DEVELOPMENT OF A QUICK DESIGN METHOD FOR COMPOSITE CONCRETE SLAB-OVER STEEL I-GIRDER BRIDGES FOR PROJECT BIDDING

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Author's Declaration

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Abstract

In bridge analysis, designers calculate maximum bending moment, M_T, and shear force, V_T, of a bridge girder under truck loading, then use available truck fraction, F_T to generate the longitudinal live load effects. This Thesis presents structural analysis of different girder configurations subjected to CL-W truck loading. Girder geometries include single-, two-, three- and four-span girders. The maximum shear, deflection and moments were plotted and then used to develop equations to represent their values. Furthermore, a software was developed to perform composite steel I-girder design. The software optimizes the I-girder size based on CHBDC design procedure. Using the developed software, a parametric study was conducted to determine the required composite moment of inertia, moment of inertia of the bare steel section and steel web area to satisfy all design requirements. Empirical equations for these three properties were developed to assist bridge designers in estimating steel I-section sizes for contract bidding.

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Chapter I

Introduction

1.1 Introduction

As the prices of steel continue to rise, bridge design engineers are moving more towards precast concrete girder superstructures. To add to that, the recent advancements in constructability of precast and prestressed concrete superstructures make concrete girder bridges more of a viable option. As a result, the steel industry must reduce material consumption in order to reduce the overall prices of steel in bridge superstructures. In addition, the steel industry must also increase constructability of steel superstructures by reducing the complexity of designs and making them less time and labour intensive. Currently in the steel industry, there are no ready-to-use information that assist bridge design engineers in selection of appropriate steel sections for bridge superstructures. On the other hand, the precast concrete industry is more advanced in that regard and facilitate ease of section design by having ready-made Tables and graphs for various section shapes and sizes. In many cases, the lack of sufficient information regarding steel section sizes to use leads designers and contractors to select overdesigned steel sections in bidding phases. This leads to an overpriced bid which in many cases leads to the bidder losing the bid. Recently, the Canadian Institute of Steel construction (CISC) created a course titled “Steel Bridges: Design, Fabrication and Construction”. This course focuses on providing design steps for I-girder and box-girder bridges as well as assist the students in learning how to interpret the Canadian Highway Bridge Design Code (CHBDC, 2014) chapters 3, 5 and 10 which are related to the design procedure. As useful as it is, it still does not provide project bidders with an accurate easy method of obtaining section sizes which in turn reduces the total material used and bid prices. The research presented in this paper provides a quick and accurate method to calculate the required steel section for slab-on-steel I-girder bridge configurations.

Currently, to arrive at an optimized steel girder size, designers are required to first assume an initial girder size. Following that assumption, the first phase is load analysis phase where designers calculate the applied loading in accordance with the Canadian Highway Bridge Design Code (CHBDC) chapter 5 (CSA, 2014). dead load per girder (DL_g). Using the applied dead load, multiple loading cases are tested to compute the most critical factored dead load moment, M_D, shear, V_D, reaction, R_D, and deflection, Δ_D for Ultimate Limit State (ULS), Serviceability Limit

State (SLS), and Fatigue Limit State (FLS) using the amplification and reduction factors specified in the Canadian Highway Bridge Design Code (CHBDC). Following the dead load calculations, designers analyze the effect of live load truck and pedestrian loading either manually using influence line method or by utilizing a Finite Element Modelling (FEM) program such as SAP2000 software. The trucks used in analysis in Canada are (i) CL-625 truck loading used in all Canada's Provinces except Ontario and Alberta, (ii) CL625-ONT truck loading used in Ontario, and (iii) CL-800 truck loading used in Alberta. The truck loadings can be seen in Figure 1.1 through 1.3.

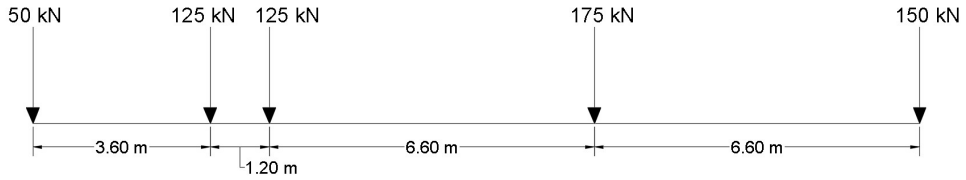

Figure 1.1: Truck configuration for CL-625 truck loading (CSA, 2014)

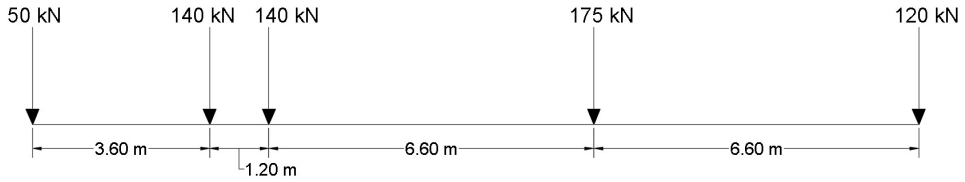

Figure 1.2: Truck configuration for CL-625-ONT truck loading (CSA, 2014)

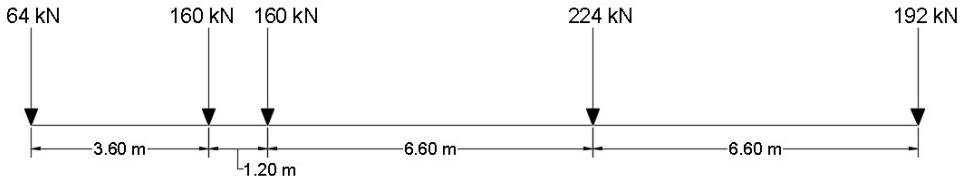

Figure 1.3: Truck configuration for CL-800 truck loading (Alberta Transportation, 2015)

Critical loading conditions are analyzed for moving (lane loading) and congested (truck loading) cases. The final value for applied moment per lane (M_T) is calculated as follows:

[1.1] $M_{T1}=M_{truck}*(1+DLA)$

[1.2] $M_{T2}=0.8*M_{truck}+M_{\frac{9kN}{m}}$

[1.3] $M_T = \max \begin{pmatrix} M_{T1} \\ M_{T2} \end{pmatrix}$

Following the calculation of M_T, the value for live load moment per lane M_L by using the truck fraction factor specified in the CHBDC as follows;

[1. 4] $M_L = F_T M_T$ where F_T is calculated as follows;

[1.5] $F_T = \frac{S}{D_T \gamma_C (1+\mu\lambda)} \geq 1.05 \frac{nR_L}{N}$ for ULS and SLS

[1.6] $F_T = \frac{S}{D_T \gamma_C (1+\mu\lambda+\gamma_e)} \geq 1.05 \frac{1}{N}$ for FLS

The live load factored shear V_L, reaction R_L and deflection Δ_L are calculated in a similar manner. Once the applied loadings are calculated, the desired critical design ULS, SLS, and FLS loading cases are obtained.

Following the load analysis phase, the girder is assessed for adequacy under critical ULS, SLS, and FLS conditions as specified by the CHBDC chapter 10. The girder should be adequate for (1) construction stage permanent deflection SLS check, (2) construction stage applied ULS moment, (3) SLS superstructure vibration, (4) ULS applied moment and shear, (5) Fatigue effect FLS check. If the selected girder size is over-designed or under-designed, the designer would change the section size and repeat the iterative process until an economical section is reached. In this research, this iterative method is replaced by ready-made Tables and equations which can be applied in bidding and preliminary analysis phases in order to obtain an accurate and economic steel section for slab-on-steel I-girder bridge configurations.

1.2 The significance of this research

During the preparation of bid documents, bridge design engineers select a bridge geometry which complies with functional requirements of highways. Moreover, bidders have to select between steel and concrete superstructure. However, due to the availability of information regarding precast concrete girders and shortage of time, bidders usually decide to select a concrete superstructure. On the other hand, the steel industry does not provide any means to the project bidders to choose a proper section sizing without spending too much time going through the full design procedure mentioned in section 1.1. Previously, CANBAS software (MTO, 2002)

was used to quickly analyze and design different bridge dimensions. However, the program has since been withdrawn as it does not comply with the recent versions of the CHBDC. This research aims to provide easy-to-use and quick Tables, equations and graphs that assist in achieving an optimal I-girder section size quickly for biding purposes. This is achieved by means of a parametric study conducted with the help of a VB.Net software developed by the author that optimizes I-girder section sizes in seconds.

1.3 Thesis objectives

1- To produce, by means of a parametric study, ready-made equations that calculate applied live load moment M_T, shear V_T, deflection Δ_T and reaction R_T for bridges ranging from one to four spans with span length ranging between 12 and 48 m under the effect of (i) CL-625 truck loading, (ii) CL625-ONT truck loading, and (iii) CL-800 truck loading.

2- To create a VB.Net program that is able to calculate the applied factored loading and perform all the girder adequacy checks given the bridge dimensions for bridges ranging from one to four spans with span length ranging between 12 and 48 m under the effect of (i) CL-625 truck loading, (ii) CL625-ONT truck loading, and (iii) CL-800 truck loading.

3- To use the VB.Net program in order to conduct a parametric study and create empirical equations for the optimum I-girder moment of inertia (I_x), and area of the web (A_w).

1.4 Scope of work

This research focuses on bridge with one-span, two equal spans, three equal spans and, four equal spans. The span lengths included in this research are between 12 and 48 m at four meter increments. Bridge widths included in this research are between 4.5 m and 25 m. Furthermore, This research focuses on bridges without a sidewalk. The research studies bridges that have between three and twelve girders and one to six design lanes. The trucks included in this research are the CL-625 truck loading, CL625-ONT truck loading, and CL-800 truck loading.

1.5 Thesis layout

This thesis includes five chapters. Chapter one introduces the reader to the field of work, the research significance and the scope of work. Chapter two discusses the literature review conducted by the author and its significance to the research conducted. Chapter three presents the live load parametric study and the developed live load equations. Chapter four presents the developed software and the methodology of using the software to produce results to be used in

chapter five. Chapter five discussed the program results and the developed empirical equations for the moment of inertia and area of the web. Chapter six presents the author's conclusions regarding the research and future research recommendations.

Chapter II

Literature Review

2.1 Application of ready-made design graphs in the concrete bridge industry

Recent advancements in the concrete industry has made it easier for designers and project bidders to select an optimized section size for preliminary analysis. As discussed previously, this makes the selection of a concrete girder for designing bridge superstructures a much more appealing option. In order to be able to create a similar preliminary design option for slab on steel I-girder bridges, one must study the example of previously conducted research in a similar field. Currently in the "Precast Prestressed Bridge Components Technical Manual" created by Pre-Con for industry use (Pre-Con, 2004), there are multiple different methods available of creating ready-made sections. Visible in Figure 2.1 is a ready-made graph for the CPCI pre-cast girder section in single span. In this figure, there are two different variables that affect the selection of a girder size, girder spacing and girder span. Both the girder span and spacing affect the girder size positively. For instance, at a girder span of 25 m, if a 1.8 m girder spacing is selected, a CPCI 1200 section would be required. Whereas, for the same girder span a spacing of 2.7 m is selected, a CPCI 1400 section would be required. A similar graph exists in the same manual for multi-span bridge sections which works in the same way.

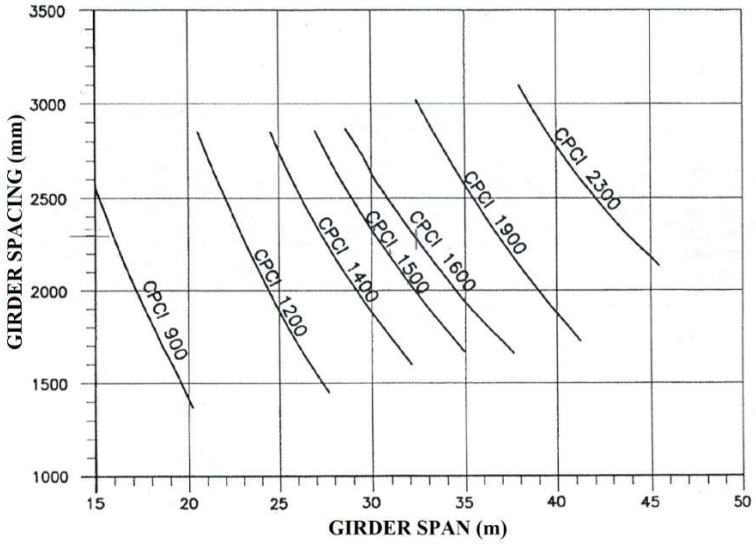

Figure 2.1: Ready-made graph for selection of CPCI girder for single span bridge configurations (Pre-Con, 2004)

Another example for methods of creating ready-made graphs can be seen in hollow slabs and box girders is shown in Figure 2.2 and 2.3 respectively. In this example, only one factor is taken into account which is the girder span. This is due to the slab being designed based on a one-meter strip method as per the PCI manual (Prestressed Concrete Institute, 1978). This methodology simplifies the preliminary design a great deal and saves the designer or the project bidder precious time in section selection. The author believes that a similar methodology can be applied to steel I-girders by dividing the total moment of inertia of the girder section by the spacing in order to produce a "per unit width" value that can be applied unanimously regardless of spacing.

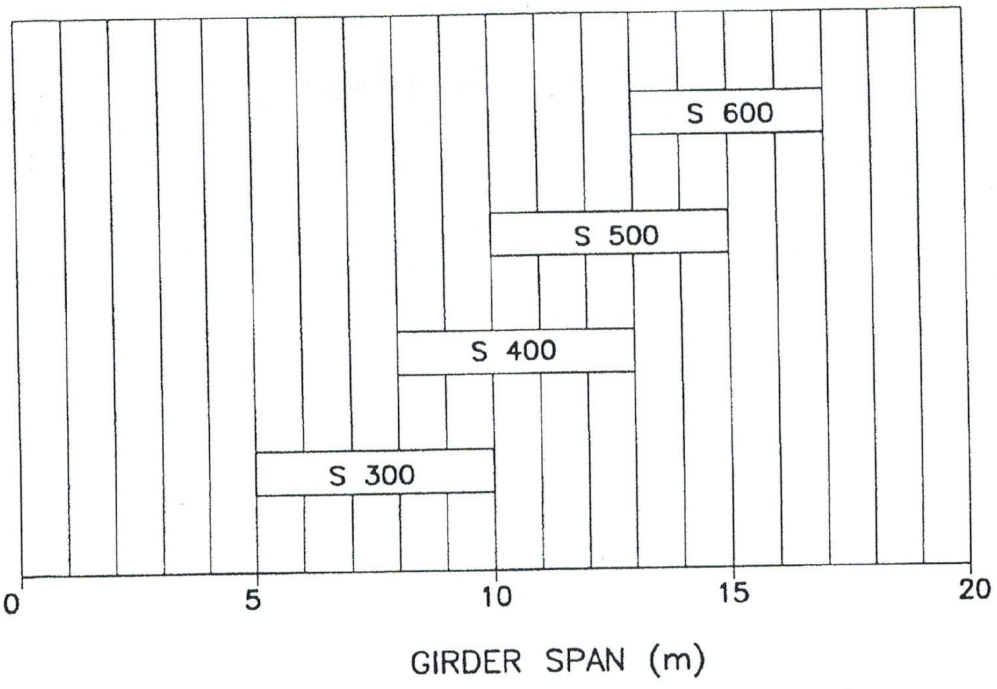

Figure 2.2: Ready-made graph for selection of concrete hollow slab section for single span and multi-span bridge configurations (Pre-Con, 2004)

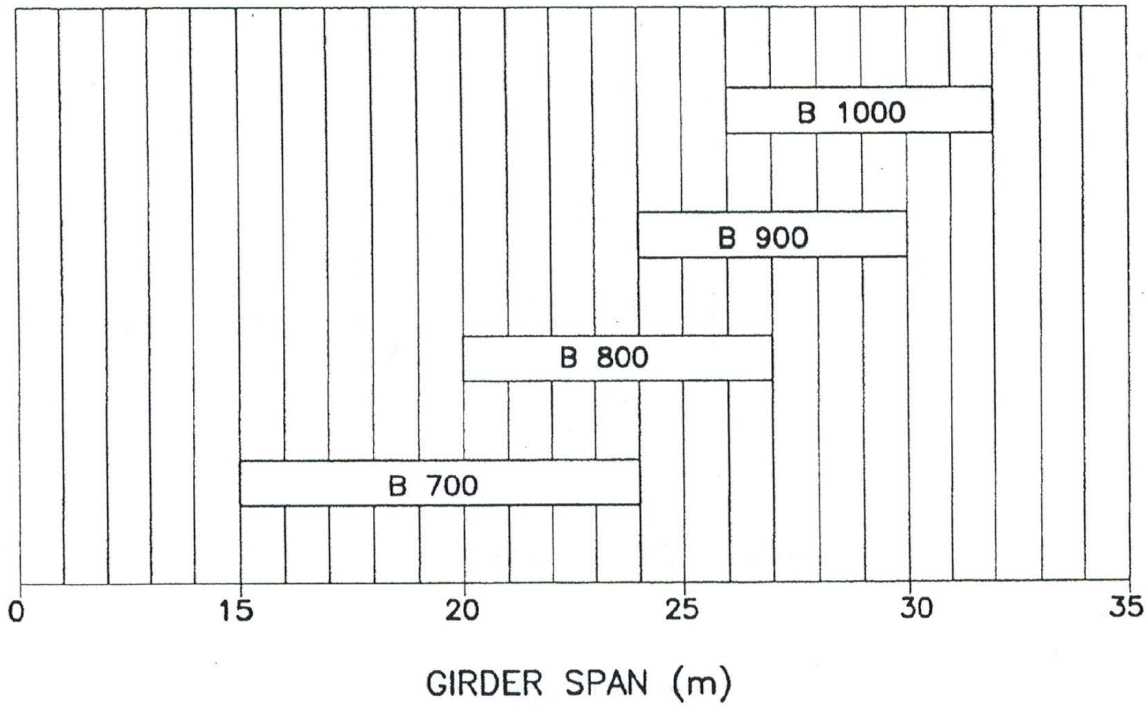

Figure 2.3: Ready-made graph for selection of concrete box girder section for single span and multi-span bridge configurations (Pre-Con, 2004)

2.2 Existing research on simplifying preliminary steel girder design in the bridge industry

Upper and lower limits for the longitudinal flexural rigidity (Dx) of single span slab-on-steel girder bridges were established in a publication for the Journal of Structural Engineering in 1988 (Bakht & Moses, 1988). As can be seen in Figure 2.4, 30 different values for flexural rigidity versus span are plotted and limits are established based on best fit curves.

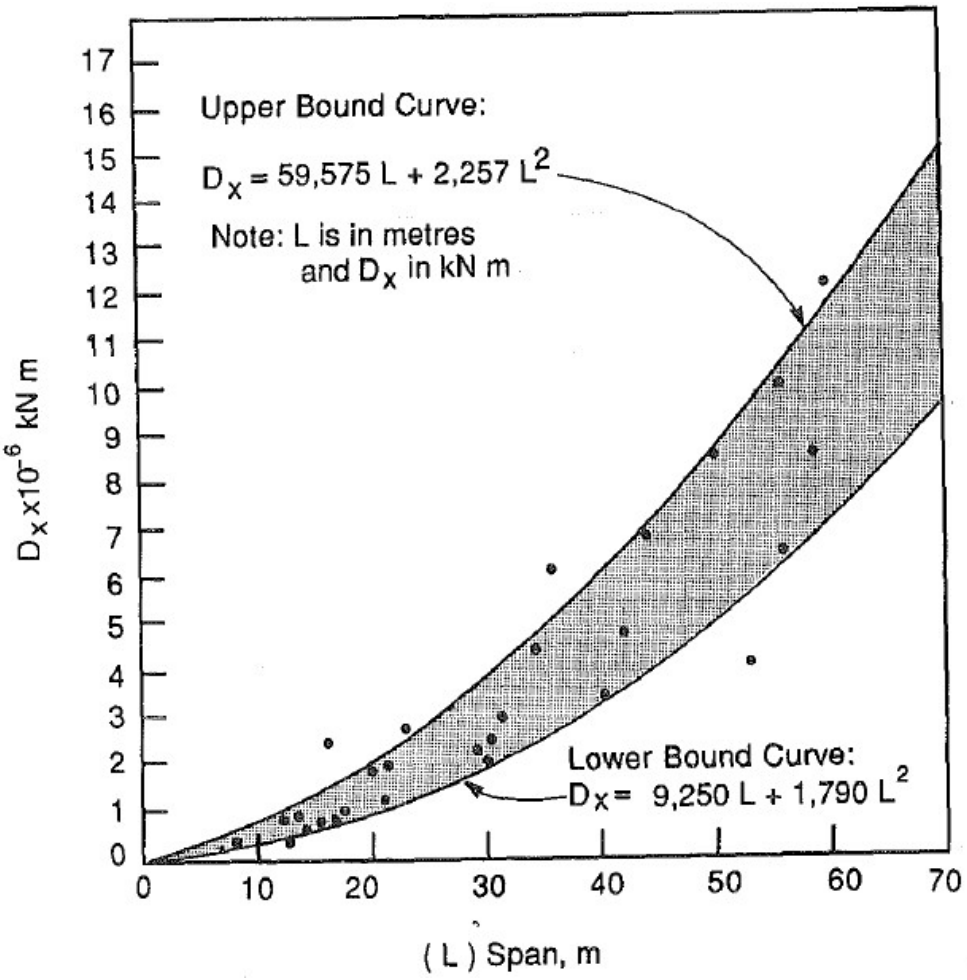

Figure 2.4: Relationship between span and longitudinal flexural rigidity Dx per unit width

The limits established can be seen below;

[2.1] $D_x = 59{,}575(L) + 2{,}257(L^2)$ kN.m Upper limit for single-span bridges

[2.2] $D_x = 9{,}250(L) + 1{,}790(L^2)$ kN.m Lower limit for single-span bridges

These results are based on a CL-740 truck loading available in the Ontario Highway Bridge Design Code (OHBDC) (MTO, 1983). It can be seen that out of the 30 samples considered, 5 samples fall out of the predictive model created while the remaining values fall within the model. These equations were then adopted by the OHBDC of 1991 while applying a 25% increase to the values to become a conservative estimate for Dx of single-span bridge configurations (MTO, 1991). Some parameters in the publication were unclear such as strength of the concrete used

and, yielding point of the steel which would impact the flexural rigidity. However, it is stated that a slab thickness of 190 mm was used in their study which was common at the time and can be seen in other load distribution studies (Hays et al., 1987). For such reasons, it is expected that the flexural rigidities obtained in such studies be lower than flexural rigidities that would be obtained in a more recent study with the advancement in material properties, quality control and assurance and increased slab thickness used nowadays.

Another study conducted in 1997 by Theodor & Al-Bazi shows 69 different bridge configurations with optimized WWF and W shaped steel I-girder sections for slab-on-steel girder single span bridge configurations (Theodor & Al-Bazi, 1997). In the publication, bridge configurations were divided into 7 groups. Groups 1, 3, 5 and, 7 utilized W shaped sections and short spans between 12 and 24 m. On the other hand, groups 2, 4 and, 6 utilized WWF sections and bridge spans between 18 m and 40 m. Tables 2.1 through 2.7 show tables for groups 1 through 7 respectively. The sections presented in the manual are based on the CISC Handbook for Steel Construction. Recent changes to the section sizes present in the handbook might render some of the sections discussed in the manual unavailable as per the 2017 version of the handbook (CISC, 2017). It is also worth noting that the sections discussed in the manual do not reach absolute optimization as they are bound by available section sizes in the market in addition to other design parameters. However, the simplicity of these tables makes them a valuable asset for the steel industry and a great example and reference for further research to be done in the area.

Table 2.1: Theodor & Al-Bazi's Bridge Group 1 utilizing WWF shaped steel girders for bridge cases 1 through 12

Bridge #	Span (m)	Girder	A (m)	**b1** (mm)	d (mm)	**b2** (mm)	**b4** (mm)	**h2** (mm)	**h4** (mm)	**h1** (mm)	**b3** (mm)	**h3** (mm)
1	18	WWF 700X152	9.28	2500	700	300	300	20	20	225	11	660
2	20	WWF 800X161	9.28	2500	800	300	300	20	20	225	11	760
3	22	WWF 900X169	9.28	2500	900	300	300	20	20	225	11	860
4	24	WWF 1000X223	9.28	2500	1000	300	300	25	25	225	14	950
5	26	WWF 1100X234	9.28	2500	1100	300	300	25	25	225	14	1050
6	28	WWF 1200X263	9.28	2500	1200	300	300	25	25	225	16	1150
7	30	WWF 1200X302	9.28	2500	1200	400	400	25	25	225	16	1150
8	32	WWF 1200X302	9.28	2500	1200	400	400	25	25	225	16	1150
9	34	WWF 1400X358	9.28	2500	1400	400	400	30	30	225	16	1340
10	36	WWF 1400X358	9.28	2500	1400	400	400	30	30	225	16	1340
11	38	WWF 1600X431	928%	2500	1600	500	500	30	30	225	16	1540
12	40	WWF1600X431	9.28	2500	1600	500	500	30	30	225	16	1540

Table 2.2: Theodor & Al-Bazi's Bridge Group 2 utilizing W shaped steel girders for bridge cases 13 through 19

Bridge #	Span (m)	Girder	A (m)	**b1** (mm)	d (mm)	**b2** (mm):	**b4** (mm):	**h2** (mm)	**h4** (mm)	**h1** (mm)	**b3** (mm)	**h3** (mm)
13	12	W 610X91	10.46	2750	598	227	227	12.7	12.7	225	9.7	573
14	14	W 690X125	10.46	2750	678	253	253	16.3	16.3	225	11.7	645
15	16	W 760X161	10.46	2750	758	266	266	19.3	19.3	225	13.8	719
16	18	W 760X161	10.46	2750	758	266	266	19.3	19.3	225	13.8	719
17	20	W 840X176	10.46	2750	835	292	292	18.8	18.8	225	14	797
18	22	W 920X201	10.46	2750	903	304	304	20.1	20.1	225	15.2	863
19	24	W 1000x249	10.46	2750	980	300	300	26	26	225	16.5	928

Table 2.3: Theodor & Al-Bazi's Bridge Group 3 utilizing WWF shaped steel girders for bridge cases 20 through 31

Bridge #	Span (m)	Girder	A (m)	**b1** (mm)	d (mm)	**b2** (mm):	**b4** (mm):	**h2** (mm)	**h4** (mm)	**h1** (mm)	**b3** (mm)	**h3** (mm)
20	18	WWF 800X161	10.46	2750	800	300	300	20	20	225	11	760
21	20	WWF 900X169	10.46	2750	900	300	300	20	20	225	11	860
22	22	WWF 900X192	10.46	2750	900	300	300	25	25	225	11	850
23	24	WWF 1000X223	10.46	2750	1000	300	300	25	25	225	14	950
24	26	WWF 1100X234	10.46	2750	1100	300	300	25	25	225	14	1050
25	28	WWF 1200X263	10.46	2750	1200	300	300	25	25	225	16	1150
26	30	WWF 1200X302	10.46	2750	1200	400	400	25	25	225	16	1150
27	32	WWF 1200X333	10.46	2750	1200	400	400	30	30	225	16	1140
28	34	WWF 1400X358	10.46	2750	1400	400	400	30	30	225	16	1340
29	36	WWF 1400X358	10.46	2750	1400	400	400	30	30	225	16	1340
30	38	WWF 1600X431	10.46	2750	1600	500	500	30	30	225	16	1540
31	40	WWF1600X431	10.46	2750	1600	500	500	30	30	225	16	1540

Table 2.4: Theodor & Al-Bazi's Bridge Group 4 utilizing W shaped steel girders for bridge cases 32 through 38

Bridge #	Span (m)	Girder	A (m)	**b1** (mm)	d (mm)	**b2** (mm):	**b4** (mm):	**h2** (mm)	**h4** (mm)	**h1** (mm)	**b3** (mm)	**h3** (mm)
32	12	W 610X101	11.46	3000	603	228	228	14.9	14.9	225	10.5	573
33	14	W 690X125	11.46	3000	678	253	253	16.3	16.3	225	11.7	645
34	16	W 760X161	11.46	3000	758	266	266	19.3	19.3	225	13.8	719
35	18	W 840X193	11.46	3000	840	292	292	12.7	12.7	225	14.7	797
36	20	W 840X193	11.46	3000	840	292	292	12.7	12.7	225	14.7	797
37	22	W 1000X222	11.46	3000	970	300	300	12.1	12.1	225	16	928
38	24	W 1000x249	11.46	3000	980	300	300	26	26	225	16.5	928

Table 2.5: Theodor & Al-Bazi's Bridge Group 5 utilizing WWF shaped steel girders for bridge cases 39 through 50

Bridge #	Span (m)	Girder	A (m)	**b1** (mm)	d (mm)	**b2** (mm):	**b4** (mm):	**h2** (mm)	**h4** (mm)	**h1** (mm)	**b3** (mm)	**h3** (mm)
39	18	WWF 900X169	11.46	3000	900	300	300	20	20	225	11	860
40	20	WWF 900X169	11.46	3000	900	300	300	20	20	225	11	860
41	22	WWF 1000X200	11.46	3000	1000	300	300	20	20	225	14	960
42	24	WWF 1100X234	11.46	3000	1100	300	300	25	25	225	14	1050
43	26	WWF 1200X263	11.46	3000	1200	300	300	25	25	225	16	1150
44	28	WWF 1200X302	11.46	3000	1200	400	400	25	25	225	16	1150
45	30	WWF 1200X302	11.46	3000	1200	400	400	25	25	225	16	1150
46	32	WWF 1200X333	11.46	3000	1200	400	400	30	30	225	16	1140
47	34	WWF 1400X358	11.46	3000	1400	400	400	30	30	225	16	1340
48	36	WWF 1400X358	11.46	3000	1400	400	400	30	30	225	16	1340
49	38	WWF 1600X431	11.46	3000	1600	500	500	30	30	225	16	1540
50	40	WWF1600X431	11.46	3000	1600	500	500	30	30	225	16	1540

Table 2.6: Theodor & Al-Bazi's Bridge Group 6 utilizing W shaped steel girders for bridge cases 51 through 57

Bridge #	Span (m)	Girder	A (m)	**b1** (mm)	d (mm)	**b2** (mm):	**b4** (mm):	**h2** (mm)	**h4** (mm)	**h1** (mm)	**b3** (mm)	**h3** (mm)
51	12	W 610X101	12.46	3250	603	228	228	14.9	14.9	225	10.5	573
52	14	W 690X125	12.46	3250	678	253	253	16.3	16.3	225	11.7	645
53	16	W 840X176	12.46	3250	835	292	292	18.8	18.8	225	14	797
54	18	W 840X193	12.46	3250	840	292	292	12.7	12.7	225	14.7	797
55	20	W 840X193	12.46	3250	840	292	292	12.7	12.7	225	14.7	797
56	22	W 1000X222	12.46	3250	970	300	300	12.1	12.1	225	16	928
57	24	W 1000x249	12.46	3250	980	300	300	26	26	225	16.5	928

Table 2.7: Theodor & Al-Bazi's Bridge Group 7 utilizing WWF shaped steel girders for bridge cases 58 through 69

Bridge #	Span (m)	Girder	A (m)	**b1** (mm)	d (mm)	**b2** (mm):	**b4** (mm):	**h2** (mm)	**h4** (mm)	**h1** (mm)	**b3** (mm)	**h3** (mm)
58	18	WWF 900X169	12.46	3250	900	300	300	20	20	225	11	860
59	20	WWF 900X169	12.46	3250	900	300	300	20	20	225	11	860
60	22	WWF 1000X200	12.46	3250	1000	300	300	20	20	225	14	960
61	24	WWF 1100X234	12.46	3250	1100	300	300	25	25	225	14	1050
62	26	WWF 1200X263	12.46	3250	1200	300	300	25	25	225	16	1150
63	28	WWF 1200X302	12.46	3250	1200	400	400	25	25	225	16	1150
64	30	WWF 1200X302	12.46	3250	1200	400	400	25	25	225	16	1150
65	32	WWF 1400X358	12.46	3250	1400	400	400	30	30	225	16	1340
66	34	WWF 1400X358	12.46	3250	1400	400	400	30	30	225	16	1340
67	36	WWF 1400X405	12.46	3250	1400	500	500	30	30	225	16	1340
68	38	WWF 1600X431	12.46	3250	1600	500	500	30	30	225	16	1540
69	40	WWF1600X431	12.46	3250	1600	500	500	30	30	225	16	1540

In continuation of the work conducted by Theodor and Al-Bazi, 3 more bridge groups were designed by Nofal (Nofal, 1988). Nofal's work focuses on bridges of spans between 12 m and 20 m and only considers W shaped steel girder sections. The research setup is very similar to that discussed above. Tables 2.8 through 2.10 show the 3 additional groups of bridges considered by Nofal summing up to a total of 94 available bridge configurations for short-span single span slab-on-steel girder bridges. Nofal's work showed a focus on girder spacing for bridges with equal span to show the effect of spacing on girder size selection. It can be seen that a decrease of girder spacing causes a decrease in section size selected as it is to be expected.

Table 2.8: Nofal's Bridge Group 1 utilizing W shaped steel girders for bridge cases 70 through 77

Bridge #	Span(m)	Girder	A(m)	b1(mm)	d(mm)	b2(mm)	b4(mm)	h2(mm)	h4(mm)	h1(mm)	b3(mm)	h3(mm)
70	16	W 610X125	8	2750	612	229	229	19.6	19.6	225	11.9	573
71	16	W 610X125	8	2500	612	229	229	19.6	19.6	225	11.9	573
72	16	W 610X125	8	2750	612	229	229	19.6	19.6	225	11.9	573
73	16	W 610X125	12	2750	612	229	229	19.6	19.6	225	11.9	573
74	16	W 610X125	16	2750	612	229	229	19.6	19.6	225	11.9	573
75	12	W 610X125	8	3000	612	229	229	19.6	19.6	225	11.9	573
76	16	W 690X170	8	3000	693	256	256	23.6	23.6	225	14.5	646
77	20	W 760X161	8	3000	758	266	266	19.3	19.3	225	13.8	719

Table 2.9: Nofal's Bridge Group 2 utilizing W shaped steel girders for bridge cases 78 through 87

Bridge #	Span(m)	Girder	A(m)	b1(mm)	d(mm)	b2(mm)	b4(mm)	h2(mm)	h4(mm)	h1(mm)	b3(mm)	h3(mm)
78	12	W 610X155	8	3750	611	324	324	19	19	225	12.7	573
79	12	W 610X140	8	3375	617	230	230	22.2	22.2	225	13.1	573
80	12	W 610X125	8	3000	612	229	229	19.6	19.6	225	11.9	573
81	12	W 530X123	8	2500	544	212	212	21.2	21.2	225	13.1	502
82	12	W 530X109	8	2250	539	211	211	18.8	18.8	225	11.6	501
83	12	W 530X101	8	2000	537	201	201	17.4	17.4	225	10.9	502
84	16	W 610X125	8	2750	612	229	229	19.6	19.6	225	11.9	573
85	16	W 610X125	8	2500	612	229	229	19.6	19.6	225	11.9	573
86	16	W 610X125	8	2750	612	229	229	19.6	19.6	225	11.9	573
87	16	W 610X125	8	2750	612	229	229	19.6	19.6	225	11.9	573

Table 2.10: Nofal's Bridge Group 1 utilizing W shaped steel girders for bridge cases 88 through 94

Bridge #	Span(m)	Girder	A(m)	b1(mm)	d(mm)	b2(mm)	b4(mm)	h2(mm)	h4(mm)	h1(mm)	b3(mm)	h3(mm)
88	12	W 610X125	8	3000	612	229	229	19.6	19.6	175	11.9	573
89	12	W 610X125	8	3000	612	229	229	19.6	19.6	225	11.9	573
90	12	W 610X125	8	3000	612	229	229	19.6	19.6	275	11.9	573
91	12	W 530X123	8	2500	544	212	212	21.2	21.2	225	13.1	502
92	12	W 530X123	8	2500	544	212	212	21.2	21.2	225	13.1	502
93	12	W 530X123	8	2500	544	212	212	21.2	21.2	225	13.1	502
94	12	W 530X123	8	2500	544	212	212	21.2	21.2	225	13.1	502

2.3 Use of programs in bridge analysis and design

Most recently, Autodesk released a program titled "Structural Bridge Design" (Autodesk Civil Engineering, 2018). This program is available online for purchase and is designed to help engineers perform loading, analysis and code checks as per American standards. This program provides an excellent tool for designers in the final design phase to conduct final checks on the selected girder and bridge dimensions. The program however, does not in itself optimize a girder size or optimize any other sections. It assists with the procedure and makes it much faster. However, it does not provide an alternative to the design iterations in achieving an optimal girder size and thus does not assist in cost reduction for bidding phase purposes.

A very common program in bridge analysis is SAP2000 Finite Element Modelling (FEM) software. This program allows for analysis of point loads, line loads, distributed loads and, moving loads on programmable 1-D, 2-D and 3-D structural members. It is simple enough to be used for a quick analysis of girders modelled as beams and yet it has the capability to model more complex structures very accurately (SAP2000, 2017). SAP2000 software is mainly used for the analysis aspect of the bridge design phase and is not very heavily relied on to perform code checks and find the most appropriate section size. Another FEM software that is more specific to the bridge industry is CSIBridge. It is created by the same creators of SAP2000 but it is designed to assist in modelling, analysis and design of bridge structures (CSI, 2017). It provides more options for design such as bearing members and abutments. It has the ability to perform code checks and update them as the model changes. This provides a great visual tool for bridge designers to finalize their model and optimize it. However, the optimization process is also manual. Moreover, it is very heavily weighed towards the final design phase rather than optimizing the preliminary design phase for bidding purposes. Finally, MIDAS Civil

Engineering software is another option that is also very heavily weighed towards analysis and design. In additional to FEM analysis, it provides Eurocode checks to the user in order to assist in section selection and optimization (MIDAS Civil, 2014). Even though third party additions are available to the software to incorporate American codes, the software itself does not assist in optimization for preliminary analysis and instead also focuses on final design of bridge sections. For these reasons, the author believes there is a need for a software that is able to provide accurate superstructure section sizing and optimization for preliminary analysis of bridges.

2.4 Transverse load distribution in bridges

Existing equations in the CHBDC assist in determining load distribution factors for exterior and interior girders (CSA, 2014). The existing equation is as follows;

[2.3] $F_T = \frac{S}{D_T \gamma_C (1+\mu\lambda)} \geq 1.05 \frac{nR_L}{N}$ for ULS and SLS

[2.4] $F_T = \frac{S}{D_T \gamma_C (1+\mu\lambda+\gamma_e)} \geq 1.05 \frac{1}{N}$ for FLS

S = girder spacing, m,

n = number of design lanes,

R_L = multilane reduction factor

N = number of girders

$D_T, \gamma_C, \lambda, \gamma_e$ are obtained from tables found in chapter 5 of the CHBDC

$$\mu = \frac{We - 3.3}{0.6} \leq 1.0$$

We = design lane width, m

This truck loading distribution factor F_T is then multiplied by the live load moment obtained from one lane of loading to obtain the loading on the selected girder.

In recent research conducted on the topic of transverse loading, the CHBDC transverse load distribution factor was compared to load distribution factors of AASHTO and load distribution done by means of FEM or manual calculations (Razaqpur & Esfandiari, 2006). Shown in Figure 2.5 is an example of the results obtained in the study.

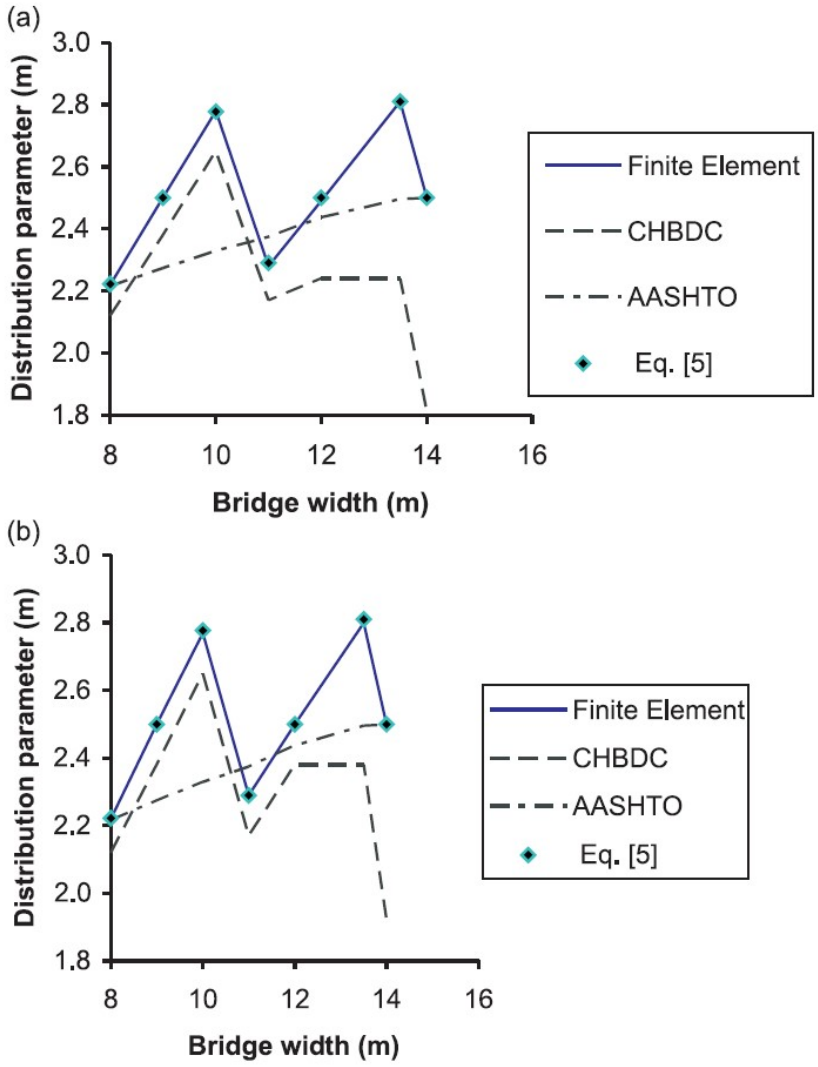

Figure 2.5: Variation in distribution parameter with bridge width for three-span bridges: (a) external girder; (b) internal girder (A. Ghani Razaqpur, 2006)

It was concluded from the study that for bridges with aspect rations between 2.50 and 3.75 (length-to-width ratio), the CHBDC distribution factors provided good results. However, for bridges below this range of aspect ratios, the CHBDC provides conservative results. It was also found that the load redistribution varies based on state of design which agreed with the methodology of the CHBDC where ULS and SLS are treated differently to FLS design state. It was also concluded in the publication that AASHTO provides very conservative results when compared to CHBDC for transverse load distribution (AASHTO, 2017).

2.5 Girder design for superstructure vibration at SLS

As per the requirements for the CHBDC, the design for bridge superstructure vibration depends on the bridge first flexural frequency, the static deflection due to truck loading magnified by Dynamic Load Allowance (DLA) and, the sidewalk usage frequency (CSA, 2014).

[2.5] $\Delta_{LL} = \Delta_{truck} . F_T . (1 + DLA)$

Once the required parameters are calculated. Figure 2.6 is then used to assess the current girder section for adequacy. If the section is inadequate, a stiffer section should be used instead. Stiffening the section can be in the form of adding stiffeners to the existing girder section or using a larger girder section size, whichever is more feasible.

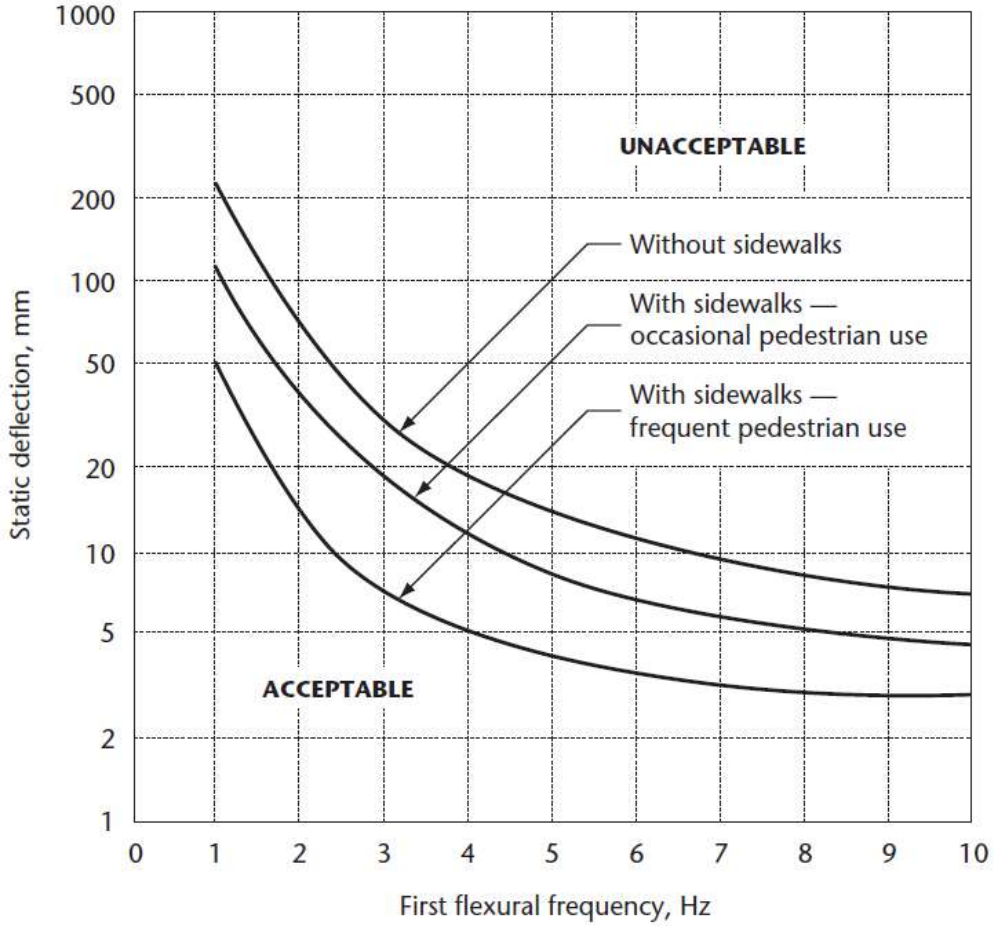

Figure 2.6: Deflection limits for highway bridge superstructure vibration (CSA, 2014)

It has been shown in a recent study that the aspect ratio of the bridge affects the vibration mode and thus also changes the natural frequency. When aspect ratios re below 4.0, the first mode is dominant while for aspect ratios above 8.0, other modes start becoming more dominant (Duan et al., 2000) Furthermore, it was also shown that maximum vibration occurs when the truck movement duration on the bridge is close to the fundamental period of the bridge (Yang and Lin, 1995). Finally, it was shown that dynamic analysis overestimates the deflection as it overestimates the first flexural frequency of the bridge since it does not take into account the effect of the mass of the truck on the vehicle-bridge system which has a lower first flexural frequency when compared to the bridge system on its own (Yang and Yau, 1997) is unclear whether the CHBDC takes these factors into account in the calculations for superstructure vibration adequacy or not. However, the CHBDC requirements will be used for the purpose of this work nonetheless even if it provides conservative results.

2.6 Girder design for ULS loading

According to the CISC Handbook of Steel construction, steel girders are classified into 4 classes. Depending on the girder class specification, the design methodology differs. Classes 1 and 2 are considered to be bulky sections and thus are designed for plastic conditions by using the plastic section modulus (Z). On the other hand, Classes 3 and 4 are slender sections and are thus designed for elastic conditions by using the elastic section modulus, S, (CISC, 2017). The resistance of the girder section is especially important when considering construction stage where the slab is wet and only the girder is acting as a resisting structural member to the construction live loads and the wet concrete and formwork dead loads.

[2.6] $M_{rgirder} \geq M_{fconstruction}$

As for the composite design for moment, existing examples shown as part of the CISC course "Steel Bridges Design, Fabrication, Construction" (CISC, 2016) were studied. In the course design examples, the composite section is converted into an equivalent steel section and then the moment resistances of the section are calculated. Under positive moment, the portion of the system above the neutral axis is under compression and thus the concrete is in effect in resisting the loads. However, under negative moment the concrete portion above the neutral axis is considered cracked under tension and only the reinforcement is considered in the load resistance

calculations. The positive and negative resisting moments are then assessed in comparison with the ultimate applied positive and negative moments (CSA, 2014).

[2.7] $M_{r+composite} \geq M_{f+ULS}$

[2.8] $M_{r-composit} \geq M_{f-ULS}$

Finally, when considering the shear resistance of the girder, it is calculated based on the web area and the considerations in the Handbook of Steel Construction (CISC, 2017).

[2.9] $V_r = \emptyset_s * A_w * F_s$

[2.10] $F_s = F_{cr} + F_t$

$\emptyset_s$ = resistance factor for steel,

A_w = area of the I-girder section web, mm^2,

F_s = ULS shear stress, MPa,

F_{cr} = shear buckling stress, MPa,

F_t = tension field component of post-buckling stress, MPa.

Detailed example of calculation of shear resistance of steel plate I-girder section was found in the CISC course "Steel Bridges Design, Fabrication, Construction" design examples (CISC, 2016). Upon the calculation of shear resistance, it is compared to the factored applied shear to ensure adequacy.

[2.11] $V_r \geq V_{fULS}$

2.7 Girder design for Fatigue Limit State

Fatigue stress ranges are calculated based on calculated FLS applied moments. According to the CHBDC, the following design requirement should be achieved (CSA, 2014).

[2.12] $0.52 * C_L * f_{sr} < F_{sr}$

0.52 = calibration constant to correlate fatigue damage from CL-W truck to that of a real truck,

C_L = truck weight factor, 1.0 for CL-625 truck,

f_{sr} = calculated stress range due to passage of a CL-W truck, MPa,

F_{sr} = calculated stress range resistance of the structural member as per the design detail categories in the CHBDC, MPa.

Chapter III

Truck Load Parametric Study

3.1 Methodology

The aim of this portion of the research is to obtain an accurate value for the design live load moment and shear using the three most used trucks in Canada, namely: CL-625, CL-625-ONT and CL-800. CL-625 truck is used for the design of bridges in all provinces and territories except Ontario and Alberta, while CL-625-ONT truck is used for the design of bridges in Ontario (CSA, 2014). CL-800 is identical to CL-625 truck but with gross weight of 800 kN and is used to design bridges in Alberta (Alberta Transportation, 2015). These truck configurations are shown in Figures 1.1 through 1.3.

The CHBDC specifies that the live load moment per girder, M_L, is calculated based equations referenced in chapter 1.

The longitudinal moment generated by one lane of CL-W loading, M_T, is the maximum moment obtained from a congested and a non-congested state of a truck loading over the bridge. The non-congested state (referred to as truck load), consists of the truck that is being located at the location of maximum moment and is magnified with a dynamic load allowance referred to as DLA as per equation 1.

In the case where the bridge span does not accommodate a full truck, a reduced version of the truck is used where some axles are removed. Few loading cases were considered of which axles to remove to obtain a maximized value for the moment per lane.

The second case to be considered is the congested state where a distributed load of 9 kN/m is assumed to be acting on the bridge in addition to 80% of the truck weight. Equation 2 represents the resulting moment for a loaded lane based on this loading case. The 9 kN/m load is only applied to locations where it would magnify the loading effect when determining the positive moment within the bridge span and the negative moment at the support.

Based on the above-mentioned loading cases, the maximum longitudinal moment generated by one lane of CL-W loading is considered the greatest values of all loading cases considered in girder analysis by equation 3.

A similar procedure is used to obtain the maximum longitudinal shear generated by one lane of CL-W loading, V_T, support reaction generated by one lane of CL-W loading, R_T, deflection generated by one lane of CL-W loading, Δ_T. The objective of this portion of the research was to develop finite-element (FE) models, using SAP2000 software (SAP2000, 2017), to obtain M_T, V_T, R_T and, Δ_T values for single span, two equal span, three equal span and, four equal span bridge configurations with span length between ranging from 12 to 48 m. FE Models of girders were created for three truck types, namely: CL-625, CL-625-ONT and CL-800. The values obtained were tabulated and used to create mathematical models to provide a quick estimate of steel girder sizes at the bidding stage on projects. This falls in line with the ultimate goal of this research which is to create an easy-to-use estimation method to obtain design live load effects without the need to perform detailed calculations and modelling needed for bidding on the project and in the preliminary estimation of girder size in the final design.

3.2 Sensitivity study: Influence line (IL) vs moving load method

In order to select a method of analysis between IL and moving load on SAP2000 software, a short sensitivity study was conducted to compare the results from analysis by using both methods. For the case of IL, diagrams were utilized to assist in locating the truck axles over the bridge girder to maximize the moment, shear, reaction and deflection effects. Figures 3.1 through 3.6 show examples of the use of Influence Line diagrams in location CL-W axles in single span and multi-span bridge configurations of 30 m span length.

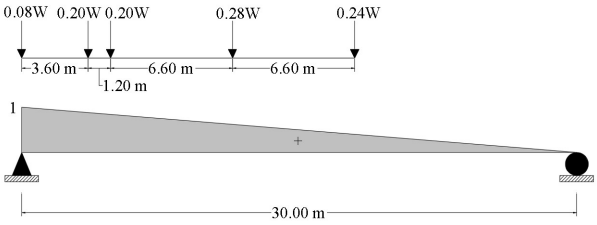

Figure 3.1: Shear and Reaction I.L. Diagram of a 30-m single span bridge and associated CL-W truck axle locations*

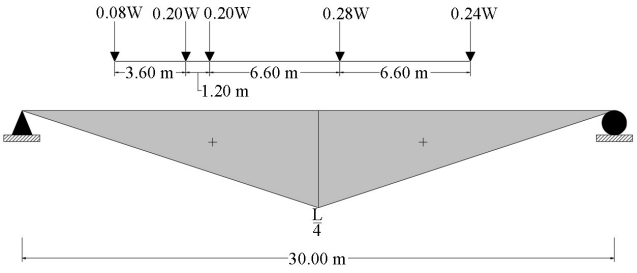

Figure 3.2: Moment I.L. Diagram of a 30-m single span bridge and associated CL-W truck axle locations*

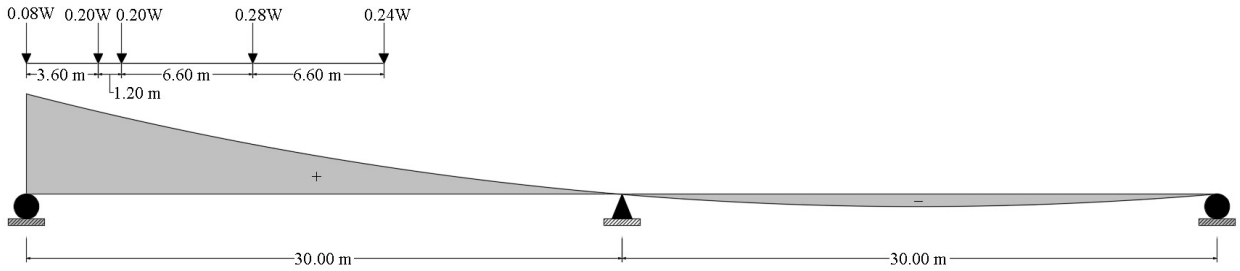

Figure 3.3: Exterior Reaction and Shear I.L. Diagram of a Two-Span bridge and associated CL-W truck axle locations*

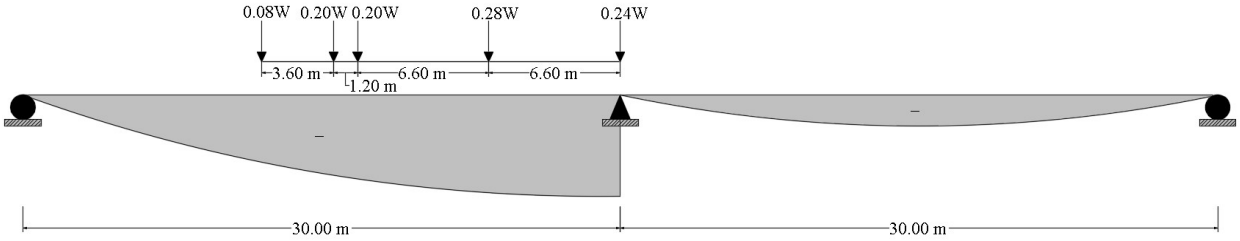

Figure 3.4: Interior Shear I.L. Diagram of a Two-Span bridge and associated CL-W truck axle locations*

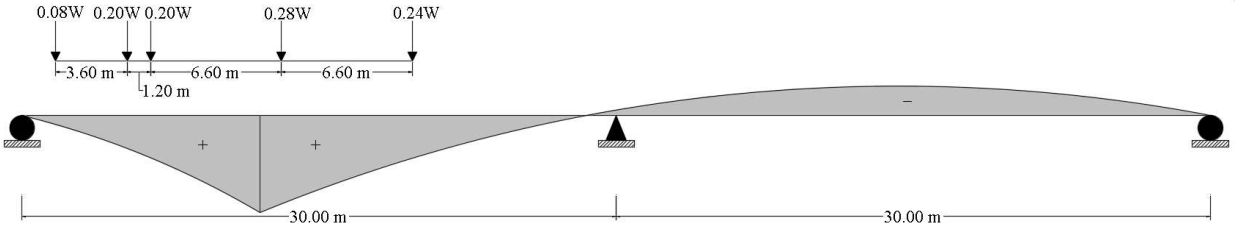

Figure 3.5: Maximum Positive Moment I.L. Diagram of a Two-Span bridge and associated CL-W truck axle locations*

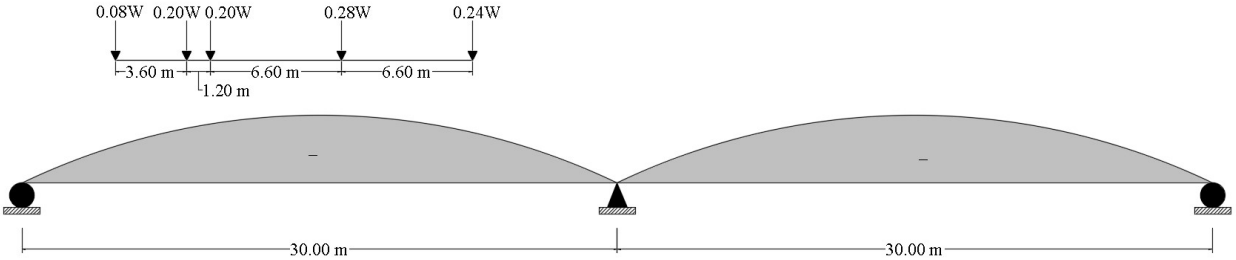

Figure 3.6: Maximum Negative Moment I.L. Diagram of a Two-Span bridge and associated CL-W truck axle locations*

*All truck loadings were placed one time facing right side direction of traffic and another time facing left side direction of traffic

SAP2000 Software was used in conjunction with equations 1 through 4 to obtain accurate results for maximum moment and shear values due to live load per lane. As for the case of moving load, the truck loading was programmed as a moving load into SAP2000 software. A very small increment of movement was selected of 0.1 m. This leads the software to measure the effect of the truck once then move it by 0.1 m and calculate the results again. This process is repeated throughout the entire lane of loading and an envelope is produced by the software. An example of the comparison of the results due to IL and moving load can be seen in Table 3.1.

Table 3.1: Comparison between moment produced by IL method and moving load method for a three equal span bridge between 25 m and 50 m under CL-625 truck loading

Span Length (m)	**Moment IL (kN.m)**	**Moment moving load (kN.m)**	**Difference (%)**
25	1885	1998	5.81
30	2627	2724	3.60
35	3430	3494	1.84
40	4278	4322	1.02
50	6114	6139	0.41

Upon analyzing the results obtained from the comparison, it was clear that moving load method produces a more critical value due to the fact that the measurement increment is very small. For instance, at 25 m, the moment produced by the moving load method was 5.8% higher than that produced by IL method. At 50 m, the moment produced by the moving load method was 0.4% higher than that produced by IL method. In no case was the moment produced by IL method higher than that of moving load method. This is because truck placement using IL method is only an estimate and not very close to the exact solution while in the case of moving load, it approaches the exact solution due to the low increment value of 0.1 m set by the author. In conclusion, moving load method was selected to conduct the parametric study due to the higher accuracy provided by the low measurement increment.

3.3 Results from finite element modelling

Models were created for the bridge lengths ranging from 12 to 48 m at 2 meter increments. The results for the CL-625, CL-625-ONT, CL-800 truck loading cases for single span bridge configurations are listed in Tables 3.2 through 3.4 respectively. In these tables, V_{truck} and M_{truck} are the maximum shear and moment due to truck axle weights without the DLA factor and V_{lane} and M_{lane} are the values for shear and moment due to uniform loading of 9 kN/m and 80% of the truck loading without DLA factor.

Table 3.2: Maximum live load shear, moment, reaction and deflection generated by one lane of CL-625 truck loading for single span bridge girders obtained SAP2000 software

Span length (m)	**V_{truck} (kN)**	**M_{truck} (kN.m)**	**V_{lane}**	**M_{lane} (kN.m)**	**R_T & V_T (kN)**	**M_T (kN.m)**	**Δ_T x EI ($kN.m^3$)**
12	275	738	274	752	344	959	13135
14	306	900	308	941	383	1125	21743
16	344	1125	347	1188	430	1406	36458
18	369	1363	376	1455	461	1703	56057
20	394	1600	405	1730	492	2000	81153
22	406	1838	424	2015	508	2297	115770
24	419	2113	443	2338	523	2641	161497
26	431	2413	462	2691	539	3016	216860
28	444	2713	481	3052	555	3391	282659
30	450	3013	495	3423	563	3766	359719
32	463	3344	514	3827	578	4180	448772
34	469	3631	528	4206	586	4539	550691
36	475	3944	542	4613	594	4930	666240
38	481	4275	556	5045	602	5344	796248
40	488	4569	570	5455	609	5711	941495
44	500	5213	598	6348	625	6516	1280999
48	513	5819	626	7247	641	7273	1721518

Table 3.3: Maximum live load shear, moment, reaction and deflection generated by one lane of CL-625-ONT truck loading for single span bridge girders obtained using SAP2000 software

Span length (m)	**R_T & V_T (kN)**	**M_T (kN.m)**	**Δ_T x EI (kN.m^3)**
12	409	1061	14547
14	432	1275	23497
16	464	1500	36866
18	492	1781	55501
20	515	2062	82644
22	533	2449	119780
24	549	2824	165964
26	562	3199	221466
28	573	3574	287568
30	583	3949	364608
32	591	4364	453734
34	599	4732	556770
36	605	5112	672634
38	611	5523	801327
40	617	5894	948791
44	630	6686	1287606
48	642	7444	1699613

Table 3.4: Maximum live load shear, moment, reaction and deflection generated by one lane of CL-800 truck loading for single span bridge girders obtained using SAP2000 software

Span length (m)	**RT & VT (kN)**	**MT (kN.m)**	**ΔT x EI (kN.m3)**
12	478	1223	16880
14	507	1473	27683
16	552	1805	46454
18	593	2210	71436
20	626	2587	103576
22	653	2965	148004
24	675	3379	206476
26	694	3864	277237
28	710	4355	361502
30	724	4852	460081
32	736	5350	574055
34	747	5847	704369
36	757	6345	852305
38	768	6844	1018742
40	780	7342	1204557
44	800	8339	1638980
48	816	9337	2163881

Tables 3.5 through 3.7 summarize positive and negative moments, exterior and interior shear forces, deflection and support reactions generated by one lane of loading in two-equal-span girder bridges for CL-625, CL-625-ONT, CL-800 truck loading cases respectively. Similarly, Tables 3.8 through 3.10 summarize positive and negative moments, exterior and interior shear forces, deflection and support reactions generated by one lane of loading in three-equal-span girder bridges for CL-625, CL-625-ONT, CL-800 truck loading cases respectively. Finally, Tables 3.11 through 3.13 summarize positive and negative moments, exterior and interior shear forces, deflection and support reactions generated by one lane of loading in four-equal-span girder bridges for CL-625, CL-625-ONT, CL-800 truck loading cases respectively. Within tables 3.11 through 3.13, R_{Text}, $V_{Text\ and}$, M_{Text} represent the reaction, shear and moment at the exterior-most support within a certain bridge span. Similarly, R_{Tint}, $V_{Tint\ and}$, M_{Tint} represent the reaction, shear and moment at the interior-most support within a certain bridge span.

Table 3.5: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-625 truck loading for two equal span bridge girders obtained using SAP2000 software

Span length (m)	**R_T & V_T exterior (kN)**	**R_T interior (kN)**	**V_T interior (kN)**	**M_{T+} (kN.m)**	**M_{T-} (kN.m)**	**Δ_T x EI ($kN.m^3$)**
12	350	542	350	402	770	915218
14	372	597	372	431	930	1518356
16	401	636	401	467	1114	2526209
18	429	663	429	503	1337	3877090
20	453	684	453	530	1619	5657997
22	474	700	474	552	1861	8123156
24	492	725	492	570	2149	11258648
26	507	754	507	585	2398	15170364
28	521	781	521	597	2734	19820594
30	534	808	534	608	3036	25225743
32	544	834	544	618	3329	31634205
34	554	859	554	630	3633	38823333
36	563	884	563	641	3943	47025738
38	571	909	571	650	4266	56413866
40	578	933	578	658	4548	66680773
44	590	981	590	678	5206	91062971
48	605	1028	605	707	5816	121626090

Table 3.6: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-625-ONT truck loading for two equal span bridge girders obtained using SAP2000 software

Span length (m)	**R_T & V_T exterior (kN)**	**R_T interior (kN)**	**V_T interior (kN)**	**M_{T+} (kN.m)**	**M_{T-} (kN.m)**	**Δ_T x EI ($kN.m^3$)**
12	385	560	385	408	717	10200
14	408	611	408	448	860	16650
16	435	647	435	498	983	27548
18	460	673	460	529	1071	42024
20	482	692	482	553	1190	61308
22	500	707	500	573	1361	85750
24	517	728	517	588	1533	118160
26	531	759	531	601	1734	157322
28	543	784	543	612	1970	205139
30	554	810	554	621	2209	259682
32	564	836	564	629	2460	323961
34	572	861	572	637	2716	396883
36	580	886	580	647	2979	480067
38	587	910	587	655	3253	574190
40	594	934	594	663	3533	679251
44	605	982	605	680	4119	923809
48	614	1029	614	710	4738	1219816

Table 3.7: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-800 truck loading for two equal span bridge girders obtained using SAP2000 software

Span length (m)	**R_T & V_T exterior (kN)**	**R_T interior (kN)**	**V_T interior (kN)**	**M_{T+} (kN.m)**	**M_{T-} (kN.m)**	**Δ_T x EI ($kN.m^3$)**
12	447	696	515	987	920	12073
14	476	768	552	1193	1118	19839
16	513	818	597	1466	1280	32950
18	548	853	643	1760	1414	50803
20	579	879	679	2065	1527	73717
22	606	899	707	2370	1637	105061
24	629	914	730	2740	1775	146233
26	649	926	749	3116	1995	196618
28	667	936	765	3495	2262	256576
30	683	944	778	3878	2536	327067
32	697	968	791	4267	2818	408631
34	709	994	806	4663	3106	502079
36	720	1019	820	5060	3401	608285
38	730	1044	832	5457	3704	727731
40	740	1069	842	5855	4015	861447
44	755	1118	860	6654	4661	1173363
48	774	1165	875	7466	5339	1553095

Table 3.8: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-625 truck loading for three equal span bridge girders obtained using SAP2000 software

Span length (m)	Exterior span				Interior span				
	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	Δ_T x EI (kN.m^3)	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	M_{T-} (kN.m)	Δ_T x EI (kN.m^3)
12	347	403	760	9252	347	415	632	686	7141
14	370	430	919	15103	370	440	765	833	11630
16	398	468	1131	25154	398	471	913	961	19051
18	426	504	1358	38684	426	499	1097	1071	29436
20	450	533	1588	56116	450	523	1286	1203	42870
22	471	555	1827	79883	471	543	1479	1354	60208
24	489	573	2108	111357	489	559	1673	1521	84215
26	505	587	2396	149624	505	574	1894	1740	113559
28	519	600	2688	195284	519	586	2131	1975	148651
30	531	610	2986	248899	531	596	2373	2216	189930
32	542	621	3285	310639	542	605	2618	2464	237831
34	552	633	3587	382269	552	613	2866	2719	292798
36	561	644	3892	463072	561	620	3117	2981	355270
38	569	653	4197	554230	569	626	3370	3250	425822
40	576	661	4505	655918	576	632	3625	3527	504505
44	589	676	5123	916090	589	647	4145	4103	689073
48	603	706	5760	1243872	603	673	4673	4709	916630

Table 3.9: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-625-ONT truck loading for three equal span bridge girders obtained using SAP2000 software

Span length (m)	Exterior span				Interior span				
	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	Δ_T x EI (kN.m^3)	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	M_{T-} (kN.m)	Δ_T x EI (kN.m^3)
12	384	410	844	10204	550	415	704	712	7901
14	406	449	1019	16576	601	440	850	851	12844
16	432	500	1238	27278	638	471	1003	968	20726
18	457	532	1480	41727	665	499	1200	1087	31815
20	479	556	1730	60363	686	523	1402	1230	46146
22	498	576	1980	84265	702	543	1608	1377	64009
24	514	591	2265	115999	716	559	1816	1551	87822
26	529	604	2560	154715	744	574	2050	1767	117485
28	541	615	2857	196888	771	586	2289	2001	152865
30	552	624	3156	254820	797	596	2535	2240	194522
32	562	631	3456	317209	822	605	2784	2487	242802
34	571	640	3763	388915	846	613	3036	2740	298168
36	578	650	4072	470209	870	620	3290	3001	360962
38	586	659	4381	561915	894	626	3546	3269	431723
40	592	667	4690	664262	917	632	3804	3544	510991
44	603	680	5309	903553	964	647	4324	4118	696266
48	613	708	5937	1192673	1009	673	4848	4724	920433

Table 3.10: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-800 truck loading for three equal span bridge girders obtained using SAP2000 software

Span length (m)	Exterior span				Interior span				
	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	Δ_T x EI (kN.m^3)	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	M_{T-} (kN.m)	Δ_T x EI (kN.m^3)
12	445	445	974	11775	674	486	810	875	9115
14	474	474	1176	19324	747	517	979	1062	14854
16	510	510	1442	32140	799	559	1163	1226	24361
18	545	545	1734	49438	838	600	1399	1367	37541
20	576	576	2034	71747	866	634	1641	1537	54759
22	603	603	2336	102266	889	663	1887	1690	77013
24	626	626	2700	142329	906	687	2137	1830	107762
26	646	646	3068	191352	920	708	2424	2059	145168
28	664	664	3440	249752	931	726	2727	2302	190136
30	680	680	3815	318289	940	741	3036	2570	242937
32	694	694	4203	397828	952	752	3349	2852	304110
34	707	707	4590	488440	977	767	3642	3140	370415
36	718	718	4982	592285	1003	776	3988	3433	454410
38	728	728	5373	708756	1027	785	4312	3734	544481
40	737	737	5764	839004	1051	798	4638	4043	645356
44	753	753	6557	1144599	1099	820	5306	4681	881001
48	771	771	7356	1513393	1145	838	5981	5349	1168096

Table 3.11: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-625 truck loading for four equal span bridge girders obtained using SAP2000 software

Span length (m)	Exterior span				Interior span							
	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	Δ_T x EI (kN.m^3)	R_{Text} (kN)	R_{Tint} (kN)	V_{Text} (kN)	V_{Tint} (kN)	M_{T+} (kN.m)	M_{T-ext} (kN.m)	M_{T-int} (kN.m)	Δ_T x EI (kN.m^3)
12	347	403	760	9131	526	499	378	380	624	681	630	6971
14	370	430	918	15045	583	558	402	405	755	827	776	11353
16	398	468	1125	24784	624	601	435	438	895	955	901	18564
18	426	504	1353	38245	654	633	466	470	1078	1070	1008	28699
20	450	533	1587	55977	676	658	493	498	1265	1203	1098	41789
22	471	555	1823	79760	694	677	515	520	1455	1371	1218	58748
24	489	573	2107	110997	717	692	539	539	1647	1541	1357	82145
26	505	588	2394	149233	746	718	551	556	1868	1766	1510	110744
28	519	600	2684	194788	774	745	565	570	2100	2005	1695	144983
30	531	610	2977	248297	800	770	577	581	2337	2252	1906	185268
32	542	621	3280	310276	826	795	587	592	2578	2505	2125	232037
34	552	634	3584	381329	851	819	596	601	2822	2765	2349	284366
36	561	644	3888	461960	876	843	604	609	3069	3032	2581	346768
38	569	653	4193	549579	900	866	612	618	3319	3307	2819	415579
40	576	662	4498	654350	924	889	621	627	3571	3589	3065	492596
44	588	678	5118	906290	972	934	647	644	4085	4178	3576	688727
48	603	707	5740	1231011	1018	978	678	668	4614	4798	4117	935892

Table 3.12: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-625-ONT truck loading for four equal span bridge girders obtained using SAP2000 software

Span length (m)	Exterior span				Interior span							
	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	Δ_T x EI (kN.m^3)	R_{Text} (kN)	R_{Tint} (kN)	V_{Text} (kN)	V_{Tint} (kN)	M_{T+} (kN.m)	M_{T-ext} (kN.m)	M_{T-int} (kN.m)	Δ_T x EI (kN.m^3)
12	383	410	844	10186	549	524	414	417	694	710	652	7727
14	405	449	1018	16529	600	577	439	441	838	849	789	12561
16	432	500	1237	27238	637	616	469	472	989	966	906	20253
18	457	532	1478	41652	665	645	497	501	1183	1089	1005	31059
20	479	556	1728	60282	685	668	520	525	1382	1233	1090	45063
22	498	576	1978	84130	701	685	540	545	1585	1397	1216	62524
24	514	591	2263	115864	721	699	557	562	1791	1574	1373	85885
26	528	604	2557	154486	750	722	572	576	2019	1796	1532	114784
28	541	615	2854	200399	777	748	584	588	2257	2033	1721	149354
30	552	624	3152	254280	803	773	594	599	2499	2277	1931	189866
32	562	632	3452	316669	829	798	604	608	2744	2528	2148	237130
34	571	641	3759	388240	853	822	612	616	2993	2787	2371	291146
36	578	651	4067	469399	878	845	619	622	3243	3053	2602	352589
38	585	659	4376	560821	902	868	625	629	3496	3327	2839	421865
40	592	667	4685	663046	926	891	630	635	3750	3608	3083	499243
44	603	681	5303	901932	973	935	651	650	4263	4195	3593	680332
48	612	710	5931	1190513	1019	979	681	671	4780	4814	4132	899501

Table 3.13: Maximum live load shear, moments, reactions and deflection generated by one lane of CL-800 truck loading for four equal span bridge girders obtained using SAP2000 software

Span length (m)	Exterior span				Interior span							
	R_T (kN)	V_T (kN)	M_{T+} (kN.m)	Δ_T x EI (kN.m^3)	R_{Text} (kN)	R_{Tint} (kN)	V_{Text} (kN)	V_{Tint} (kN)	M_{T+} (kN.m)	M_{T-ext} (kN.m)	M_{T-int} (kN.m)	Δ_T x EI (kN.m^3)
12	445	516	973	11750	673	639	484	484	799	871	807	8919
14	474	550	1175	19311	746	714	515	515	966	1058	993	14584
16	510	599	1440	32018	798	770	557	557	1146	1223	1153	23798
18	545	646	1732	49290	837	811	597	597	1379	1369	1289	36731
20	576	682	2032	71639	866	842	631	631	1619	1540	1405	53476
22	603	710	2334	101955	888	866	660	660	1862	1694	1505	74947
24	626	733	2697	142062	906	886	684	684	2108	1835	1605	105061
26	646	746	3064	190690	920	901	705	705	2391	2068	1750	141657
28	664	768	3436	249284	931	914	723	723	2688	2329	1958	185545
30	680	781	3811	317749	940	924	738	738	2991	2609	2197	237130
32	694	795	4199	397018	959	932	752	752	3299	2895	2443	296953
34	707	811	4587	488035	985	951	763	763	3612	3188	2696	365688
36	718	825	4977	591070	1010	975	774	774	3928	3488	2954	443741
38	728	836	5367	707340	1035	999	783	783	4248	3794	3219	531788
40	737	847	5758	837788	1060	1023	795	795	4571	4109	3491	630367
44	753	865	6550	1142438	1108	1069	817	817	5229	4760	4055	861015
48	771	879	7348	1510557	1155	1114	835	835	5896	5442	4647	1145949

3.4 Development of empirical equations

The results obtained from modelling bridge lanes under CL-W loading were plotted and a curve of best fit was created using third degree polynomials. Following that, regression analysis was performed on the results to obtain the correlation factor between the best fit curve and the actual results obtained from SAP2000 software. The following subsections summarize the findings of this data analysis.

3.4.1 Single span bridge configurations

Using the results obtained from SAP2000 software, the following equations were developed to obtain the maximum longitudinal moment generated by one lane of CL-W loading as a function of the girder span for the three truck configurations considered in this study. In this particular case, the correlation factor showed the developed equations are 99.95% representative of the SAP2000 software results. The developed equations ensured that the load effect is at least equal (slightly higher than) those obtained from analysis using SAP2000 software with zero underestimation for safety reasons. Figure 3.7 shows comparison between these developed equations and the data from analysis, showing excellent agreement.

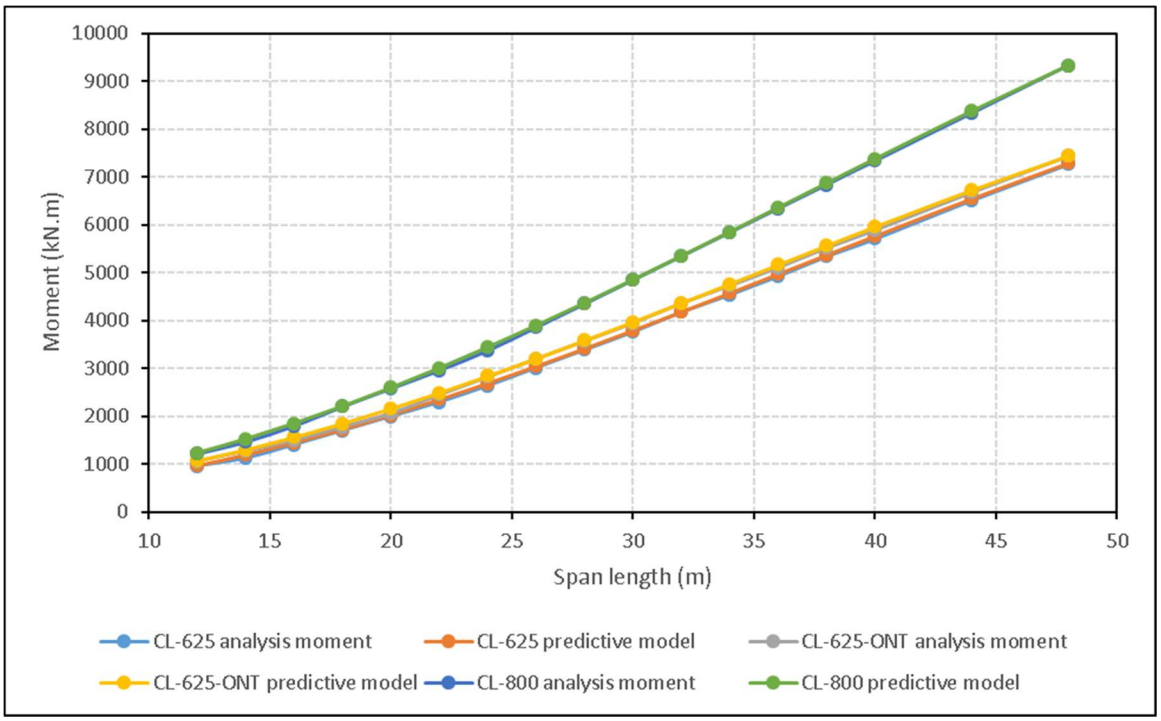

Figure 3.7: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal moment generated by one lane of CL-W loading in single span bridge configurations

[3.1] $M_T = -0.050(L^3) + 5.6(L^2) - 6.51(L) + 330$ kN.m for CL-625 Truck

[3.2] $M_T = -0.058(L^3) + 6.1(L^2) - 13.6(L) + 460$ kN.m for CL-625-ONT Truck

[3.3] $M_T = -0.063(L^3) + 7(L^2) - 4.43(L) + 390$ kN.m for CL-800 Truck

In the case of single span shear and reaction generated by one lane of CL-W loading as a function of the girder span for the three truck configurations considered in this study, the following developed equations showed accuracy of the results of 98.5% on the conservative side. Figure 3.8 shows a comparison between the developed equations and the results obtained from SAP2000 model for shear generated by one lane of CL-W loading in single span bridge girders.

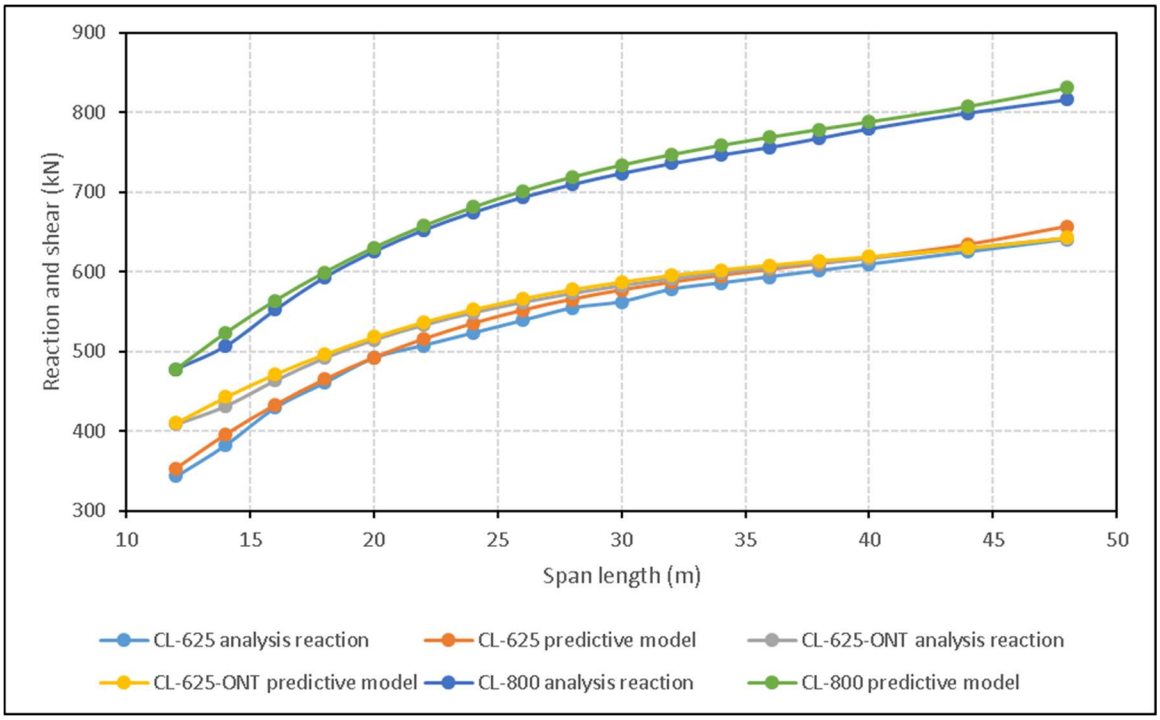

Figure 3.8: Comparison between the developed equations and the results obtained from SAP2000 model for shear and reaction generated by one lane of CL-W loading in single span bridge configuration

[3.4] $R_T = V_T = 0.0097(L^3) - 1.1(L^2) + 44.8(L) - 43$ kN for CL-625 Truck

[3.5] $R_T = V_T = 0.0063(L^3) - 0.76(L^2) + 32.7(L) + 116$ kN for CL-625-ONT Truck

[3.6] $R_T = V_T = 0.0086(L^3) - 1.02(L^2) + 45(L) + 70$ kN for CL-800 Truck

As for single span deflection generated by one lane of CL-W loading as a function of the girder span for the three truck configurations considered in this study, the models developed showed a correlation factor of 99.99% to the SAP2000 software results. Figure 3.9 shows comparison between these developed equations and the data from analysis.

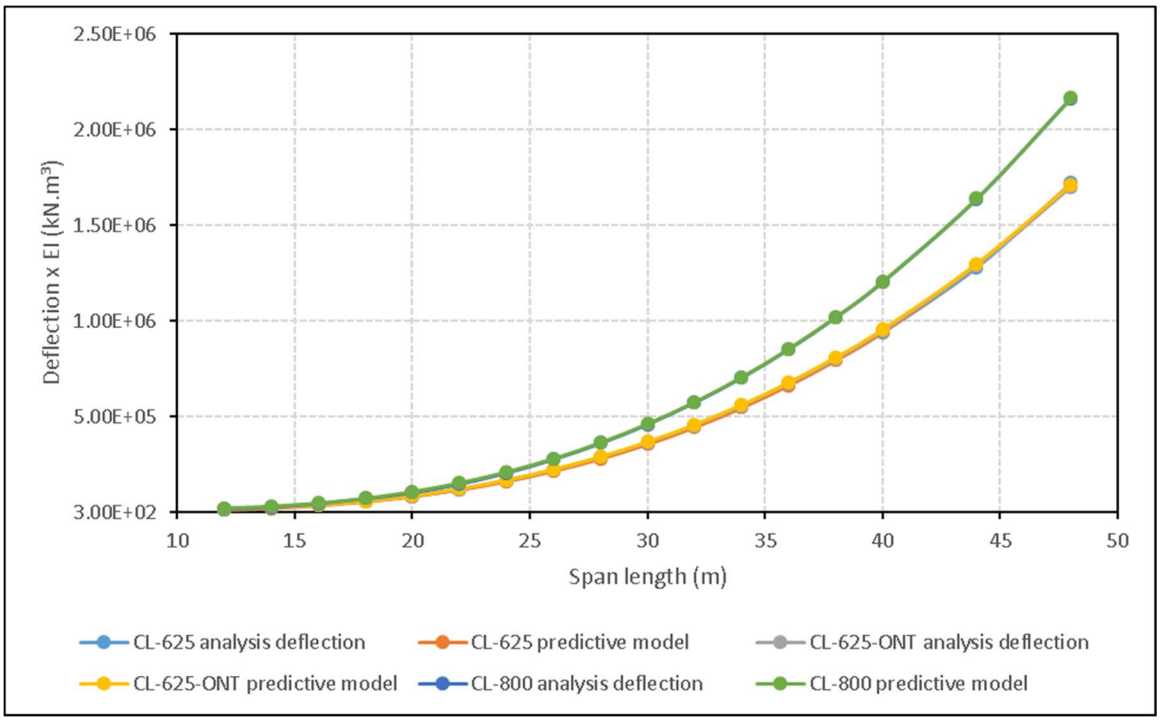

Figure 3.9: Comparison between the developed equations and the results obtained from SAP2000 model for deflection generated by one lane of CL-W loading in single span bridge configuration

[3.7] $\Delta_T * EI = 19.3(L^3) - 176.7(L^2) - 511.6(L) + 10000$ kN.m^3 for CL-625 Truck

[3.8] $\Delta_T * EI = 16(L^3) + 90.5(L^2) - 6714(L) + 56000$ kN.m^3 for CL-625-ONT Truck

[3.9] $\Delta_T * EI = 20.4(L^3) + 110.5(L^2) - 8817(L) + 75600$ kN.m^3 for CL-800 Truck

3.4.2 Two-equal-span bridge configurations

The following equations were developed for maximum positive moment, M_{T+}, generated by one lane of CL-W loading in two-equal-span bridge girders. Figure 3.10 shows comparison between these developed equations and the data from analysis.

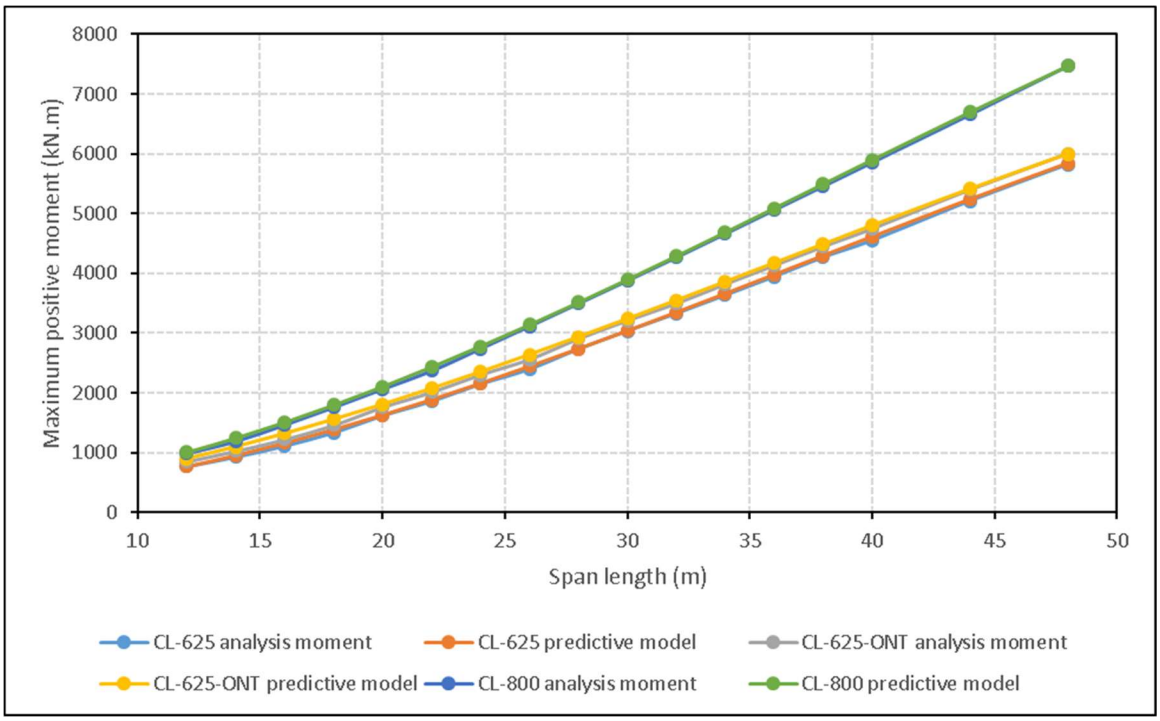

Figure 3.10: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal positive moment generated by one lane of CL-W loading in two equal spans bridge configurations

[3.10] $M_{T+} = -0.037(L^3) + 4.1(L^2) + 5.2(L) + 180$ kN.m for CL-625 Truck

[3.11] $M_{T+} = -0.035(L^3) + 3.8(L^2) + 19.4(L) + 180$ kN.m for CL-625-ONT Truck

[3.12] $M_{T+} = -0.045(L^3) + 5.1(L^2) + 9.7(L) + 230$ kN.m for CL-800 Truck

The following equations were developed for maximum negative moment, M_{T-}, generated by one lane of CL-W loading in two-equal-span bridge girders. Figure 3.11 shows comparison between these developed equations and the data from analysis.

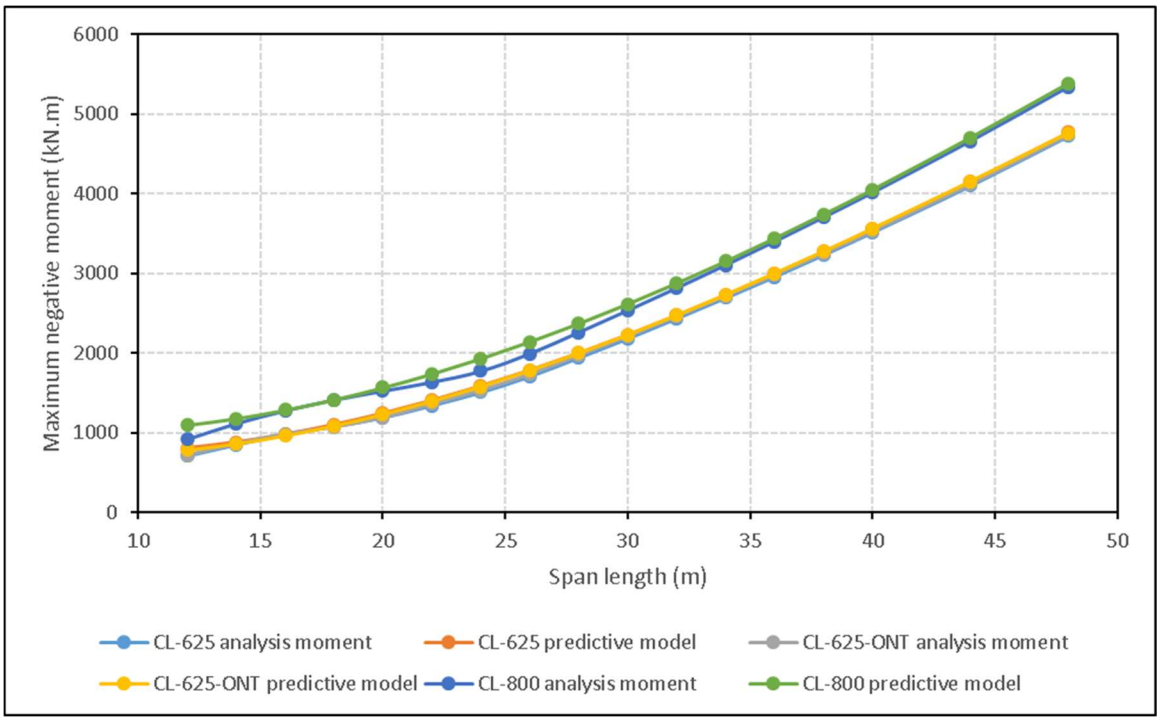

Figure 3.11: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal negative moment generated by one lane of CL-W loading in two equal spans bridge configurations

[3.13] $M_{T-} = -0.0256(L^3) + 4.03(L^2) - 54.28(L) + 920$ kN.m for CL-625 Truck

[3.14] $M_{T-} = -0.0286(L^3) + 4.09(L^2) - 53.71(L) + 885$ kN.m for CL-625-ONT Truck

[3.15] $M_{T-} = -0.023(L^3) + 4(L^2) - 51.2(L) + 1175$ kN.m for CL-800 Truck

The following equations were developed for maximum exterior reaction R_{Text} and, shear V_{Text} generated by one lane of CL-W loading in two-equal-span bridge girders. Figure 3.12 shows comparison between these developed equations and the data from analysis.

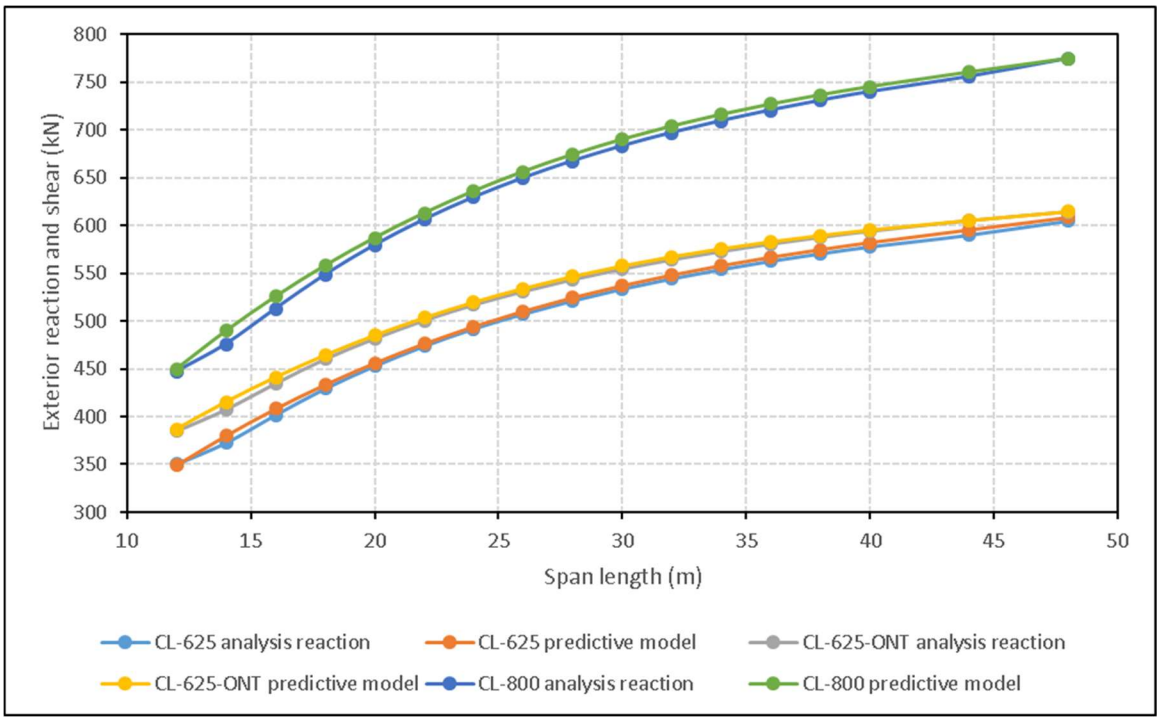

Figure 3.12: Comparison between the developed equations and the results obtained from SAP2000 model for exterior shear and reaction generated by one lane of CL-W loading in two equal spans bridge configurations

[3.16] $V_{Text} = 0.004(L^3) - 0.54(L^2) + 27.5(L) + 90$ kN for CL-625 Truck

[3.17] $V_{Text} = 0.0036(L^3) - 0.5(L^2) + 25.4(L) + 147$ kN for CL-625-ONT Truck

[3.18] $V_{Text} = 0.005(L^3) - 0.69(L^2) + 35.3(L) + 117$ kN for CL-800 Truck

The following equations were developed for maximum interior support reaction generated by one lane of CL-W loading in two-equal-span bridge girders. Figure 3.13 shows comparison between these developed equations and the data from analysis, showing excellent agreement.

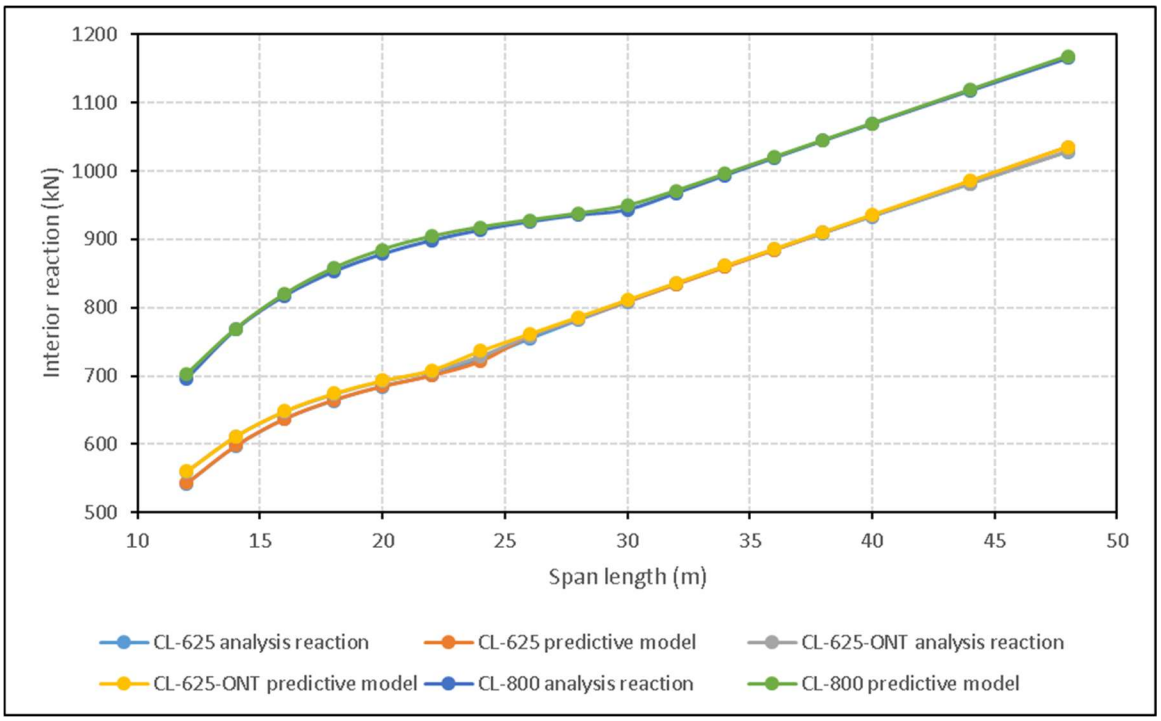

Figure 3.13: Comparison between the developed equations and the results obtained from SAP2000 model for interior reaction generated by one lane of CL-W loading in two equal spans bridge configurations

[3.19] $R_{Tint} = 0.08(L^3) - 5.3(L^2) + 124.6(L) - 327$ kN $(12\ m \leq L \leq 22\ m)$

$R_{Tint} = 12.57(L) + 420$ kN $(22\ m < L \leq 48\ m)$ for CL-625 Truck

[3.20] $R_{Tint} = 0.075(L^3) - 4.97(L^2) + 116.5(L) - 252$ kN $(12\ m \leq L \leq 22\ m)$

$R_{Tint} = 12.44(L) + 438$ kN $(22\ m < L \leq 48\ m)$ for CL-625-ONT Truck

[3.21] $R_{Tint} = 0.052(L^3) - 4.1(L^2) + 113.6(L) - 159$ kN $(12\ m \leq L \leq 30\ m)$

$R_{Tint} = 12.32(L) + 577$ kN $(30\ m < L \leq 48\ m)$ for CL-800 Truck

The following equations were developed for maximum interior shear generated by one lane of CL-W loading in two-equal-span bridge girders. Figure 3.14 shows comparison between these developed equations and the data from analysis.

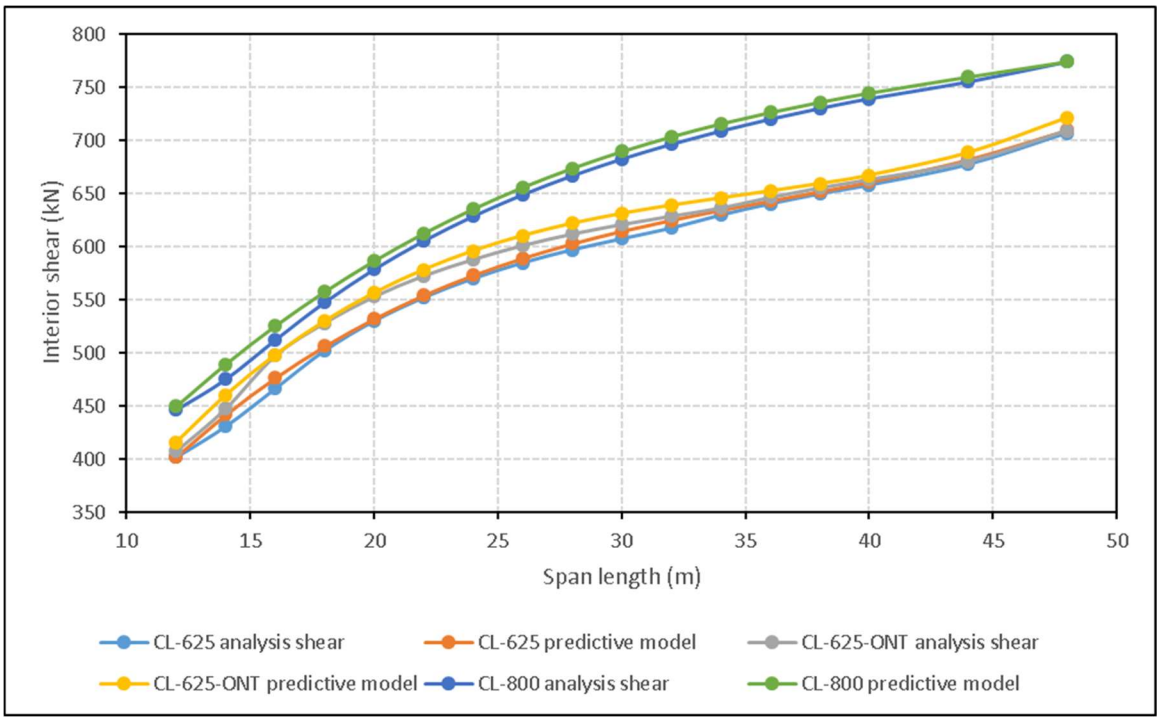

Figure 3.14: Comparison between the developed equations and the results obtained from SAP2000 model for interior shear generated by one lane of CL-W loading in two equal spans bridge configurations

[3.22] $V_{Tint} = 0.0094(L^3) - 1.027(L^2) + 41.75(L) + 33$ kN for CL-625 Truck

[3.23] $V_{Tint} = 0.0132(L^3) - 1.381(L^2) + 51.43(L) - 25$ kN for CL-625-ONT Truck

[3.24] $V_{Tint} = 0.0088(L^3) - 1.06(L^2) + 47.47(L) + 84$ kN for CL-800 Truck

The following equations were developed for maximum deflection generated by one lane of CL-W loading in two-equal-span bridge girders. Figure 3.15 shows comparison between these developed equations and the data from analysis.

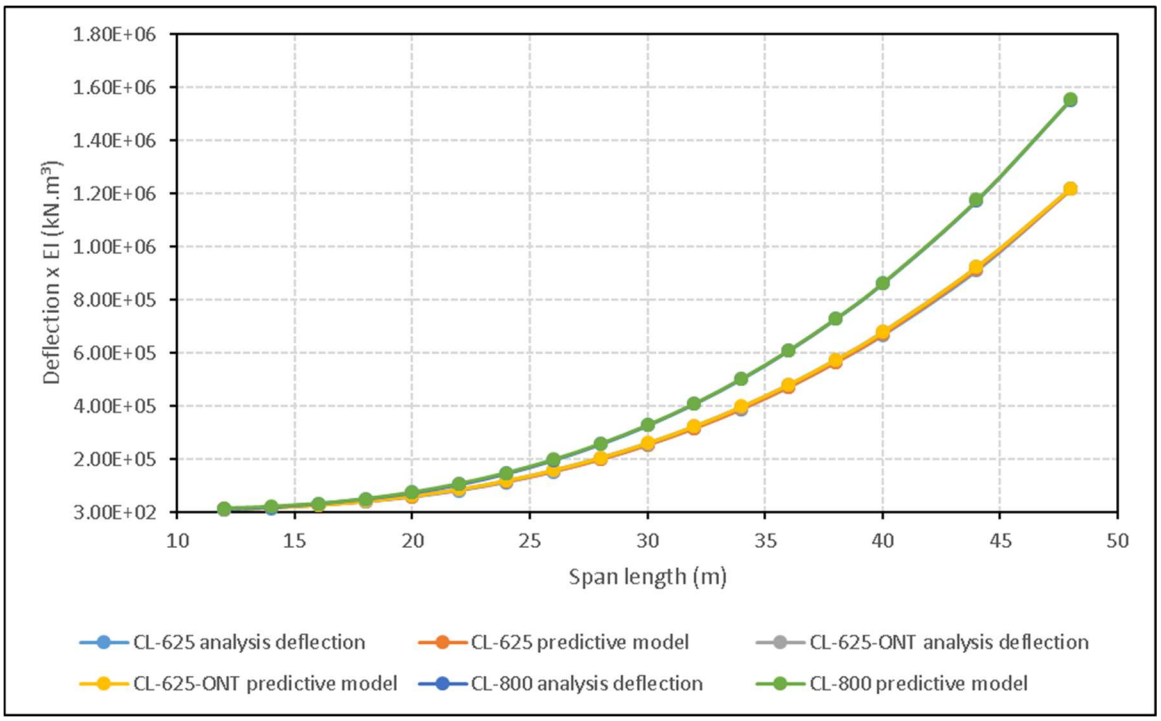

Figure 3.15: Comparison between the developed equations and the results obtained from SAP2000 model for deflection generated by one lane of CL-W loading in two equal spans bridge configurations

[3.25] $\Delta_T * EI = 13.2(L^3) - 74.8(L^2) - 1870(L) + 21800$ kN.m^3 for CL-625 Truck

[3.26] $\Delta_T * EI = 16(L^3) + 90.5(L^2) - 6714(L) + 56000$ kN.m^3 for CL-625-ONT Truck

[3.27] $\Delta_T * EI = 20.4(L^3) + 111(L^2) - 8817(L) + 75600$ kN.m^3 for CL-800 Truck

3.4.3 Three-equal-span bridge configurations

The following equations were developed for longitudinal positive moment in exterior span generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.16 shows comparison between these developed equations and the data from analysis.

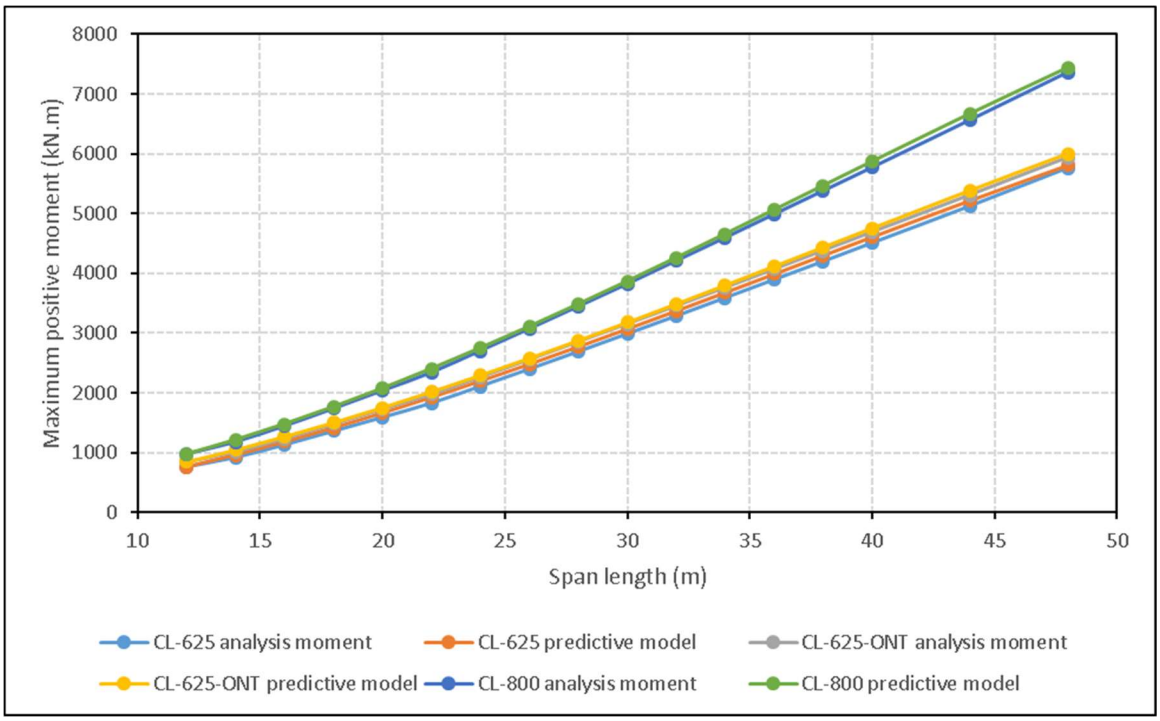

Figure 3.16: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal positive moment in exterior span generated by one lane of CL-W loading in three equal spans bridge configurations

[3.28] $M_{T+ext} = -0.031(L^3) + 3.46(L^2) + 26.35(L)$ kN.m for CL-625 Truck

[3.29] $M_{T+ext} = -0.03(L^3) + 3.46(L^2) + 26.35(L) + 82$ kN.m for CL-625-ONT Truck

[3.30] $M_{T+ext} = -0.045(L^3) + 5.1(L^2) + 9.7(L) + 200$ kN.m for CL-800 Truck

The following equations were developed for longitudinal positive moment in interior span generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.17 shows comparison between these developed equations and the data from analysis.

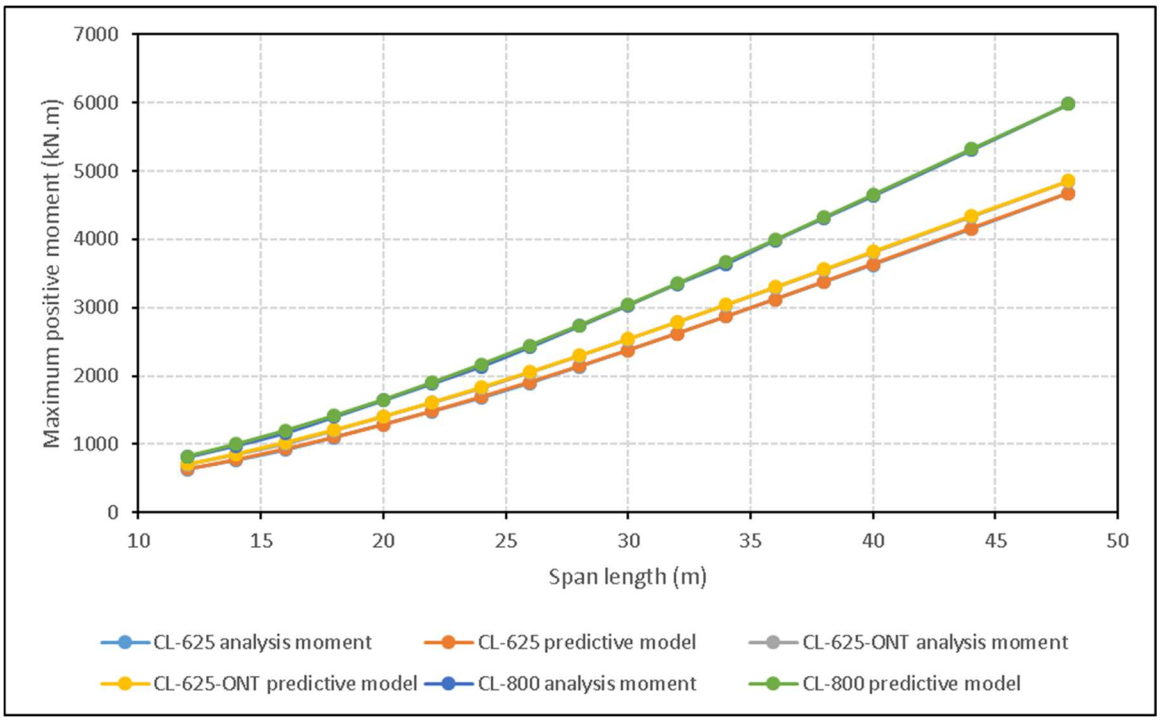

Figure 3.17: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal positive moment in interior span generated by one lane of CL-W loading in three equal spans bridge configurations

[3.31] $M_{T+int} = -0.024(L^3) + 3.04(L^2) + 3(L) + 205$ kN.m for CL-625 Truck
[3.32] $M_{T+int} = -0.024(L^3) + 2.94(L^2) + 12.8(L) + 170$ kN.m for CL-625-ONT Truck
[3.33] $M_{T+int} = -0.031(L^3) + 3.9(L^2) + 3(L) + 280$ kN.m for CL-800 Truck

The following equations were developed for longitudinal negative moment generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.18 shows comparison between these developed equations and the data from analysis.

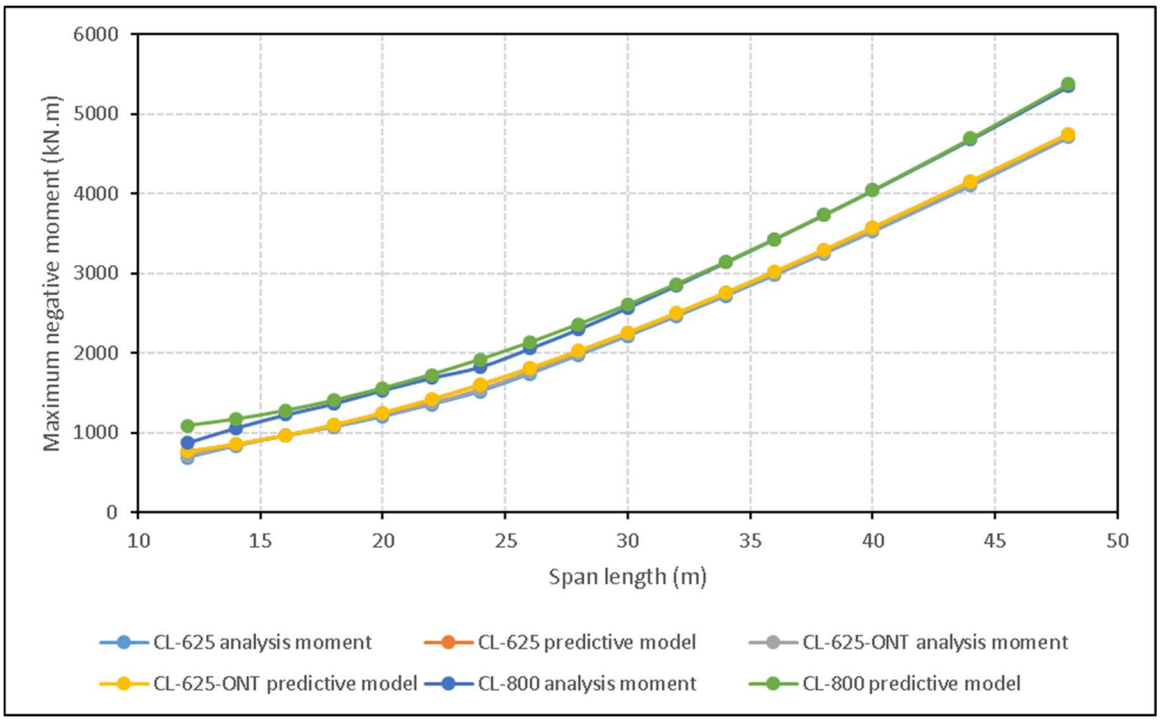

Figure 3.18: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal negative moment generated by one lane of CL-W loading in three equal spans bridge configurations

[3.34] $M_{T-} = -0.0255(L^3) + 3.84(L^2) - 42.6(L) + 764$ kN.m for CL-625 Truck
[3.35] $M_{T-} = -0.0255(L^3) + 3.84(L^2) - 42.6(L) + 770$ kN.m for CL-625-ONT Truck
[3.36] $M_{T-} = -0.023(L^3) + 4(L^2) - 51.2(L) + 1165$ kN.m for CL-800 Truck

The following equations were developed for exterior reaction and shear generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.19 shows comparison between these developed equations and the data from analysis.

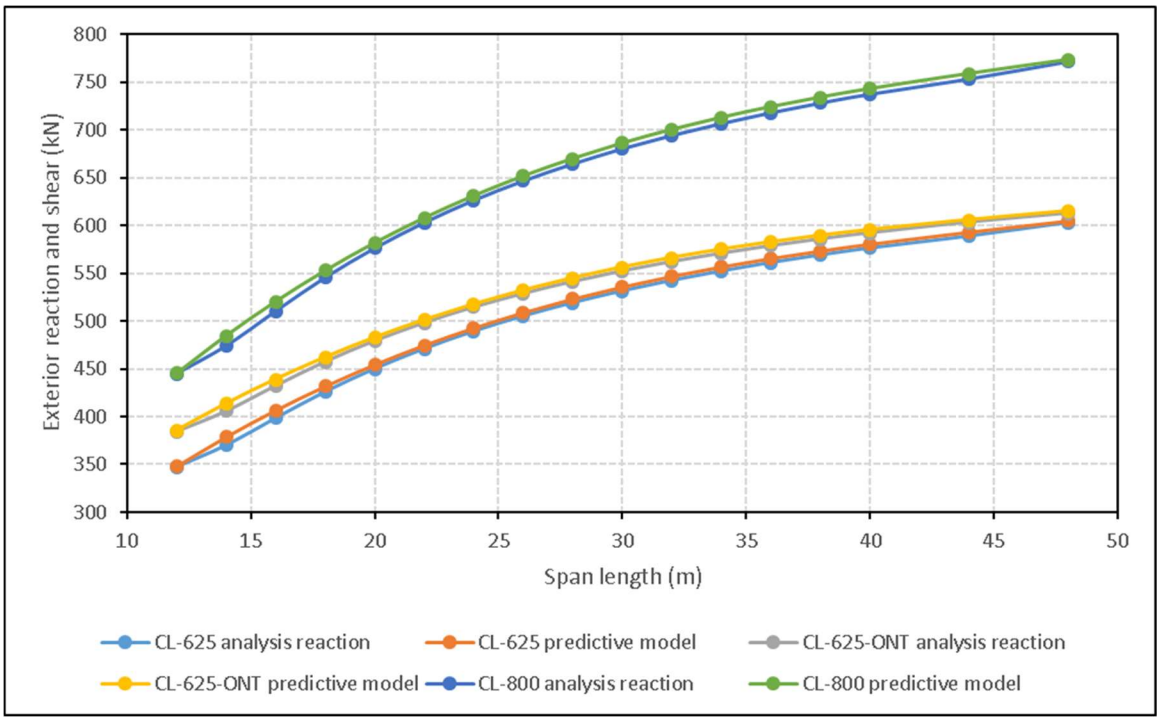

Figure 3.19: Comparison between the developed equations and the results obtained from SAP2000 model for exterior reaction and shear generated by one lane of CL-W loading in three equal spans bridge configurations

[3.37] $V_{Text} = 0.0037(L^3) - 0.516(L^2) + 26.9(L) + 93$ kN for CL-625 Truck

[3.38] $V_{Text} = 0.0033(L^3) - 0.47(L^2) + 24.6(L) + 152$ kN for CL-625-ONT Truck

[3.39] $V_{Text} = 0.0047(L^3) - 0.66(L^2) + 34.5(L) + 118$ kN for CL-800 Truck

The following equations were developed for interior reaction generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.20 shows comparison between these developed equations and the data from analysis.

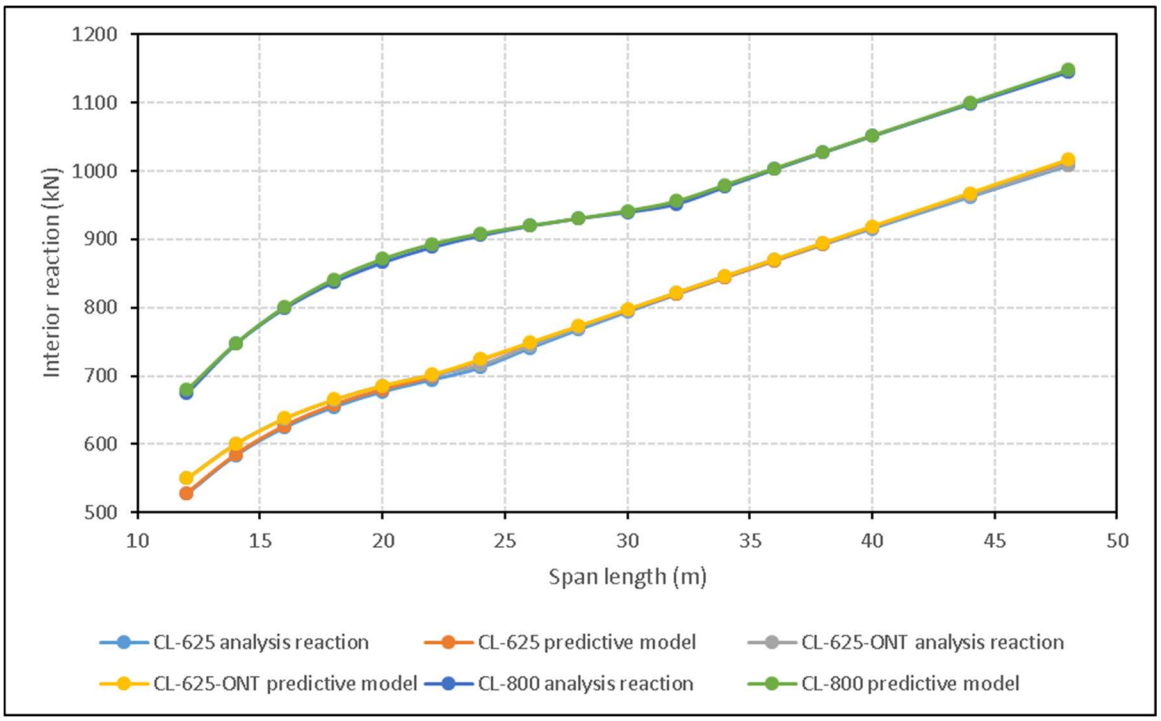

Figure 3.20: Comparison between the developed equations and the results obtained from SAP2000 model for interior reaction generated by one lane of CL-W loading in three equal spans bridge configurations

[3.40] $R_{Tint} = 0.074(L^3) - 4.97(L^2) + 120(L) - 324$ kN $(12\ m \leq L \leq 22\ m)$
$R_{Tint} = 12.16(L) + 431$ kN $(22\ m < L \leq 48\ m)$ for CL-625 Truck

[3.41] $R_{Tint} = 0.062(L^3) - 4.23(L^2) + 103.7(L) - 192$ kN $(12\ m \leq L \leq 22\ m)$
$R_{Tint} = 12.16(L) + 433$ kN $(22\ m < L \leq 48\ m)$ for CL-625-ONT Truck

[3.42] $R_{Tint} = 0.048(L^3) - 3.9(L^2) + 111.4(L) - 178$ kN $(12\ m \leq L \leq 30\ m)$
$R_{Tint} = 12(L) + 572$ kN $(30\ m < L \leq 48\ m)$ for CL-800 Truck

The following equations were developed for shear left of interior support generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.21 shows comparison between these developed equations and the data from analysis.

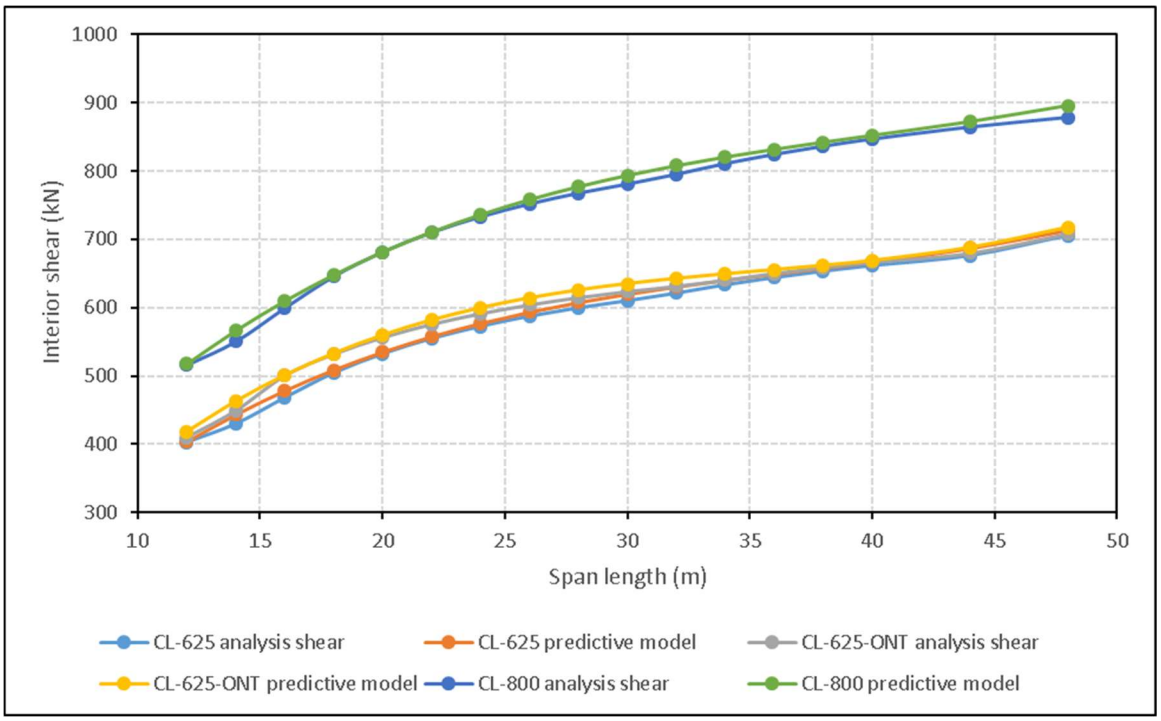

Figure 3.21: Comparison between the developed equations and the results obtained from SAP2000 model for shear left of interior support generated by one lane of CL-W loading in three equal spans bridge configurations

[3.43] $V_{Tint}left = 0.009(L^3) - L^2 + 41.4(L) + 35$ kN for CL-625 Truck
[3.44] $V_{Tint}left = 0.013(L^3) - 1.35(L^2) + 50.9(L) - 20$ kN for CL-625-ONT Truck
[3.45] $V_{Tint}left = 0.009(L^3) - 1.06(L^2) + 47.5(L) + 85$ kN for CL-800 Truck

The following equations were developed for shear right of interior support generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.22 shows comparison between these developed equations and the data from analysis.

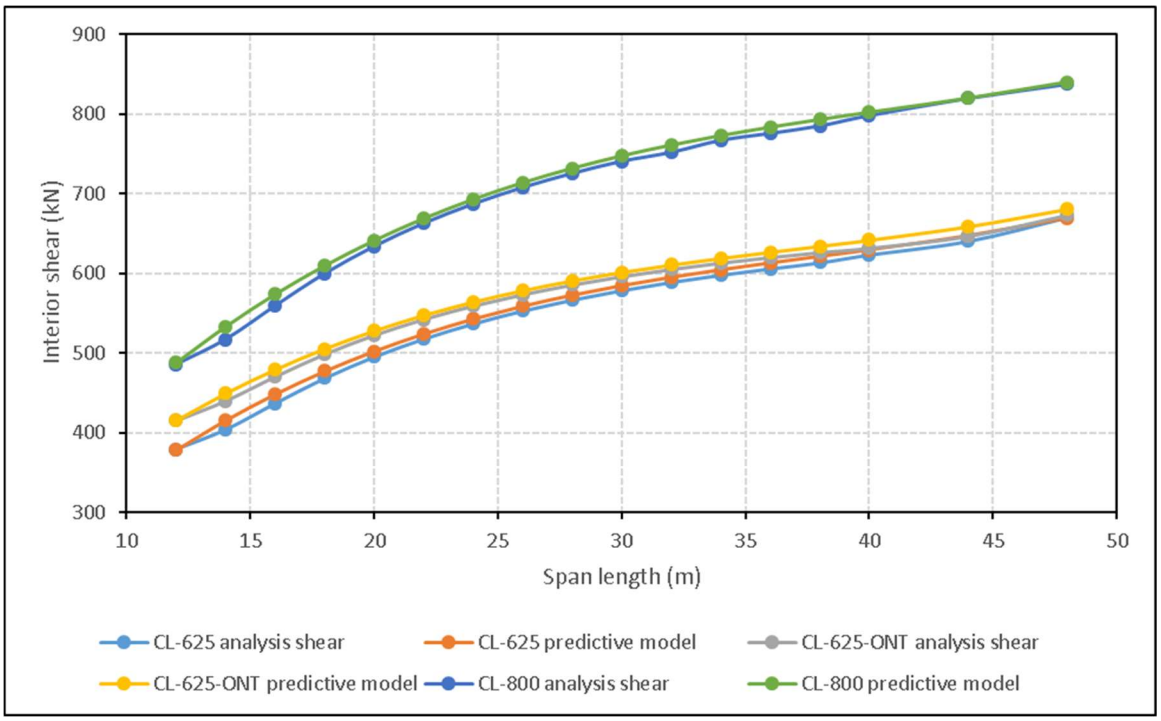

Figure 3.22: Comparison between the developed equations and the results obtained from SAP2000 model for shear right of interior support generated by one lane of CL-W loading in three equal spans bridge configurations

[3.46] $V_{Tint}right = 0.0077(L^3) - 0.88(L^2) + 37.6(L) + 41$ kN for CL-625 Truck
[3.47] $V_{Tint}right = 0.0075(L^3) - 0.84(L^2) + 35.1(L) + 102$ kN for CL-625-ONT Truck
[3.48] $V_{Tint}right = 0.0078(L^3) - 0.96(L^2) + 43.8(L) + 87$ kN for CL-800 Truck

The following equations were developed for deflection in exterior span generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.23 shows comparison between these developed equations and the data from analysis.

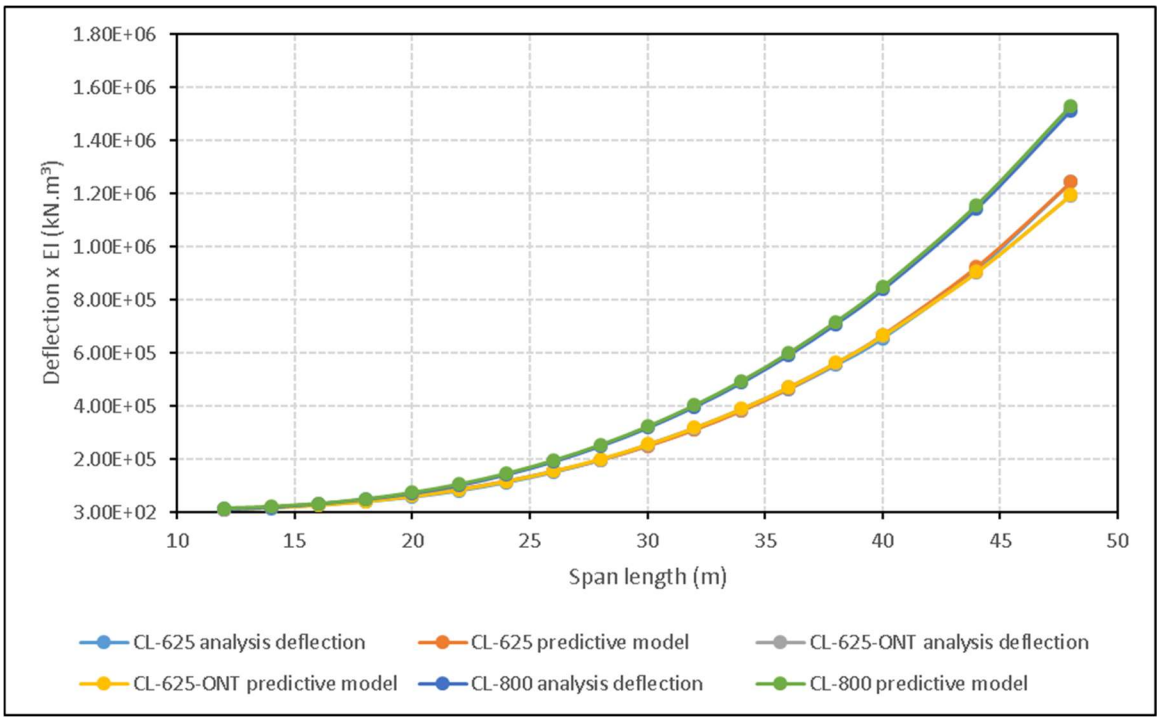

Figure 3.23: Comparison between the developed equations and the results obtained from SAP2000 model for deflection in exterior span generated by one lane of CL-W loading in three equal spans bridge configurations

[3.49] $\Delta_{Text} * EI = 18.0(L^3) - 454.6(L^2) - 7106(L) - 40000$ kN.m^3 for CL-625 Truck

[3.50] $\Delta_{Text} * EI = 11.7(L^3) + 25.2(L^2) - 3900(L) + 36000$ kN.m^3 for CL-625-ONT Truck

[3.51] $\Delta_{Text} * EI = 15.0(L^3) + 40(L^2) - 5630(L) + 50550$ kN.m^3 for CL-800 Truck

The following equations were developed for deflection in interior span generated by one lane of CL-W loading in three equal spans bridge configurations. Figure 3.24 shows comparison between these developed equations and the data from analysis.

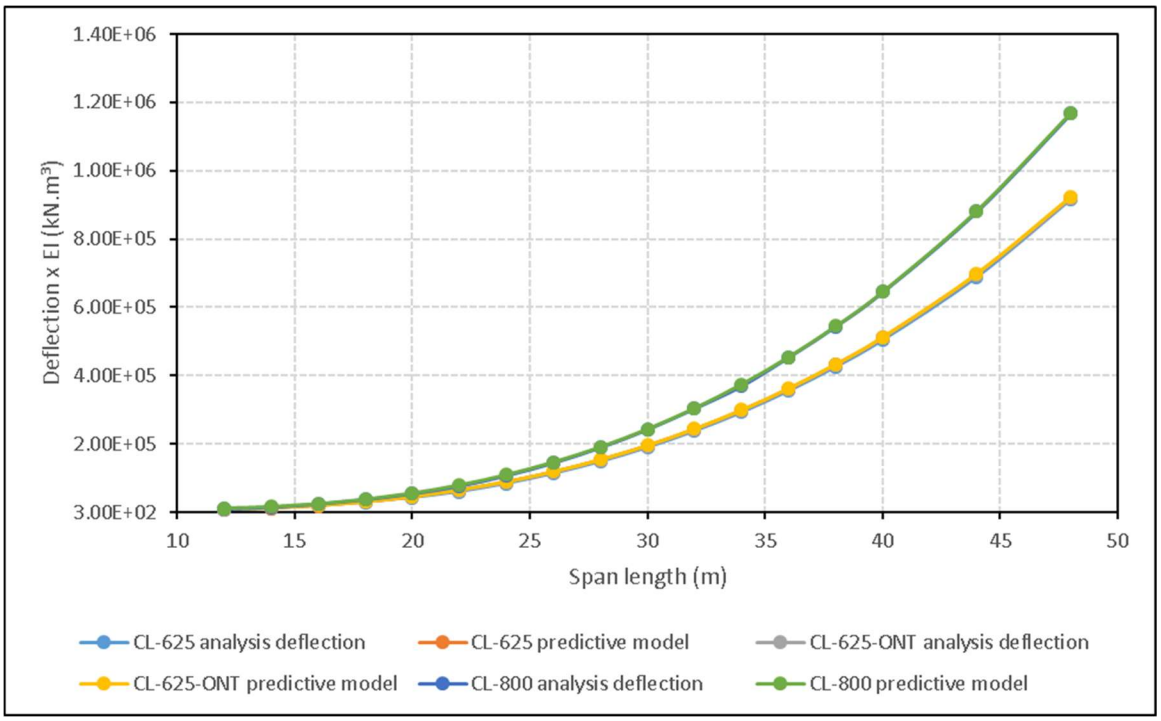

Figure 3.24: Comparison between the developed equations and the results obtained from SAP2000 model for deflection in interior span generated by one lane of CL-W loading in three equal spans bridge configurations

[3.52] $\Delta_{Tint} * EI = 9.22(L^3) + 3.43(L^2) - 2700(L) + 23550$ kN.m^3 for CL-625 Truck
[3.53] $\Delta_{Tint} * EI = 9.22(L^3) + 3.43(L^2) - 2700(L) + 25550$ kN.m^3 for CL-625-ONT Truck
[3.54] $\Delta_{Tint} * EI = 11.9(L^3) - 3800(L) + 36700$ kN.m^3 for CL-800 Truck

3.4.4 Four-equal-span bridge configurations

3.4.4.1 Exterior span

The following equations were developed for exterior support reaction and shear generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.25 shows comparison between these developed equations and the data from analysis.

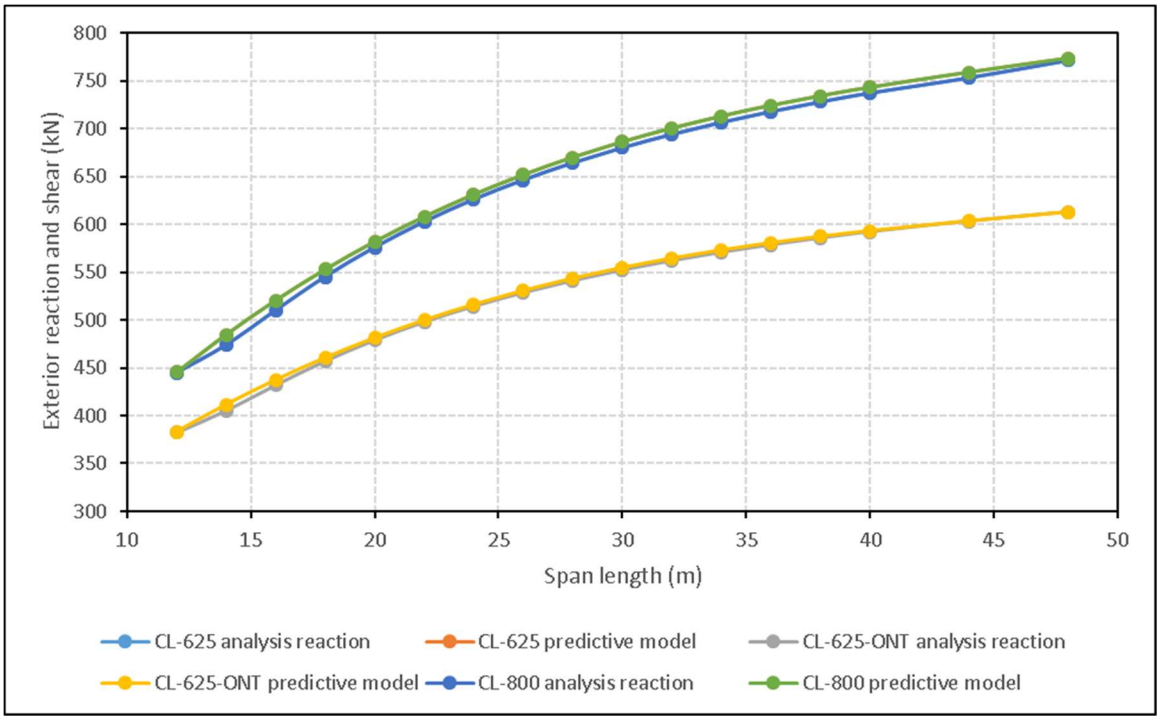

Figure 3.25: Comparison between the developed equations and the results obtained from SAP2000 model for exterior support reaction and shear generated by one lane of CL-W loading in four equal spans bridge configurations

[3.55] $V_{Text} = 0.0037(L^3) - 0.516(L^2) + 26.9(L) + 92$ kN for CL-625 Truck

[3.56] $V_{Text} = 0.0035(L^3) - 0.49(L^2) + 25.2(L) + 145$ kN for CL-625-ONT Truck

[3.57] $V_{Text} = 0.0047(L^3) - 0.66(L^2) + 34.5(L) + 118$ kN for CL-800 Truck

The following equations were developed for support reaction at first interior support generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.26 shows comparison between these developed equations and the data from analysis.

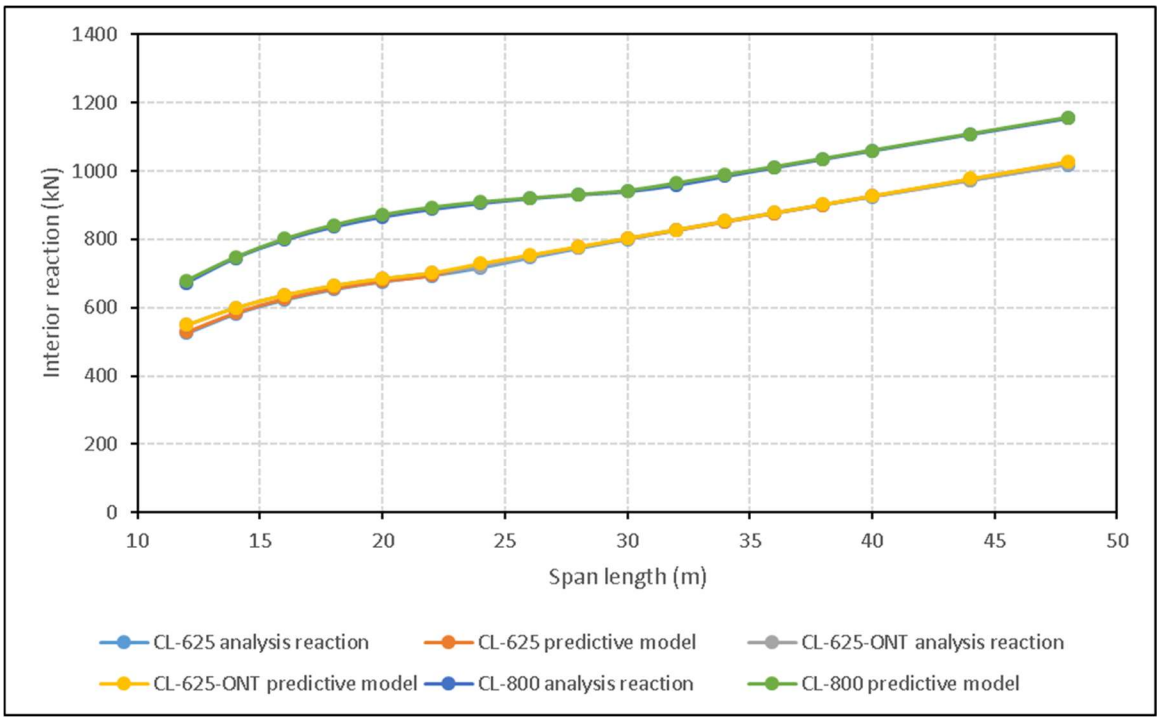

Figure 3.26: Comparison between the developed equations and the results obtained from SAP2000 model for support reaction at first interior support generated by one lane of CL-W loading in four equal spans bridge configurations

[3.58] $V_{Tint} = 0.009(L^3) - L^2 + 41.6(L) + 33$ kN for CL-625 Truck

[3.59] $V_{Tint} = 0.013(L^3) - 1.36(L^2) + 51.2(L) - 24$ kN for CL-625-ONT Truck

[3.60] $V_{Tint} = 0.009(L^3) - 1.05(L^2) + 47.2(L) + 89$ kN for CL-800 Truck

The following equations were developed for longitudinal positive moment in exterior span generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.27 shows comparison between these developed equations and the data from analysis.

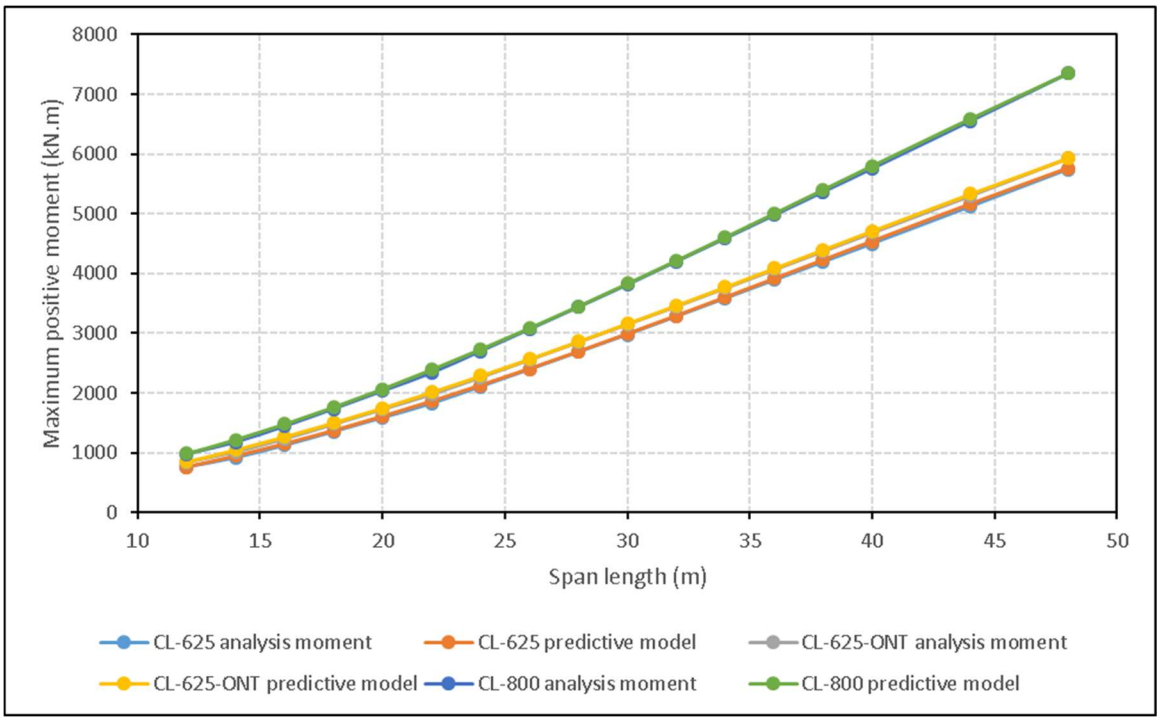

Figure 3.27: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal positive moment in exterior span generated by one lane of CL-W loading in four equal spans bridge configurations

[3.61] $M_{T+} = -0.034(L^3) + 3.9(L^2) + 7.75(L) + 164$ kN.m for CL-625 Truck

[3.62] $M_{T+} = -0.031(L^3) + 3.45(L^2) + 26.33(L) + 90$ kN.m for CL-625-ONT Truck

[3.63] $M_{T+} = -0.044(L^3) + 5(L^2) + 9.9(L) + 220$ kN.m for CL-800 Truck

The following equations were developed for deflection in exterior span generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.28 shows comparison between these developed equations and the data from analysis.

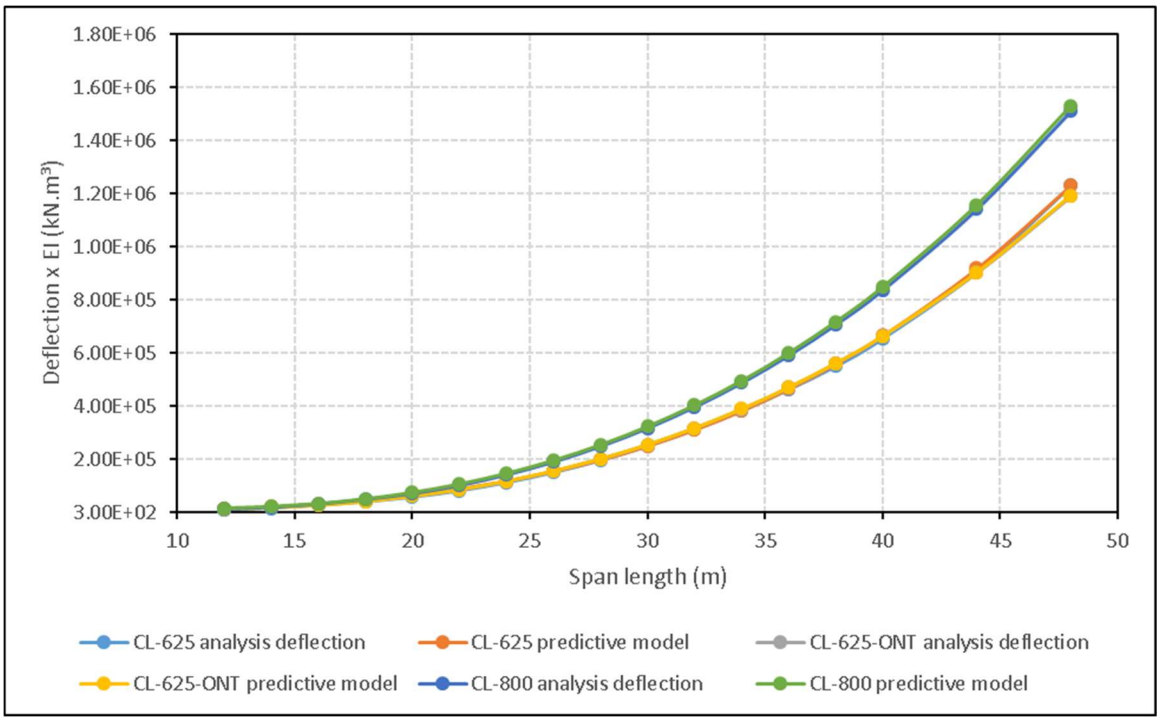

Figure 3.28: Comparison between the developed equations and the results obtained from SAP2000 model for deflection in exterior span generated by one lane of CL-W loading in four equal spans bridge configurations

[3.64] $\Delta_T * EI = 17.2(L^3) - 400(L^2) - 5944(L) - 31000$ kN.m^3 for CL-625 Truck

[3.65] $\Delta_T * EI = 11.7(L^3) + 15(L^2) - 3560(L) + 32600$ kN.m^3 for CL-625-ONT Truck

[3.66] $\Delta_T * EI = 15.0(L^3) + 40(L^2) - 5630(L) + 50450$ kN.m^3 for CL-800 Truck

3.4.4.2 Interior span

The following equations were developed for support reaction at first interior support generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.29 shows comparison between these developed equations and the data from analysis.

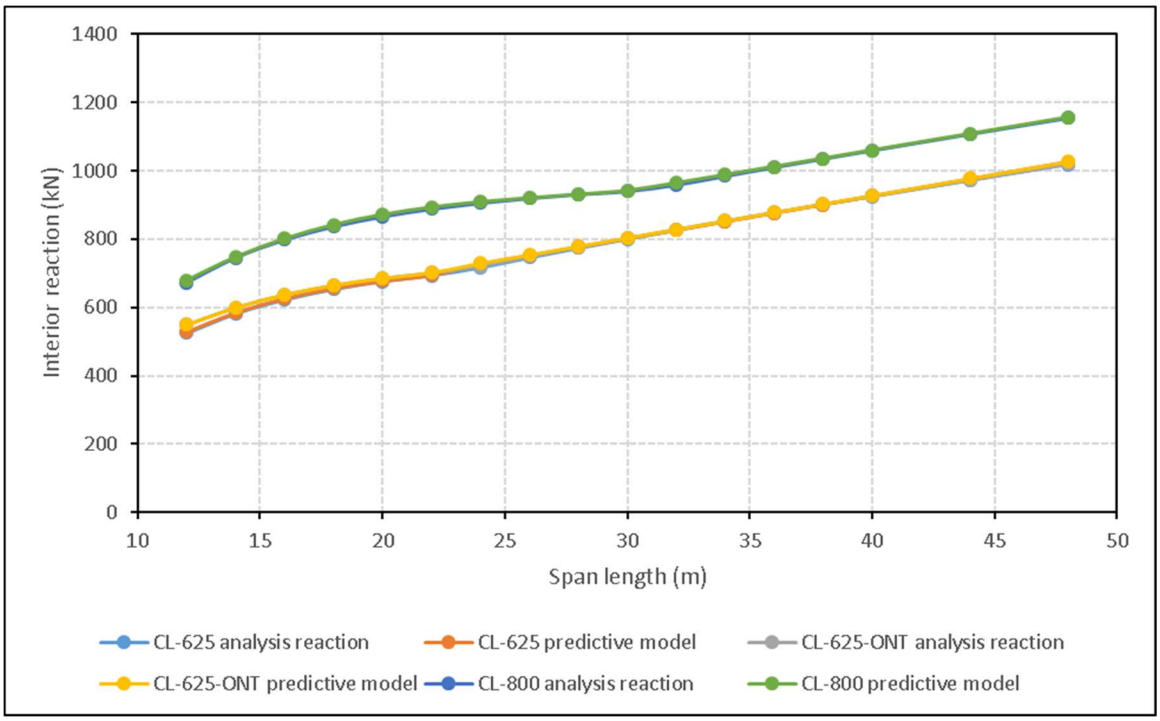

Figure 3.29: Comparison between the developed equations and the results obtained from SAP2000 model for support reaction at first interior support generated by one lane of CL-W loading in four equal spans bridge configurations

[3.67] $R_{Text} = 0.073(L^3) - 4.95(L^2) + 119.7(L) - 320$ kN $(12\ m \leq L \leq 22\ m)$
$R_{Text} = 12.4(L) + 430$ kN $(22\ m < L \leq 48\ m)$ for CL-625 Truck

[3.68] $R_{Text} = 0.061(L^3) - 4.18(L^2) + 103(L) - 190$ kN $(12\ m \leq L \leq 22\ m)$
$R_{Text} = 12.4(L) + 432$ kN $(22\ m < L \leq 48\ m)$ for CL-625-ONT Truck

[3.69] $R_{Text} = 0.048(L^3) - 3.9(L^2) + 111.4(L) - 178$ kN $(12\ m \leq L \leq 30\ m)$
$R_{Text} = 12(L) + 580$ kN $(30\ m < L \leq 48\ m)$ for CL-800 Truck

The following equations were developed for support reaction at centermost interior support generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.30 shows comparison between these developed equations and the data from analysis.

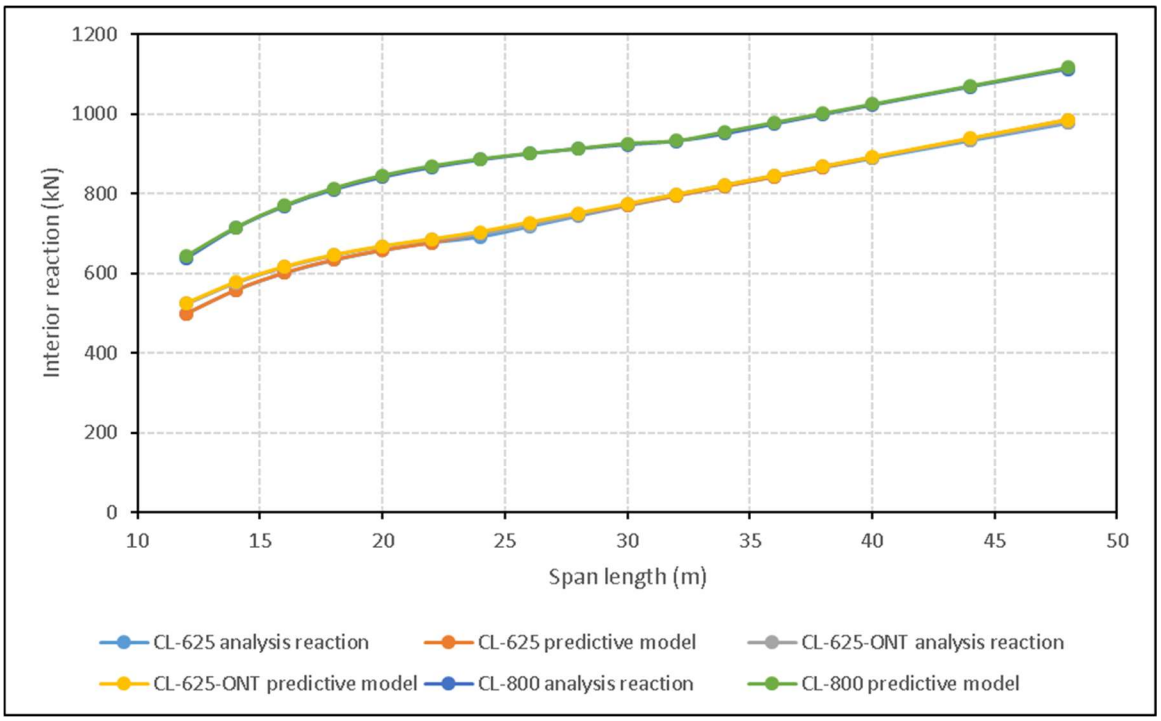

Figure 3.30: Comparison between the developed equations and the results obtained from SAP2000 model for support reaction at centermost interior support generated by one lane of CL-W loading in four equal spans bridge configurations

[3.70] $R_{Tint} = 0.068(L^3) - 4.7(L^2) + 116.9(L) - 344$ kN $(12\ m \leq L \leq 22\ m)$
$R_{Tint} = 11.9(L) + 414$ kN $(22\ m < L \leq 48\ m)$ for CL-625 Truck

[3.71] $R_{Tint} = 0.058(L^3) - 4.06(L^2) + 102(L) - 215$ kN $(12\ m \leq L \leq 22\ m)$
$R_{Tint} = 12.4(L) + 432$ kN $(22\ m < L \leq 48\ m)$ for CL-625-ONT Truck

[3.72] $R_{Tint} = 0.048(L^3) - 3.9(L^2) + 112.8(L) - 230$ kN $(12\ m \leq L \leq 30\ m)$
$R_{Tint} = 11.5(L) + 565$ kN $(30\ m < L \leq 48\ m)$ for CL-800 Truck

The following equations were developed for shear left of first interior support generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.31 shows comparison between these developed equations and the data from analysis.

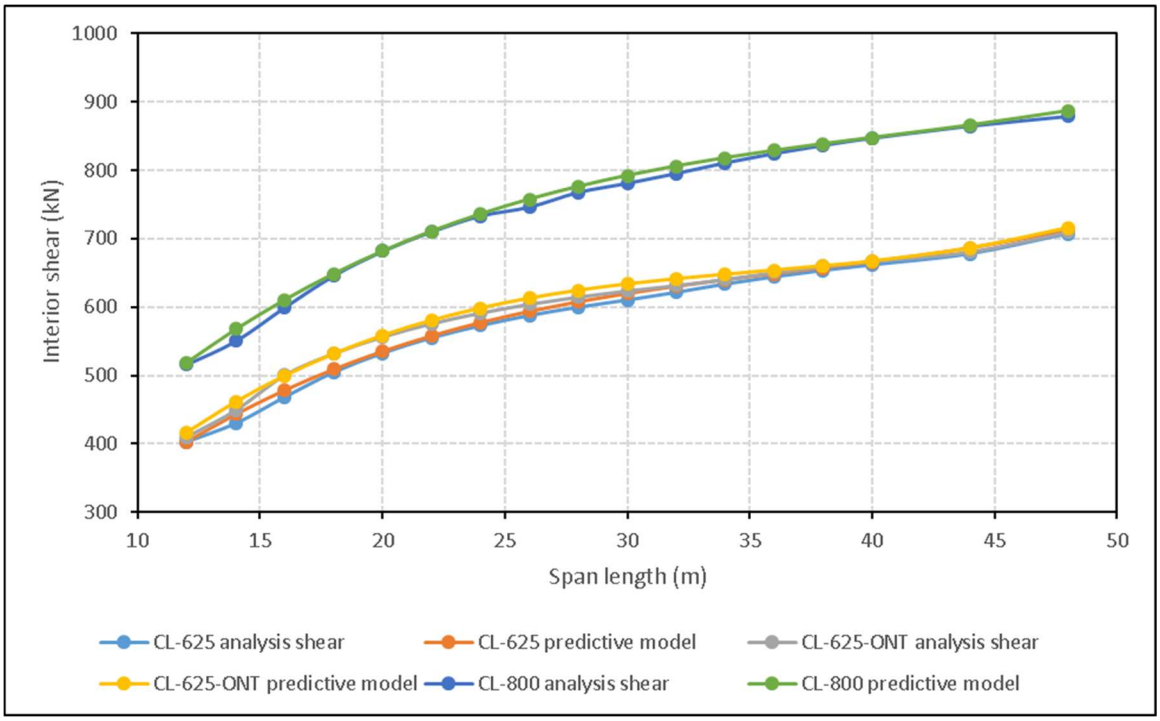

Figure 3.31: Comparison between the developed equations and the results obtained from SAP2000 model for shear left of first interior support generated by one lane of CL-W loading in four equal spans bridge configurations

[3.73] $V_{Text} = 0.0037(L^3) - 0.516(L^2) + 26.9(L) + 92$ kN for CL-625 Truck

[3.74] $V_{Text} = 0.0035(L^3) - 0.49(L^2) + 25.2(L) + 145$ kN for CL-625-ONT Truck

[3.75] $V_{Text} = 0.0086(L^3) - 1.05(L^2) + 47.2(L) + 89$ kN for CL-800 Truck

The following equations were developed for shear right of first interior support generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.32 shows comparison between these developed equations and the data from analysis.

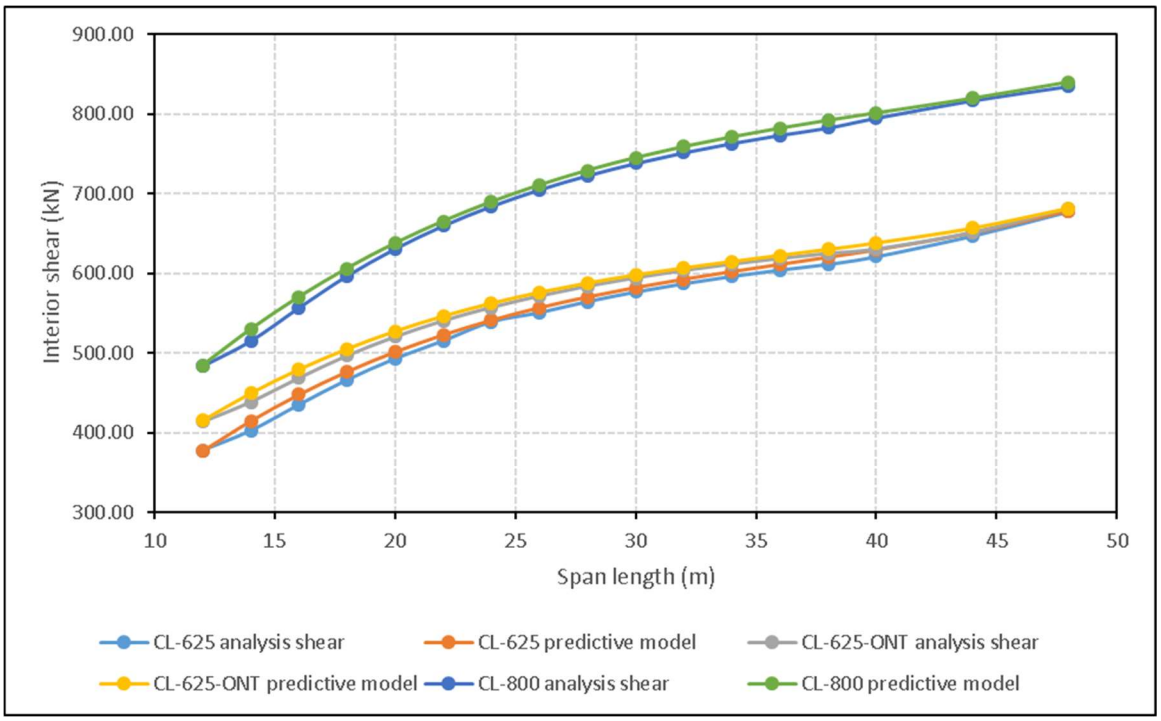

Figure 3.32: Comparison between the developed equations and the results obtained from SAP2000 model for shear right of first interior support generated by one lane of CL-W loading in four equal spans bridge configurations

[3.76] $V_{Tint} = 0.007(L^3) - 0.84(L^2) + 36.7(L) + 48$ kN for CL-625 Truck
[3.77] $V_{Tint} = 0.007(L^3) - 0.81(L^2) + 34.4(L) + 109$ kN for CL-625-ONT Truck
[3.78] $V_{Tint} = 0.008(L^3) - 0.97(L^2) + 44.3(L) + 81$ kN for CL-800 Truck

The following equations were developed for longitudinal positive moment in interior span generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.33 shows comparison between these developed equations and the data from analysis.

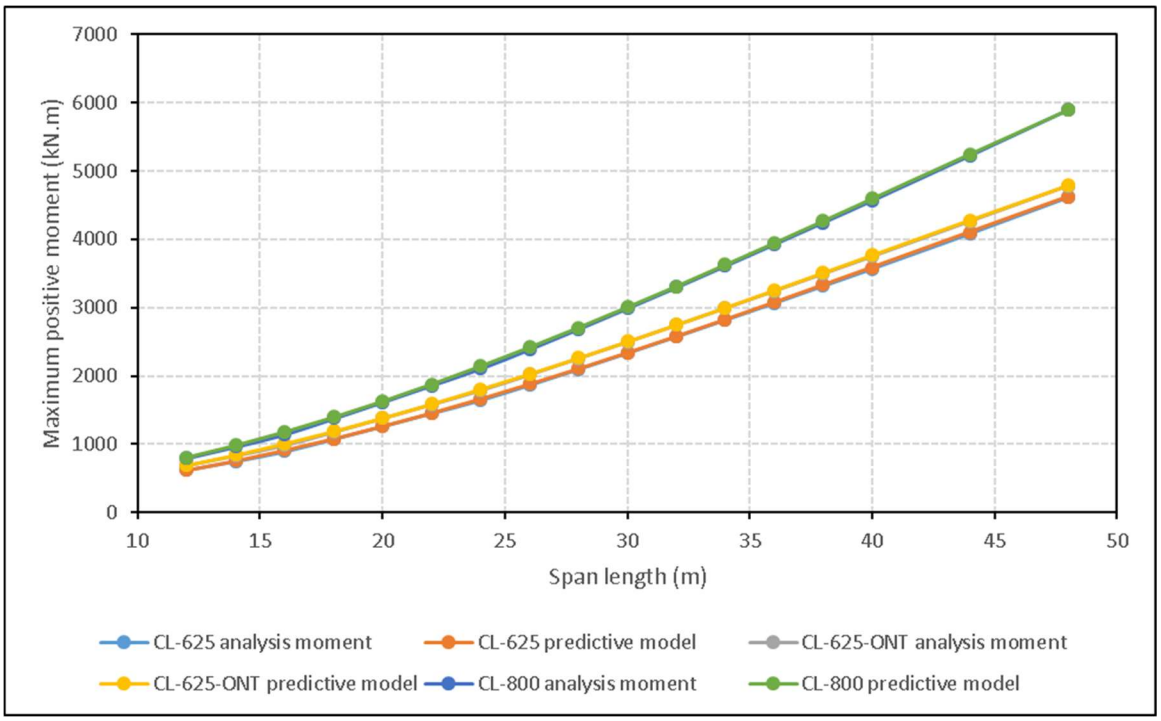

Figure 3.33: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal positive moment in interior span generated by one lane of CL-W loading in four equal spans bridge configurations

[3.79] $M_{T+} = -0.023(L^3) + 2.96(L^2) + 3.61(L) + 195$ kN.m for CL-625 Truck

[3.80] $M_{T+} = -0.024(L^3) + 2.90(L^2) + 12.6(L) + 167$ kN.m for CL-625-ONT Truck

[3.81] $M_{T+} = -0.032(L^3) + 3.90(L^2) + 2.6(L) + 269$ kN.m for CL-800 Truck

The following equations were developed for longitudinal negative moment at first interior support generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.34 shows comparison between these developed equations and the data from analysis.

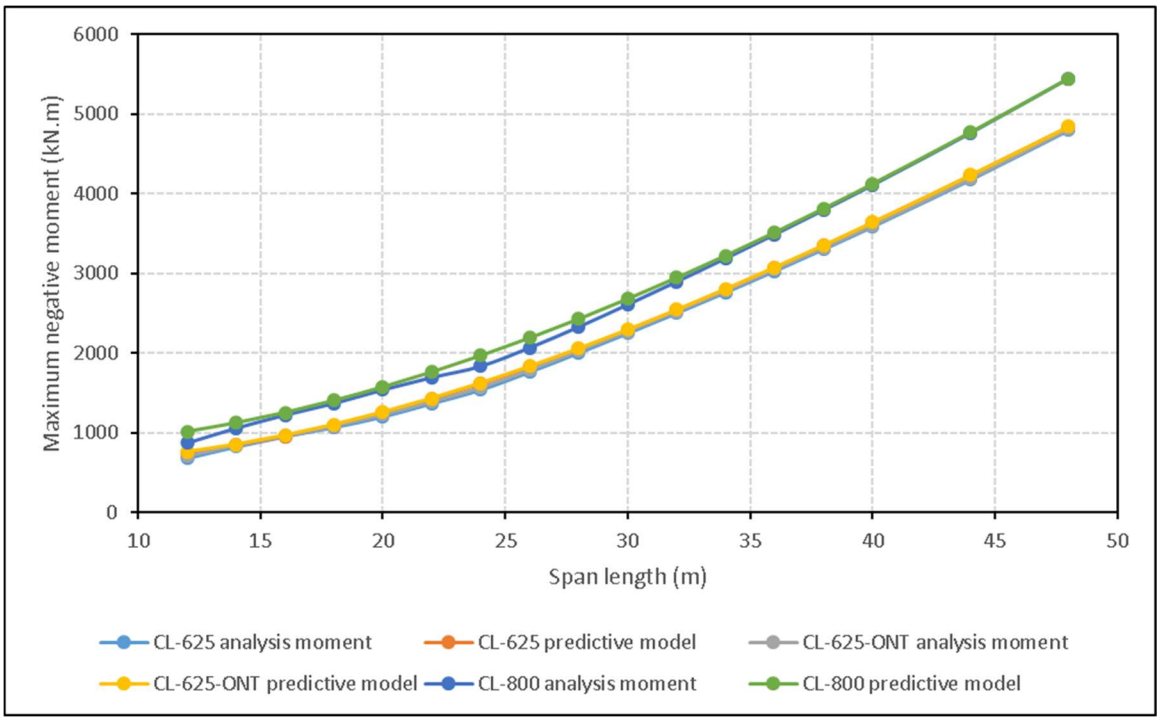

Figure 3.34: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal negative moment at first interior support generated by one lane of CL-W loading in four equal spans bridge configurations

[3.82] $M_{T\text{-}ext} = -0.026(L^3) + 3.91(L^2) - 42.4(L) + 740$ kN.m for CL-625 Truck

[3.83] $M_{T\text{-}ext} = -0.026(L^3) + 3.91(L^2) - 42.4(L) + 750$ kN.m for CL-625-ONT Truck

[3.84] $M_{T\text{-}ext} = -0.020(L^3) + 3.50(L^2) - 26.5(L) + 865$ kN.m for CL-800 Truck

The following equations were developed for longitudinal negative moment at centermost interior support generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.35 shows comparison between these developed equations and the data from analysis.

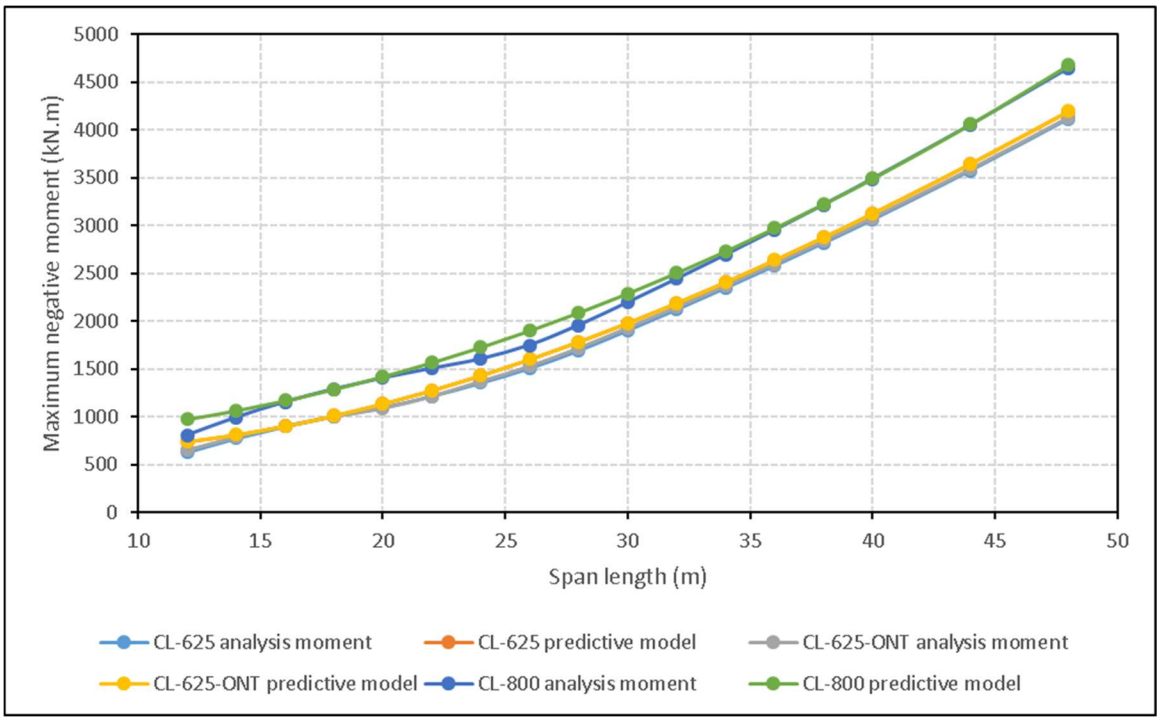

Figure 3.35: Comparison between the developed equations and the results obtained from SAP2000 model for longitudinal negative moment at centermost interior support generated by one lane of CL-W loading in four equal spans bridge configurations

[3.85] $M_{T\text{-}int} = -0.016(L^3) + 2.96(L^2) - 32.4(L) + 731$ kN.m for CL-625 Truck
[3.86] $M_{T\text{-}int} = -0.016(L^3) + 2.95(L^2) - 32.4(L) + 735$ kN.m for CL-625-ONT Truck
[3.87] $M_{T\text{-}int} = -0.0032(L^3) + 1.94(L^2) - 3.9(L) + 750$ kN.m for CL-800 Truck

The following equations were developed for deflection in interior span generated by one lane of CL-W loading in four equal spans bridge configurations. Figure 3.36 shows comparison between these developed equations and the data from analysis.

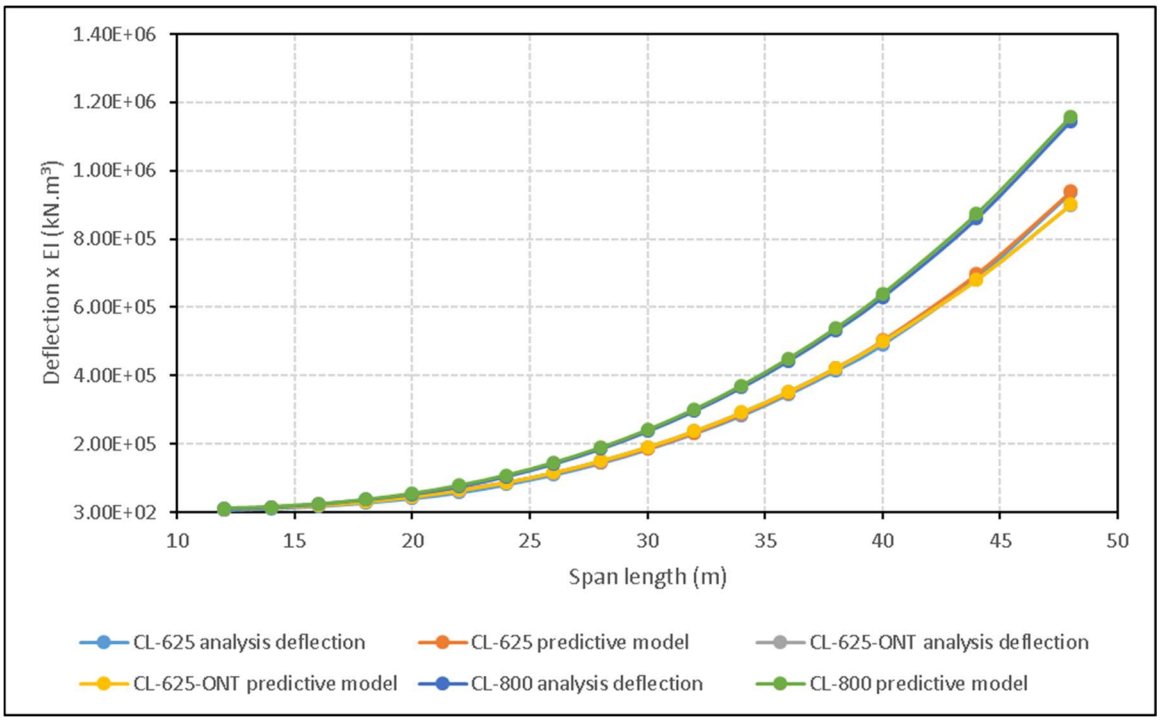

Figure 3.36: Comparison between the developed equations and the results obtained from SAP2000 model for deflection in interior span generated by one lane of CL-W loading in four equal spans bridge configurations

[3.88] $\Delta_T * EI = 13.7(L^3) - 345(L^2) - 5194(L) - 29000$ kN.m^3 for CL-625 Truck

[3.89] $\Delta_T * EI = 9.1(L^3) + 0.78(L^2) - 2650(L) + 25700$ kN.m^3 for CL-625-ONT Truck

[3.90] $\Delta_T * EI = 11.8(L^3) - 3800(L) + 36000$ kN.m^3 for CL-800 Truck

3.5 Comments regarding empirical equations

In terms of data accuracy, deflection equations proved to be very representative of the data samples with accuracies in the range of 99.99%. Moment equations were also very accurate with accuracy values in the range of 99.95%. Shear and reaction equations were the least accurate with accuracy of 98.5%. All empirical equations were created to slightly overestimate the result by 1-2%. This is to prevent any chance of under-designing the bridge section. Further information and analysis of these results can be found elsewhere (Diab & Sennah, 2018).

In terms of similarity of results, equations for multi-span bridge configurations seem very similar to one another with only minor variances in the range 5%. Furthermore, there is great similarity between equations produced for the CL-625 and CL-625-ONT truck. As can be seen in Figure 3.37, moments produced by the CL-625 and CL-625-ONT truck loadings are within 3.5% of each other overall.

Chapter IV

Software Development and Results

4.1 Objectives behind development of software

In order to be able to study the relationships between all the different parameter that affect the selection of a girder section, a quick method of girder design was required to be established. The author elected to design a VB.Net software that needs to be able to:

1) Calculate applied dead load and live load on bridge girders
2) Obtain factored applied moment, shear, deflection and support reactions at ULS, SLS and FLS
3) Asses I-girder section for construction stage permanent (plastic) deflection at SLS
4) Asses section for construction stage applied moment at ULS
5) Asses section for superstructure vibration at SLS
6) Asses section for applied shear, moment and their combined effect at ULS
7) Asses section for fatigue resistance at FLS

4.2 Functions of different software modules

The software was designed to meet the objectives stated in section 4.1. The main menu of the software can be seen in Figure 1. The main menu provides the user with an option to input the variables required by the program in the main menu once and then send these values to the other modules so that the modules require no further input from the user. However, if the user only needs to run one module, the option to input the data required by the module into the module itself is also an option.

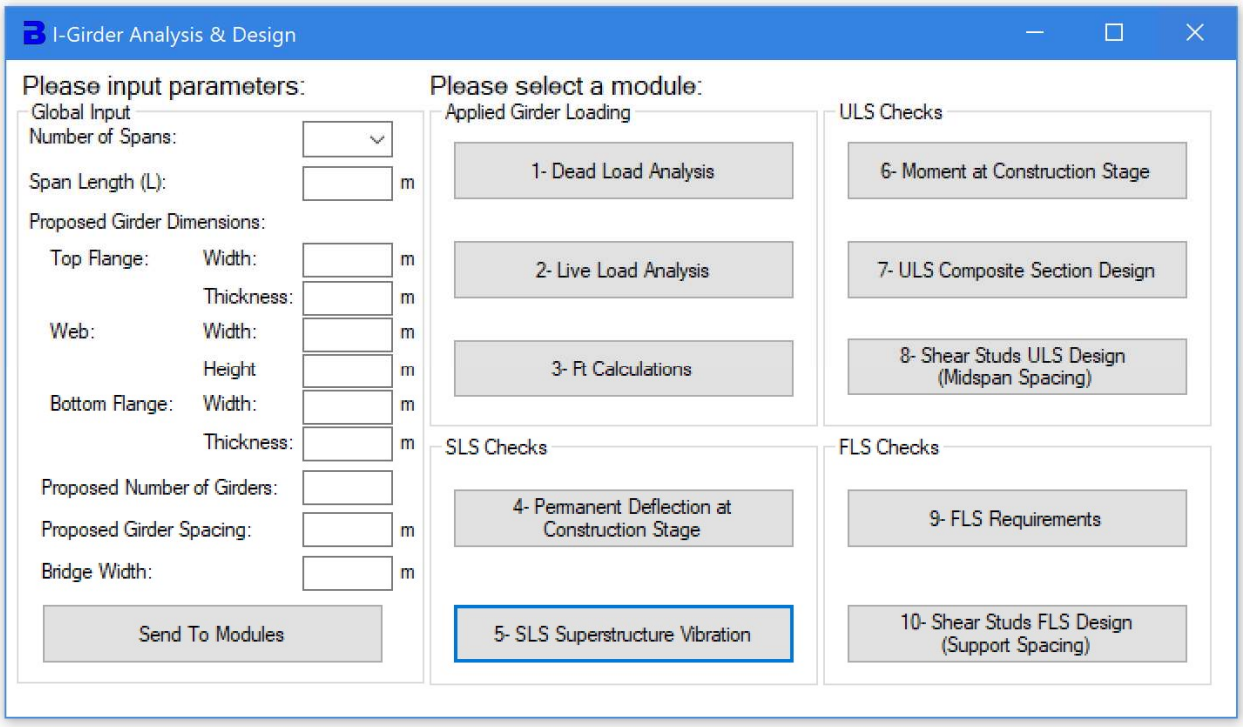

Figure 4.1: Screenshot showing the main menu of the I-girder design software

4.2.1 Design load values calculation modules

The first module the in the process of girder analysis is the dead load calculation module. In this module, the program takes the input regarding the bridge dimensions and calculates applied dead load moment, shear, support reactions and deflection. A flowchart showing the operation of the software can be seen in Figure 2. A screenshot showing the front end Graphical User Interface (GUI) can be seen in Figure 3.

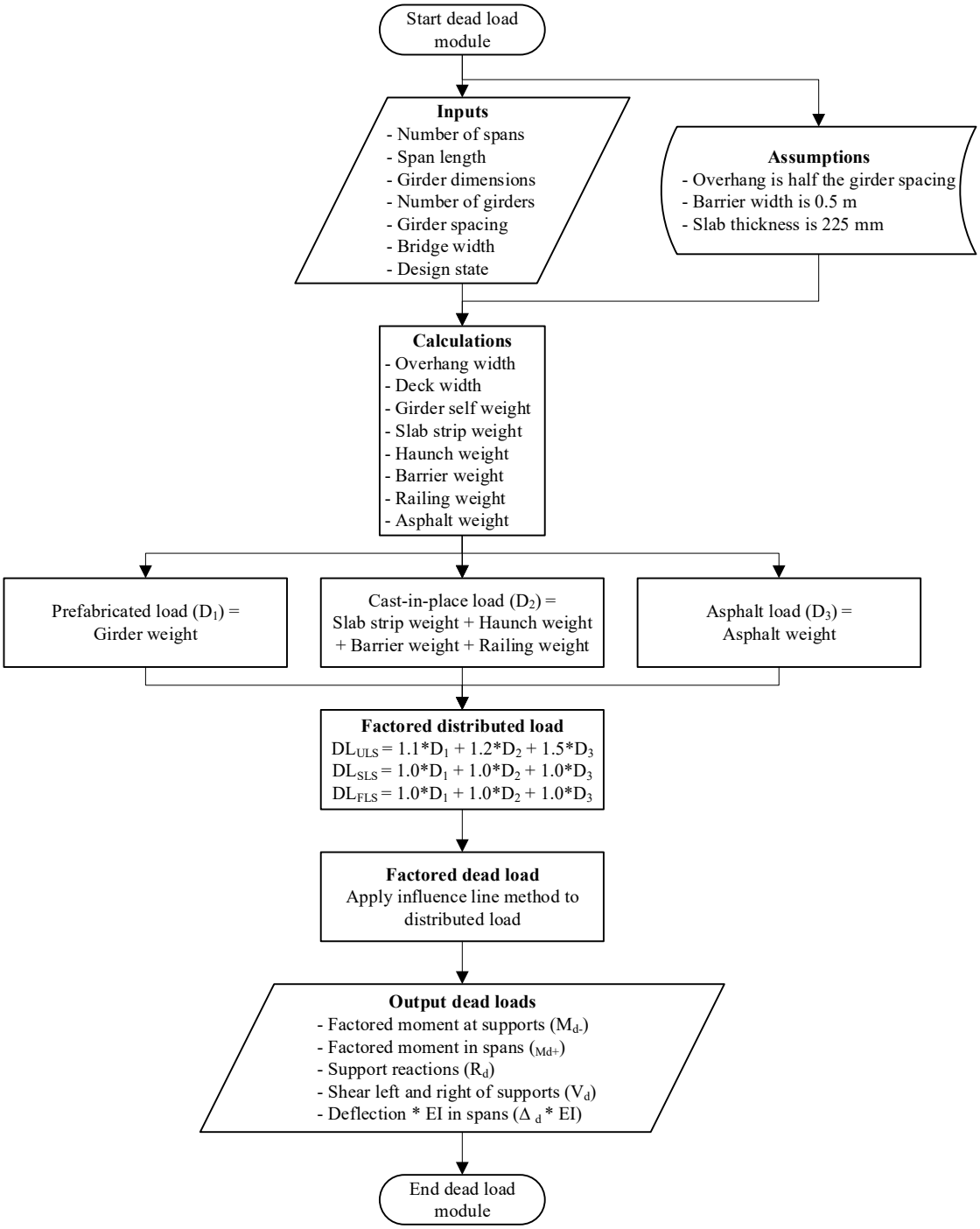

Figure 4.2: Flowchart showing the back-end operations of the dead load module developed as part of the I-girder design software

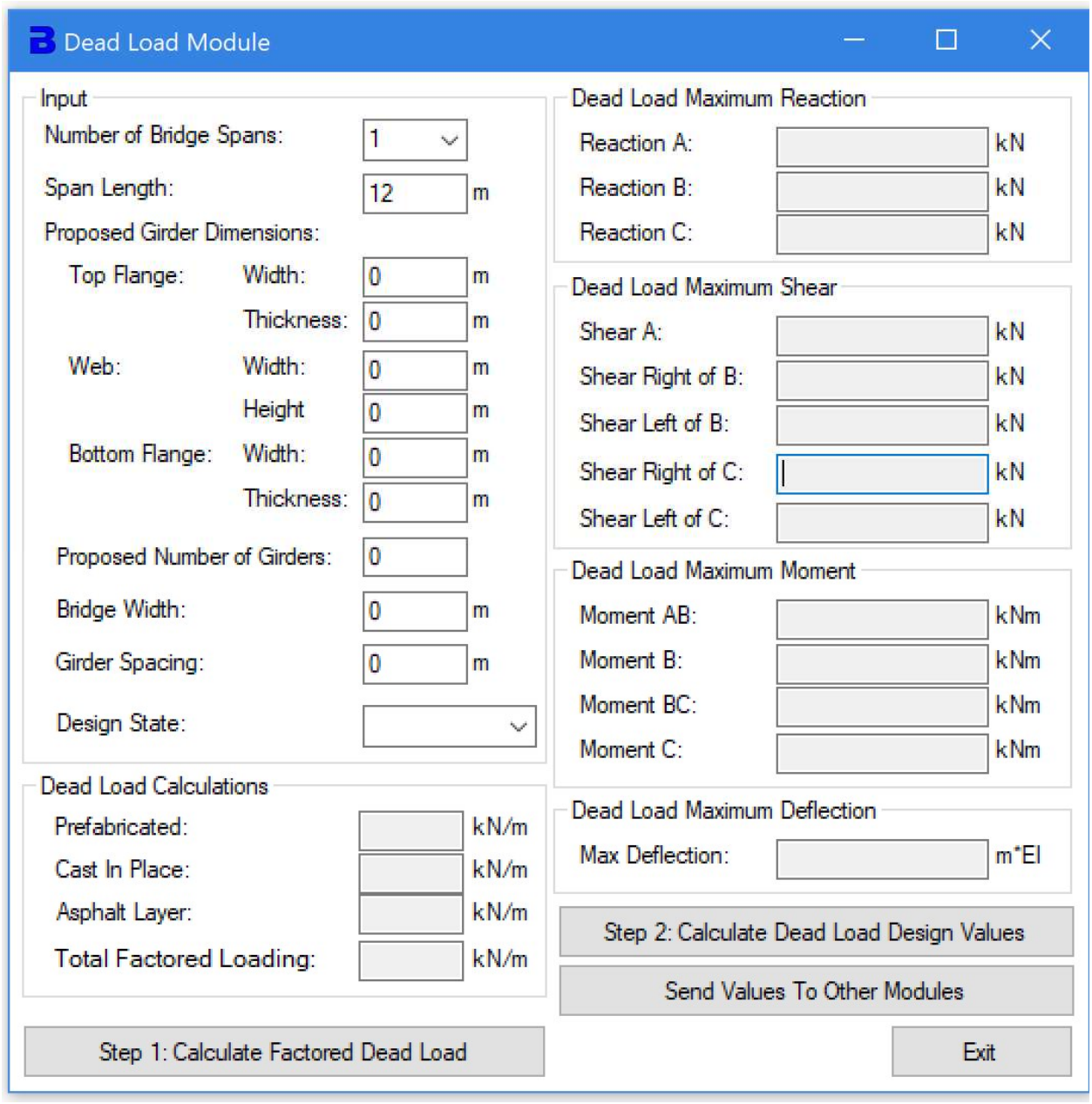

Figure 4.3: Screenshot showing the front-end layout of the dead load module developed as part of the I-girder design software

Followed by the dead load calculations module is the live load module. This module depends heavily on the equations developed in chapter 3 of this thesis. This module takes input regarding the number of spans, the span length and the truck loading to be used and produces output that includes maximum longitudinal live load moments at support locations, maximum longitudinal live load moments within spans, support reactions, shear left and right of supports and deflection in spans. A flowchart showing the operation of the module can be seen in Figure 4. The front-end GUI of the module can be seen in Figure 5.

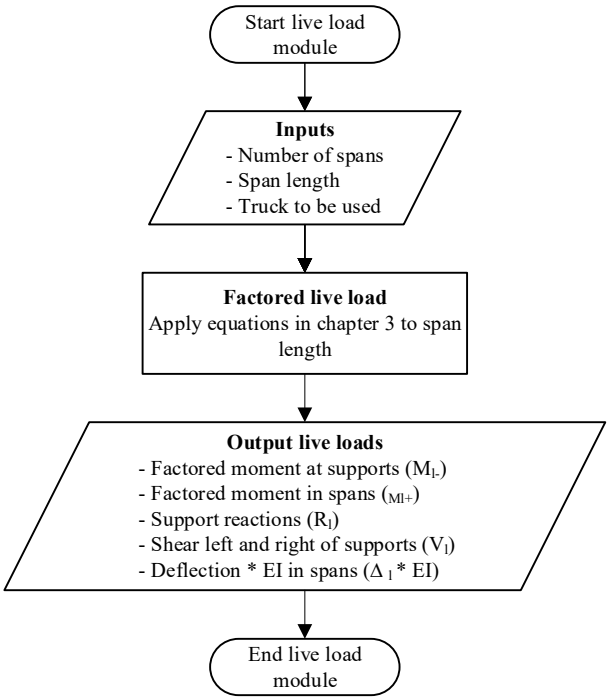

Figure 4.4: Flowchart showing the back-end operations of the live load module developed as part of the I-girder design software

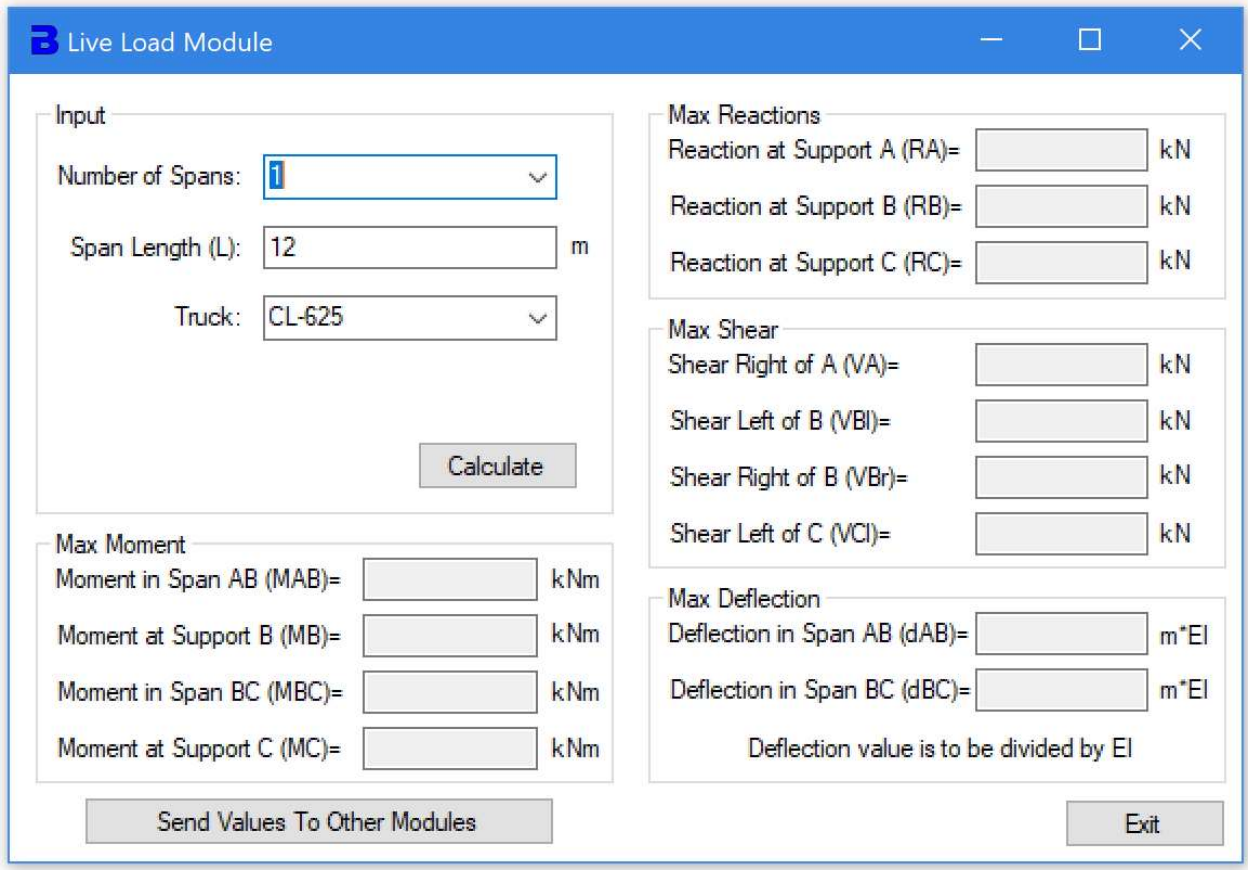

Figure 4.5: Screenshot showing the front-end layout of the live load module developed as part of the I-girder design software

Accompanied by the live load module is the truck factor (F_T) module. This module takes input regarding the number of spans, span length, shoulder width, number of girders, girder spacing and, bridge width. This module makes the following assumptions: (i) overhang is half the girder spacing, (ii) barrier width is equal to 0.5 m, (iii) slab thickness is 225 mm, and (iv) the travel lane is 3.5 m. The module conducts the calculations for F_T according to the CHBDC of 2014 and produces output for F_T for shear and moment for ULS, SLS and ULS for exterior and interior girders. The back-end operations of the truck factor calculation (F_T) module can be seen in Figure 6. The front-end GUI can be seen in Figure 7.

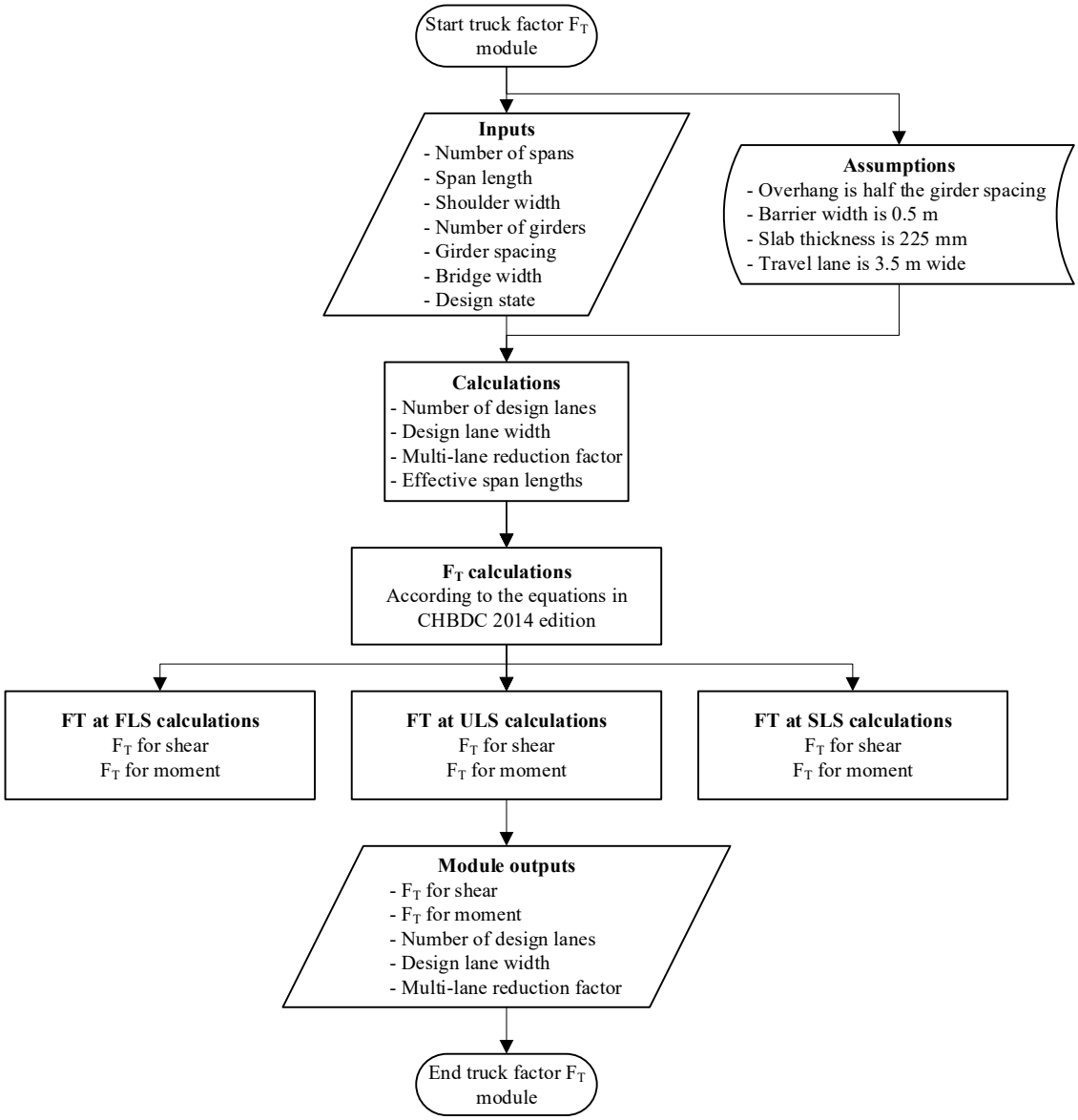

Figure 4.6: Flowchart showing the back-end operations of the truck factor calculation (F_T) module developed as part of the I-girder design software

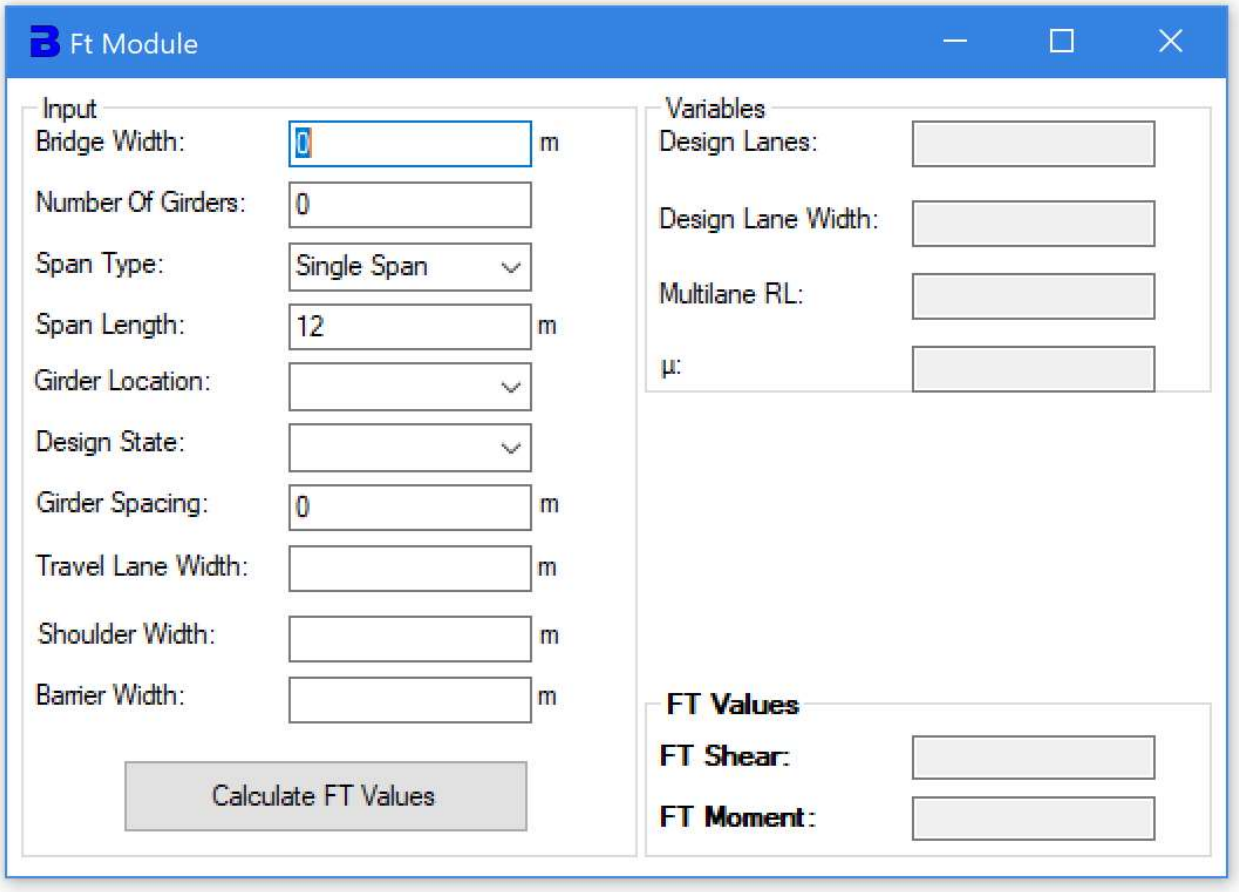

Figure 4.7: Screenshot showing the front-end layout of the of the truck factor calculation (F_T) module developed as part of the I-girder design software

4.2.2 SLS design modules

The first module in the SLS modules list is permanent deflection at construction stage module which assesses the girder for plastic deflection at SLS during unshored construction. The input for this module includes number of spans, span length, girder dimensions, number of girders, girder spacing, bridge width, and truck loading. This module also obtains data from previously discussed modules. In addition to assumptions previously stated, this module assumes a concrete compressive strength, f'_c, of 30 MPa. The module conducts the required check and provides the user information on the values of interest regarding the check and whether or not the girder dimensions selected are adequate. The back-end operations of the module can be seen in Figure 8. The front-end GUI can be seen in Figure 9.

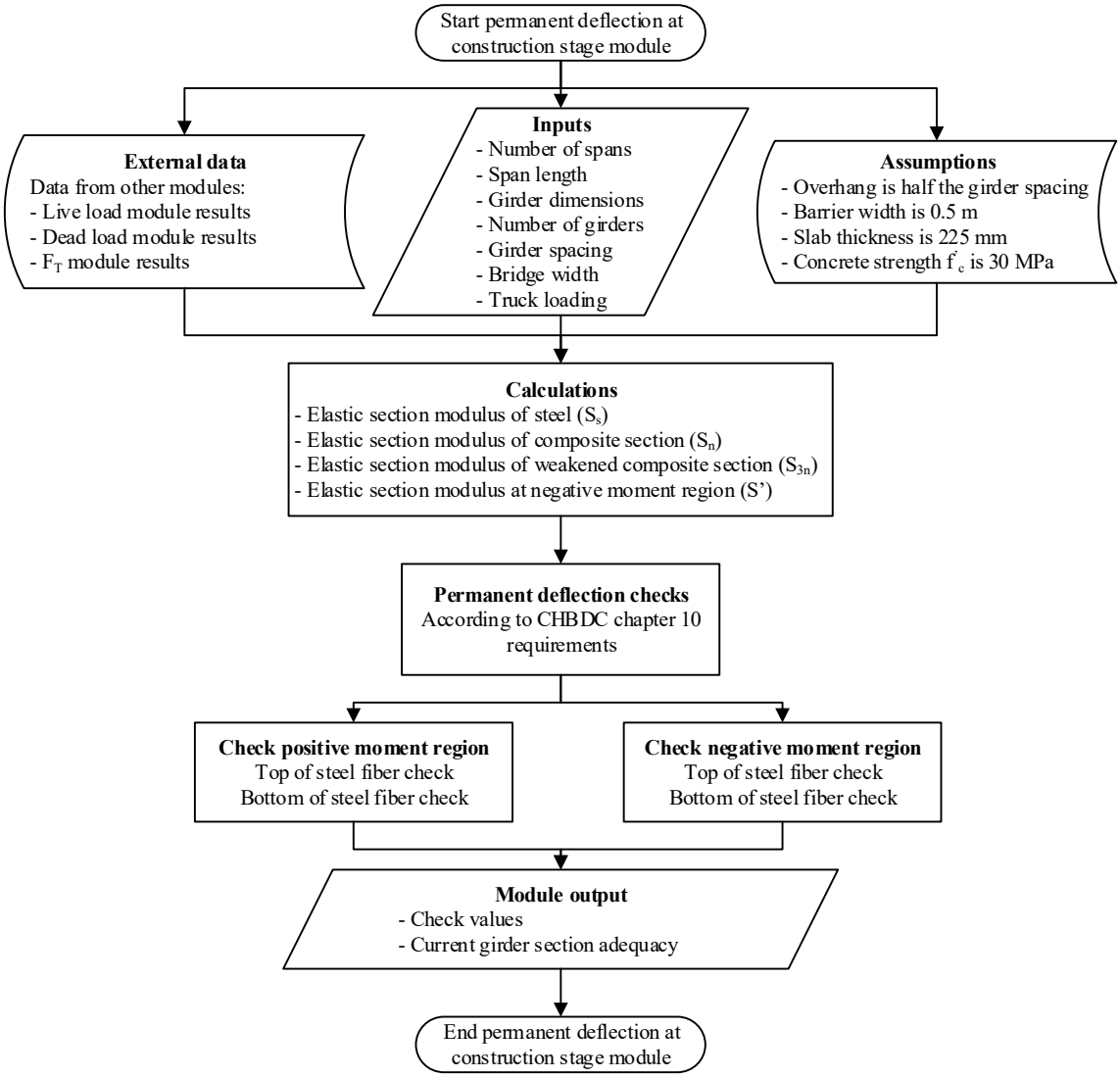

Figure 4.8: Flowchart showing the back-end operations of the permanent deflection at construction stage module developed as part of the I-girder design software

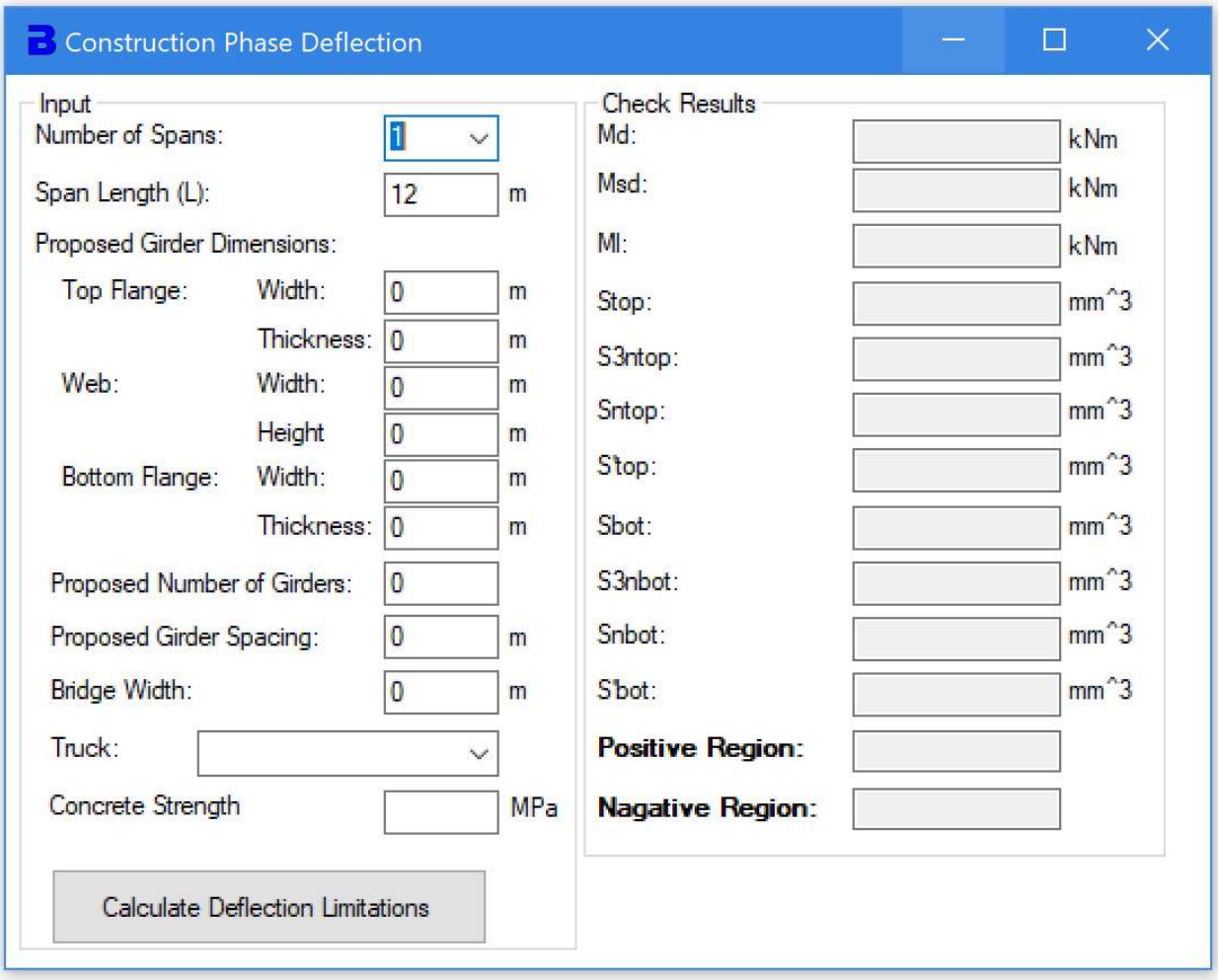

Figure 4.9: Screenshot showing the front-end layout of the of the permanent deflection at construction stage module developed as part of the I-girder design software

The second SLS module is the superstructure vibration module. This module obtains input regarding span length, girder dimensions, number of girders, girder spacing and, bridge width. It also obtains data from the live load module and the F_T module. It assumes a no-sidewalk case by default. However, if the user indicates the existence of a sidewalk, the program automatically takes that into account in the calculations. The program calculates the first flexural frequency of the bridge and the deflection limitation in accordance with the CHBDC and conducts the required checks. The output of this module will include the live load truck deflection at SLS, the deflection limitation of the bridge at the selected sidewalk usage case, and the girder section

adequacy. The back-end operations of the module can be seen in Figure 10. The front-end GUI can be seen in Figure 11.

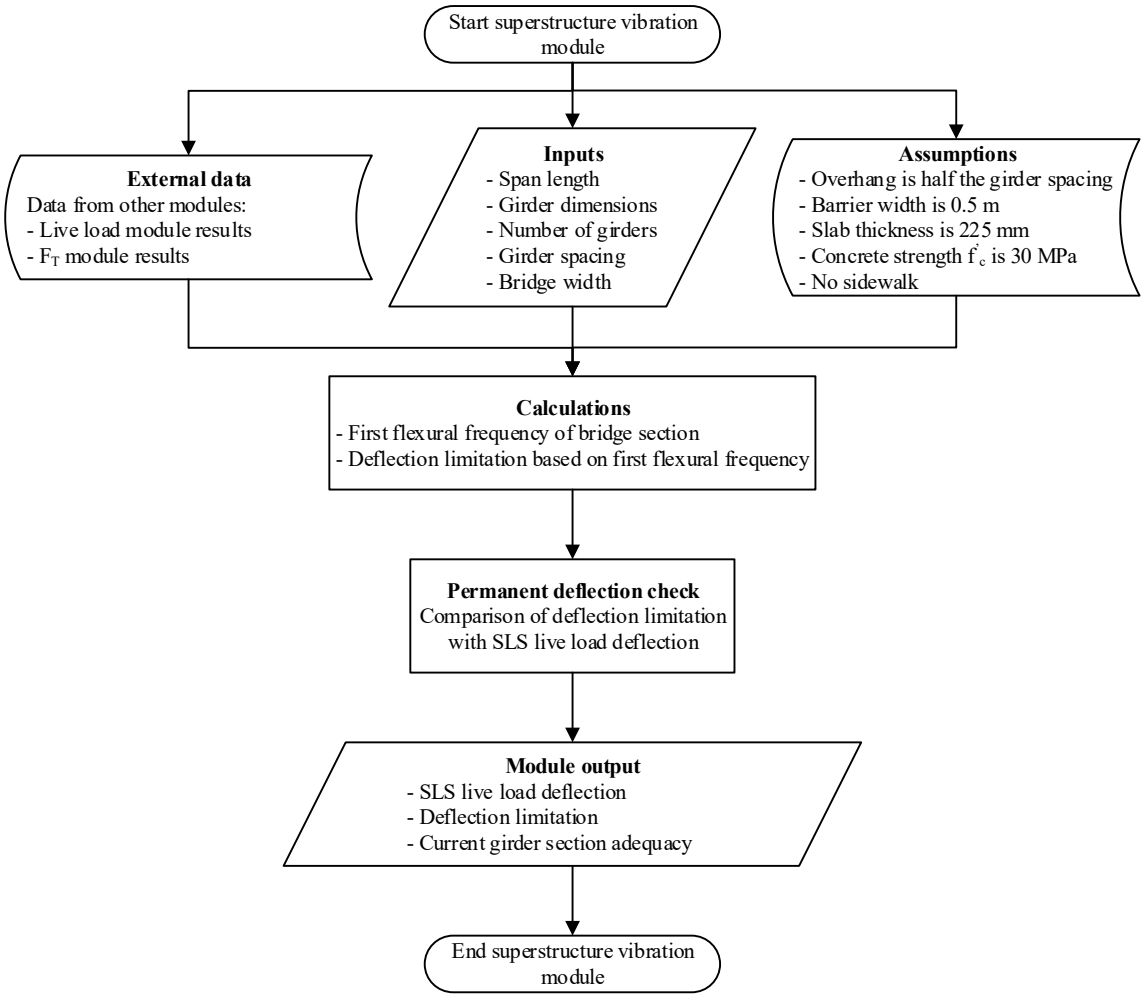

Figure 4.10: Flowchart showing the back-end operations of the superstructure vibration module developed as part of the I-girder design software

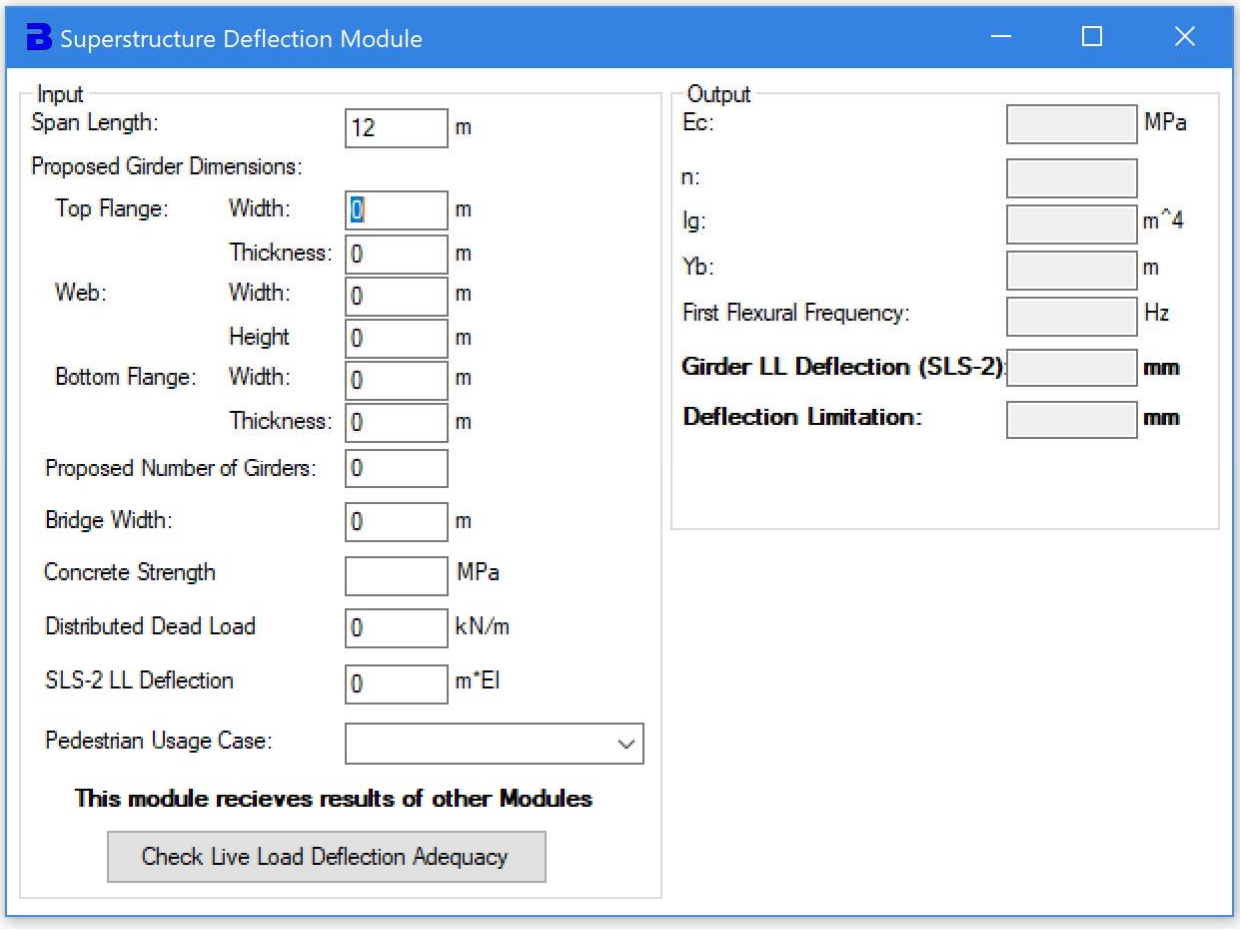

Figure 4.11: Screenshot showing the front-end layout of the of the superstructure vibration module developed as part of the I-girder design software

4.2.3 ULS design modules

The first module in the ULS design modules is the construction stage moment module. It obtains data from the design load values calculation modules in addition to user input which includes number of spans, span length, girder dimensions, number of girders, girder spacing and, bridge width. The module outputs the factored applied construction moment, the resisting moment of the steel section and the section adequacy. The back-end operations of the module can be seen in Figure 12. The front-end GUI can be seen in Figure 13.

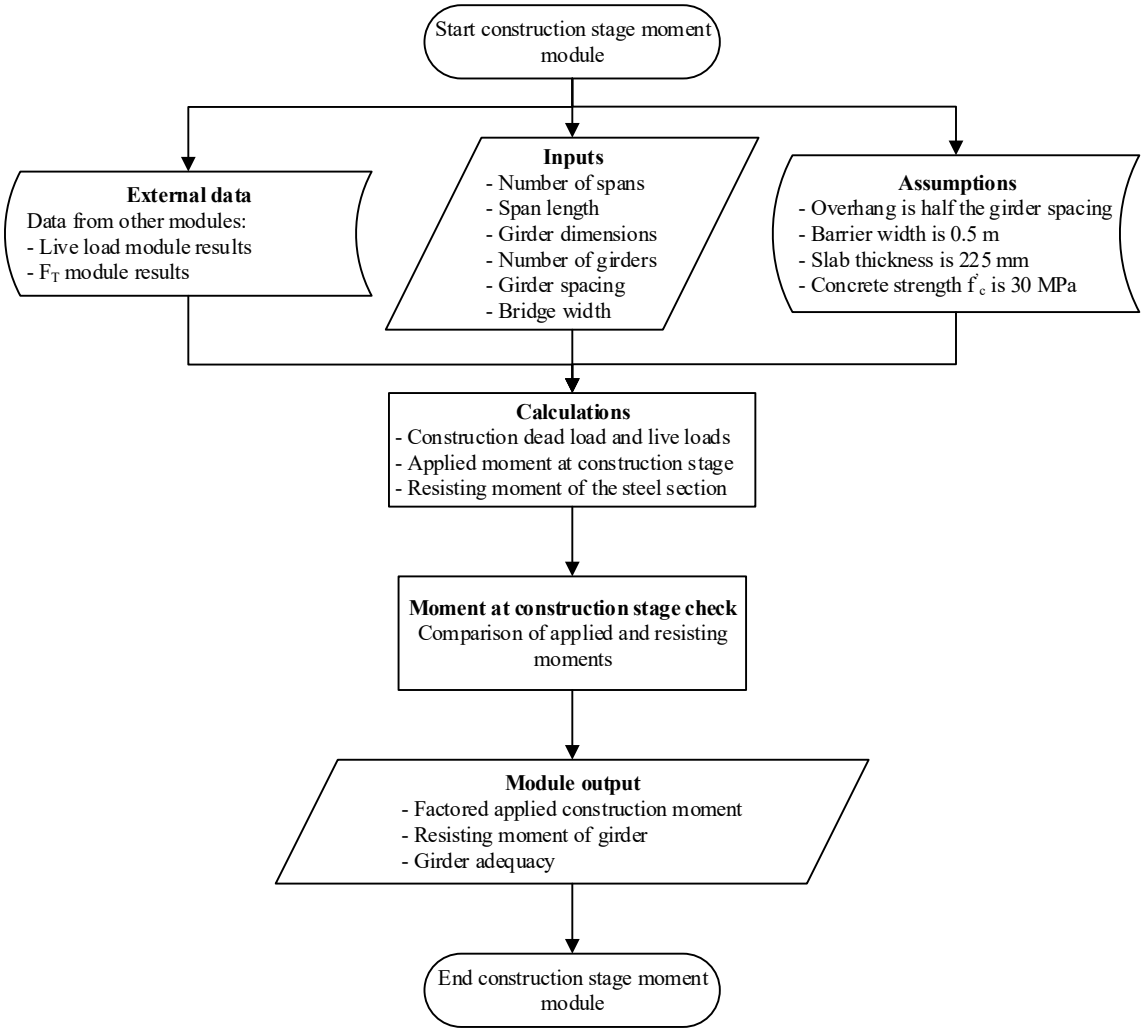

Figure 4.12: Flowchart showing the back-end operations of the construction stage moment module developed as part of the I-girder design software

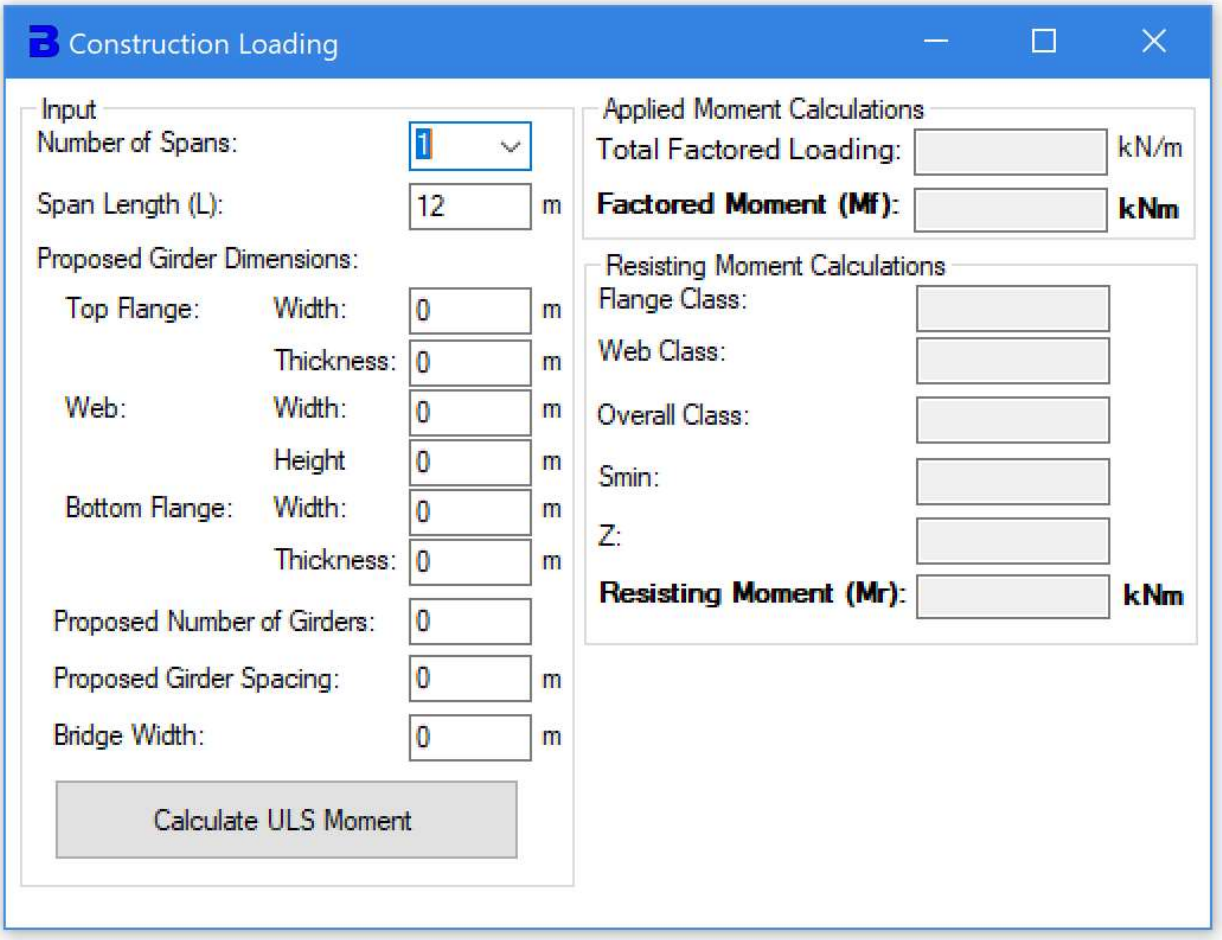

Figure 4.13: Screenshot showing the front-end layout of the of the construction stage moment module developed as part of the I-girder design software

Followed by it is the ULS moment, shear and combined checks module. This module obtains input from the design load values calculation modules in addition to user input regarding number of spans, span length, girder dimensions, number of girders, girder spacing and, bridge width. In addition to the previous assumptions, this module assumes the stiffeners are spaced at the minimum of (i) the maximum allowed stiffener spacing for the bridge geometry as per the CISC "Handbook of Steel Construction" (CISC, 2017) and, (ii) 2 meters. This is due to the fact that in some cases, 2-meter stiffener spacing exceeds the maximum spacing requirement and therefore fails that check. Also, the program assumes 15M bar reinforcement spaced at 300 mm. The output from this module indicates are composite section resisting longitudinal positive moment adequacy, longitudinal negative moment adequacy, shear adequacy, combined checks adequacy,

and overall section adequacy after conducting all the necessary checks. The back-end operations of the module can be seen in Figure 14. The front-end GUI can be seen in Figure 15.

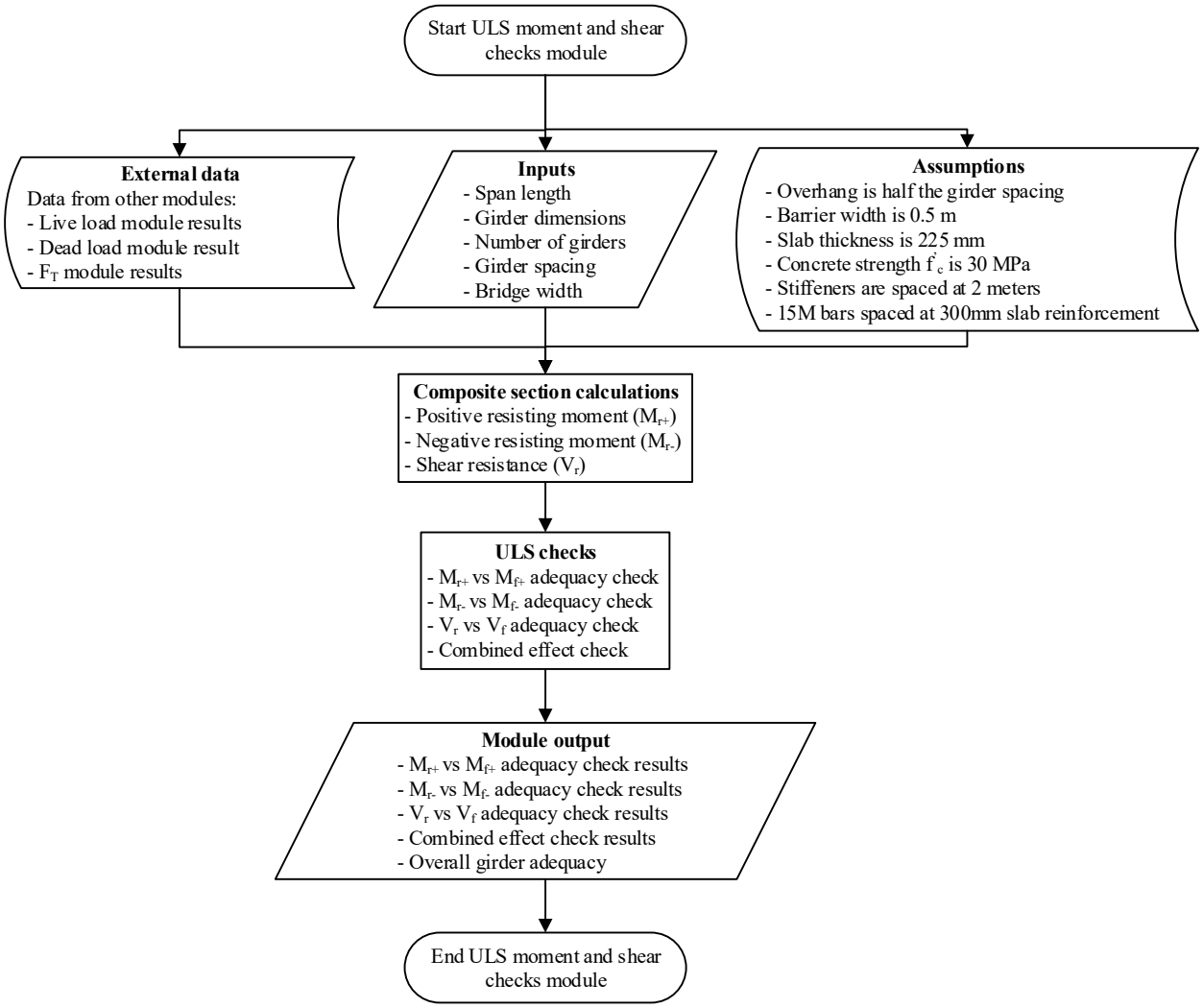

Figure 4.14: Flowchart showing the back-end operations of the ULS adequacy checks module developed as part of the I-girder design software

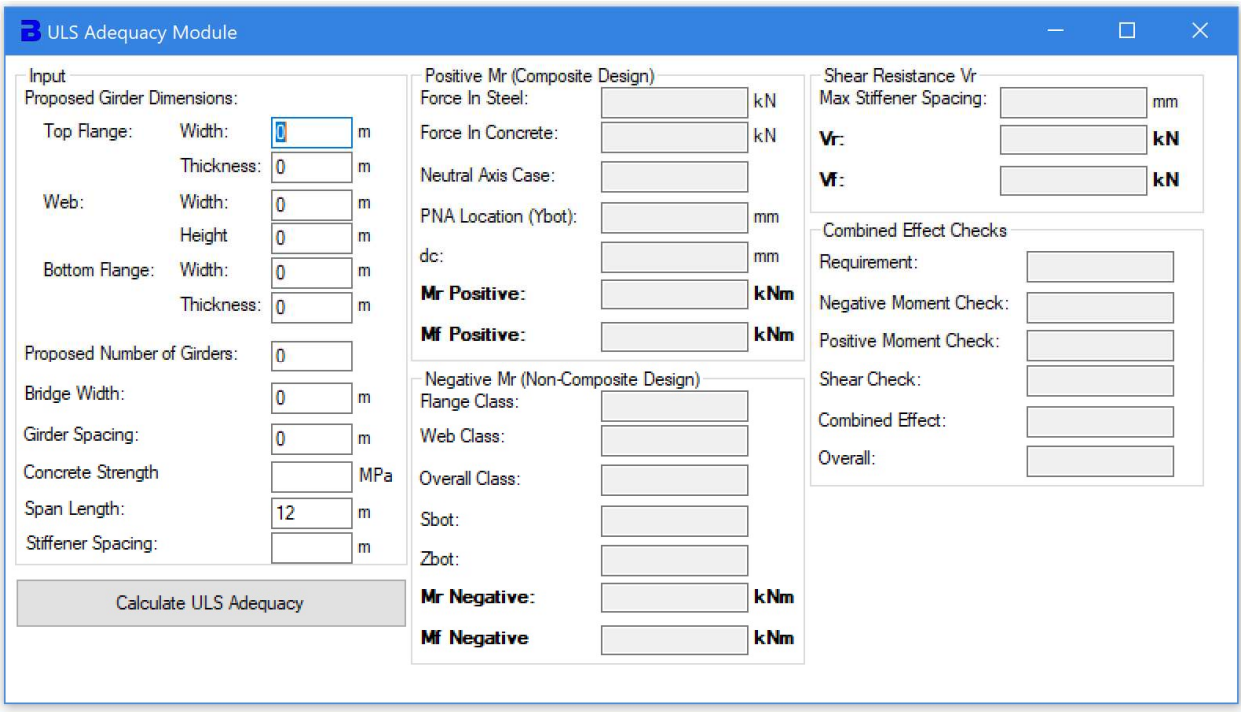

Figure 4.15: Screenshot showing the front-end layout of the of the ULS adequacy checks module developed as part of the I-girder design software

The last module in the ULS modules list is the shear stud ULS module. This module obtains input from the design load values calculation modules in addition to user input regarding number of spans, span length, girder top flange width, number of girders, girder spacing and, bridge width. In addition to the previously stated assumptions, this module assumes a stud diameter of 22 mm. The output from this module includes the total required number of studs, the number of transverse shear stud rows, the number of longitudinal shear stud rows and, the row spacing. The back-end operations of the module can be seen in Figure 16. The front-end GUI can be seen in Figure 17.

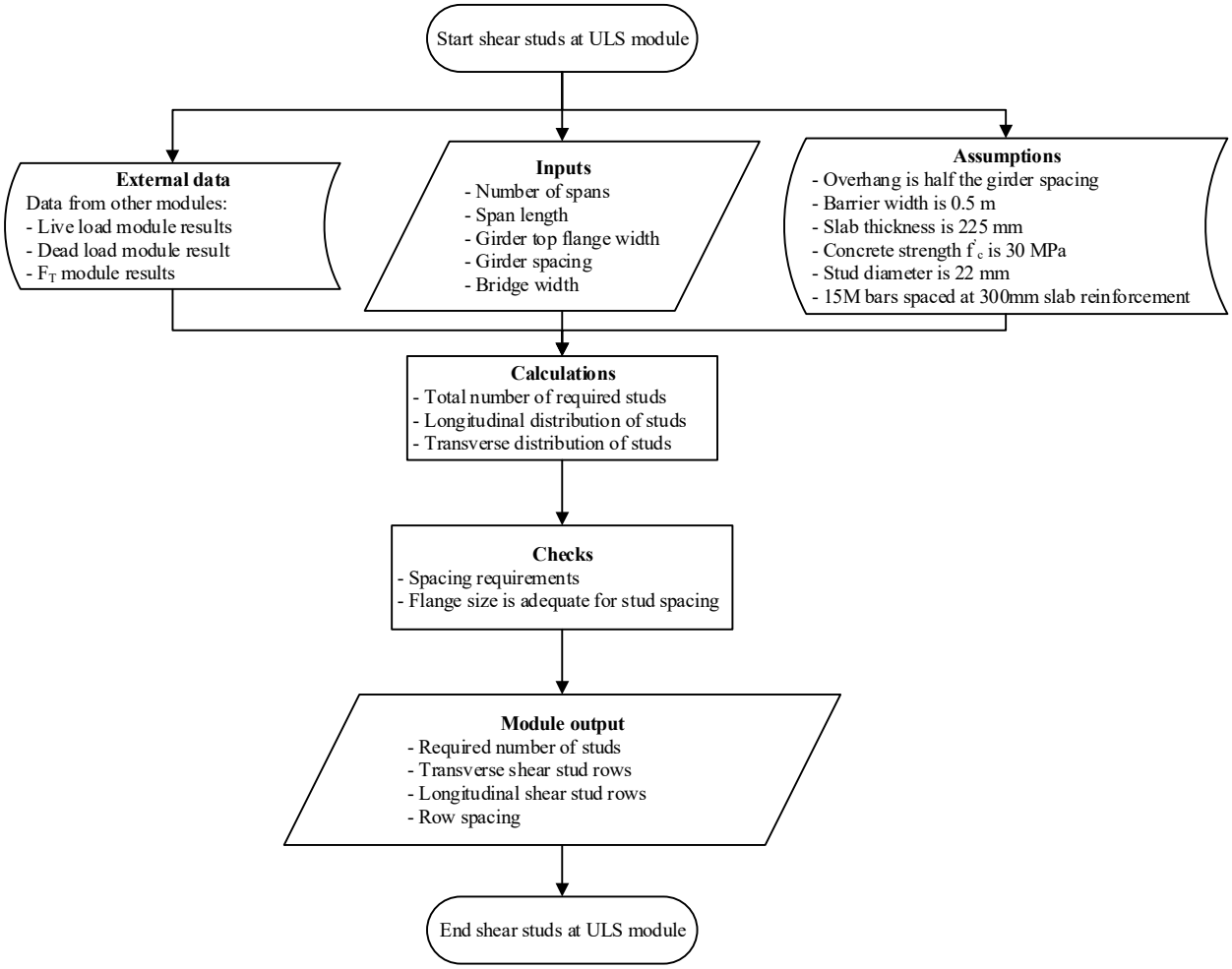

Figure 4.16: Flowchart showing the back-end operations of the shear stud design at ULS module developed as part of the I-girder design software

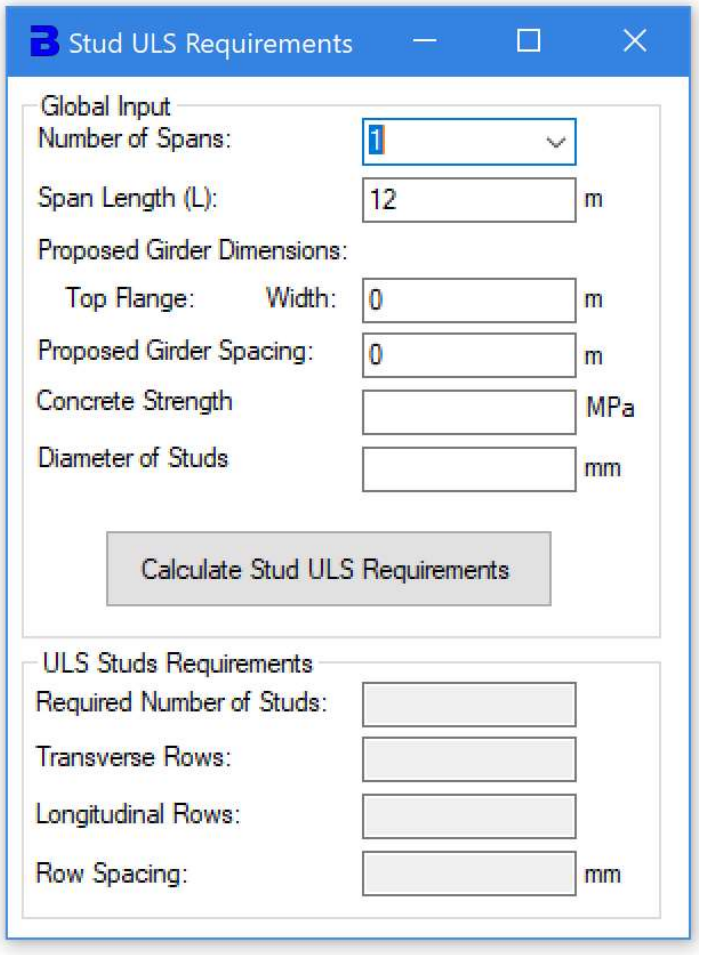

Figure 4.17: Screenshot showing the front-end layout of the of the shear stud design at ULS module developed as part of the I-girder design software

4.2.4 FLS design modules

The first module in the FLS design modules is the FLS adequacy module. This module obtains input from the design load values calculation modules in addition to user input regarding number of spans, span length, girder dimensions, number of girders, girder spacing and, bridge width. The module calculates the applied and resisting fatigue stress ratios for an expected bridge life expectancy of 75 years in accordance with the CHBDC. The program then conducts the checks required and provides the user with an output indicating whether or not the girder section is adequate for the applied fatigue stress range and cycles during its lifespan. The back-end operations of the module can be seen in Figure 18. The front-end GUI of the module can be seen in Figure 19.

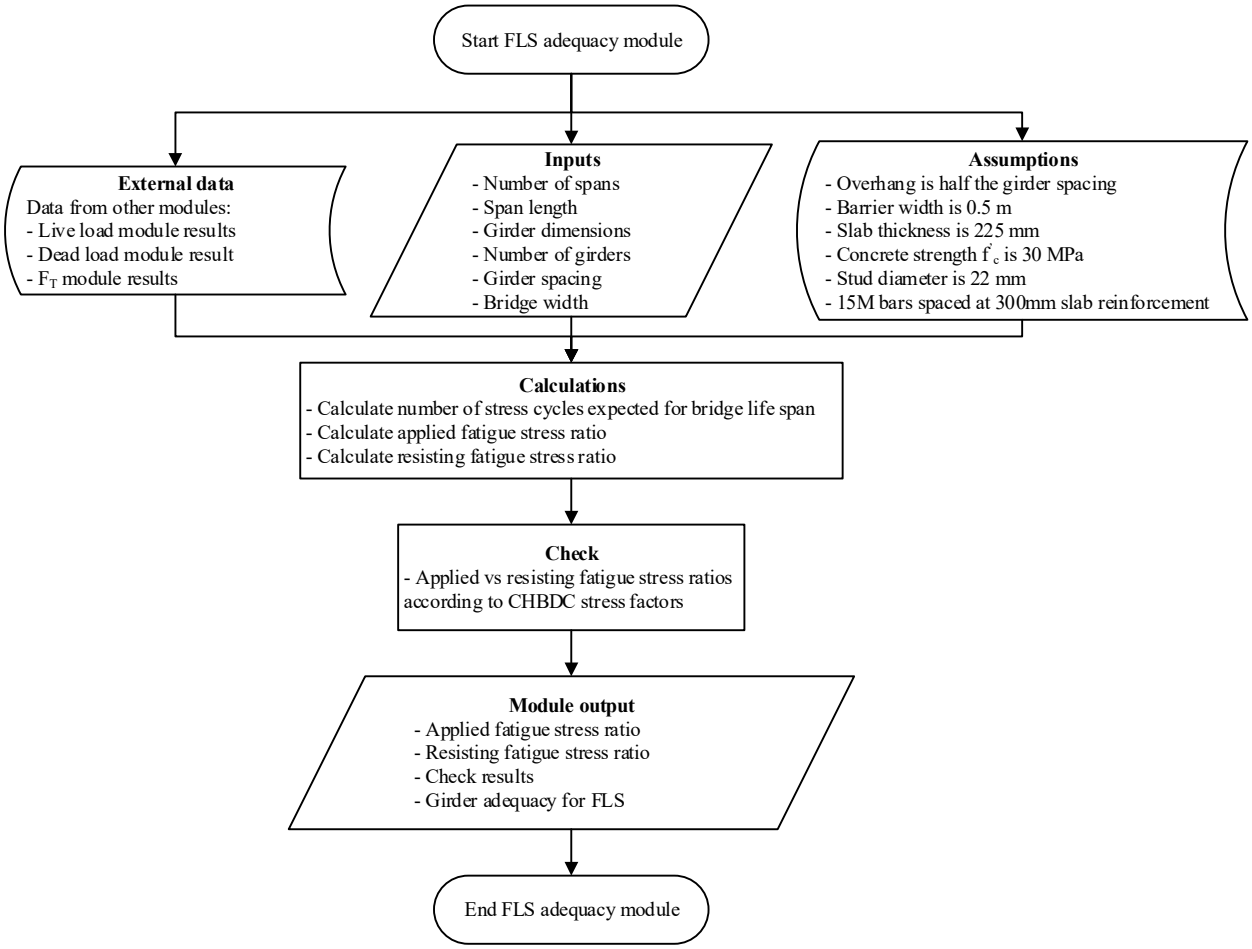

Figure 4.18: Flowchart showing the back-end operations of the FLS adequacy module developed as part of the I-girder design software

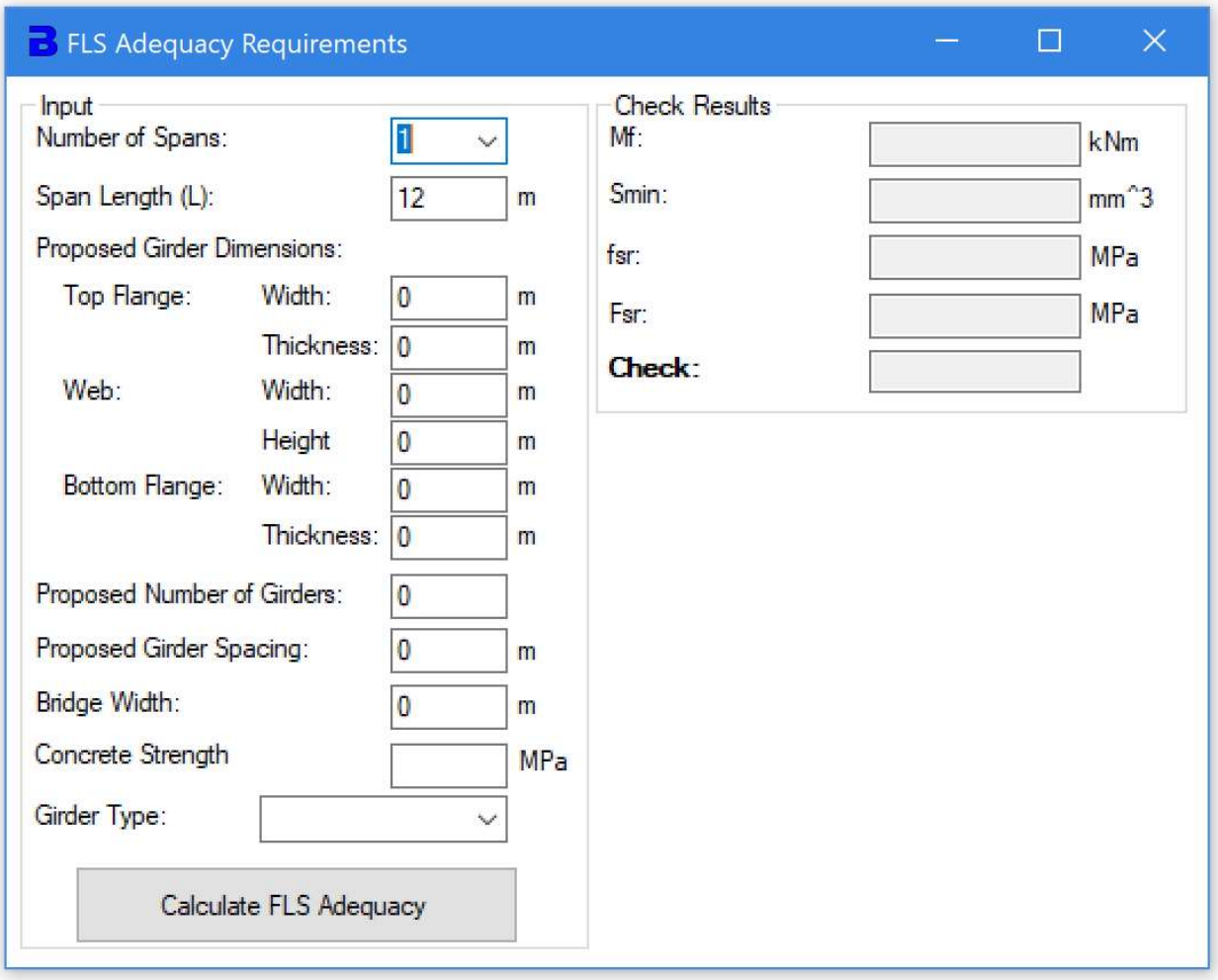

Figure 4.19: Screenshot showing the front-end layout of the of the FLS adequacy module developed as part of the I-girder design software

The last module in the FLS category is the shear stud design at FLS module. This module obtains input from the design load values calculation modules in addition to user input regarding number of spans, span length, girder dimensions, number of girders, girder spacing and, bridge width. It conducts similar calculations to the FLS adequacy module. In addition to the previously stated assumptions, this module assumes a stud diameter of 22 mm. The output from this module includes the total required number of studs, the number of transverse shear stud rows, the number of longitudinal shear stud rows and, the row spacing. The back-end operations of the module can be seen in Figure 20. The front-end GUI of the module can be seen in Figure 21.

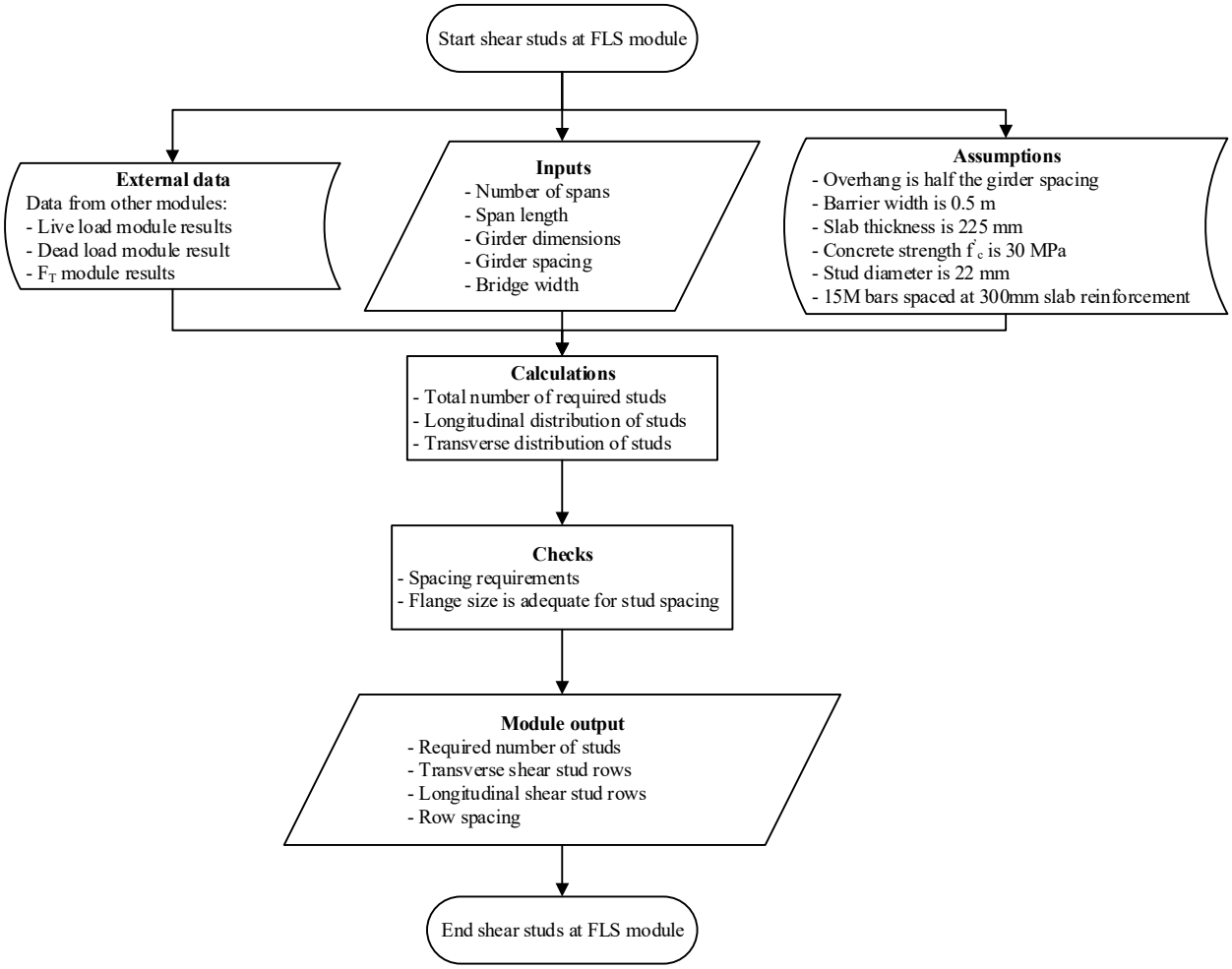

Figure 4.20: Flowchart showing the back-end operations of the shear studs design at FLS module developed as part of the I-girder design software

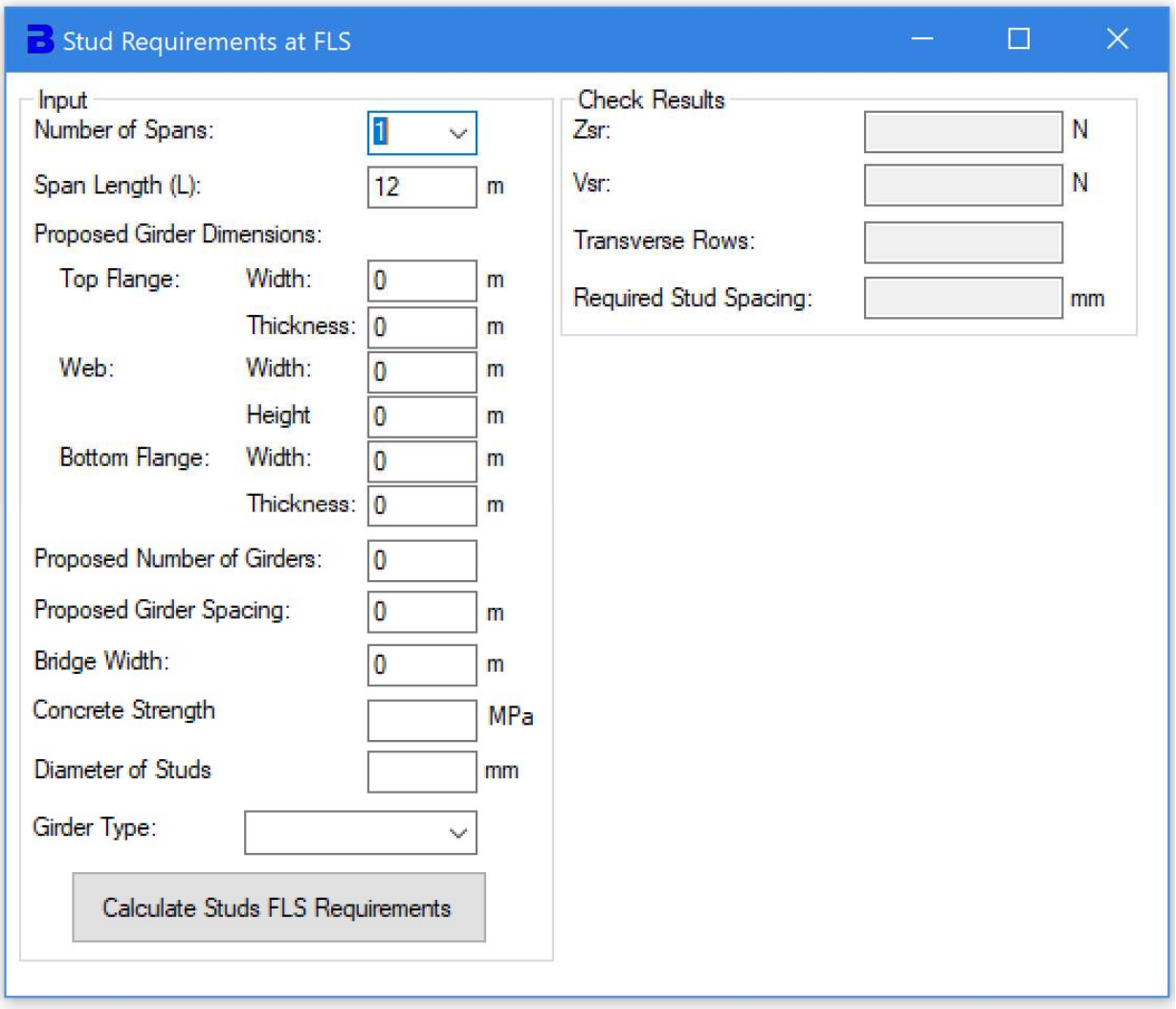

Figure 4.21: Screenshot showing the front-end layout of the of the shear studs design at FLS module developed as part of the I-girder design software

4.2.5 I-girder size optimization module

This module combines all the previous modules into one module. This module obtains user input regarding number of spans, span length, number of girders, girder spacing, bridge width, truck loading and shoulder width. It makes the same assumptions as the collective of all the previously discussed modules in addition to a travel lane of 3.5m. It creates a doubly symmetric I-girder section with a starting flange width (b) of 240 mm, flange and web thickness (w and t) of 12 mm and, a web height initial value of $\frac{L}{25}$ x 1000 mm. The module calculates the applied design loads, then conducts all the checks conducted by the previously discussed modules and, designs

the shear studs for midspan and support locations. In case the girder does not meet the check requirements, the program increases its size while maintaining its status as a class 2 section. In contrast, if the section is overdesigned, the program repeats the process in order to obtain a more economical section. The program repeats this process until it reaches the boundary condition where any further decrease in the girder section size makes it inadequate. The program then provides the user with all the check results in addition to the optimized girder section size and shear stud design parameters for midspan and support locations. The back-end operations of the module can be seen in Figure 22. The front-end GUI of the module can be seen in Figure 23.

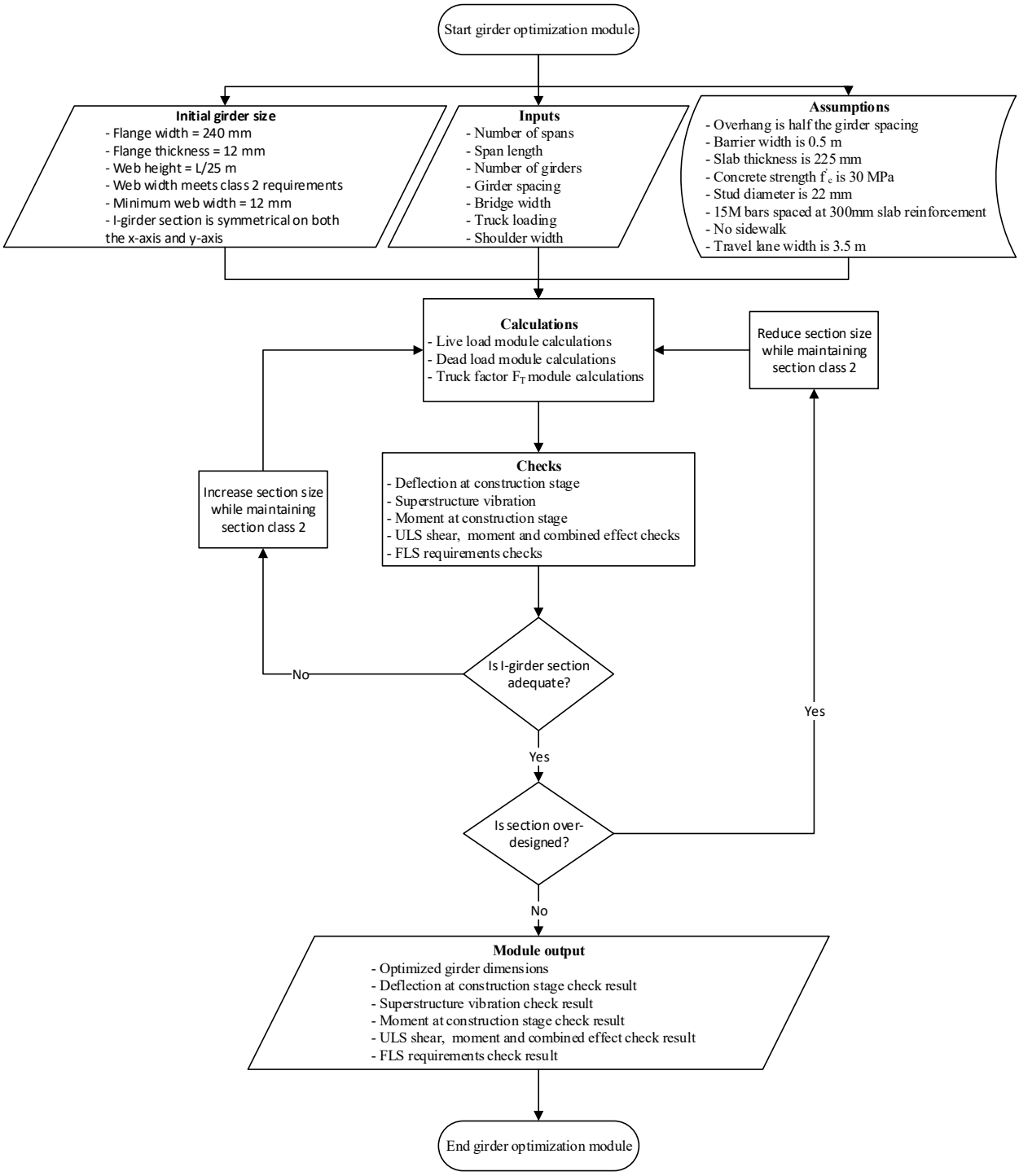

Figure 4.22: Flowchart showing the back-end operations of the girder optimization module developed as part of the I-girder design software

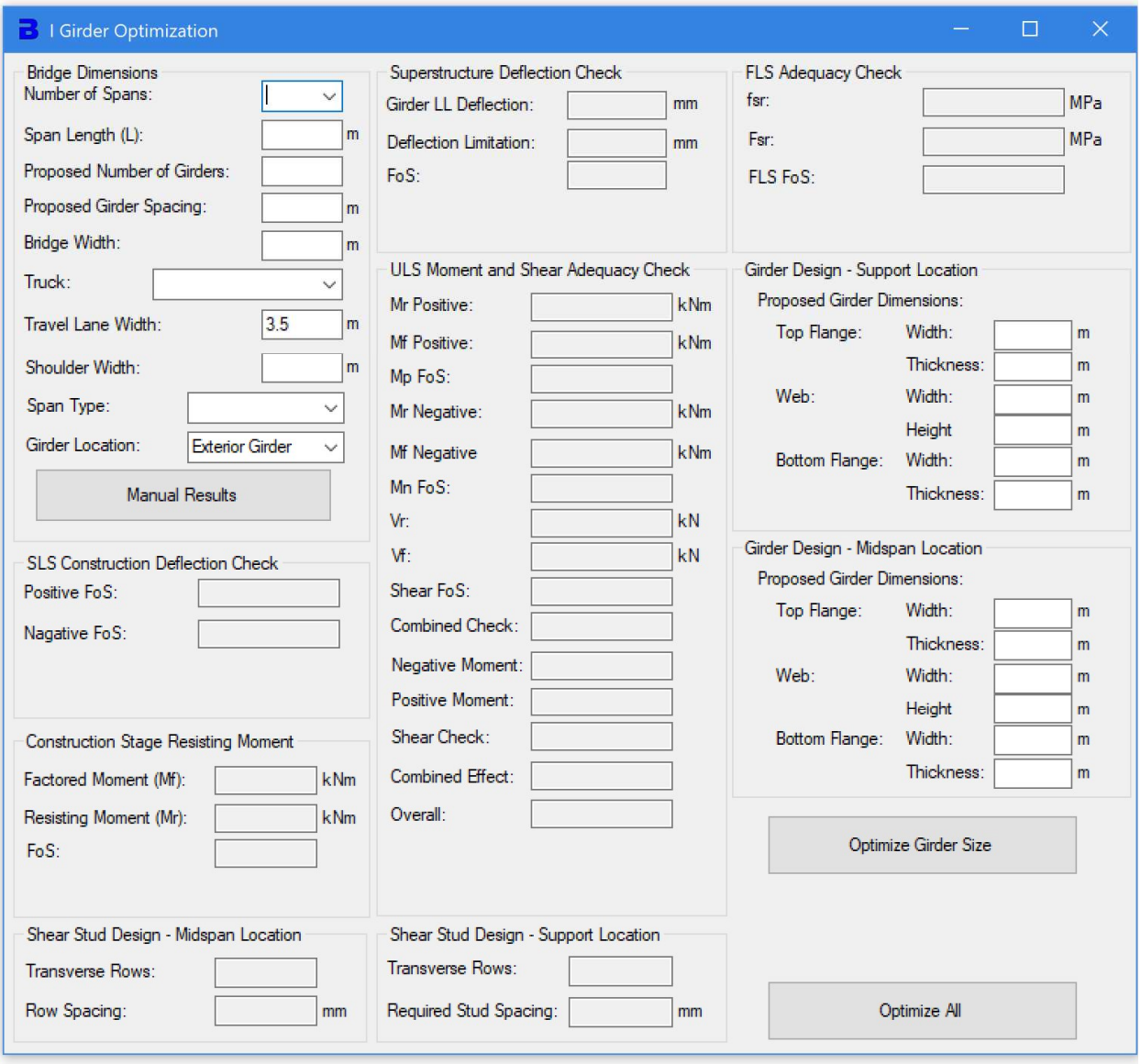

Figure 4.23: Screenshot showing the front-end layout of the of the girder optimization module developed as part of the I-girder design software

4.3 Program result verification

In order to verify the program results, a full design example from the CISC "Steel Bridges, Design, Fabrication, Construction" course design examples book was selected (CISC, 2016). A composite slab on steel plate girder example was selected as it is a straight plate girder bridge which matches the research scope of work. The bridge selected had a span of 45 m and a lane width of 3.75 m. The girders were spaced at 2.9 m center to center. The manual results were compared to results from the program. The results can be seen in Table 4.1.

Table 4.1: Comparison between manual calculation results and program results for a CISC composite concrete slab on straight plate girder bridge design example

Value analyzed	**Manual results**	**Program results**
M_f at ULS	17600 kN.m	18200 kN.m
V_f at ULS	1739 kN	1740 kN
Δ_{Limit} at SLS	80 mm	79 mm
Δ_{LL} at SLS	33 mm	33 mm
Construction phase M_f	10000 kN.m	10200 kN.m
Construction phase M_r	11000 kN.m	11300 kN.m
Extreme fiber stress	207 MPa	245 MPa
Composite section M_r	25000 kN.m	24600 kN.m
Composite section V_r	3745 kN	3250 kN
Shear studs at ULS	3 per row @ 600 mm	3 per row @ 600 mm
Shear studs at FLS	3 per row @ 430 mm	3 per row @ 470 mm

As can be observed, the program provides accurate and conservative results when compared to manual calculation. The variation in some data is due to the assumptions made by the program. For instance, the shear resistance heavily depends on the intermediate stiffener spacing. The program assumes stiffener spacing at 2 meters for this case. However, when manually designed, designers can choose to lower the spacing or increase it in order to match the applied factored shear at ULS. As for the remaining values, the program results show excellent representation of manual calculations with a slight overestimation of applied forces and underestimation of resisting forces.

4.4 Program parametric study

In order to produce equations that assist designers in obtaining optimized I-girder sizes. The program was used to obtain optimized results for various different bridge configurations between

1 to 6 design lanes shown in Table 4.2. The parametric study was conducted once for CL-625 truck loading and once for CL-800 truck loading. The CL-625-ONT truck loading case was not considered in this study as it was shown in Figure 3.37 that the variation in results between the CL-625 truck loading and the CL-625-ONT truck loading is within 3%.

Table 4.2: Table showing the bridge configuration cases optimized by the program per truck loading per span length

Number of design lanes	Bridge width, B (m)	Deck width, Wc (m)	Design lane width, We (m)	Number of girders	Girder spacing (m)	Travelling lane width (m)	Shoulder width (m)
1	4.5	3.5	3.5	3	1.5	3.5	0
1	6.0	5.0	5.0	3	2.00	3.5	0.75
				4	1.50	3.3	0.75
1	7.0	6.0	6.0	3	2.33	3.5	1.25
				4	1.75	3.5	1.25
2	8	7	3.5	3	2.67	3.5	0
				4	2.00	3.5	0
				5	1.6	3.5	0
2	9.5	8.5	4.25	3	3.17	3.5	0.75
				4	2.375	3.5	0.75
				5	1.9	3.5	0.75
				6	1.583		
2	11	10	5	3	3.67	3.5	1.5
				4	2.75	3.5	1.5
				5	2.2	3.5	1.5
				6	1.833	3.5	1.5
				7	1.57	3.5	1.5
2	11.5	10.5	5.25	4	2.875	3.5	1.75
				5	2.3	3.5	1.75
				6	1.917	3.5	1.75
				7	1.643	3.5	1.75
2	13	12	6	4	3.25	3.5	2.5
				5	2.6	3.5	2.5
				6	2.167	3.5	2.5
				7	1.857	3.5	2.5
2	14.5	13.5	6.75	4	3.625	3.5	3.25
				5	2.9	3.5	3.25
				6	2.417	3.5	3.25
				7	2.07	3.5	3.25
3	11.5	10.5	3.5	4	2.875	3.5	0
				5	2.3	3.5	0
				6	1.917	3.5	0
				7	1.643	3.5	0
3	13	12	4	4	3.25	3.5	0.75
				5	2.6	3.5	0.75
				6	2.167	3.5	0.75
				7	1.857	3.5	0.75
3	14.5	13.5	4.5	4	3.625	3.5	1.5
				5	2.9	3.5	1.5

Number of design lanes	Bridge width, B (m)	Deck width, Wc (m)	Design lane width, We (m)	Number of girders	Girder spacing (m)	Travelling lane width (m)	Shoulder width (m)
				6	2.417	3.5	1.5
				7	2.07	3.5	1.5
4	15	14	3.5	5	3	3.5	0
				6	2.5	3.5	0
				7	2.14	3.5	0
				8	1.875	3.5	0
				9	1.67	3.5	0
4	16.5	15.5	3.875	5	3.3	3.5	0.75
				6	2.75	3.5	0.75
				7	2.357	3.5	0.75
				8	2.06	3.5	0.75
				9	1.83	3.5	0.75
4	18.0	17.0	4.25	5	3.6	3.5	1.5
				6	3	3.5	1.5
				7	2.57	3.5	1.5
				8	2.25	3.5	1.5
				9	2	3.5	1.5
5	18.5	17.5	3.5	6	3.08	3.5	0
				7	2.64	3.5	0
				8	2.32	3.5	0
				9	2.06	3.5	0
				10	1.85	3.5	0
5	21.5	20.5	4.1	6	3.58	3.5	1.5
				7	3.07	3.5	1.5
				8	2.69	3.5	1.5
				9	2.39	3.5	1.5
				10	2.15	3.5	1.5
6	22	21	3.5	7	3.14	3.5	0
				8	2.75	3.5	0
				9	2.44	3.5	0
				10	2.2	3.5	0
				11	2	3.5	0
				12	1.83	3.5	0
6	25	24	4	7	3.57	3.5	1.5
				8	3.125	3.5	1.5
				9	2.78	3.5	1.5
				10	2.5	3.5	1.5
				11	2.27	3.5	1.5
				12	1.83	3.5	1.5

The scope of the optimization was as follows:

1- Girder spacing is between 1.5 m and 3.67 m

2- Slab thickness = 225 mm

3- Travelling lane width = 3.5 m

4- Number of design lanes is from 1 to 6
5- Number of steel I-girders is from 3 to 12
6- Span lengths between 12 m to 48 m with 4 meter increments

The cases in Table 4.2 were repeated for bridges of span lengths 12 m to 48 m, for truck loadings of CL-625 and CL-800 and, for single span to four-equal span bridge configurations. The total cases to be optimized were 6240 bridge configuration cases.

The optimized results data for 20 m single span bridge configurations studied under CL-625 truck loading is shown as an example in Table 4.3. In this table, N signifies the number of girders, S represents the girder spacing, B represents the bridge width, n represents the number of design lanes, Aw / S is the total web area per unit width, Is / S represents the steel section moment of inertia per unit width and, Ics / S represents the composite section moment of inertia per unit width. As can be observed in the table, the lowest CTD ratio for any given bridge configuration is 1.00 approximated to 2 decimal places. It can also be observed that multiple cases can govern design. The full results for all 6240 bridge configurations including shear studs design can be found in Appendix A.

Table 4.3: Table showing the optimized results data for20 m single span bridge configurations studied under CL-625 truck loading

N	S (m)	B (m)	Shoulder (m)	n	Construction stage permanent deflection CTD	Superstructure Vibration CTD	Construction Stage Moment CTD	ULS Moment CTD	ULS Shear CTD	FLS CTD Ratio	Aw / S (mm)	Is / S (mm^3)	Ics / S (mm^3)
3	1.5	4.5	0	1	1.38	1.04	1.96	1.41	1.72	1.00	6.98	1749954	4862033
3	2	6	0.75	1	1.50	1.02	1.99	1.52	1.66	1.00	5.54	1873152	5048677
3	2.33	7	1.25	1	1.00	1.71	1.29	1.07	1.34	1.27	4.49	1110056	3375663
4	1.5	6	0.75	1	1.36	1.04	1.88	1.40	1.73	1.00	6.94	1669964	4701923
4	1.75	7	1.25	1	1.00	1.32	1.25	1.12	1.59	1.01	5.64	1020159	3253639
3	2.67	8	0	2	1.36	1.13	1.77	1.38	1.28	1.00	4.27	1681003	4583121
3	3.17	9.5	0.75	2	1.05	1.39	1.29	1.10	1.06	1.00	3.49	1173820	3441331
3	3.67	11	1.5	2	1.00	2.08	1.29	1.02	1.00	1.49	3.28	1267026	3684755
4	2	8	0	2	1.33	1.10	1.68	1.40	1.59	1.00	5.35	1502718	4273776
4	2.375	9.5	0.75	2	1.02	1.35	1.22	1.13	1.32	1.00	4.37	1041479	3214883
4	2.75	11	1.5	2	1.00	2.04	1.27	1.05	1.18	1.52	3.90	1116488	3345400
4	2.875	11.5	1.75	2	1.00	2.23	1.26	1.05	1.14	1.65	3.76	1111814	3325627
4	3.25	13	2.5	2	1.00	2.20	1.23	1.05	1.03	1.59	3.39	1106606	3283265
4	3.625	14.5	3.25	2	1.00	2.27	1.28	1.02	1.00	1.65	3.26	1230406	3589323
5	1.6	8	0	2	1.23	1.09	1.60	1.31	1.69	1.00	6.38	1372899	4059292
5	1.9	9.5	0.75	2	1.00	1.38	1.17	1.15	1.56	1.01	5.22	952485	3076758
5	2.2	11	1.5	2	1.00	2.06	1.24	1.09	1.41	1.55	4.67	1048103	3253580
5	2.3	11.5	1.75	2	1.00	2.24	1.23	1.09	1.36	1.68	4.49	1040920	3221187
5	2.6	13	2.5	2	1.00	2.21	1.20	1.08	1.23	1.61	4.05	1037364	3183385
5	2.9	14.5	3.25	2	1.00	2.27	1.26	1.05	1.14	1.67	3.73	1115103	3329834
6	1.583	9.5	0.75	2	1.07	1.20	1.36	1.18	1.65	1.00	6.24	1115934	3502630
6	1.833	11	1.5	2	1.00	2.08	1.22	1.12	1.61	1.58	5.41	992503	3178103
6	1.917	11.5	1.75	2	1.00	2.27	1.20	1.12	1.56	1.71	5.20	987679	3153777
6	2.167	13	2.5	2	1.00	2.24	1.18	1.12	1.42	1.64	4.68	982870	3107285
6	2.417	14.5	3.25	2	1.00	2.22	1.24	1.08	1.32	1.70	4.32	1059772	3254172
7	1.57	11	1.5	2	1.00	2.04	1.19	1.15	1.77	1.60	6.11	946352	3116427
7	1.643	11.5	1.75	2	1.00	2.23	1.18	1.15	1.73	1.74	5.89	943135	3099381
7	1.857	13	2.5	2	1.00	2.20	1.16	1.15	1.59	1.67	5.30	938360	3048216
7	2.07	14.5	3.25	2	1.00	2.25	1.22	1.10	1.49	1.72	4.89	1013089	3189678
4	2.875	11.5	0	3	1.34	1.09	1.74	1.34	1.22	1.00	4.02	1679048	4564082
4	3.25	13	0.75	3	1.05	1.35	1.30	1.09	1.05	1.00	3.43	1187020	3465965
4	3.625	14.5	1.5	3	1.00	2.06	1.28	1.02	1.00	1.50	3.26	1230406	3589323

N	S (m)	B (m)	Shoulder (m)	n	Construction stage permanent deflection CTD	Superstructure Vibration CTD	Construction Stage Moment CTD	ULS Moment CTD	ULS Shear CTD	FLS CTD Ratio	Aw / S (mm)	Is / S (mm^3)	Ics / S (mm^3)
5	2.3	11.5	0	3	1.32	1.09	1.68	1.36	1.44	1.00	4.78	1542410	4326510
5	2.6	13	0.75	3	1.03	1.33	1.25	1.11	1.24	1.00	4.08	1083748	3289121
5	2.9	14.5	1.5	3	1.00	2.06	1.26	1.05	1.14	1.52	3.73	1115103	3329834
6	1.917	11.5	0	3	1.30	1.09	1.62	1.37	1.64	1.00	5.51	1434532	4142200
6	2.167	13	0.75	3	1.01	1.32	1.20	1.13	1.43	1.00	4.69	1000568	3145459
6	2.417	14.5	1.5	3	1.00	1.71	1.24	1.08	1.32	1.31	4.32	1059772	3254172
7	1.643	11.5	0	3	1.28	1.09	1.57	1.38	1.80	1.00	6.21	1343712	3987498
7	1.857	13	0.75	3	1.00	1.32	1.16	1.15	1.59	1.00	5.30	938360	3048216
7	2.07	14.5	1.5	3	1.00	1.49	1.22	1.10	1.49	1.14	4.89	1013089	3189678
5	3	15	0	4	1.36	1.11	1.76	1.34	1.18	1.00	3.89	1706902	4615071
5	3.3	16.5	0.75	4	1.06	1.30	1.30	1.09	1.04	1.00	3.39	1190004	3468018
5	3.6	18	1.5	4	1.00	2.03	1.27	1.02	1.00	1.49	3.25	1209014	3533277
6	2.5	15	0	4	1.34	1.06	1.71	1.36	1.36	1.00	4.48	1595642	4421218
6	2.75	16.5	0.75	4	1.04	1.30	1.26	1.11	1.19	1.00	3.90	1106163	3324205
6	3	18	1.5	4	1.00	1.98	1.25	1.04	1.11	1.50	3.63	1116251	3323924
7	2.14	15	0	4	1.32	1.07	1.66	1.37	1.53	1.00	5.06	1504212	4262863
7	2.357	16.5	0.75	4	1.03	1.30	1.22	1.12	1.34	1.00	4.40	1036508	3206802
7	2.57	18	1.5	4	1.00	1.82	1.24	1.07	1.26	1.38	4.10	1067340	3252629
8	1.875	15	0	4	1.31	1.08	1.62	1.38	1.67	1.00	5.60	1420730	4116964
8	2.06	16.5	0.75	4	1.01	1.30	1.19	1.13	1.49	1.00	4.89	979044	3112972
8	2.25	18	1.5	4	1.00	1.56	1.22	1.09	1.39	1.22	4.56	1024532	3189834
9	1.67	15	0	4	1.26	1.09	1.58	1.35	1.70	1.00	6.13	1352714	4002331
9	1.83	16.5	0.75	4	1.01	1.31	1.17	1.15	1.60	1.00	5.37	944517	3066832
9	2	18	1.5	4	1.00	1.42	1.20	1.11	1.53	1.10	5.02	990008	3145409
6	3.08	18.5	0	5	1.37	1.06	1.77	1.35	1.17	1.00	3.81	1725940	4649750
6	3.58	21.5	1.5	5	1.00	2.01	1.26	1.02	1.00	1.48	3.25	1196812	3500261
7	2.64	18.5	0	5	1.35	1.07	1.72	1.36	1.31	1.00	4.30	1631841	4484212
7	3.07	21.5	1.5	5	1.00	1.98	1.25	1.04	1.09	1.49	3.56	1116427	3319594
8	2.32	18.5	0	5	1.34	1.09	1.68	1.37	1.44	1.00	4.74	1546515	4331793
8	2.69	21.5	1.5	5	1.00	1.91	1.23	1.06	1.21	1.43	3.95	1072847	3253180
9	2.06	18.5	0	5	1.32	1.06	1.65	1.38	1.58	1.00	5.21	1476674	4213702
9	2.39	21.5	1.5	5	1.00	1.67	1.22	1.08	1.33	1.28	4.35	1037619	3205538
10	1.85	18.5	0	5	1.31	1.08	1.61	1.39	1.69	1.00	5.67	1415655	4112727
10	2.15	21.5	1.5	5	1.00	1.54	1.21	1.10	1.45	1.17	4.73	1006075	3162812

N	S (m)	B (m)	Shoulder (m)	n	Construction stage permanent deflection CTD	Superstructure Vibration CTD	Construction Stage Moment CTD	ULS Moment CTD	ULS Shear CTD	FLS CTD Ratio	Aw / S (mm)	Is / S (mm^3)	Ics / S (mm^3)
7	3.14	22	0	6	1.37	1.07	1.77	1.35	1.15	1.00	3.76	1739159	4674802
7	3.57	25	1.5	6	1.00	1.99	1.26	1.02	1.00	1.47	3.24	1184009	3466187
8	2.75	22	0	6	1.36	1.08	1.73	1.36	1.27	1.00	4.16	1653892	4523036
8	3.125	25	1.5	6	1.00	1.97	1.25	1.04	1.08	1.48	3.50	1114365	3308533
9	2.44	22	0	6	1.35	1.05	1.71	1.37	1.39	1.00	4.57	1588003	4409361
9	2.78	25	1.5	6	1.00	1.90	1.23	1.05	1.18	1.47	3.85	1078727	3259109
10	2.2	22	0	6	1.34	1.07	1.67	1.38	1.51	1.00	4.95	1515263	4279550
10	2.5	25	1.5	6	1.00	1.75	1.22	1.07	1.29	1.33	4.20	1047585	3217253
11	2	22	0	6	1.33	1.05	1.64	1.39	1.62	1.00	5.33	1460673	4188564
11	2.27	25	1.5	6	1.00	1.57	1.21	1.09	1.39	1.22	4.53	1018176	3174058
12	1.83	22	0	6	1.32	1.08	1.62	1.40	1.70	1.00	5.72	1420595	4126229
12	1.83	25	1.5	6	1.05	1.34	1.74	1.00	1.70	1.27	5.80	1558306	4417011

Chapter V

Software Results Analysis and Parametric Study

5.1 Effect of number of girders on moment of inertia

In order to study the effect of the number of girders on the moment of inertia for the steel and the composite sections per unit width (Is/S & Ics/S), multiple graphs were created where the bridge width (B) and the number of design lanes (n) were set to a constant value while changing the number of girders (N) for single span bridge configurations under CL-625 truck loading.

As can be seen in Figures 5.1 through 5.18, the moment of inertia of the steel section per unit width follows the same pattern regardless of the number of design lanes or bridge width. However, in the case of N = 12 for B = 25 m seen in Figure 5.19, the moment of inertia does not follow the same pattern exhibited in the other figures. This can be attributed to overdesigning of the bridge configuration due to an excessive amount of steel used to meet the design criteria. To conclude this portion of the study, the moment of inertia per unit width of the steel section show a good relationship with span length regardless of the bridge width or number of design lanes. The exception to this rule is the case of 12 girders used. This exception can be attributed to the use of an excessive amount of steel thus increasing the total moment of inertia and consecutively the moment of inertia per unit width for the steel section.

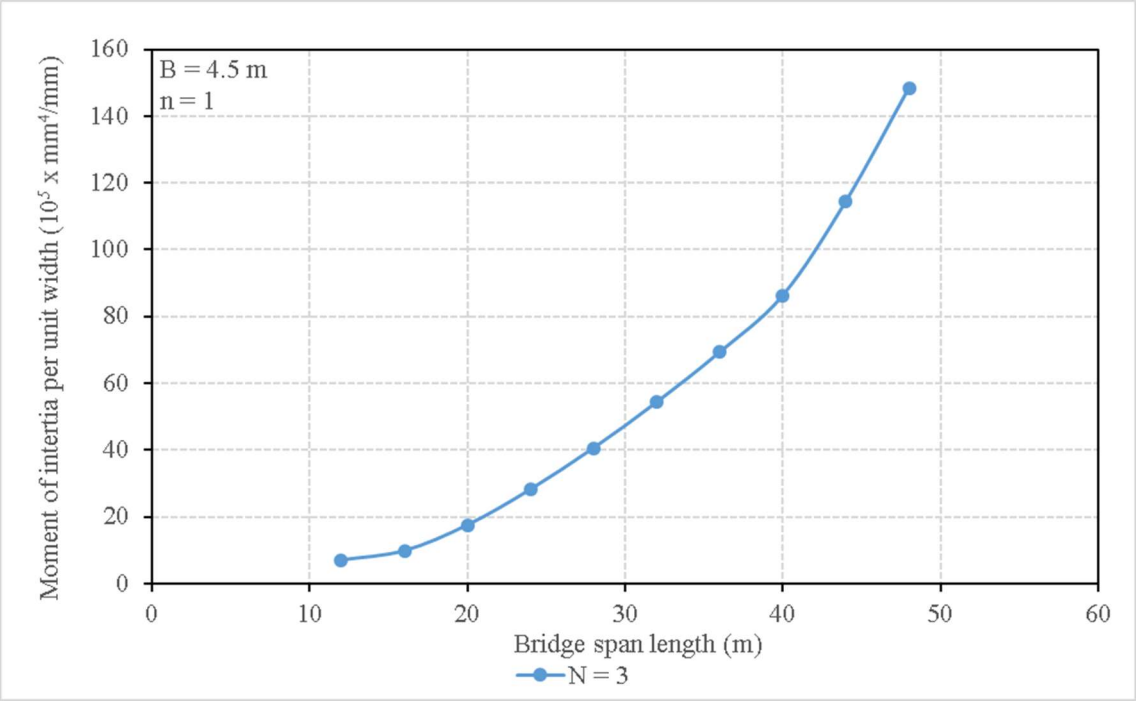

Figure 5.1: Moment of inertia of the steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading of 4.5 m width

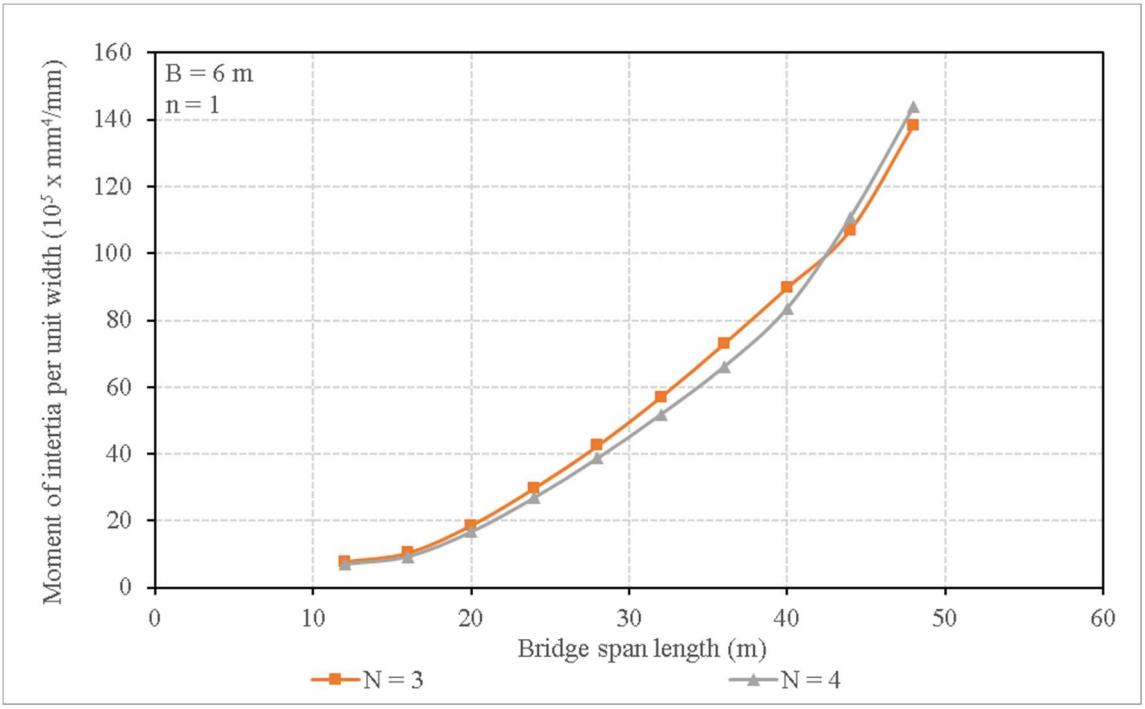

Figure 5.2: Moment of inertia of the steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading of 6 m width

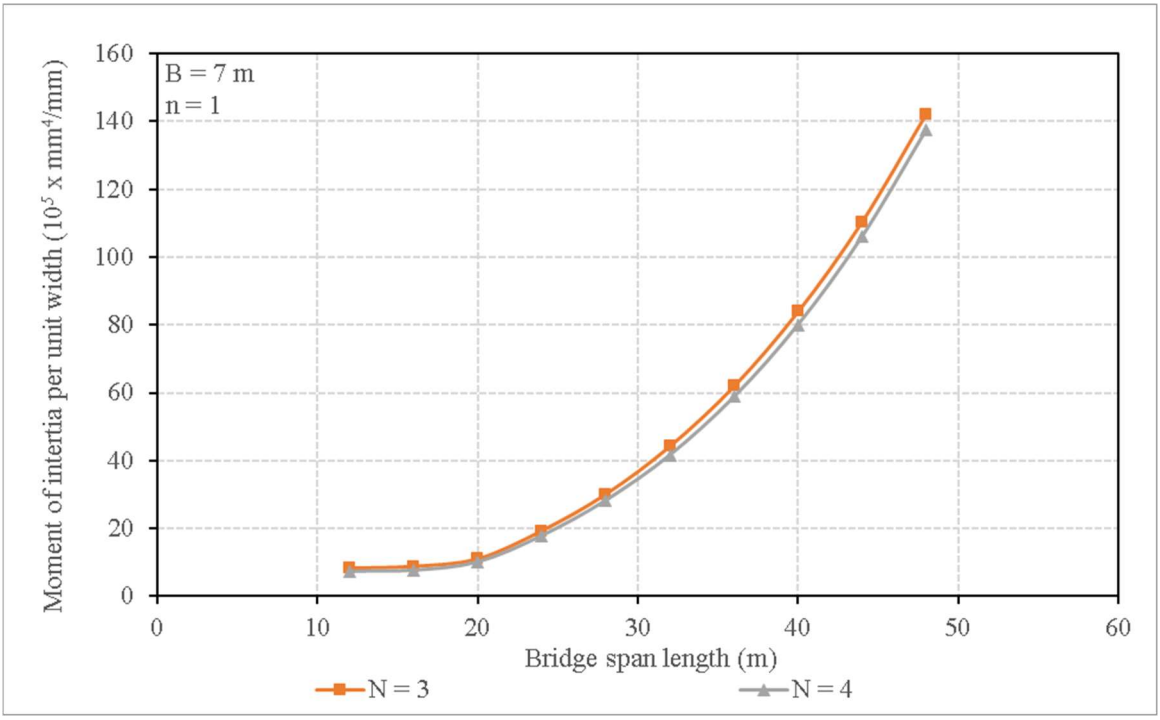

Figure 5.3: Moment of inertia of the steel section per unit width vs span length for a one -lane single span bridge under CL-625 truck loading of 7 m width

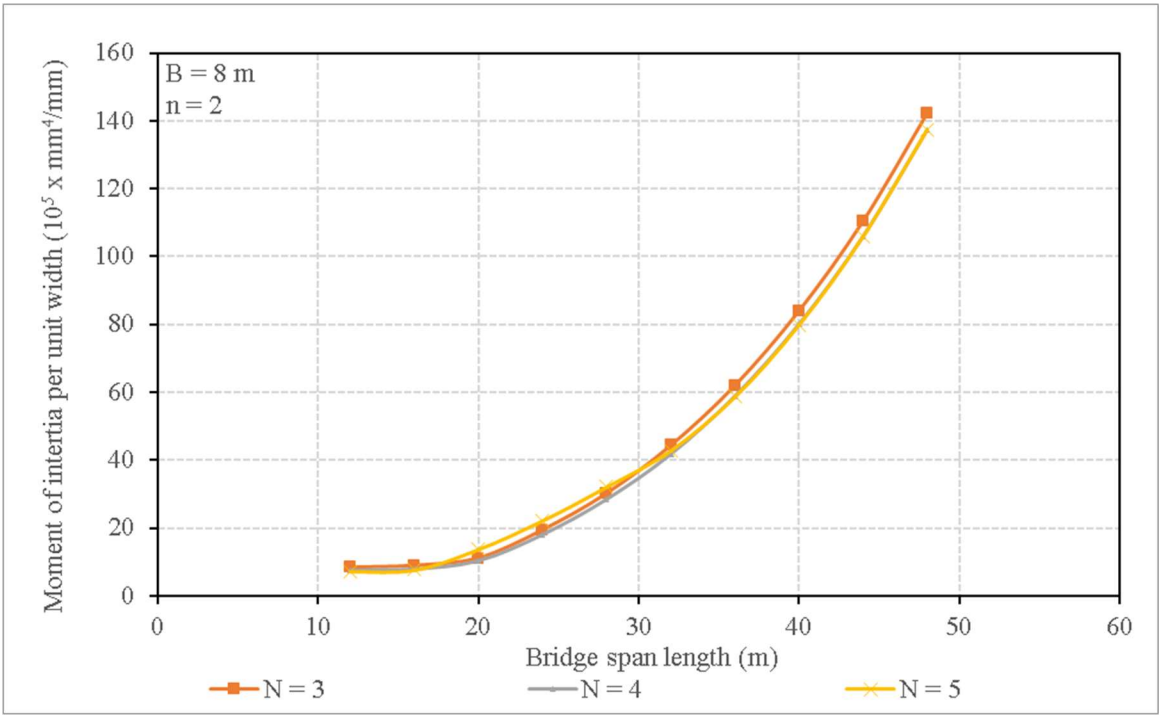

Figure 5.4: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 8 m width

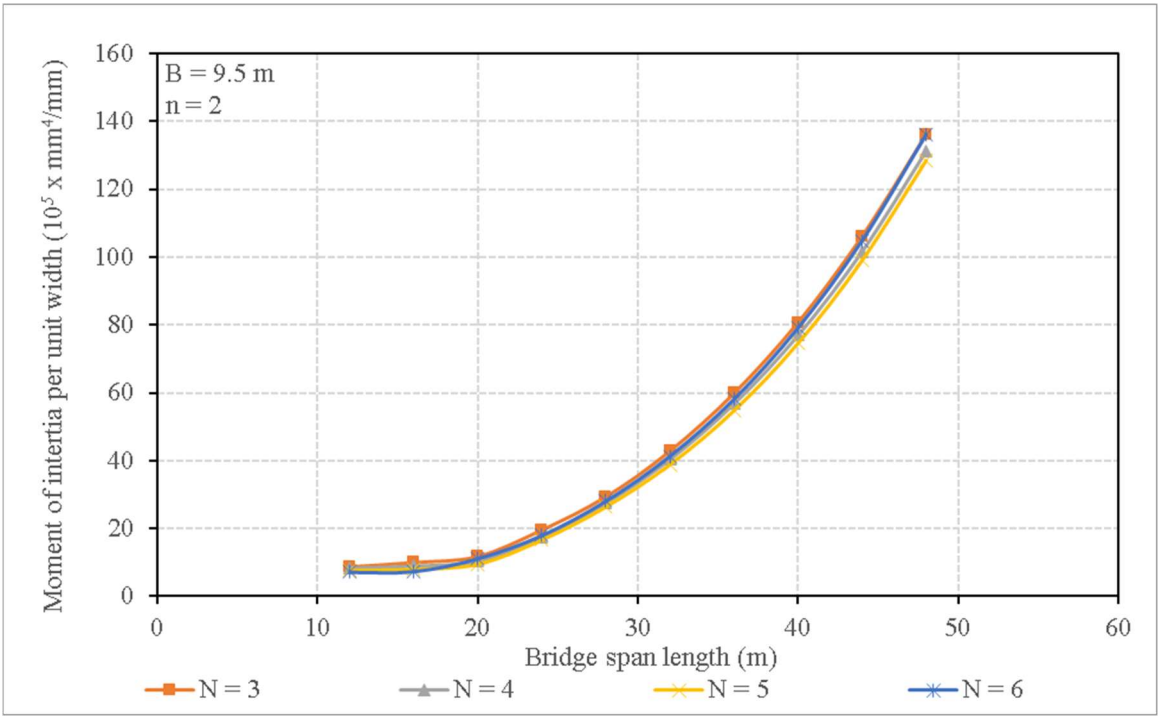

Figure 5.5: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 9.5 m width

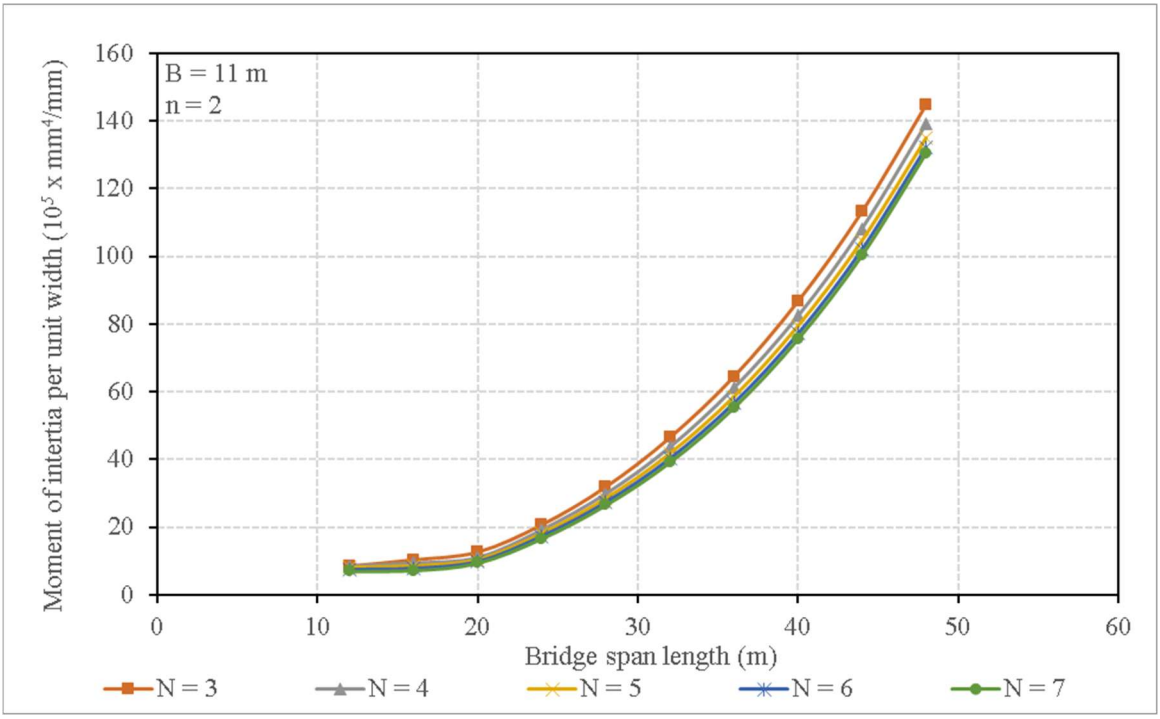

Figure 5.6: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 11 m width

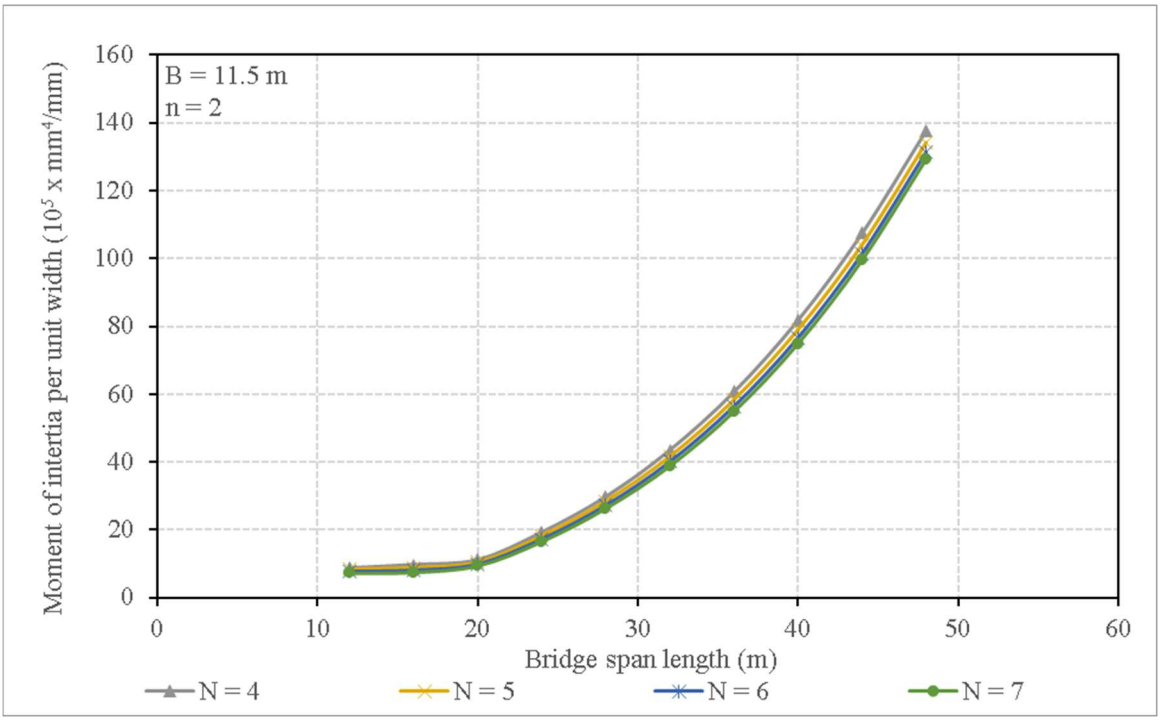

Figure 5.7: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 11.5 m width

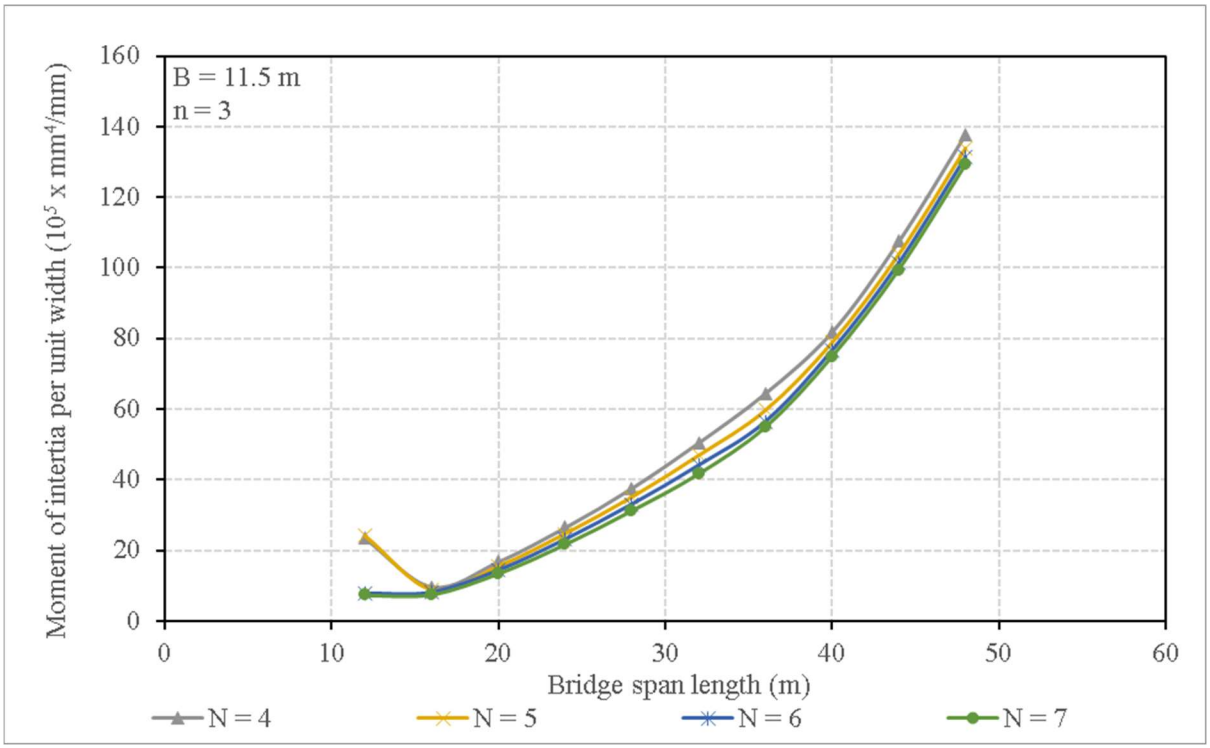

Figure 5.8: Moment of inertia of the steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading of 11.5 m width

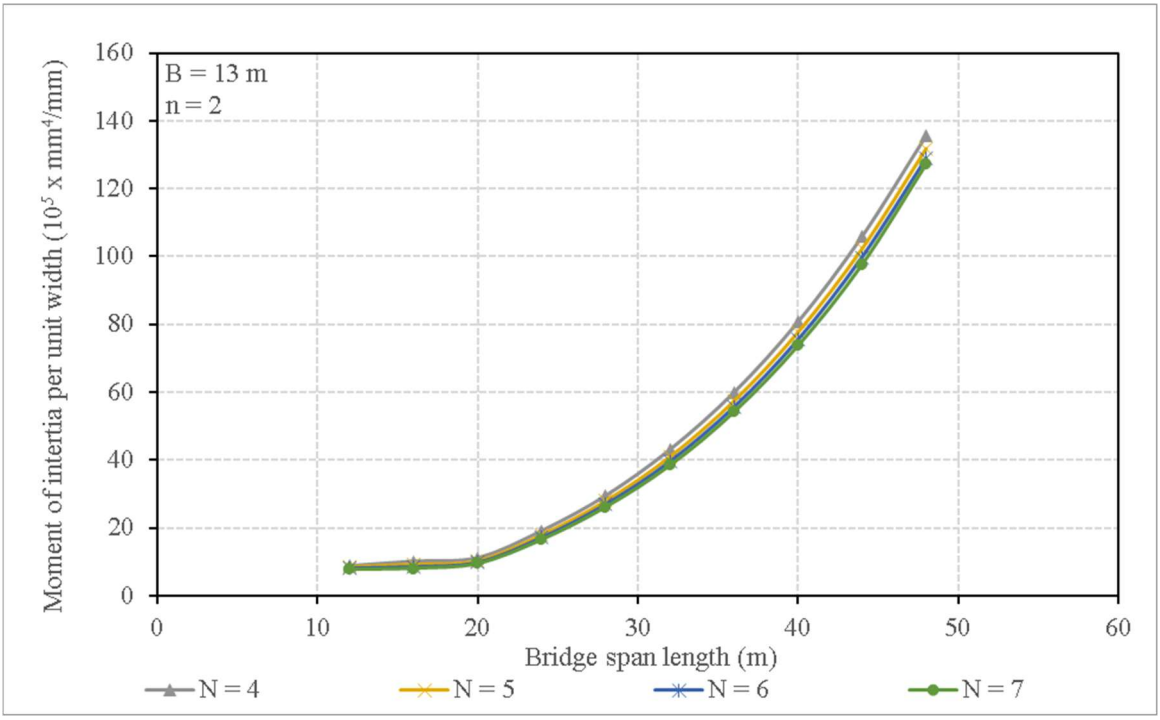

Figure 5.9: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 13 m width

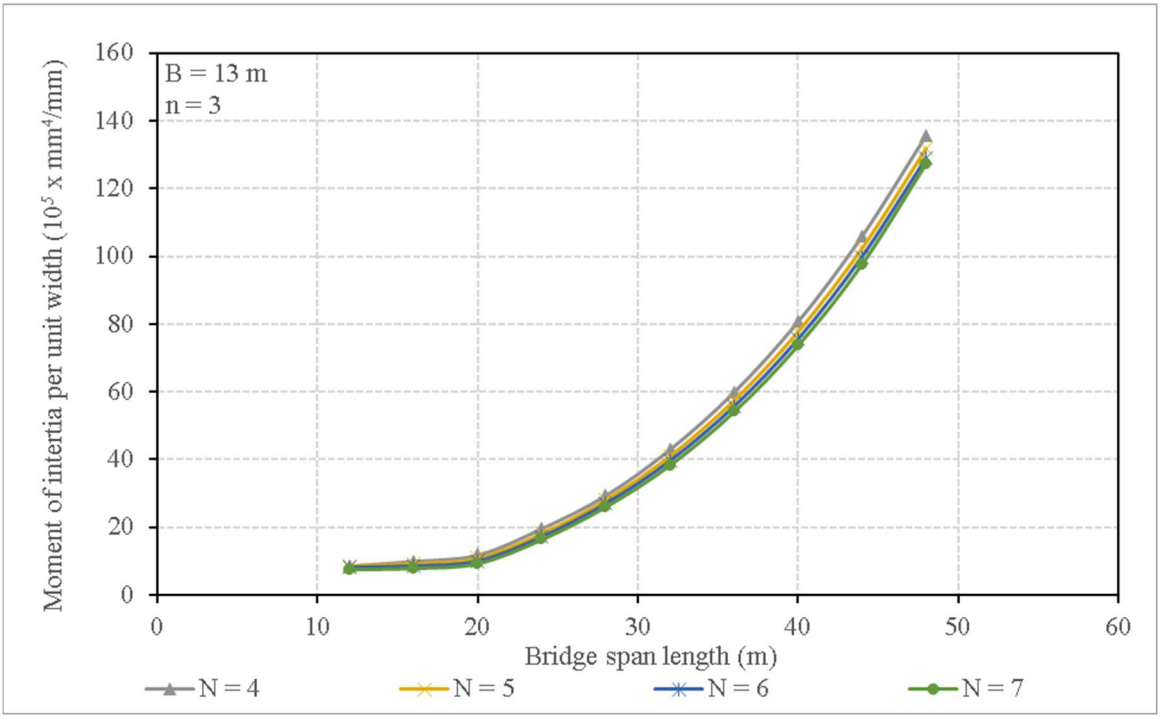

Figure 5.10: Moment of inertia of the steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading of 13 m width

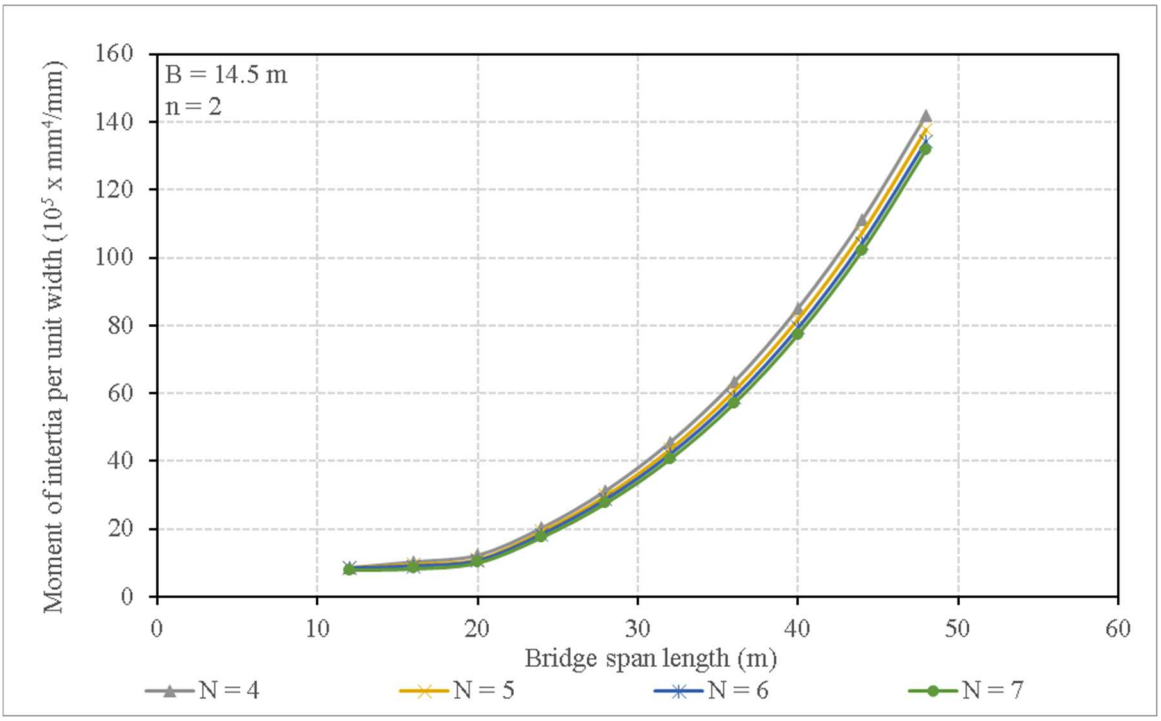

Figure 5.11: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 14.5 m width

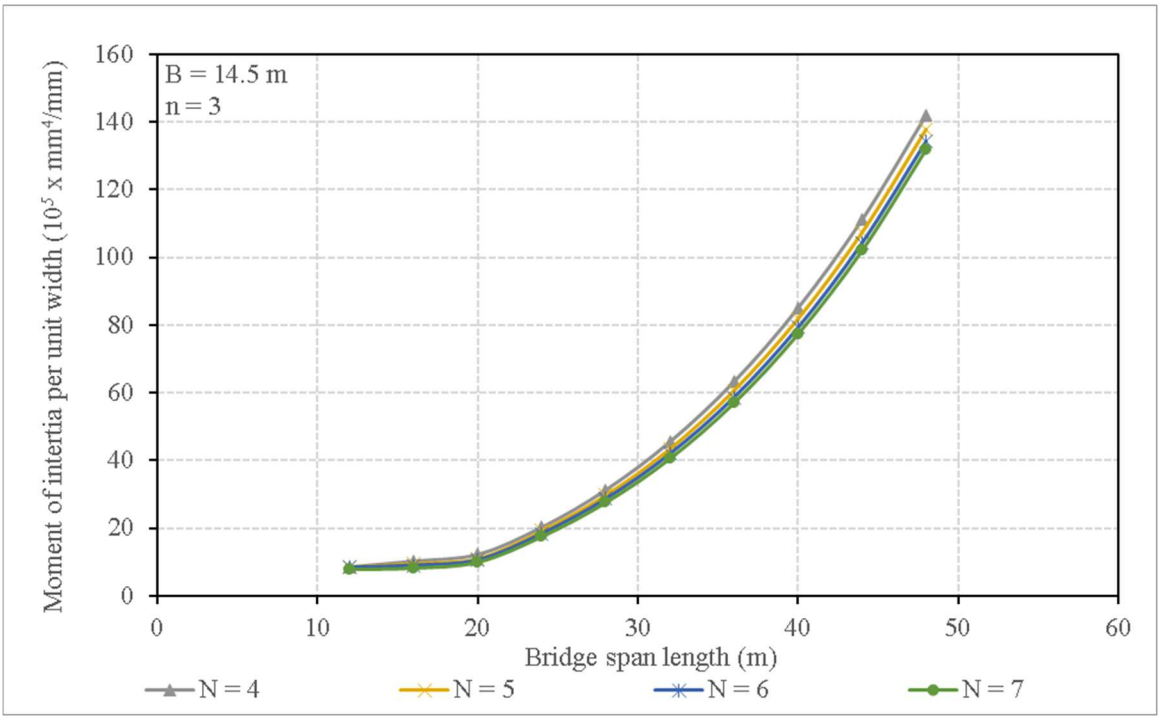

Figure 5.12: Moment of inertia of the steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading of 14.5 m width

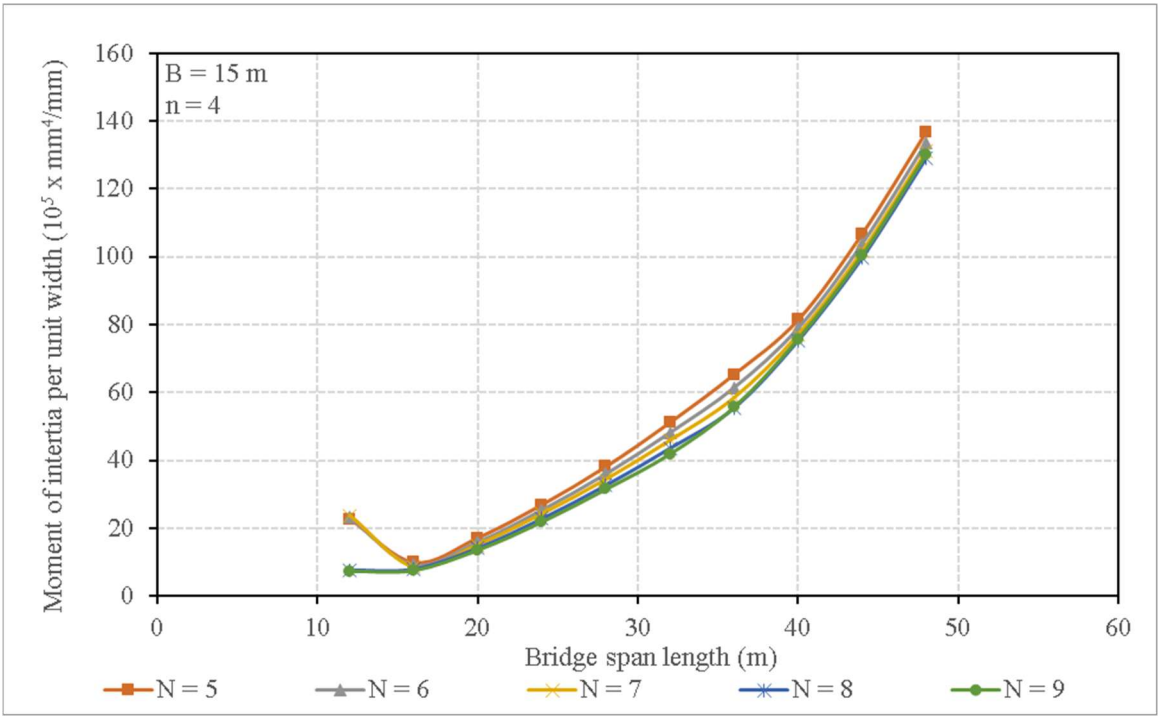

Figure 5.13: Moment of inertia of the steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading of 15 m width

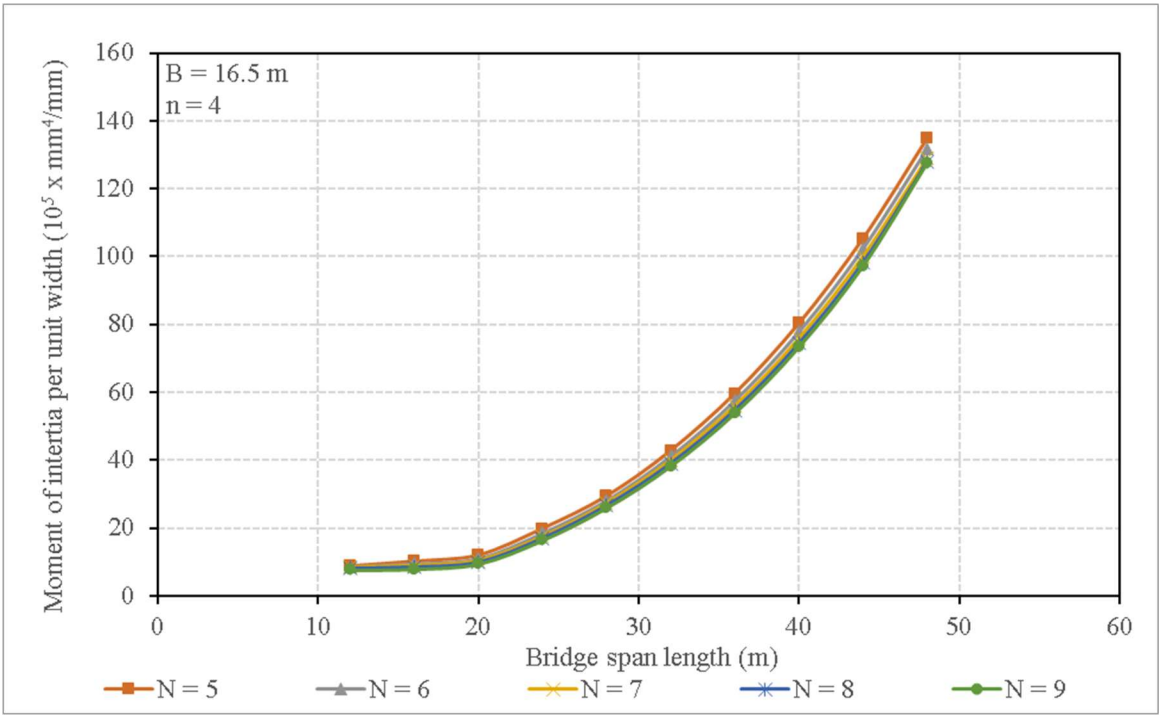

Figure 5.14: Moment of inertia of the steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading of 16.5 m width

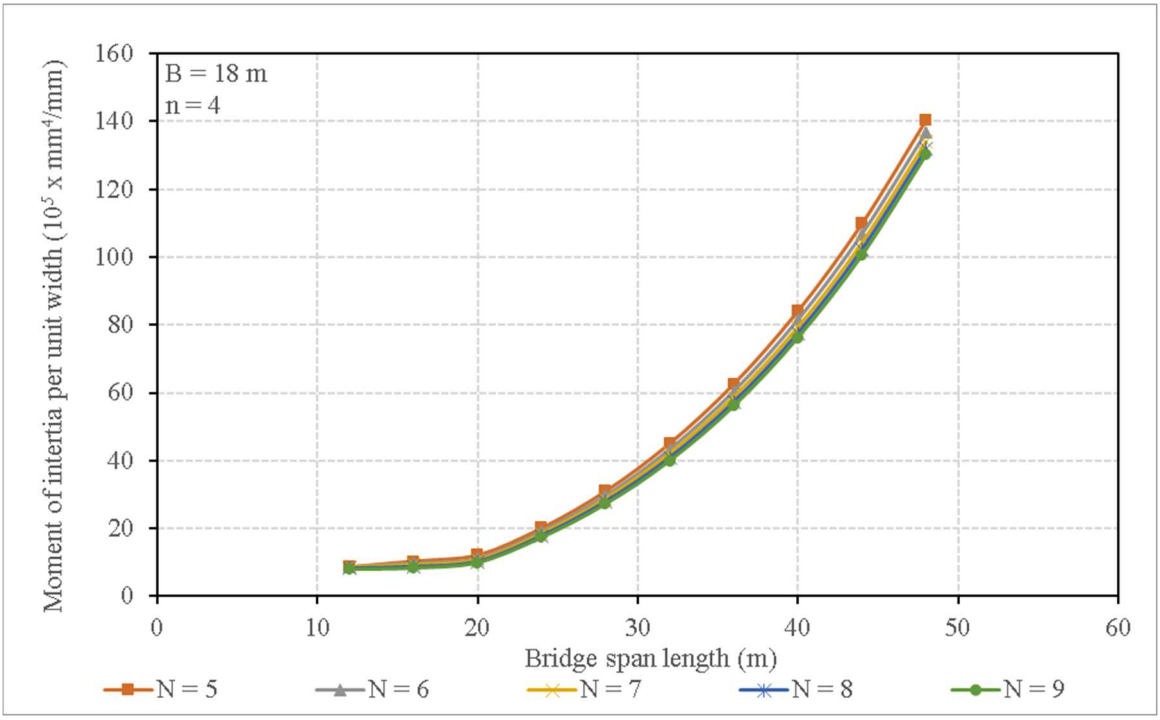

Figure 5.15: Moment of inertia of the steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading of 18 m width

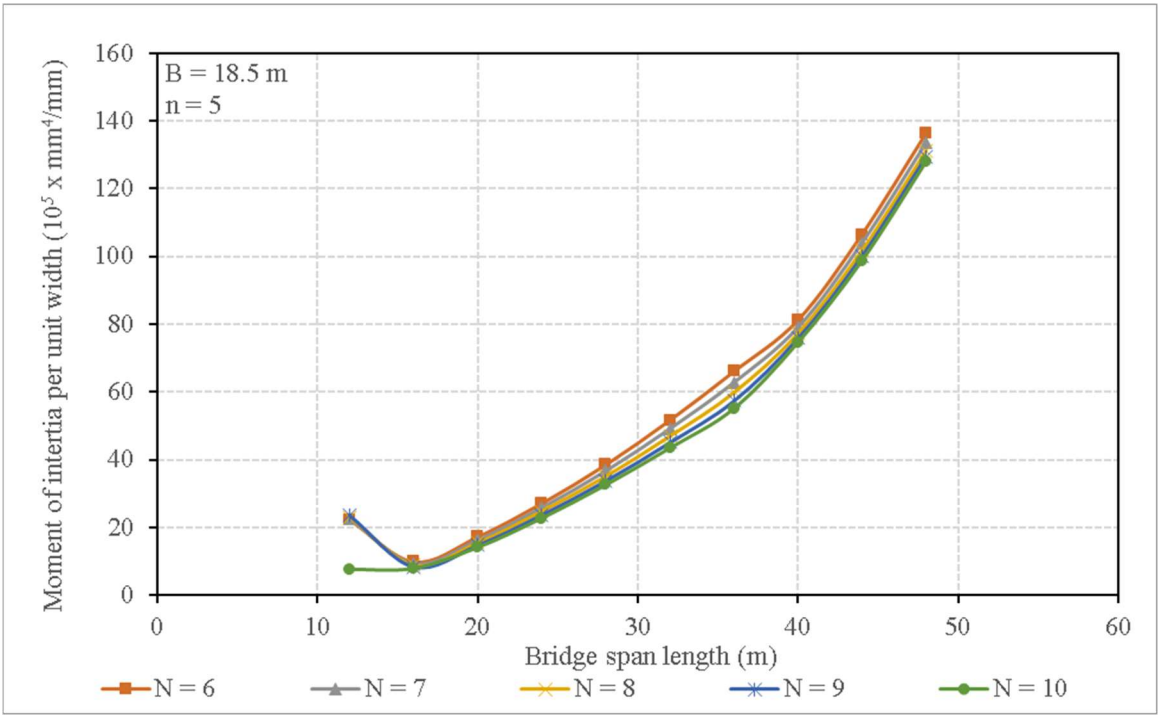

Figure 5.16: Moment of inertia of the steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading of 18.5 m width

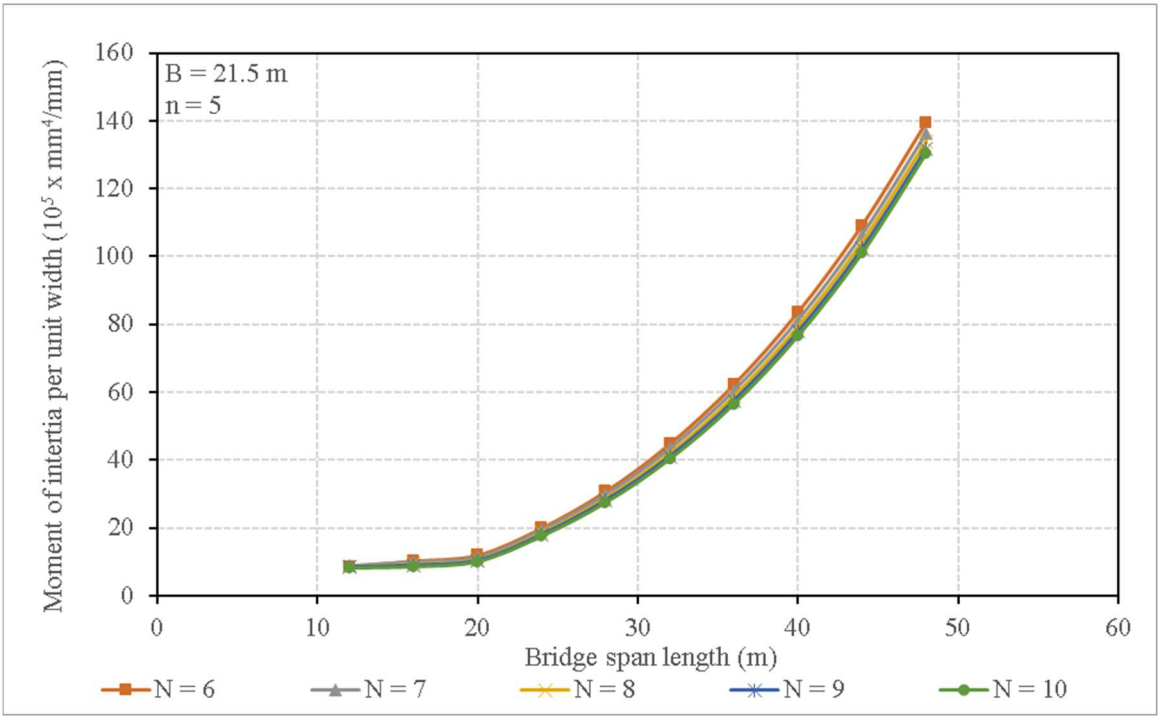

Figure 5.17: Moment of inertia of the steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading of 21.5 m width

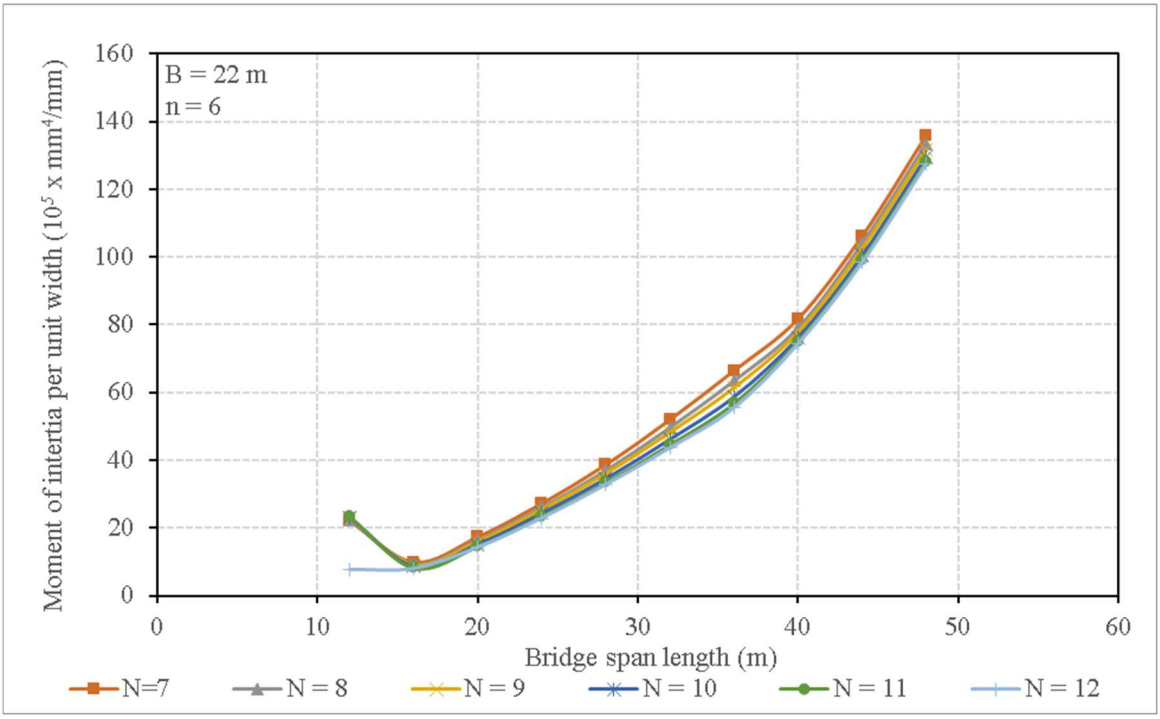

Figure 5.18: Moment of inertia of the steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading of 22 m width

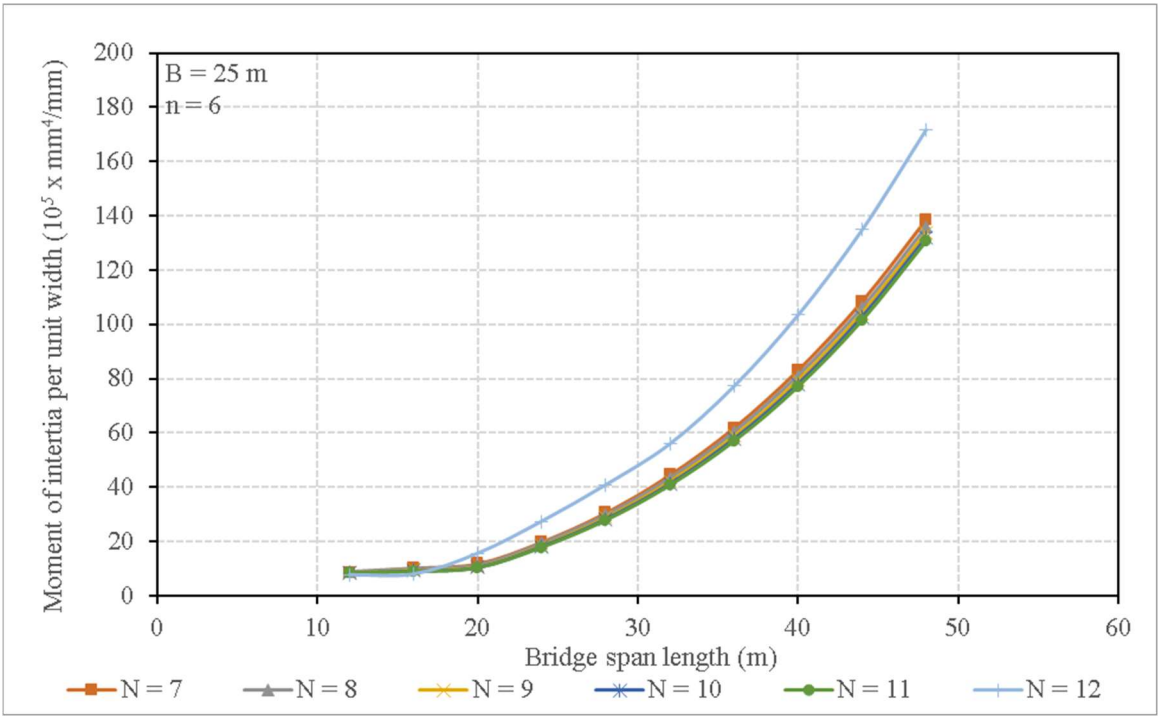

Figure 5.19: Moment of inertia of the steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading of 25 m width

As for the moment of inertia per unit width of the composite section observed in Figures 5.20 through 5.38, the values show a similar pattern to the steel section values. However, in the case of composite section, the values have a much closer packing. This is due to the moment of inertia of the slab per unit width being considered in the calculations which increases the magnitude of the results while reducing the variability. As expected, the case of 12 girders used visible in Figure 5.38 shows the same overdesigned characteristic as in Figure 5.19 for the steel section. This is due to the same reasons previously discussed. As a result, the case of 12 girders was omitted when obtaining parametric equations to represent the results.

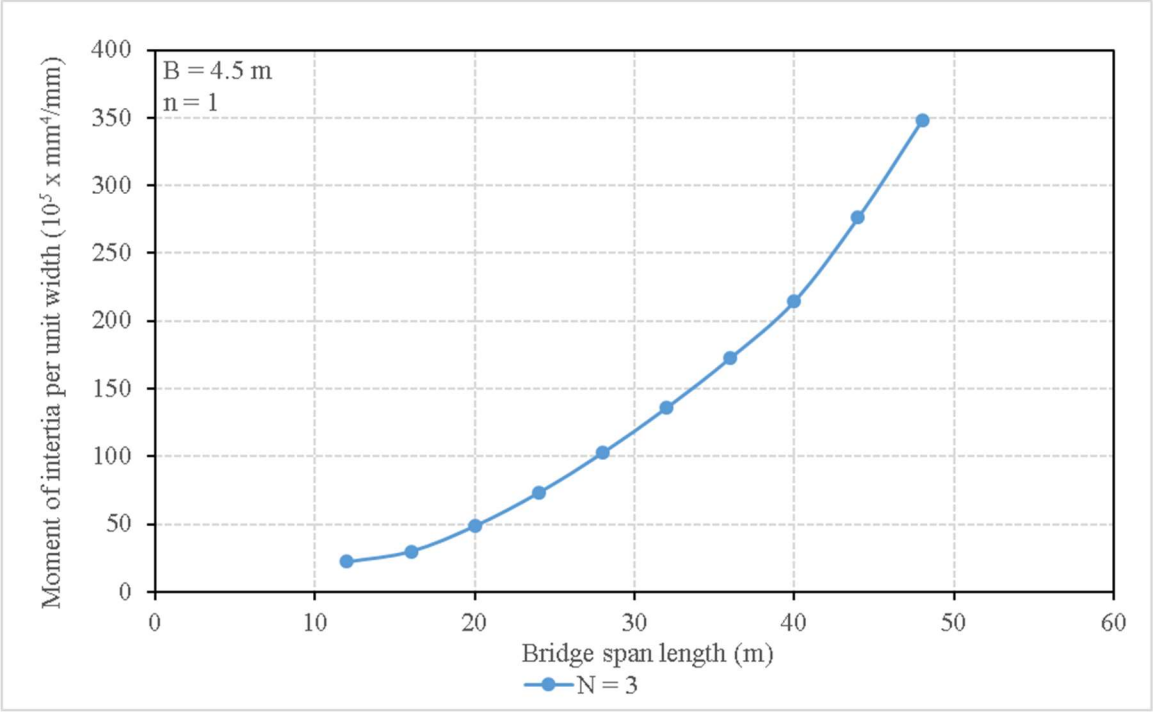

Figure 5.20: Moment of inertia of the composite concrete-steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading of 4.5 m width

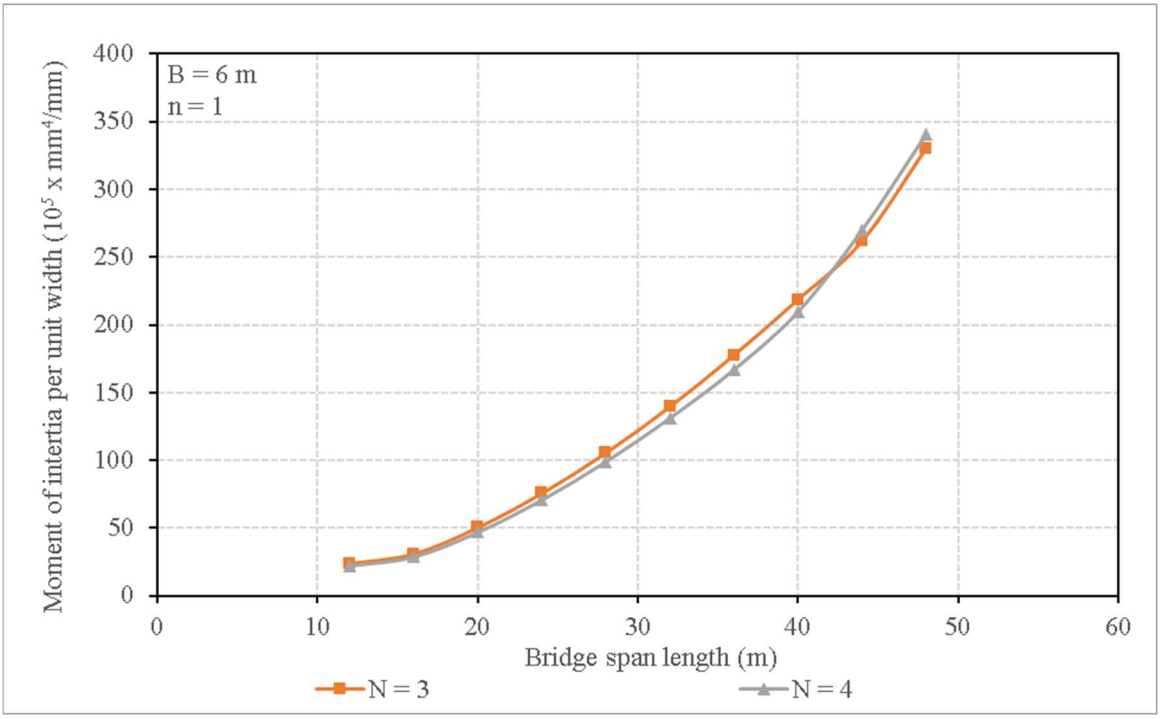

Figure 5.21: Moment of inertia of the composite concrete-steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading of 6 m width

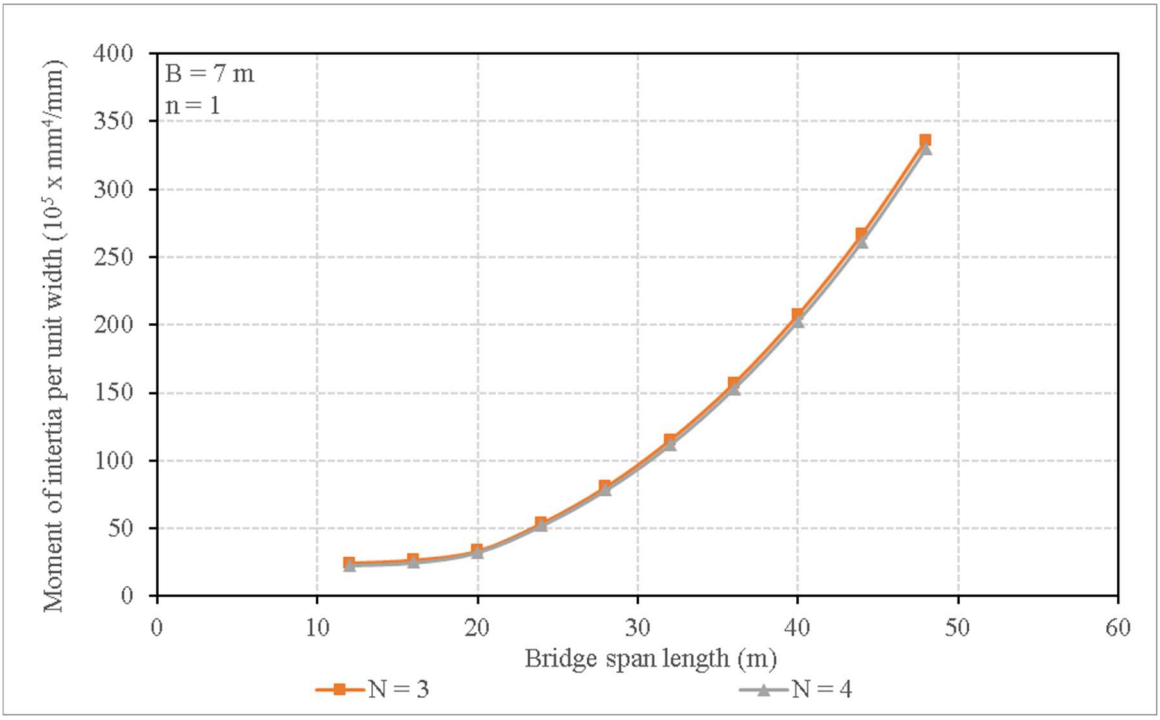

Figure 5.22: Moment of inertia of the composite concrete-steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading of 7 m width

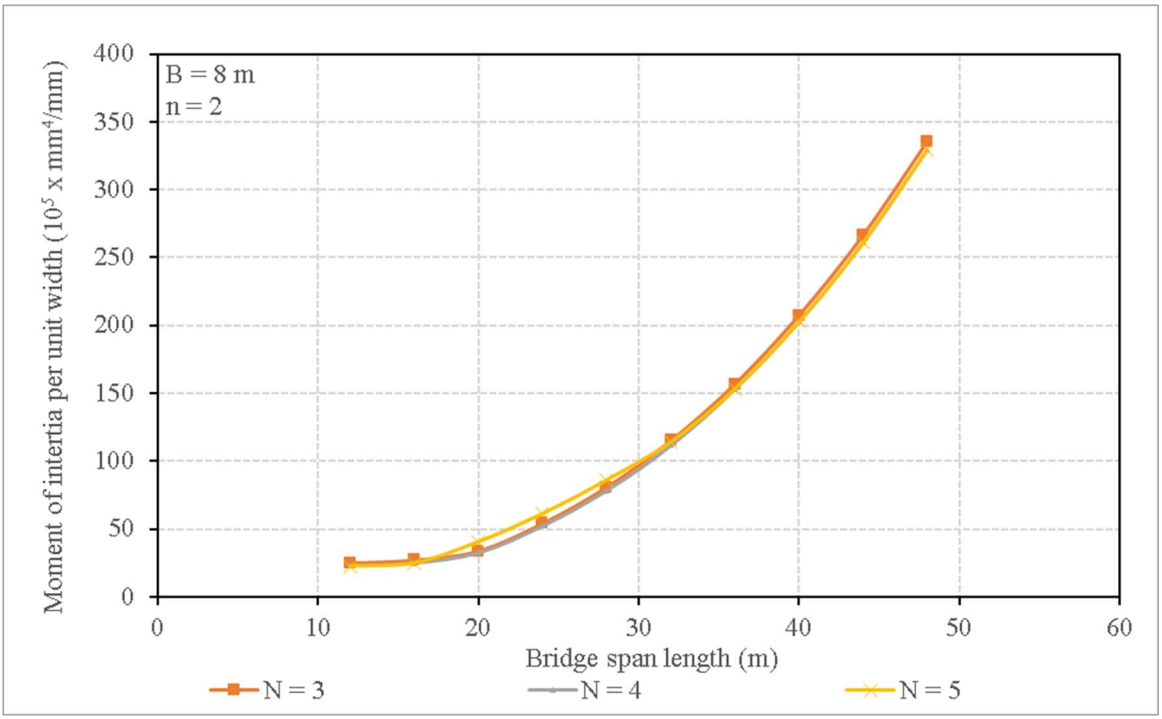

Figure 5.23: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 8 m width

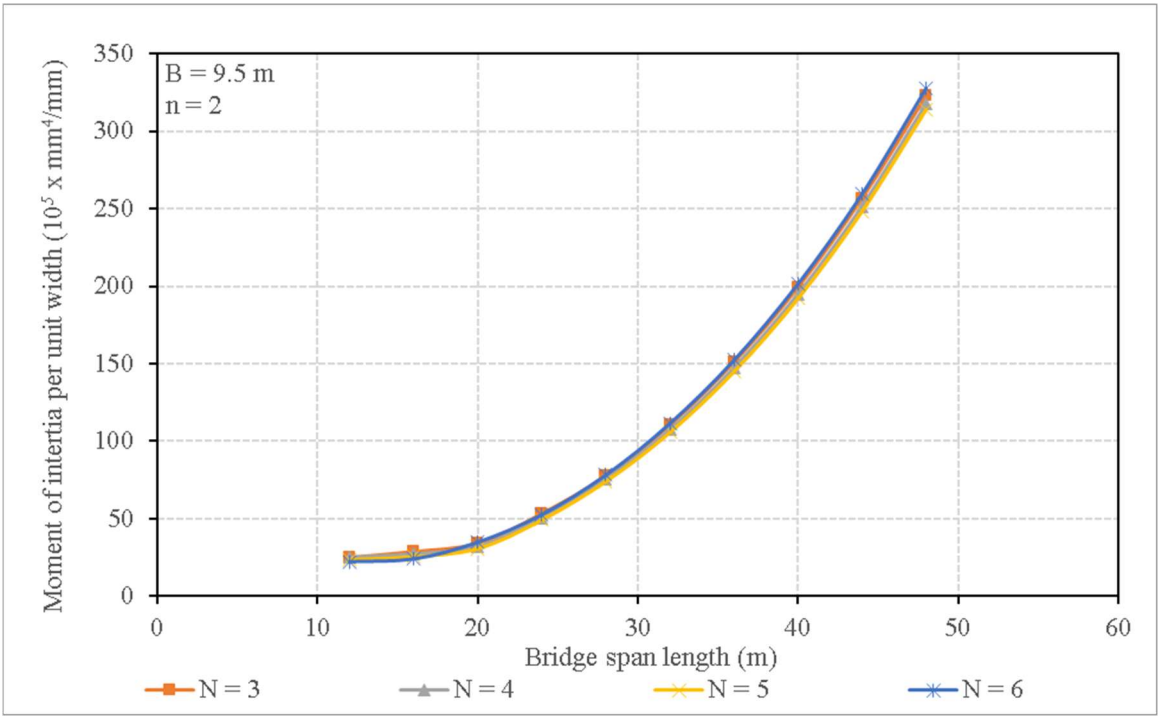

Figure 5.24: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 9.5 m width

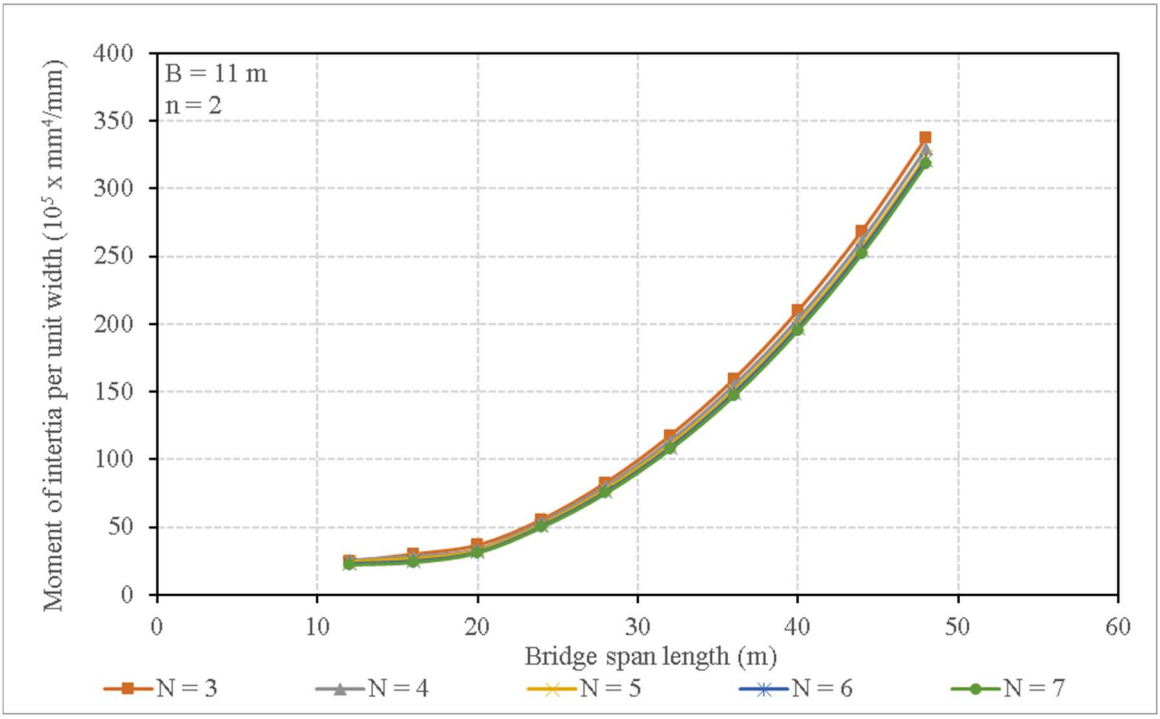

Figure 5.25: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 11 m width

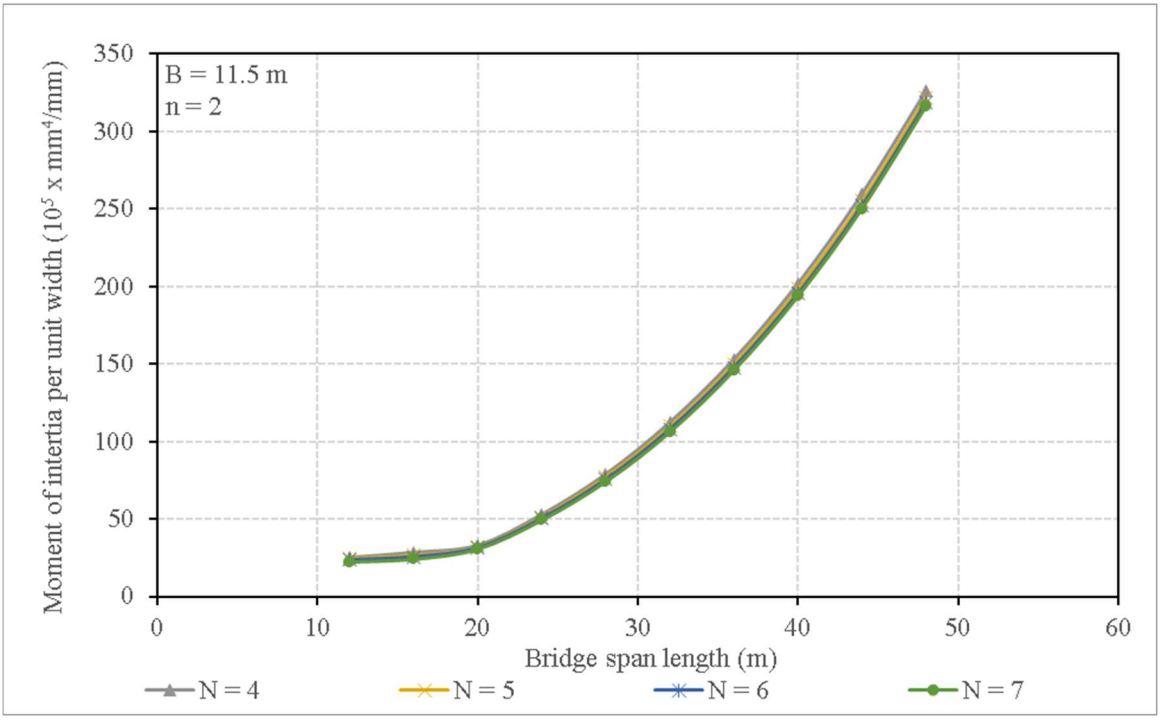

Figure 5.26: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 11.5 m width

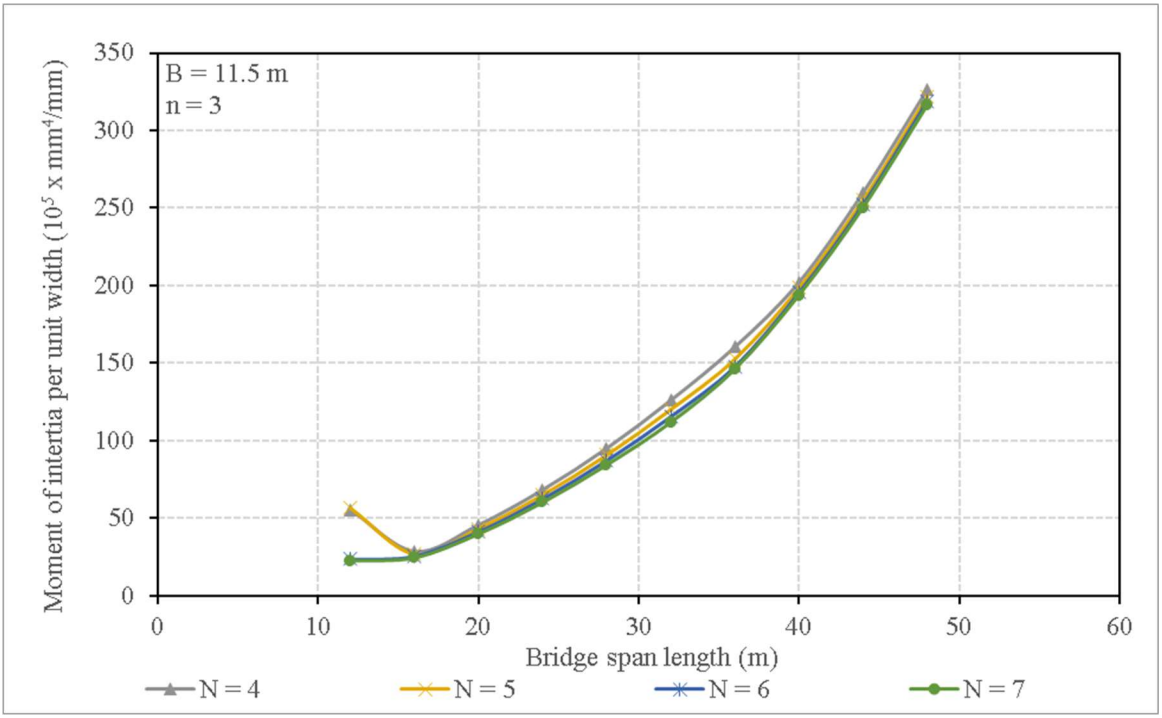

Figure 5.27: Moment of inertia of the composite concrete-steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading of 11.5 m width

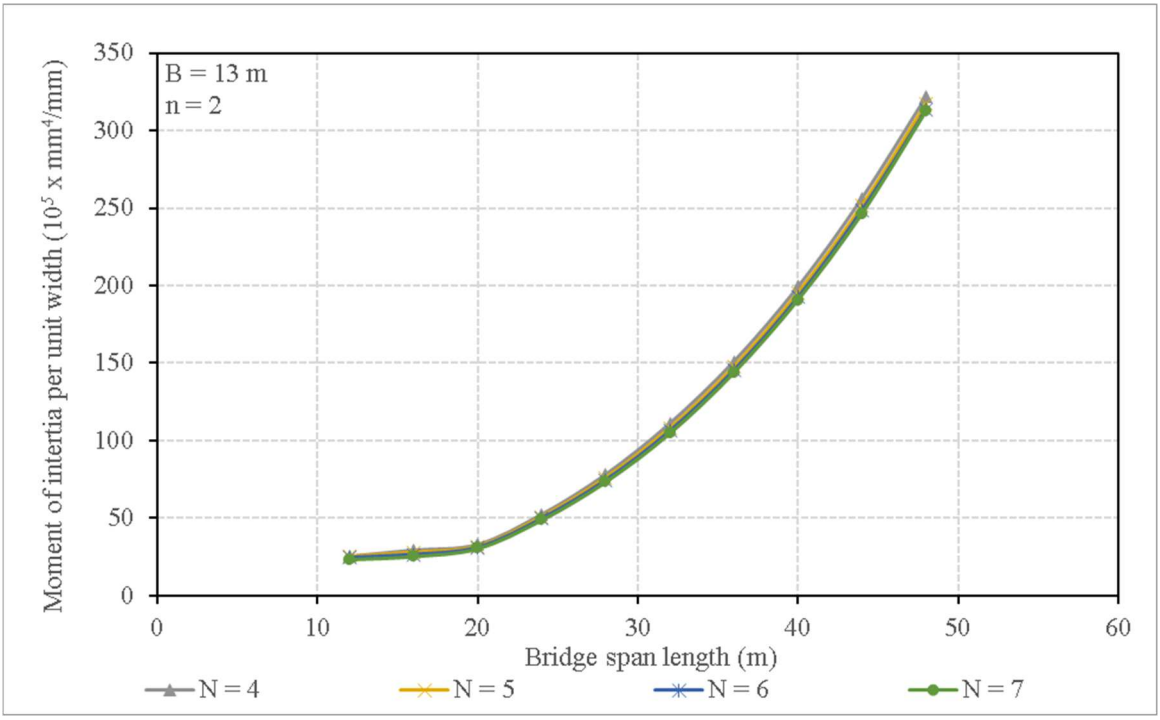

Figure 5.28: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 13 m width

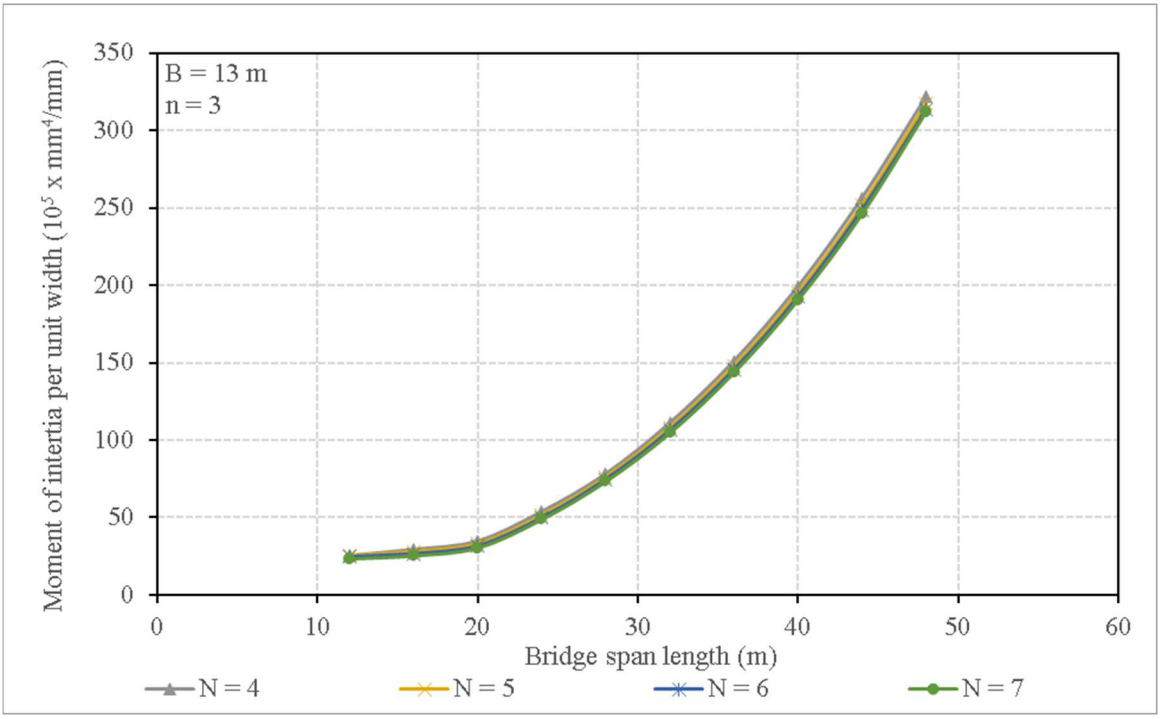

Figure 5.29: Moment of inertia of the composite concrete-steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading of 13 m width

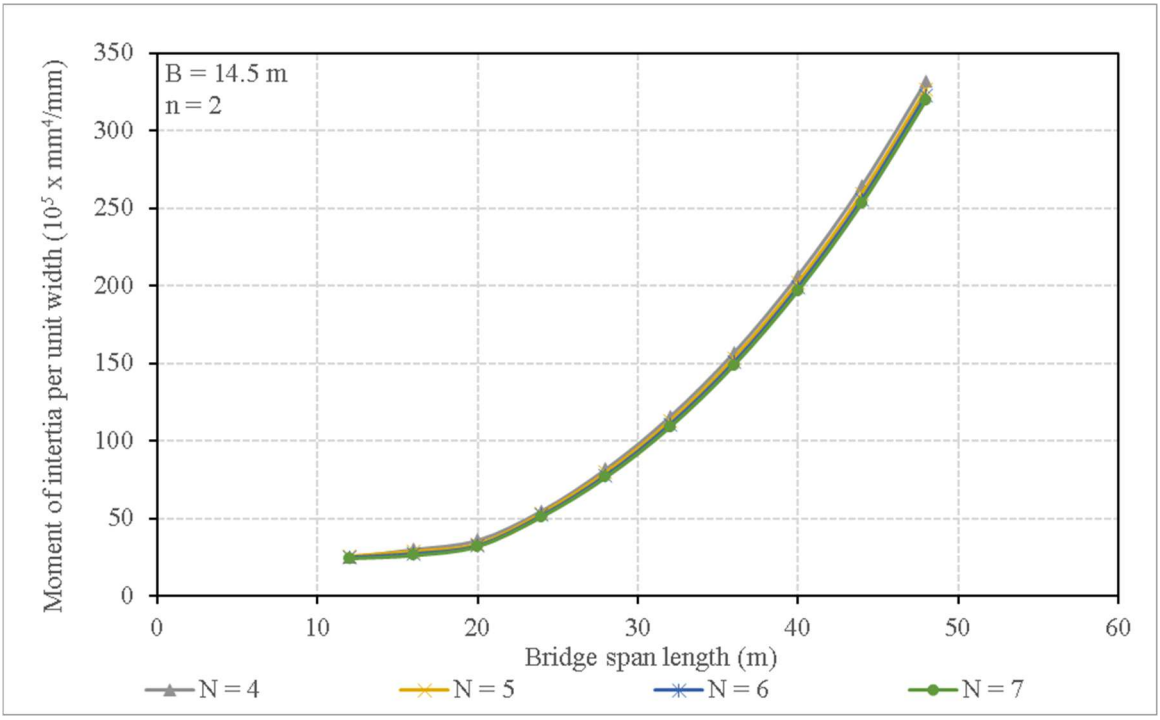

Figure 5.30: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading of 14.5 m width

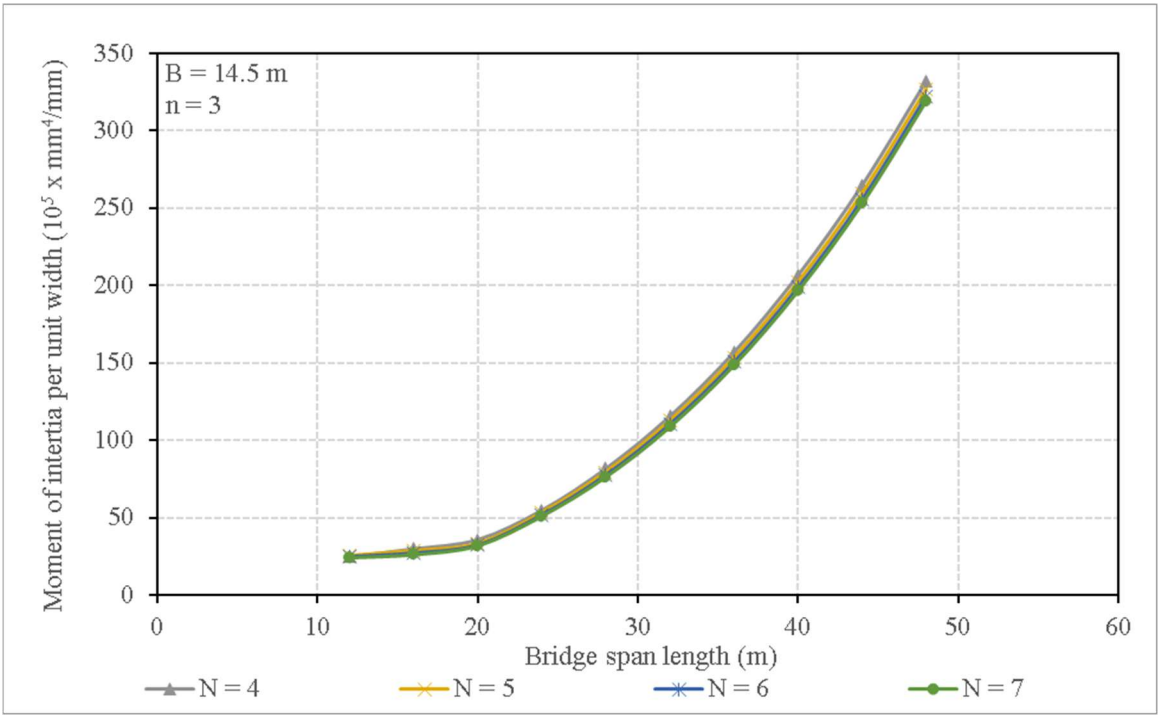

Figure 5.31: Moment of inertia of the composite concrete-steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading of 14.5 m width

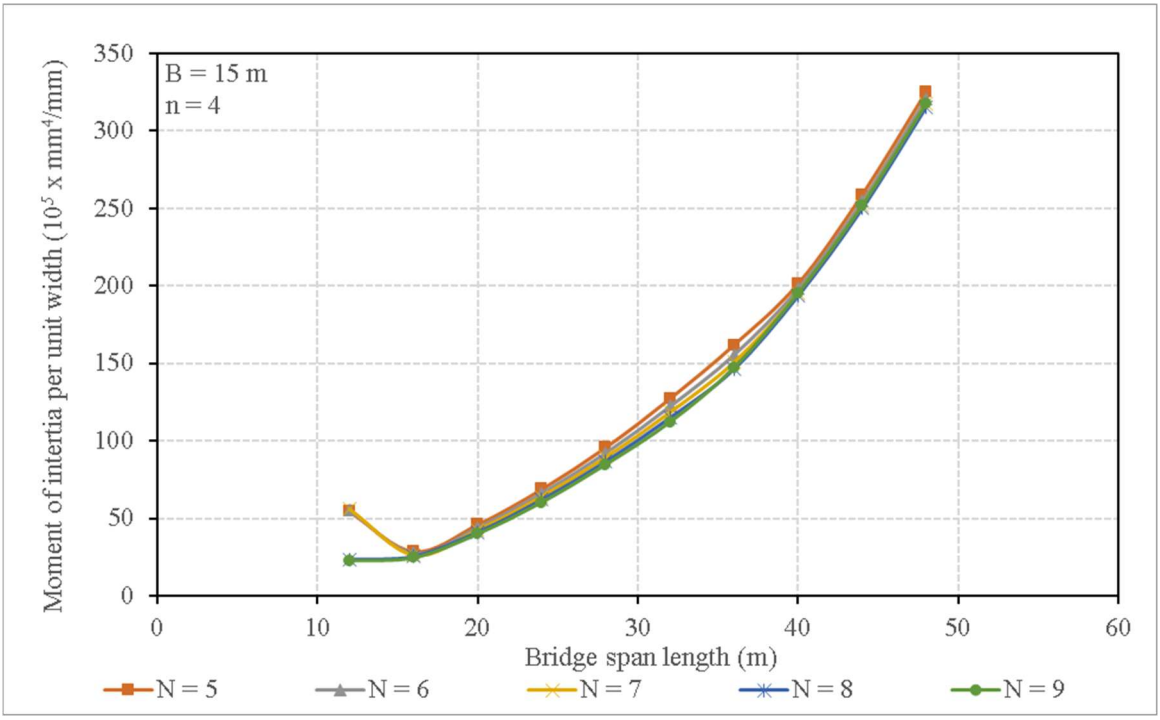

Figure 5.32: Moment of inertia of the composite concrete-steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading of 15 m width

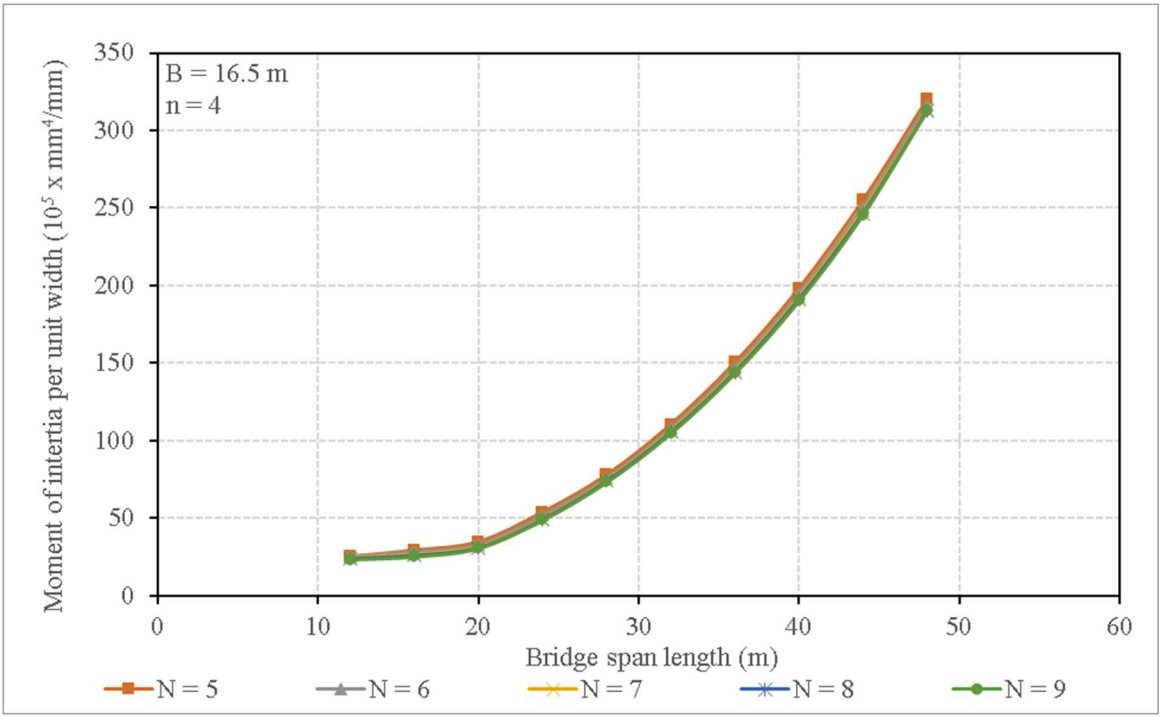

Figure 5.33: Moment of inertia of the composite concrete-steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading of 16.5 m width

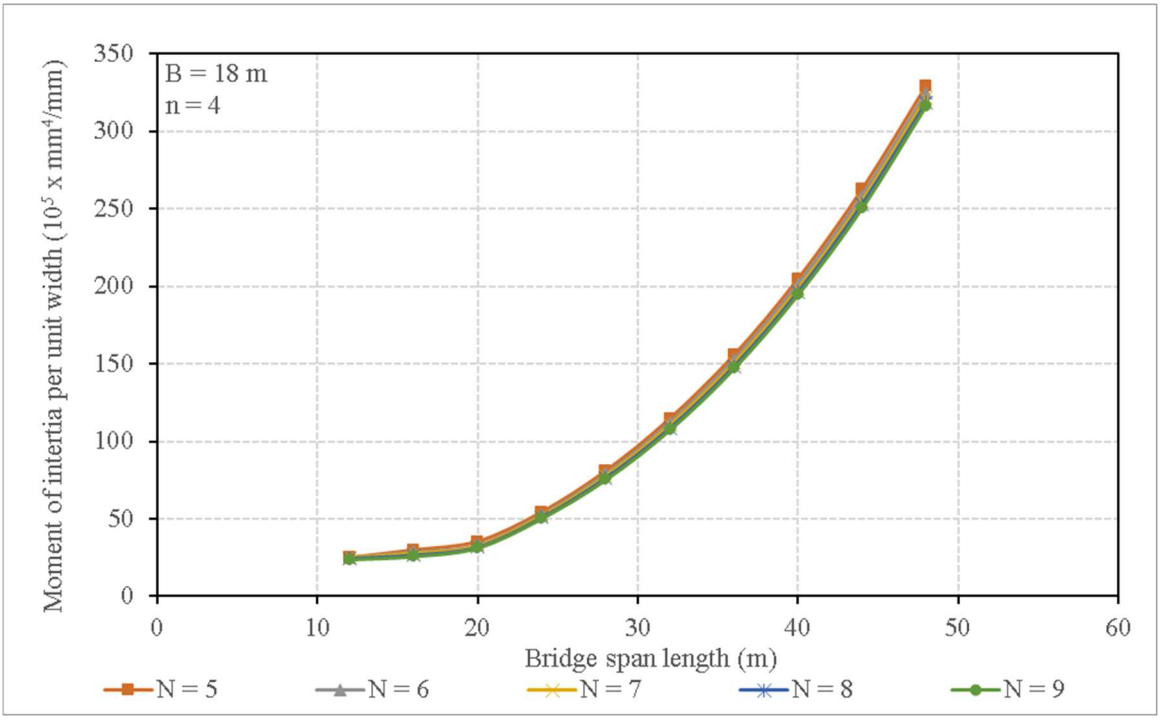

Figure 5.34: Moment of inertia of the composite concrete-steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading of 18 m width

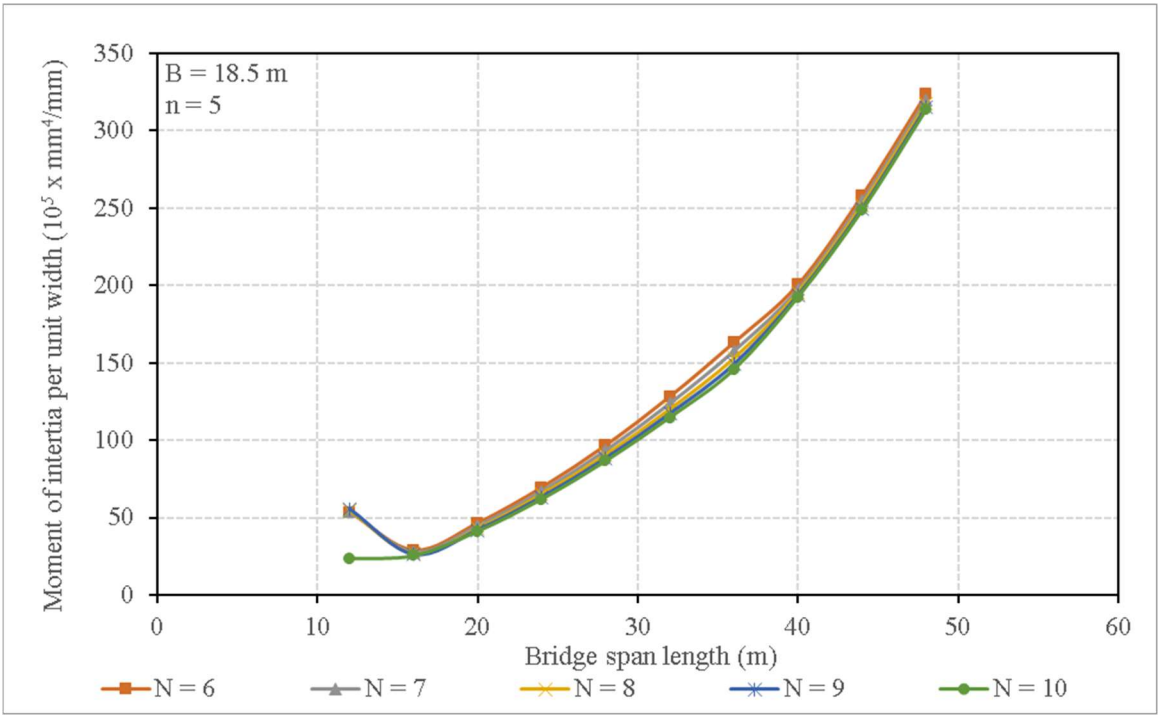

Figure 5.35: Moment of inertia of the composite concrete-steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading of 18.5 m width

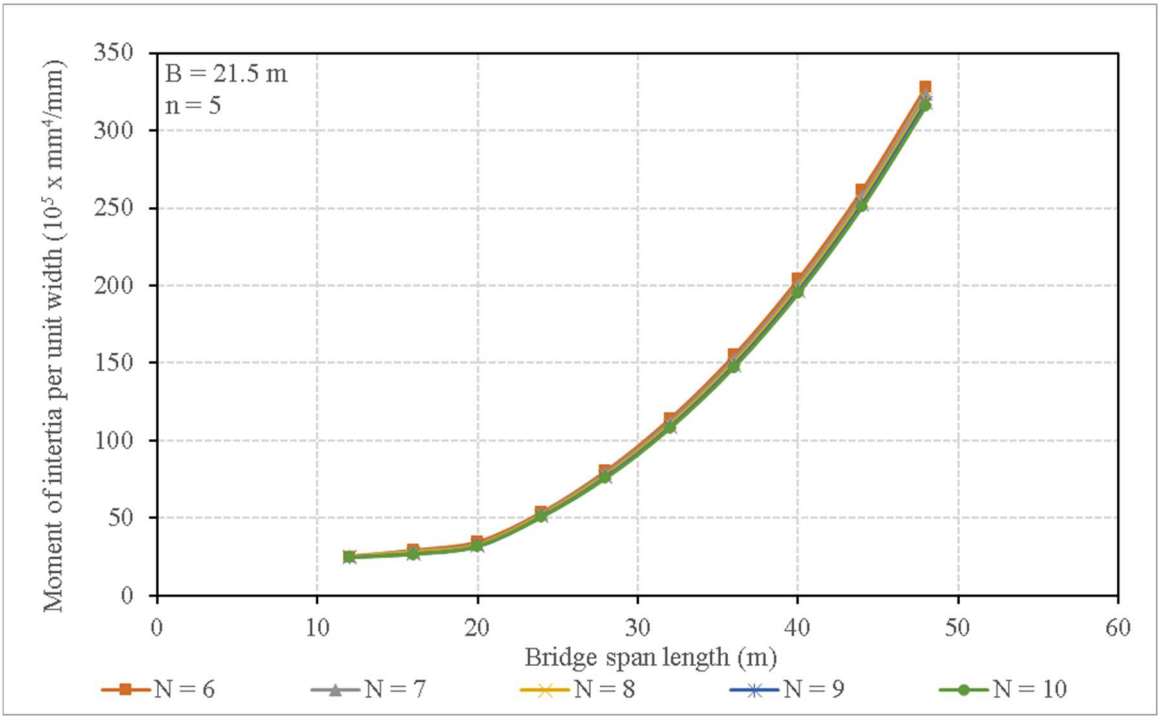

Figure 5.36: Moment of inertia of the composite concrete-steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading of 21.5 m width

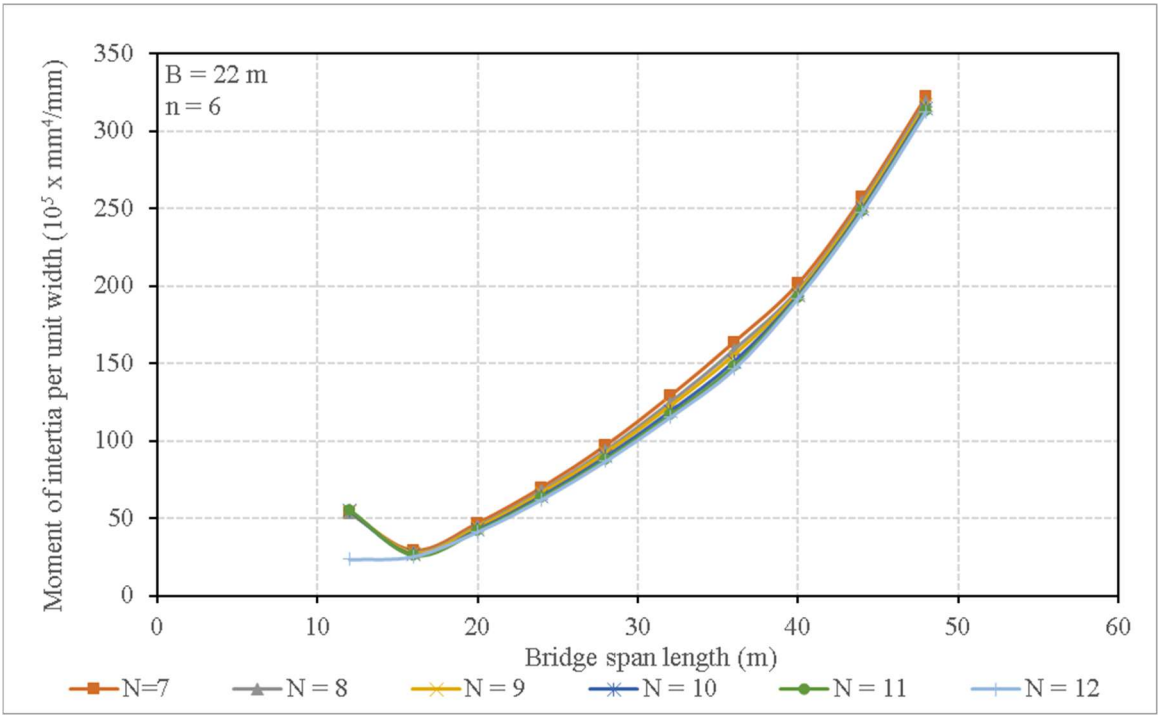

Figure 5.37: Moment of inertia of the composite concrete-steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading of 22 m width

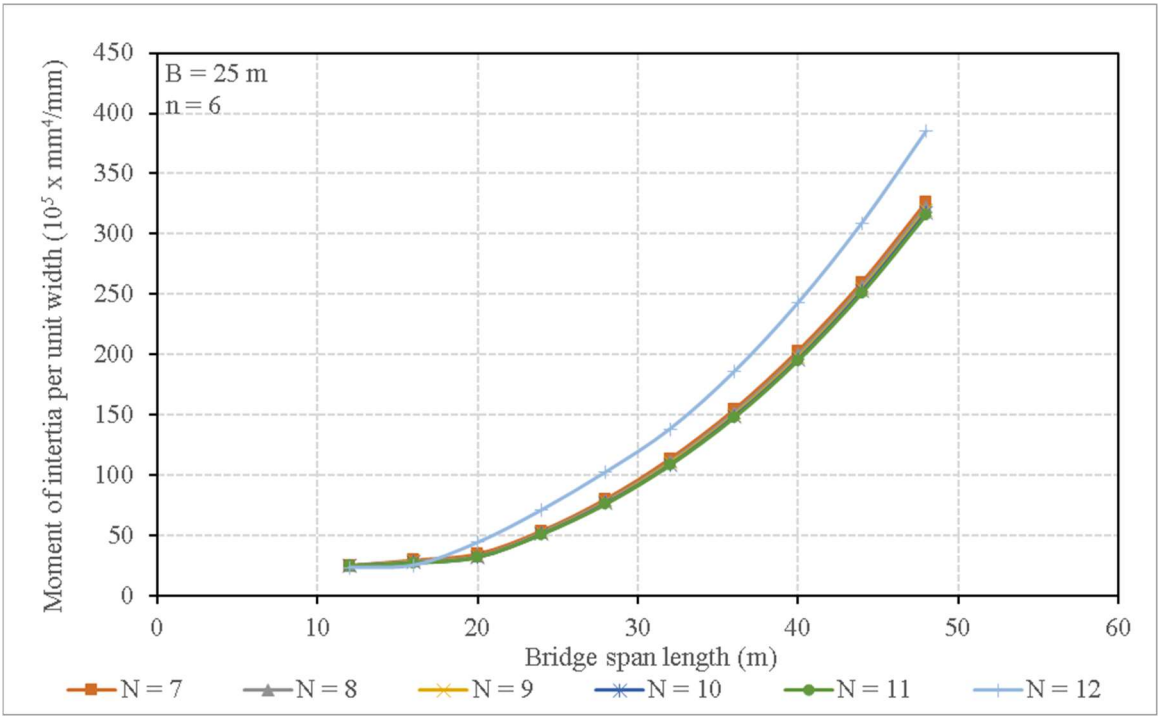

Figure 5.38: Moment of inertia of the composite concrete-steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading of 25 m width

5.2 Effect of bridge width on moment of inertia

In order to study the effect of the bridge width (B) on the moment of inertia for the steel and the composite sections per unit width (Is/S & Ics/S), multiple graphs were created where the number of girders (N) and the number of design lanes (n) were set to a constant value while changing the bridge width (B) for single span bridge configurations under CL-625 truck loading.

As can be seen in Figures 5.39 through 5.54, the moment of inertia of the steel section per unit width does not show any specific relation to the bridge width. This is due to the moment of inertia not being studied as an absolute value but a value per unit width. As was seen before, in the case of N = 12 for B = 25 m seen in Figure 54, the moment of inertia does not follow the same pattern exhibited in the other figures. As discussed in the previous section, this can be attributed to overdesigning of the bridge configuration due to an excessive amount of steel used to meet the design criteria. To conclude this section, the bridge width (B) does not have an explicit effect on the moment of inertia of the steel section per unit width as the width is already accounted for by dividing the total moment of inertia of the steel section by the spacing.

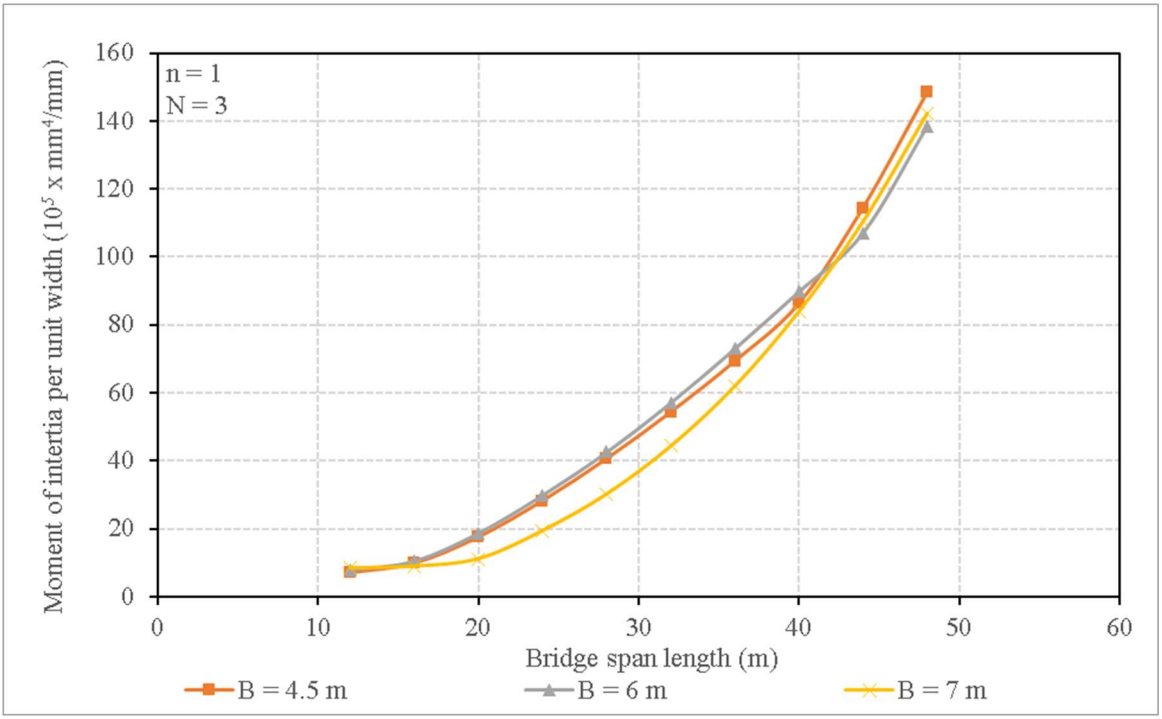

Figure 5.39: Moment of inertia of the steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading with three girders

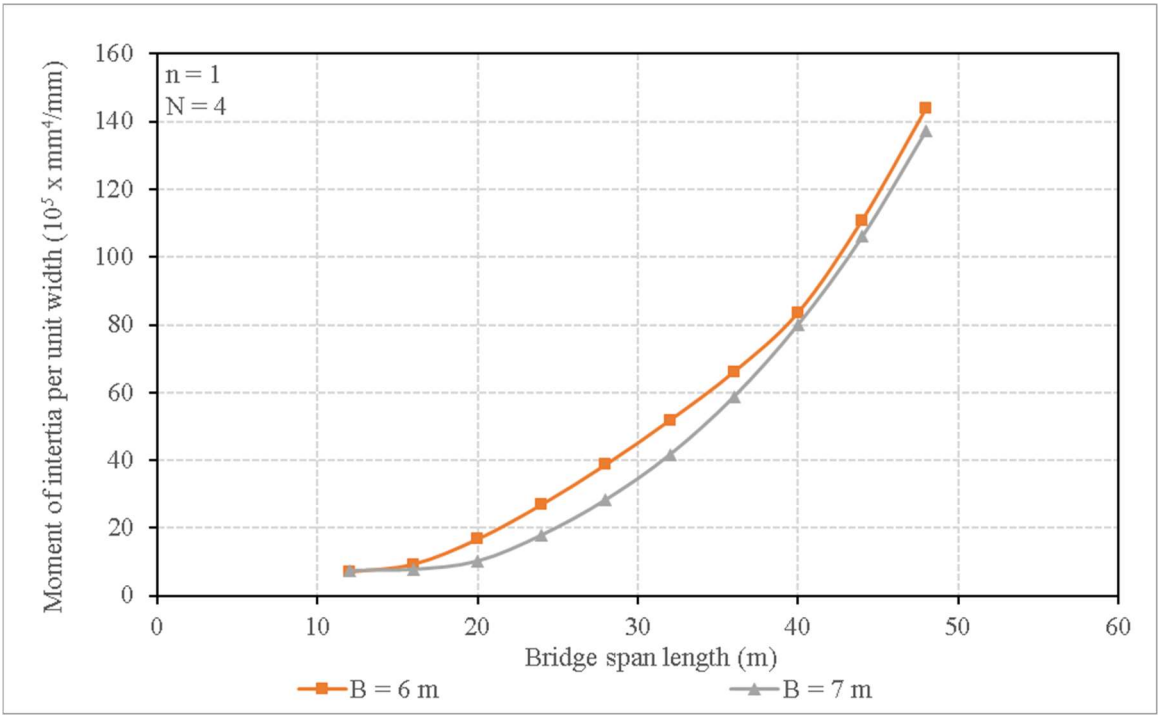

Figure 5.40: Moment of inertia of the steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading with four girders

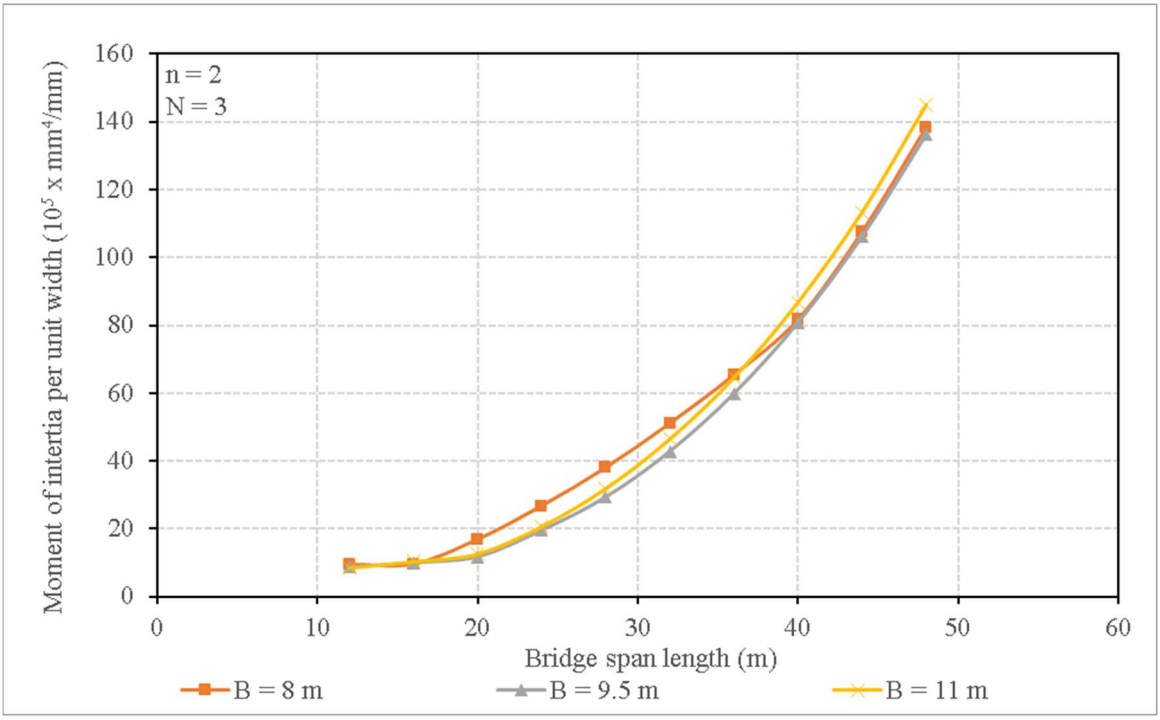

Figure 5.41: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading with three girders

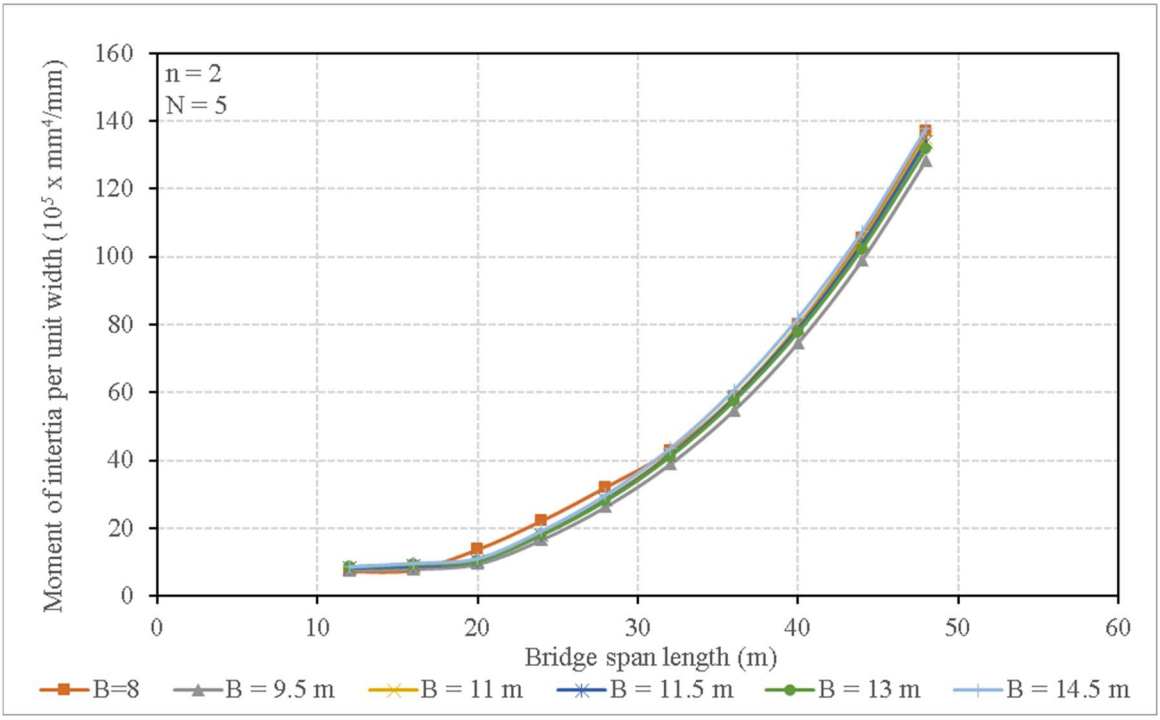

Figure 5.42: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading with five girders

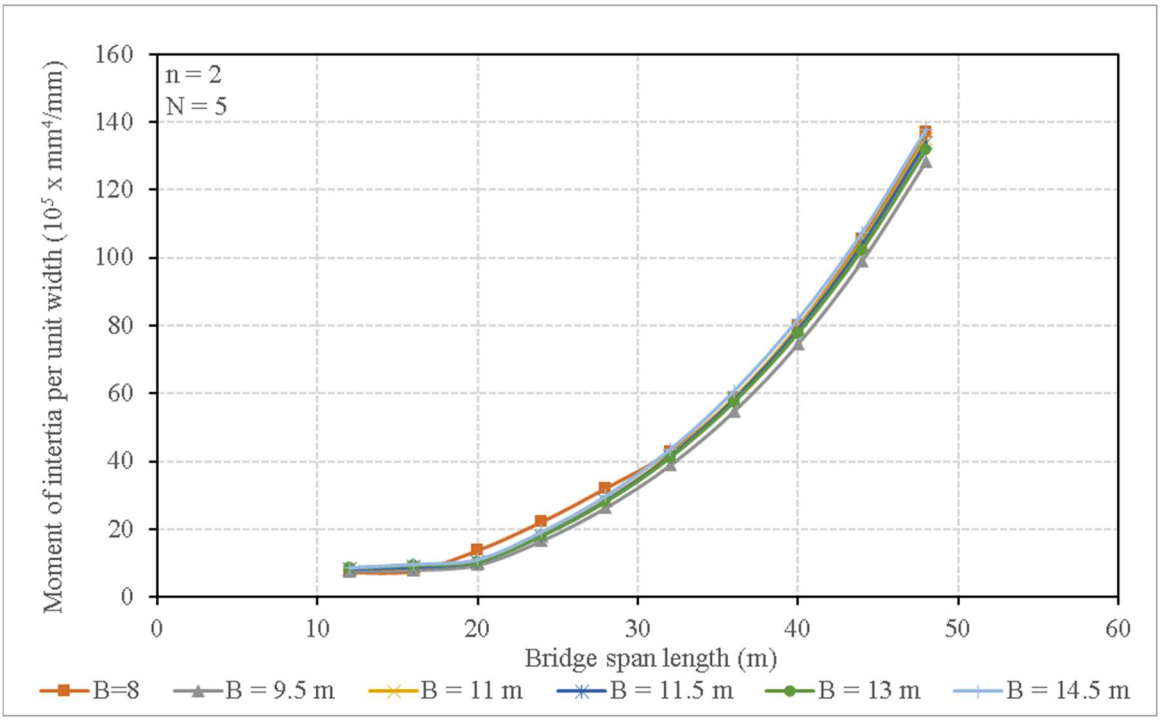

Figure 5.43: Moment of inertia of the steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading with seven girders

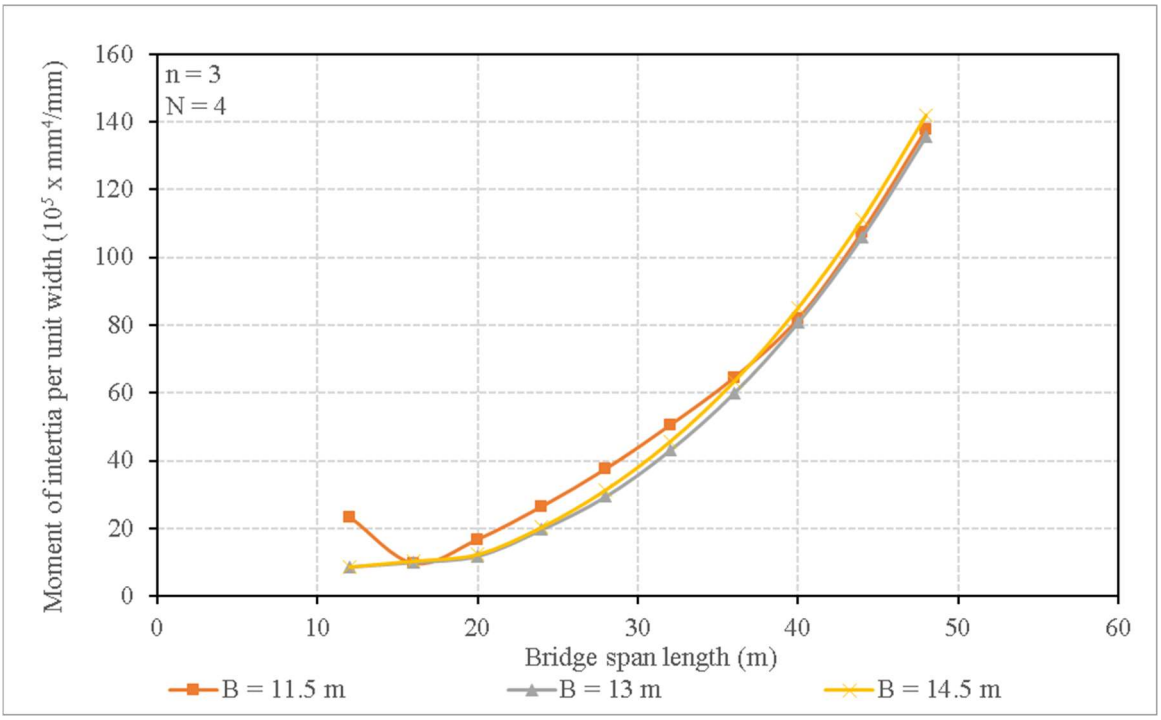

Figure 5.44: Moment of inertia of the steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading with four girders

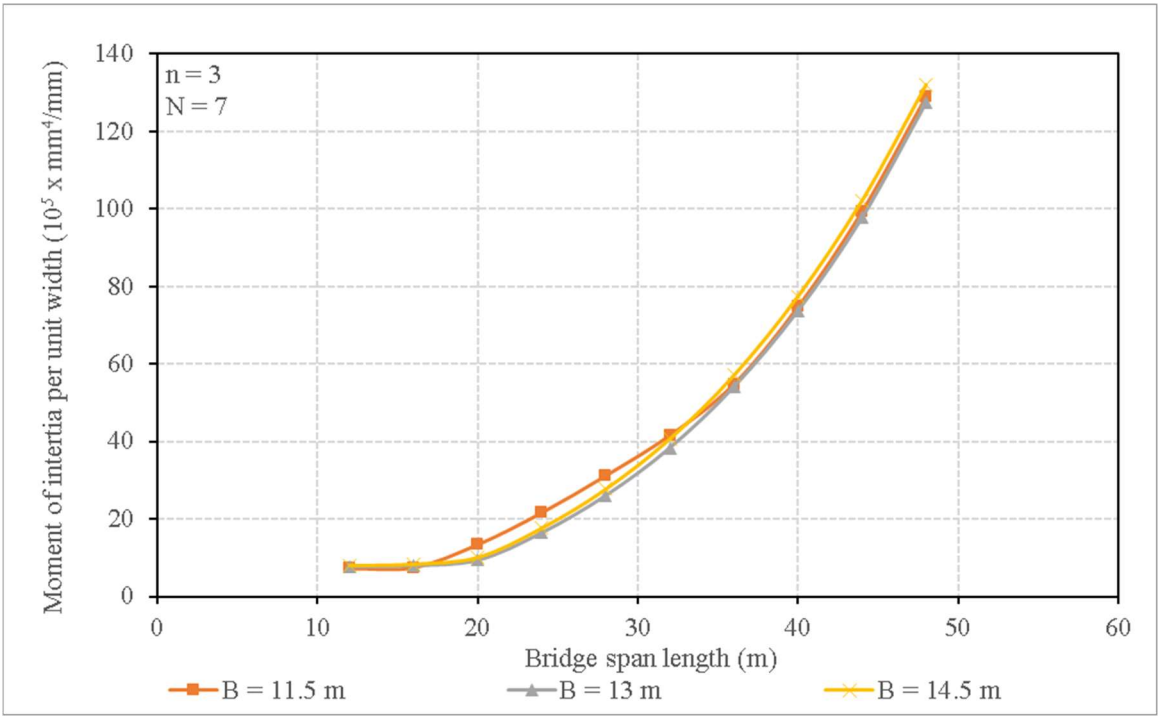

Figure 5.45: Moment of inertia of the steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading with seven girders

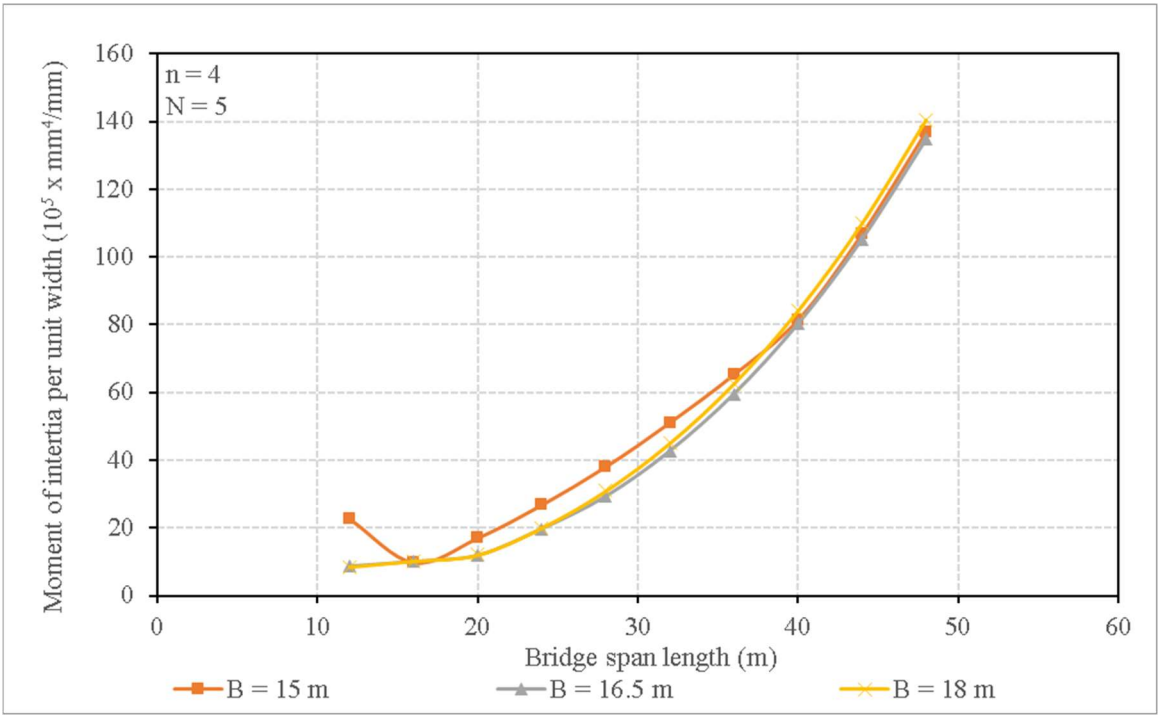

Figure 5.46: Moment of inertia of the steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading with five girders

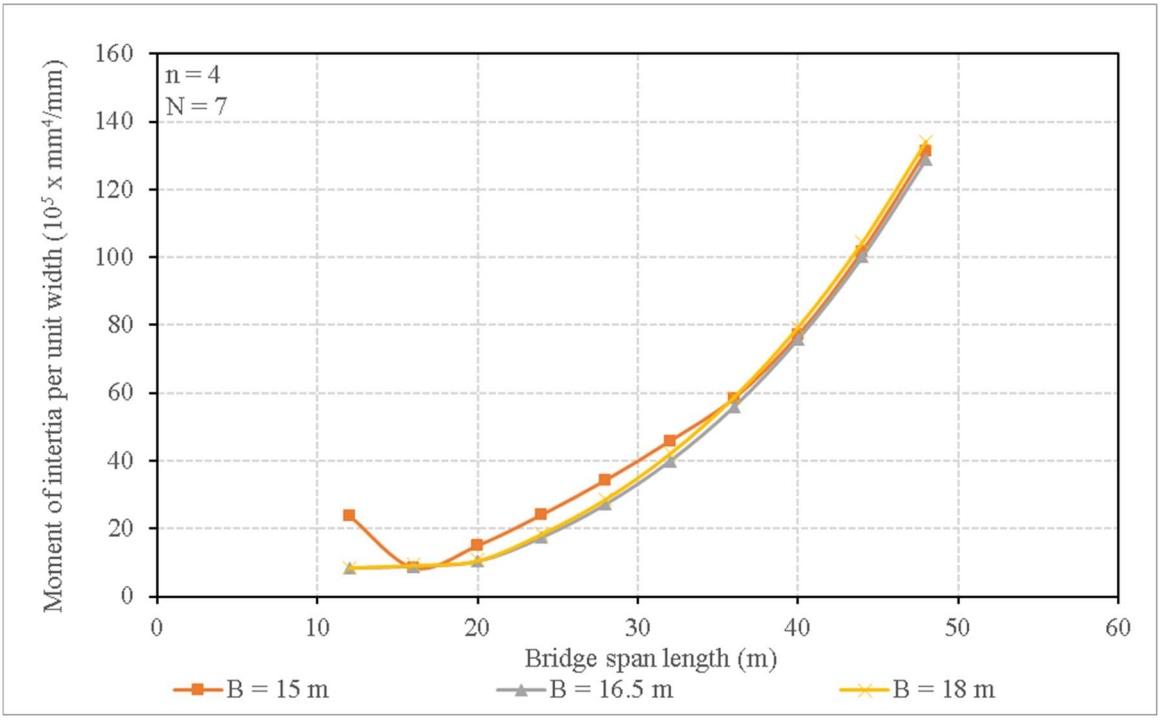

Figure 5.47: Moment of inertia of the steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading with seven girders

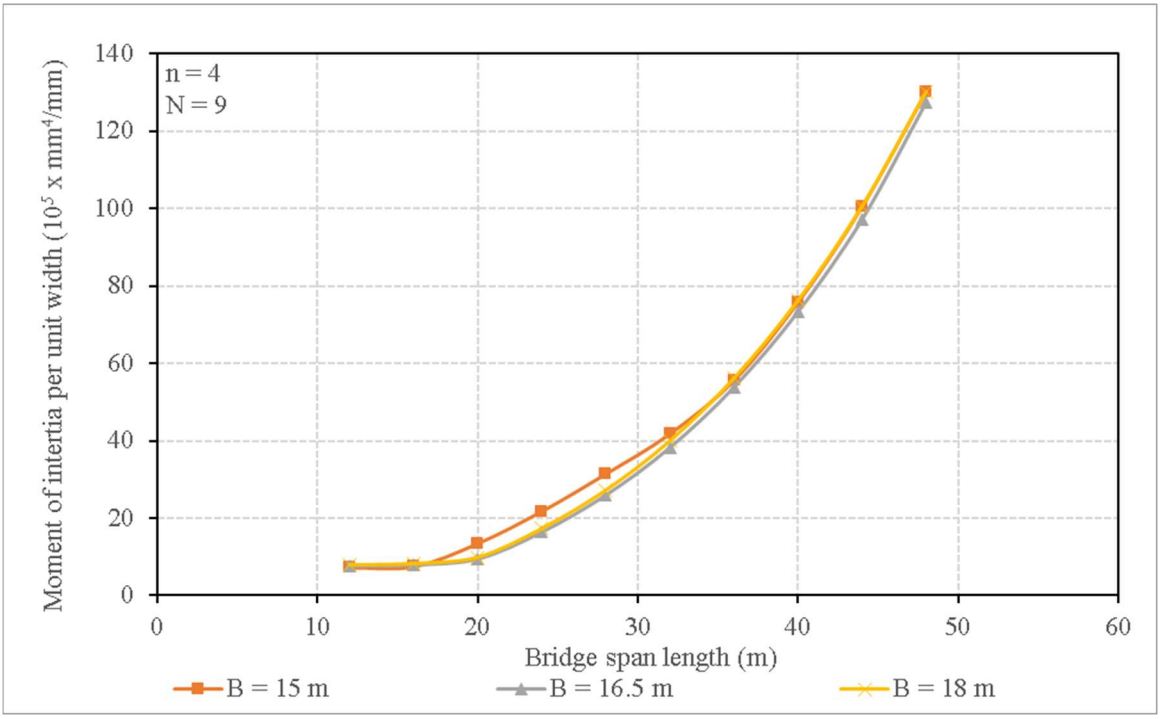

Figure 5.48: Moment of inertia of the steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading with nine girders

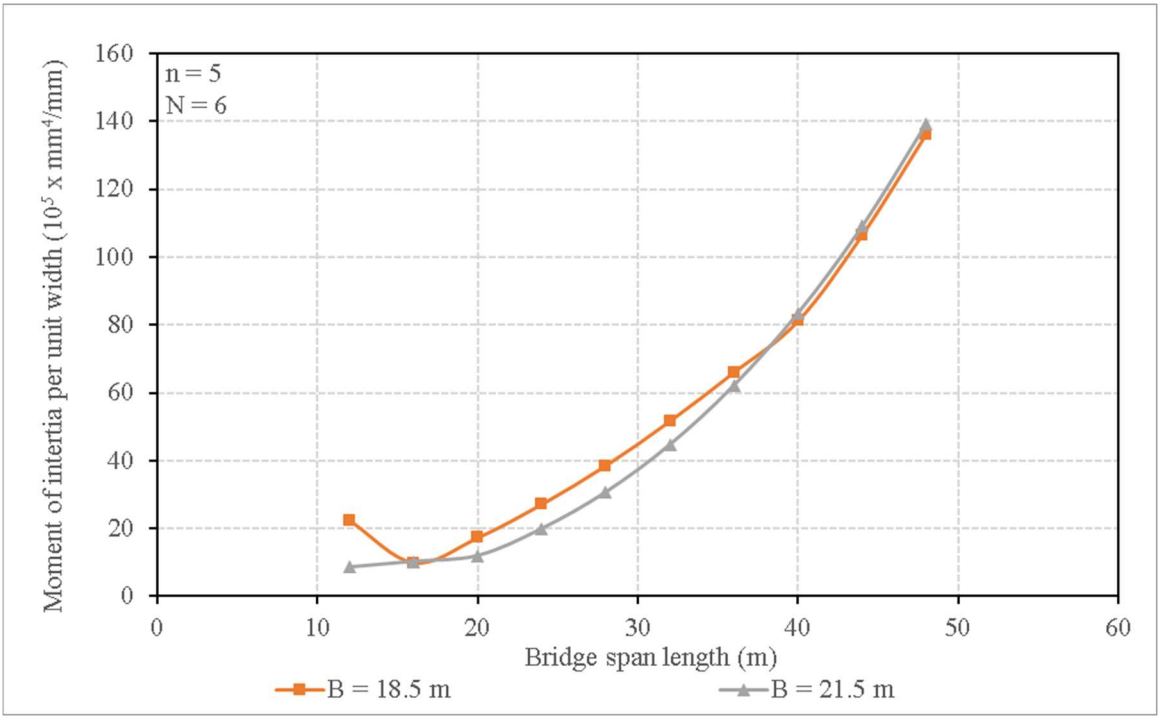

Figure 5.49: Moment of inertia of the steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading with six girders

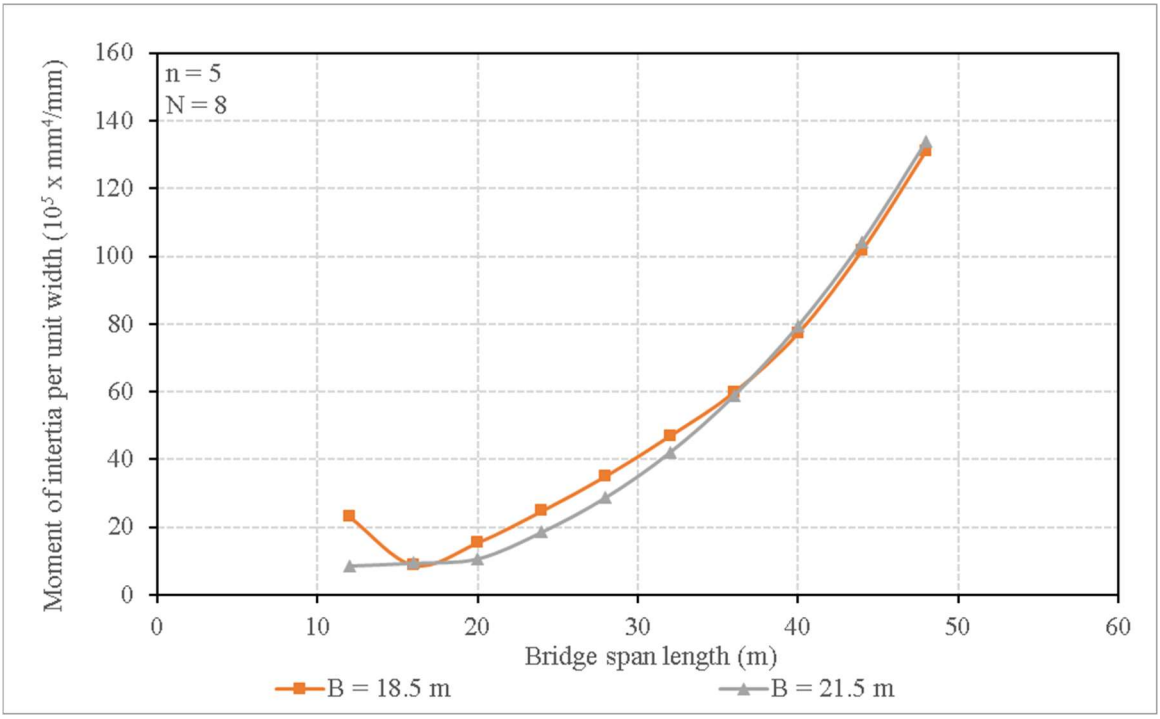

Figure 5.50: Moment of inertia of the steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading with eight girders

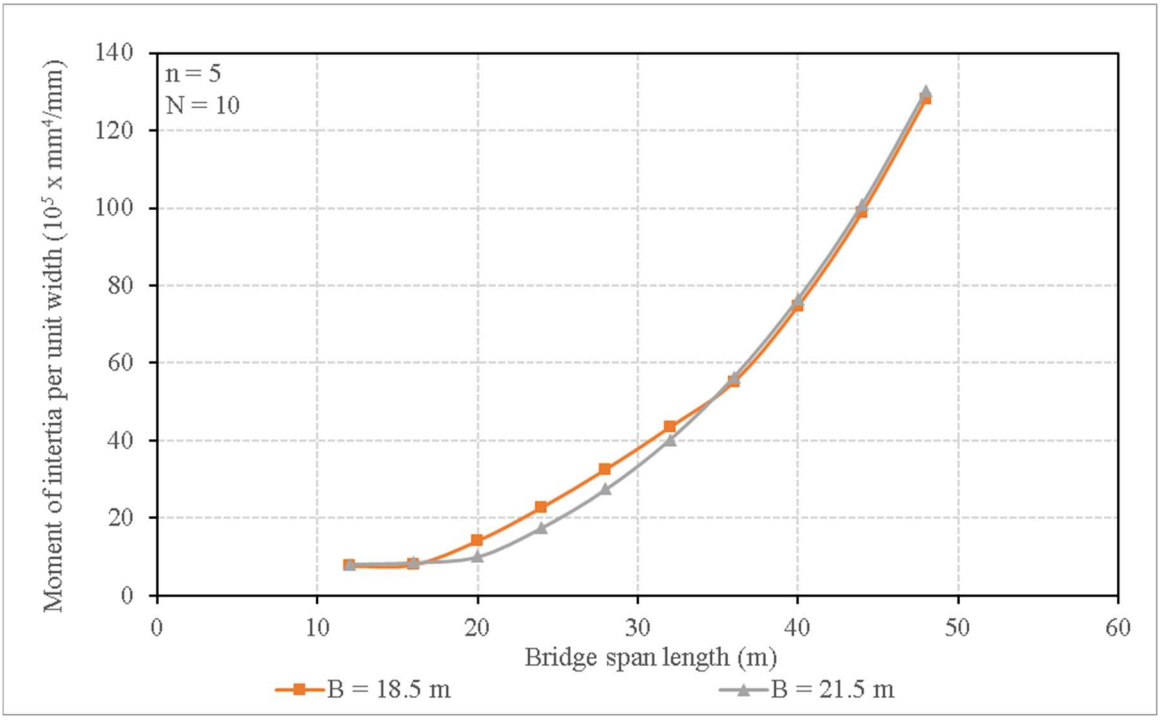

Figure 5.51: Moment of inertia of the steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading with ten girders

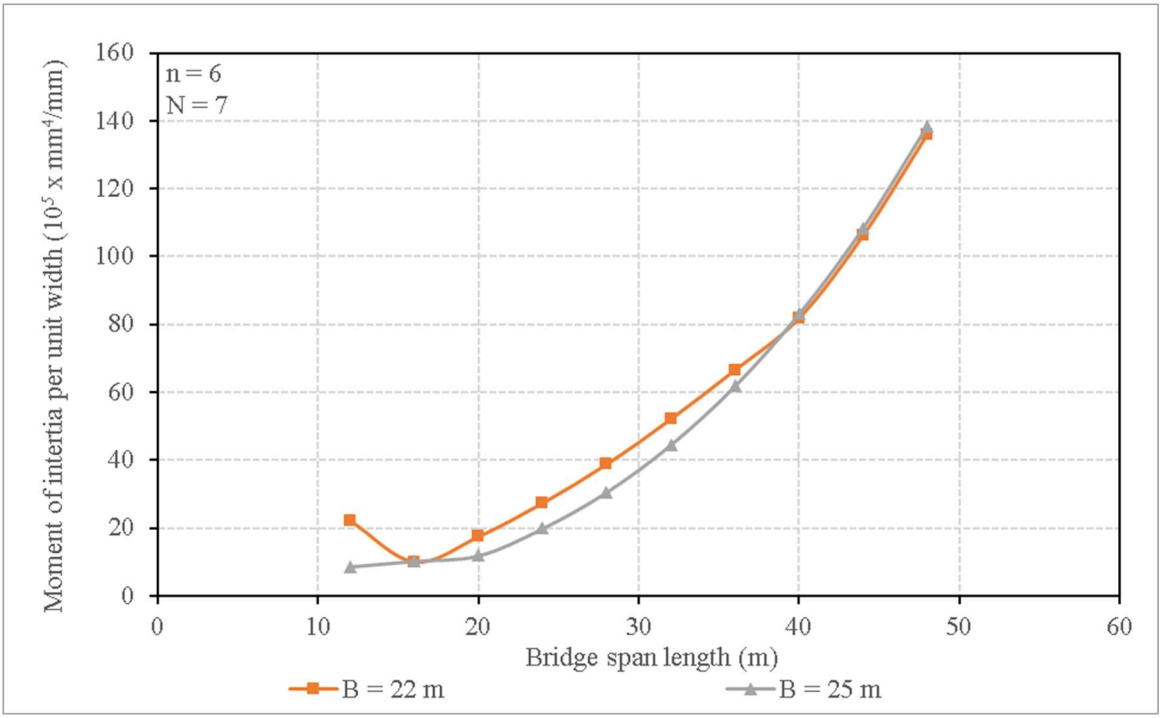

Figure 5.52: Moment of inertia of the steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading with seven girders

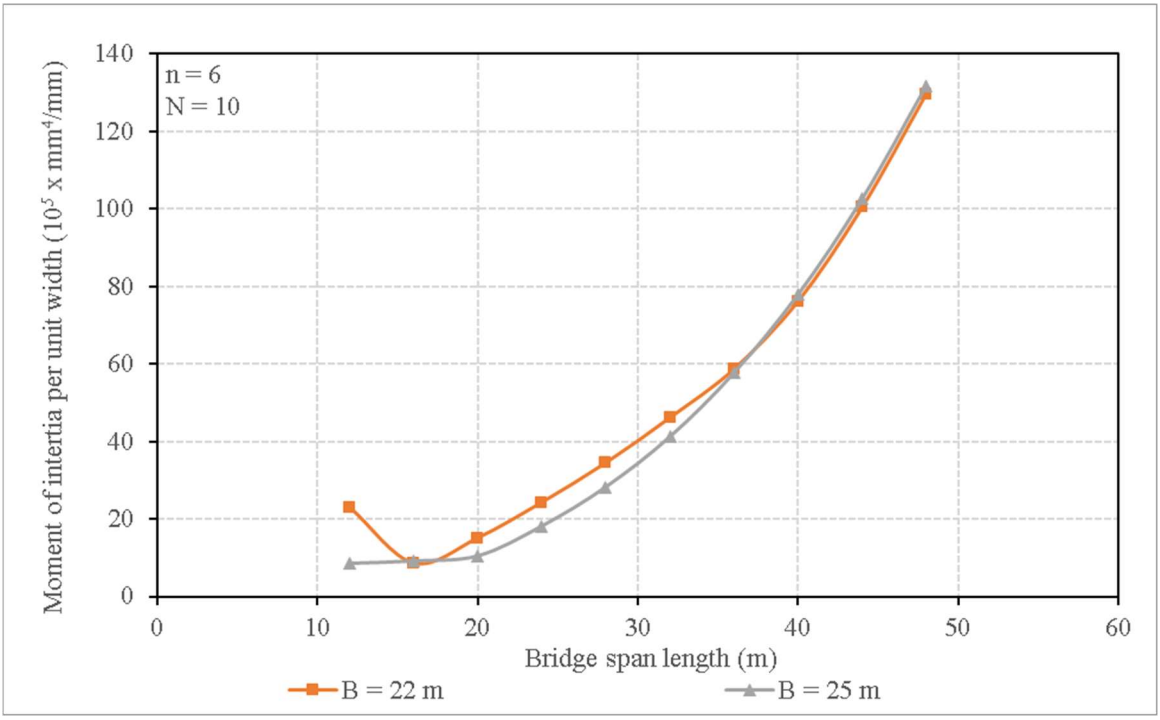

Figure 5.53: Moment of inertia of the steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading with ten girders

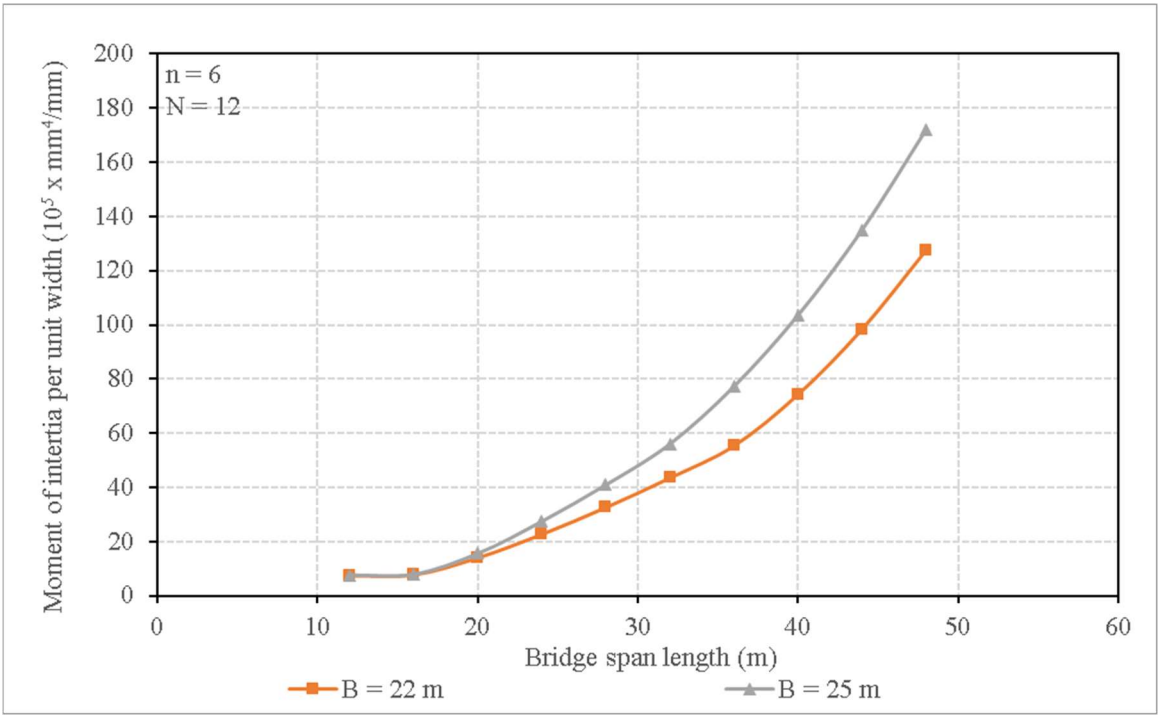

Figure 5.54: Moment of inertia of the steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading with twelve girders

As for the moment of inertia per unit width of the composite section observed in Figures 5.55 through 5.70, the values show a similar pattern to the steel section values. However, in the case of composite section, the values have a much closer packing. This is due to the moment of inertia of the slab per unit width being considered in the calculations which increases the magnitude of the results while reducing the variability as discussed previously. As expected, the case of 12 girders used visible in Figure 5.70 shows the same overdesigned characteristic as in Figure 5.54 for the steel section. This is due to the same reasons mentioned above. As a result, the case of 12 girders was omitted when obtaining parametric equations to represent the results obtained in this section.

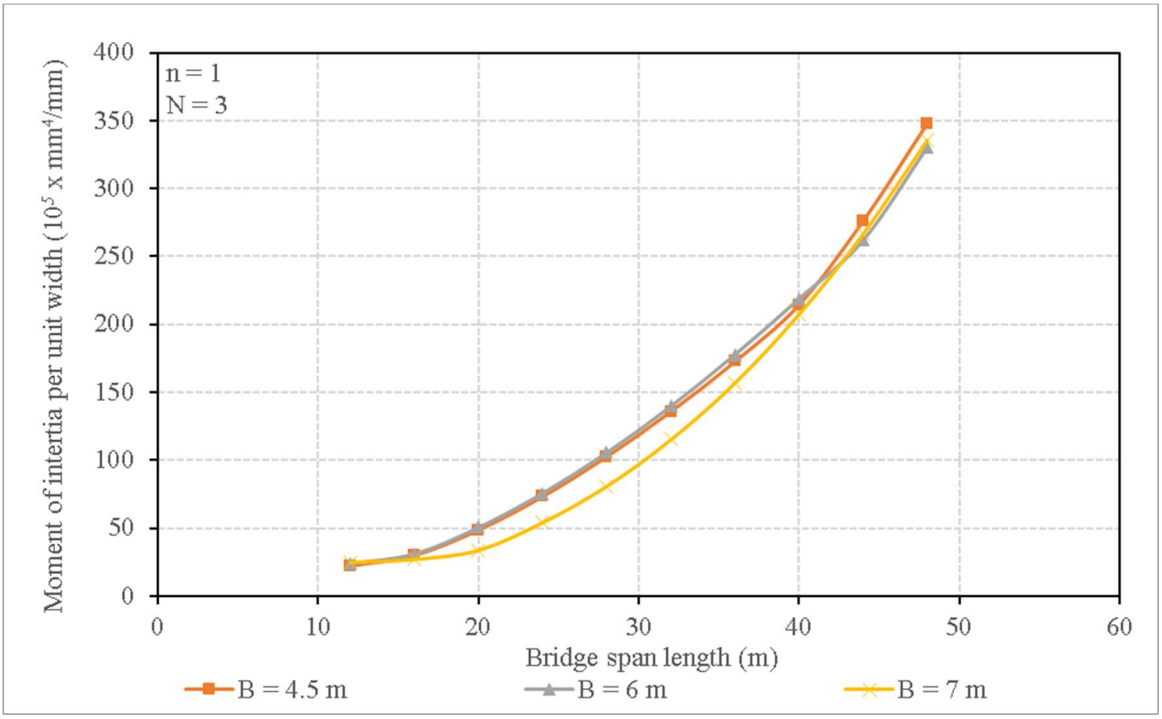

Figure 5.55: Moment of inertia of the composite concrete-steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading with three girders

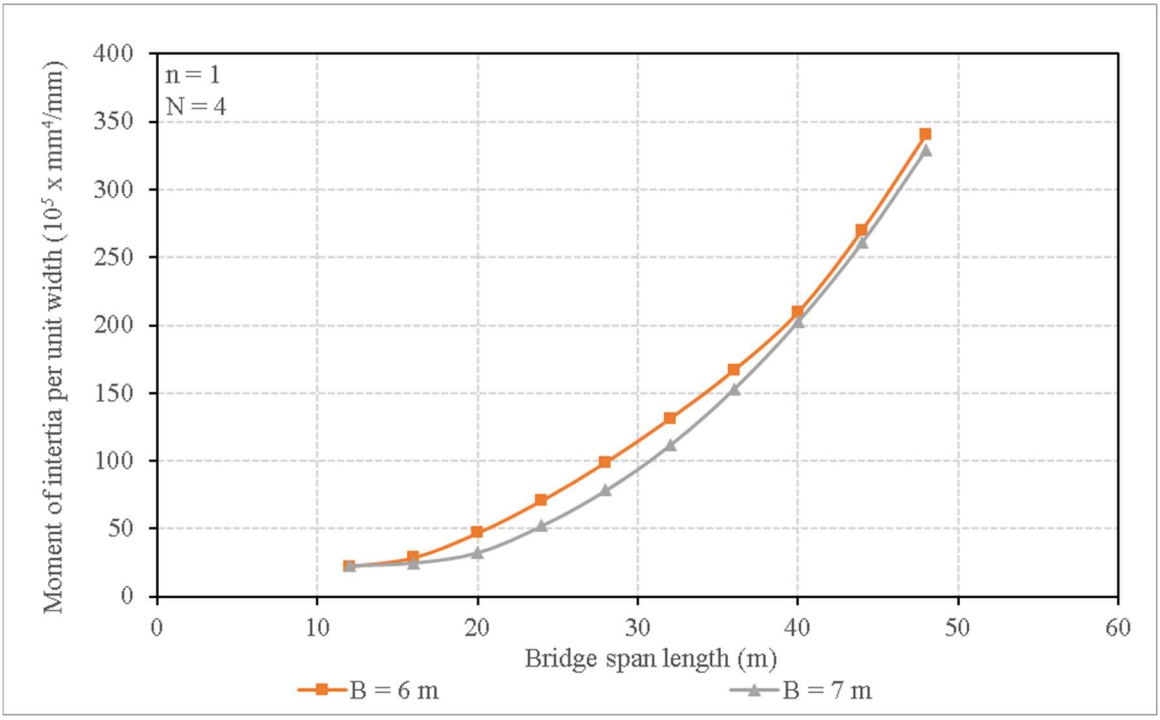

Figure 5.56: Moment of inertia of the composite concrete-steel section per unit width vs span length for a one-lane single span bridge under CL-625 truck loading with four girders

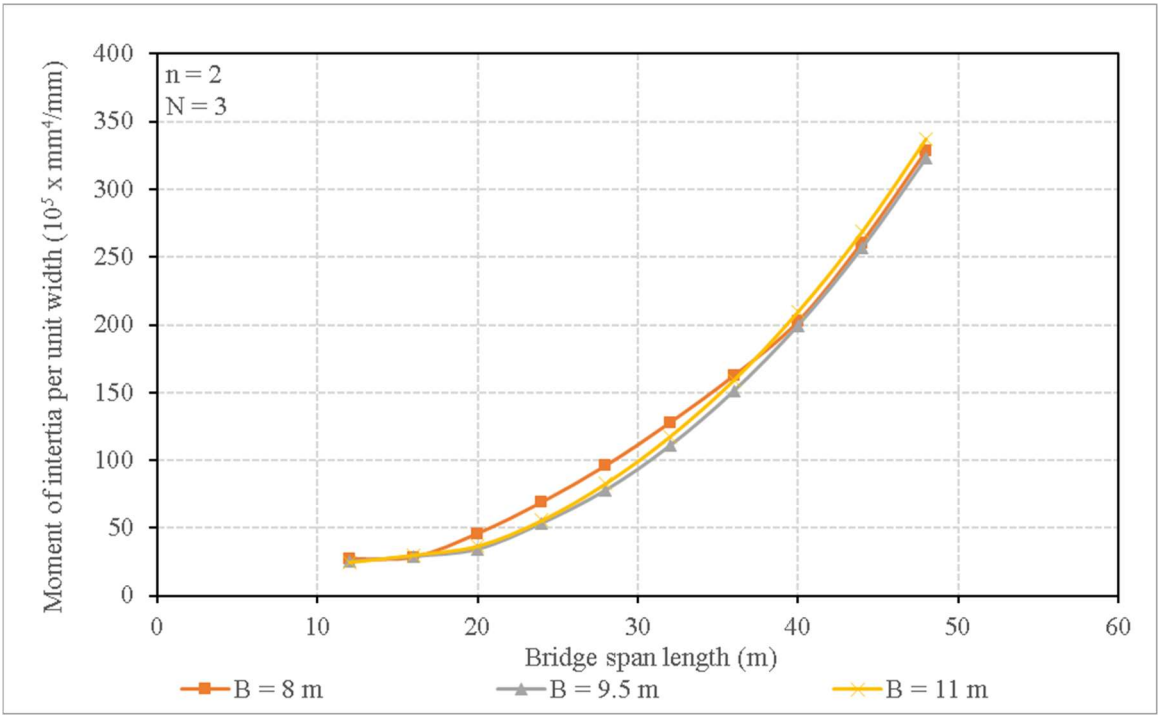

Figure 5.57: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading with three girders

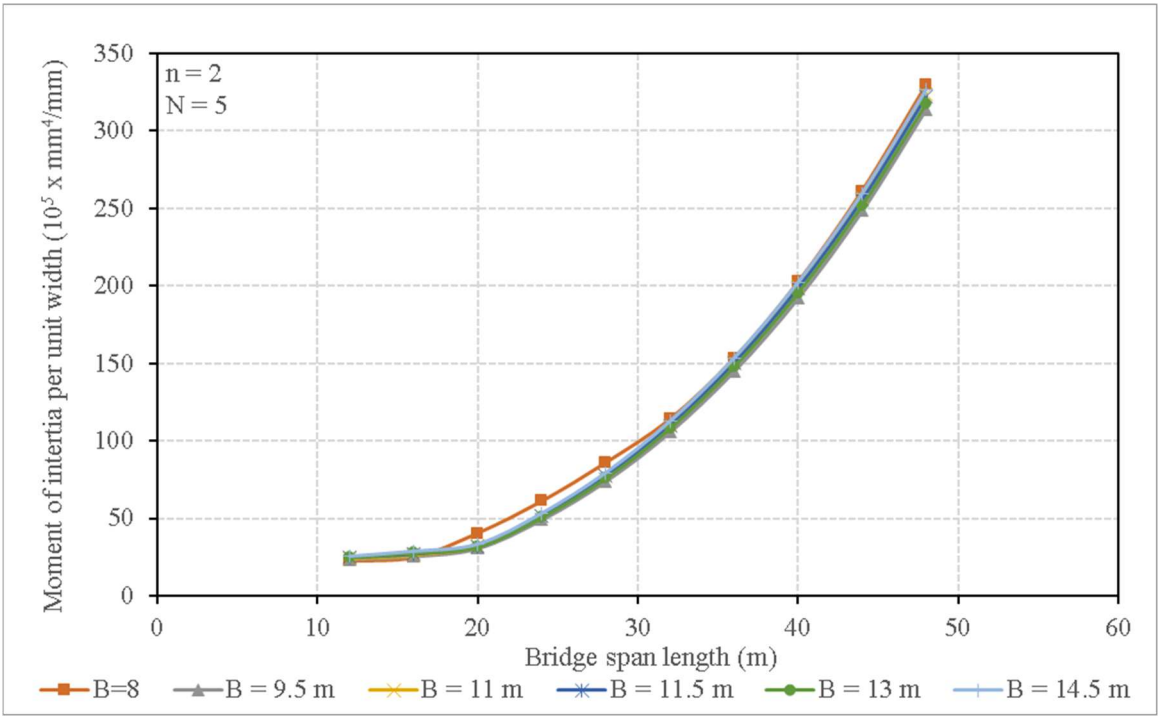

Figure 5.58: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading with five girders

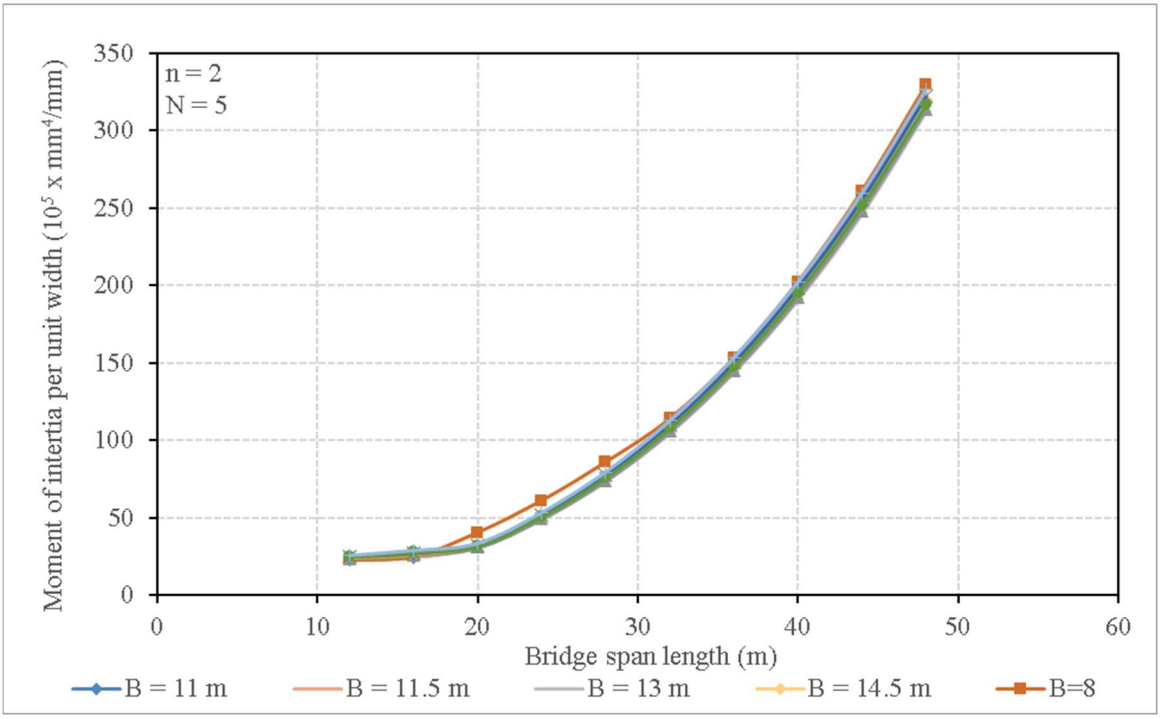

Figure 5.59: Moment of inertia of the composite concrete-steel section per unit width vs span length for a two-lane single span bridge under CL-625 truck loading with seven girders

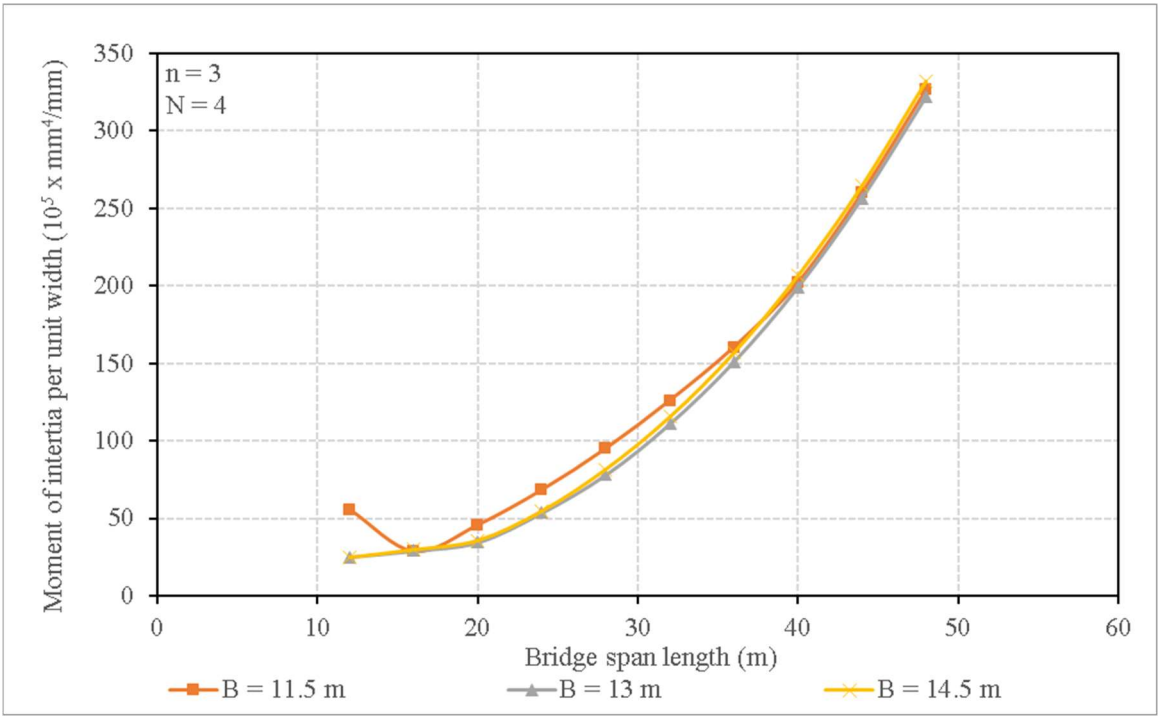

Figure 5.60: Moment of inertia of the composite concrete-steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading with four girders

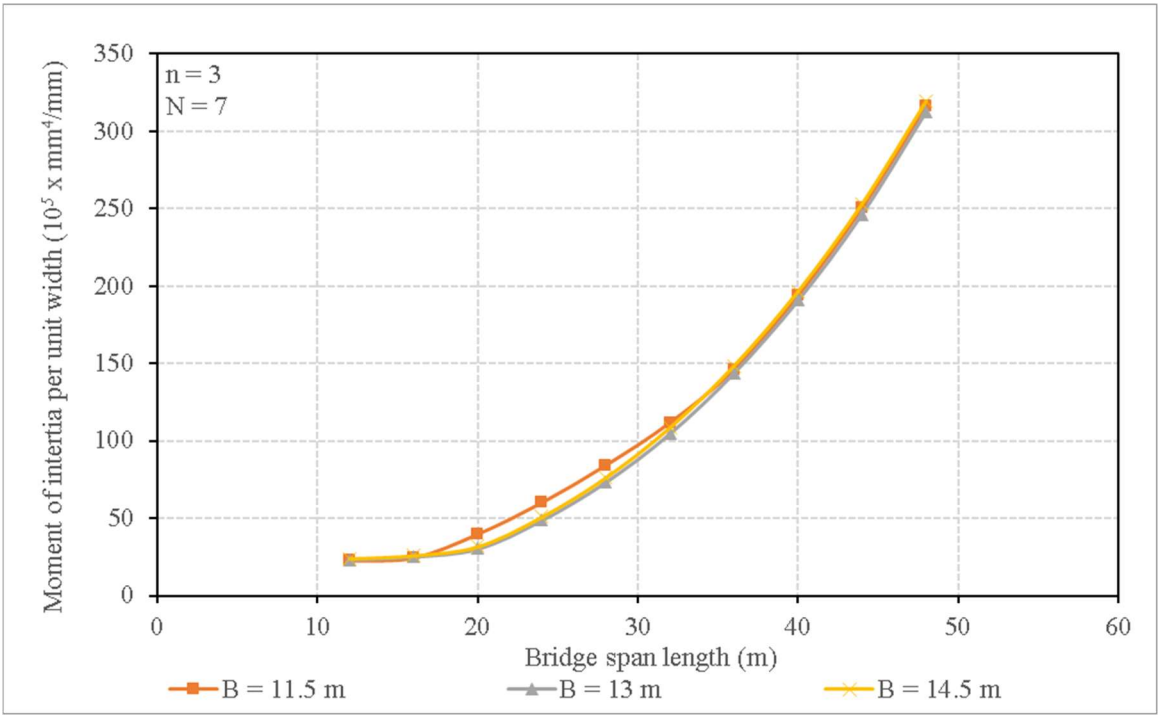

Figure 5.61: Moment of inertia of the composite concrete-steel section per unit width vs span length for a three-lane single span bridge under CL-625 truck loading with seven girders

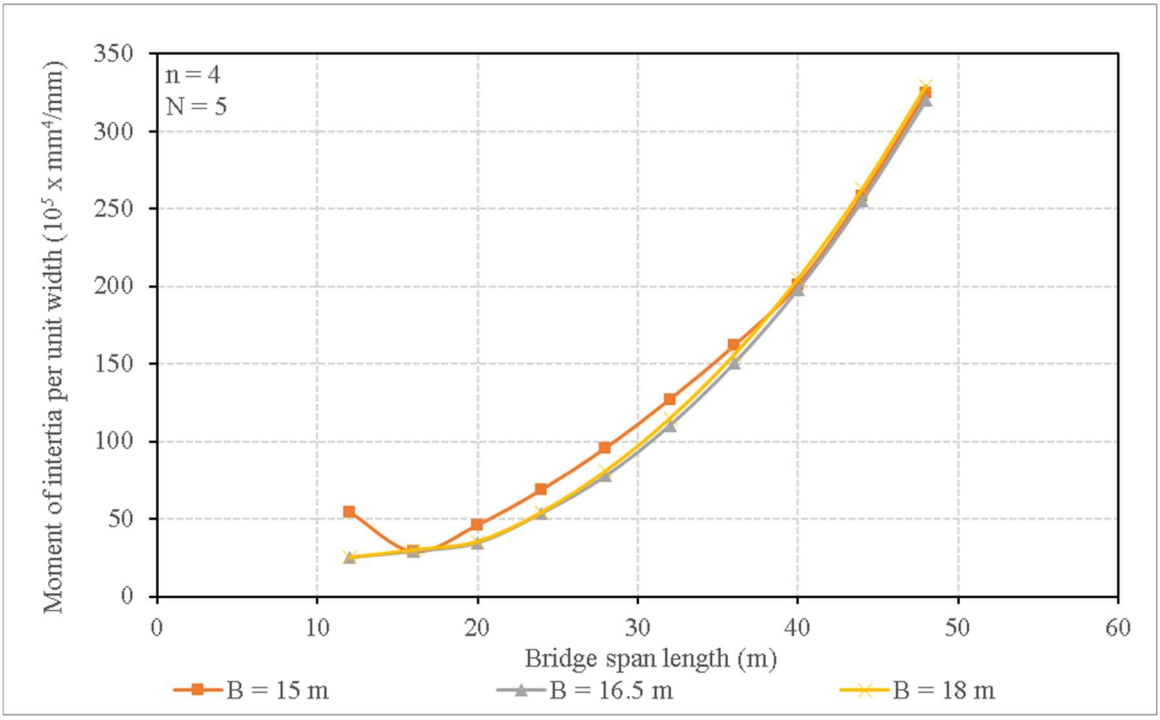

Figure 5.62: Moment of inertia of the composite concrete-steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading with five girders

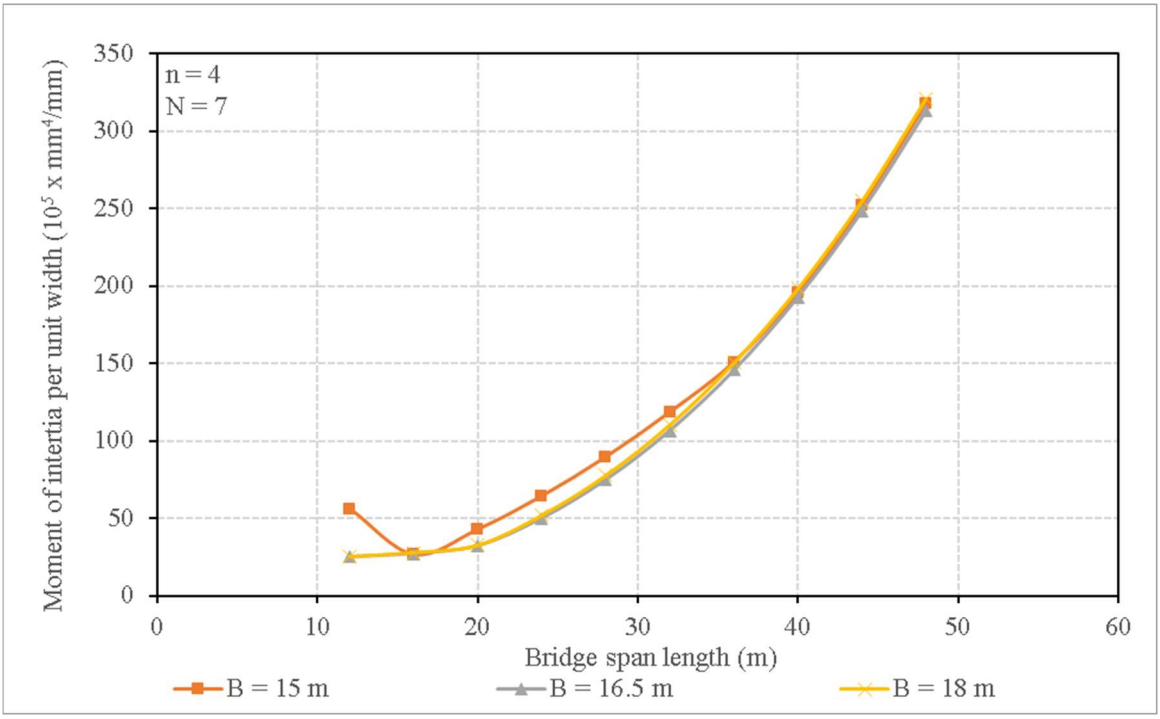

Figure 5.63: Moment of inertia of the composite concrete-steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading with seven girders

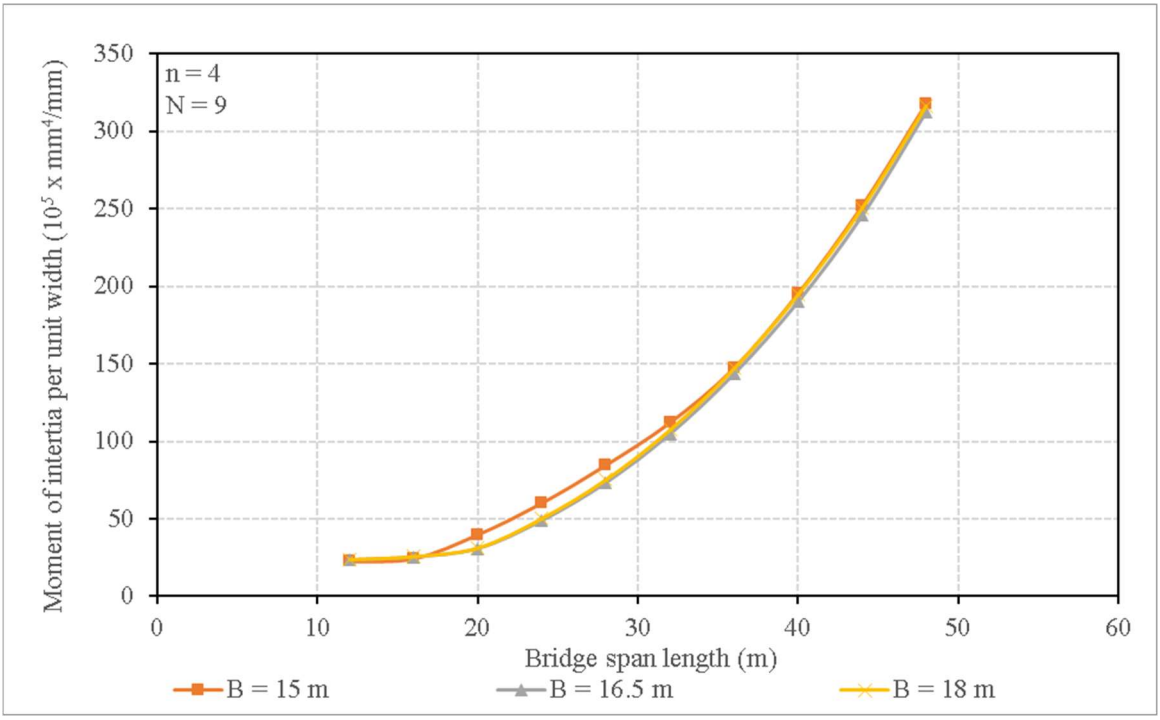

Figure 5.64: Moment of inertia of the composite concrete-steel section per unit width vs span length for a four-lane single span bridge under CL-625 truck loading with nine girders

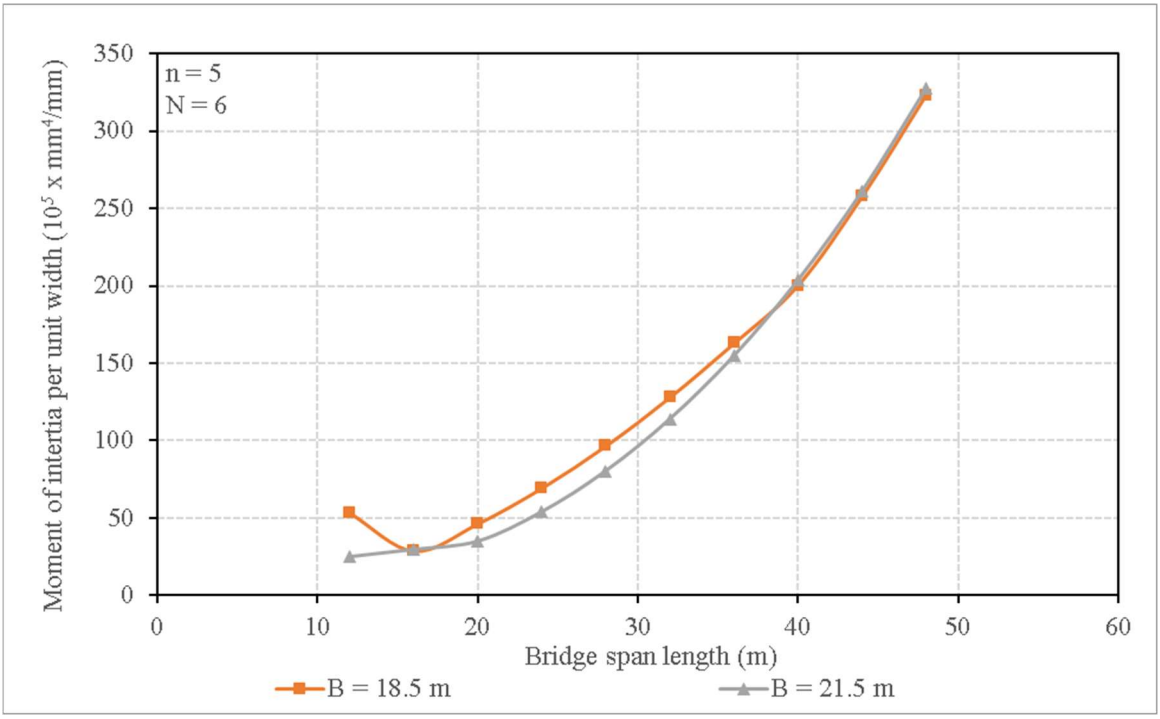

Figure 5.65: Moment of inertia of the composite concrete-steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading with six girders

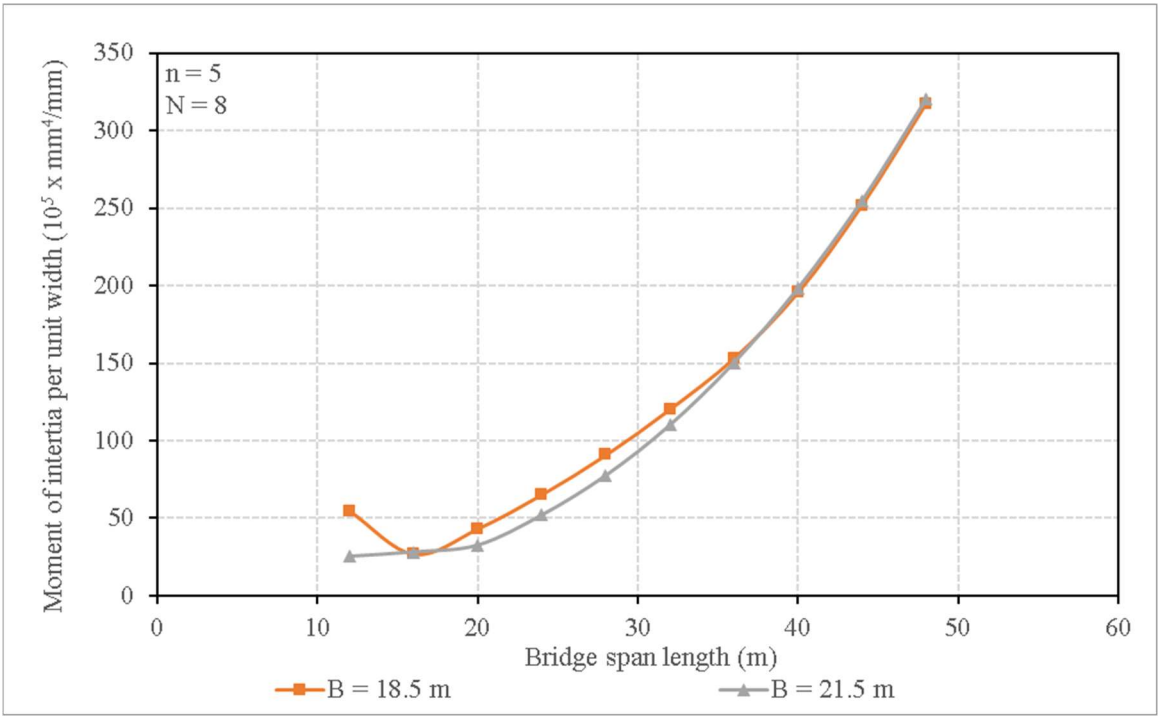

Figure 5.66: Moment of inertia of the composite concrete-steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading with eight girders

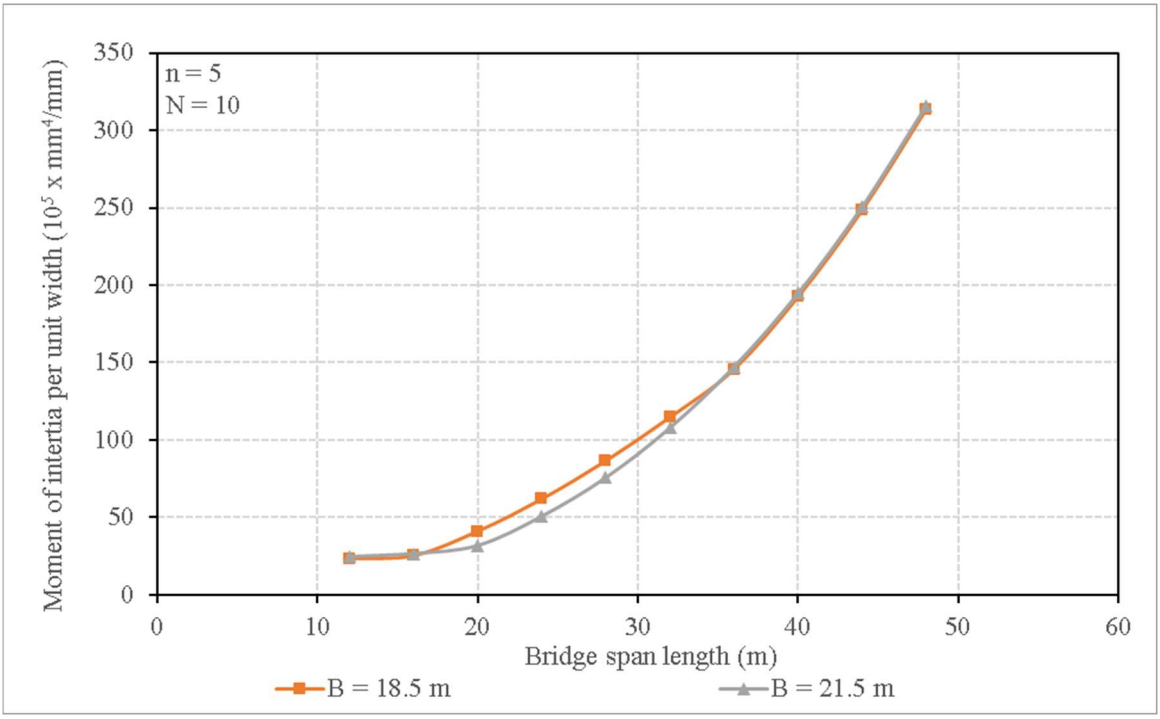

Figure 5.67: Moment of inertia of the composite concrete-steel section per unit width vs span length for a five-lane single span bridge under CL-625 truck loading with ten girders

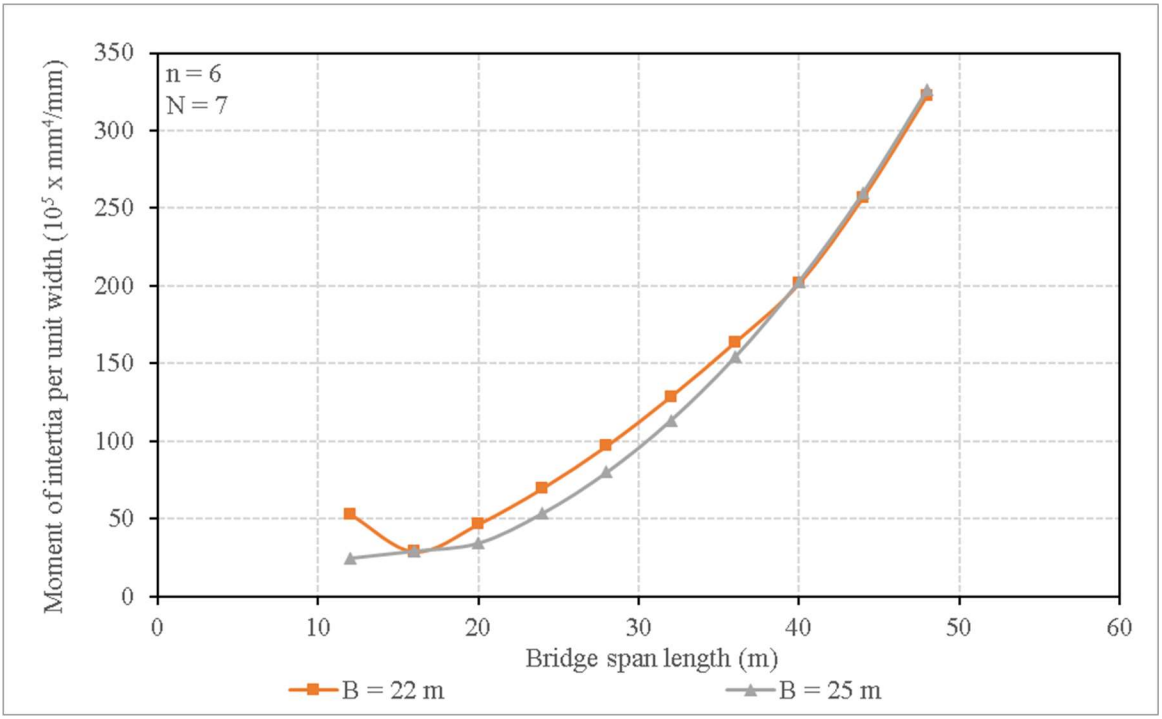

Figure 5.68: Moment of inertia of the composite concrete-steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading with seven girders

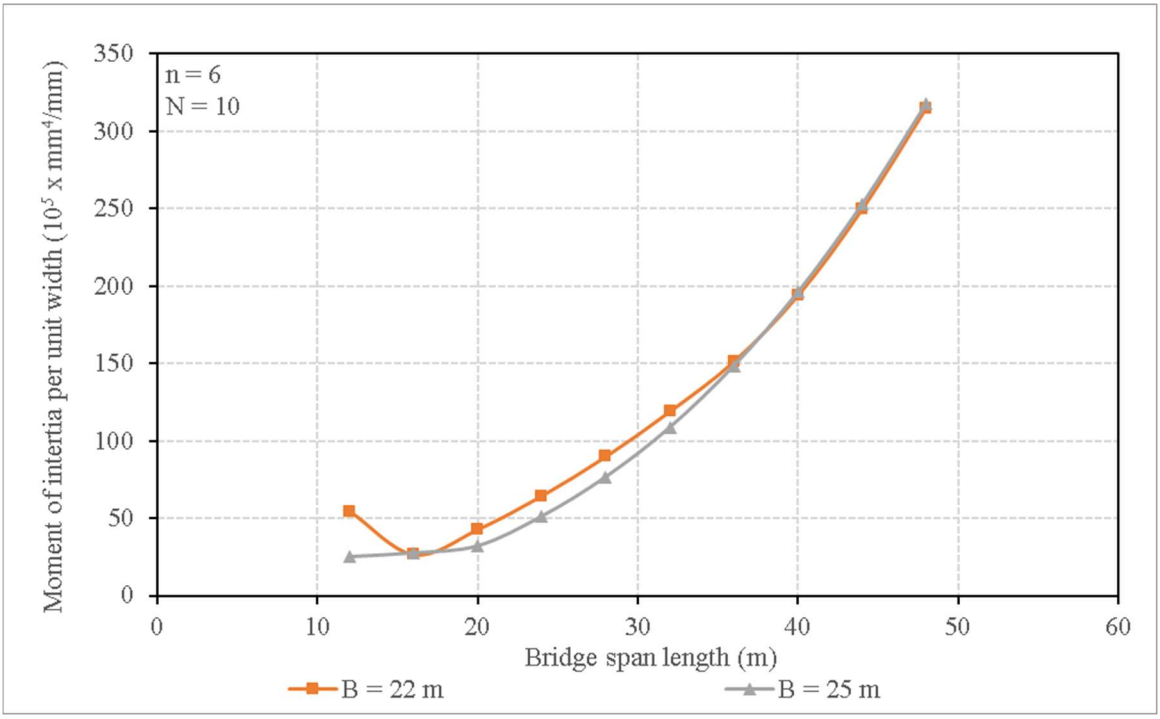

Figure 5.69: Moment of inertia of the composite concrete-steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading with ten girders

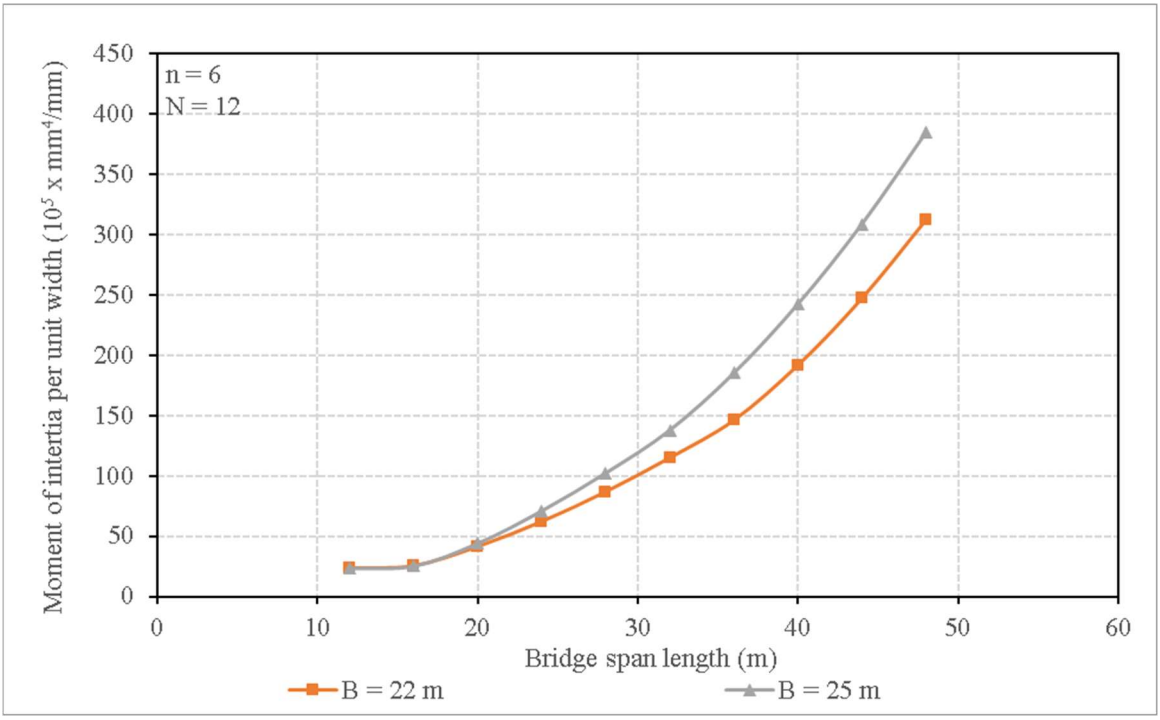

Figure 5.70: Moment of inertia of the composite concrete-steel section per unit width vs span length for a six-lane single span bridge under CL-625 truck loading with twelve girders

5.3 Effect of number of design lanes on moment of inertia

In order to study the effect of the number of design lanes (n) on the moment of inertia for the steel and the composite sections per unit width (Is/S & Ics/S), multiple graphs were created for n = 1 through n = 6 for single span bridge configurations under CL-625 truck loading. Furthermore, parametric equations were created to represent the values for moment of inertia for the steel and the composite sections per unit width for each design lane case.

In the case of one design lane shown in Figure 5.71, the moment of inertia per unit width can be seen to show a second degree polynomial relationship with the span length. This is true for both moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section. The equations developed for single span bridge configurations can be seen below;

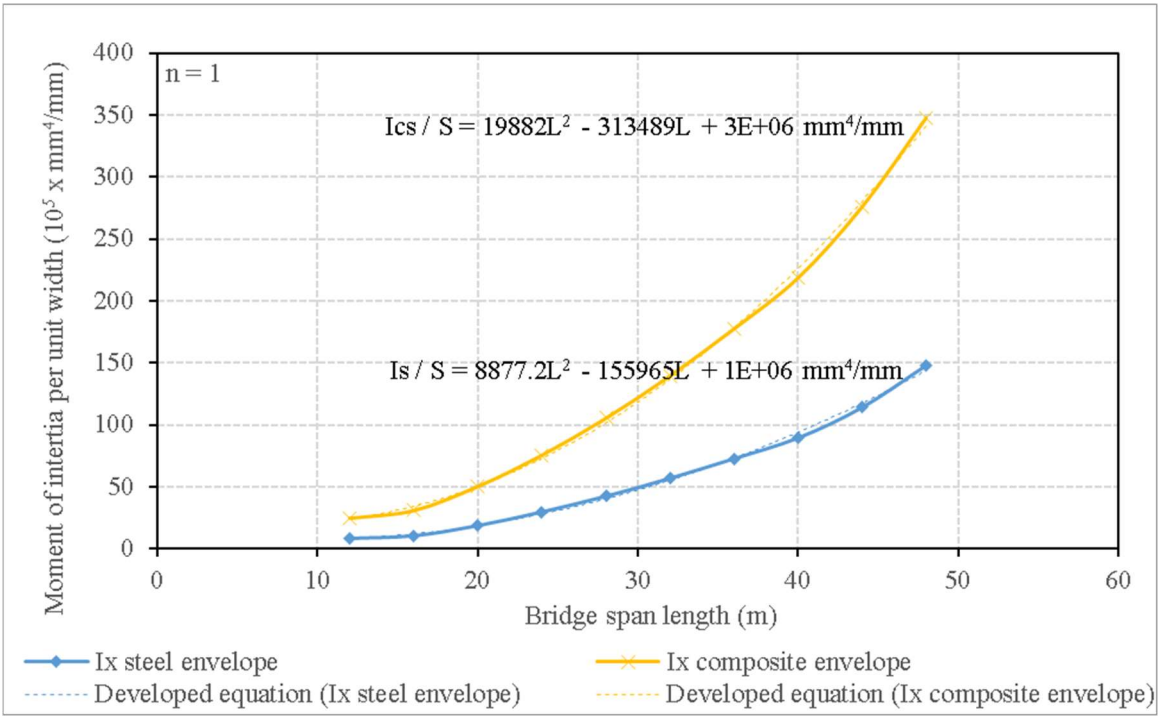

Figure 5.71: Envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for one-lane single span bridge under CL-625 truck loadings

[5.1] $\mathrm{Ics/S} = 19900(\mathrm{L}^2) - 314000(\mathrm{L}) + 3 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 1, CL-625 truck loading

[5.2] $\mathrm{Is/S} = 8900(\mathrm{L}^2) - 156000(\mathrm{L}) + 1 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 1, CL-625 truck loading

As for the case of two design lanes shown in Figure 5.72, the moment of inertia per unit width shows a very similar pattern to that of a single design lane. Second degree polynomial equations were created to represent the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section. The equations developed for single span bridge configurations can be seen below;

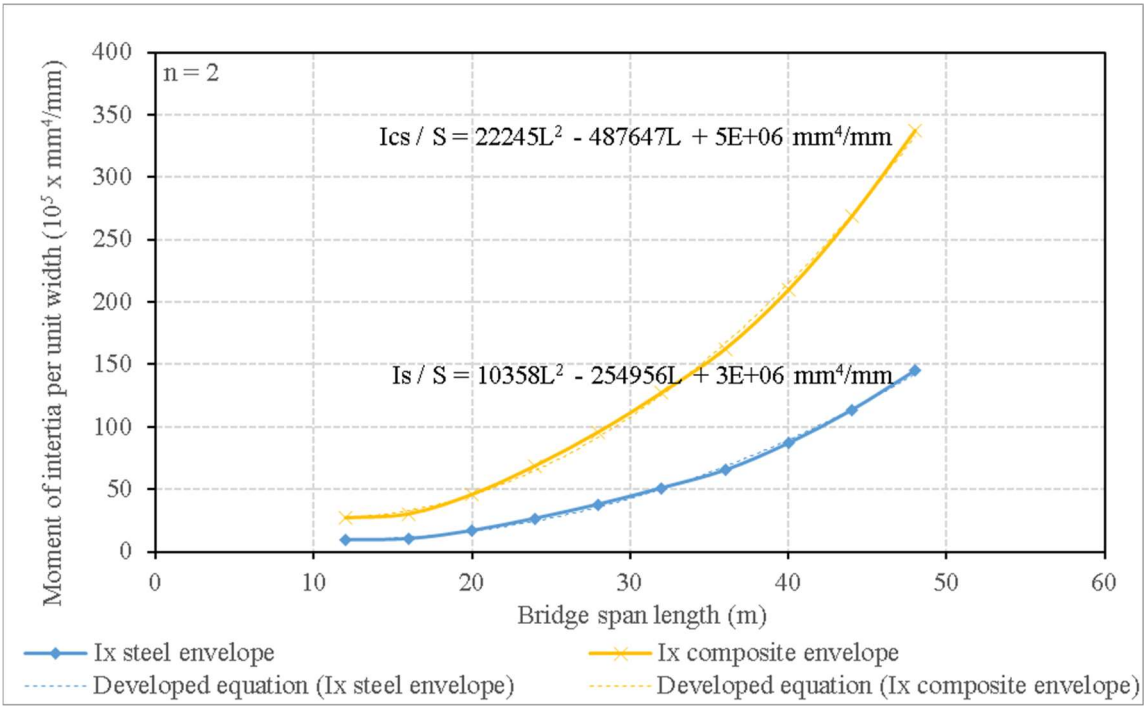

Figure 5.72: Envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for two-lane single span bridge under CL-625 truck loadings

[5.3] $\mathrm{Ics/S} = 22300(\mathrm{L}^2) - 488000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 2, CL-625 truck loading

[5.4] $\mathrm{Is/S} = 10000(\mathrm{L}^2) - 260000(\mathrm{L}) + 3 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 2, CL-625 truck loading

As for the case of three design lanes shown in Figure 5.73, the moment of inertia per unit width shows a very similar pattern to that of a one and two design lanes with the exception of moment of inertia at 12 m span length. This is due to some cases being overdesigned as the bridge dimensions are in some cases very small with too many girders thus being overdesigned. Second degree polynomial equations were created to represent the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section. The equations developed for single span bridge configurations can be seen below;

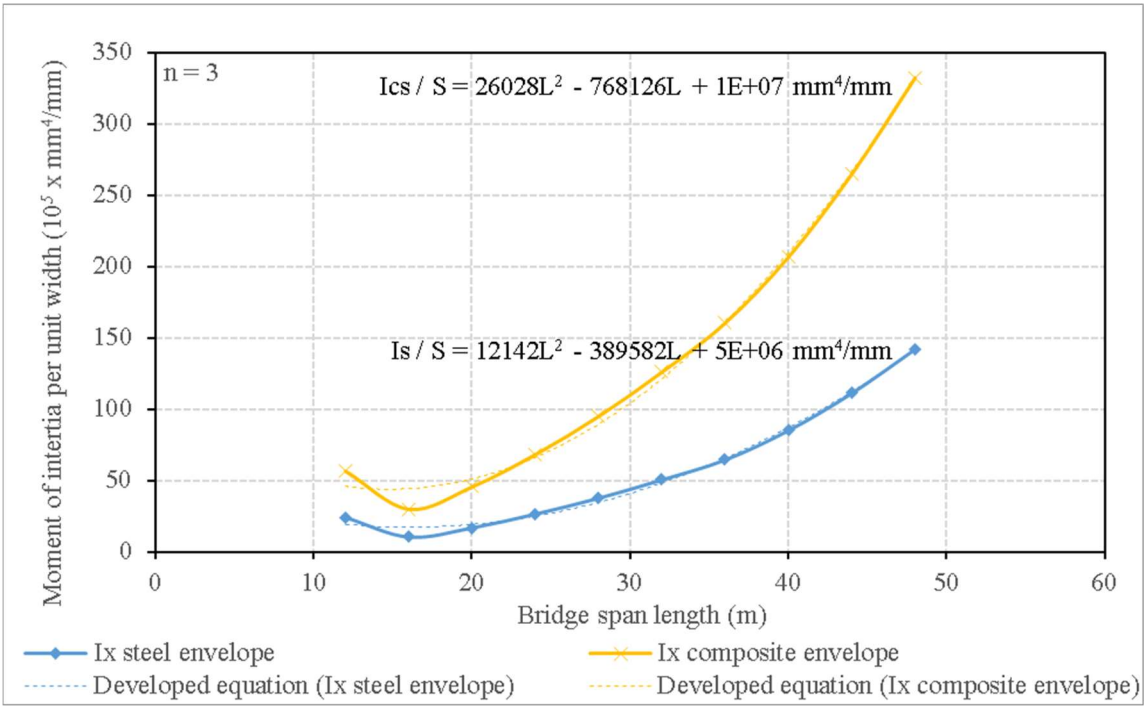

Figure 5.73: Envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for three-lane single span bridge under CL-625 truck loading

[5.5] $\mathrm{Ics/S} = 26000(\mathrm{L}^2) - 768000(\mathrm{L}) + 1 * 10^7\ \mathrm{mm}^4/\mathrm{mm}$ n = 3, CL-625 truck loading

[5.6] $\mathrm{Is/S} = 12000(\mathrm{L}^2) - 390000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 3, CL-625 truck loading

As for the case of four design lanes shown in Figure 5.74, the moment of inertia per unit width shows a very similar pattern to that of three design lanes. Second degree polynomial equations were created to represent the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section. The equations developed for single span bridge configurations can be seen below;

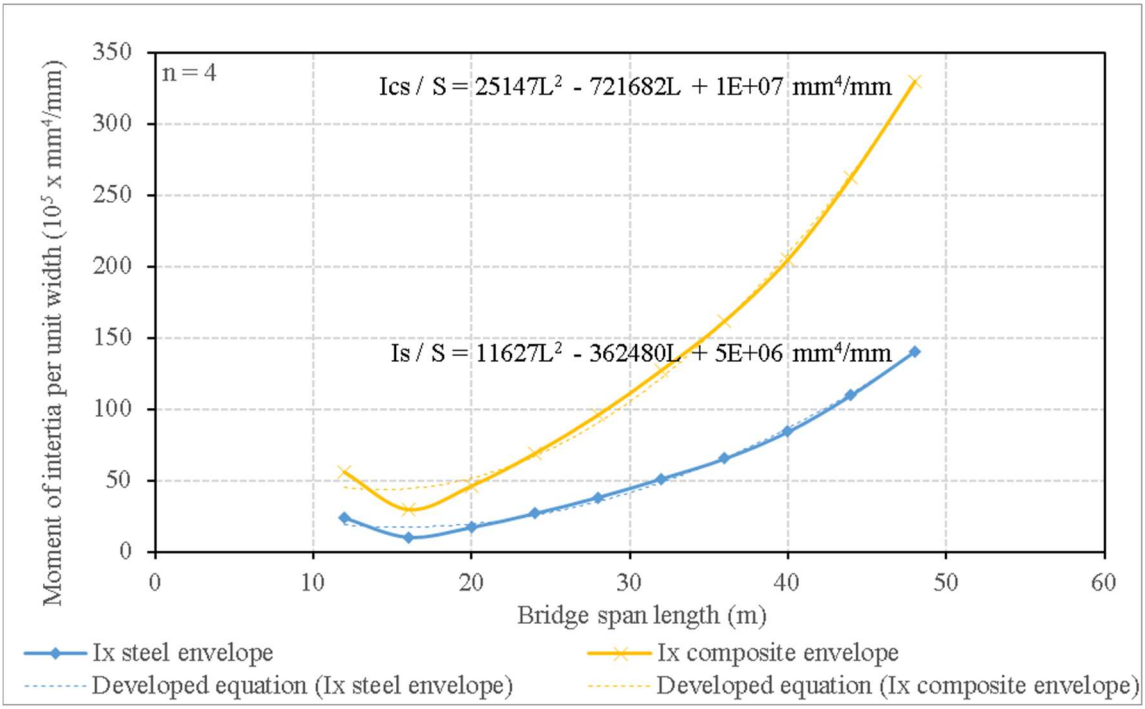

Figure 5.74: Envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for four-lane single span bridge under CL-625 truck loadings

[5.7] $\mathrm{Ics/S} = 26000(\mathrm{L}^2) - 720000(\mathrm{L}) + 1 * 10^7\ \mathrm{mm}^4/\mathrm{mm}$ n = 4, CL-625 truck loading

[5.8] $\mathrm{Is/S} = 12000(\mathrm{L}^2) - 360000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 4, CL-625 truck loading

As for the case of five design lanes shown in Figure 5.75, the moment of inertia per unit width shows a very similar pattern to that of three and four design lanes. Second degree polynomial equations were created to represent the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section. The equations developed for single span bridge configurations can be seen below;

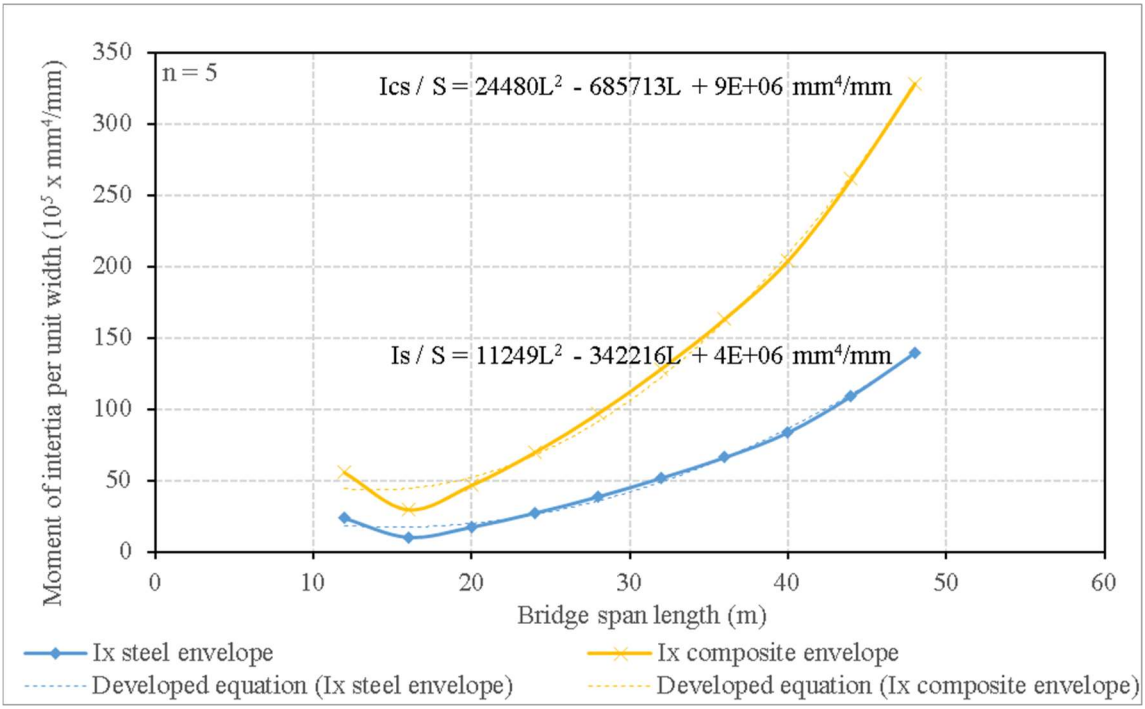

Figure 5.75: Envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for five-lane single span bridge under CL-625 truck loadings

[5.9] $\mathrm{Ics/S} = 25000(\mathrm{L}^2) - 680000(\mathrm{L}) + 9 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 5, CL-625 truck loading

[5.10] $\mathrm{Is/S} = 11000(\mathrm{L}^2) - 340000(\mathrm{L}) + 4 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ n = 5, CL-625 truck loading

Finally, in the case of five design lanes shown in Figure 5.75, the moment of inertia per unit width shows higher values than its previous counterparts. This is due to these values being governed by the case of N = 12 discussed in previous sections. This causes these values to heavily overestimate the required moment of inertia per unit width for the case of six design lanes. This being said, second degree polynomial equations were created to represent the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section. The equations developed for single span bridge configurations can be seen below;

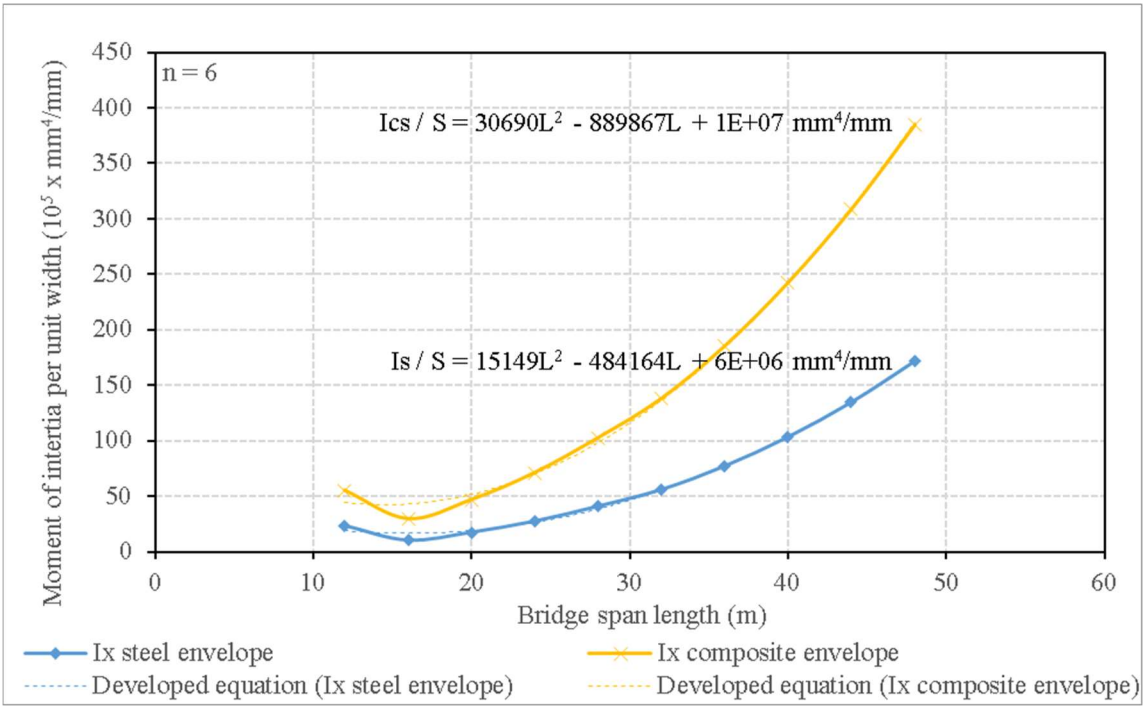

Figure 5.76: Envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for six-lane single span bridge under CL-625 truck loadings

[5.11] $\text{Ics/S} = 31000(\text{L}^2) - 890000(\text{L}) + 1 * 10^7\ \text{mm}^4/\text{mm}$ n = 6, CL-625 truck loading

[5.12] $\text{Is/S} = 15000(\text{L}^2) - 480000(\text{L}) + 6 * 10^6\ \text{mm}^4/\text{mm}$ n = 6, CL-625 truck loading

To put the difference in values in perspective, Figures 5.77 and 5.78 show the difference in results between the cases of one to five design lanes and that of six design lanes which is governed by the N-12 case. As can be seen, the values are very close between 16 m and 48 m for n = 1 through n = 5. The n = 6, being governed by the N = 12 case shows higher values when compared to the other five cases in both graphs. The difference shown is reduced in Figure 5.78. However, this is due to the slab contributing to the moment of inertia which reduces the percentage contributed by the I-girder to the moment of inertia per unit width.

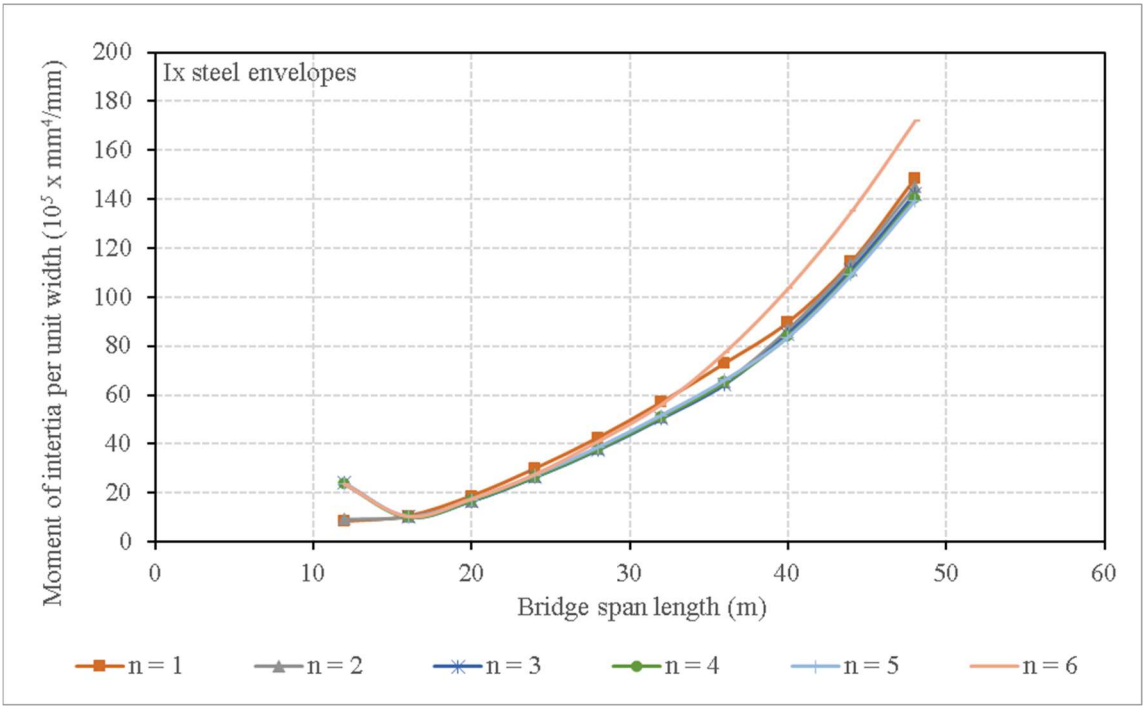

Figure 5.77: Combined envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length

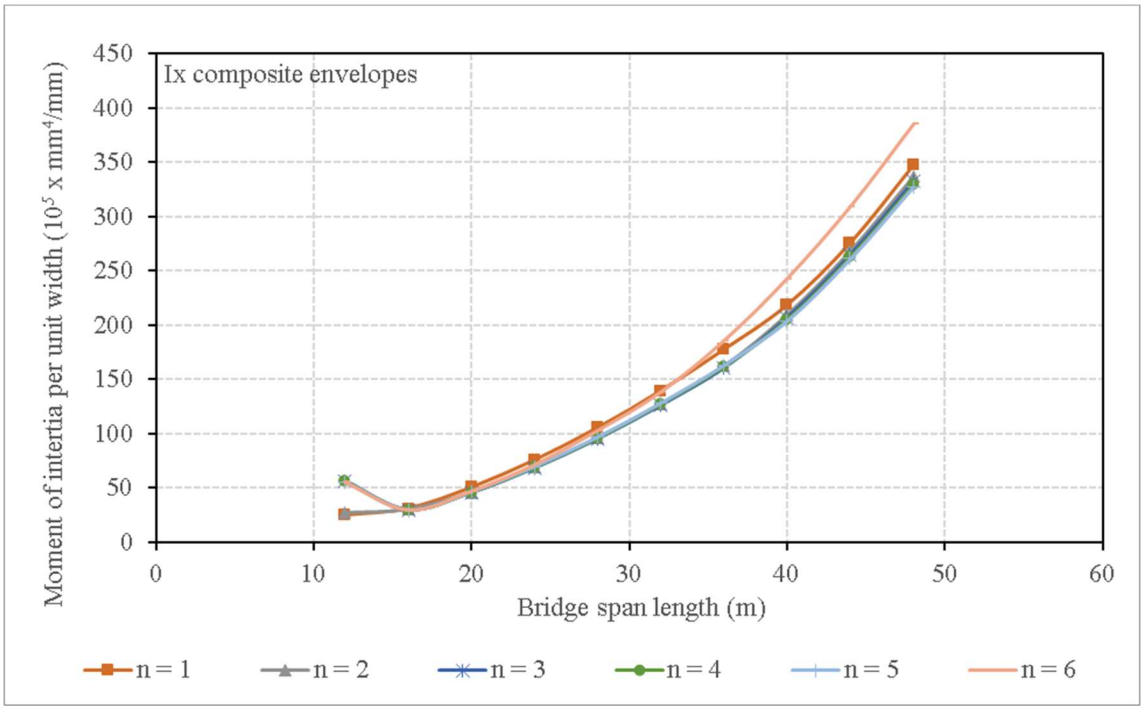

Figure 5.78: Combined envelopes for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length

5.4 Developed equations for single span bridge configurations

5.4.1 Bridge configurations under CL-625 truck loading

Considering the results from the analysis conducted in sections 5.1 through 5.3, the case of N = 12 was omitted when creating equations to represent the results obtained. Figure 5.79 shows the envelope of the results obtained for both Is and Ics. The equation representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

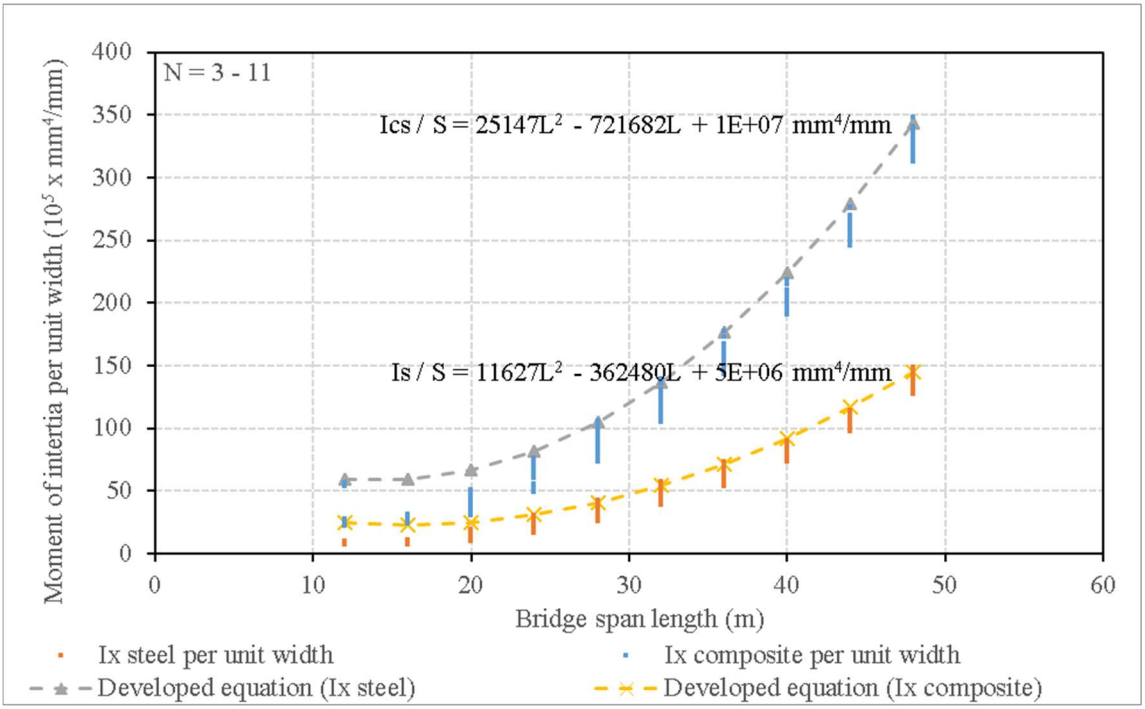

Figure 5.79: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for single span bridge under CL-625 truck loading between three and eleven girders

$$[5.13]\ Ics/S = 25000(L^2) - 720000(L) + 1 * 10^7\ mm^4/mm$$

$$[5.14]\ Is/S = 12000(L^2) - 360000(L) + 5 * 10^6\ mm^4/mm$$

To study the effect of girder spacing on the area of the web per unit width (Aw/S), a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.80 shows the results for such analysis. It can be seen that with an increased girder spacing, the Aw/S value decreases. This was taken into account when creating the final equation to represent the area of

the web. Furthermore, a similar graph was created to study the effect of the number of girders on the web area per unit width. Figure 5.81 shows the graph created. It can be seen that there are overlapping lines in contrast to Figure 5.80. This is due to some cases having different number of girders while having similar spacing. It was concluded from that study that the web area per unit width varies with the spacing regardless of the number of girders. A two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

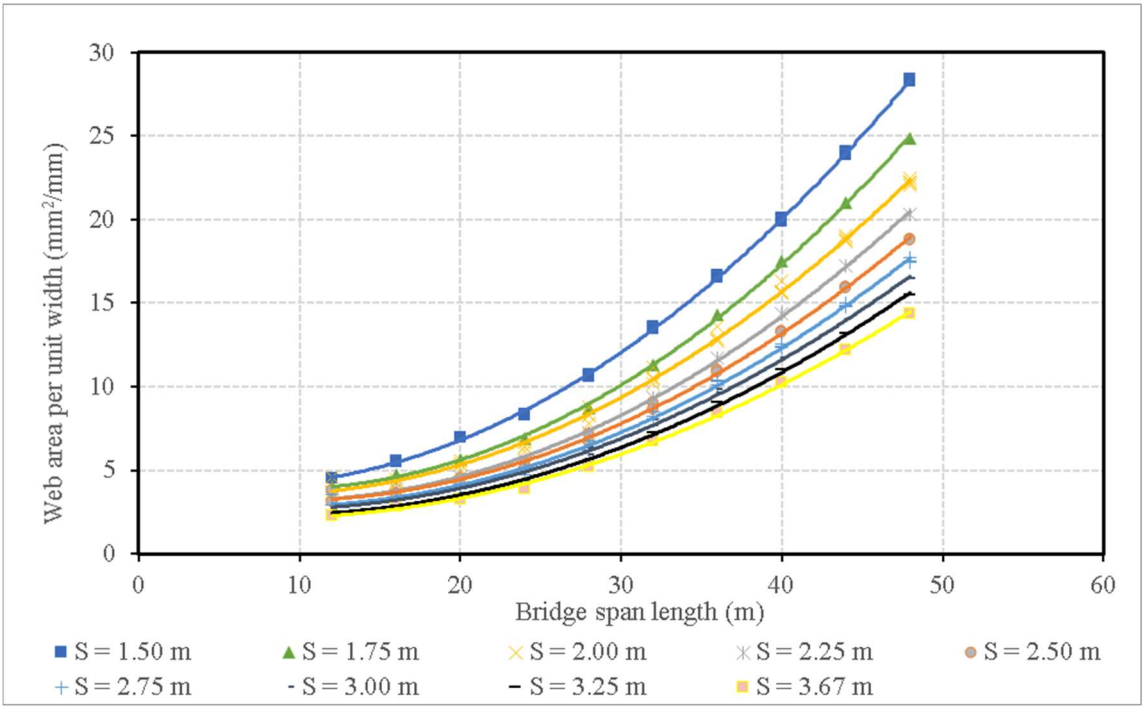

Figure 5.80: Web area per unit width vs span length for single span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

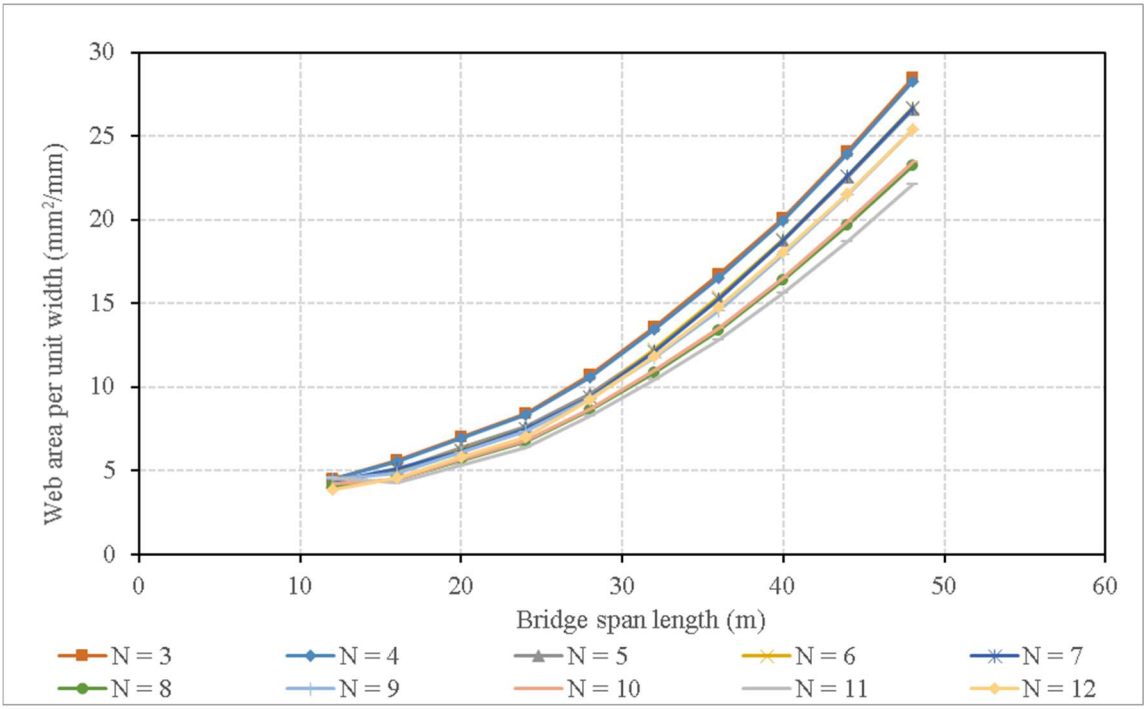

Figure 5.81: Web area per unit width vs span length for single span bridge configurations under CL-625 truck loading ranging between three to twelve girders

$$[5.15]\ \mathrm{Aw/S} = \big(0.018 - 0.029(\mathrm{S})\big)(\mathrm{L}^2) - \big(1.19 - 0.22(\mathrm{S})\big)(\mathrm{L}) + 5.85 - 0.91(\mathrm{S})\ \mathrm{mm}^2/\mathrm{mm}$$

The performance of the equation when compared to the program results can be seen in Figure 5.82. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

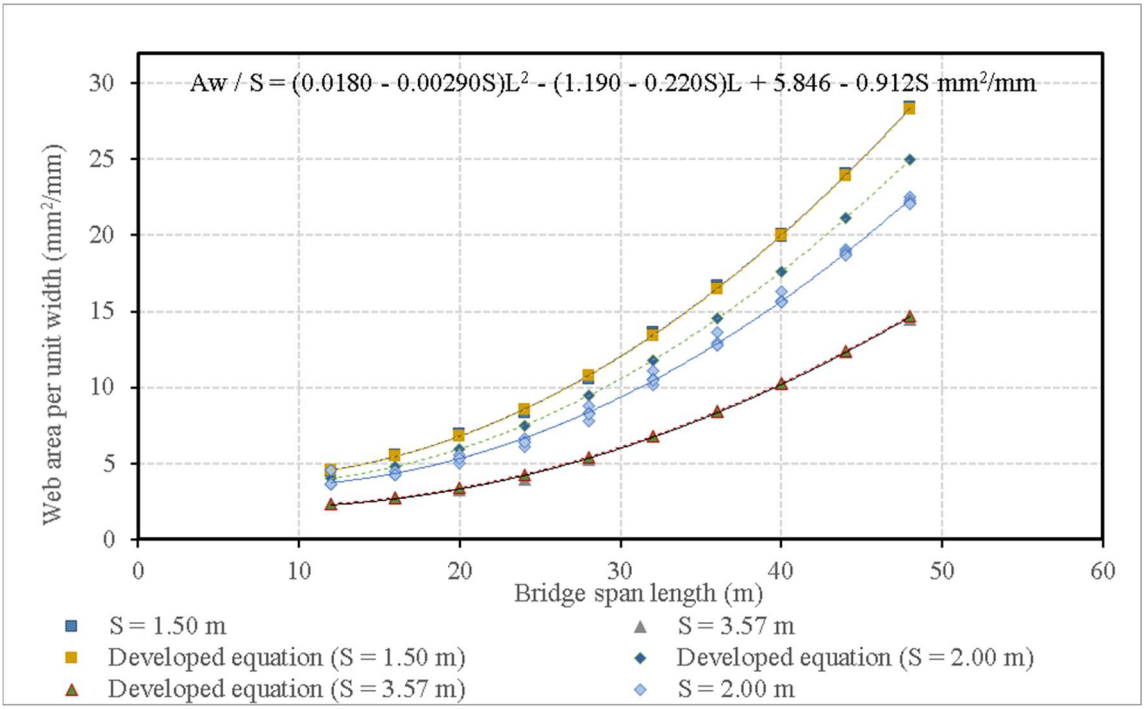

Figure 5.82: Comparison between program results and developed two-variable equation for web area per unit width vs span length for single span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figure 5.83. The longitudinal flexural rigidity (Dx) results in this study show a tighter data distribution between the lower and upper bounds as well as a much lower upper bound and a slightly reduced lower bound for shorter spans (Bakht & Moses, 1988). It is worth noting that the results from Bakht's study are for the CL-740 truck that was being used in the OHBDC of 1983 (MTO, 1983). Some information is not stated regarding the calculation of the longitudinal flexural rigidity in Bakht's work. However, it is assumed that the concrete used in the 1980s has a lower compressive strength (f'_c) and is not to the current standards. This might have an effect on the results produced for Dx.

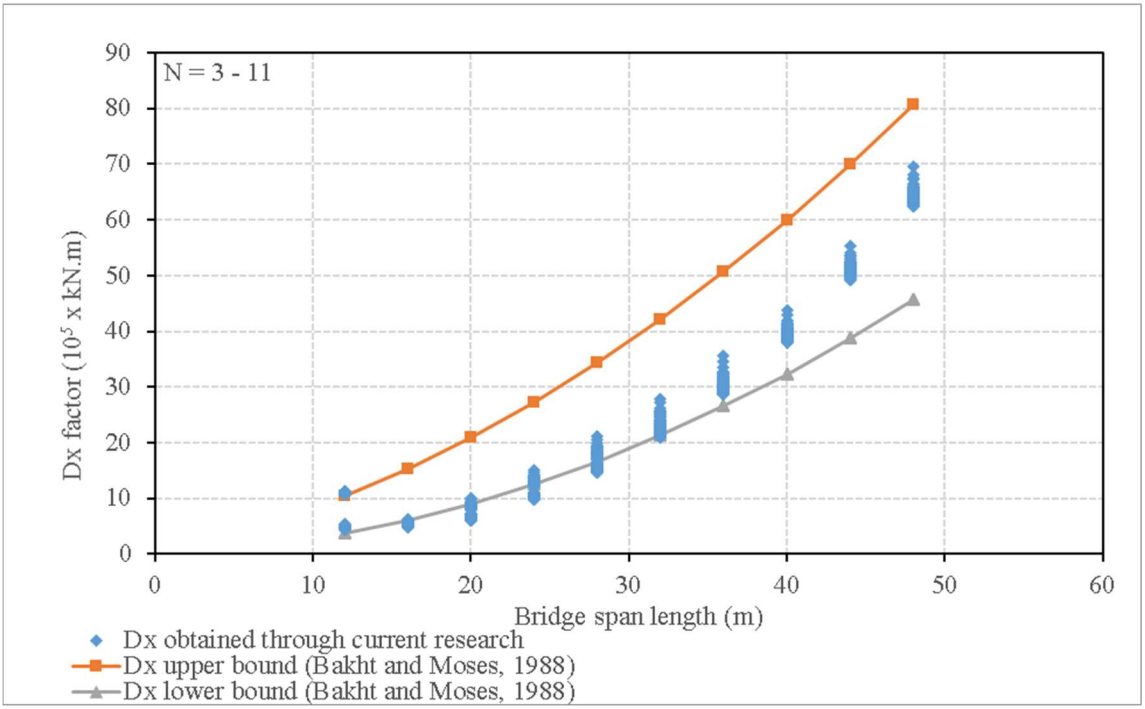

Figure 5.83: Comparison between Dx factor obtained in this research for single span bridge under CL-625 truck loading and the boundary values obtained by Bakht B., and Moses, F (Bakht & Moses, 1988)

5.4.2 Bridge configurations under CL-800 truck loading

Similar to section 5.4, the case of N = 12 was omitted when creating equations to represent the results obtained. Figure 5.84 shows the envelope of the results obtained for both Is and Ics per unit width. The equation representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

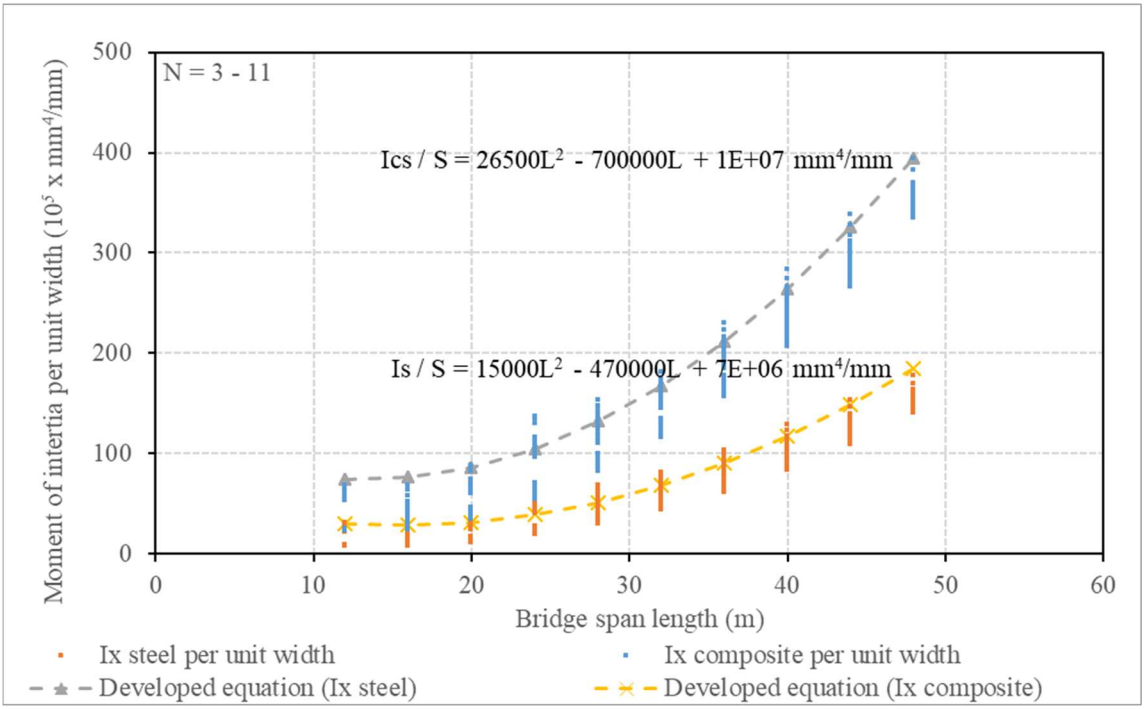

Figure 5.84: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length for single span bridge under CL-800 truck loading between three and eleven girders

$$[5.16]\ \mathrm{Ics/S} = 26500(\mathrm{L}^2) - 700000(\mathrm{L}) + 1 * 10^7\ \mathrm{mm}^4/\mathrm{mm}$$

$$[5.17]\ \mathrm{Is/S} = 15000(\mathrm{L}^2) - 470000(\mathrm{L}) + 7 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$$

Based on the results of the study conducted in section 5.4, a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.85 shows the results for such analysis. A similar distribution to Figure 5.85 can be seen. This behavior was taken into account when creating the final equation to represent the area of the web for this section. A two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

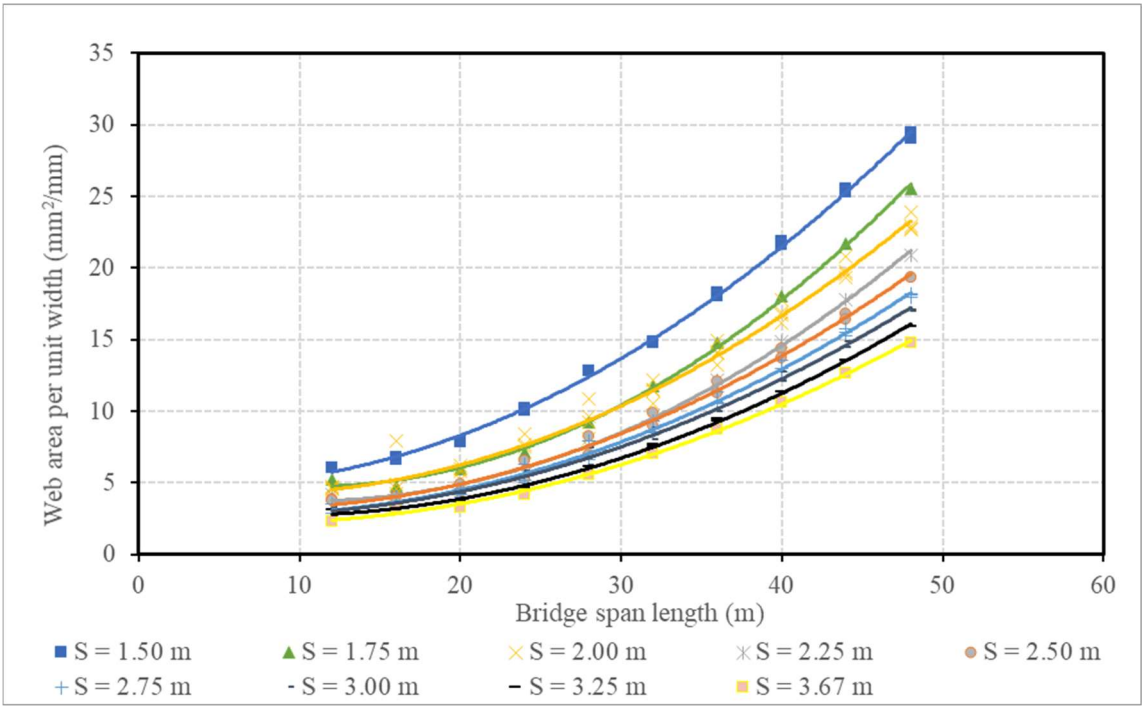

Figure 5.85: Web area per unit width vs span length for single span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

[5.18] $\mathrm{Aw/S} = \big(0.0156 - 0.024(\mathrm{S})\big)(\mathrm{L}^2) - \big(0.0495 - 0.0.0126(\mathrm{S})\big)(\mathrm{L}) + 5.00 - 0.138(\mathrm{S})\ \mathrm{mm}^2/\mathrm{mm}$

The performance of the equation when compared to the program results can be seen in Figure 5.86. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

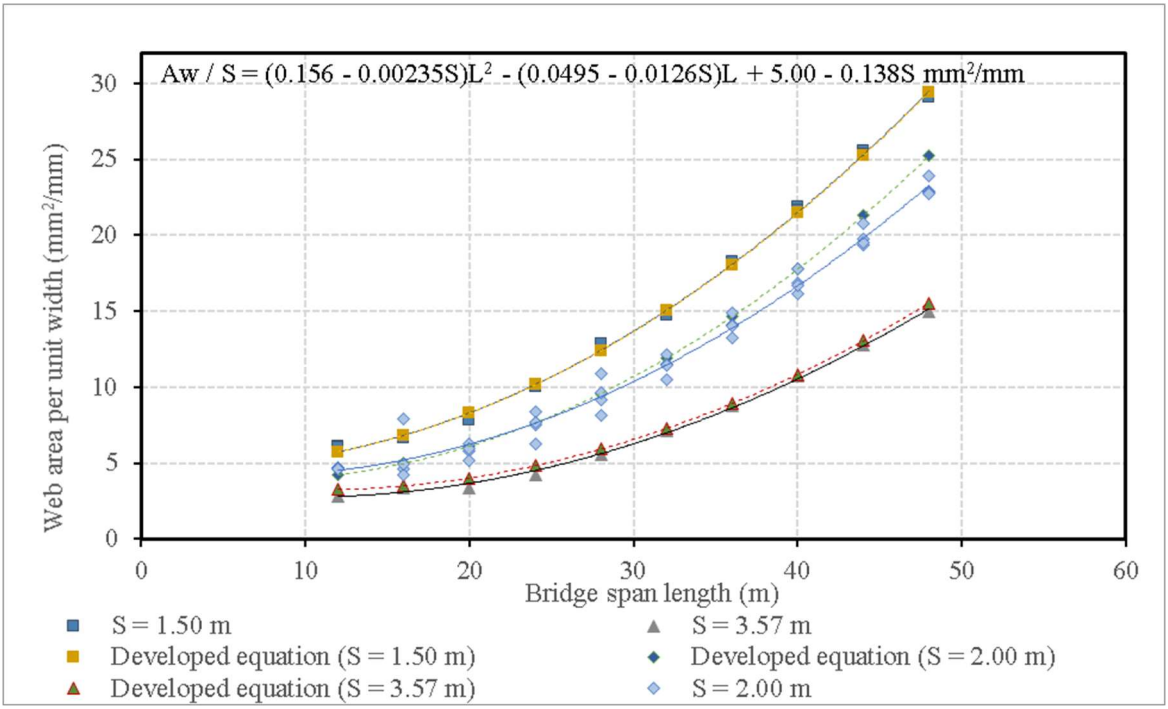

Figure 5.86: Comparison between program results and developed two-variable equation for web area per unit width vs span length for single span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figure 5.87. The longitudinal flexural rigidity (Dx) results in this study show a very similar data distribution between the lower and upper bounds to the results obtained in the previous study (Bakht & Moses, 1988). It is worth noting that the results from Bakht's study are for the CL-740 truck loading that was being used in the OHBDC of 1983 which is very close in weight to the CL-800 truck loading (MTO, 1983).

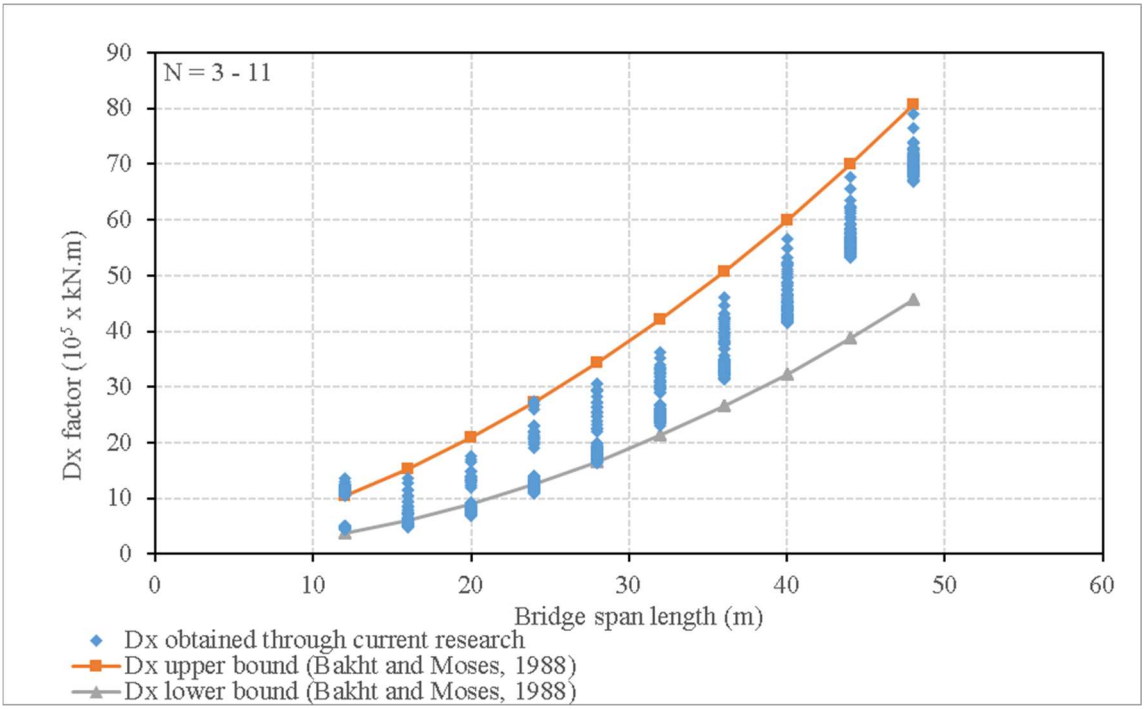

Figure 5.87: Comparison between Dx factor obtained in this research for single span bridge under CL-800 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

5.5 Developed equations for two equal span bridge configurations

5.5.1 Bridge configurations under CL-625 truck loading

Considering the results obtained for single span cases, similar results were produced for two equal span bridge configurations. Figure 5.88 shows the envelope of the results obtained for both Is and Ics at support location and Figure 5.89 shows the envelope of the results obtained for both Is and Ics at midspan location. The equations representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

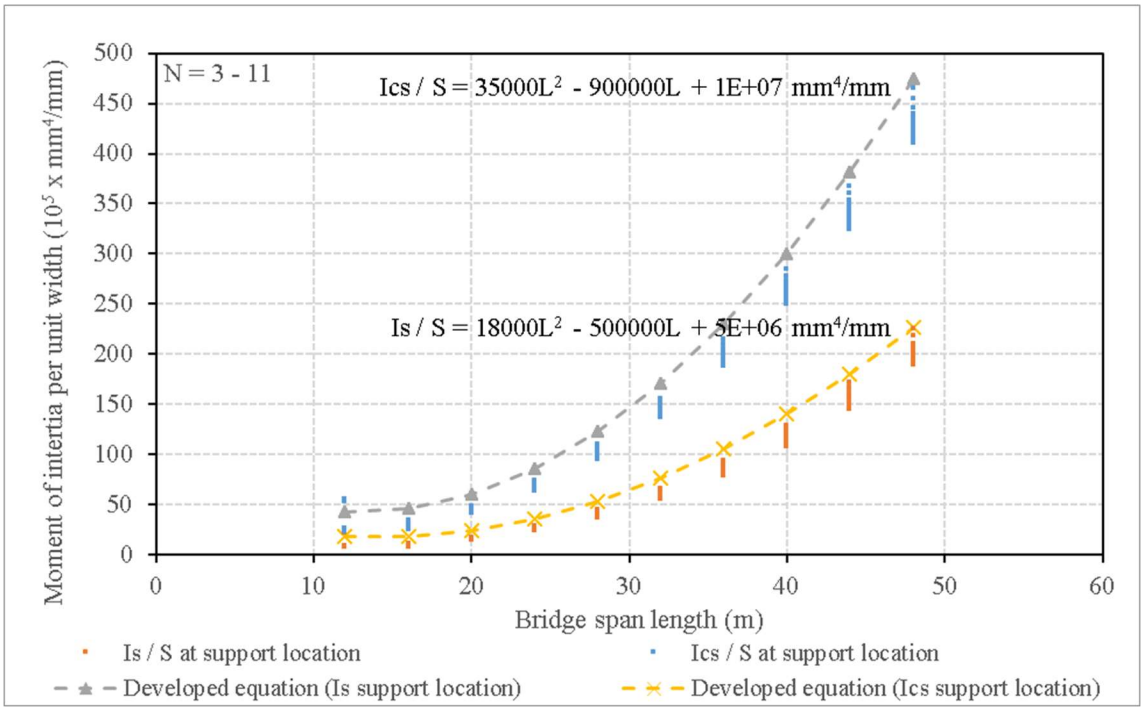

Figure 5.88: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at support location for two equal span bridge under CL-625 truck loading between three and eleven girders

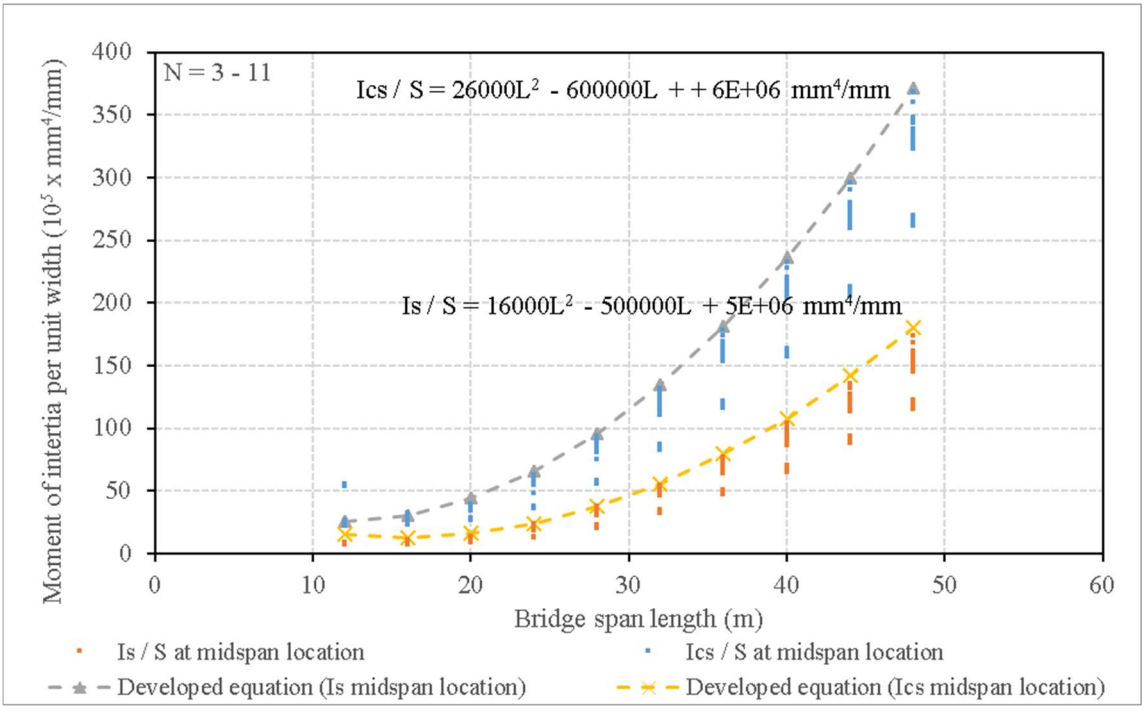

Figure 5.89: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at midspan location for two equal span bridge under CL-625 truck loading between three and eleven girders

[5.19] $\mathrm{Ics/S} = 35000(\mathrm{L}^2) - 900000(\mathrm{L}) + 1 * 10^7\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.20] $\mathrm{Is/S} = 18000(\mathrm{L}^2) - 500000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.21] $\mathrm{Ics/S} = 26000(\mathrm{L}^2) - 600000(\mathrm{L}) + 6 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

[5.22] $\mathrm{Is/S} = 16000(\mathrm{L}^2) - 500000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

Based on the results of the study conducted in section 5.4, a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.90 shows the results for such analysis. A similar distribution to Figure 5.85 can be seen. This behavior was taken into account when creating the final equation to represent the area of the web for this section. A similar two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

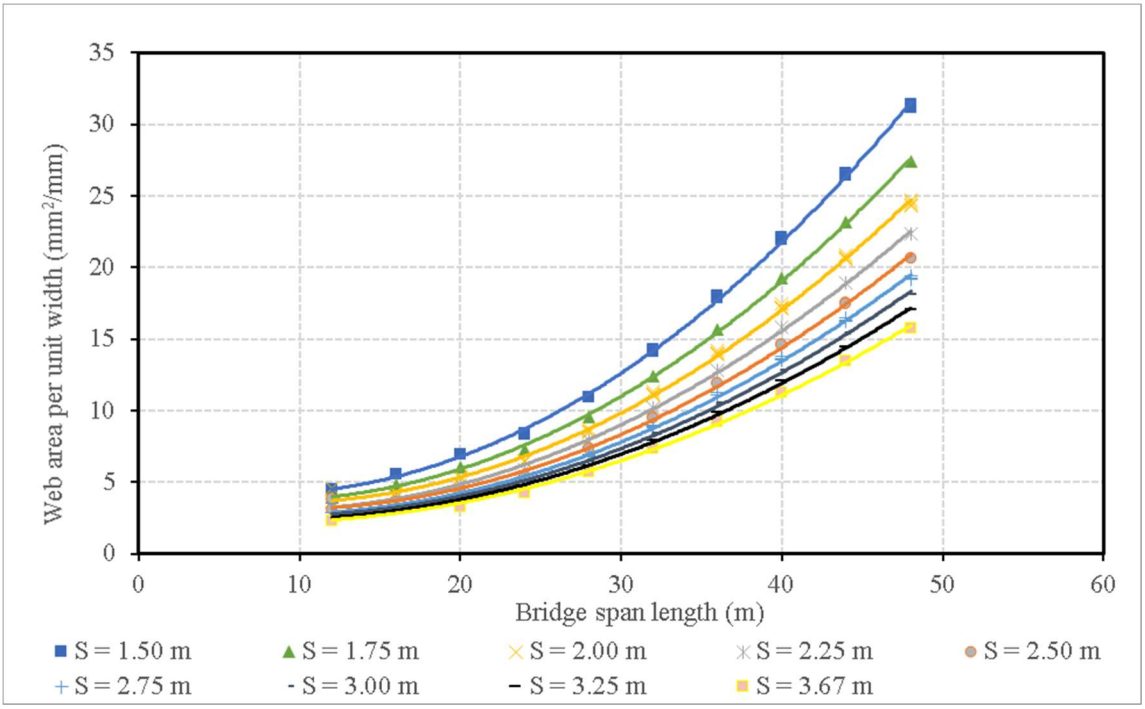

Figure 5.90: Web area per unit width vs span length for two equal span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

[5.23] $\mathrm{Aw/S} = \big(0.021 - 0.029(\mathrm{S})\big)(\mathrm{L}^2) - \big(0.32 - 0.046(\mathrm{S})\big)(\mathrm{L}) + 7.00 - 1.25(\mathrm{S})\ \mathrm{mm}^2/\mathrm{mm}$

The performance of the equation when compared to the program results can be seen in Figure 5.91. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

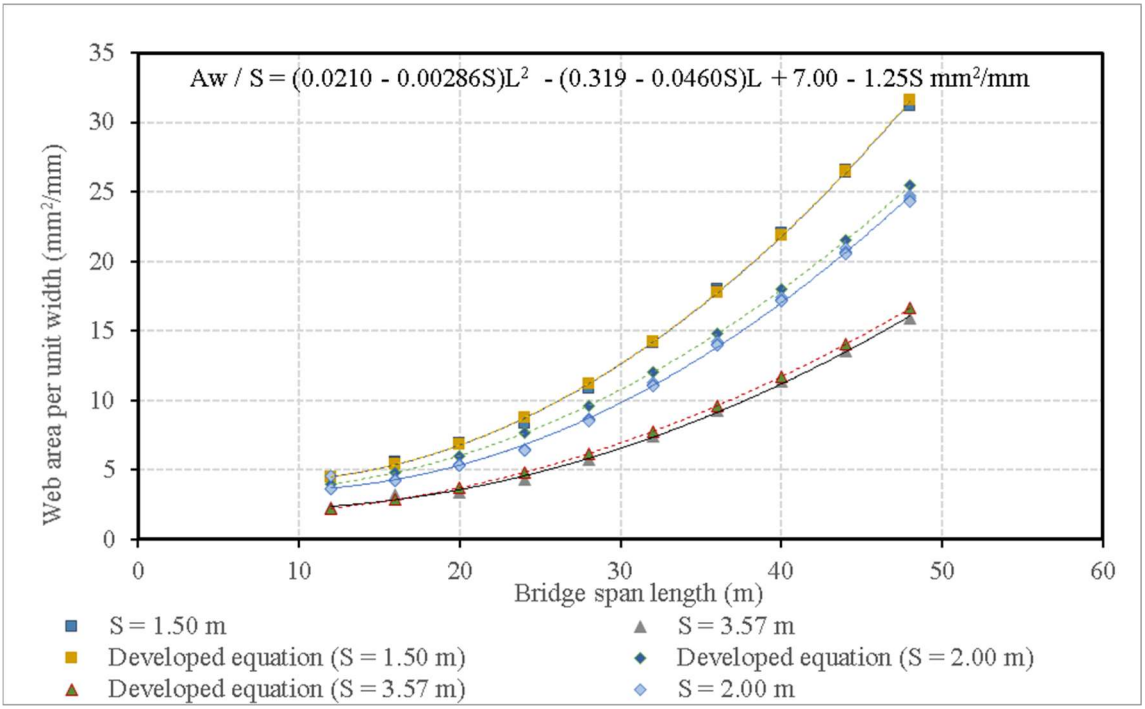

Figure 5.91: Comparison between program results and developed two-variable equation for web area per unit width vs span length for two equal span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figures 5.92 and 5.93 for support location and midspan location respectively. The longitudinal flexural rigidity (Dx) results in this study show a higher upper bound for support locations for longer spans due to these equations being developed by Bakht B. for midspan location for single span bridge configurations (Bakht & Moses, 1988). However, the results produced for midspan show a much better distribution when compared to the values obtained in the previous study as expected. It is worth noting that the results from Bakht's study are for the CL-740 truck that was being used in the OHBDC of 1983 (MTO, 1983) while in this portion of the study the CL-625 is used.

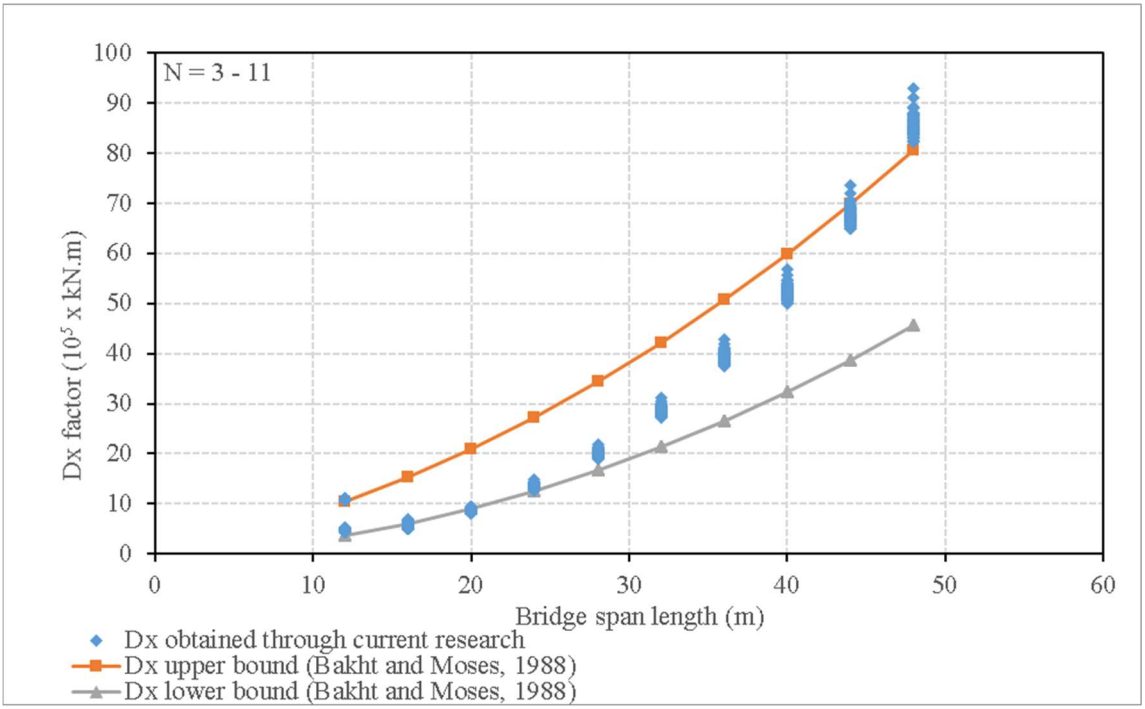

Figure 5.92: Comparison between Dx factor at support location obtained in this research for two equal span bridge under CL-625 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

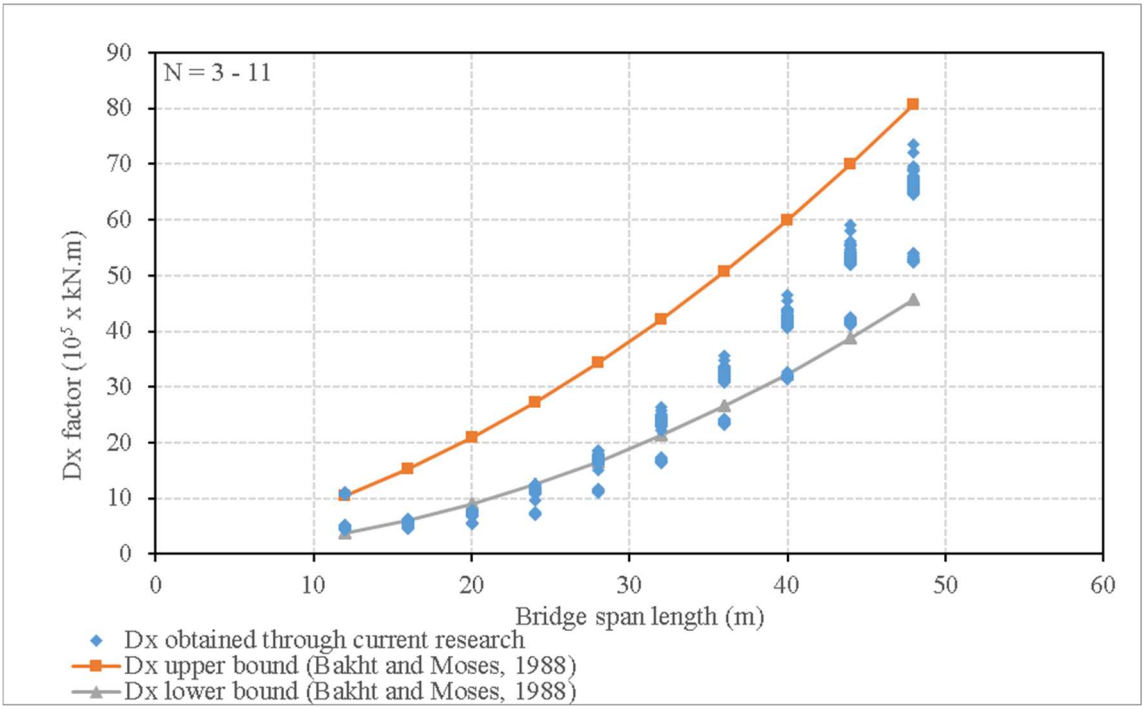

Figure 5.93: Comparison between Dx factor at midspan location obtained in this research for two equal span bridge under CL-625 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

5.5.2 Bridge configurations under CL-800 truck loading

Considering the results obtained for single span cases for the CL-625 truck, similar results were produced for two equal span bridge configurations. Figure 5.94 shows the envelope of the results obtained for both Is and Ics at support location and Figure 5.95 shows the envelope of the results obtained for both Is and Ics at midspan location. The equations representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

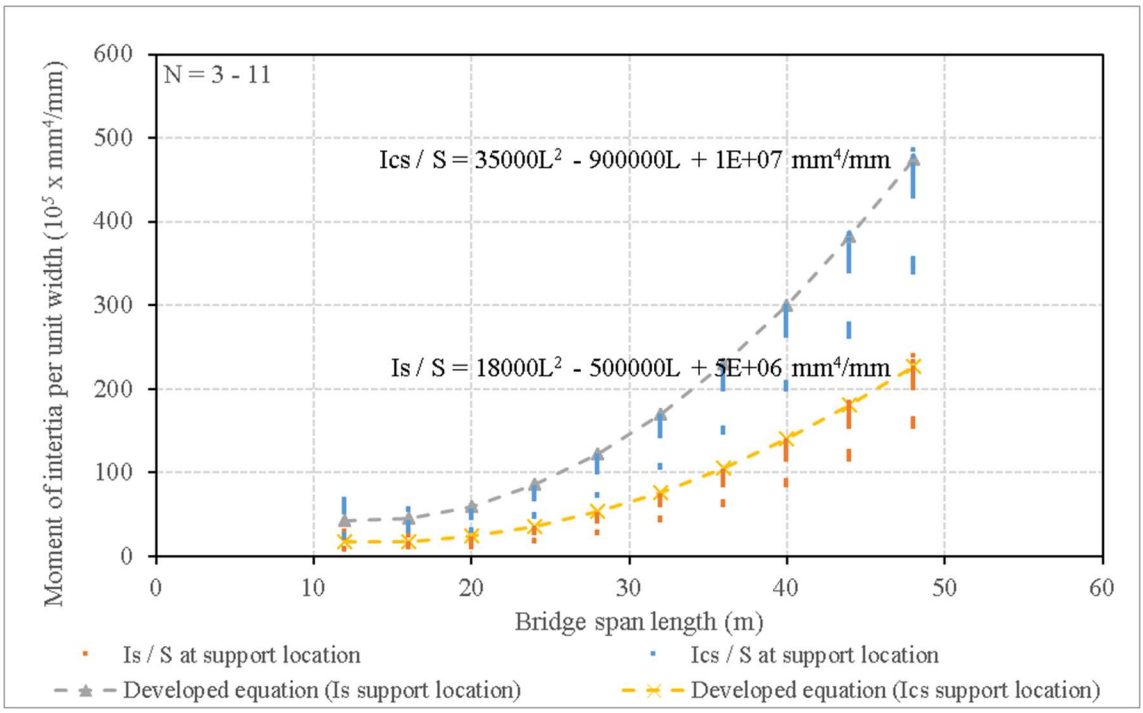

Figure 5.94: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at support location for two equal span bridge under CL-800 truck loading between three and eleven girders

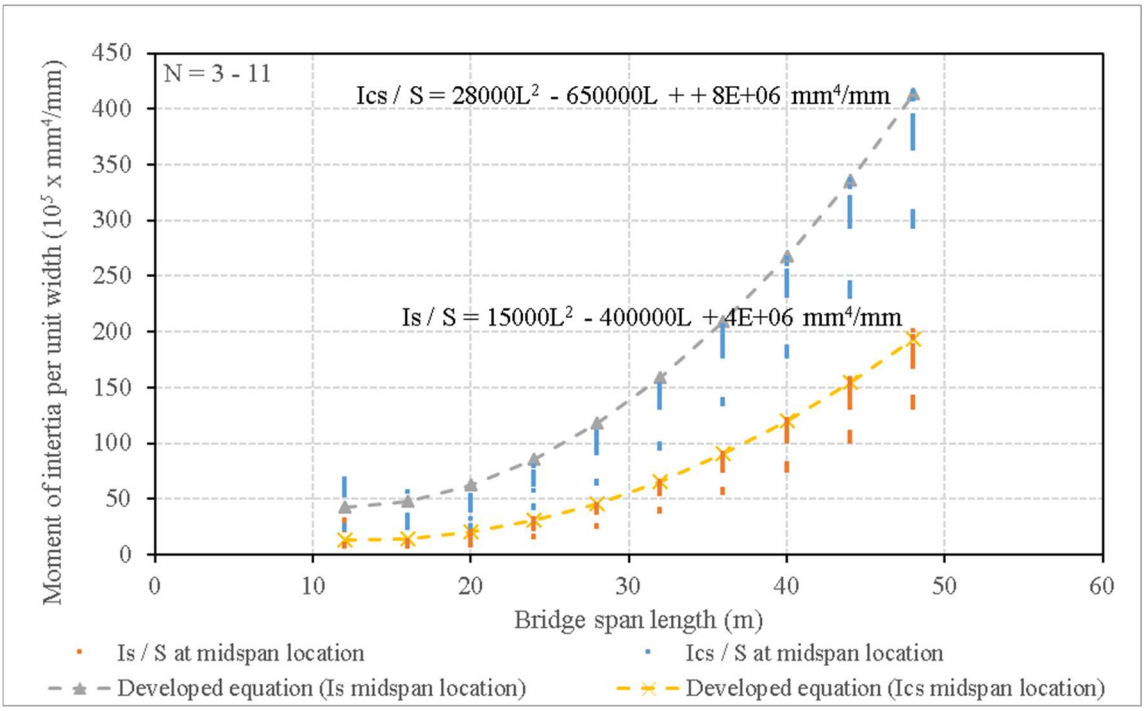

Figure 5.95: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at midspan location for two equal span bridge under CL-800 truck loading between three and eleven girders

[5.24] $\mathrm{Ics/S} = 35000(\mathrm{L}^2) - 900000(\mathrm{L}) + 1 * 10^7\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.25] $\mathrm{Is/S} = 18000(\mathrm{L}^2) - 500000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.26] $\mathrm{Ics/S} = 28000(\mathrm{L}^2) - 650000(\mathrm{L}) + 8 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

[5.27] $\mathrm{Is/S} = 15000(\mathrm{L}^2) - 400000(\mathrm{L}) + 4 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

Based on the results of the study conducted in section 5.4, a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.96 shows the results for such analysis. A similar distribution to Figure 5.85 can be seen. This behavior was taken into account when creating the final equation to represent the area of the web for this section. A similar two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

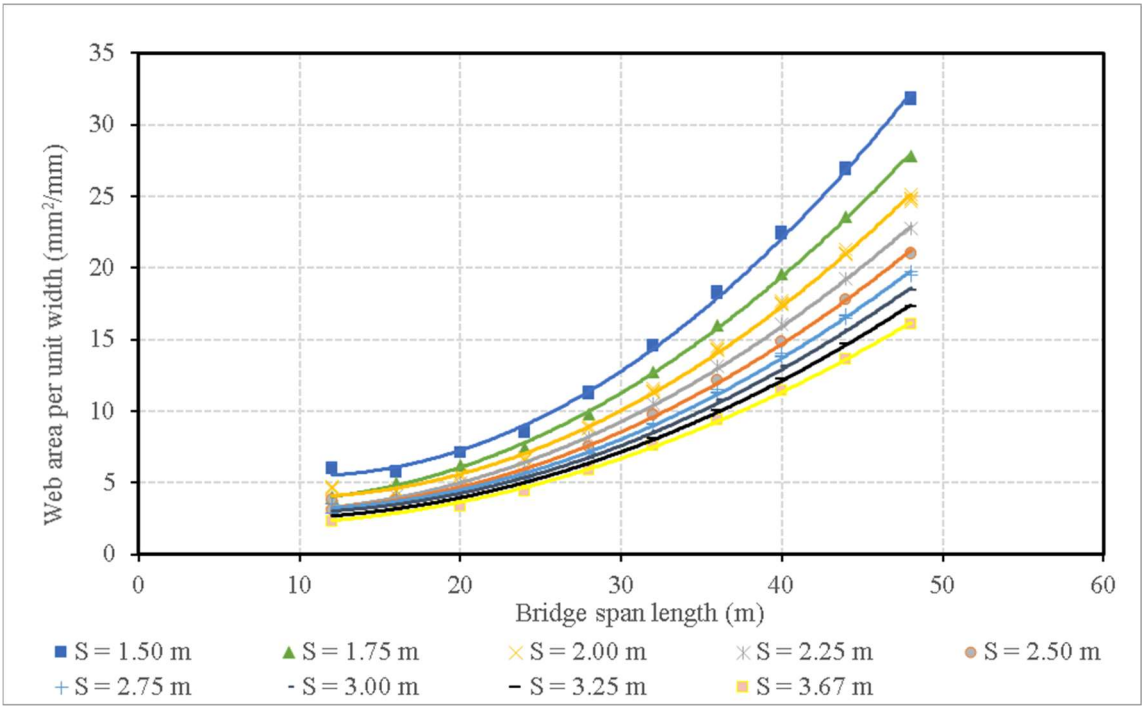

Figure 5.96: Web area per unit width vs span length for two equal span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

$$[5.28]\ Aw/S = \big(0.024 - 0.036(S)\big)(L^2) - \big(0.51 - 0.085(S)\big)(L) + 9.83 - 1.59(S)\ mm^2/mm$$

The performance of the equation when compared to the program results can be seen in Figure 5.97. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

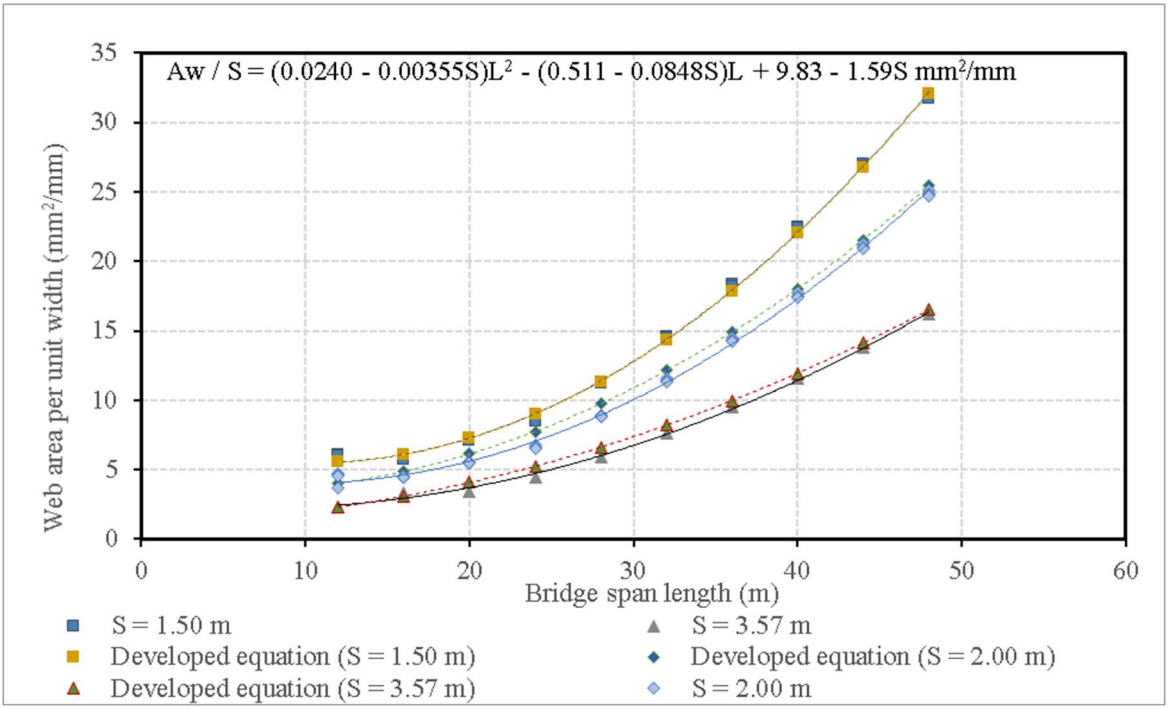

Figure 5.97: Comparison between program results and developed two-variable equation for web area per unit width vs span length for two equal span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figures 5.98 and 5.99 for support location and midspan location respectively. The longitudinal flexural rigidity (Dx) results in this study show a higher upper bound for support locations for longer spans due to these equations being developed by Bakht B. for midspan location for single span bridge configurations (Bakht & Moses, 1988). However, the results produced for midspan show a much better distribution when compared to the values obtained in the previous study as expected. It is worth noting that the results from Bakht's study are for the CL-740 truck that was being used in the OHBDC of 1983 (MTO, 1983) while in this portion of the study the CL-800 is used which is very similar in weight to the CL-740 truck loading.

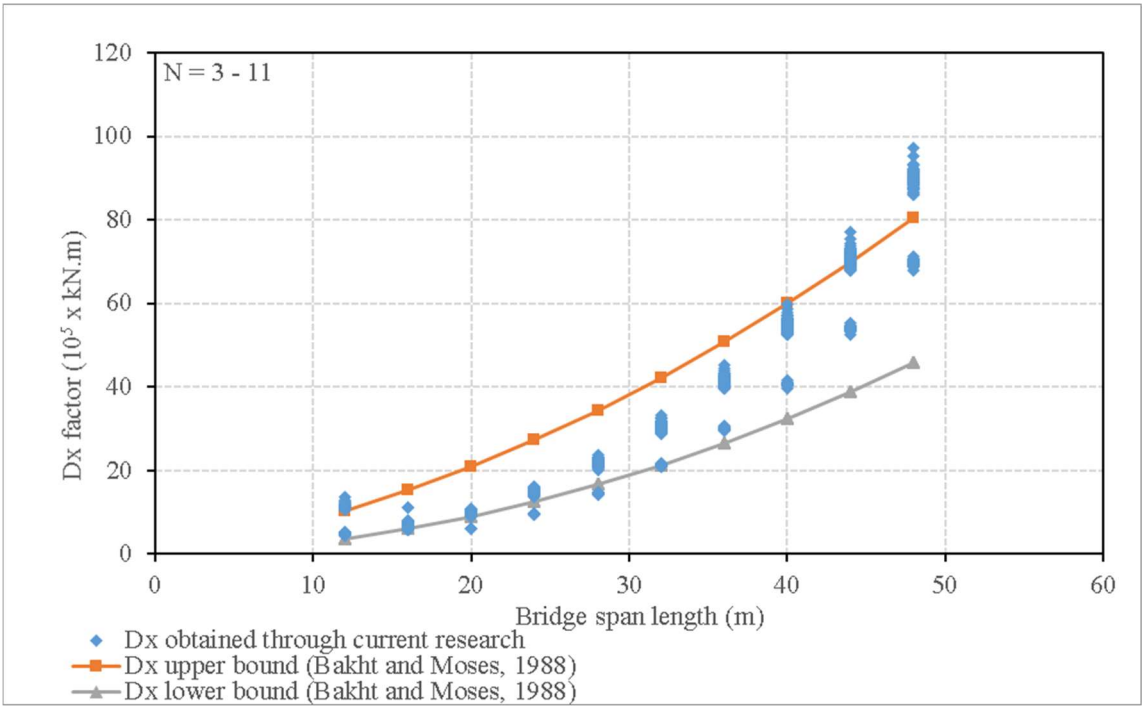

Figure 5.98: Comparison between Dx factor at support location obtained in this research for two equal span bridge under CL-800 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

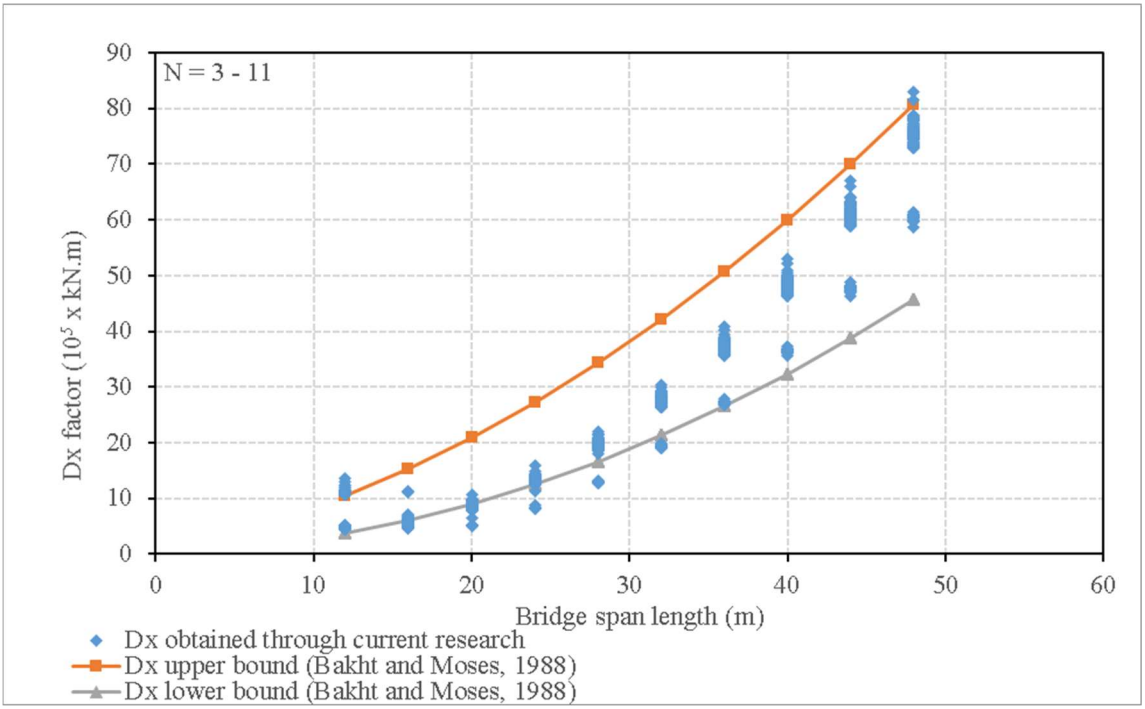

Figure 5.99: Comparison between Dx factor at midspan location obtained in this research for two equal span bridge under CL-800 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

5.6 Developed equations for three equal span bridge configurations

5.6.1 Bridge configurations under CL-625 truck loading

Considering the results obtained for single span cases, similar results were produced for two equal span bridge configurations. Figure 5.100 shows the envelope of the results obtained for both Is and Ics at support location and Figure 5.101 shows the envelope of the results obtained for both Is and Ics at midspan location. The equations representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

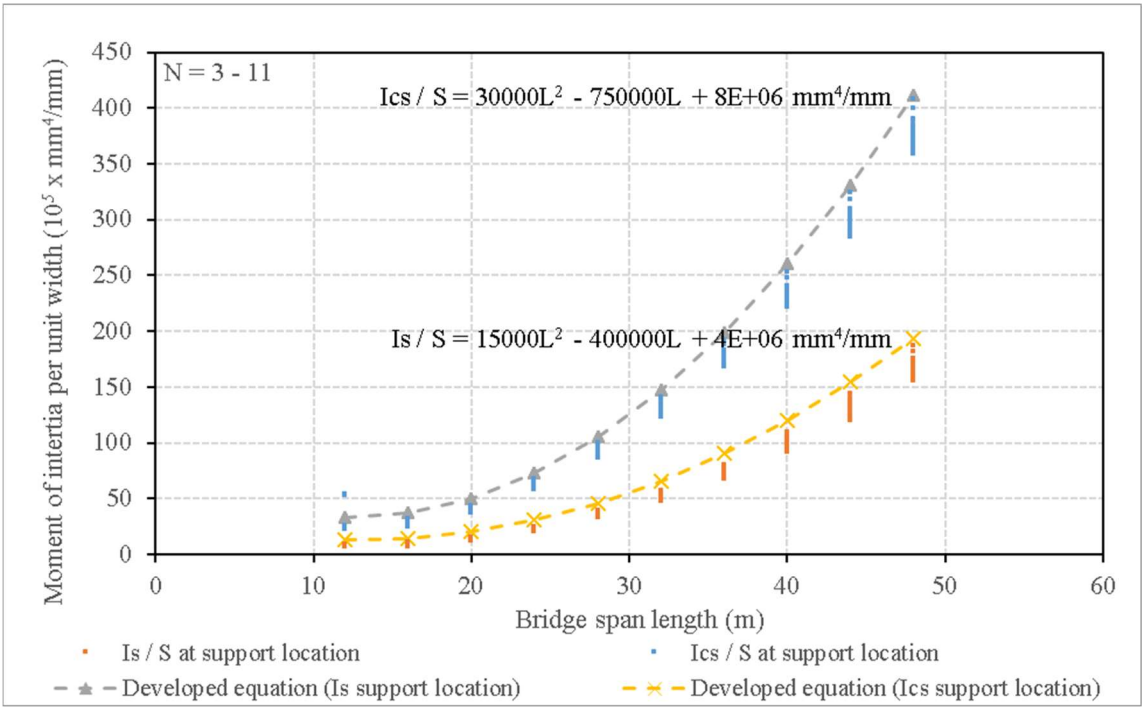

Figure 5.100: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at support location for three equal span bridge under CL-625 truck loading between three and eleven girders

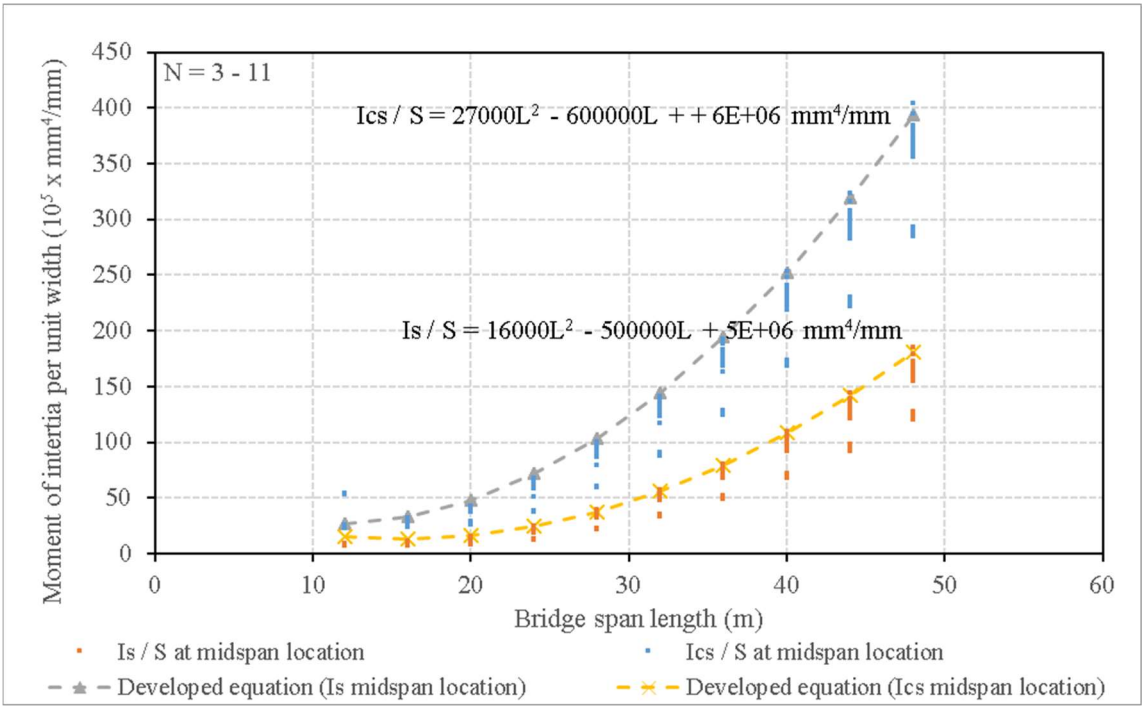

Figure 5.101: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at midspan location for three equal span bridge under CL-625 truck loading between three and eleven girders

[5.29] $\text{Ics/S} = 30000(\text{L}^2) - 750000(\text{L}) + 8 * 10^6\ \text{mm}^4/\text{mm}$ at support location

[5.30] $\text{Is/S} = 15000(\text{L}^2) - 400000(\text{L}) + 4 * 10^6\ \text{mm}^4/\text{mm}$ at support location

[5.31] $\text{Ics/S} = 27000(\text{L}^2) - 600000(\text{L}) + 6 * 10^6\ \text{mm}^4/\text{mm}$ at midspan location

[5.32] $\text{Is/S} = 16000(\text{L}^2) - 500000(\text{L}) + 5 * 10^6\ \text{mm}^4/\text{mm}$ at midspan location

Based on the results of the study conducted in section 5.4, a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.102 shows the results for such analysis. A similar distribution to Figure 5.85 can be seen. This behavior was taken into account when creating the final equation to represent the area of the web for this section. A similar two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

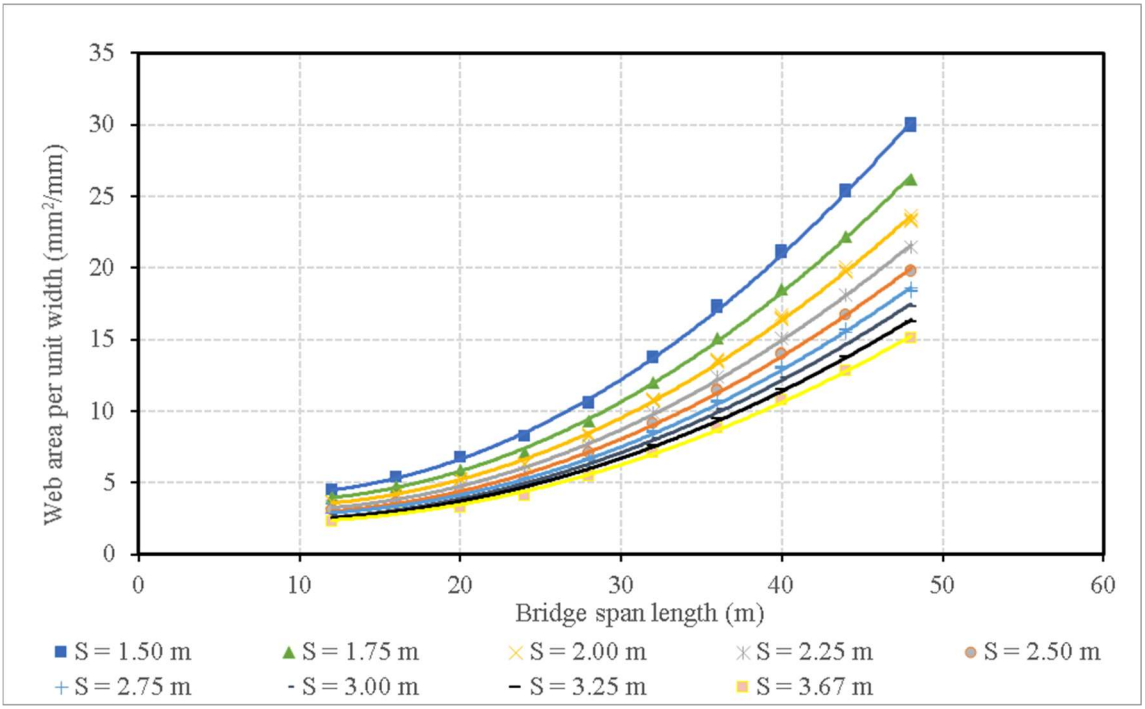

Figure 5.102: Web area per unit width vs span length for three equal span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

$$[5.33]\ \mathrm{Aw/S} = \big(0.021 - 0.029(\mathrm{S})\big)(\mathrm{L}^2) - \big(0.32 - 0.046(\mathrm{S})\big)(\mathrm{L}) + 7.00 - 1.25(\mathrm{S})\ \mathrm{mm}^2/\mathrm{mm}$$

The performance of the equation when compared to the program results can be seen in Figure 5.103. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

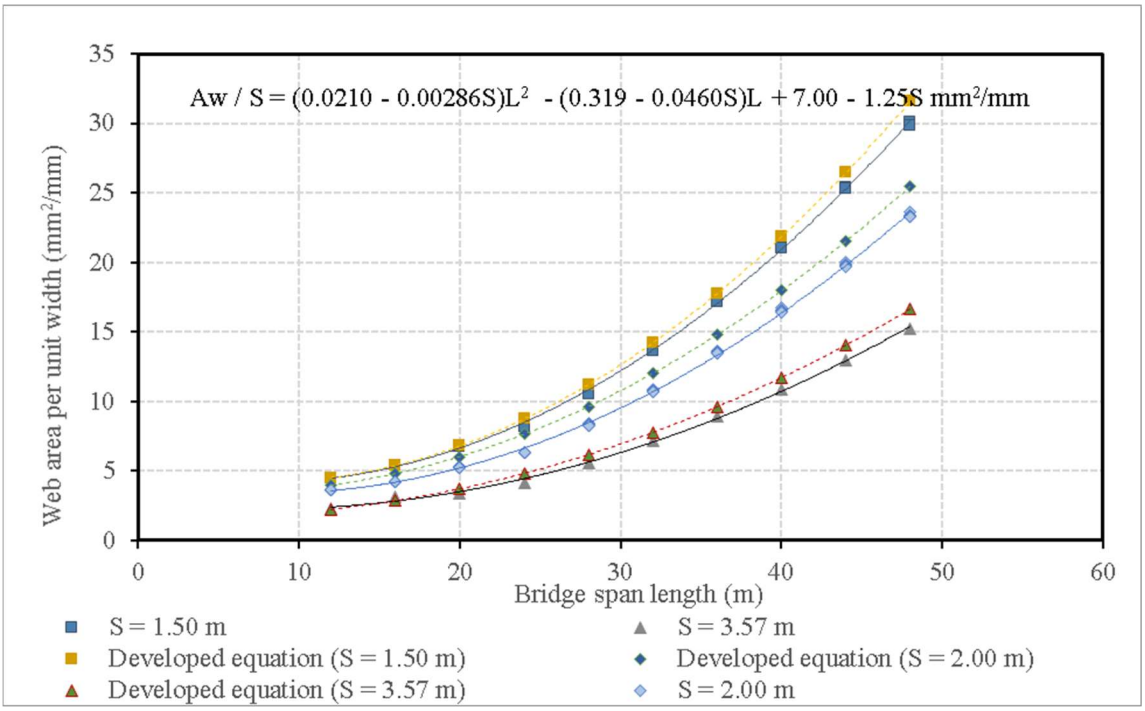

Figure 5.103: Comparison between program results and developed two-variable equation for web area per unit width vs span length for three equal span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figures 5.104 and 5.105 for support location and midspan location respectively. The longitudinal flexural rigidity (Dx) results in this portion of the study show good results produced for midspan and support locations. It is worth noting that the results from Bakht's study are for the CL-740 truck that was being used in the OHBDC of 1983 (MTO, 1983) while in this portion of the study the CL-625 is used.

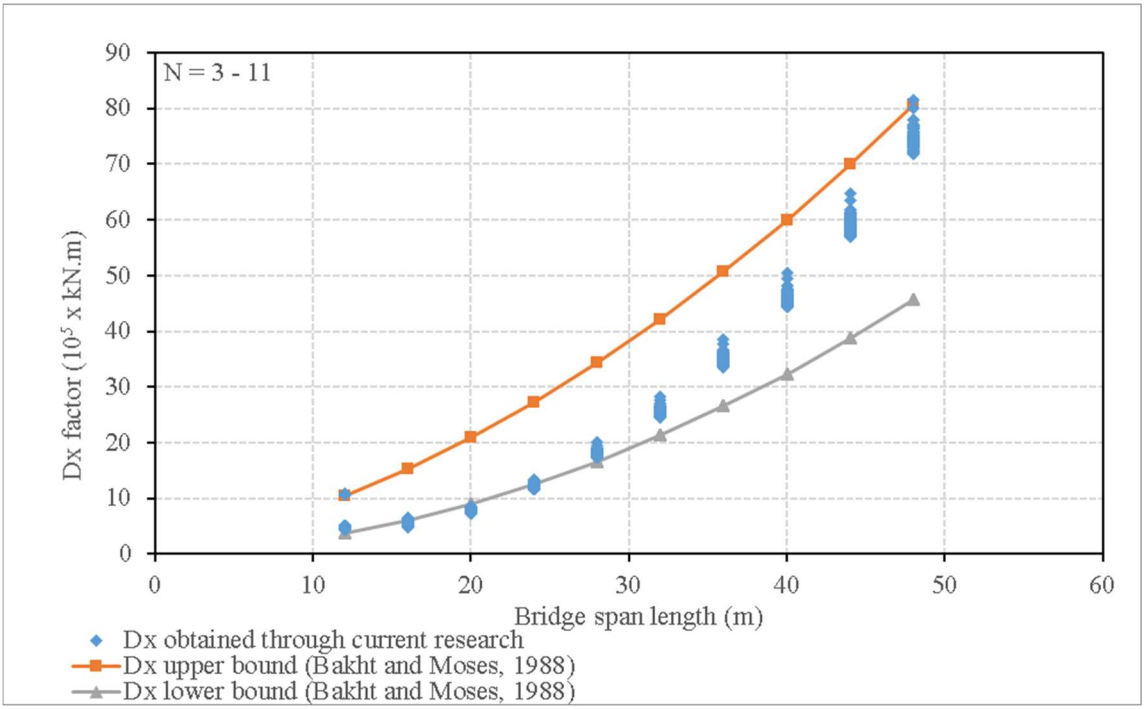

Figure 5.104: Comparison between Dx factor at support location obtained in this research for three equal span bridge under CL-625 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

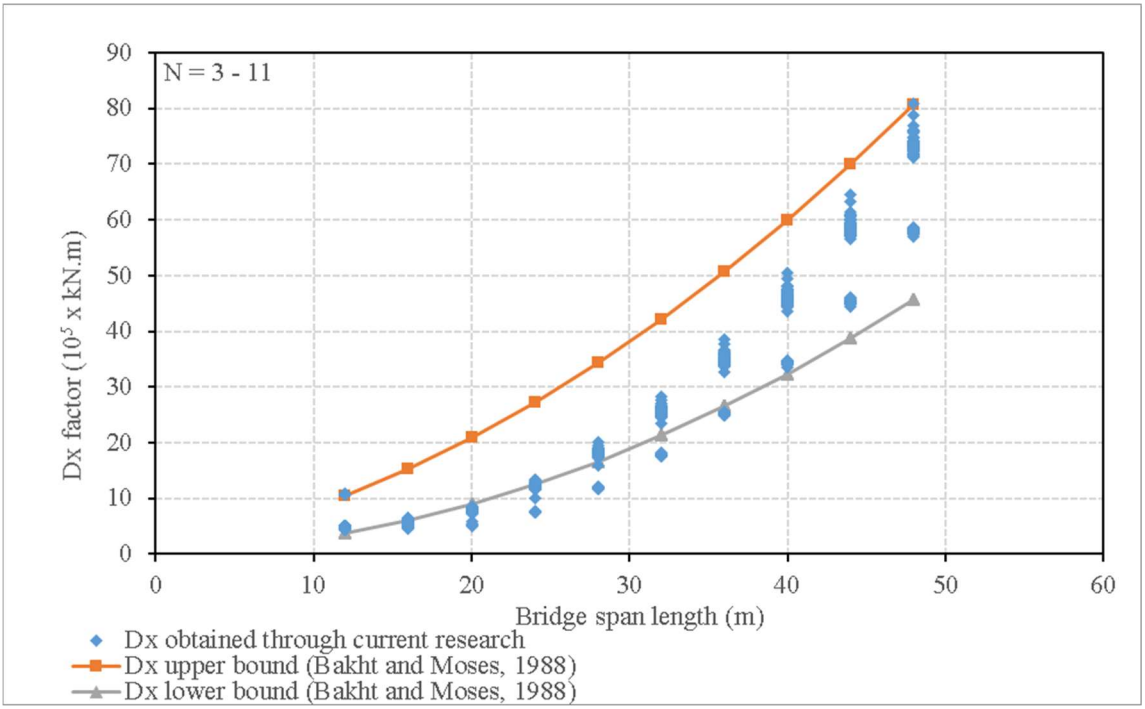

Figure 5.105: Comparison between Dx factor at midspan location obtained in this research for three equal span bridge under CL-625 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

5.6.2 Bridge configurations under CL-800 truck loading

Considering the results obtained for single span cases for the CL-625 truck, similar results were produced for two equal span bridge configurations. Figure 5.106 shows the envelope of the results obtained for both Is and Ics at support location and Figure 5.107 shows the envelope of the results obtained for both Is and Ics at midspan location. The equations representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

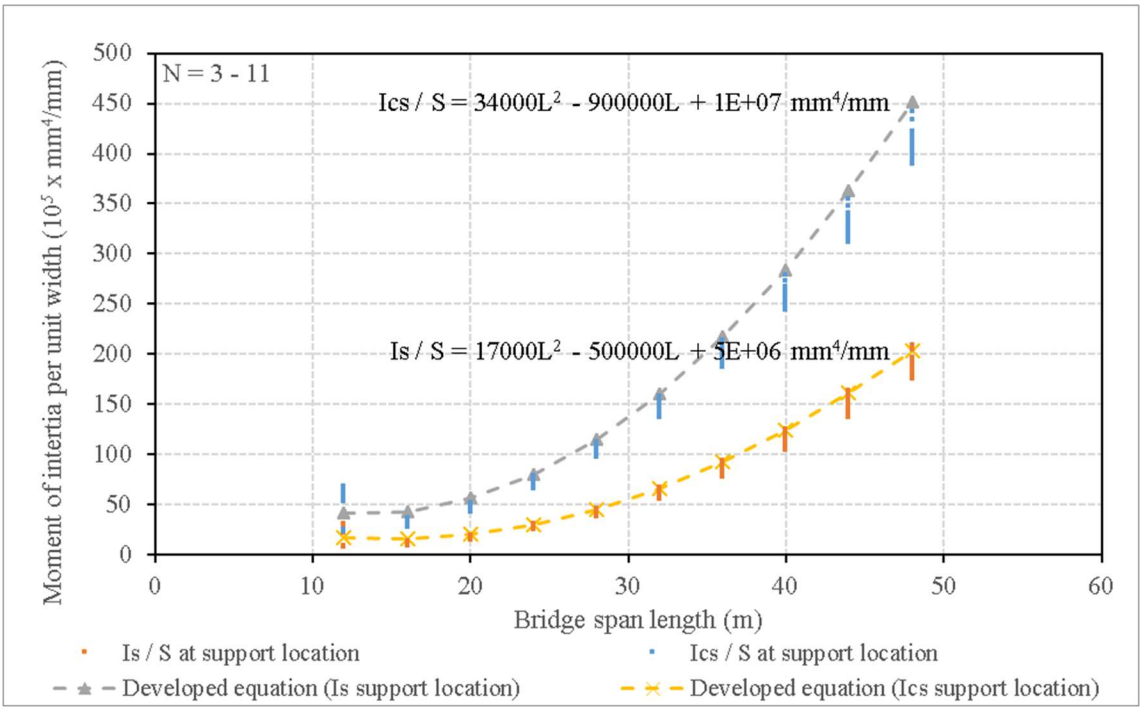

Figure 5.106: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at support location for three equal span bridge under CL-800 truck loading between three and eleven girders

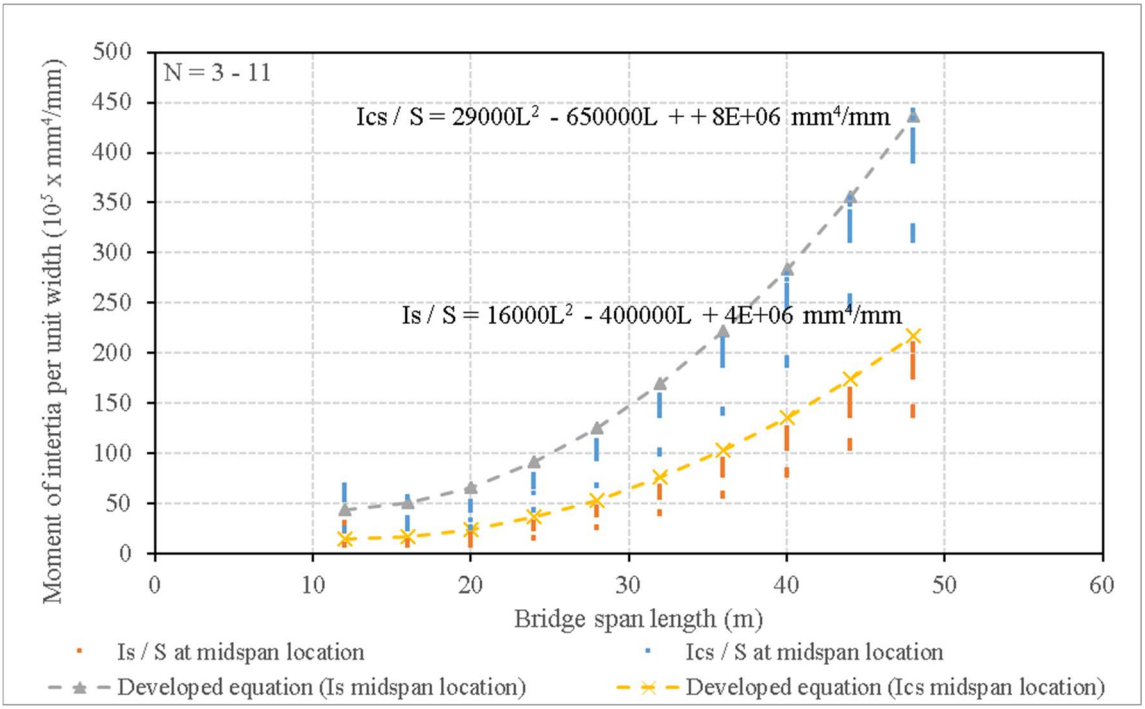

Figure 5.107: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at midspan location for three equal span bridge under CL-800 truck loading between three and eleven girders

[5.34] $\mathrm{Ics/S} = 34000(\mathrm{L}^2) - 900000(\mathrm{L}) + 1 * 10^7\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.35] $\mathrm{Is/S} = 17000(\mathrm{L}^2) - 500000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.36] $\mathrm{Ics/S} = 29000(\mathrm{L}^2) - 650000(\mathrm{L}) + 8 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

[5.37] $\mathrm{Is/S} = 16000(\mathrm{L}^2) - 400000(\mathrm{L}) + 4 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

Based on the results of the study conducted in section 5.4, a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.108 shows the results for such analysis. A similar distribution to Figure 5.85 can be seen. This behavior was taken into account when creating the final equation to represent the area of the web for this section. A similar two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

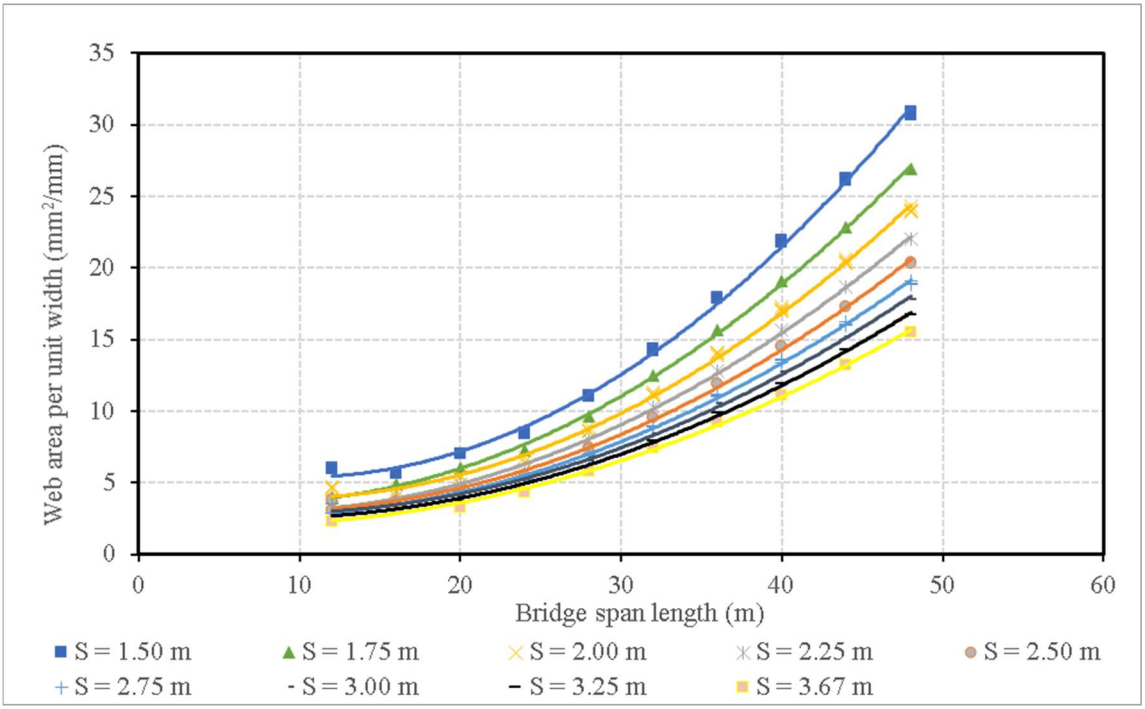

Figure 5.108: Web area per unit width vs span length for three equal span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

$$[5.38]\ \mathrm{Aw/S} = \big(0.024 - 0.036(\mathrm{S})\big)(\mathrm{L}^2) - \big(0.51 - 0.085(\mathrm{S})\big)(\mathrm{L}) + 9.83 - 1.59(\mathrm{S})\ \mathrm{mm}^2/\mathrm{mm}$$

The performance of the equation when compared to the program results can be seen in Figure 5.109. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

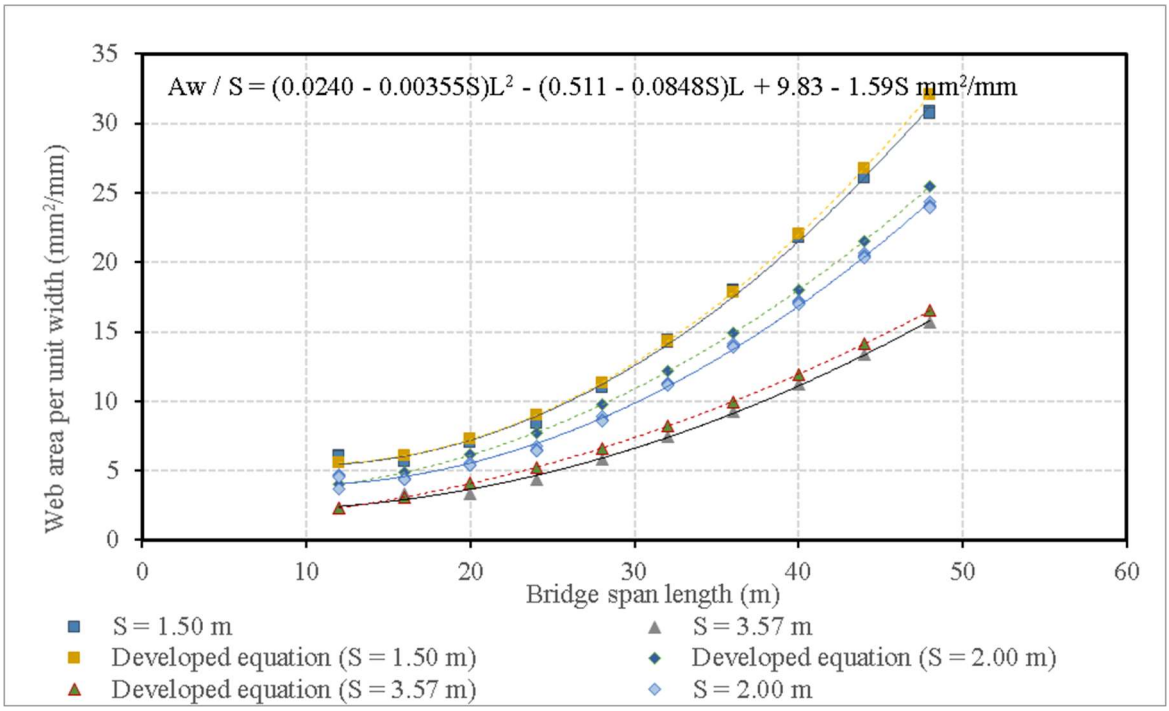

Figure 5.109: Comparison between program results and developed two-variable equation for web area per unit width vs span length for three equal span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figures 5.110 and 5.111 for support location and midspan location respectively. The longitudinal flexural rigidity (Dx) results in this study show a higher upper bound for support locations and midspan locations for longer spans due to these equations being developed by Bakht B. for CL-740 truck loading (Bakht & Moses, 1988).

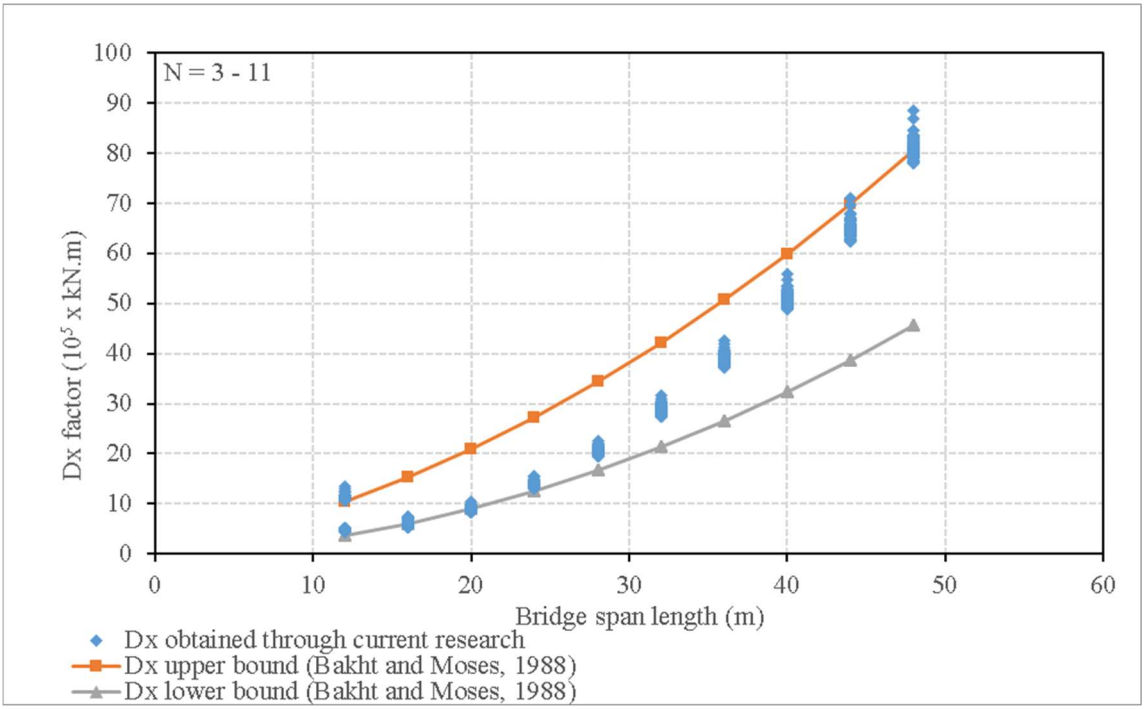

Figure 5.110: Comparison between Dx factor at support location obtained in this research for three equal span bridge under CL-800 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

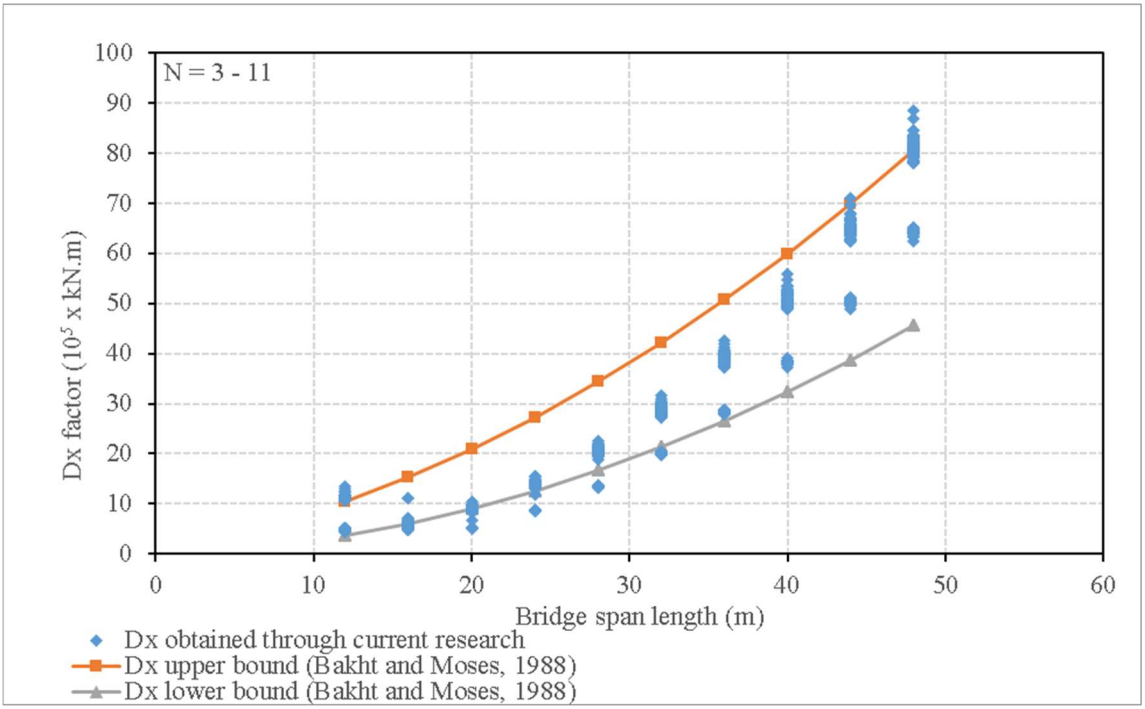

Figure 5.111: Comparison between Dx factor at midspan location obtained in this research for three equal span bridge under CL-800 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

5.7 Developed equations for four equal span bridge configurations

5.7.1 Bridge configurations under CL-625 truck loading

Considering the results obtained for single span cases, similar results were produced for two equal span bridge configurations. Figure 5.112 shows the envelope of the results obtained for both Is and Ics at support location and Figure 5.113 shows the envelope of the results obtained for both Is and Ics at midspan location. The equations representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

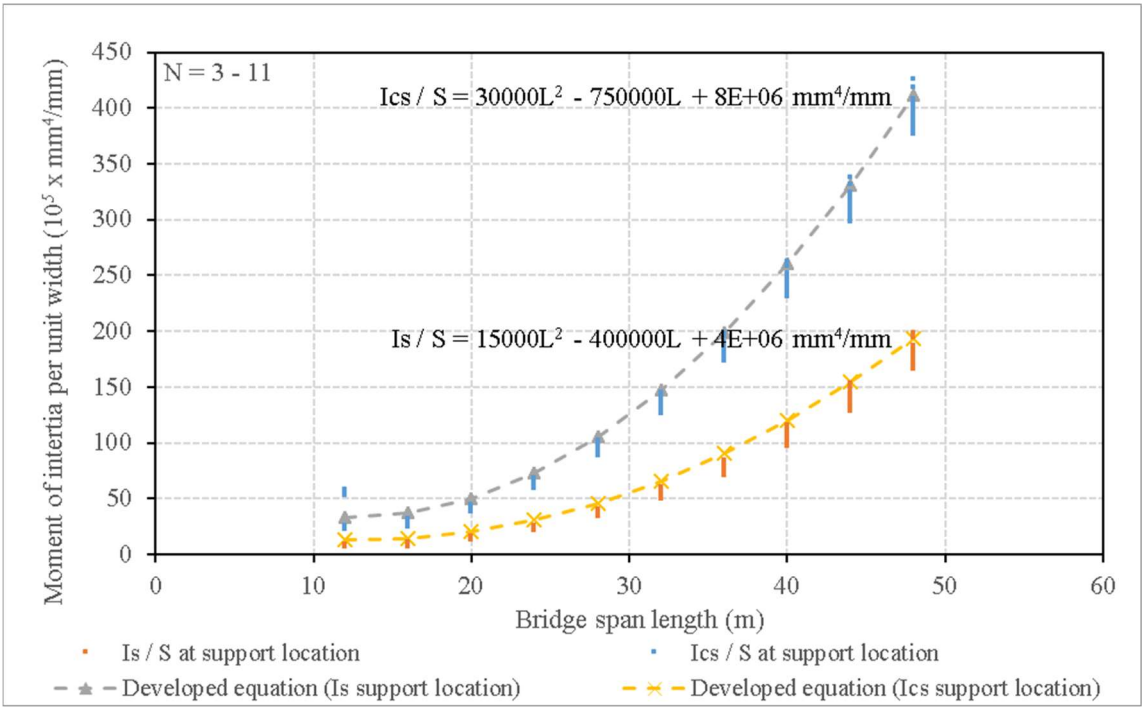

Figure 5.112: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at support location for four equal span bridge under CL-625 truck loading between three and eleven girders

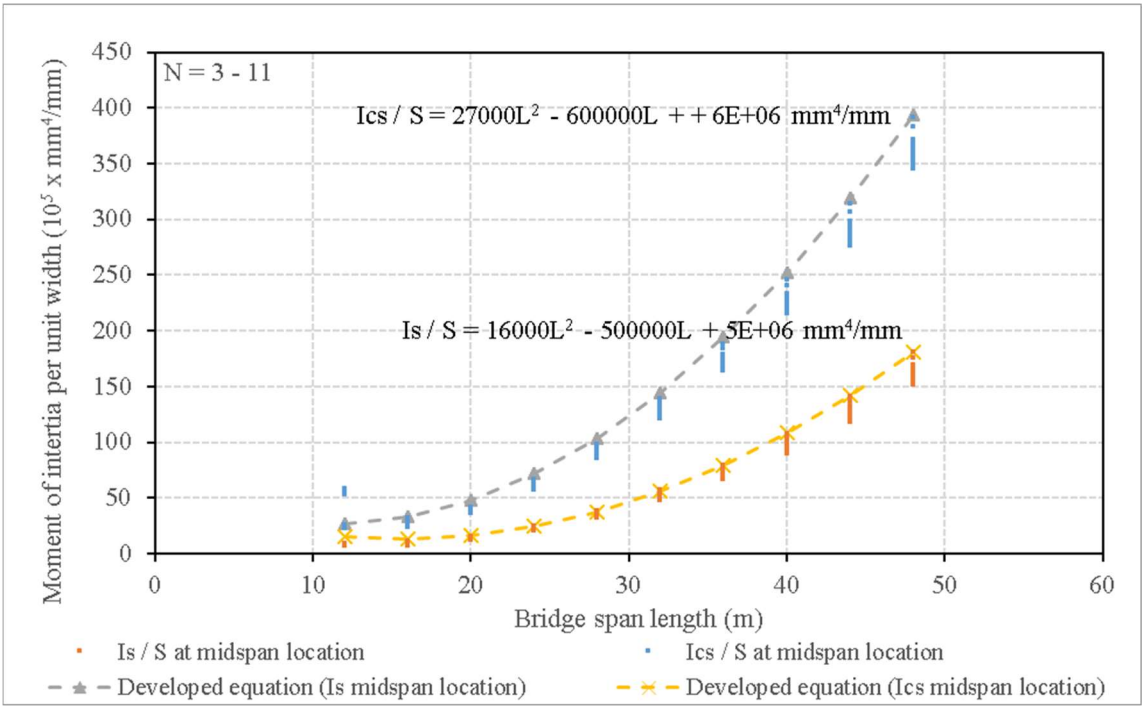

Figure 5.113: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at midspan location for four equal span bridge under CL-625 truck loading between three and eleven girders

[5.39] $\mathrm{Ics/S} = 30000(\mathrm{L}^2) - 750000(\mathrm{L}) + 8 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.40] $\mathrm{Is/S} = 15000(\mathrm{L}^2) - 400000(\mathrm{L}) + 4 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.41] $\mathrm{Ics/S} = 27000(\mathrm{L}^2) - 600000(\mathrm{L}) + 6 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

[5.42] $\mathrm{Is/S} = 16000(\mathrm{L}^2) - 500000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

Based on the results of the study conducted in section 5.4, a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.114 shows the results for such analysis. A similar distribution to Figure 5.85 can be seen. This behavior was taken into account when creating the final equation to represent the area of the web for this section. A similar two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

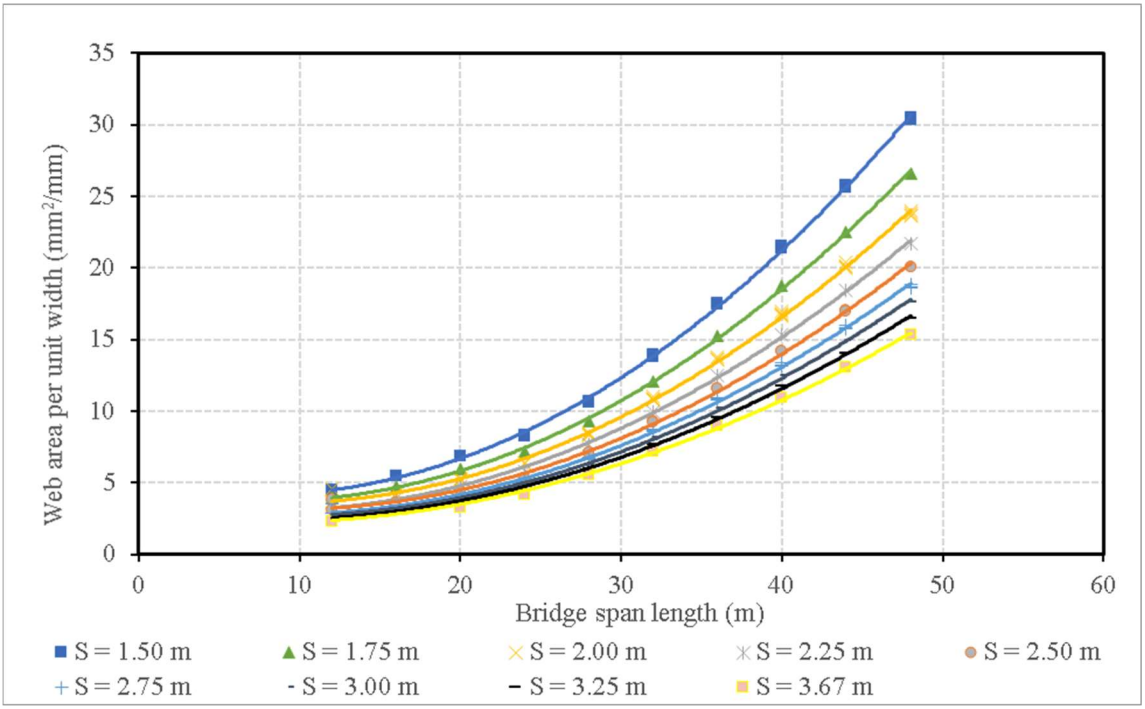

Figure 5.114: Web area per unit width vs span length for four equal span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

$$[5.43]\ \mathrm{Aw/S} = \big(0.021 - 0.029(\mathrm{S})\big)(\mathrm{L}^2) - \big(0.32 - 0.046(\mathrm{S})\big)(\mathrm{L}) + 7.00 - 1.25(\mathrm{S})\ \mathrm{mm}^2/\mathrm{mm}$$

The performance of the equation when compared to the program results can be seen in Figure 5.115. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

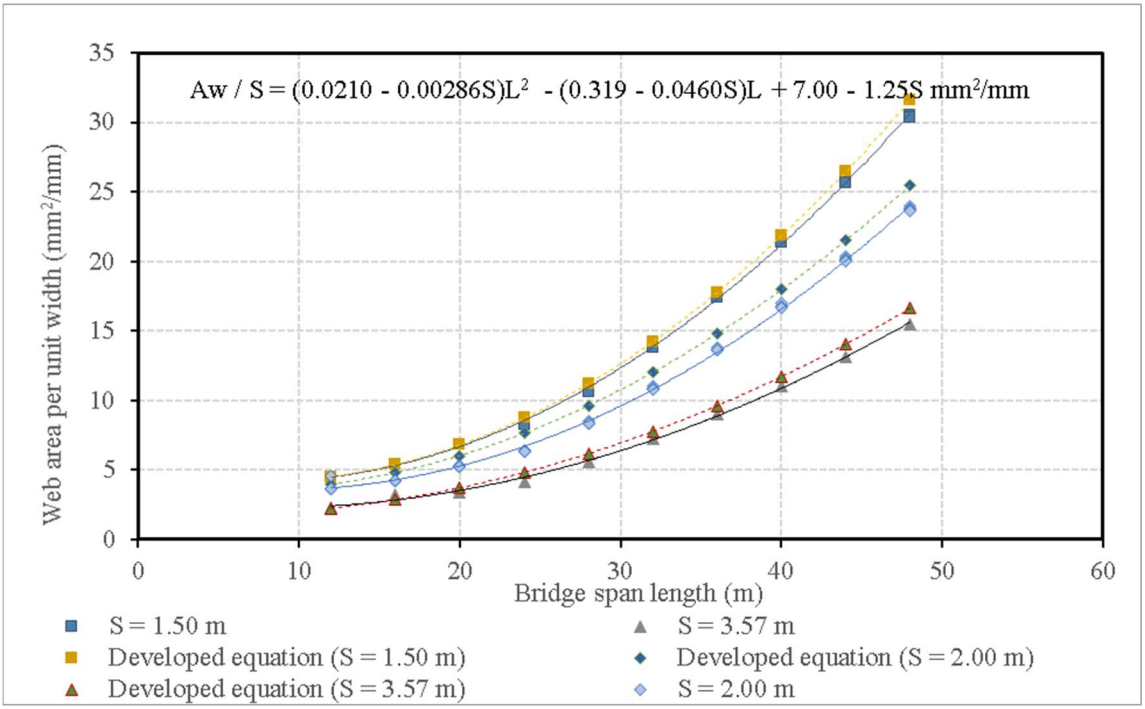

Figure 5.115: Comparison between program results and developed two-variable equation for web area per unit width vs span length for four equal span bridge under CL-625 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figures 5.116 and 5.117 for support location and midspan location respectively. The longitudinal flexural rigidity (Dx) results in this portion of the study show good results produced for midspan and support locations. It is worth noting that the results from Bakht's study are for the CL-740 truck that was being used in the OHBDC of 1983 (MTO, 1983) while in this portion of the study the CL-625 is used.

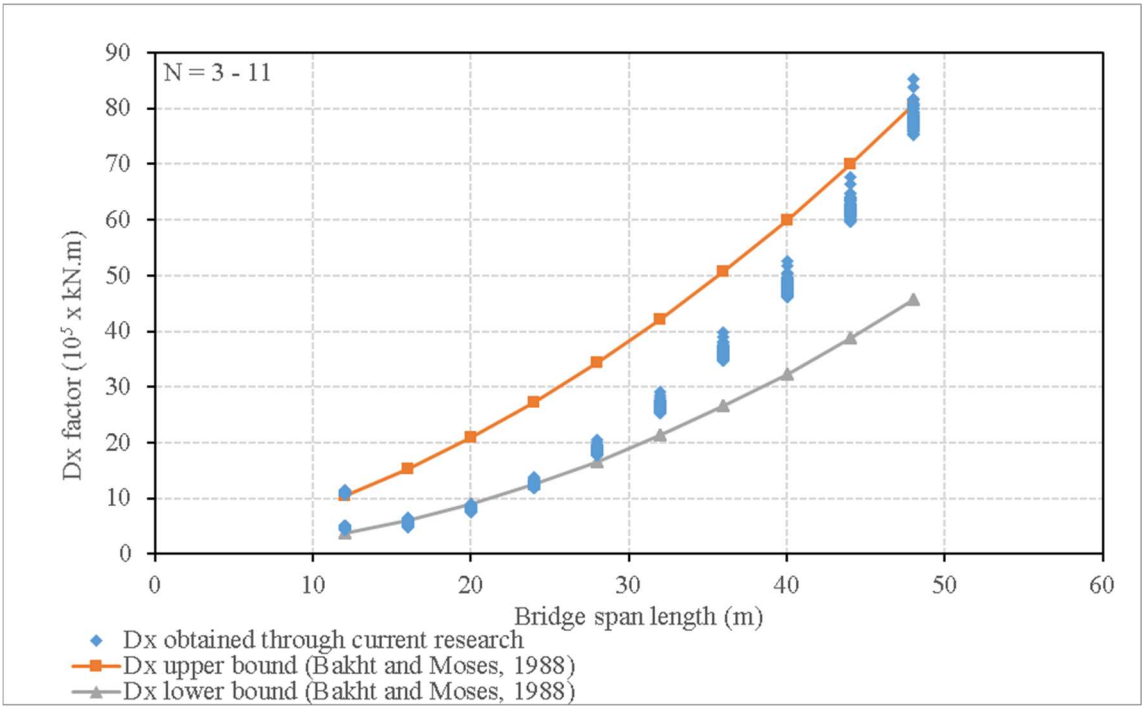

Figure 5.116: Comparison between Dx factor at support location obtained in this research for four equal span bridge under CL-625 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

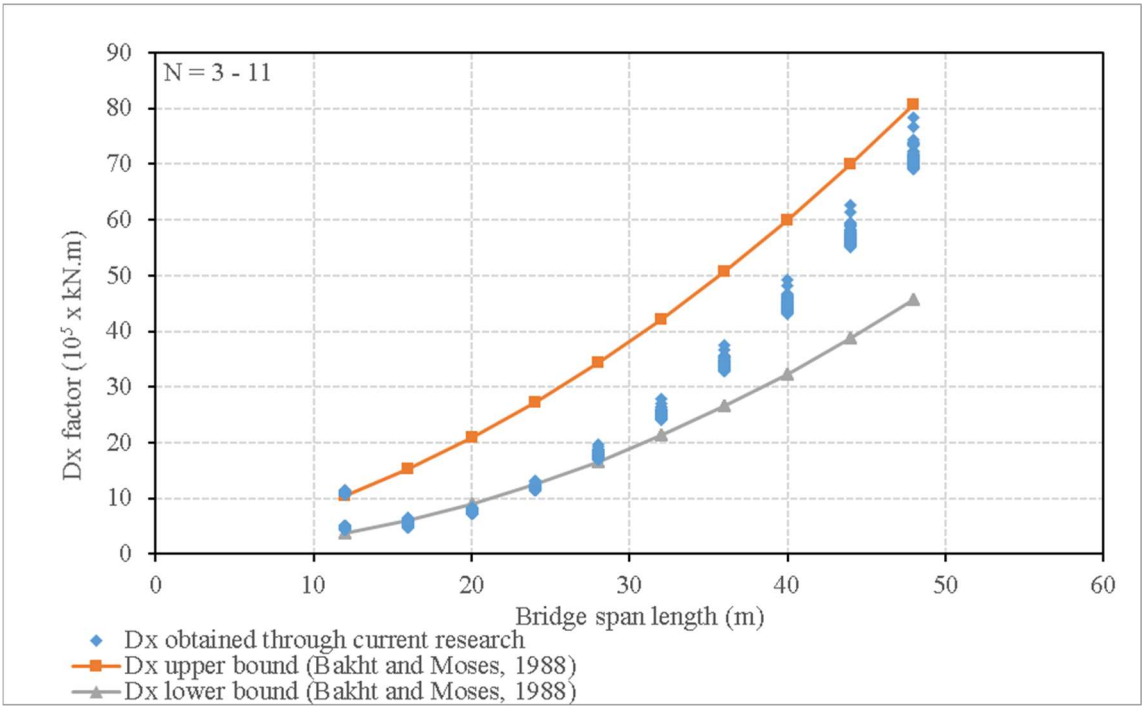

Figure 5.117: Comparison between Dx factor at midspan location obtained in this research for four equal span bridge under CL-625 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

5.7.2 Bridge configurations under CL-800 truck loading

Considering the results obtained for single span cases for the CL-625 truck, similar results were produced for two equal span bridge configurations. Figure 5.118 shows the envelope of the results obtained for both Is and Ics at support location and Figure 5.119 shows the envelope of the results obtained for both Is and Ics at midspan location. The equations representing the moment of inertia per unit width of the steel section and the moment of inertia per unit width of the composite section can be seen below;

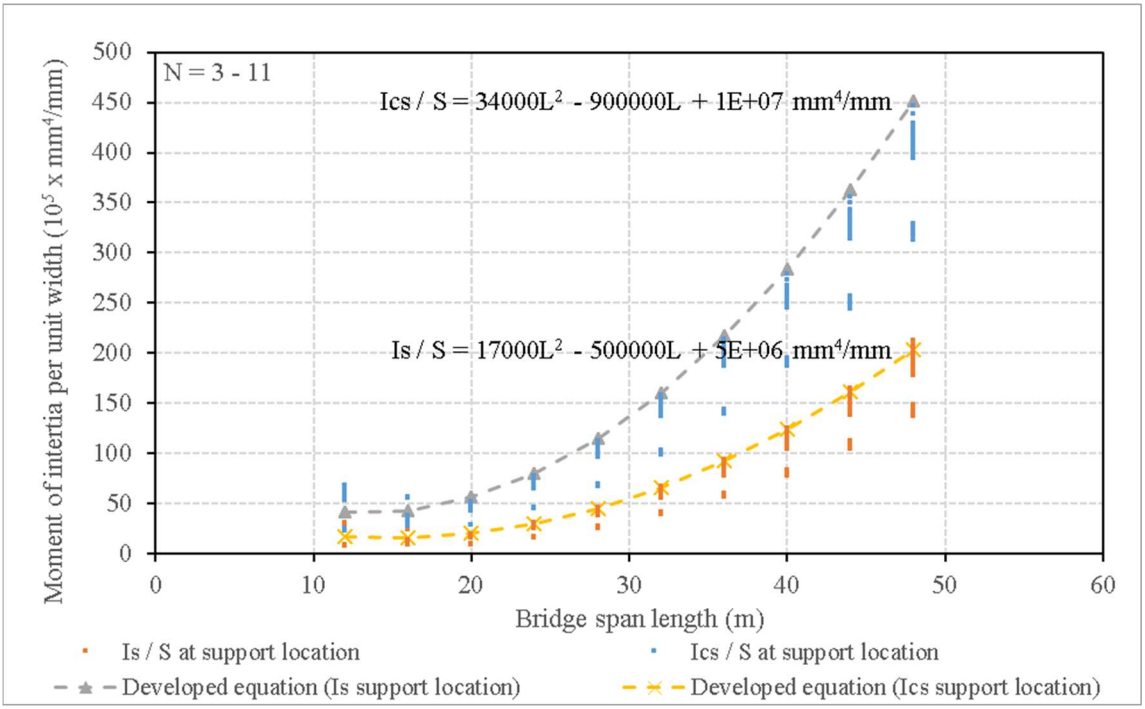

Figure 5.118: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at support location for four equal span bridge under CL-800 truck loading between three and eleven girders

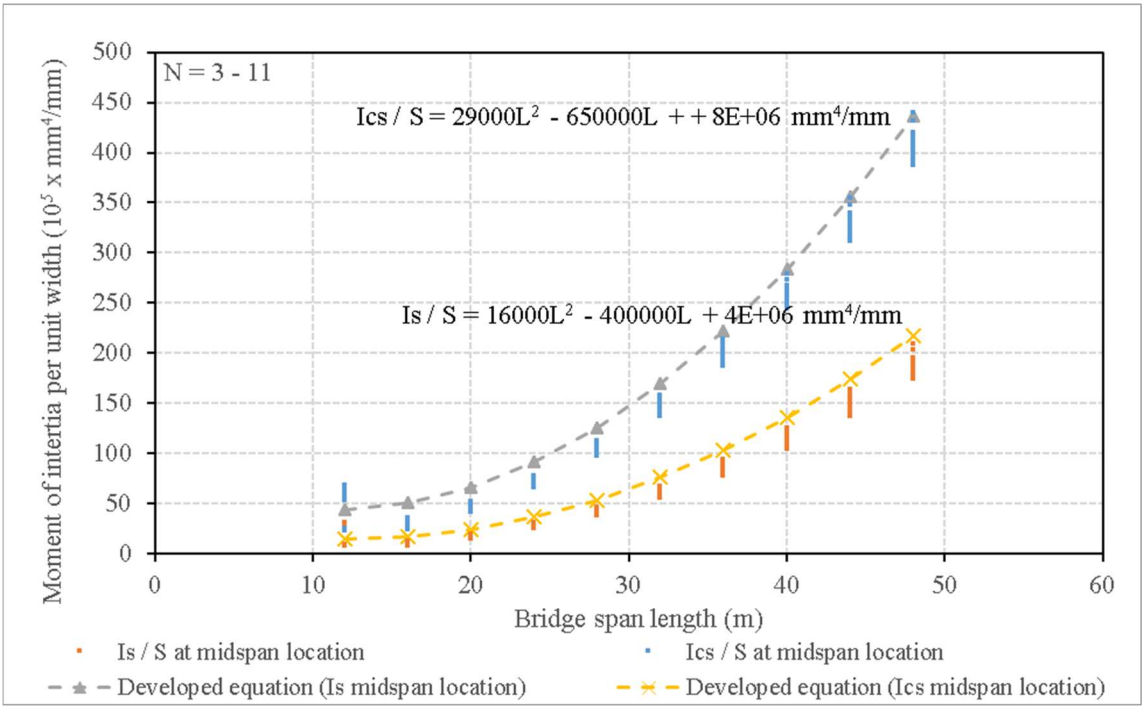

Figure 5.119: Combined envelope for moment of inertia for the steel and the composite concrete-steel section per unit width vs span length at midspan location for four equal span bridge under CL-800 truck loading between three and eleven girders

[5.44] $\mathrm{Ics/S} = 34000(\mathrm{L}^2) - 900000(\mathrm{L}) + 1 * 10^7\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.45] $\mathrm{Is/S} = 17000(\mathrm{L}^2) - 500000(\mathrm{L}) + 5 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at support location

[5.46] $\mathrm{Ics/S} = 29000(\mathrm{L}^2) - 650000(\mathrm{L}) + 8 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

[5.47] $\mathrm{Is/S} = 16000(\mathrm{L}^2) - 400000(\mathrm{L}) + 4 * 10^6\ \mathrm{mm}^4/\mathrm{mm}$ at midspan location

Based on the results of the study conducted in section 5.4, a graph showing Aw/S vs span length for different girder spacing values was created. Figure 5.120 shows the results for such analysis. A similar distribution to Figure 5.85 can be seen. This behavior was taken into account when creating the final equation to represent the area of the web for this section. A similar two-variable equation for the web area per unit width was created to represent that characteristic. The equation can be seen below;

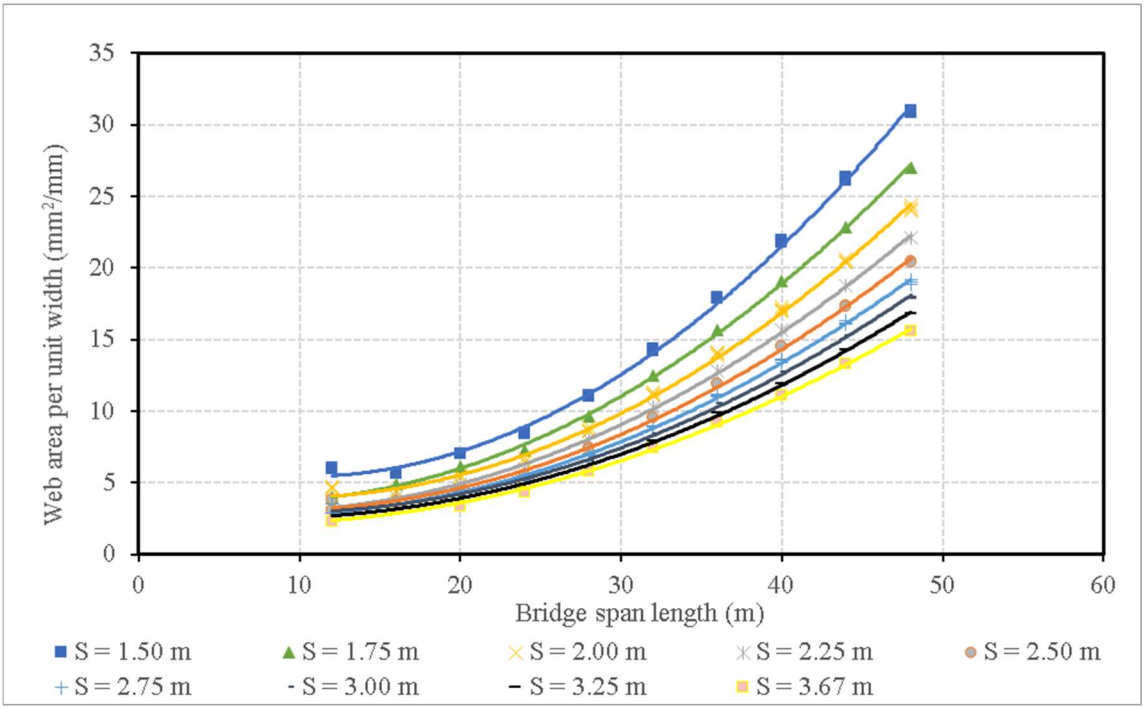

Figure 5.120: Web area per unit width vs span length for four equal span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

$$[5.48]\ Aw/S = \big(0.024 - 0.036(S)\big)(L^2) - \big(0.51 - 0.085(S)\big)(L) + 9.83 - 1.59(S)\ mm^2/mm$$

The performance of the equation when compared to the program results can be seen in Figure 5.121. The equation created shows excellent representation while always slightly overestimating the Aw/S required for any given section.

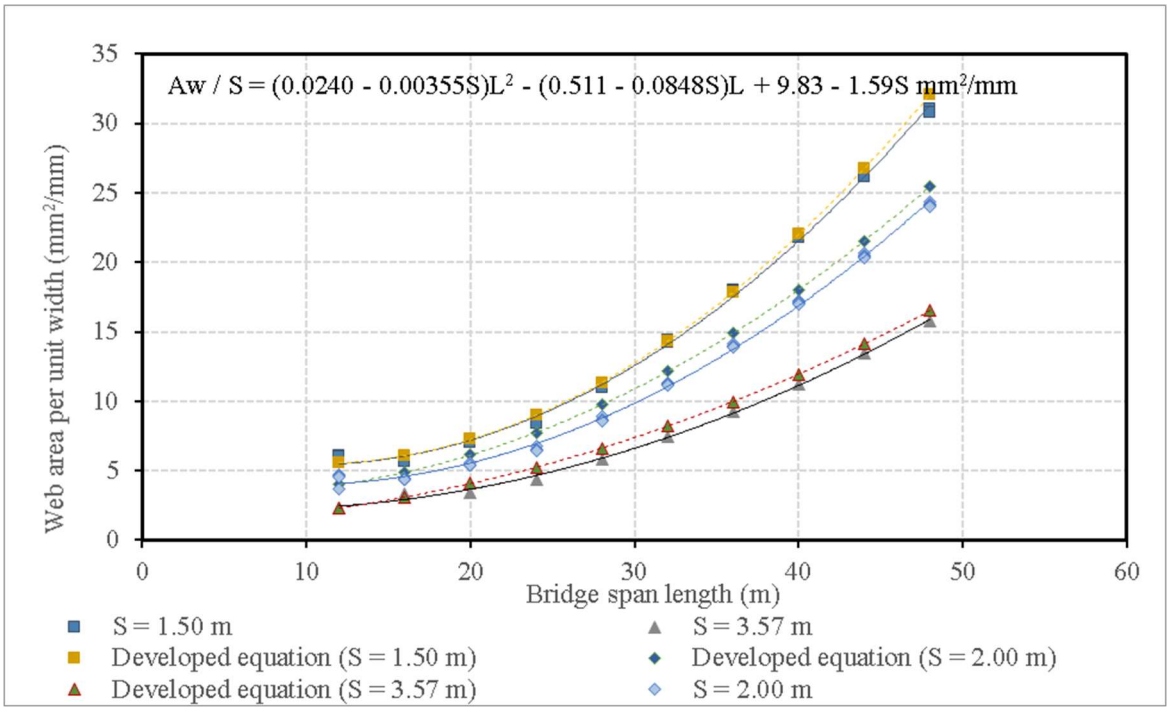

Figure 5.121: Comparison between program results and developed two-variable equation for web area per unit width vs span length for four equal span bridge under CL-800 truck loading with girder spacing ranging between 1.5 m and 3.67 m

The difference between the results from a similar previous study conducted by Bakht B. and the results from this study can be seen in Figures 5.122 and 5.123 for support location and midspan location respectively. The longitudinal flexural rigidity (Dx) results in this study show a higher upper bound for support locations and midspan locations for longer spans due to these equations being developed by Bakht B. for CL-740 truck loading (Bakht & Moses, 1988).

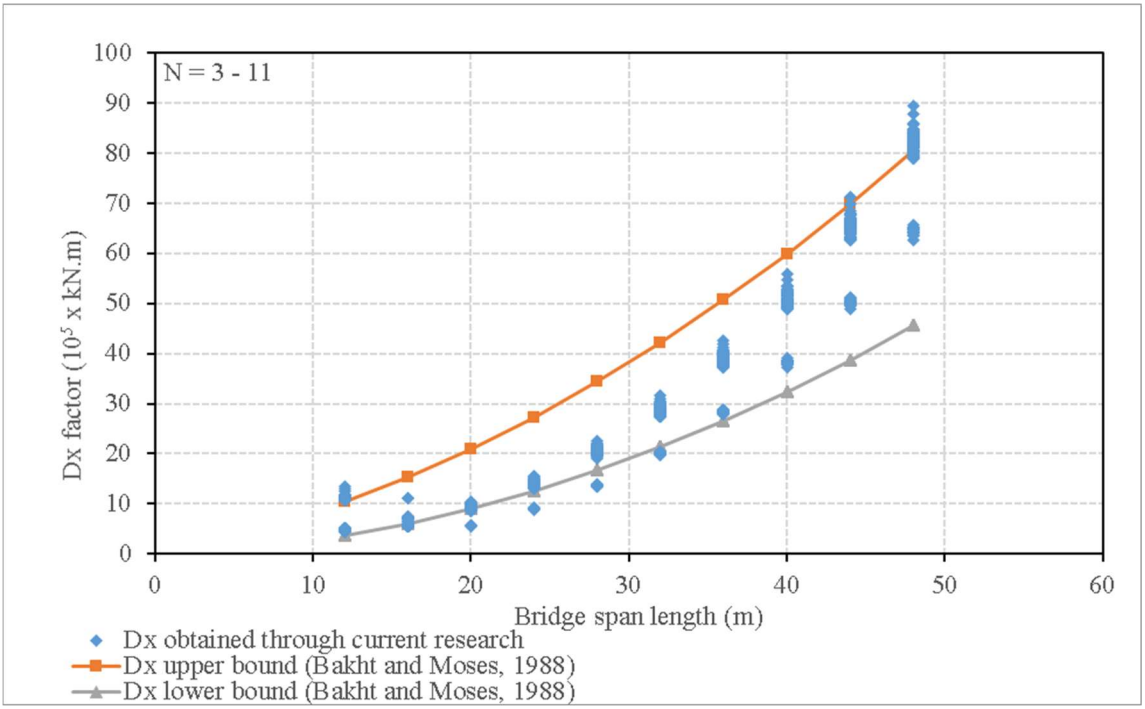

Figure 5.122: Comparison between Dx factor at support location obtained in this research for four equal span bridge under CL-800 truck loading and the boundary values obtained by Bakht B., and Moses, F *(Bakht & Moses, 1988)*

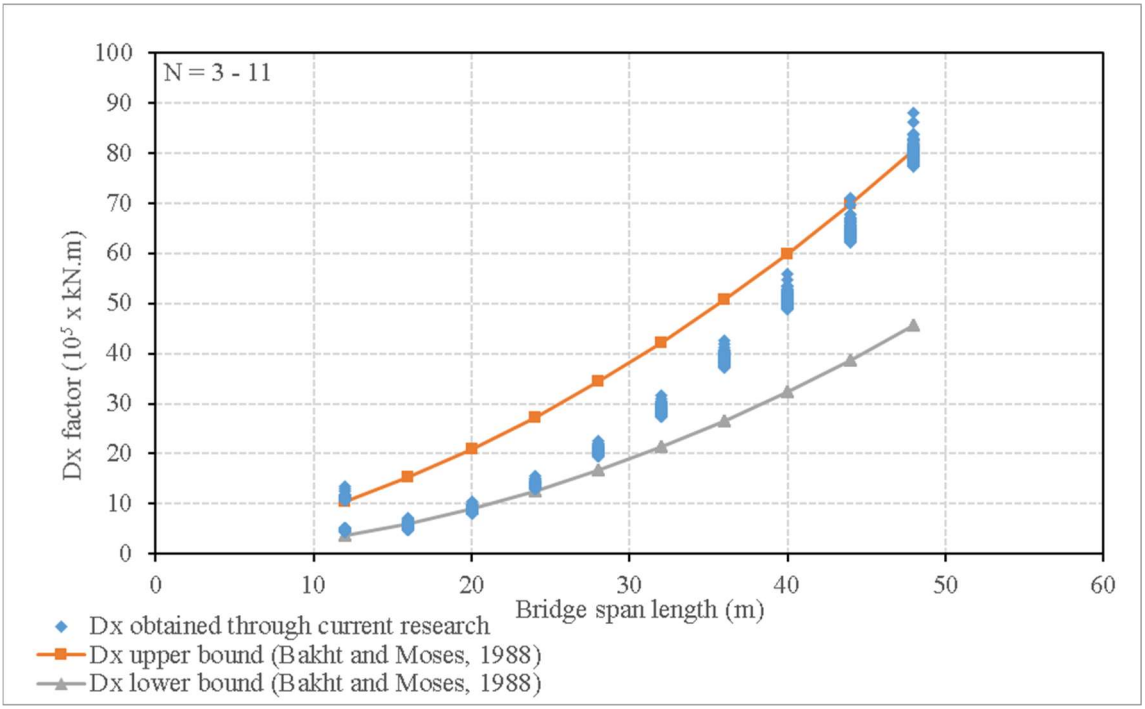

Figure 5.123: Comparison of Dx factor at midspan location obtained in this research for four equal span bridge under CL-800 truck loading and previous research (Bakht & Moses, 1988)

Chapter VI

Conclusion and Recommendations for Future Research

6.1 Conclusions

As the steel technology is falling behind the concrete industry in terms of ease of design and implementation, this research aimed to increase the efficiency and optimization of design in the early stages such as bidding and preliminary analysis. Firstly, ready-made equations were created to mimic the effect of truck loading on a single lane of bridge loading. The truck loadings considered in that portion of the research were the (i) CL-625 truck loading used in all Canada's Provinces except Ontario and Alberta, (ii) CL625-ONT truck loading used in Ontario, and (iii) CL-800 truck loading used in Alberta. Bridge configurations included single span bridges, two-equal-span bridges, three-equal-span bridges and, four-equal-span bridges between 12 m and 48 m in length. Third degree polynomial equations were produced for the maximum longitudinal moment generated by one lane of CL-W loading, M_T, the maximum longitudinal shear generated by one lane of CL-W loading, V_T, support reaction generated by one lane of CL-W loading, R_T, deflection generated by one lane of CL-W loading, Δ_T and can be found in chapter 3. Furthermore, by utilizing the developed equations in addition to CHBDC code requirements, a VB.Net software was developed that is able to calculate live loads at all limit states, dead loads at all limit states, truck loading factor F_T at all limit states for shear and moment and, maximum factored moment, shear, deflection and support reaction at all limit states. In addition to the load calculation capabilities, the program is able to assess girder sections as per CHBDC code requirements and produce an optimized girder section for the applied loadings as per the code limitations. The developed program was limited by the scope of work of the developed live load equations in chapter 3. Finally, by means of using the developed program, 6240 bridge configuration cases were studied in order to optimize an I-girder section size for super structure. The scope of work included bridges of span lengths 12 m to 48 m, truck loadings of CL-625 and CL-800 and, single span to four-equal span bridge configurations. The results from this analysis were used to study the effect of number of girders on the moment of inertia of the optimized I-girder section size, the effect of bridge width on the moment of inertia of the optimized I-girder section size, the effect of girder number and girder spacing on the area of the web of inertia of the optimized I-girder section size. It was found that the moment of inertia I_x per unit width had a

strong correlation to the span length. Furthermore, the web area A_w per unit width had a strong correlation with both the spacing and the span length. Second degree polynomial equations were developed for the moment of inertia per unit width within the scope of the research. Additionally, two-variable equations were developed for the area of web per unit width in order to mimic the behavior of web area which depends on the girder spacing and span length. Finally, the flexural rigidity of data produced was compared to a previous study conducted by Bakht B. et al. (Bakht & Moses, 1988). The data produced in this research showed tighter packing but similar distribution to the results produced in the previous research conducted by Bakht B. et al. Finally, upon studying the produced equations for Ix and Aw per unit width, it was also found that the equations produced for multi-span bridges are very similar to each other.

6.2 Limitations of use

In this research,

1- The end conditions of the girders were considered to be simply supported (conventional construction).
2- The effect of the construction method of the cantilever slab on the transverse capacity of the braced exterior girder is not included in this study.

6.3 Recommendations for future research

Based on the research conducted in this publication, the author recommends future research be conducted on the following:

1- Study and produce empirical equations for live load for multi-span bridge configurations with unequal span lengths.
2- Produce similar ready-made equations to mimic the effect of dead load to replace the IL method.
3- Further study the effect of various aspects of the bridge configurations on the girder dimensions and modify the equations produced here accordingly.
4- Produce similar equations for different steel sections such as WWF sections, singly symmetrical W sections, box-girder sections etc. to further optimize a suitable design.
5- Conduct similar research for skewed and curved bridge configurations.
6- Study the effect of increasing the steel section depth at the interior support on the minimum section size to satisfy the SLS, ULS and, FLS requirements.
7- Extend the scope of work to include integral abutment bridges.
8- Study potential change in girder size due to the effects of construction of cantilever slab on the transverse capacity of braced exterior girders.

Appendix A: CL-625 truck loading optimization program results

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	12	3	1.5	4.5	0	16	323	12	562	16	323	12	562	3	316	3	444	2.26	0.00	1.10	3.36	2.26	0.00	3.26	1.29	1.10	4.50	699700	2214665
1	12	3	2	6	0.75	19	370	12	610	19	370	12	610	3	240	3	387	2.37	0.00	1.07	3.51	2.32	0.00	2.83	1.33	1.07	3.66	789650	2392863
1	12	4	1.5	6	0.75	16	323	12	562	16	323	12	562	3	316	3	444	2.33	0.00	1.14	3.36	2.33	0.00	3.30	1.34	1.14	4.50	699700	2214665
1	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	355	2.36	0.00	1.82	3.57	2.27	0.00	2.50	2.54	1.82	3.27	835299	2481138
1	12	4	1.75	7	1.25	17	347	12	587	17	347	12	587	3	273	3	424	2.33	0.00	1.98	3.44	2.29	0.00	2.99	2.56	1.98	4.03	745925	2305811
1	12	3	2.67	8	0	22	429	12	670	22	429	12	670	3	182	3	327	2.57	0.00	1.00	3.80	2.45	0.00	2.31	1.60	1.00	3.01	938833	2702968
1	12	4	2	8	0	19	370	12	610	19	370	12	610	3	240	3	398	2.45	0.00	1.07	3.51	2.40	0.00	2.80	1.55	1.07	3.66	789650	2392863
1	12	5	1.6	8	0	17	332	12	573	17	332	12	573	3	300	3	443	2.42	0.00	1.18	3.39	2.42	0.00	3.16	1.55	1.18	4.30	718350	2252137
1	12	3	3.17	9.5	0.75	22	443	12	683	22	443	12	683	3	154	3	280	2.42	0.00	1.25	3.49	2.32	0.00	2.00	1.95	1.25	2.59	870337	2533691
1	12	4	2.375	9.5	0.75	20	399	12	639	20	399	12	639	3	200	3	351	2.53	0.00	1.50	3.57	2.47	0.00	2.49	2.07	1.50	3.23	839676	2490190
1	12	5	1.9	9.5	0.75	18	362	12	600	18	362	12	600	3	250	3	407	2.52	0.00	1.42	3.49	2.50	0.00	2.89	2.09	1.42	3.79	772623	2357808
1	12	6	1.583	9.5	0.75	17	331	12	571	17	331	12	571	3	300	3	445	2.49	0.00	1.58	3.38	2.51	0.00	3.19	2.09	1.58	4.33	715080	2245269
1	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	248	2.20	0.00	1.84	3.35	2.06	0.00	1.78	2.79	1.78	2.29	853966	2482392
1	12	4	2.75	11	1.5	21	422	12	663	21	422	12	663	3	176	3	313	2.38	0.00	1.91	3.56	2.26	0.00	2.24	3.06	1.91	2.89	865779	2536469
1	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	371	2.42	0.00	2.23	3.56	2.33	0.00	2.64	3.15	2.23	3.41	820529	2453482
1	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	415	2.41	0.00	2.12	3.47	2.35	0.00	2.95	3.16	2.12	3.89	761511	2335902
1	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	447	2.38	0.00	2.37	3.38	2.35	0.00	3.21	3.15	2.35	4.35	711954	2238259
1	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	302	2.40	0.00	2.10	3.55	2.27	0.00	2.17	3.34	2.10	2.79	868304	2536946
1	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	359	2.45	0.00	2.06	3.57	2.36	0.00	2.56	3.45	2.06	3.31	832062	2476056
1	12	6	1.917	11.5	1.75	18	362	12	603	18	362	12	603	3	250	3	406	2.44	0.00	2.37	3.49	2.38	0.00	2.89	3.47	2.37	3.77	775753	2365667
1	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	437	2.42	0.00	2.65	3.41	2.39	0.00	3.14	3.47	2.39	4.21	726503	2267767
1	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	274	2.40	0.00	2.07	3.47	2.27	0.00	1.97	3.22	1.97	2.53	868179	2525722
1	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	327	2.51	0.00	2.09	3.57	2.41	0.00	2.35	3.40	2.09	3.02	858043	2523686
1	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	375	2.53	0.00	2.04	3.55	2.46	0.00	2.68	3.47	2.04	3.46	816110	2445415
1	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	412	2.51	0.00	2.34	3.47	2.47	0.00	2.94	3.47	2.34	3.85	764454	2341371
1	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	251	2.24	0.00	2.06	3.37	2.09	0.00	1.81	3.13	1.81	2.32	857702	2492785
1	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	300	2.39	0.00	2.13	3.54	2.25	0.00	2.16	3.37	2.13	2.77	869809	2540035
1	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	346	2.44	0.00	2.10	3.58	2.33	0.00	2.48	3.48	2.10	3.18	843495	2496363
1	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	388	2.44	0.00	2.44	3.53	2.36	0.00	2.77	3.51	2.36	3.57	801170	2415795
1	12	4	2.875	11.5	0	29	582	12	823	29	582	12	823	3	167	3	391	4.70	0.00	1.25	7.36	3.98	0.00	1.50	3.02	1.25	3.44	2337253	5557403
1	12	5	2.3	11.5	0	28	550	12	789	28	550	12	789	3	207	3	474	5.03	0.00	1.28	7.80	4.23	0.00	1.80	3.27	1.28	4.12	2406428	5666548
1	12	6	1.917	11.5	0	18	362	12	603	18	362	12	603	3	250	3	406	2.44	0.00	1.08	3.49	2.38	0.00	2.89	1.58	1.08	3.77	775753	2365667
1	12	7	1.643	11.5	0	17	337	12	577	17	337	12	577	3	286	3	437	2.42	0.00	1.20	3.41	2.39	0.00	3.14	1.58	1.20	4.21	726503	2267767
1	12	4	3.25	13	0.75	22	447	12	685	22	447	12	685	3	150	3	274	2.40	0.00	1.25	3.47	2.27	0.00	1.97	1.94	1.25	2.53	868179	2525722
1	12	5	2.6	13	0.75	21	414	12	654	21	414	12	654	3	188	3	327	2.51	0.00	1.26	3.57	2.41	0.00	2.35	2.05	1.26	3.02	858043	2523686
1	12	6	2.167	13	0.75	19	384	12	624	19	384	12	624	3	222	3	375	2.53	0.00	1.22	3.55	2.46	0.00	2.68	2.08	1.22	3.46	816110	2445415
1	12	7	1.857	13	0.75	18	358	12	596	18	358	12	596	3	261	3	412	2.51	0.00	1.41	3.47	2.47	0.00	2.94	2.09	1.41	3.85	764454	2341371
1	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	251	2.24	0.00	1.87	3.37	2.09	0.00	1.81	2.84	1.81	2.32	857702	2492785
1	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	300	2.39	0.00	1.93	3.54	2.25	0.00	2.16	3.06	1.93	2.77	869809	2540035
1	12	6	2.417	14.5	1.5	20	403	12	641	20	403	12	641	3	200	3	346	2.44	0.00	1.62	3.58	2.33	0.00	2.48	2.69	1.62	3.18	843495	2496363
1	12	7	2.07	14.5	1.5	19	376	12	616	19	376	12	616	3	231	3	388	2.44	0.00	1.62	3.53	2.36	0.00	2.77	2.32	1.62	3.57	801170	2415795
1	12	5	3	15	0	29	585	12	825	29	585	12	825	3	162	3	375	4.60	0.00	1.22	7.17	3.90	0.00	1.45	2.93	1.22	3.30	2272927	5435968
1	12	6	2.5	15	0	28	557	12	797	28	557	12	797	3	194	3	438	4.85	0.00	1.24	7.49	4.10	0.00	1.68	3.12	1.24	3.83	2318222	5508842
1	12	7	2.14	15	0	27	536	12	775	27	536	12	775	3	222	3	502	5.09	0.00	1.26	7.82	4.27	0.00	3.31	3.29	1.26	4.35	2376004	5602155
1	12	8	1.875	15	0	18	359	12	599	18	359	12	599	3	250	3	411	2.45	0.00	1.07	3.48	2.40	0.00	2.94	1.58	1.07	3.83	768885	2351744
1	12	9	1.67	15	0	17	340	12	579	17	340	12	579	3	286	3	434	2.37	0.00	1.04	3.41	2.31	0.00	2.94	1.58	1.04	4.16	731112	2276081
1	12	5	3.3	16.5	0.75	22	449	12	687	22	449	12	687	3	146	3	270	2.40	0.00	1.24	3.46	2.27	0.00	1.96	1.93	1.24	2.50	867222	2522180
1	12	6	2.75	16.5	0.75	21	422	12	663	21	422	12	663	3	176	3	313	2.50	0.00	1.26	3.56	2.39	0.00	2.26	2.02	1.26	2.89	865779	2536469
1	12	7	2.357	16.5	0.75	20	399	12	637	20	399	12	637	3	207	3	352	2.54	0.00	1.24	3.58	2.45	0.00	2.53	2.07	1.24	3.24	838657	2487692
1	12	8	2.06	16.5	0.75	19	376	12	614	19	376	12	614	3	231	3	389	2.53	0.00	1.45	3.53	2.47	0.00	2.78	2.08	1.45	3.58	799608	2411568
1	12	9	1.83	16.5	0.75	18	355	12	595	18	355	12	595	3	261	3	415	2.50	0.00	1.39	3.47	2.46	0.00	2.96	2.06	1.39	3.90	761704	2337708
1	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	252	2.26	0.00	1.87	3.37	2.10	0.00	1.83	2.84	1.83	2.33	857692	2493394
1	12	6	3	18	1.5	22	436	12	675	22	436	12	675	3	162	3	292	2.39	0.00	1.54	3.53	2.25	0.00	2.11	3.03	1.54	2.70	871911	2541766
1	12	7	2.57	18	1.5	21	413	12	651	21	413	12	651	3	188	3	330	2.45	0.00	1.74	3.58	2.32	0.00	2.37	2.84	1.74	3.04	856090	2519326
1	12	8	2.25	18	1.5	20	391	12	629	20	391	12	629	3	214	3	365	2.46	0.00	1.49	3.56	2.36	0.00	2.62	2.52	1.49	3.35	825313	2461716
1	12	9	2	18	1.5	19	370	12	610	19	370	12	610	3	240	3	398	2.45	0.00	1.55	3.51	2.38	0.00	2.85	2.24	1.55	3.66	789650	2392863
1	12	6	3.08	18.5	0	29	586	12	827	29	586	12	827	3	158	3	365	4.54	0.00	1.20	7.04	3.85	0.00	1.42	2.86	1.20	3.22	2231959	5359269
1	12	7	2.64	18.5	0	28	562	12	803	28	562	12	803	3	182	3	416	4.73	0.00	1.22	7.29	4.01	0.00	1.61	3.01	1.22	3.65	2262845	5408934
1	12	8	2.32	18.5	0	27	544	12	784	27	544	12	784	3	207	3	465	4.94	0.00	1.24	7.55	4.16	0.00	3.10	3.17	1.24	4.06	2306982	5481440
1	12	9	2.06	18.5	0	26	528	12	768	26	528	12	768	3	231	3	517	5.13	0.00	1.25	7.81	4.30	0.00	3.41	3.31	1.25	4.47	2355786	5561601
1	12	10	1.85	18.5	0	18	357	12	596	18	357	12	596	3	261	3	413	2.46	0.00	1.07	3.47	2.40	0.00	2.96	1.58	1.07	3.87	763597	2340378
1	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	253	2.27	0.00	1.86	3.38	2.11	0.00	1.84	2.85	1.84	2.34	857425	2492538

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	12	7	3.07	21.5	1.5	22	439	12	678	22	439	12	678	3	158	3	287	2.38	0.00	1.53	3.51	2.24	0.00	2.08	3.01	1.53	2.65	870663	2536877
1	12	8	2.69	21.5	1.5	21	419	12	659	21	419	12	659	3	182	3	319	2.44	0.00	1.46	3.57	2.31	0.00	2.30	2.95	1.46	2.94	862887	2531433
1	12	9	2.39	21.5	1.5	20	401	12	640	20	401	12	640	3	200	3	349	2.47	0.00	1.61	3.58	2.36	0.00	2.51	2.66	1.61	3.21	842707	2496114
1	12	10	2.15	21.5	1.5	19	383	12	622	19	383	12	622	3	222	3	377	2.47	0.00	1.41	3.55	2.38	0.00	2.71	2.41	1.41	3.47	813297	2439214
1	12	7	3.14	22	0	29	588	12	828	29	588	12	828	3	154	3	358	4.50	0.00	1.19	6.97	3.82	0.00	1.40	2.83	1.19	3.16	2208894	5314753
1	12	8	2.75	22	0	28	567	12	807	28	567	12	807	3	176	3	400	4.67	0.00	1.20	7.17	3.96	0.00	1.56	2.96	1.20	3.52	2231332	5350393
1	12	9	2.44	22	0	28	549	12	789	28	549	12	789	3	200	3	444	4.83	0.00	1.21	7.39	4.07	0.00	1.71	3.07	1.21	3.88	2264596	5405004
1	12	10	2.2	22	0	27	535	12	775	27	535	12	775	3	222	3	486	5.00	0.00	1.23	7.61	4.20	0.00	3.24	3.21	1.23	4.23	2303113	5469378
1	12	11	2	22	0	26	522	12	762	26	522	12	762	3	240	3	529	5.15	0.00	1.25	7.81	4.32	0.00	3.49	3.32	1.25	4.57	2341828	5532137
1	12	12	1.83	22	0	18	355	12	595	18	355	12	595	3	261	3	415	2.46	0.00	1.06	3.47	2.40	0.00	2.97	1.57	1.06	3.90	761704	2337708
1	12	7	3.57	25	1.5	23	458	12	698	23	458	12	698	3	136	3	254	2.28	0.00	1.50	3.38	2.12	0.00	1.85	2.85	1.50	2.35	858915	2496946
1	12	8	3.125	25	1.5	22	441	12	681	22	441	12	681	3	154	3	283	2.38	0.00	1.53	3.50	2.23	0.00	2.06	2.99	1.53	2.62	870338	2534980
1	12	9	2.78	25	1.5	21	424	12	664	21	424	12	664	3	176	3	311	2.44	0.00	1.51	3.56	2.30	0.00	2.25	3.02	1.51	2.87	866487	2536625
1	12	10	2.5	25	1.5	20	408	12	648	20	408	12	648	3	194	3	337	2.47	0.00	1.35	3.58	2.35	0.00	2.44	2.77	1.35	3.11	852762	2515287
1	12	11	2.27	25	1.5	20	392	12	632	20	392	12	632	3	214	3	363	2.48	0.00	1.51	3.57	2.37	0.00	2.61	2.54	1.51	3.34	829958	2472496
1	12	12	1.83	25	1.5	18	355	12	595	18	355	12	595	3	261	3	415	1.77	0.00	1.29	3.47	1.59	0.00	2.94	1.86	1.29	3.90	761704	2337708
1	16	3	1.5	4.5	0	15	298	12	698	15	298	12	698	3	421	3	420	1.48	0.00	1.12	2.16	1.52	0.00	2.82	1.00	1.00	5.58	979031	2991337
1	16	3	2	6	0.75	17	343	12	742	17	343	12	742	3	320	3	361	1.61	0.00	1.06	2.19	1.65	0.00	2.74	1.00	1.00	4.45	1051930	3103435
1	16	4	1.5	6	0.75	15	293	12	690	15	293	12	690	3	421	3	414	1.46	0.00	1.05	2.08	1.50	0.00	2.82	1.00	1.00	5.52	929554	2877581
1	16	3	2.33	7	1.25	17	341	12	739	17	341	12	739	3	276	3	315	1.37	0.00	1.98	1.88	1.41	0.00	2.32	1.62	1.37	3.81	886504	2704742
1	16	4	1.75	7	1.25	14	289	12	688	14	289	12	688	3	364	3	375	1.33	0.00	1.49	1.76	1.43	0.00	2.72	1.24	1.24	4.72	774922	2498142
1	16	3	2.67	8	0	18	368	12	767	18	368	12	767	3	242	3	286	1.46	0.00	1.20	1.94	1.49	0.00	2.12	1.00	1.00	3.45	951318	2831199
1	16	4	2	8	0	16	315	12	714	16	315	12	714	3	320	3	353	1.43	0.00	1.18	1.85	1.51	0.00	2.62	1.00	1.00	4.28	842610	2630947
1	16	5	1.6	8	0	14	277	12	676	14	277	12	676	3	400	3	393	1.32	0.00	1.18	1.76	1.40	0.00	2.75	1.00	1.00	5.07	763693	2488735
1	16	3	3.17	9.5	0.75	20	399	12	797	20	399	12	797	3	205	3	251	1.50	0.00	1.55	1.97	1.51	0.00	1.07	1.33	1.07	3.02	997819	2909291
1	16	4	2.375	9.5	0.75	17	343	12	744	17	343	12	744	3	267	3	311	1.48	0.00	1.55	1.88	1.54	0.00	2.32	1.33	1.33	3.76	893184	2718998
1	16	5	1.9	9.5	0.75	15	303	12	703	15	303	12	703	3	333	3	361	1.43	0.00	1.54	1.79	1.54	0.00	2.71	1.33	1.33	4.44	805970	2556273
1	16	6	1.583	9.5	0.75	14	272	12	670	14	272	12	670	3	400	3	392	1.29	0.00	1.31	1.72	1.38	0.00	2.75	1.12	1.12	5.08	736078	2425077
1	16	3	3.67	11	1.5	20	403	12	863	20	403	12	863	3	178	3	231	1.38	0.00	2.28	1.91	1.36	0.00	1.00	1.93	1.00	2.82	1038167	3019924
1	16	4	2.75	11	1.5	19	371	12	772	19	371	12	772	3	235	3	280	1.43	0.00	2.29	1.93	1.44	0.00	2.09	2.02	1.43	3.37	951673	2828533
1	16	5	2.2	11	1.5	17	330	12	729	17	330	12	729	3	296	3	329	1.41	0.00	2.29	1.86	1.45	0.00	2.46	2.01	1.41	3.98	863978	2663579
1	16	6	1.833	11	1.5	15	297	12	696	15	297	12	696	3	348	3	367	1.38	0.00	2.31	1.78	1.46	0.00	2.77	2.00	1.38	4.56	791944	2529274
1	16	7	1.57	11	1.5	14	269	12	670	14	269	12	670	3	400	3	394	1.35	0.00	2.33	1.71	1.47	0.00	3.02	1.99	1.35	5.12	731937	2419590
1	16	4	2.875	11.5	1.75	19	381	12	779	19	381	12	779	3	222	3	270	1.45	0.00	2.54	1.95	1.46	0.00	2.02	2.22	1.45	3.25	968499	2857811
1	16	5	2.3	11.5	1.75	17	337	12	738	17	337	12	738	3	276	3	318	1.43	0.00	2.55	1.87	1.47	0.00	2.38	2.22	1.43	3.85	880444	2695198
1	16	6	1.917	11.5	1.75	15	305	12	704	15	305	12	704	3	333	3	359	1.40	0.00	2.57	1.80	1.48	0.00	2.70	2.21	1.40	4.41	809696	2562392
1	16	7	1.643	11.5	1.75	14	278	12	677	14	278	12	677	3	381	3	386	1.38	0.00	2.46	1.73	1.49	0.00	2.95	2.20	1.38	4.94	750266	2452307
1	16	4	3.25	13	2.5	20	403	12	802	20	403	12	802	3	200	3	247	1.49	0.00	2.59	1.96	1.49	0.00	1.06	2.20	1.06	2.96	1003332	2918686
1	16	5	2.6	13	2.5	18	361	12	761	18	361	12	761	3	250	3	291	1.49	0.00	2.48	1.92	1.52	0.00	2.18	2.22	1.49	3.51	930162	2788077
1	16	6	2.167	13	2.5	16	327	12	726	16	327	12	726	3	296	3	332	1.46	0.00	2.51	1.85	1.53	0.00	2.49	2.21	1.46	4.02	856514	2648998
1	16	7	1.857	13	2.5	15	299	12	699	15	299	12	699	3	348	3	365	1.44	0.00	2.55	1.79	1.54	0.00	2.76	2.21	1.44	4.52	797494	2540744
1	16	4	3.625	14.5	3.25	20	408	12	847	20	408	12	847	3	178	3	231	1.41	0.00	2.52	1.92	1.39	0.00	1.00	2.17	1.00	2.80	1031542	2992397
1	16	5	2.9	14.5	3.25	19	382	12	782	19	382	12	782	3	222	3	269	1.45	0.00	2.59	1.95	1.45	0.00	2.02	2.25	1.45	3.24	972367	2866690
1	16	6	2.417	14.5	3.25	17	347	12	747	17	347	12	747	3	267	3	307	1.43	0.00	2.62	1.89	1.46	0.00	2.31	2.25	1.43	3.71	900207	2731639
1	16	7	2.07	14.5	3.25	16	319	12	717	16	319	12	717	3	308	3	343	1.41	0.00	2.51	1.83	1.47	0.00	2.58	2.24	1.41	4.16	838410	2614333
1	16	4	2.875	11.5	0	19	381	12	779	19	381	12	779	3	222	3	270	1.45	0.00	1.16	1.95	1.46	0.00	2.02	1.01	1.01	3.25	968499	2857811
1	16	5	2.3	11.5	0	17	337	12	738	17	337	12	738	3	276	3	318	1.43	0.00	1.16	1.87	1.47	0.00	2.38	1.01	1.01	3.85	880444	2695198
1	16	6	1.917	11.5	0	15	305	12	704	15	305	12	704	3	333	3	359	1.40	0.00	1.17	1.80	1.48	0.00	2.70	1.01	1.01	4.41	809696	2562392
1	16	7	1.643	11.5	0	14	278	12	677	14	278	12	677	3	381	3	386	1.38	0.00	1.12	1.73	1.49	0.00	2.95	1.00	1.00	4.94	750266	2452307
1	16	4	3.25	13	0.75	20	403	12	802	20	403	12	802	3	200	3	247	1.49	0.00	1.56	1.96	1.49	0.00	1.06	1.32	1.06	2.96	1003332	2918686
1	16	5	2.6	13	0.75	18	361	12	761	18	361	12	761	3	250	3	291	1.49	0.00	1.49	1.92	1.52	0.00	2.18	1.34	1.34	3.51	930162	2788077
1	16	6	2.167	13	0.75	16	327	12	726	16	327	12	726	3	296	3	332	1.46	0.00	1.51	1.85	1.53	0.00	2.49	1.33	1.33	4.02	856514	2648998
1	16	7	1.857	13	0.75	15	299	12	699	15	299	12	699	3	348	3	365	1.44	0.00	1.53	1.79	1.54	0.00	2.76	1.33	1.33	4.52	797494	2540744
1	16	4	3.625	14.5	1.5	20	408	12	847	20	408	12	847	3	178	3	231	1.41	0.00	2.28	1.92	1.39	0.00	1.00	1.97	1.00	2.80	1031542	2992397
1	16	5	2.9	14.5	1.5	19	382	12	782	19	382	12	782	3	222	3	269	1.45	0.00	2.35	1.95	1.45	0.00	2.02	2.04	1.45	3.24	972367	2866690
1	16	6	2.417	14.5	1.5	17	347	12	747	17	347	12	747	3	267	3	307	1.43	0.00	2.02	1.89	1.46	0.00	2.31	1.74	1.43	3.71	900207	2731639
1	16	7	2.07	14.5	1.5	16	319	12	717	16	319	12	717	3	308	3	343	1.41	0.00	1.66	1.83	1.47	0.00	2.58	1.48	1.41	4.16	838410	2614333
1	16	5	3	15	0	19	389	12	787	19	389	12	787	3	216	3	262	1.47	0.00	1.17	1.96	1.46	0.00	1.13	1.01	1.01	3.15	982752	2883557
1	16	6	2.5	15	0	18	354	12	753	18	354	12	753	3	258	3	300	1.45	0.00	1.12	1.91	1.48	0.00	2.25	1.01	1.01	3.61	915264	2759692
1	16	7	2.14	15	0	16	324	12	724	16	324	12	724	3	296	3	335	1.43	0.00	1.14	1.84	1.48	0.00	2.52	1.01	1.01	4.06	851526	2640217
1	16	8	1.875	15	0	15	301	12	700	15	301	12	700	3	333	3	363	1.41	0.00	1.16	1.79	1.49	0.00	2.75	1.00	1.00	4.48	800678	2545457
1	16	9	1.67	15	0	14	281	12	679	14	281	12	679	3	381	3	383	1.35	0.00	1.12	1.74	1.45	0.00	2.77	1.00	1.00	4.88	755292	2460015

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	16	5	3.3	16.5	0.75	20	406	12	804	20	406	12	804	3	195	3	244	1.50	0.00	1.56	1.97	1.49	0.00	1.05	1.32	1.05	2.92	1006156	2922119
1	16	6	2.75	16.5	0.75	19	371	12	772	19	371	12	772	3	235	3	280	1.50	0.00	1.51	1.93	1.52	0.00	2.10	1.34	1.34	3.37	951673	2828533
1	16	7	2.357	16.5	0.75	17	343	12	741	17	343	12	741	3	276	3	312	1.48	0.00	1.54	1.88	1.53	0.00	2.35	1.34	1.34	3.77	890008	2710847
1	16	8	2.06	16.5	0.75	16	318	12	717	16	318	12	717	3	308	3	345	1.46	0.00	1.49	1.83	1.54	0.00	2.60	1.33	1.33	4.18	838235	2615657
1	16	9	1.83	16.5	0.75	15	297	12	695	15	297	12	695	3	348	3	367	1.43	0.00	1.50	1.78	1.53	0.00	2.77	1.31	1.31	4.56	790737	2525826
1	16	5	3.6	18	1.5	21	411	12	837	21	411	12	837	3	182	3	231	1.43	0.00	2.27	1.94	1.40	0.00	1.00	1.98	1.00	2.79	1027909	2976297
1	16	6	3	18	1.5	19	389	12	787	19	389	12	787	3	216	3	262	1.46	0.00	2.36	1.96	1.45	0.00	1.13	2.04	1.13	3.15	982752	2883557
1	16	7	2.57	18	1.5	18	359	12	759	18	359	12	759	3	250	3	294	1.45	0.00	2.06	1.91	1.47	0.00	2.21	1.85	1.45	3.54	927070	2782914
1	16	8	2.25	18	1.5	17	334	12	733	17	334	12	733	3	286	3	323	1.43	0.00	1.85	1.86	1.47	0.00	2.44	1.62	1.43	3.91	871819	2677766
1	16	9	2	18	1.5	16	313	12	711	16	313	12	711	3	320	3	352	1.42	0.00	1.59	1.82	1.48	0.00	2.66	1.43	1.42	4.27	826433	2592698
1	16	6	3.08	18.5	0	20	393	12	793	20	393	12	793	3	211	3	257	1.47	0.00	1.17	1.96	1.46	0.00	1.11	1.01	1.01	3.09	989976	2897293
1	16	7	2.64	18.5	0	18	364	12	764	18	364	12	764	3	242	3	288	1.46	0.00	1.13	1.92	1.48	0.00	2.17	1.01	1.01	3.47	936726	2800569
1	16	8	2.32	18.5	0	17	340	12	738	17	340	12	738	3	276	3	316	1.45	0.00	1.16	1.88	1.49	0.00	2.38	1.01	1.01	3.82	883447	2698453
1	16	9	2.06	18.5	0	16	318	12	717	16	318	12	717	3	308	3	345	1.43	0.00	1.13	1.83	1.50	0.00	2.61	1.01	1.01	4.18	838235	2615657
1	16	10	1.85	18.5	0	15	299	12	697	15	299	12	697	3	348	3	365	1.41	0.00	1.09	1.79	1.50	0.00	2.77	1.00	1.00	4.52	795486	2534895
1	16	6	3.58	21.5	1.5	21	413	12	830	21	413	12	830	3	182	3	231	1.44	0.00	2.26	1.94	1.41	0.00	1.00	1.98	1.00	2.78	1023980	2962337
1	16	7	3.07	21.5	1.5	20	393	12	791	20	393	12	791	3	211	3	257	1.47	0.00	2.36	1.96	1.45	0.00	1.12	2.04	1.12	3.09	987892	2891673
1	16	8	2.69	21.5	1.5	18	368	12	767	18	368	12	767	3	242	3	284	1.46	0.00	2.18	1.93	1.47	0.00	2.14	1.94	1.46	3.42	944245	2813915
1	16	9	2.39	21.5	1.5	17	345	12	745	17	345	12	745	3	267	3	310	1.45	0.00	1.88	1.89	1.48	0.00	2.34	1.72	1.45	3.74	896528	2725089
1	16	10	2.15	21.5	1.5	16	326	12	724	16	326	12	724	3	296	3	334	1.43	0.00	1.74	1.85	1.48	0.00	2.53	1.54	1.43	4.04	853878	2643427
1	16	7	3.14	22	0	20	397	12	796	20	397	12	796	3	205	3	253	1.48	0.00	1.10	1.96	1.46	0.00	1.10	1.01	1.01	3.04	996030	2907366
1	16	8	2.75	22	0	19	371	12	772	19	371	12	772	3	235	3	280	1.47	0.00	1.15	1.93	1.48	0.00	2.11	1.01	1.01	3.37	951673	2828533
1	16	9	2.44	22	0	17	349	12	749	17	349	12	749	3	267	3	305	1.46	0.00	1.11	1.89	1.48	0.00	2.31	1.01	1.01	3.68	905445	2742050
1	16	10	2.2	22	0	17	330	12	729	17	330	12	729	3	296	3	329	1.45	0.00	1.15	1.86	1.49	0.00	2.49	1.01	1.01	3.98	863978	2663579
1	16	11	2	22	0	16	313	12	711	16	313	12	711	3	320	3	352	1.43	0.00	1.12	1.82	1.50	0.00	2.67	1.01	1.01	4.27	826433	2592698
1	16	12	1.83	22	0	15	297	12	696	15	297	12	696	3	348	3	367	1.41	0.00	1.09	1.78	1.50	0.00	2.78	1.00	1.00	4.56	793242	2532593
1	16	7	3.57	25	1.5	21	415	12	826	21	415	12	826	3	182	3	231	1.45	0.00	2.25	1.95	1.42	0.00	1.00	1.99	1.00	2.78	1022759	2956326
1	16	8	3.125	25	1.5	20	396	12	795	20	396	12	795	3	205	3	254	1.47	0.00	2.22	1.96	1.45	0.00	1.10	2.03	1.10	3.05	993831	2903114
1	16	9	2.78	25	1.5	19	374	12	774	19	374	12	774	3	235	3	278	1.47	0.00	2.28	1.94	1.47	0.00	2.10	2.00	1.47	3.34	957356	2839251
1	16	10	2.5	25	1.5	18	354	12	753	18	354	12	753	3	258	3	300	1.46	0.00	1.99	1.91	1.48	0.00	2.27	1.80	1.46	3.61	915264	2759692
1	16	11	2.27	25	1.5	17	336	12	734	17	336	12	734	3	286	3	321	1.44	0.00	1.87	1.87	1.48	0.00	2.43	1.63	1.44	3.88	875199	2683192
1	16	12	1.83	25	1.5	15	297	12	695	15	297	12	695	3	348	3	367	1.04	0.00	1.32	1.78	1.01	0.00	2.75	1.19	1.01	4.56	790737	2525826
1	20	3	1.5	4.5	0	16	315	12	873	16	315	12	873	3	526	3	450	1.38	0.00	1.04	1.96	1.41	0.00	1.72	1.00	1.00	6.98	1749954	4862033
1	20	3	2	6	0.75	18	365	12	924	18	365	12	924	3	400	3	387	1.50	0.00	1.02	1.99	1.52	0.00	1.66	1.00	1.00	5.54	1873152	5048677
1	20	4	1.5	6	0.75	15	308	12	868	15	308	12	868	3	526	3	444	1.36	0.00	1.04	1.88	1.40	0.00	1.73	1.00	1.00	6.94	1669964	4701923
1	20	3	2.33	7	1.25	16	313	12	871	16	313	12	871	3	345	3	309	1.00	0.00	1.71	1.29	1.07	0.00	1.34	1.27	1.00	4.49	1110056	3375663
1	20	4	1.75	7	1.25	13	265	12	823	13	265	12	823	3	455	3	371	1.00	0.00	1.32	1.25	1.12	0.00	1.59	1.01	1.00	5.64	1020159	3253639
1	20	3	2.67	8	0	20	393	12	950	20	393	12	950	3	303	3	304	1.36	0.00	1.13	1.77	1.38	0.00	1.28	1.00	1.00	4.27	1681003	4583121
1	20	4	2	8	0	17	334	12	891	17	334	12	891	3	400	3	376	1.33	0.00	1.10	1.68	1.40	0.00	1.59	1.00	1.00	5.35	1502718	4273776
1	20	5	1.6	8	0	15	291	12	850	15	291	12	850	3	500	3	419	1.23	0.00	1.09	1.60	1.31	0.00	1.69	1.00	1.00	6.38	1372899	4059292
1	20	3	3.17	9.5	0.75	18	364	12	923	18	364	12	923	3	256	3	243	1.05	0.00	1.39	1.29	1.10	0.00	1.06	1.00	1.00	3.49	1173820	3441331
1	20	4	2.375	9.5	0.75	15	307	12	865	15	307	12	865	3	333	3	300	1.02	0.00	1.35	1.22	1.13	0.00	1.32	1.00	1.00	4.37	1041479	3214883
1	20	5	1.9	9.5	0.75	13	266	12	826	13	266	12	826	3	417	3	349	1.00	0.00	1.38	1.17	1.15	0.00	1.56	1.01	1.00	5.22	952485	3076758
1	20	6	1.583	9.5	0.75	13	263	12	823	13	263	12	823	2	345	2	268	1.07	0.00	1.20	1.36	1.18	0.00	1.65	1.00	1.00	6.24	1115934	3502630
1	20	3	3.67	11	1.5	19	373	12	1003	19	373	12	1003	3	222	3	225	1.00	0.00	2.08	1.29	1.02	0.00	1.00	1.49	1.00	3.28	1267026	3684755
1	20	4	2.75	11	1.5	17	337	12	894	17	337	12	894	3	294	3	270	1.00	0.00	2.04	1.27	1.05	0.00	1.18	1.52	1.00	3.90	1116488	3345400
1	20	5	2.2	11	1.5	15	297	12	857	15	297	12	857	3	370	3	320	1.00	0.00	2.06	1.24	1.09	0.00	1.41	1.55	1.00	4.67	1048103	3253580
1	20	6	1.833	11	1.5	13	267	12	826	13	267	12	826	3	435	3	359	1.00	0.00	2.08	1.22	1.12	0.00	1.61	1.58	1.00	5.41	992503	3178103
1	20	7	1.57	11	1.5	12	243	12	800	12	243	12	800	2	345	2	259	1.00	0.00	2.04	1.19	1.15	0.00	1.77	1.60	1.00	6.11	946352	3116427
1	20	4	2.875	11.5	1.75	17	342	12	901	17	342	12	901	3	278	3	260	1.00	0.00	2.23	1.26	1.05	0.00	1.14	1.65	1.00	3.76	1111814	3325627
1	20	5	2.3	11.5	1.75	15	303	12	860	15	303	12	860	3	345	3	308	1.00	0.00	2.24	1.23	1.09	0.00	1.36	1.68	1.00	4.49	1040920	3221187
1	20	6	1.917	11.5	1.75	14	272	12	831	14	272	12	831	3	417	3	350	1.00	0.00	2.27	1.20	1.12	0.00	1.56	1.71	1.00	5.20	987679	3153777
1	20	7	1.643	11.5	1.75	12	247	12	807	12	247	12	807	2	323	2	252	1.00	0.00	2.23	1.18	1.15	0.00	1.73	1.74	1.00	5.89	943135	3099381
1	20	4	3.25	13	2.5	18	359	12	918	18	359	12	918	3	250	3	235	1.00	0.00	2.20	1.23	1.05	0.00	1.03	1.59	1.00	3.39	1106606	3283265
1	20	5	2.6	13	2.5	16	318	12	878	16	318	12	878	3	312	3	279	1.00	0.00	2.21	1.20	1.08	0.00	1.23	1.61	1.00	4.05	1037364	3183385
1	20	6	2.167	13	2.5	14	287	12	846	14	287	12	846	3	370	3	320	1.00	0.00	2.24	1.18	1.12	0.00	1.42	1.64	1.00	4.68	982870	3107285
1	20	7	1.857	13	2.5	13	262	12	820	13	262	12	820	2	286	2	235	1.00	0.00	2.20	1.16	1.15	0.00	1.59	1.67	1.00	5.30	938360	3048216
1	20	4	3.625	14.5	3.25	19	372	12	986	19	372	12	986	3	222	3	224	1.00	0.00	2.27	1.28	1.02	0.00	1.00	1.65	1.00	3.26	1230406	3589323
1	20	5	2.9	14.5	3.25	17	344	12	902	17	344	12	902	3	278	3	259	1.00	0.00	2.27	1.26	1.05	0.00	1.14	1.67	1.00	3.73	1115103	3329834
1	20	6	2.417	14.5	3.25	16	311	12	871	16	311	12	871	3	333	3	297	1.00	0.00	2.22	1.24	1.08	0.00	1.32	1.70	1.00	4.32	1059772	3254172
1	20	7	2.07	14.5	3.25	14	285	12	844	14	285	12	844	3	385	3	334	1.00	0.00	2.25	1.22	1.10	0.00	1.49	1.72	1.00	4.89	1013089	3189678
1	20	4	2.875	11.5	0	20	404	12	962	20	404	12	962	3	278	3	286	1.34	0.00	1.09	1.74	1.34	0.00	1.22	1.00	1.00	4.02	1679048	4564082

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	20	5	2.3	11.5	0	18	357	12	916	18	357	12	916	3	345	3	337	1.32	0.00	1.09	1.68	1.36	0.00	1.44	1.00	1.00	4.78	1542410	4326510
1	20	6	1.917	11.5	0	16	321	12	880	16	321	12	880	3	417	3	382	1.30	0.00	1.09	1.62	1.37	0.00	1.64	1.00	1.00	5.51	1434532	4142200
1	20	7	1.643	11.5	0	15	292	12	850	15	292	12	850	3	476	3	411	1.28	0.00	1.09	1.57	1.38	0.00	1.80	1.00	1.00	6.21	1343712	3987498
1	20	4	3.25	13	0.75	18	369	12	929	18	369	12	929	3	250	3	239	1.05	0.00	1.35	1.30	1.09	0.00	1.05	1.00	1.00	3.43	1187020	3465965
1	20	5	2.6	13	0.75	16	324	12	884	16	324	12	884	3	312	3	281	1.03	0.00	1.33	1.25	1.11	0.00	1.24	1.00	1.00	4.08	1083748	3289121
1	20	6	2.167	13	0.75	15	290	12	847	15	290	12	847	3	370	3	321	1.01	0.00	1.32	1.20	1.13	0.00	1.43	1.00	1.00	4.69	1000568	3145459
1	20	7	1.857	13	0.75	13	262	12	820	13	262	12	820	2	286	2	235	1.00	0.00	1.32	1.16	1.15	0.00	1.59	1.00	1.00	5.30	938360	3048216
1	20	4	3.625	14.5	1.5	19	372	12	986	19	372	12	986	3	222	3	224	1.00	0.00	2.06	1.28	1.02	0.00	1.00	1.50	1.00	3.26	1230406	3589323
1	20	5	2.9	14.5	1.5	17	344	12	902	17	344	12	902	3	278	3	259	1.00	0.00	2.06	1.26	1.05	0.00	1.14	1.52	1.00	3.73	1115103	3329834
1	20	6	2.417	14.5	1.5	16	311	12	871	16	311	12	871	3	333	3	297	1.00	0.00	1.71	1.24	1.08	0.00	1.32	1.31	1.00	4.32	1059772	3254172
1	20	7	2.07	14.5	1.5	14	285	12	844	14	285	12	844	3	385	3	334	1.00	0.00	1.49	1.22	1.10	0.00	1.49	1.14	1.00	4.89	1013089	3189678
1	20	5	3	15	0	21	413	12	972	21	413	12	972	3	270	3	277	1.36	0.00	1.11	1.76	1.34	0.00	1.18	1.00	1.00	3.89	1706902	4615071
1	20	6	2.5	15	0	19	374	12	934	19	374	12	934	3	323	3	318	1.34	0.00	1.06	1.71	1.36	0.00	1.36	1.00	1.00	4.48	1595642	4421218
1	20	7	2.14	15	0	17	343	12	902	17	343	12	902	3	370	3	356	1.32	0.00	1.07	1.66	1.37	0.00	1.53	1.00	1.00	5.06	1504212	4262863
1	20	8	1.875	15	0	16	317	12	875	16	317	12	875	3	417	3	385	1.31	0.00	1.08	1.62	1.38	0.00	1.67	1.00	1.00	5.60	1420730	4116964
1	20	9	1.67	15	0	15	295	12	853	15	295	12	853	3	476	3	407	1.26	0.00	1.09	1.58	1.35	0.00	1.70	1.00	1.00	6.13	1352714	4002331
1	20	5	3.3	16.5	0.75	19	372	12	931	19	372	12	931	3	244	3	236	1.06	0.00	1.30	1.30	1.09	0.00	1.04	1.00	1.00	3.39	1190004	3468018
1	20	6	2.75	16.5	0.75	17	335	12	894	17	335	12	894	3	294	3	270	1.04	0.00	1.30	1.26	1.11	0.00	1.19	1.00	1.00	3.90	1106163	3324205
1	20	7	2.357	16.5	0.75	15	305	12	864	15	305	12	864	3	345	3	302	1.03	0.00	1.30	1.22	1.12	0.00	1.34	1.00	1.00	4.40	1036508	3206802
1	20	8	2.06	16.5	0.75	14	280	12	839	14	280	12	839	3	385	3	333	1.01	0.00	1.30	1.19	1.13	0.00	1.49	1.00	1.00	4.89	979044	3112972
1	20	9	1.83	16.5	0.75	13	261	12	819	13	261	12	819	2	294	2	237	1.01	0.00	1.31	1.17	1.15	0.00	1.60	1.00	1.00	5.37	944517	3066832
1	20	5	3.6	18	1.5	19	372	12	976	19	372	12	976	3	227	3	224	1.00	0.00	2.03	1.27	1.02	0.00	1.00	1.49	1.00	3.25	1209014	3533277
1	20	6	3	18	1.5	17	349	12	907	17	349	12	907	3	270	3	252	1.00	0.00	1.98	1.25	1.04	0.00	1.11	1.50	1.00	3.63	1116251	3323924
1	20	7	2.57	18	1.5	16	321	12	879	16	321	12	879	3	312	3	283	1.00	0.00	1.82	1.24	1.07	0.00	1.26	1.38	1.00	4.10	1067340	3252629
1	20	8	2.25	18	1.5	15	298	12	855	15	298	12	855	3	357	3	312	1.00	0.00	1.56	1.22	1.09	0.00	1.39	1.22	1.00	4.56	1024532	3189834
1	20	9	2	18	1.5	14	278	12	836	14	278	12	836	3	400	3	342	1.00	0.00	1.42	1.20	1.11	0.00	1.53	1.10	1.00	5.02	990008	3145409
1	20	6	3.08	18.5	0	21	419	12	978	21	419	12	978	3	263	3	272	1.37	0.00	1.06	1.77	1.35	0.00	1.17	1.00	1.00	3.81	1725940	4649750
1	20	7	2.64	18.5	0	19	386	12	945	19	386	12	945	3	303	3	305	1.35	0.00	1.07	1.72	1.36	0.00	1.31	1.00	1.00	4.30	1631841	4484212
1	20	8	2.32	18.5	0	18	359	12	917	18	359	12	917	3	345	3	335	1.34	0.00	1.09	1.68	1.37	0.00	1.44	1.00	1.00	4.74	1546515	4331793
1	20	9	2.06	18.5	0	17	335	12	894	17	335	12	894	3	385	3	366	1.32	0.00	1.06	1.65	1.38	0.00	1.58	1.00	1.00	5.21	1476674	4213702
1	20	10	1.85	18.5	0	16	314	12	874	16	314	12	874	3	435	3	388	1.31	0.00	1.08	1.61	1.39	0.00	1.69	1.00	1.00	5.67	1415655	4112727
1	20	6	3.58	21.5	1.5	19	372	12	969	19	372	12	969	3	227	3	224	1.00	0.00	2.01	1.26	1.02	0.00	1.00	1.48	1.00	3.25	1196812	3500261
1	20	7	3.07	21.5	1.5	18	352	12	911	18	352	12	911	3	263	3	247	1.00	0.00	1.98	1.25	1.04	0.00	1.09	1.49	1.00	3.56	1116427	3319594
1	20	8	2.69	21.5	1.5	16	328	12	886	16	328	12	886	3	303	3	273	1.00	0.00	1.91	1.23	1.06	0.00	1.21	1.43	1.00	3.95	1072847	3253180
1	20	9	2.39	21.5	1.5	15	307	12	866	15	307	12	866	3	333	3	298	1.00	0.00	1.67	1.22	1.08	0.00	1.33	1.28	1.00	4.35	1037619	3205538
1	20	10	2.15	21.5	1.5	14	289	12	848	14	289	12	848	3	370	3	323	1.00	0.00	1.54	1.21	1.10	0.00	1.45	1.17	1.00	4.73	1006075	3162812
1	20	7	3.14	22	0	21	423	12	983	21	423	12	983	3	256	3	268	1.37	0.00	1.07	1.77	1.35	0.00	1.15	1.00	1.00	3.76	1739159	4674802
1	20	8	2.75	22	0	20	394	12	954	20	394	12	954	3	294	3	296	1.36	0.00	1.08	1.73	1.36	0.00	1.27	1.00	1.00	4.16	1653892	4523036
1	20	9	2.44	22	0	19	370	12	929	19	370	12	929	3	333	3	324	1.35	0.00	1.05	1.71	1.37	0.00	1.39	1.00	1.00	4.57	1588003	4409361
1	20	10	2.2	22	0	17	348	12	907	17	348	12	907	3	370	3	349	1.34	0.00	1.07	1.67	1.38	0.00	1.51	1.00	1.00	4.95	1515263	4279550
1	20	11	2	22	0	16	329	12	889	16	329	12	889	3	400	3	374	1.33	0.00	1.05	1.64	1.39	0.00	1.62	1.00	1.00	5.33	1460673	4188564
1	20	12	1.83	22	0	16	313	12	873	16	313	12	873	3	435	3	391	1.32	0.00	1.08	1.62	1.40	0.00	1.70	1.00	1.00	5.72	1420595	4126229
1	20	7	3.57	25	1.5	19	372	12	963	19	372	12	963	3	227	3	223	1.00	0.00	1.99	1.26	1.02	0.00	1.00	1.47	1.00	3.24	1184009	3466187
1	20	8	3.125	25	1.5	18	355	12	912	18	355	12	912	3	256	3	243	1.00	0.00	1.97	1.25	1.04	0.00	1.08	1.48	1.00	3.50	1114365	3308533
1	20	9	2.78	25	1.5	17	333	12	892	17	333	12	892	3	294	3	266	1.00	0.00	1.90	1.23	1.05	0.00	1.18	1.47	1.00	3.85	1078727	3259109
1	20	10	2.5	25	1.5	16	314	12	874	16	314	12	874	3	323	3	288	1.00	0.00	1.75	1.22	1.07	0.00	1.29	1.33	1.00	4.20	1047585	3217253
1	20	11	2.27	25	1.5	15	298	12	856	15	298	12	856	3	357	3	310	1.00	0.00	1.57	1.21	1.09	0.00	1.39	1.22	1.00	4.53	1018176	3174058
1	20	12	1.83	25	1.5	16	326	12	885	16	326	12	885	3	435	3	400	1.05	0.00	1.34	1.74	1.00	0.00	1.70	1.27	1.00	5.80	1558306	4417011
1	24	3	1.5	4.5	0	17	330	12	1047	17	330	12	1047	3	429	2	491	1.31	0.00	1.08	1.81	1.33	0.00	2.72	1.00	1.00	8.38	2818142	7325602
1	24	3	2	6	0.75	19	384	12	1101	19	384	12	1101	3	480	3	420	1.42	0.00	1.04	1.84	1.43	0.00	2.55	1.00	1.00	6.67	2986590	7568225
1	24	4	1.5	6	0.75	16	323	12	1040	16	323	12	1040	3	429	2	484	1.29	0.00	1.04	1.74	1.32	0.00	2.76	1.00	1.00	8.32	2689628	7079089
1	24	3	2.33	7	1.25	17	339	12	1059	17	339	12	1059	3	414	3	341	1.00	0.00	1.77	1.28	1.06	0.00	2.13	1.28	1.00	5.45	1937311	5414565
1	24	4	1.75	7	1.25	14	286	12	1005	14	286	12	1005	3	545	3	410	1.00	0.00	1.46	1.24	1.11	0.00	2.65	1.07	1.00	6.89	1794177	5227468
1	24	3	2.67	8	0	21	412	12	1131	21	412	12	1131	3	364	3	328	1.28	0.00	1.14	1.62	1.30	0.00	2.03	1.00	1.00	5.26	2669209	6886445
1	24	4	2	8	0	18	350	12	1070	18	350	12	1070	3	480	3	409	1.26	0.00	1.14	1.55	1.32	0.00	2.48	1.00	1.00	6.42	2423620	6464547
1	24	5	1.6	8	0	15	304	12	1021	15	304	12	1021	3	400	2	455	1.16	0.00	1.15	1.48	1.24	0.00	2.74	1.00	1.00	7.66	2215757	6124086
1	24	3	3.17	9.5	0.75	19	389	12	1109	19	389	12	1109	3	308	3	264	1.02	0.00	1.43	1.24	1.07	0.00	1.66	1.00	1.00	4.26	1956767	5355851
1	24	4	2.375	9.5	0.75	16	328	12	1046	16	328	12	1046	3	400	3	327	1.00	0.00	1.42	1.18	1.10	0.00	2.11	1.00	1.00	5.29	1760177	5029667
1	24	5	1.9	9.5	0.75	14	288	12	1005	14	288	12	1005	3	500	3	384	1.00	0.00	1.46	1.16	1.13	0.00	2.59	1.03	1.00	6.35	1668450	4922539
1	24	6	1.583	9.5	0.75	14	273	12	990	14	273	12	990	3	414	2	434	1.01	0.00	1.30	1.25	1.12	0.00	1.77	1.00	1.00	7.50	1798652	5275295
1	24	3	3.67	11	1.5	21	423	13	1142	21	423	13	1142	3	267	3	237	1.00	0.00	1.98	1.28	1.01	0.00	1.54	1.42	1.00	3.91	2073603	5572838
1	24	4	2.75	11	1.5	18	365	12	1084	18	365	12	1084	3	353	3	297	1.00	0.00	1.96	1.25	1.04	0.00	1.85	1.45	1.00	4.73	1934796	5346576

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
1	24	5	2.2	11	1.5	16	322	12	1039	16	322	12	1039	3	444	3	352	1.00	0.00	2.01	1.22	1.08	0.00	2.28	1.48	1.00	5.67	1821575	5187813
1	24	6	1.833	11	1.5	14	288	12	1008	14	288	12	1008	3	522	3	396	1.00	0.00	2.02	1.20	1.11	0.00	2.67	1.51	1.00	6.60	1741339	5098658
1	24	7	1.57	11	1.5	13	261	12	980	13	261	12	980	2	414	2	286	1.00	0.00	2.04	1.18	1.14	0.00	1.92	1.53	1.00	7.49	1669251	5011350
1	24	4	2.875	11.5	1.75	19	371	12	1091	19	371	12	1091	3	333	3	286	1.00	0.00	2.11	1.24	1.04	0.00	1.77	1.55	1.00	4.55	1925301	5312391
1	24	5	2.3	11.5	1.75	16	328	12	1045	16	328	12	1045	3	414	3	339	1.00	0.00	2.16	1.21	1.08	0.00	2.18	1.58	1.00	5.45	1813665	5153816
1	24	6	1.917	11.5	1.75	15	294	12	1012	15	294	12	1012	3	500	3	385	1.00	0.00	2.17	1.19	1.11	0.00	2.58	1.61	1.00	6.33	1728963	5049507
1	24	7	1.643	11.5	1.75	13	267	12	984	13	267	12	984	3	571	3	417	1.00	0.00	2.19	1.17	1.14	0.00	1.87	1.64	1.00	7.19	1658954	4964909
1	24	4	3.25	13	2.5	19	389	12	1108	19	389	12	1108	3	300	3	257	1.00	0.00	2.07	1.21	1.04	0.00	1.63	1.49	1.00	4.15	1904439	5234286
1	24	5	2.6	13	2.5	17	345	12	1064	17	345	12	1064	3	375	3	306	1.00	0.00	2.13	1.19	1.07	0.00	1.95	1.52	1.00	4.91	1801405	5084701
1	24	6	2.167	13	2.5	16	311	12	1028	16	311	12	1028	3	444	3	351	1.00	0.00	2.14	1.17	1.10	0.00	2.32	1.55	1.00	5.69	1716562	4971054
1	24	7	1.857	13	2.5	14	283	12	1000	14	283	12	1000	3	522	3	388	1.00	0.00	2.16	1.15	1.13	0.00	1.72	1.57	1.00	6.46	1647508	4887531
1	24	4	3.625	14.5	3.25	21	418	12	1136	21	418	12	1136	3	267	3	238	1.00	0.00	2.08	1.26	1.01	0.00	1.55	1.55	1.00	3.91	2033669	5487503
1	24	5	2.9	14.5	3.25	19	373	12	1092	19	373	12	1092	3	333	3	284	1.00	0.00	2.14	1.24	1.03	0.00	1.77	1.57	1.00	4.52	1928661	5314833
1	24	6	2.417	14.5	3.25	17	337	12	1056	17	337	12	1056	3	400	3	326	1.00	0.00	2.15	1.22	1.06	0.00	2.10	1.59	1.00	5.24	1839396	5192823
1	24	7	2.07	14.5	3.25	15	308	12	1027	15	308	12	1027	3	462	3	367	1.00	0.00	2.17	1.20	1.09	0.00	2.43	1.62	1.00	5.95	1768294	5103254
1	24	4	2.875	11.5	0	21	423	13	1142	21	423	13	1142	3	333	3	308	1.27	0.00	1.11	1.60	1.27	0.00	1.96	1.00	1.00	4.99	2647474	6828952
1	24	5	2.3	11.5	0	19	376	12	1093	19	376	12	1093	3	414	3	366	1.25	0.00	1.14	1.55	1.28	0.00	2.20	1.00	1.00	5.71	2468447	6502046
1	24	6	1.917	11.5	0	17	336	12	1056	17	336	12	1056	3	500	3	414	1.23	0.00	1.13	1.50	1.29	0.00	2.59	1.00	1.00	6.61	2308894	6249771
1	24	7	1.643	11.5	0	15	304	12	1023	15	304	12	1023	3	571	3	446	1.21	0.00	1.15	1.45	1.31	0.00	2.92	1.00	1.00	7.47	2167415	6021166
1	24	4	3.25	13	0.75	20	395	12	1112	20	395	12	1112	3	300	3	259	1.03	0.00	1.35	1.24	1.06	0.00	1.64	1.00	1.00	4.18	1968657	5370505
1	24	5	2.6	13	0.75	17	347	12	1064	17	347	12	1064	3	375	3	306	1.01	0.00	1.40	1.20	1.08	0.00	1.95	1.00	1.00	4.91	1817216	5114949
1	24	6	2.167	13	0.75	16	311	12	1028	16	311	12	1028	3	444	3	351	1.00	0.00	1.40	1.17	1.10	0.00	2.32	1.01	1.00	5.69	1716562	4971054
1	24	7	1.857	13	0.75	14	283	12	1000	14	283	12	1000	3	522	3	388	1.00	0.00	1.41	1.15	1.13	0.00	1.72	1.03	1.00	6.46	1647508	4887531
1	24	4	3.625	14.5	1.5	21	418	12	1136	21	418	12	1136	3	267	3	238	1.00	0.00	1.92	1.26	1.01	0.00	1.55	1.43	1.00	3.91	2033669	5487503
1	24	5	2.9	14.5	1.5	19	373	12	1092	19	373	12	1092	3	333	3	284	1.00	0.00	1.97	1.24	1.03	0.00	1.77	1.44	1.00	4.52	1928661	5314833
1	24	6	2.417	14.5	1.5	17	337	12	1056	17	337	12	1056	3	400	3	326	1.00	0.00	1.81	1.22	1.06	0.00	2.10	1.34	1.00	5.24	1839396	5192823
1	24	7	2.07	14.5	1.5	15	308	12	1027	15	308	12	1027	3	462	3	367	1.00	0.00	1.56	1.20	1.09	0.00	2.43	1.17	1.00	5.95	1768294	5103254
1	24	5	3	15	0	22	433	13	1151	22	433	13	1151	3	324	3	298	1.28	0.00	1.12	1.61	1.27	0.00	1.92	1.00	1.00	4.85	2684468	6894108
1	24	6	2.5	15	0	20	393	12	1112	20	393	12	1112	3	387	3	343	1.27	0.00	1.12	1.57	1.28	0.00	2.12	1.00	1.00	5.44	2538210	6631659
1	24	7	2.14	15	0	18	361	12	1078	18	361	12	1078	3	444	3	386	1.25	0.00	1.12	1.54	1.29	0.00	2.36	1.00	1.00	6.04	2414500	6416537
1	24	8	1.875	15	0	17	332	12	1049	17	332	12	1049	3	500	3	418	1.23	0.00	1.12	1.49	1.30	0.00	2.64	1.00	1.00	6.71	2284569	6202331
1	24	9	1.67	15	0	15	308	12	1025	15	308	12	1025	3	571	3	442	1.19	0.00	1.12	1.46	1.27	0.00	2.74	1.00	1.00	7.37	2182140	6039774
1	24	5	3.3	16.5	0.75	20	397	12	1117	20	397	12	1117	3	293	3	256	1.03	0.00	1.36	1.24	1.06	0.00	1.64	1.00	1.00	4.15	1975318	5386459
1	24	6	2.75	16.5	0.75	18	358	12	1078	18	358	12	1078	3	353	3	294	1.02	0.00	1.35	1.21	1.08	0.00	1.86	1.00	1.00	4.70	1854976	5179485
1	24	7	2.357	16.5	0.75	16	325	12	1044	16	325	12	1044	3	414	3	329	1.00	0.00	1.37	1.17	1.09	0.00	2.15	1.00	1.00	5.32	1742270	4996239
1	24	8	2.06	16.5	0.75	15	300	12	1020	15	300	12	1020	3	462	3	365	1.00	0.00	1.39	1.16	1.11	0.00	2.44	1.01	1.00	5.94	1685259	4930566
1	24	9	1.83	16.5	0.75	14	280	12	998	14	280	12	998	3	522	3	391	1.00	0.00	1.36	1.15	1.13	0.00	1.74	1.02	1.00	6.54	1640143	4880099
1	24	5	3.6	18	1.5	21	415	12	1132	21	415	12	1132	3	273	3	239	1.00	0.00	1.90	1.25	1.01	0.00	1.56	1.41	1.00	3.92	2007530	5431247
1	24	6	3	18	1.5	19	378	12	1097	19	378	12	1097	3	324	3	276	1.00	0.00	1.91	1.23	1.03	0.00	1.73	1.43	1.00	4.41	1924902	5298278
1	24	7	2.57	18	1.5	17	348	12	1065	17	348	12	1065	3	375	3	310	1.00	0.00	1.87	1.22	1.05	0.00	1.98	1.41	1.00	4.97	1850335	5189469
1	24	8	2.25	18	1.5	16	322	12	1040	16	322	12	1040	3	429	3	344	1.00	0.00	1.66	1.20	1.08	0.00	2.25	1.25	1.00	5.55	1784969	5103428
1	24	9	2	18	1.5	15	300	12	1019	15	300	12	1019	3	480	3	376	1.00	0.00	1.49	1.19	1.10	0.00	2.52	1.12	1.00	6.11	1731930	5040220
1	24	6	3.08	18.5	0	22	439	13	1158	22	439	13	1158	3	316	3	292	1.29	0.00	1.09	1.62	1.28	0.00	1.90	1.00	1.00	4.78	2712829	6949788
1	24	7	2.64	18.5	0	20	405	12	1124	20	405	12	1124	3	364	3	329	1.28	0.00	1.10	1.59	1.28	0.00	2.07	1.00	1.00	5.26	2587572	6721842
1	24	8	2.32	18.5	0	19	377	12	1097	19	377	12	1097	3	414	3	364	1.27	0.00	1.10	1.55	1.29	0.00	2.22	1.00	1.00	5.70	2478794	6528111
1	24	9	2.06	18.5	0	18	352	12	1069	18	352	12	1069	3	462	3	397	1.25	0.00	1.11	1.52	1.30	0.00	2.46	1.00	1.00	6.23	2368576	6337507
1	24	10	1.85	18.5	0	16	329	12	1047	16	329	12	1047	3	522	3	421	1.24	0.00	1.12	1.49	1.31	0.00	2.68	1.00	1.00	6.79	2274751	6189753
1	24	6	3.58	21.5	1.5	21	413	12	1130	21	413	12	1130	3	273	3	239	1.00	0.00	1.89	1.24	1.01	0.00	1.56	1.41	1.00	3.92	1994282	5403204
1	24	7	3.07	21.5	1.5	19	382	12	1100	19	382	12	1100	3	316	3	270	1.00	0.00	1.91	1.23	1.03	0.00	1.71	1.42	1.00	4.33	1925088	5291054
1	24	8	2.69	21.5	1.5	18	355	12	1075	18	355	12	1075	3	364	3	300	1.00	0.00	1.93	1.21	1.05	0.00	1.91	1.44	1.00	4.80	1860519	5199297
1	24	9	2.39	21.5	1.5	17	332	12	1052	17	332	12	1052	3	400	3	328	1.00	0.00	1.77	1.20	1.07	0.00	2.13	1.31	1.00	5.28	1803825	5123561
1	24	10	2.15	21.5	1.5	16	312	12	1032	16	312	12	1032	3	444	3	355	1.00	0.00	1.57	1.19	1.09	0.00	2.36	1.19	1.00	5.76	1753532	5058534
1	24	7	3.14	22	0	22	443	13	1163	22	443	13	1163	3	308	3	288	1.30	0.00	1.10	1.62	1.28	0.00	1.89	1.00	1.00	4.73	2728441	6980632
1	24	8	2.75	22	0	21	413	12	1133	21	413	12	1133	3	353	3	319	1.28	0.00	1.10	1.59	1.29	0.00	2.03	1.00	1.00	5.13	2612700	6767729
1	24	9	2.44	22	0	19	389	12	1107	19	389	12	1107	3	400	3	350	1.28	0.00	1.08	1.57	1.29	0.00	2.16	1.00	1.00	5.52	2531117	6619714
1	24	10	2.2	22	0	18	366	12	1085	18	366	12	1085	3	444	3	378	1.27	0.00	1.09	1.54	1.30	0.00	2.32	1.00	1.00	5.92	2433719	6449838
1	24	11	2	22	0	17	345	12	1065	17	345	12	1065	3	480	3	406	1.25	0.00	1.10	1.51	1.31	0.00	2.53	1.00	1.00	6.39	2346745	6310514
1	24	12	1.83	22	0	16	328	12	1046	16	328	12	1046	3	522	3	424	1.25	0.00	1.08	1.50	1.32	0.00	2.69	1.00	1.00	6.86	2284383	6213155
1	24	7	3.57	25	1.5	21	411	12	1130	21	411	12	1130	3	273	3	240	1.00	0.00	1.88	1.24	1.01	0.00	1.57	1.40	1.00	3.93	1984313	5385872
1	24	8	3.125	25	1.5	19	384	12	1104	19	384	12	1104	3	308	3	266	1.00	0.00	1.91	1.22	1.03	0.00	1.70	1.42	1.00	4.29	1923678	5287562
1	24	9	2.78	25	1.5	18	361	12	1080	18	361	12	1080	3	353	3	292	1.00	0.00	1.93	1.21	1.04	0.00	1.85	1.43	1.00	4.66	1866299	5197936
1	24	10	2.5	25	1.5	17	340	12	1060	17	340	12	1060	3	387	3	316	1.00	0.00	1.80	1.20	1.06	0.00	2.05	1.36	1.00	5.09	1817396	5135152

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
1	24	11	2.27	25	1.5	16	322	12	1041	16	322	12	1041	3	429	3	341	1.00	0.00	1.66	1.19	1.07	0.00	2.24	1.25	1.00	5.50	1773086	5076573
1	24	12	1.83	25	1.5	18	356	12	1074	18	356	12	1074	3	522	3	445	1.07	0.00	1.23	1.73	1.00	0.00	2.66	1.22	1.00	7.04	2740976	7115124
1	28	3	1.5	4.5	0	17	331	13	1210	17	331	13	1210	3	500	2	528	1.22	0.00	1.18	1.63	1.29	0.00	3.17	1.00	1.00	10.73	4055934	10260246
1	28	3	2	6	0.75	19	386	14	1266	19	386	14	1266	3	560	3	449	1.32	0.00	1.14	1.65	1.38	0.00	3.17	1.00	1.00	8.81	4253194	10555524
1	28	4	1.5	6	0.75	16	324	13	1202	16	324	13	1202	3	500	2	521	1.21	0.00	1.15	1.57	1.28	0.00	3.17	1.00	1.00	10.58	3870974	9909232
1	28	3	2.33	7	1.25	18	355	14	1232	18	355	14	1232	3	483	3	370	1.00	0.00	1.89	1.24	1.08	0.00	2.57	1.30	1.00	7.16	3018293	8083239
1	28	4	1.75	7	1.25	15	300	13	1178	15	300	13	1178	3	424	2	450	1.00	0.00	1.58	1.21	1.12	0.00	2.92	1.10	1.00	8.71	2837663	7835197
1	28	3	2.67	8	0	21	418	14	1295	21	418	14	1295	3	424	3	349	1.20	0.00	1.23	1.47	1.25	0.00	2.52	1.00	1.00	6.91	3798451	9594690
1	28	4	2	8	0	18	352	14	1230	18	352	14	1230	3	560	3	437	1.18	0.00	1.27	1.40	1.27	0.00	2.98	1.00	1.00	8.32	3459744	9023350
1	28	5	1.6	8	0	15	305	13	1183	15	305	13	1183	3	467	2	490	1.09	0.00	1.27	1.35	1.20	0.00	3.04	1.00	1.00	9.61	3208051	8611334
1	28	3	3.17	9.5	0.75	20	402	14	1281	20	402	14	1281	3	359	3	283	1.00	0.00	1.55	1.17	1.07	0.00	2.10	1.02	1.00	5.69	2935572	7807163
1	28	4	2.375	9.5	0.75	17	343	13	1221	17	343	13	1221	3	467	3	356	1.00	0.00	1.56	1.15	1.11	0.00	2.50	1.05	1.00	6.90	2755615	7539710
1	28	5	1.9	9.5	0.75	15	301	13	1181	15	301	13	1181	3	583	3	421	1.00	0.00	1.59	1.13	1.15	0.00	2.86	1.08	1.00	8.07	2643070	7408446
1	28	6	1.583	9.5	0.75	14	283	13	1163	14	283	13	1163	3	483	2	477	1.00	0.00	1.40	1.21	1.12	0.00	2.96	1.02	1.00	9.39	2811052	7833217
1	28	3	3.67	11	1.5	22	444	15	1323	22	444	15	1323	3	311	3	255	1.00	0.00	2.02	1.23	1.03	0.00	1.97	1.42	1.00	5.24	3195292	8296255
1	28	4	2.75	11	1.5	19	381	14	1260	19	381	14	1260	3	412	3	321	1.00	0.00	2.04	1.21	1.06	0.00	2.33	1.45	1.00	6.34	2998377	7987097
1	28	5	2.2	11	1.5	17	336	13	1215	17	336	13	1215	3	519	3	383	1.00	0.00	2.07	1.19	1.09	0.00	2.68	1.47	1.00	7.38	2854575	7778403
1	28	6	1.833	11	1.5	15	302	13	1180	15	302	13	1180	3	412	2	434	1.00	0.00	2.12	1.17	1.12	0.00	2.95	1.50	1.00	8.35	2745333	7627206
1	28	7	1.57	11	1.5	14	274	13	1153	14	274	13	1153	3	483	2	472	1.00	0.00	2.13	1.16	1.15	0.00	3.17	1.52	1.00	9.31	2658194	7522844
1	28	4	2.875	11.5	1.75	19	388	14	1265	19	388	14	1265	3	389	3	309	1.00	0.00	2.17	1.20	1.06	0.00	2.26	1.53	1.00	6.12	2976019	7919995
1	28	5	2.3	11.5	1.75	17	342	13	1222	17	342	13	1222	3	483	3	369	1.00	0.00	2.21	1.18	1.10	0.00	2.60	1.56	1.00	7.13	2839951	7732997
1	28	6	1.917	11.5	1.75	15	308	13	1185	15	308	13	1185	3	583	3	421	1.00	0.00	2.25	1.16	1.12	0.00	2.87	1.58	1.00	8.05	2724721	7561986
1	28	7	1.643	11.5	1.75	14	280	13	1157	14	280	13	1157	3	452	2	458	1.00	0.00	2.26	1.15	1.15	0.00	3.09	1.61	1.00	8.96	2635537	7448815
1	28	4	3.25	13	2.5	20	407	14	1286	20	407	14	1286	3	350	3	278	1.00	0.00	2.14	1.17	1.06	0.00	2.09	1.47	1.00	5.59	2945353	7818812
1	28	5	2.6	13	2.5	18	361	14	1238	18	361	14	1238	3	438	3	331	1.00	0.00	2.17	1.15	1.09	0.00	2.38	1.50	1.00	6.48	2804427	7602041
1	28	6	2.167	13	2.5	16	325	13	1203	16	325	13	1203	3	519	3	383	1.00	0.00	2.22	1.14	1.12	0.00	2.67	1.52	1.00	7.34	2696663	7455417
1	28	7	1.857	13	2.5	15	296	13	1175	15	296	13	1175	3	400	2	425	1.00	0.00	2.23	1.12	1.15	0.00	2.90	1.55	1.00	8.17	2609843	7346549
1	28	4	3.625	14.5	3.25	22	438	14	1318	22	438	14	1318	3	311	3	257	1.00	0.00	2.17	1.22	1.03	0.00	1.99	1.52	1.00	5.27	3137856	8183765
1	28	5	2.9	14.5	3.25	19	389	14	1269	19	389	14	1269	3	389	3	307	1.00	0.00	2.16	1.20	1.06	0.00	2.27	1.55	1.00	6.10	2984646	7942878
1	28	6	2.417	14.5	3.25	18	352	14	1231	18	352	14	1231	3	467	3	354	1.00	0.00	2.20	1.18	1.08	0.00	2.53	1.57	1.00	6.89	2868159	7768092
1	28	7	2.07	14.5	3.25	16	322	13	1201	16	322	13	1201	3	538	3	401	1.00	0.00	2.21	1.17	1.11	0.00	2.78	1.59	1.00	7.66	2775471	7640414
1	28	4	2.875	11.5	0	21	429	14	1308	21	429	14	1308	3	389	3	327	1.19	0.00	1.22	1.44	1.22	0.00	2.43	1.00	1.00	6.54	3761820	9508969
1	28	5	2.3	11.5	0	19	377	14	1257	19	377	14	1257	3	483	3	389	1.17	0.00	1.22	1.40	1.24	0.00	2.76	1.00	1.00	7.55	3508939	9079495
1	28	6	1.917	11.5	0	17	337	13	1217	17	337	13	1217	3	583	3	443	1.15	0.00	1.26	1.35	1.25	0.00	3.04	1.00	1.00	8.49	3302806	8736118
1	28	7	1.643	11.5	0	15	305	13	1183	15	305	13	1183	3	452	2	479	1.13	0.00	1.25	1.32	1.26	0.00	3.24	1.00	1.00	9.37	3125014	8437821
1	28	4	3.25	13	0.75	20	407	14	1286	20	407	14	1286	3	350	3	278	1.00	0.00	1.48	1.17	1.06	0.00	2.09	1.02	1.00	5.59	2945353	7818812
1	28	5	2.6	13	0.75	18	361	14	1238	18	361	14	1238	3	438	3	331	1.00	0.00	1.51	1.15	1.09	0.00	2.38	1.04	1.00	6.48	2804427	7602041
1	28	6	2.167	13	0.75	16	325	13	1203	16	325	13	1203	3	519	3	383	1.00	0.00	1.54	1.14	1.12	0.00	2.67	1.06	1.00	7.34	2696663	7455417
1	28	7	1.857	13	0.75	15	296	13	1175	15	296	13	1175	3	400	2	425	1.00	0.00	1.55	1.12	1.15	0.00	2.90	1.07	1.00	8.17	2609843	7346549
1	28	4	3.625	14.5	1.5	22	438	14	1318	22	438	14	1318	3	311	3	257	1.00	0.00	2.02	1.22	1.03	0.00	1.99	1.42	1.00	5.27	3137856	8183765
1	28	5	2.9	14.5	1.5	19	389	14	1269	19	389	14	1269	3	389	3	307	1.00	0.00	2.01	1.20	1.06	0.00	2.27	1.44	1.00	6.10	2984646	7942878
1	28	6	2.417	14.5	1.5	18	352	14	1231	18	352	14	1231	3	467	3	354	1.00	0.00	1.97	1.18	1.08	0.00	2.53	1.40	1.00	6.89	2868159	7768092
1	28	7	2.07	14.5	1.5	16	322	13	1201	16	322	13	1201	3	538	3	401	1.00	0.00	1.69	1.17	1.11	0.00	2.78	1.22	1.00	7.66	2775471	7640414
1	28	5	3	15	0	22	440	14	1317	22	440	14	1317	3	378	3	317	1.20	0.00	1.20	1.45	1.23	0.00	2.38	1.00	1.00	6.36	3811868	9589886
1	28	6	2.5	15	0	20	396	14	1276	20	396	14	1276	3	452	3	365	1.19	0.00	1.22	1.42	1.24	0.00	2.64	1.00	1.00	7.16	3604345	9241318
1	28	7	2.14	15	0	18	362	14	1240	18	362	14	1240	3	519	3	411	1.17	0.00	1.20	1.38	1.25	0.00	2.88	1.00	1.00	7.90	3434977	8950504
1	28	8	1.875	15	0	17	333	13	1210	17	333	13	1210	3	583	3	447	1.16	0.00	1.23	1.35	1.26	0.00	3.08	1.00	1.00	8.59	3272617	8674348
1	28	9	1.67	15	0	15	308	13	1188	15	308	13	1188	3	452	2	475	1.12	0.00	1.23	1.32	1.23	0.00	3.08	1.00	1.00	9.29	3148951	8485506
1	28	5	3.3	16.5	0.75	20	409	14	1288	20	409	14	1288	3	341	3	274	1.00	0.00	1.48	1.17	1.06	0.00	2.07	1.02	1.00	5.52	2933520	7788994
1	28	6	2.75	16.5	0.75	19	371	14	1248	19	371	14	1248	3	412	3	316	1.00	0.00	1.48	1.15	1.08	0.00	2.31	1.03	1.00	6.22	2815184	7603047
1	28	7	2.357	16.5	0.75	17	340	13	1218	17	340	13	1218	3	483	3	357	1.00	0.00	1.49	1.14	1.11	0.00	2.54	1.05	1.00	6.92	2725330	7480066
1	28	8	2.06	16.5	0.75	16	314	13	1194	16	314	13	1194	3	538	3	398	1.00	0.00	1.50	1.13	1.13	0.00	2.77	1.06	1.00	7.61	2654602	7396720
1	28	9	1.83	16.5	0.75	15	293	13	1172	15	293	13	1172	3	412	2	428	1.00	0.00	1.50	1.12	1.14	0.00	2.92	1.06	1.00	8.26	2596495	7326477
1	28	5	3.6	18	1.5	22	435	14	1313	22	435	14	1313	3	318	3	258	1.00	0.00	2.00	1.21	1.03	0.00	1.99	1.41	1.00	5.26	3097306	8096776
1	28	6	3	18	1.5	20	395	14	1273	20	395	14	1273	3	378	3	298	1.00	0.00	2.00	1.19	1.05	0.00	2.22	1.43	1.00	5.94	2974703	7904454
1	28	7	2.57	18	1.5	18	363	14	1241	18	363	14	1241	3	438	3	337	1.00	0.00	2.01	1.18	1.07	0.00	2.44	1.44	1.00	6.59	2877526	7760571
1	28	8	2.25	18	1.5	17	336	13	1216	17	336	13	1216	3	500	3	374	1.00	0.00	1.80	1.17	1.09	0.00	2.65	1.30	1.00	7.22	2796425	7652364
1	28	9	2	18	1.5	16	314	13	1192	16	314	13	1192	3	560	3	411	1.00	0.00	1.62	1.16	1.11	0.00	2.84	1.17	1.00	7.81	2722837	7544279
1	28	6	3.08	18.5	0	22	446	15	1326	22	446	15	1326	3	368	3	311	1.21	0.00	1.17	1.46	1.23	0.00	2.36	1.00	1.00	6.27	3854610	9676165
1	28	7	2.64	18.5	0	20	409	14	1289	20	409	14	1289	3	424	3	350	1.20	0.00	1.20	1.43	1.24	0.00	2.57	1.00	1.00	6.92	3674015	9362400
1	28	8	2.32	18.5	0	19	379	14	1258	19	379	14	1258	3	483	3	386	1.18	0.00	1.19	1.40	1.25	0.00	2.77	1.00	1.00	7.50	3513487	9082996
1	28	9	2.06	18.5	0	18	353	14	1231	18	353	14	1231	3	538	3	423	1.17	0.00	1.19	1.37	1.26	0.00	2.96	1.00	1.00	8.08	3378743	8852697

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	28	10	1.85	18.5	0	17	330	13	1208	17	330	13	1208	3	400	2	451	1.16	0.00	1.23	1.35	1.26	0.00	3.10	1.00	1.00	8.67	3260763	8658834
1	28	6	3.58	21.5	1.5	22	433	14	1310	22	433	14	1310	3	318	3	258	1.00	0.00	1.94	1.20	1.03	0.00	2.00	1.40	1.00	5.27	3075261	8050256
1	28	7	3.07	21.5	1.5	20	399	14	1277	20	399	14	1277	3	368	3	292	1.00	0.00	2.00	1.19	1.05	0.00	2.19	1.42	1.00	5.84	2974098	7895157
1	28	8	2.69	21.5	1.5	19	371	14	1249	19	371	14	1249	3	424	3	324	1.00	0.00	2.01	1.18	1.07	0.00	2.37	1.43	1.00	6.37	2883868	7756474
1	28	9	2.39	21.5	1.5	17	347	13	1226	17	347	13	1226	3	467	3	356	1.00	0.00	1.92	1.17	1.09	0.00	2.55	1.37	1.00	6.91	2812873	7658684
1	28	10	2.15	21.5	1.5	16	327	13	1204	16	327	13	1204	3	519	3	387	1.00	0.00	1.74	1.16	1.10	0.00	2.72	1.25	1.00	7.41	2746835	7558930
1	28	7	3.14	22	0	23	451	15	1330	23	451	15	1330	3	359	3	306	1.22	0.00	1.18	1.46	1.23	0.00	2.34	1.00	1.00	6.19	3875400	9709086
1	28	8	2.75	22	0	21	419	14	1296	21	419	14	1296	3	412	3	339	1.21	0.00	1.17	1.44	1.24	0.00	2.52	1.00	1.00	6.72	3708439	9409409
1	28	9	2.44	22	0	20	392	14	1270	20	392	14	1270	3	467	3	372	1.20	0.00	1.18	1.42	1.25	0.00	2.70	1.00	1.00	7.26	3594923	9223335
1	28	10	2.2	22	0	18	367	14	1247	18	367	14	1247	3	519	3	402	1.18	0.00	1.18	1.39	1.26	0.00	2.86	1.00	1.00	7.77	3457278	8992314
1	28	11	2	22	0	17	346	13	1226	17	346	13	1226	3	560	3	433	1.17	0.00	1.19	1.36	1.26	0.00	3.02	1.00	1.00	8.26	3347803	8809476
1	28	12	1.83	22	0	16	329	13	1207	16	329	13	1207	3	412	2	454	1.17	0.00	1.20	1.35	1.27	0.00	3.11	1.00	1.00	8.75	3275574	8692179
1	28	7	3.57	25	1.5	22	431	14	1309	22	431	14	1309	3	318	3	259	1.00	0.00	1.94	1.19	1.03	0.00	2.01	1.40	1.00	5.28	3056875	8016613
1	28	8	3.125	25	1.5	20	402	14	1279	20	402	14	1279	3	359	3	287	1.00	0.00	1.95	1.18	1.05	0.00	2.17	1.41	1.00	5.75	2966205	7869805
1	28	9	2.78	25	1.5	19	377	14	1255	19	377	14	1255	3	412	3	315	1.00	0.00	1.96	1.17	1.06	0.00	2.33	1.42	1.00	6.23	2891340	7759707
1	28	10	2.5	25	1.5	18	355	14	1235	18	355	14	1235	3	452	3	343	1.00	0.00	1.97	1.17	1.08	0.00	2.49	1.43	1.00	6.70	2830075	7679652
1	28	11	2.27	25	1.5	17	337	13	1214	17	337	13	1214	3	500	3	370	1.00	0.00	1.81	1.16	1.09	0.00	2.63	1.31	1.00	7.13	2771256	7587013
1	28	12	1.83	25	1.5	18	365	14	1243	18	365	14	1243	3	412	2	482	1.04	0.00	1.28	1.61	1.00	0.00	3.27	1.18	1.00	9.28	4089959	10262805
1	32	3	1.5	4.5	0	16	323	15	1363	16	323	15	1363	3	571	2	563	1.14	0.00	1.32	1.46	1.27	0.00	3.86	1.00	1.00	13.61	5424981	13581519
1	32	3	2	6	0.75	19	384	16	1422	19	384	16	1422	3	432	2	478	1.24	0.00	1.28	1.49	1.35	0.00	3.82	1.00	1.00	11.12	5702147	13967419
1	32	4	1.5	6	0.75	16	316	15	1354	16	316	15	1354	3	571	2	555	1.13	0.00	1.29	1.41	1.26	0.00	3.87	1.00	1.00	13.44	5176326	13122785
1	32	3	2.33	7	1.25	18	365	15	1405	18	365	15	1405	3	552	3	403	1.00	0.00	2.02	1.20	1.11	0.00	3.20	1.34	1.00	9.31	4427251	11515339
1	32	4	1.75	7	1.25	15	306	15	1343	15	306	15	1343	3	485	2	489	1.00	0.00	1.73	1.17	1.15	0.00	3.64	1.16	1.00	11.33	4170382	11155353
1	32	3	2.67	8	0	21	417	16	1457	21	417	16	1457	3	485	3	372	1.13	0.00	1.37	1.33	1.22	0.00	3.05	1.00	1.00	8.74	5101860	12749471
1	32	4	2	8	0	17	346	15	1386	17	346	15	1386	3	432	2	464	1.10	0.00	1.42	1.26	1.24	0.00	3.61	1.00	1.00	10.55	4636699	11992909
1	32	5	1.6	8	0	15	295	15	1333	15	295	15	1333	3	533	2	520	1.02	0.00	1.42	1.20	1.18	0.00	3.71	1.00	1.00	12.20	4277100	11414656
1	32	3	3.17	9.5	0.75	21	417	16	1455	21	417	16	1455	3	410	3	307	1.00	0.00	1.69	1.14	1.10	0.00	2.61	1.08	1.00	7.34	4282806	11076613
1	32	4	2.375	9.5	0.75	18	353	15	1390	18	353	15	1390	3	533	3	386	1.00	0.00	1.72	1.11	1.14	0.00	3.11	1.11	1.00	8.95	4039597	10734681
1	32	5	1.9	9.5	0.75	15	307	15	1347	15	307	15	1347	3	457	2	457	1.00	0.00	1.75	1.10	1.18	0.00	3.57	1.14	1.00	10.49	3888452	10574307
1	32	6	1.583	9.5	0.75	14	287	15	1327	14	287	15	1327	3	552	2	518	1.00	0.00	1.52	1.17	1.16	0.00	3.71	1.07	1.00	12.22	4134406	11158132
1	32	3	3.67	11	1.5	23	462	17	1502	23	462	17	1502	3	356	3	277	1.00	0.00	2.17	1.20	1.05	0.00	1.78	1.44	1.00	6.76	4652073	11750410
1	32	4	2.75	11	1.5	20	394	16	1432	20	394	16	1432	3	471	3	348	1.00	0.00	2.17	1.17	1.09	0.00	2.90	1.47	1.00	8.20	4375532	11326266
1	32	5	2.2	11	1.5	17	345	15	1384	17	345	15	1384	3	593	3	416	1.00	0.00	2.24	1.15	1.12	0.00	3.33	1.50	1.00	9.57	4183093	11065152
1	32	6	1.833	11	1.5	15	308	15	1346	15	308	15	1346	3	471	2	471	1.00	0.00	2.24	1.14	1.16	0.00	3.68	1.54	1.00	10.86	4037925	10877755
1	32	7	1.57	11	1.5	14	277	14	1317	14	277	14	1317	3	552	2	513	1.00	0.00	2.28	1.12	1.19	0.00	3.97	1.56	1.00	12.14	3918855	10746971
1	32	4	2.875	11.5	1.75	20	401	16	1440	20	401	16	1440	3	444	3	335	1.00	0.00	2.29	1.16	1.09	0.00	2.81	1.54	1.00	7.93	4350529	11259266
1	32	5	2.3	11.5	1.75	18	352	15	1390	18	352	15	1390	3	552	3	400	1.00	0.00	2.36	1.14	1.12	0.00	3.22	1.57	1.00	9.23	4154878	10981932
1	32	6	1.917	11.5	1.75	16	314	15	1353	16	314	15	1353	3	457	2	458	1.00	0.00	2.36	1.13	1.16	0.00	3.59	1.61	1.00	10.49	4009701	10802068
1	32	7	1.643	11.5	1.75	14	284	15	1321	14	284	15	1321	3	516	2	498	1.00	0.00	2.40	1.11	1.18	0.00	3.86	1.63	1.00	11.67	3885275	10639299
1	32	4	3.25	13	2.5	21	422	16	1462	21	422	16	1462	3	400	3	301	1.00	0.00	2.26	1.14	1.09	0.00	2.59	1.48	1.00	7.23	4300676	11107474
1	32	5	2.6	13	2.5	19	372	15	1409	19	372	15	1409	3	500	3	359	1.00	0.00	2.28	1.12	1.12	0.00	2.97	1.51	1.00	8.40	4101175	10809162
1	32	6	2.167	13	2.5	17	333	15	1371	17	333	15	1371	3	593	3	416	1.00	0.00	2.32	1.10	1.15	0.00	3.32	1.54	1.00	9.53	3956516	10624005
1	32	7	1.857	13	2.5	15	302	15	1339	15	302	15	1339	3	457	2	461	1.00	0.00	2.36	1.09	1.18	0.00	3.62	1.57	1.00	10.62	3837843	10474972
1	32	4	3.625	14.5	3.25	23	456	16	1494	23	456	16	1494	3	356	3	278	1.00	0.00	2.26	1.18	1.05	0.00	1.79	1.53	1.00	6.77	4558076	11562263
1	32	5	2.9	14.5	3.25	20	403	16	1441	20	403	16	1441	3	444	3	333	1.00	0.00	2.29	1.16	1.08	0.00	2.81	1.56	1.00	7.87	4350853	11251702
1	32	6	2.417	14.5	3.25	18	362	15	1402	18	362	15	1402	3	533	3	385	1.00	0.00	2.33	1.15	1.11	0.00	3.15	1.59	1.00	8.94	4197481	11048529
1	32	7	2.07	14.5	3.25	17	330	15	1368	17	330	15	1368	3	410	2	435	1.00	0.00	2.37	1.13	1.14	0.00	3.46	1.61	1.00	9.93	4070538	10873390
1	32	4	2.875	11.5	0	22	430	16	1468	22	430	16	1468	3	444	3	348	1.12	0.00	1.37	1.31	1.19	0.00	2.93	1.00	1.00	8.24	5046645	12606174
1	32	5	2.3	11.5	0	19	373	16	1413	19	373	16	1413	3	552	3	413	1.09	0.00	1.38	1.26	1.20	0.00	3.33	1.00	1.00	9.54	4686911	12021908
1	32	6	1.917	11.5	0	17	330	15	1369	17	330	15	1369	3	457	2	470	1.07	0.00	1.40	1.22	1.22	0.00	3.68	1.00	1.00	10.74	4404247	11565574
1	32	7	1.643	11.5	0	15	295	15	1333	15	295	15	1333	3	516	2	508	1.05	0.00	1.40	1.18	1.23	0.00	3.94	1.00	1.00	11.88	4165162	11185697
1	32	4	3.25	13	0.75	21	422	16	1462	21	422	16	1462	3	400	3	301	1.00	0.00	1.64	1.14	1.09	0.00	2.59	1.07	1.00	7.23	4300676	11107474
1	32	5	2.6	13	0.75	19	372	15	1409	19	372	15	1409	3	500	3	359	1.00	0.00	1.65	1.12	1.12	0.00	2.97	1.09	1.00	8.40	4101175	10809162
1	32	6	2.167	13	0.75	17	333	15	1371	17	333	15	1371	3	593	3	416	1.00	0.00	1.68	1.10	1.15	0.00	3.32	1.12	1.00	9.53	3956516	10624005
1	32	7	1.857	13	0.75	15	302	15	1339	15	302	15	1339	3	457	2	461	1.00	0.00	1.71	1.09	1.18	0.00	3.62	1.14	1.00	10.62	3837843	10474972
1	32	4	3.625	14.5	1.5	23	456	16	1494	23	456	16	1494	3	356	3	278	1.00	0.00	2.13	1.18	1.05	0.00	1.79	1.44	1.00	6.77	4558076	11562263
1	32	5	2.9	14.5	1.5	20	403	16	1441	20	403	16	1441	3	444	3	333	1.00	0.00	2.15	1.16	1.08	0.00	2.81	1.47	1.00	7.87	4350853	11251702
1	32	6	2.417	14.5	1.5	18	362	15	1402	18	362	15	1402	3	533	3	385	1.00	0.00	2.17	1.15	1.11	0.00	3.15	1.48	1.00	8.94	4197481	11048529
1	32	7	2.07	14.5	1.5	17	330	15	1368	17	330	15	1368	3	410	2	435	1.00	0.00	1.89	1.13	1.14	0.00	3.46	1.29	1.00	9.93	4070538	10873390
1	32	5	3	15	0	22	441	16	1479	22	441	16	1479	3	432	3	337	1.13	0.00	1.33	1.32	1.19	0.00	2.10	1.00	1.00	8.01	5112480	12715934
1	32	6	2.5	15	0	20	394	16	1433	20	394	16	1433	3	516	3	388	1.11	0.00	1.35	1.28	1.20	0.00	3.19	1.00	1.00	9.03	4820826	12236074
1	32	7	2.14	15	0	18	357	15	1394	18	357	15	1394	3	593	3	437	1.09	0.00	1.36	1.25	1.21	0.00	3.49	1.00	1.00	9.99	4585053	11848029

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	32	8	1.875	15	0	16	325	15	1363	16	325	15	1363	3	457	2	475	1.08	0.00	1.37	1.21	1.22	0.00	3.74	1.00	1.00	10.89	4364859	11496752
1	32	9	1.67	15	0	15	298	15	1337	15	298	15	1337	3	516	2	503	1.04	0.00	1.38	1.18	1.20	0.00	3.75	1.00	1.00	11.77	4183279	11217475
1	32	5	3.3	16.5	0.75	21	424	16	1463	21	424	16	1463	3	390	3	297	1.00	0.00	1.63	1.13	1.08	0.00	2.57	1.07	1.00	7.13	4272499	11041484
1	32	6	2.75	16.5	0.75	19	383	16	1420	19	383	16	1420	3	471	3	343	1.00	0.00	1.63	1.12	1.11	0.00	2.87	1.09	1.00	8.06	4116056	10809230
1	32	7	2.357	16.5	0.75	17	349	15	1388	17	349	15	1388	3	552	3	388	1.00	0.00	1.66	1.10	1.14	0.00	3.17	1.10	1.00	8.98	3994056	10656474
1	32	8	2.06	16.5	0.75	16	321	15	1361	16	321	15	1361	3	421	2	432	1.00	0.00	1.67	1.09	1.16	0.00	3.45	1.12	1.00	9.88	3896640	10543576
1	32	9	1.83	16.5	0.75	15	298	15	1338	15	298	15	1338	3	471	2	465	1.00	0.00	1.66	1.09	1.18	0.00	3.65	1.13	1.00	10.75	3824402	10470486
1	32	5	3.6	18	1.5	23	452	16	1491	23	452	16	1491	3	364	3	279	1.00	0.00	2.11	1.17	1.05	0.00	1.81	1.43	1.00	6.79	4507785	11469406
1	32	6	3	18	1.5	20	409	16	1447	20	409	16	1447	3	432	3	323	1.00	0.00	2.14	1.16	1.08	0.00	2.75	1.45	1.00	7.67	4340293	11215038
1	32	7	2.57	18	1.5	19	374	16	1413	19	374	16	1413	3	500	3	365	1.00	0.00	2.14	1.14	1.10	0.00	3.03	1.47	1.00	8.54	4209602	11036624
1	32	8	2.25	18	1.5	17	345	15	1384	17	345	15	1384	3	571	3	406	1.00	0.00	2.02	1.13	1.12	0.00	3.30	1.38	1.00	9.36	4091214	10874184
1	32	9	2	18	1.5	16	321	15	1359	16	321	15	1359	3	432	2	446	1.00	0.00	1.80	1.12	1.14	0.00	3.54	1.24	1.00	10.15	3997236	10748971
1	32	6	3.08	18.5	0	22	448	16	1487	22	448	16	1487	3	421	3	331	1.14	0.00	1.31	1.32	1.20	0.00	2.08	1.00	1.00	7.89	5165497	12811917
1	32	7	2.64	18.5	0	20	408	16	1447	20	408	16	1447	3	485	3	372	1.12	0.00	1.32	1.29	1.20	0.00	3.11	1.00	1.00	8.72	4916309	12396547
1	32	8	2.32	18.5	0	19	376	16	1413	19	376	16	1413	3	552	3	410	1.11	0.00	1.33	1.26	1.21	0.00	3.35	1.00	1.00	9.46	4697908	12026069
1	32	9	2.06	18.5	0	17	347	15	1385	17	347	15	1385	3	421	2	449	1.09	0.00	1.35	1.23	1.22	0.00	3.59	1.00	1.00	10.24	4510769	11729230
1	32	10	1.85	18.5	0	16	322	15	1360	16	322	15	1360	3	457	2	478	1.08	0.00	1.37	1.21	1.23	0.00	3.77	1.00	1.00	10.99	4346789	11469200
1	32	6	3.58	21.5	1.5	22	449	16	1489	22	449	16	1489	3	364	3	280	1.00	0.00	2.10	1.16	1.06	0.00	1.81	1.42	1.00	6.81	4473793	11408183
1	32	7	3.07	21.5	1.5	21	413	16	1451	21	413	16	1451	3	421	3	316	1.00	0.00	2.10	1.15	1.08	0.00	2.72	1.44	1.00	7.54	4330661	11185303
1	32	8	2.69	21.5	1.5	19	383	16	1420	19	383	16	1420	3	485	3	351	1.00	0.00	2.14	1.14	1.10	0.00	2.95	1.46	1.00	8.24	4208839	11004802
1	32	9	2.39	21.5	1.5	18	357	15	1395	18	357	15	1395	3	533	3	386	1.00	0.00	2.11	1.13	1.11	0.00	3.17	1.45	1.00	8.95	4112329	10878158
1	32	10	2.15	21.5	1.5	17	334	15	1374	17	334	15	1374	3	593	3	420	1.00	0.00	1.91	1.12	1.13	0.00	3.40	1.32	1.00	9.65	4026943	10776186
1	32	7	3.14	22	0	23	453	16	1493	23	453	16	1493	3	410	3	326	1.15	0.00	1.29	1.33	1.20	0.00	2.07	1.00	1.00	7.80	5202566	12880074
1	32	8	2.75	22	0	21	418	16	1457	21	418	16	1457	3	471	3	360	1.13	0.00	1.30	1.30	1.21	0.00	3.04	1.00	1.00	8.48	4970258	12481978
1	32	9	2.44	22	0	19	389	16	1428	19	389	16	1428	3	533	3	396	1.12	0.00	1.32	1.28	1.21	0.00	3.27	1.00	1.00	9.18	4809130	12224376
1	32	10	2.2	22	0	18	363	15	1401	18	363	15	1401	3	593	3	428	1.11	0.00	1.34	1.25	1.22	0.00	3.46	1.00	1.00	9.80	4619499	11904403
1	32	11	2	22	0	17	340	15	1378	17	340	15	1378	3	432	2	459	1.09	0.00	1.34	1.23	1.23	0.00	3.66	1.00	1.00	10.44	4464333	11655109
1	32	12	1.83	22	0	16	320	15	1360	16	320	15	1360	3	471	2	482	1.09	0.00	1.34	1.21	1.24	0.00	3.79	1.00	1.00	11.11	4360690	11511561
1	32	7	3.57	25	1.5	22	448	16	1486	22	448	16	1486	3	364	3	280	1.00	0.00	2.09	1.16	1.06	0.00	1.82	1.42	1.00	6.80	4448895	11352424
1	32	8	3.125	25	1.5	21	416	16	1454	21	416	16	1454	3	410	3	312	1.00	0.00	2.09	1.15	1.07	0.00	2.69	1.43	1.00	7.43	4321162	11158305
1	32	9	2.78	25	1.5	19	389	16	1428	19	389	16	1428	3	471	3	342	1.00	0.00	2.10	1.14	1.09	0.00	2.89	1.45	1.00	8.06	4220963	11019876
1	32	10	2.5	25	1.5	18	366	15	1403	18	366	15	1403	3	516	3	372	1.00	0.00	2.12	1.13	1.11	0.00	3.09	1.46	1.00	8.66	4126478	10879301
1	32	11	2.27	25	1.5	17	345	15	1385	17	345	15	1385	3	571	3	402	1.00	0.00	1.99	1.12	1.12	0.00	3.29	1.38	1.00	9.29	4062056	10815526
1	32	12	1.83	25	1.5	18	364	15	1403	18	364	15	1403	3	471	2	517	1.00	0.00	1.36	1.48	1.00	0.00	3.98	1.14	1.00	11.82	5595072	13808584
1	36	3	1.5	4.5	0	16	311	17	1510	16	311	17	1510	3	327	1	597	1.07	0.00	1.45	1.31	1.25	0.00	3.35	1.00	1.00	16.70	6925686	17265232
1	36	3	2	6	0.75	19	376	17	1574	19	376	17	1574	3	486	2	508	1.16	0.00	1.41	1.34	1.32	0.00	3.30	1.00	1.00	13.62	7295789	17770109
1	36	4	1.5	6	0.75	15	302	17	1502	15	302	17	1502	3	327	1	588	1.05	0.00	1.43	1.26	1.24	0.00	3.36	1.00	1.00	16.53	6605865	16706704
1	36	3	2.33	7	1.25	19	374	17	1572	19	374	17	1572	3	419	2	437	1.00	0.00	2.18	1.17	1.14	0.00	2.83	1.39	1.00	11.65	6197841	15692487
1	36	4	1.75	7	1.25	15	309	17	1509	15	309	17	1509	3	545	2	532	1.00	0.00	1.89	1.14	1.20	0.00	3.24	1.23	1.00	14.30	5883297	15303895
1	36	3	2.67	8	0	21	412	18	1610	21	412	18	1610	3	545	3	395	1.06	0.00	1.52	1.20	1.19	0.00	2.64	1.00	1.00	10.67	6530576	16232756
1	36	4	2	8	0	17	335	17	1534	17	335	17	1534	3	486	2	491	1.02	0.00	1.55	1.14	1.22	0.00	3.12	1.00	1.00	12.93	5909064	15257536
1	36	5	1.6	8	0	15	292	16	1492	15	292	16	1492	3	305	1	561	1.00	0.00	1.58	1.14	1.21	0.00	3.28	1.05	1.00	15.29	5860266	15321166
1	36	3	3.17	9.5	0.75	21	429	18	1629	21	429	18	1629	3	462	3	333	1.00	0.00	1.86	1.11	1.13	0.00	2.32	1.14	1.00	9.20	5988131	15126313
1	36	4	2.375	9.5	0.75	18	360	17	1560	18	360	17	1560	3	409	2	419	1.00	0.00	1.88	1.09	1.18	0.00	2.77	1.17	1.00	11.26	5680705	14722071
1	36	5	1.9	9.5	0.75	16	311	17	1511	16	311	17	1511	3	514	2	496	1.00	0.00	1.91	1.07	1.22	0.00	3.17	1.21	1.00	13.20	5478175	14493159
1	36	6	1.583	9.5	0.75	14	289	16	1488	14	289	16	1488	3	310	1	564	1.00	0.00	1.68	1.14	1.21	0.00	3.29	1.13	1.00	15.37	5813626	15236232
1	36	3	3.67	11	1.5	24	478	18	1675	24	478	18	1675	3	400	3	300	1.00	0.00	2.31	1.16	1.07	0.00	2.16	1.48	1.00	8.41	6457865	15927170
1	36	4	2.75	11	1.5	20	404	18	1604	20	404	18	1604	3	529	3	378	1.00	0.00	2.35	1.14	1.12	0.00	2.58	1.52	1.00	10.28	6118713	15457295
1	36	5	2.2	11	1.5	18	352	17	1550	18	352	17	1550	3	439	2	452	1.00	0.00	2.39	1.12	1.16	0.00	2.95	1.56	1.00	12.00	5862722	15103332
1	36	6	1.833	11	1.5	16	311	17	1511	16	311	17	1511	3	529	2	512	1.00	0.00	2.43	1.11	1.20	0.00	3.27	1.59	1.00	13.69	5678414	14893052
1	36	7	1.57	11	1.5	14	279	16	1477	14	279	16	1477	3	310	1	558	1.00	0.00	2.46	1.09	1.23	0.00	3.52	1.62	1.00	15.27	5531292	14714689
1	36	4	2.875	11.5	1.75	21	412	18	1610	21	412	18	1610	3	500	3	363	1.00	0.00	2.46	1.13	1.12	0.00	2.50	1.58	1.00	9.91	6066247	15322435
1	36	5	2.3	11.5	1.75	18	359	17	1558	18	359	17	1558	3	419	2	434	1.00	0.00	2.51	1.11	1.16	0.00	2.87	1.62	1.00	11.60	5825356	15010318
1	36	6	1.917	11.5	1.75	16	318	17	1518	16	318	17	1518	3	514	2	497	1.00	0.00	2.54	1.10	1.20	0.00	3.19	1.66	1.00	13.21	5639544	14789674
1	36	7	1.643	11.5	1.75	14	285	16	1485	14	285	16	1485	3	581	2	542	1.00	0.00	2.55	1.08	1.24	0.00	3.44	1.69	1.00	14.75	5488611	14616029
1	36	4	3.25	13	2.5	22	435	18	1633	22	435	18	1633	3	450	3	326	1.00	0.00	2.42	1.11	1.11	0.00	2.30	1.52	1.00	9.02	5990842	15107960
1	36	5	2.6	13	2.5	19	381	17	1578	19	381	17	1578	3	562	3	389	1.00	0.00	2.44	1.09	1.15	0.00	2.63	1.56	1.00	10.52	5744095	14766707
1	36	6	2.167	13	2.5	17	339	17	1537	17	339	17	1537	3	450	2	451	1.00	0.00	2.47	1.08	1.19	0.00	2.95	1.59	1.00	11.98	5560016	14543976
1	36	7	1.857	13	2.5	15	305	17	1504	15	305	17	1504	3	514	2	501	1.00	0.00	2.51	1.06	1.23	0.00	3.22	1.62	1.00	13.39	5413915	14382429
1	36	4	3.625	14.5	3.25	24	471	18	1668	24	471	18	1668	3	400	3	301	1.00	0.00	2.44	1.14	1.08	0.00	2.18	1.56	1.00	8.44	6334611	15699119
1	36	5	2.9	14.5	3.25	21	414	18	1612	21	414	18	1612	3	500	3	360	1.00	0.00	2.46	1.13	1.11	0.00	2.50	1.60	1.00	9.85	6071191	15325584
1	36	6	2.417	14.5	3.25	19	370	17	1569	19	370	17	1569	3	400	2	417	1.00	0.00	2.49	1.11	1.14	0.00	2.80	1.63	1.00	11.20	5866304	15056680

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
1	36	7	2.07	14.5	3.25	17	335	17	1534	17	335	17	1534	3	462	2	472	1.00	0.00	2.52	1.10	1.17	0.00	3.08	1.66	1.00	12.49	5709241	14861890
1	36	4	2.875	11.5	0	21	424	18	1624	21	424	18	1624	3	500	3	369	1.04	0.00	1.52	1.18	1.16	0.00	2.54	1.00	1.00	10.08	6447070	16048310
1	36	5	2.3	11.5	0	18	364	17	1562	18	364	17	1562	3	419	2	437	1.02	0.00	1.53	1.13	1.17	0.00	2.88	1.00	1.00	11.66	5967975	15273131
1	36	6	1.917	11.5	0	16	318	17	1518	16	318	17	1518	3	514	2	497	1.00	0.00	1.55	1.10	1.20	0.00	3.19	1.01	1.00	13.21	5639544	14789674
1	36	7	1.643	11.5	0	14	285	16	1485	14	285	16	1485	3	581	2	542	1.00	0.00	1.55	1.08	1.24	0.00	3.44	1.03	1.00	14.75	5488611	14616029
1	36	4	3.25	13	0.75	22	435	18	1633	22	435	18	1633	3	450	3	326	1.00	0.00	1.80	1.11	1.11	0.00	2.30	1.13	1.00	9.02	5990842	15107960
1	36	5	2.6	13	0.75	19	381	17	1578	19	381	17	1578	3	562	3	389	1.00	0.00	1.81	1.09	1.15	0.00	2.63	1.16	1.00	10.52	5744095	14766707
1	36	6	2.167	13	0.75	17	339	17	1537	17	339	17	1537	3	450	2	451	1.00	0.00	1.84	1.08	1.19	0.00	2.95	1.18	1.00	11.98	5560016	14543976
1	36	7	1.857	13	0.75	15	305	17	1504	15	305	17	1504	3	514	2	501	1.00	0.00	1.87	1.06	1.23	0.00	3.22	1.21	1.00	13.39	5413915	14382429
1	36	4	3.625	14.5	1.5	24	471	18	1668	24	471	18	1668	3	400	3	301	1.00	0.00	2.31	1.14	1.08	0.00	2.18	1.48	1.00	8.44	6334611	15699119
1	36	5	2.9	14.5	1.5	21	414	18	1612	21	414	18	1612	3	500	3	360	1.00	0.00	2.32	1.13	1.11	0.00	2.50	1.51	1.00	9.85	6071191	15325584
1	36	6	2.417	14.5	1.5	19	370	17	1569	19	370	17	1569	3	400	2	417	1.00	0.00	2.35	1.11	1.14	0.00	2.80	1.54	1.00	11.20	5866304	15056680
1	36	7	2.07	14.5	1.5	17	335	17	1534	17	335	17	1534	3	462	2	472	1.00	0.00	2.08	1.10	1.17	0.00	3.08	1.37	1.00	12.49	5709241	14861890
1	36	5	3	15	0	22	436	18	1635	22	436	18	1635	3	486	3	357	1.06	0.00	1.48	1.19	1.16	0.00	2.50	1.00	1.00	9.80	6531368	16178948
1	36	6	2.5	15	0	19	386	17	1585	19	386	17	1585	3	581	3	410	1.04	0.00	1.49	1.15	1.18	0.00	2.77	1.00	1.00	11.04	6146834	15561091
1	36	7	2.14	15	0	17	346	17	1544	17	346	17	1544	3	462	2	462	1.02	0.00	1.51	1.12	1.19	0.00	3.03	1.00	1.00	12.24	5841269	15081130
1	36	8	1.875	15	0	16	311	17	1511	16	311	17	1511	3	514	2	502	1.00	0.00	1.51	1.08	1.21	0.00	3.24	1.00	1.00	13.38	5551217	14639665
1	36	9	1.67	15	0	15	291	16	1489	15	291	16	1489	3	581	2	538	1.00	0.00	1.54	1.09	1.21	0.00	3.28	1.03	1.00	14.59	5561388	14727291
1	36	5	3.3	16.5	0.75	22	437	18	1635	22	437	18	1635	3	439	3	321	1.00	0.00	1.78	1.10	1.11	0.00	2.29	1.13	1.00	8.91	5956004	15032547
1	36	6	2.75	16.5	0.75	20	392	17	1591	20	392	17	1591	3	529	3	371	1.00	0.00	1.80	1.09	1.14	0.00	2.56	1.15	1.00	10.12	5757561	14767627
1	36	7	2.357	16.5	0.75	18	356	17	1555	18	356	17	1555	3	419	2	420	1.00	0.00	1.82	1.07	1.17	0.00	2.81	1.17	1.00	11.27	5597055	14562879
1	36	8	2.06	16.5	0.75	16	326	17	1525	16	326	17	1525	3	474	2	469	1.00	0.00	1.83	1.07	1.20	0.00	3.06	1.19	1.00	12.41	5469950	14415795
1	36	9	1.83	16.5	0.75	15	301	16	1501	15	301	16	1501	3	529	2	505	1.00	0.00	1.82	1.06	1.22	0.00	3.24	1.20	1.00	13.53	5384965	14344524
1	36	5	3.6	18	1.5	23	467	18	1664	23	467	18	1664	3	409	3	302	1.00	0.00	2.26	1.14	1.08	0.00	2.19	1.47	1.00	8.45	6262544	15564307
1	36	6	3	18	1.5	21	420	18	1619	21	420	18	1619	3	486	3	350	1.00	0.00	2.28	1.12	1.11	0.00	2.45	1.50	1.00	9.60	6051146	15273148
1	36	7	2.57	18	1.5	19	383	17	1581	19	383	17	1581	3	562	3	396	1.00	0.00	2.31	1.11	1.13	0.00	2.69	1.52	1.00	10.69	5880054	15037130
1	36	8	2.25	18	1.5	18	352	17	1550	18	352	17	1550	3	439	2	440	1.00	0.00	2.22	1.10	1.16	0.00	2.92	1.46	1.00	11.73	5732439	14844066
1	36	9	2	18	1.5	16	325	17	1525	16	325	17	1525	3	486	2	484	1.00	0.00	1.98	1.09	1.18	0.00	3.15	1.32	1.00	12.78	5612889	14710507
1	36	6	3.08	18.5	0	22	444	18	1643	22	444	18	1643	3	474	3	350	1.07	0.00	1.45	1.20	1.16	0.00	2.47	1.00	1.00	9.64	6605158	16303299
1	36	7	2.64	18.5	0	20	401	18	1601	20	401	18	1601	3	545	3	394	1.05	0.00	1.47	1.17	1.18	0.00	2.70	1.00	1.00	10.67	6280627	15784879
1	36	8	2.32	18.5	0	18	366	17	1565	18	366	17	1565	3	419	2	434	1.03	0.00	1.49	1.14	1.19	0.00	2.90	1.00	1.00	11.61	5988084	15311123
1	36	9	2.06	18.5	0	17	335	17	1534	17	335	17	1534	3	474	2	475	1.02	0.00	1.50	1.11	1.20	0.00	3.11	1.00	1.00	12.56	5738560	14921253
1	36	10	1.85	18.5	0	15	308	17	1506	15	308	17	1506	3	514	2	505	1.00	0.00	1.50	1.08	1.21	0.00	3.26	1.00	1.00	13.48	5515335	14570746
1	36	6	3.58	21.5	1.5	23	464	18	1662	23	464	18	1662	3	409	3	303	1.00	0.00	2.24	1.13	1.08	0.00	2.20	1.46	1.00	8.48	6221679	15494230
1	36	7	3.07	21.5	1.5	21	424	18	1624	21	424	18	1624	3	474	3	343	1.00	0.00	2.28	1.12	1.10	0.00	2.42	1.48	1.00	9.44	6037565	15239168
1	36	8	2.69	21.5	1.5	20	392	17	1591	20	392	17	1591	3	545	3	381	1.00	0.00	2.28	1.11	1.13	0.00	2.62	1.51	1.00	10.34	5885983	15025479
1	36	9	2.39	21.5	1.5	18	364	17	1563	18	364	17	1563	3	409	2	419	1.00	0.00	2.32	1.10	1.15	0.00	2.82	1.53	1.00	11.24	5753470	14851071
1	36	10	2.15	21.5	1.5	17	340	17	1539	17	340	17	1539	3	450	2	456	1.00	0.00	2.10	1.09	1.17	0.00	3.02	1.40	1.00	12.11	5645564	14717806
1	36	7	3.14	22	0	23	450	18	1648	23	450	18	1648	3	462	3	345	1.08	0.00	1.45	1.21	1.17	0.00	2.45	1.00	1.00	9.50	6650579	16371961
1	36	8	2.75	22	0	21	412	18	1611	21	412	18	1611	3	529	3	382	1.06	0.00	1.46	1.17	1.18	0.00	2.64	1.00	1.00	10.37	6351193	15888036
1	36	9	2.44	22	0	19	381	17	1579	19	381	17	1579	3	400	2	419	1.05	0.00	1.47	1.15	1.19	0.00	2.83	1.00	1.00	11.23	6131413	15541115
1	36	10	2.2	22	0	18	352	17	1551	18	352	17	1551	3	439	2	452	1.03	0.00	1.48	1.12	1.20	0.00	3.00	1.00	1.00	12.02	5874897	15133176
1	36	11	2	22	0	16	328	17	1526	16	328	17	1526	3	486	2	486	1.02	0.00	1.49	1.10	1.21	0.00	3.17	1.00	1.00	12.79	5682333	14828691
1	36	12	1.83	22	0	15	307	17	1505	15	307	17	1505	3	529	2	509	1.01	0.00	1.48	1.09	1.22	0.00	3.27	1.00	1.00	13.60	5543512	14629961
1	36	7	3.57	25	1.5	23	462	18	1660	23	462	18	1660	3	409	3	303	1.00	0.00	2.23	1.12	1.08	0.00	2.21	1.46	1.00	8.48	6182294	15420516
1	36	8	3.125	25	1.5	21	428	18	1626	21	428	18	1626	3	462	3	337	1.00	0.00	2.27	1.11	1.10	0.00	2.39	1.48	1.00	9.30	6025783	15196046
1	36	9	2.78	25	1.5	20	399	18	1597	20	399	18	1597	3	529	3	370	1.00	0.00	2.28	1.10	1.12	0.00	2.57	1.50	1.00	10.09	5887310	15003461
1	36	10	2.5	25	1.5	19	374	17	1572	19	374	17	1572	3	581	3	403	1.00	0.00	2.29	1.10	1.14	0.00	2.74	1.51	1.00	10.86	5776387	14858536
1	36	11	2.27	25	1.5	18	352	17	1550	18	352	17	1550	3	429	2	436	1.00	0.00	2.20	1.09	1.16	0.00	2.91	1.46	1.00	11.63	5681933	14742982
1	36	12	1.83	25	1.5	19	370	17	1567	19	370	17	1567	3	529	2	561	1.00	0.00	1.47	1.41	1.04	0.00	3.51	1.16	1.00	14.75	7718775	18546595
1	40	3	1.5	4.5	0	15	295	18	1655	15	295	18	1655	2	364	1	420	1.00	0.00	1.59	1.19	1.22	0.00	3.91	1.01	1.00	20.07	8624094	21444839
1	40	3	2	6	0.75	18	361	19	1722	18	361	19	1722	3	541	2	534	1.08	0.00	1.55	1.21	1.30	0.00	3.82	1.00	1.00	16.29	8972464	21875418
1	40	4	1.5	6	0.75	14	289	18	1648	14	289	18	1648	2	364	1	415	1.00	0.00	1.57	1.16	1.22	0.00	3.94	1.02	1.00	19.91	8353136	20969744
1	40	3	2.33	7	1.25	19	380	19	1740	19	380	19	1740	3	465	2	472	1.00	0.00	2.36	1.14	1.18	0.00	3.37	1.47	1.00	14.28	8396640	20756191
1	40	4	1.75	7	1.25	16	311	18	1671	16	311	18	1671	3	312	1	576	1.00	0.00	2.06	1.11	1.24	0.00	3.86	1.31	1.00	17.53	8010229	20270371
1	40	3	2.67	8	0	20	404	19	1762	20	404	19	1762	3	408	2	416	1.00	0.00	1.65	1.10	1.18	0.00	3.07	1.01	1.00	12.79	8162035	20227155
1	40	4	2	8	0	17	333	19	1691	17	333	19	1691	3	541	2	526	1.00	0.00	1.69	1.08	1.24	0.00	3.68	1.05	1.00	15.72	7788220	19762295
1	40	5	1.6	8	0	15	293	18	1651	15	293	18	1651	2	339	1	405	1.00	0.00	1.73	1.11	1.24	0.00	3.91	1.13	1.00	18.72	7974150	20254887
1	40	3	3.17	9.5	0.75	22	440	20	1798	22	440	20	1798	3	513	3	358	1.00	0.00	2.01	1.08	1.16	0.00	2.75	1.21	1.00	11.21	8078439	19956014
1	40	4	2.375	9.5	0.75	18	366	19	1725	18	366	19	1725	3	455	2	452	1.00	0.00	2.06	1.06	1.22	0.00	3.29	1.25	1.00	13.77	7699525	19477235
1	40	5	1.9	9.5	0.75	16	314	18	1672	16	314	18	1672	3	571	2	536	1.00	0.00	2.08	1.05	1.27	0.00	3.76	1.29	1.00	16.17	7462060	19213013
1	40	6	1.583	9.5	0.75	14	289	18	1648	14	289	18	1648	2	345	1	406	1.00	0.00	1.83	1.11	1.24	0.00	3.94	1.21	1.00	18.85	7912575	20161949

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
1	40	3	3.67	11	1.5	25	491	20	1849	25	491	20	1849	3	444	3	323	1.00	0.00	2.49	1.13	1.10	0.00	2.55	1.53	1.00	10.24	8681387	20969118
1	40	4	2.75	11	1.5	21	413	19	1770	21	413	19	1770	3	588	3	407	1.00	0.00	2.54	1.11	1.15	0.00	3.05	1.58	1.00	12.53	8242460	20346001
1	40	5	2.2	11	1.5	18	357	19	1715	18	357	19	1715	3	488	2	488	1.00	0.00	2.55	1.09	1.20	0.00	3.51	1.63	1.00	14.69	7949918	19980934
1	40	6	1.833	11	1.5	16	313	18	1673	16	313	18	1673	3	588	2	553	1.00	0.00	2.61	1.08	1.24	0.00	3.89	1.67	1.00	16.78	7724089	19726983
1	40	7	1.57	11	1.5	14	278	18	1638	14	278	18	1638	2	345	1	403	1.00	0.00	2.64	1.07	1.27	0.00	4.21	1.71	1.00	18.78	7557087	19546361
1	40	4	2.875	11.5	1.75	21	421	20	1779	21	421	20	1779	3	556	3	391	1.00	0.00	2.65	1.10	1.15	0.00	2.96	1.64	1.00	12.10	8184464	20215695
1	40	5	2.3	11.5	1.75	18	364	19	1724	18	364	19	1724	3	465	2	468	1.00	0.00	2.67	1.08	1.20	0.00	3.41	1.68	1.00	14.20	7888675	19851964
1	40	6	1.917	11.5	1.75	16	321	18	1679	16	321	18	1679	3	571	2	537	1.00	0.00	2.72	1.07	1.24	0.00	3.79	1.72	1.00	16.16	7657333	19558021
1	40	7	1.643	11.5	1.75	14	285	18	1645	14	285	18	1645	3	333	1	586	1.00	0.00	2.73	1.06	1.27	0.00	4.10	1.76	1.00	18.10	7484068	19381384
1	40	4	3.25	13	2.5	22	446	20	1803	22	446	20	1803	3	500	3	351	1.00	0.00	2.58	1.08	1.15	0.00	2.72	1.57	1.00	10.99	8075868	19926645
1	40	5	2.6	13	2.5	19	388	19	1745	19	388	19	1745	3	417	2	420	1.00	0.00	2.62	1.06	1.19	0.00	3.13	1.62	1.00	12.87	7772295	19528008
1	40	6	2.167	13	2.5	17	343	19	1701	17	343	19	1701	3	500	2	486	1.00	0.00	2.65	1.05	1.23	0.00	3.51	1.66	1.00	14.67	7544696	19259250
1	40	7	1.857	13	2.5	15	307	18	1665	15	307	18	1665	3	571	2	541	1.00	0.00	2.68	1.04	1.27	0.00	3.83	1.69	1.00	16.40	7372603	19069452
1	40	4	3.625	14.5	3.25	24	483	20	1842	24	483	20	1842	3	444	3	324	1.00	0.00	2.58	1.11	1.11	0.00	2.58	1.62	1.00	10.29	8513099	20675040
1	40	5	2.9	14.5	3.25	21	423	20	1781	21	423	20	1781	3	556	3	388	1.00	0.00	2.63	1.10	1.15	0.00	2.96	1.66	1.00	12.02	8186978	20214371
1	40	6	2.417	14.5	3.25	19	376	19	1735	19	376	19	1735	3	444	2	450	1.00	0.00	2.68	1.08	1.19	0.00	3.32	1.70	1.00	13.69	7933137	19890024
1	40	7	2.07	14.5	3.25	17	339	19	1697	17	339	19	1697	3	513	2	510	1.00	0.00	2.68	1.07	1.22	0.00	3.65	1.73	1.00	15.29	7746252	19659501
1	40	4	2.875	11.5	0	21	421	20	1779	21	421	20	1779	3	556	3	391	1.00	0.00	1.66	1.10	1.15	0.00	2.96	1.02	1.00	12.10	8184464	20215695
1	40	5	2.3	11.5	0	18	364	19	1724	18	364	19	1724	3	465	2	468	1.00	0.00	1.67	1.08	1.20	0.00	3.41	1.05	1.00	14.20	7888675	19851964
1	40	6	1.917	11.5	0	16	321	18	1679	16	321	18	1679	3	571	2	537	1.00	0.00	1.70	1.07	1.24	0.00	3.79	1.08	1.00	16.16	7657333	19558021
1	40	7	1.643	11.5	0	14	285	18	1645	14	285	18	1645	3	333	1	586	1.00	0.00	1.71	1.06	1.27	0.00	4.10	1.10	1.00	18.10	7484068	19381384
1	40	4	3.25	13	0.75	22	446	20	1803	22	446	20	1803	3	500	3	351	1.00	0.00	1.96	1.08	1.15	0.00	2.72	1.20	1.00	10.99	8075868	19926645
1	40	5	2.6	13	0.75	19	388	19	1745	19	388	19	1745	3	417	2	420	1.00	0.00	2.00	1.06	1.19	0.00	3.13	1.23	1.00	12.87	7772295	19528008
1	40	6	2.167	13	0.75	17	343	19	1701	17	343	19	1701	3	500	2	486	1.00	0.00	2.01	1.05	1.23	0.00	3.51	1.26	1.00	14.67	7544696	19259250
1	40	7	1.857	13	0.75	15	307	18	1665	15	307	18	1665	3	571	2	541	1.00	0.00	2.04	1.04	1.27	0.00	3.83	1.29	1.00	16.40	7372603	19069452
1	40	4	3.625	14.5	1.5	24	483	20	1842	24	483	20	1842	3	444	3	324	1.00	0.00	2.46	1.11	1.11	0.00	2.58	1.54	1.00	10.29	8513099	20675040
1	40	5	2.9	14.5	1.5	21	423	20	1781	21	423	20	1781	3	556	3	388	1.00	0.00	2.50	1.10	1.15	0.00	2.96	1.58	1.00	12.02	8186978	20214371
1	40	6	2.417	14.5	1.5	19	376	19	1735	19	376	19	1735	3	444	2	450	1.00	0.00	2.55	1.08	1.19	0.00	3.32	1.61	1.00	13.69	7933137	19890024
1	40	7	2.07	14.5	1.5	17	339	19	1697	17	339	19	1697	3	513	2	510	1.00	0.00	2.25	1.07	1.22	0.00	3.65	1.46	1.00	15.29	7746252	19659501
1	40	5	3	15	0	21	429	20	1788	21	429	20	1788	3	541	3	376	1.00	0.00	1.61	1.09	1.14	0.00	2.89	1.01	1.00	11.71	8141451	20114623
1	40	6	2.5	15	0	19	382	19	1742	19	382	19	1742	3	435	2	436	1.00	0.00	1.63	1.08	1.18	0.00	3.25	1.03	1.00	13.34	7899077	19809026
1	40	7	2.14	15	0	17	345	19	1702	17	345	19	1702	3	513	2	495	1.00	0.00	1.64	1.07	1.22	0.00	3.57	1.05	1.00	14.88	7701032	19545269
1	40	8	1.875	15	0	16	313	18	1672	16	313	18	1672	3	571	2	542	1.00	0.00	1.67	1.06	1.25	0.00	3.85	1.07	1.00	16.38	7537520	19367018
1	40	9	1.67	15	0	15	291	18	1650	15	291	18	1650	3	328	1	582	1.00	0.00	1.68	1.07	1.25	0.00	3.92	1.11	1.00	17.91	7576885	19527081
1	40	5	3.3	16.5	0.75	22	448	20	1805	22	448	20	1805	3	488	3	345	1.00	0.00	1.94	1.07	1.14	0.00	2.71	1.20	1.00	10.85	8023337	19819345
1	40	6	2.75	16.5	0.75	20	400	19	1758	20	400	19	1758	3	588	3	400	1.00	0.00	1.96	1.06	1.18	0.00	3.03	1.22	1.00	12.35	7779106	19505661
1	40	7	2.357	16.5	0.75	18	361	19	1721	18	361	19	1721	3	465	2	453	1.00	0.00	1.98	1.05	1.22	0.00	3.35	1.25	1.00	13.81	7588888	19288244
1	40	8	2.06	16.5	0.75	16	329	19	1689	16	329	19	1689	3	526	2	506	1.00	0.00	2.01	1.04	1.25	0.00	3.65	1.27	1.00	15.22	7438483	19120655
1	40	9	1.83	16.5	0.75	15	303	18	1661	15	303	18	1661	3	588	2	545	1.00	0.00	2.00	1.04	1.27	0.00	3.86	1.28	1.00	16.57	7332750	19009062
1	40	5	3.6	18	1.5	24	479	20	1837	24	479	20	1837	3	455	3	325	1.00	0.00	2.43	1.10	1.11	0.00	2.59	1.53	1.00	10.30	8415010	20491334
1	40	6	3	18	1.5	21	429	20	1789	21	429	20	1789	3	541	3	377	1.00	0.00	2.46	1.09	1.14	0.00	2.91	1.56	1.00	11.72	8153988	20144165
1	40	7	2.57	18	1.5	20	390	19	1747	20	390	19	1747	3	426	2	426	1.00	0.00	2.48	1.08	1.17	0.00	3.19	1.59	1.00	13.05	7936291	19835779
1	40	8	2.25	18	1.5	18	356	19	1716	18	356	19	1716	3	488	2	475	1.00	0.00	2.42	1.07	1.20	0.00	3.48	1.55	1.00	14.38	7762319	19639671
1	40	9	2	18	1.5	16	328	19	1688	16	328	19	1688	3	541	2	523	1.00	0.00	2.16	1.06	1.23	0.00	3.75	1.40	1.00	15.66	7624118	19480310
1	40	6	3.08	18.5	0	22	435	20	1792	22	435	20	1792	3	526	3	368	1.00	0.00	1.58	1.09	1.14	0.00	2.85	1.00	1.00	11.46	8118978	20042374
1	40	7	2.64	18.5	0	20	395	19	1752	20	395	19	1752	3	408	2	416	1.00	0.00	1.60	1.08	1.17	0.00	3.13	1.02	1.00	12.78	7906448	19761913
1	40	8	2.32	18.5	0	18	362	19	1721	18	362	19	1721	3	465	2	462	1.00	0.00	1.62	1.07	1.20	0.00	3.41	1.04	1.00	14.03	7733727	19557344
1	40	9	2.06	18.5	0	17	333	19	1693	17	333	19	1693	3	526	2	509	1.00	0.00	1.63	1.06	1.23	0.00	3.67	1.05	1.00	15.29	7585653	19387715
1	40	10	1.85	18.5	0	15	308	18	1668	15	308	18	1668	3	571	2	545	1.00	0.00	1.66	1.05	1.25	0.00	3.88	1.07	1.00	16.53	7464611	19253604
1	40	6	3.58	21.5	1.5	24	476	20	1834	24	476	20	1834	3	455	3	326	1.00	0.00	2.42	1.10	1.11	0.00	2.61	1.52	1.00	10.32	8355211	20384642
1	40	7	3.07	21.5	1.5	22	434	20	1792	22	434	20	1792	3	526	3	369	1.00	0.00	2.44	1.09	1.14	0.00	2.87	1.55	1.00	11.50	8123581	20060830
1	40	8	2.69	21.5	1.5	20	399	19	1759	20	399	19	1759	3	408	2	410	1.00	0.00	2.48	1.08	1.16	0.00	3.12	1.57	1.00	12.64	7941546	19832804
1	40	9	2.39	21.5	1.5	19	370	19	1728	19	370	19	1728	3	455	2	451	1.00	0.00	2.48	1.07	1.19	0.00	3.35	1.59	1.00	13.73	7784452	19620050
1	40	10	2.15	21.5	1.5	17	344	19	1703	17	344	19	1703	3	500	2	492	1.00	0.00	2.29	1.06	1.22	0.00	3.58	1.49	1.00	14.82	7654434	19471792
1	40	7	3.14	22	0	22	440	20	1800	22	440	20	1800	3	513	3	363	1.01	0.00	1.57	1.09	1.14	0.00	2.83	1.00	1.00	11.34	8178738	20158439
1	40	8	2.75	22	0	20	404	19	1761	20	404	19	1761	3	588	3	402	1.00	0.00	1.60	1.07	1.16	0.00	3.06	1.01	1.00	12.39	7910205	19739262
1	40	9	2.44	22	0	19	374	19	1732	19	374	19	1732	3	444	2	443	1.00	0.00	1.60	1.07	1.19	0.00	3.30	1.02	1.00	13.52	7772042	19583204
1	40	10	2.2	22	0	17	348	19	1707	17	348	19	1707	3	488	2	482	1.00	0.00	1.61	1.06	1.21	0.00	3.53	1.04	1.00	14.55	7626473	19403265
1	40	11	2	22	0	16	325	19	1685	16	325	19	1685	3	541	2	520	1.00	0.00	1.62	1.05	1.24	0.00	3.75	1.05	1.00	15.60	7512458	19278417
1	40	12	1.83	22	0	15	305	18	1665	15	305	18	1665	3	588	2	548	1.00	0.00	1.63	1.05	1.25	0.00	3.90	1.06	1.00	16.65	7433735	19206504
1	40	7	3.57	25	1.5	24	474	20	1832	24	474	20	1832	3	455	3	326	1.00	0.00	2.41	1.09	1.11	0.00	2.61	1.52	1.00	10.33	8307779	20298943
1	40	8	3.125	25	1.5	22	437	20	1797	22	437	20	1797	3	513	3	363	1.00	0.00	2.41	1.08	1.14	0.00	2.84	1.54	1.00	11.36	8110139	20035738

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
1	40	9	2.78	25	1.5	20	407	19	1765	20	407	19	1765	3	588	3	399	1.00	0.00	2.44	1.08	1.16	0.00	3.05	1.56	1.00	12.31	7945195	19802208
1	40	10	2.5	25	1.5	19	380	19	1738	19	380	19	1738	3	435	2	435	1.00	0.00	2.45	1.07	1.18	0.00	3.26	1.58	1.00	13.28	7800103	19614878
1	40	11	2.27	25	1.5	18	356	19	1716	18	356	19	1716	3	476	2	470	1.00	0.00	2.40	1.06	1.20	0.00	3.47	1.55	1.00	14.26	7693929	19508778
1	40	12	1.83	25	1.5	19	373	19	1733	19	373	19	1733	2	588	2	405	1.00	0.00	1.58	1.36	1.07	0.00	4.16	1.21	1.00	18.03	10345575	24266334
1	44	3	1.5	4.5	0	15	295	20	1813	15	295	20	1813	2	400	1	451	1.00	0.00	1.72	1.16	1.24	0.00	4.53	1.09	1.00	24.08	11441418	27611721
1	44	3	2	6	0.75	17	343	20	1862	17	343	20	1862	3	595	2	554	1.00	0.00	1.65	1.09	1.26	0.00	4.30	1.00	1.00	19.05	10697021	26180652
1	44	4	1.5	6	0.75	14	288	20	1806	14	288	20	1806	2	400	1	446	1.00	0.00	1.70	1.13	1.24	0.00	4.57	1.10	1.00	23.89	11075840	27003277
1	44	3	2.33	7	1.25	19	385	21	1904	19	385	21	1904	3	512	2	504	1.00	0.00	2.54	1.11	1.22	0.00	3.89	1.55	1.00	17.10	11048126	26674998
1	44	4	1.75	7	1.25	16	312	20	1830	16	312	20	1830	2	344	1	411	1.00	0.00	2.24	1.09	1.26	0.00	4.47	1.40	1.00	21.03	10605650	26110950
1	44	3	2.67	8	0	21	410	21	1930	21	410	21	1930	3	449	2	445	1.00	0.00	1.80	1.08	1.22	0.00	3.55	1.08	1.00	15.33	10747088	26059971
1	44	4	2	8	0	17	335	20	1854	17	335	20	1854	3	595	2	563	1.00	0.00	1.84	1.06	1.27	0.00	4.26	1.13	1.00	18.89	10319425	25529283
1	44	5	1.6	8	0	15	292	20	1810	15	292	20	1810	2	373	1	434	1.00	0.00	1.88	1.09	1.26	0.00	4.55	1.21	1.00	22.50	10578250	26125648
1	44	3	3.17	9.5	0.75	22	449	22	1967	22	449	22	1967	3	564	3	382	1.00	0.00	2.17	1.05	1.20	0.00	3.17	1.28	1.00	13.41	10617499	25684785
1	44	4	2.375	9.5	0.75	19	370	21	1890	19	370	21	1890	3	500	2	483	1.00	0.00	2.21	1.04	1.26	0.00	3.81	1.34	1.00	16.53	10168968	25137464
1	44	5	1.9	9.5	0.75	16	315	20	1833	16	315	20	1833	3	314	1	574	1.00	0.00	2.25	1.03	1.30	0.00	4.37	1.39	1.00	19.43	9903397	24838680
1	44	6	1.583	9.5	0.75	14	288	20	1805	14	288	20	1805	2	379	1	436	1.00	0.00	2.00	1.08	1.26	0.00	4.57	1.29	1.00	22.63	10480126	25958208
1	44	3	3.67	11	1.5	25	502	22	2020	25	502	22	2020	3	489	3	344	1.00	0.00	2.65	1.10	1.13	0.00	2.94	1.60	1.00	12.22	11334611	26855810
1	44	4	2.75	11	1.5	21	419	21	1938	21	419	21	1938	3	431	2	434	1.00	0.00	2.70	1.08	1.20	0.00	3.53	1.66	1.00	15.02	10824742	26167177
1	44	5	2.2	11	1.5	18	360	21	1878	18	360	21	1878	3	537	2	521	1.00	0.00	2.74	1.07	1.24	0.00	4.06	1.71	1.00	17.62	10472044	25711390
1	44	6	1.833	11	1.5	16	314	20	1832	16	314	20	1832	3	328	1	592	1.00	0.00	2.79	1.05	1.27	0.00	4.51	1.76	1.00	20.12	10218547	25413151
1	44	7	1.57	11	1.5	14	276	20	1795	14	276	20	1795	2	379	1	432	1.00	0.00	2.82	1.04	1.29	0.00	4.88	1.80	1.00	22.56	10027369	25209612
1	44	4	2.875	11.5	1.75	21	428	21	1947	21	428	21	1947	3	415	2	417	1.00	0.00	2.81	1.07	1.19	0.00	3.42	1.71	1.00	14.49	10749344	25999995
1	44	5	2.3	11.5	1.75	18	368	21	1887	18	368	21	1887	3	512	2	500	1.00	0.00	2.85	1.06	1.24	0.00	3.94	1.77	1.00	17.01	10392541	25546727
1	44	6	1.917	11.5	1.75	16	322	20	1840	16	322	20	1840	3	314	1	575	1.00	0.00	2.90	1.04	1.27	0.00	4.40	1.81	1.00	19.41	10134004	25232268
1	44	7	1.643	11.5	1.75	14	284	20	1803	14	284	20	1803	2	367	1	419	1.00	0.00	2.93	1.03	1.30	0.00	4.76	1.86	1.00	21.74	9942884	25029749
1	44	4	3.25	13	2.5	23	454	22	1974	23	454	22	1974	3	550	3	374	1.00	0.00	2.74	1.05	1.18	0.00	3.15	1.65	1.00	13.18	10599804	25649855
1	44	5	2.6	13	2.5	20	393	21	1911	20	393	21	1911	3	458	2	448	1.00	0.00	2.78	1.04	1.23	0.00	3.63	1.70	1.00	15.44	10233000	25159460
1	44	6	2.167	13	2.5	17	345	20	1865	17	345	20	1865	3	550	2	520	1.00	0.00	2.83	1.03	1.27	0.00	4.08	1.74	1.00	17.64	9977542	24877287
1	44	7	1.857	13	2.5	15	307	20	1825	15	307	20	1825	3	324	1	579	1.00	0.00	2.86	1.02	1.30	0.00	4.45	1.79	1.00	19.72	9770869	24627622
1	44	4	3.625	14.5	3.25	25	494	22	2012	25	494	22	2012	3	489	3	345	1.00	0.00	2.78	1.08	1.14	0.00	2.97	1.69	1.00	12.27	11121520	26485214
1	44	5	2.9	14.5	3.25	22	430	21	1948	22	430	21	1948	3	415	2	414	1.00	0.00	2.82	1.07	1.19	0.00	3.42	1.74	1.00	14.38	10730234	25951719
1	44	6	2.417	14.5	3.25	19	381	21	1898	19	381	21	1898	3	489	2	480	1.00	0.00	2.84	1.06	1.22	0.00	3.83	1.78	1.00	16.38	10434996	25564880
1	44	7	2.07	14.5	3.25	17	341	20	1858	17	341	20	1858	3	564	2	545	1.00	0.00	2.86	1.05	1.25	0.00	4.23	1.82	1.00	18.34	10212615	25300689
1	44	4	2.875	11.5	0	21	428	21	1947	21	428	21	1947	3	415	2	417	1.00	0.00	1.80	1.07	1.19	0.00	3.42	1.10	1.00	14.49	10749344	25999995
1	44	5	2.3	11.5	0	18	368	21	1887	18	368	21	1887	3	512	2	500	1.00	0.00	1.82	1.06	1.24	0.00	3.94	1.13	1.00	17.01	10392541	25546727
1	44	6	1.917	11.5	0	16	322	20	1840	16	322	20	1840	3	314	1	575	1.00	0.00	1.86	1.04	1.27	0.00	4.40	1.16	1.00	19.41	10134004	25232268
1	44	7	1.643	11.5	0	14	284	20	1803	14	284	20	1803	2	367	1	419	1.00	0.00	1.88	1.03	1.30	0.00	4.76	1.19	1.00	21.74	9942884	25029749
1	44	4	3.25	13	0.75	23	454	22	1974	23	454	22	1974	3	550	3	374	1.00	0.00	2.12	1.05	1.18	0.00	3.15	1.28	1.00	13.18	10599804	25649855
1	44	5	2.6	13	0.75	20	393	21	1911	20	393	21	1911	3	458	2	448	1.00	0.00	2.15	1.04	1.23	0.00	3.63	1.31	1.00	15.44	10233000	25159460
1	44	6	2.167	13	0.75	17	345	20	1865	17	345	20	1865	3	550	2	520	1.00	0.00	2.19	1.03	1.27	0.00	4.08	1.35	1.00	17.64	9977542	24877287
1	44	7	1.857	13	0.75	15	307	20	1825	15	307	20	1825	3	324	1	579	1.00	0.00	2.21	1.02	1.30	0.00	4.45	1.38	1.00	19.72	9770869	24627622
1	44	4	3.625	14.5	1.5	25	494	22	2012	25	494	22	2012	3	489	3	345	1.00	0.00	2.65	1.08	1.14	0.00	2.97	1.61	1.00	12.27	11121520	26485214
1	44	5	2.9	14.5	1.5	22	430	21	1948	22	430	21	1948	3	415	2	414	1.00	0.00	2.69	1.07	1.19	0.00	3.42	1.66	1.00	14.38	10730234	25951719
1	44	6	2.417	14.5	1.5	19	381	21	1898	19	381	21	1898	3	489	2	480	1.00	0.00	2.71	1.06	1.22	0.00	3.83	1.70	1.00	16.38	10434996	25564880
1	44	7	2.07	14.5	1.5	17	341	20	1858	17	341	20	1858	3	564	2	545	1.00	0.00	2.45	1.05	1.25	0.00	4.23	1.56	1.00	18.34	10212615	25300689
1	44	5	3	15	0	22	437	21	1955	22	437	21	1955	3	595	3	401	1.00	0.00	1.77	1.06	1.19	0.00	3.34	1.08	1.00	14.00	10678433	25834656
1	44	6	2.5	15	0	19	387	21	1906	19	387	21	1906	3	478	2	466	1.00	0.00	1.78	1.05	1.23	0.00	3.75	1.11	1.00	15.97	10386331	25469592
1	44	7	2.14	15	0	17	347	21	1865	17	347	21	1865	3	564	2	529	1.00	0.00	1.80	1.04	1.25	0.00	4.14	1.13	1.00	17.87	10164017	25198094
1	44	8	1.875	15	0	16	313	20	1833	16	313	20	1833	3	319	1	580	1.00	0.00	1.82	1.03	1.28	0.00	4.47	1.16	1.00	19.69	9977718	24996307
1	44	9	1.67	15	0	15	290	20	1808	15	290	20	1808	2	361	1	416	1.00	0.00	1.85	1.04	1.28	0.00	4.56	1.19	1.00	21.51	10041224	25177903
1	44	5	3.3	16.5	0.75	23	456	22	1976	23	456	22	1976	3	537	3	368	1.00	0.00	2.10	1.04	1.18	0.00	3.13	1.28	1.00	13.00	10524495	25503664
1	44	6	2.75	16.5	0.75	20	406	21	1924	20	406	21	1924	3	431	2	427	1.00	0.00	2.14	1.03	1.22	0.00	3.51	1.31	1.00	14.79	10228176	25105134
1	44	7	2.357	16.5	0.75	18	365	21	1884	18	365	21	1884	3	512	2	484	1.00	0.00	2.16	1.02	1.26	0.00	3.88	1.33	1.00	16.55	10008330	24852465
1	44	8	2.06	16.5	0.75	17	331	20	1849	17	331	20	1849	3	579	2	541	1.00	0.00	2.18	1.02	1.28	0.00	4.22	1.36	1.00	18.25	9826254	24638427
1	44	9	1.83	16.5	0.75	15	302	20	1822	15	302	20	1822	3	328	1	584	1.00	0.00	2.17	1.01	1.30	0.00	4.48	1.37	1.00	19.93	9719791	24566852
1	44	5	3.6	18	1.5	24	489	22	2008	24	489	22	2008	3	500	3	346	1.00	0.00	2.60	1.07	1.14	0.00	2.99	1.60	1.00	12.31	10995386	26272814
1	44	6	3	18	1.5	22	437	21	1955	22	437	21	1955	3	595	3	401	1.00	0.00	2.65	1.06	1.18	0.00	3.35	1.64	1.00	14.00	10678433	25834656
1	44	7	2.57	18	1.5	20	395	21	1912	20	395	21	1912	3	468	2	455	1.00	0.00	2.67	1.05	1.21	0.00	3.69	1.67	1.00	15.63	10426002	25500786
1	44	8	2.25	18	1.5	18	359	21	1879	18	359	21	1879	3	537	2	507	1.00	0.00	2.64	1.04	1.24	0.00	4.03	1.66	1.00	17.24	10226564	25282717
1	44	9	2	18	1.5	17	330	20	1847	17	330	20	1847	3	595	2	558	1.00	0.00	2.35	1.04	1.26	0.00	4.33	1.50	1.00	18.74	10055867	25054007
1	44	6	3.08	18.5	0	22	442	22	1962	22	442	22	1962	3	579	3	392	1.00	0.00	1.74	1.06	1.18	0.00	3.30	1.07	1.00	13.73	10648571	25777621
1	44	7	2.64	18.5	0	20	400	21	1919	20	400	21	1919	3	449	2	444	1.00	0.00	1.76	1.05	1.21	0.00	3.63	1.09	1.00	15.33	10400814	25451627

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	44	8	2.32	18.5	0	18	365	21	1885	18	365	21	1885	3	512	2	493	1.00	0.00	1.78	1.04	1.24	0.00	3.95	1.11	1.00	16.83	10183976	25183091
1	44	9	2.06	18.5	0	17	335	20	1854	17	335	20	1854	3	579	2	544	1.00	0.00	1.78	1.03	1.26	0.00	4.25	1.13	1.00	18.34	10018859	24982907
1	44	10	1.85	18.5	0	15	308	20	1828	15	308	20	1828	3	324	1	583	1.00	0.00	1.81	1.02	1.28	0.00	4.51	1.15	1.00	19.85	9883578	24843414
1	44	6	3.58	21.5	1.5	24	486	22	2004	24	486	22	2004	3	500	3	347	1.00	0.00	2.59	1.07	1.14	0.00	3.01	1.59	1.00	12.33	10911595	26119666
1	44	7	3.07	21.5	1.5	22	442	22	1959	22	442	22	1959	3	579	3	393	1.00	0.00	2.61	1.06	1.18	0.00	3.31	1.62	1.00	13.74	10637360	25736504
1	44	8	2.69	21.5	1.5	20	405	21	1924	20	405	21	1924	3	449	2	438	1.00	0.00	2.64	1.05	1.21	0.00	3.60	1.65	1.00	15.12	10427522	25483819
1	44	9	2.39	21.5	1.5	19	374	21	1891	19	374	21	1891	3	500	2	482	1.00	0.00	2.67	1.04	1.23	0.00	3.87	1.68	1.00	16.44	10235598	25224183
1	44	10	2.15	21.5	1.5	17	346	21	1865	17	346	21	1865	3	550	2	525	1.00	0.00	2.50	1.04	1.25	0.00	4.15	1.59	1.00	17.79	10087927	25069964
1	44	7	3.14	22	0	22	446	22	1966	22	446	22	1966	3	564	3	385	1.00	0.00	1.72	1.05	1.18	0.00	3.27	1.06	1.00	13.53	10618207	25708945
1	44	8	2.75	22	0	20	409	21	1929	20	409	21	1929	3	431	2	429	1.00	0.00	1.74	1.05	1.21	0.00	3.55	1.08	1.00	14.87	10390322	25408650
1	44	9	2.44	22	0	19	378	21	1897	19	378	21	1897	3	489	2	473	1.00	0.00	1.74	1.04	1.23	0.00	3.83	1.10	1.00	16.21	10234179	25221654
1	44	10	2.2	22	0	18	351	21	1868	18	351	21	1868	3	537	2	514	1.00	0.00	1.76	1.03	1.25	0.00	4.08	1.12	1.00	17.44	10048614	24965079
1	44	11	2	22	0	16	327	20	1844	16	327	20	1844	3	595	2	556	1.00	0.00	1.77	1.03	1.27	0.00	4.33	1.13	1.00	18.68	9920091	24817213
1	44	12	1.83	22	0	15	305	20	1824	15	305	20	1824	3	328	1	586	1.00	0.00	1.78	1.02	1.28	0.00	4.52	1.15	1.00	19.98	9838052	24764113
1	44	7	3.57	25	1.5	24	484	22	2001	24	484	22	2001	3	500	3	347	1.00	0.00	2.58	1.06	1.14	0.00	3.01	1.59	1.00	12.33	10842987	25992974
1	44	8	3.125	25	1.5	22	445	22	1964	22	445	22	1964	3	564	3	387	1.00	0.00	2.61	1.05	1.17	0.00	3.28	1.62	1.00	13.57	10612518	25696041
1	44	9	2.78	25	1.5	21	413	21	1931	21	413	21	1931	3	431	2	425	1.00	0.00	2.61	1.05	1.20	0.00	3.53	1.64	1.00	14.74	10422684	25441038
1	44	10	2.5	25	1.5	19	384	21	1904	19	384	21	1904	3	478	2	464	1.00	0.00	2.65	1.04	1.22	0.00	3.78	1.66	1.00	15.94	10268123	25269962
1	44	11	2.27	25	1.5	18	359	21	1879	18	359	21	1879	3	524	2	502	1.00	0.00	2.62	1.04	1.24	0.00	4.02	1.66	1.00	17.09	10136462	25117606
1	44	12	1.83	25	1.5	19	375	21	1895	19	375	21	1895	2	328	1	433	1.00	0.00	1.73	1.31	1.09	0.00	4.78	1.26	1.00	21.56	13489183	30898847
1	48	3	1.5	4.5	0	15	293	22	1970	15	293	22	1970	2	436	1	477	1.00	0.00	1.86	1.13	1.26	0.00	5.14	1.17	1.00	28.45	14835506	34782490
1	48	3	2	6	0.75	17	344	22	2023	17	344	22	2023	3	329	1	585	1.00	0.00	1.78	1.06	1.28	0.00	4.86	1.08	1.00	22.50	13829844	33014904
1	48	4	1.5	6	0.75	14	285	22	1964	14	285	22	1964	2	436	1	472	1.00	0.00	1.85	1.10	1.26	0.00	5.19	1.19	1.00	28.26	14381431	34072272
1	48	3	2.33	7	1.25	19	388	23	2068	19	388	23	2068	3	558	2	532	1.00	0.00	2.69	1.08	1.24	0.00	4.39	1.65	1.00	20.17	14226615	33582304
1	48	4	1.75	7	1.25	16	311	22	1989	16	311	22	1989	2	375	1	435	1.00	0.00	2.41	1.06	1.28	0.00	5.06	1.51	1.00	24.85	13746216	32949804
1	48	3	2.67	8	0	21	415	23	2095	21	415	23	2095	3	490	2	468	1.00	0.00	1.93	1.05	1.25	0.00	4.01	1.16	1.00	18.06	13825811	32809310
1	48	4	2	8	0	17	336	22	2014	17	336	22	2014	3	329	1	594	1.00	0.00	1.98	1.04	1.29	0.00	4.82	1.22	1.00	22.29	13353431	32208346
1	48	5	1.6	8	0	14	289	22	1968	14	289	22	1968	2	407	1	459	1.00	0.00	2.05	1.06	1.28	0.00	5.16	1.31	1.00	26.60	13714288	32956486
1	48	3	3.17	9.5	0.75	23	456	23	2134	23	456	23	2134	3	414	2	402	1.00	0.00	2.34	1.03	1.24	0.00	3.59	1.37	1.00	15.79	13619578	32303802
1	48	4	2.375	9.5	0.75	19	373	23	2053	19	373	23	2053	3	545	2	509	1.00	0.00	2.38	1.02	1.29	0.00	4.32	1.43	1.00	19.50	13135150	31727648
1	48	5	1.9	9.5	0.75	16	314	22	1993	16	314	22	1993	2	343	1	404	1.00	0.00	2.42	1.01	1.32	0.00	4.95	1.49	1.00	22.98	12842620	31399362
1	48	6	1.583	9.5	0.75	14	285	22	1963	14	285	22	1963	2	414	1	461	1.00	0.00	2.15	1.06	1.28	0.00	5.19	1.39	1.00	26.75	13604792	32771684
1	48	3	3.67	11	1.5	26	511	24	2191	26	511	24	2191	3	533	3	361	1.00	0.00	2.81	1.07	1.17	0.00	3.32	1.69	1.00	14.37	14489741	33713633
1	48	4	2.75	11	1.5	21	424	23	2104	21	424	23	2104	3	471	2	457	1.00	0.00	2.86	1.05	1.23	0.00	3.99	1.76	1.00	17.69	13907351	32925550
1	48	5	2.2	11	1.5	18	362	22	2039	18	362	22	2039	3	585	2	549	1.00	0.00	2.92	1.04	1.26	0.00	4.59	1.82	1.00	20.78	13500091	32376229
1	48	6	1.833	11	1.5	16	313	22	1991	16	313	22	1991	2	358	1	417	1.00	0.00	2.97	1.03	1.29	0.00	5.10	1.87	1.00	23.77	13230993	32064520
1	48	7	1.57	11	1.5	14	273	21	1951	14	273	21	1951	2	414	1	457	1.00	0.00	3.00	1.02	1.31	0.00	5.52	1.92	1.00	26.66	13036124	31838662
1	48	4	2.875	11.5	1.75	22	434	23	2111	22	434	23	2111	3	453	2	438	1.00	0.00	2.96	1.05	1.23	0.00	3.86	1.81	1.00	17.04	13778459	32644880
1	48	5	2.3	11.5	1.75	19	370	23	2050	19	370	23	2050	3	558	2	527	1.00	0.00	3.03	1.03	1.27	0.00	4.46	1.87	1.00	20.08	13398825	32200488
1	48	6	1.917	11.5	1.75	16	321	22	2001	16	321	22	2001	2	343	1	404	1.00	0.00	3.05	1.02	1.29	0.00	4.98	1.93	1.00	22.95	13125767	31877697
1	48	7	1.643	11.5	1.75	14	281	22	1960	14	281	22	1960	2	400	1	442	1.00	0.00	3.11	1.01	1.31	0.00	5.39	1.98	1.00	25.71	12911809	31615227
1	48	4	3.25	13	2.5	23	462	24	2139	23	462	24	2139	3	407	2	393	1.00	0.00	2.92	1.03	1.22	0.00	3.56	1.74	1.00	15.47	13573975	32196012
1	48	5	2.6	13	2.5	20	397	23	2075	20	397	23	2075	3	500	2	472	1.00	0.00	2.96	1.01	1.27	0.00	4.10	1.79	1.00	18.20	13180135	31710363
1	48	6	2.167	13	2.5	17	347	22	2024	17	347	22	2024	3	304	1	548	1.00	0.00	3.00	1.00	1.30	0.00	4.61	1.85	1.00	20.78	12884128	31347113
1	48	7	1.857	13	2.5	15	307	22	1985	15	307	22	1985	2	353	1	408	1.00	0.00	3.04	1.00	1.32	0.00	5.05	1.90	1.00	23.33	12737168	31228504
1	48	4	3.625	14.5	3.25	25	503	24	2181	25	503	24	2181	3	533	3	363	1.00	0.00	2.95	1.06	1.18	0.00	3.36	1.78	1.00	14.42	14208914	33219749
1	48	5	2.9	14.5	3.25	22	435	23	2115	22	435	23	2115	3	453	2	435	1.00	0.00	2.98	1.04	1.22	0.00	3.87	1.83	1.00	16.95	13766656	32645093
1	48	6	2.417	14.5	3.25	19	383	23	2063	19	383	23	2063	3	533	2	505	1.00	0.00	3.03	1.03	1.25	0.00	4.35	1.88	1.00	19.35	13440791	32232865
1	48	7	2.07	14.5	3.25	17	341	22	2020	17	341	22	2020	3	316	1	575	1.00	0.00	3.05	1.02	1.28	0.00	4.79	1.93	1.00	21.66	13193304	31924310
1	48	4	2.875	11.5	0	22	434	23	2111	22	434	23	2111	3	453	2	438	1.00	0.00	1.93	1.05	1.23	0.00	3.86	1.18	1.00	17.04	13778459	32644880
1	48	5	2.3	11.5	0	19	370	23	2050	19	370	23	2050	3	558	2	527	1.00	0.00	1.97	1.03	1.27	0.00	4.46	1.22	1.00	20.08	13398825	32200488
1	48	6	1.917	11.5	0	16	321	22	2001	16	321	22	2001	2	343	1	404	1.00	0.00	1.99	1.02	1.29	0.00	4.98	1.25	1.00	22.95	13125767	31877697
1	48	7	1.643	11.5	0	14	281	22	1960	14	281	22	1960	2	400	1	442	1.00	0.00	2.02	1.01	1.31	0.00	5.39	1.29	1.00	25.71	12911809	31615227
1	48	4	3.25	13	0.75	23	462	24	2139	23	462	24	2139	3	407	2	393	1.00	0.00	2.29	1.03	1.22	0.00	3.56	1.36	1.00	15.47	13573975	32196012
1	48	5	2.6	13	0.75	20	397	23	2075	20	397	23	2075	3	500	2	472	1.00	0.00	2.32	1.01	1.27	0.00	4.10	1.41	1.00	18.20	13180135	31710363
1	48	6	2.167	13	0.75	17	347	22	2024	17	347	22	2024	3	304	1	548	1.00	0.00	2.35	1.00	1.30	0.00	4.61	1.45	1.00	20.78	12884128	31347113
1	48	7	1.857	13	0.75	15	307	22	1985	15	307	22	1985	2	353	1	408	1.00	0.00	2.39	1.00	1.32	0.00	5.05	1.49	1.00	23.33	12737168	31228504
1	48	4	3.625	14.5	1.5	25	503	24	2181	25	503	24	2181	3	533	3	363	1.00	0.00	2.82	1.06	1.18	0.00	3.36	1.70	1.00	14.42	14208914	33219749
1	48	5	2.9	14.5	1.5	22	435	23	2115	22	435	23	2115	3	453	2	435	1.00	0.00	2.85	1.04	1.22	0.00	3.87	1.75	1.00	16.95	13766656	32645093
1	48	6	2.417	14.5	1.5	19	383	23	2063	19	383	23	2063	3	533	2	505	1.00	0.00	2.90	1.03	1.25	0.00	4.35	1.80	1.00	19.35	13440791	32232865
1	48	7	2.07	14.5	1.5	17	341	22	2020	17	341	22	2020	3	316	1	575	1.00	0.00	2.65	1.02	1.28	0.00	4.79	1.67	1.00	21.66	13193304	31924310
1	48	5	3	15	0	22	443	23	2121	22	443	23	2121	3	436	2	422	1.00	0.00	1.90	1.04	1.22	0.00	3.78	1.16	1.00	16.48	13689434	32467474

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	48	6	2.5	15	0	20	390	23	2070	20	390	23	2070	3	522	2	490	1.00	0.00	1.93	1.03	1.26	0.00	4.25	1.19	1.00	18.83	13366304	32079531
1	48	7	2.14	15	0	17	348	22	2026	17	348	22	2026	3	308	1	557	1.00	0.00	1.94	1.02	1.28	0.00	4.68	1.22	1.00	21.09	13120804	31767865
1	48	8	1.875	15	0	16	312	22	1992	16	312	22	1992	2	348	1	408	1.00	0.00	1.97	1.01	1.30	0.00	5.06	1.25	1.00	23.26	12921442	31550677
1	48	9	1.67	15	0	14	287	22	1965	14	287	22	1965	2	393	1	439	1.00	0.00	2.00	1.02	1.30	0.00	5.17	1.29	1.00	25.42	13010634	31759350
1	48	5	3.3	16.5	0.75	23	464	24	2141	23	464	24	2141	3	585	3	387	1.00	0.00	2.27	1.02	1.22	0.00	3.54	1.36	1.00	15.27	13473199	32010756
1	48	6	2.75	16.5	0.75	21	410	23	2090	21	410	23	2090	3	471	2	449	1.00	0.00	2.29	1.01	1.26	0.00	3.98	1.40	1.00	17.45	13160803	31649350
1	48	7	2.357	16.5	0.75	18	367	22	2046	18	367	22	2046	3	558	2	510	1.00	0.00	2.33	1.00	1.28	0.00	4.39	1.43	1.00	19.53	12899877	31324438
1	48	8	2.06	16.5	0.75	17	333	22	2010	17	333	22	2010	3	320	1	571	1.00	0.00	2.34	1.00	1.31	0.00	4.78	1.47	1.00	21.56	12787059	31223008
1	48	9	1.83	16.5	0.75	15	303	22	1983	15	303	22	1983	2	358	1	412	1.01	0.00	2.34	1.00	1.32	0.00	5.09	1.49	1.00	23.61	12745498	31272416
1	48	5	3.6	18	1.5	25	498	24	2176	25	498	24	2176	3	545	3	363	1.00	0.00	2.77	1.05	1.18	0.00	3.38	1.69	1.00	14.45	14045960	32942997
1	48	6	3	18	1.5	22	443	23	2120	22	443	23	2120	3	436	2	422	1.00	0.00	2.81	1.04	1.22	0.00	3.79	1.73	1.00	16.46	13670784	32426078
1	48	7	2.57	18	1.5	20	398	23	2077	20	398	23	2077	3	511	2	479	1.00	0.00	2.83	1.03	1.25	0.00	4.19	1.77	1.00	18.45	13406673	32116384
1	48	8	2.25	18	1.5	18	361	22	2040	18	361	22	2040	3	585	2	534	1.00	0.00	2.82	1.02	1.27	0.00	4.56	1.78	1.00	20.33	13182115	31840955
1	48	9	2	18	1.5	16	329	22	2009	16	329	22	2009	3	329	1	589	1.00	0.00	2.54	1.01	1.29	0.00	4.91	1.61	1.00	22.18	13009553	31650921
1	48	6	3.08	18.5	0	22	449	23	2126	22	449	23	2126	3	421	2	412	1.00	0.00	1.87	1.03	1.22	0.00	3.72	1.15	1.00	16.13	13627569	32331116
1	48	7	2.64	18.5	0	20	404	23	2082	20	404	23	2082	3	490	2	467	1.00	0.00	1.89	1.02	1.25	0.00	4.11	1.17	1.00	18.05	13351482	31992315
1	48	8	2.32	18.5	0	18	367	22	2047	18	367	22	2047	3	558	2	520	1.00	0.00	1.91	1.02	1.27	0.00	4.47	1.20	1.00	19.85	13121754	31723930
1	48	9	2.06	18.5	0	17	335	22	2015	17	335	22	2015	3	320	1	574	1.00	0.00	1.93	1.01	1.29	0.00	4.82	1.22	1.00	21.66	12950704	31528818
1	48	10	1.85	18.5	0	15	307	22	1986	15	307	22	1986	2	353	1	410	1.00	0.00	1.96	1.00	1.30	0.00	5.10	1.25	1.00	23.43	12802086	31349520
1	48	6	3.58	21.5	1.5	25	494	24	2173	25	494	24	2173	3	545	3	364	1.00	0.00	2.75	1.04	1.18	0.00	3.40	1.68	1.00	14.50	13937270	32769403
1	48	7	3.07	21.5	1.5	22	448	23	2125	22	448	23	2125	3	421	2	413	1.00	0.00	2.80	1.03	1.21	0.00	3.74	1.72	1.00	16.17	13622273	32326062
1	48	8	2.69	21.5	1.5	20	409	23	2088	20	409	23	2088	3	490	2	460	1.00	0.00	2.80	1.02	1.24	0.00	4.07	1.75	1.00	17.81	13382173	32037724
1	48	9	2.39	21.5	1.5	19	376	23	2054	19	376	23	2054	3	545	2	507	1.00	0.00	2.83	1.02	1.26	0.00	4.39	1.78	1.00	19.41	13177231	31775877
1	48	10	2.15	21.5	1.5	17	347	22	2026	17	347	22	2026	3	304	1	554	1.00	0.00	2.70	1.01	1.28	0.00	4.70	1.71	1.00	20.98	13022204	31606106
1	48	7	3.14	22	0	23	453	23	2131	23	453	23	2131	3	421	2	405	1.00	0.00	1.85	1.03	1.21	0.00	3.69	1.14	1.00	15.89	13592572	32264797
1	48	8	2.75	22	0	21	414	23	2092	21	414	23	2092	3	471	2	451	1.00	0.00	1.87	1.02	1.24	0.00	4.01	1.16	1.00	17.49	13333108	31926123
1	48	9	2.44	22	0	19	381	23	2058	19	381	23	2058	3	533	2	498	1.00	0.00	1.88	1.02	1.26	0.00	4.32	1.18	1.00	19.08	13152276	31706766
1	48	10	2.2	22	0	18	352	22	2030	18	352	22	2030	3	585	2	542	1.00	0.00	1.91	1.01	1.28	0.00	4.62	1.20	1.00	20.58	12972107	31492850
1	48	11	2	22	0	16	326	22	2005	16	326	22	2005	3	329	1	587	1.00	0.00	1.92	1.00	1.29	0.00	4.91	1.22	1.00	22.09	12827247	31333054
1	48	12	1.83	22	0	15	303	22	1983	15	303	22	1983	2	358	1	412	1.00	0.00	1.93	1.00	1.30	0.00	5.12	1.24	1.00	23.61	12745498	31272416
1	48	7	3.57	25	1.5	25	492	24	2170	25	492	24	2170	3	545	3	364	1.00	0.00	2.74	1.04	1.18	0.00	3.41	1.68	1.00	14.49	13852375	32613879
1	48	8	3.125	25	1.5	23	451	23	2131	23	451	23	2131	3	421	2	406	1.00	0.00	2.77	1.03	1.21	0.00	3.71	1.71	1.00	15.97	13590024	32282765
1	48	9	2.78	25	1.5	21	417	23	2096	21	417	23	2096	3	471	2	447	1.00	0.00	2.80	1.02	1.24	0.00	4.00	1.74	1.00	17.37	13368173	31988360
1	48	10	2.5	25	1.5	19	387	23	2066	19	387	23	2066	3	522	2	488	1.00	0.00	2.80	1.02	1.25	0.00	4.27	1.76	1.00	18.76	13186745	31763744
1	48	11	2.27	25	1.5	18	361	22	2039	18	361	22	2039	3	571	2	529	1.00	0.00	2.82	1.01	1.27	0.00	4.54	1.78	1.00	20.14	13049797	31600891
1	48	12	1.83	25	1.5	19	375	23	2055	19	375	23	2055	2	358	1	456	1.00	0.00	1.87	1.26	1.11	0.00	5.38	1.32	1.00	25.36	17186115	38490737
2	12	3	1.5	4.5	0	16	323	12	562	16	323	12	562	3	316	3	390	2.16	1.72	1.14	3.36	2.94	1.29	2.44	1.55	1.14	4.50	699700	2214665
2	12	3	2	6	0.75	19	370	12	610	19	370	12	610	3	240	3	340	2.36	1.94	1.11	3.51	3.21	1.45	2.42	1.60	1.11	3.66	789650	2392863
2	12	4	1.5	6	0.75	16	323	12	562	16	323	12	562	3	316	3	390	2.20	1.76	1.17	3.36	2.97	1.31	2.46	1.60	1.17	4.50	699700	2214665
2	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	312	2.36	1.96	1.89	3.57	3.14	1.46	2.13	3.05	1.46	3.27	835299	2481138
2	12	4	1.75	7	1.25	17	347	12	587	17	348	12	588	3	273	3	373	2.34	1.90	1.54	3.44	3.19	1.42	2.48	2.30	1.42	4.03	745925	2305811
2	12	3	2.67	8	0	21	424	12	664	21	424	12	664	3	182	3	285	2.50	2.09	1.00	3.69	3.32	1.56	1.96	1.87	1.00	2.98	900204	2616268
2	12	4	2	8	0	19	370	12	610	19	370	12	610	3	240	3	350	2.44	2.01	1.10	3.51	3.33	1.51	2.39	1.86	1.10	3.66	789650	2392863
2	12	5	1.6	8	0	17	332	12	573	17	333	12	573	3	300	3	389	2.30	1.86	1.21	3.39	3.14	1.39	2.49	1.86	1.21	4.30	718350	2252137
2	12	3	3.17	9.5	0.75	22	443	12	683	22	443	12	683	3	154	3	246	2.41	2.04	1.29	3.49	3.21	1.53	1.71	2.34	1.29	2.59	870337	2533691
2	12	4	2.375	9.5	0.75	20	399	12	639	20	400	12	640	3	200	3	308	2.52	2.11	1.54	3.57	3.42	1.58	2.13	2.48	1.54	3.23	839676	2490190
2	12	5	1.9	9.5	0.75	18	362	12	600	18	362	12	600	3	250	3	358	2.51	2.07	1.46	3.49	3.47	1.55	2.47	2.50	1.46	3.79	772623	2357808
2	12	6	1.583	9.5	0.75	17	331	12	571	17	331	12	571	3	300	3	391	2.31	1.86	1.36	3.38	3.12	1.38	2.50	2.09	1.36	4.33	715080	2245269
2	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	218	2.20	1.86	1.90	3.35	2.83	1.38	1.52	3.35	1.38	2.29	853966	2482392
2	12	4	2.75	11	1.5	21	422	12	663	21	423	12	663	3	176	3	275	2.38	1.99	1.97	3.56	3.12	1.48	1.92	3.67	1.48	2.89	865779	2536469
2	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	326	2.42	2.00	2.30	3.56	3.22	1.49	2.26	3.77	1.49	3.41	820529	2453482
2	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	364	2.40	1.96	2.19	3.47	3.24	1.46	2.52	3.78	1.46	3.89	761511	2335902
2	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	392	2.38	1.92	2.45	3.38	3.25	1.43	2.74	3.78	1.43	4.35	711954	2238259
2	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	266	2.39	2.01	2.17	3.55	3.14	1.49	1.85	4.00	1.49	2.79	868304	2536946
2	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	316	2.45	2.03	2.13	3.57	3.26	1.51	2.19	4.14	1.51	3.31	832062	2476056
2	12	6	1.917	11.5	1.75	18	362	12	603	18	363	12	603	3	250	3	357	2.43	2.00	2.44	3.49	3.29	1.49	2.47	4.16	1.49	3.77	775753	2365667
2	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	384	2.41	1.96	2.74	3.41	3.30	1.46	2.68	4.16	1.46	4.21	726503	2267767
2	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	241	2.39	2.02	2.14	3.47	3.13	1.50	1.69	3.86	1.50	2.53	868179	2525722
2	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	288	2.49	2.09	2.16	3.57	3.32	1.56	2.01	4.08	1.56	3.02	858043	2523686
2	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	330	2.52	2.09	2.10	3.55	3.40	1.56	2.29	4.15	1.56	3.46	816110	2445415
2	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	362	2.50	2.05	2.42	3.47	3.41	1.53	2.51	4.16	1.53	3.85	764454	2341371
2	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	220	2.23	1.89	2.12	3.37	2.87	1.40	1.55	3.75	1.40	2.32	857702	2492785

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	264	2.38	2.00	2.19	3.54	3.11	1.49	1.85	4.04	1.49	2.77	869809	2540035
2	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	304	2.44	2.03	2.17	3.58	3.22	1.51	2.12	4.17	1.51	3.18	843495	2496363
2	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	341	2.44	2.01	2.52	3.53	3.25	1.49	2.37	4.20	1.49	3.57	801170	2415795
2	12	4	2.875	11.5	0	22	432	12	672	22	433	12	672	3	167	3	267	2.43	2.04	1.00	3.60	3.17	1.52	1.86	1.84	1.00	2.80	888434	2583187
2	12	5	2.3	11.5	0	20	400	12	640	20	400	12	640	3	207	3	319	2.52	2.10	1.00	3.69	3.35	1.56	2.21	1.94	1.00	3.34	871773	2565524
2	12	6	1.917	11.5	0	18	362	12	603	18	363	12	603	3	250	3	357	2.43	2.00	1.11	3.49	3.29	1.49	2.47	1.89	1.11	3.77	775753	2365667
2	12	7	1.643	11.5	0	17	337	12	577	17	337	12	577	3	286	3	384	2.41	1.96	1.24	3.41	3.30	1.46	2.68	1.89	1.24	4.21	726503	2267767
2	12	4	3.25	13	0.75	22	447	12	685	22	447	12	685	3	150	3	241	2.39	2.02	1.28	3.47	3.13	1.50	1.69	2.32	1.28	2.53	868179	2525722
2	12	5	2.6	13	0.75	21	414	12	654	21	414	12	654	3	188	3	288	2.49	2.09	1.30	3.57	3.32	1.56	2.01	2.45	1.30	3.02	858043	2523686
2	12	6	2.167	13	0.75	19	384	12	624	19	384	12	624	3	222	3	330	2.52	2.09	1.26	3.55	3.40	1.56	2.29	2.49	1.26	3.46	816110	2445415
2	12	7	1.857	13	0.75	18	358	12	596	18	358	12	596	3	261	3	362	2.50	2.05	1.45	3.47	3.41	1.53	2.51	2.50	1.45	3.85	764454	2341371
2	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	220	2.23	1.89	1.92	3.37	2.87	1.40	1.55	3.40	1.40	2.32	857702	2492785
2	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	264	2.38	2.00	1.99	3.54	3.11	1.49	1.85	3.66	1.49	2.77	869809	2540035
2	12	6	2.417	14.5	1.5	20	403	12	641	20	403	12	641	3	200	3	304	2.44	2.03	1.67	3.58	3.22	1.51	2.12	3.22	1.51	3.18	843495	2496363
2	12	7	2.07	14.5	1.5	19	376	12	616	19	376	12	616	3	231	3	341	2.44	2.01	1.67	3.53	3.25	1.49	2.37	2.78	1.49	3.57	801170	2415795
2	12	5	3	15	0	29	585	12	825	29	586	12	825	3	162	3	329	4.59	4.02	1.26	7.17	5.40	2.96	1.24	3.50	1.24	3.30	2272927	5435968
2	12	6	2.5	15	0	28	557	12	797	28	558	12	797	3	194	3	385	4.84	4.23	1.28	7.49	5.68	3.10	1.44	3.73	1.28	3.83	2318222	5508842
2	12	7	2.14	15	0	20	391	12	630	20	391	12	630	3	222	3	338	2.58	2.14	1.00	3.74	3.42	1.59	2.34	1.97	1.00	3.53	870610	2568671
2	12	8	1.875	15	0	18	359	12	599	18	359	12	599	3	250	3	361	2.45	2.01	1.10	3.48	3.31	1.49	2.51	1.89	1.10	3.83	768885	2351744
2	12	9	1.67	15	0	17	340	12	579	17	340	12	579	3	286	3	381	2.36	1.91	1.07	3.41	3.17	1.42	2.52	1.89	1.07	4.16	731112	2276081
2	12	5	3.3	16.5	0.75	22	449	12	687	22	449	12	687	3	146	3	238	2.39	2.02	1.28	3.46	3.12	1.50	1.67	2.30	1.28	2.50	867222	2522180
2	12	6	2.75	16.5	0.75	21	422	12	663	21	423	12	663	3	176	3	275	2.49	2.09	1.30	3.56	3.29	1.56	1.93	2.42	1.30	2.89	865779	2536469
2	12	7	2.357	16.5	0.75	20	399	12	637	20	399	12	637	3	207	3	310	2.53	2.11	1.28	3.58	3.38	1.57	2.16	2.48	1.28	3.24	838657	2487692
2	12	8	2.06	16.5	0.75	19	376	12	614	19	376	12	614	3	231	3	342	2.52	2.08	1.49	3.53	3.40	1.55	2.38	2.49	1.49	3.58	799608	2411568
2	12	9	1.83	16.5	0.75	18	355	12	595	18	355	12	595	3	261	3	365	2.49	2.04	1.43	3.47	3.39	1.52	2.53	2.46	1.43	3.90	761704	2337708
2	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	221	2.25	1.90	1.93	3.37	2.89	1.41	1.56	3.41	1.41	2.33	857692	2493394
2	12	6	3	18	1.5	22	436	12	675	22	436	12	675	3	162	3	257	2.38	2.00	1.59	3.53	3.09	1.49	1.81	3.63	1.49	2.70	871911	2541766
2	12	7	2.57	18	1.5	21	413	12	651	21	413	12	651	3	188	3	290	2.44	2.04	1.79	3.58	3.20	1.51	2.03	3.40	1.51	3.04	856090	2519326
2	12	8	2.25	18	1.5	20	391	12	629	20	391	12	629	3	214	3	320	2.46	2.04	1.54	3.56	3.26	1.51	2.24	3.01	1.51	3.35	825313	2461716
2	12	9	2	18	1.5	19	370	12	610	19	370	12	610	3	240	3	350	2.45	2.02	1.60	3.51	3.28	1.50	2.44	2.69	1.50	3.66	789650	2392863
2	12	6	3.08	18.5	0	29	586	12	827	29	587	12	828	3	158	3	321	4.53	3.96	1.23	7.04	5.31	2.91	1.22	3.43	1.22	3.22	2231959	5359269
2	12	7	2.64	18.5	0	28	562	12	803	28	562	12	803	3	182	3	365	4.72	4.12	1.25	7.29	5.54	3.03	1.38	3.60	1.25	3.65	2262845	5408934
2	12	8	2.32	18.5	0	27	544	12	784	27	544	12	784	3	207	3	409	4.92	4.29	1.27	7.55	5.76	3.15	2.65	3.79	1.27	4.06	2306982	5481440
2	12	9	2.06	18.5	0	26	528	12	768	26	528	12	768	3	231	3	455	5.12	4.45	1.29	7.81	5.96	3.26	2.91	3.96	1.29	4.47	2355786	5561601
2	12	10	1.85	18.5	0	18	357	12	596	18	357	12	596	3	261	3	363	2.46	2.01	1.10	3.47	3.31	1.50	2.53	1.89	1.10	3.87	763597	2340378
2	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	222	2.26	1.92	1.92	3.38	2.91	1.42	1.57	3.41	1.42	2.34	857425	2492538
2	12	7	3.07	21.5	1.5	22	439	12	678	22	439	12	678	3	158	3	252	2.38	2.00	1.58	3.51	3.08	1.48	1.78	3.60	1.48	2.65	870663	2536877
2	12	8	2.69	21.5	1.5	21	419	12	659	21	420	12	659	3	182	3	280	2.44	2.04	1.51	3.57	3.19	1.51	1.97	3.53	1.51	2.94	862887	2531433
2	12	9	2.39	21.5	1.5	20	401	12	640	20	401	12	640	3	200	3	307	2.47	2.05	1.66	3.58	3.25	1.52	2.15	3.19	1.52	3.21	842707	2496114
2	12	10	2.15	21.5	1.5	19	383	12	622	19	383	12	622	3	222	3	332	2.47	2.04	1.46	3.55	3.28	1.52	2.32	2.89	1.46	3.47	813297	2439214
2	12	7	3.14	22	0	29	588	12	828	29	589	12	828	3	154	3	315	4.49	3.93	1.22	6.97	5.27	2.89	1.20	3.39	1.20	3.16	2208894	5314753
2	12	8	2.75	22	0	28	567	12	807	28	567	12	807	3	176	3	352	4.66	4.07	1.24	7.17	5.47	2.98	1.33	3.54	1.24	3.52	2231332	5350393
2	12	9	2.44	22	0	28	549	12	789	27	550	12	789	3	200	3	390	4.81	4.19	1.25	7.39	5.63	3.08	1.46	3.68	1.25	3.88	2264596	5405004
2	12	10	2.2	22	0	27	535	12	775	27	535	12	775	3	222	3	427	4.99	4.34	1.27	7.61	5.82	3.18	2.76	3.84	1.27	4.23	2303113	5469378
2	12	11	2	22	0	26	522	12	762	26	523	12	763	3	240	3	465	5.14	4.46	1.29	7.81	5.98	3.27	2.98	3.98	1.29	4.57	2341828	5532137
2	12	12	1.83	22	0	18	355	12	595	18	355	12	595	3	261	3	365	2.46	2.01	1.09	3.47	3.31	1.49	2.54	1.88	1.09	3.90	761704	2337708
2	12	7	3.57	25	1.5	23	458	12	698	23	458	12	698	3	136	3	223	2.27	1.92	1.54	3.38	2.92	1.42	1.58	3.41	1.42	2.35	858915	2496946
2	12	8	3.125	25	1.5	22	441	12	681	22	441	12	681	3	154	3	249	2.37	2.00	1.58	3.50	3.07	1.48	1.76	3.58	1.48	2.62	870338	2534980
2	12	9	2.78	25	1.5	21	424	12	664	21	425	12	664	3	176	3	273	2.43	2.04	1.56	3.56	3.17	1.51	1.92	3.62	1.51	2.87	866487	2536625
2	12	10	2.5	25	1.5	20	408	12	648	20	408	12	648	3	194	3	296	2.47	2.06	1.39	3.58	3.24	1.53	2.08	3.32	1.39	3.11	852762	2515287
2	12	11	2.27	25	1.5	20	392	12	632	20	392	12	632	3	214	3	319	2.47	2.05	1.56	3.57	3.27	1.52	2.24	3.04	1.52	3.34	829958	2472496
2	12	12	1.83	25	1.5	18	355	12	595	18	355	12	595	3	261	3	365	1.77	1.40	1.33	3.47	2.13	1.01	2.51	2.23	1.01	3.90	761704	2337708
2	16	3	1.5	4.5	0	15	296	12	694	15	296	12	606	3	421	3	379	1.45	1.17	1.46	2.12	2.07	1.00	2.45	1.22	1.00	5.55	956578	2939103
2	16	3	2	6	0.75	16	320	12	718	16	320	12	698	3	320	3	315	1.41	1.17	1.38	1.90	2.07	1.00	2.32	1.09	1.00	4.31	874790	2703956
2	16	4	1.5	6	0.75	15	293	12	691	15	293	12	611	3	421	3	377	1.45	1.17	1.39	2.08	2.07	1.00	2.48	1.24	1.00	5.53	932526	2885372
2	16	3	2.33	7	1.25	17	345	12	743	17	344	12	732	3	276	3	288	1.40	1.17	2.56	1.93	2.00	1.00	2.04	2.07	1.00	3.83	914300	2768302
2	16	4	1.75	7	1.25	15	301	12	700	15	301	12	667	3	364	3	348	1.43	1.17	2.02	1.91	2.10	1.00	2.41	1.64	1.00	4.80	857869	2689783
2	16	3	2.67	8	0	18	367	12	765	18	367	12	765	3	242	3	259	1.45	1.22	1.58	1.93	2.06	1.04	1.84	1.23	1.04	3.44	941697	2808549
2	16	4	2	8	0	16	313	12	713	16	313	12	711	3	320	3	320	1.41	1.17	1.55	1.83	2.09	1.00	2.28	1.23	1.00	4.28	831518	2606249
2	16	5	1.6	8	0	15	294	12	691	15	294	12	638	3	400	3	368	1.44	1.17	1.55	1.97	2.08	1.00	2.46	1.36	1.00	5.18	878906	2751808
2	16	3	3.17	9.5	0.75	18	365	12	862	18	366	12	862	3	205	3	238	1.45	1.23	2.16	1.88	2.08	1.06	1.01	1.60	1.01	3.26	1018594	3031843
2	16	4	2.375	9.5	0.75	17	343	12	744	17	344	12	745	3	267	3	283	1.47	1.24	2.06	1.88	2.15	1.06	2.02	1.65	1.06	3.76	893184	2718998

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	16	5	1.9	9.5	0.75	15	303	12	703	15	303	12	703	3	333	3	328	1.43	1.18	2.05	1.79	2.15	1.01	2.36	1.64	1.01	4.44	805970	2556273
2	16	6	1.583	9.5	0.75	15	292	12	691	15	291	12	637	3	400	3	371	1.45	1.17	1.77	1.97	2.08	1.00	2.48	1.55	1.00	5.24	878935	2755943
2	16	3	3.67	11	1.5	18	354	12	997	18	355	12	959	3	178	3	229	1.37	1.16	3.23	1.86	1.94	1.00	1.02	2.40	1.00	3.26	1151627	3436821
2	16	4	2.75	11	1.5	19	371	12	772	19	372	12	773	3	235	3	254	1.43	1.20	3.04	1.93	1.99	1.03	1.82	2.50	1.03	3.37	951673	2828533
2	16	5	2.2	11	1.5	17	331	12	729	17	331	12	727	3	296	3	299	1.41	1.17	3.05	1.86	2.02	1.00	2.15	2.50	1.00	3.98	868247	2672544
2	16	6	1.833	11	1.5	15	303	12	702	15	303	12	686	3	348	3	337	1.42	1.17	3.18	1.85	2.08	1.00	2.44	2.56	1.00	4.60	832825	2623927
2	16	7	1.57	11	1.5	14	281	12	680	14	281	12	651	3	400	3	365	1.44	1.17	3.13	1.85	2.14	1.00	2.68	2.62	1.00	5.20	806026	2590567
2	16	4	2.875	11.5	1.75	19	381	12	779	19	381	12	779	3	222	3	246	1.45	1.23	3.38	1.95	2.02	1.05	1.76	2.75	1.05	3.25	968499	2857811
2	16	5	2.3	11.5	1.75	17	337	12	738	17	338	12	738	3	276	3	289	1.42	1.19	3.39	1.87	2.04	1.02	2.08	2.74	1.02	3.85	880444	2695198
2	16	6	1.917	11.5	1.75	15	307	12	707	15	307	12	700	3	333	3	328	1.42	1.17	3.47	1.83	2.08	1.00	2.37	2.77	1.00	4.43	825786	2600568
2	16	7	1.643	11.5	1.75	14	285	12	684	14	285	12	665	3	381	3	355	1.43	1.17	3.42	1.82	2.14	1.00	2.60	2.83	1.00	5.00	797437	2562212
2	16	4	3.25	13	2.5	18	364	12	878	18	364	12	878	3	200	3	235	1.43	1.22	3.39	1.86	2.04	1.04	1.01	2.64	1.01	3.24	1026965	3060569
2	16	5	2.6	13	2.5	18	361	12	761	18	361	12	761	3	250	3	265	1.48	1.25	3.30	1.92	2.11	1.07	1.91	2.75	1.07	3.51	930162	2788077
2	16	6	2.167	13	2.5	16	327	12	726	16	327	12	726	3	296	3	302	1.46	1.21	3.33	1.85	2.13	1.04	2.18	2.74	1.04	4.02	856514	2648998
2	16	7	1.857	13	2.5	15	299	12	699	15	299	12	699	3	348	3	331	1.43	1.18	3.39	1.79	2.14	1.01	2.41	2.73	1.01	4.52	797494	2540744
2	16	4	3.625	14.5	3.25	18	354	12	979	18	354	12	953	3	178	3	228	1.37	1.16	3.50	1.83	1.93	1.00	1.02	2.64	1.00	3.24	1117489	3344357
2	16	5	2.9	14.5	3.25	19	382	12	782	19	382	12	782	3	222	3	244	1.45	1.23	3.43	1.95	2.00	1.05	1.76	2.79	1.05	3.24	972367	2866690
2	16	6	2.417	14.5	3.25	17	347	12	747	17	347	12	747	3	267	3	279	1.43	1.20	3.48	1.89	2.02	1.02	2.02	2.78	1.02	3.71	900207	2731639
2	16	7	2.07	14.5	3.25	16	320	12	717	16	319	12	716	3	308	3	312	1.41	1.17	3.34	1.84	2.04	1.00	2.25	2.78	1.00	4.16	842647	2623236
2	16	4	2.875	11.5	0	19	381	12	779	19	381	12	779	3	222	3	246	1.45	1.23	1.54	1.95	2.02	1.05	1.76	1.25	1.05	3.25	968499	2857811
2	16	5	2.3	11.5	0	17	337	12	738	17	338	12	738	3	276	3	289	1.42	1.19	1.54	1.87	2.04	1.02	2.08	1.25	1.02	3.85	880444	2695198
2	16	6	1.917	11.5	0	15	307	12	707	15	307	12	700	3	333	3	328	1.42	1.17	1.58	1.83	2.08	1.00	2.37	1.26	1.00	4.43	825786	2600568
2	16	7	1.643	11.5	0	14	285	12	684	14	285	12	665	3	381	3	355	1.43	1.17	1.55	1.82	2.14	1.00	2.60	1.29	1.00	5.00	797437	2562212
2	16	4	3.25	13	0.75	18	364	12	878	18	364	12	878	3	200	3	235	1.43	1.22	2.04	1.86	2.04	1.04	1.01	1.59	1.01	3.24	1026965	3060569
2	16	5	2.6	13	0.75	18	361	12	761	18	361	12	761	3	250	3	265	1.48	1.25	1.98	1.92	2.11	1.07	1.91	1.65	1.07	3.51	930162	2788077
2	16	6	2.167	13	0.75	16	327	12	726	16	327	12	726	3	296	3	302	1.46	1.21	2.00	1.85	2.13	1.04	2.18	1.65	1.04	4.02	856514	2648998
2	16	7	1.857	13	0.75	15	299	12	699	15	299	12	699	3	348	3	331	1.43	1.18	2.03	1.79	2.14	1.01	2.41	1.64	1.01	4.52	797494	2540744
2	16	4	3.625	14.5	1.5	18	354	12	979	18	354	12	953	3	178	3	228	1.37	1.16	3.17	1.83	1.93	1.00	1.02	2.40	1.00	3.24	1117489	3344357
2	16	5	2.9	14.5	1.5	19	382	12	782	19	382	12	782	3	222	3	244	1.45	1.23	3.11	1.95	2.00	1.05	1.76	2.53	1.05	3.24	972367	2866690
2	16	6	2.417	14.5	1.5	17	347	12	747	17	347	12	747	3	267	3	279	1.43	1.20	2.69	1.89	2.02	1.02	2.02	2.15	1.02	3.71	900207	2731639
2	16	7	2.07	14.5	1.5	16	320	12	717	16	319	12	716	3	308	3	312	1.41	1.17	2.21	1.84	2.04	1.00	2.25	1.84	1.00	4.16	842647	2623236
2	16	5	3	15	0	19	382	12	800	19	382	12	800	3	216	3	240	1.45	1.23	1.56	1.94	2.01	1.05	1.00	1.24	1.00	3.20	986681	2906938
2	16	6	2.5	15	0	18	354	12	753	18	354	12	753	3	258	3	272	1.45	1.22	1.48	1.91	2.05	1.04	1.97	1.25	1.04	3.61	915264	2759692
2	16	7	2.14	15	0	16	324	12	724	16	325	12	725	3	296	3	305	1.42	1.18	1.51	1.84	2.05	1.01	2.20	1.24	1.01	4.06	851526	2640217
2	16	8	1.875	15	0	15	303	12	701	15	302	12	697	3	333	3	330	1.42	1.17	1.47	1.81	2.08	1.00	2.41	1.25	1.00	4.49	811628	2569929
2	16	9	1.67	15	0	15	291	12	691	15	290	12	663	3	381	3	355	1.44	1.17	1.51	1.87	2.09	1.00	2.47	1.31	1.00	4.97	828710	2632406
2	16	5	3.3	16.5	0.75	18	363	12	888	18	363	12	888	3	195	3	234	1.43	1.22	2.05	1.85	2.03	1.04	1.01	1.58	1.01	3.23	1031971	3078233
2	16	6	2.75	16.5	0.75	19	371	12	772	19	372	12	773	3	235	3	254	1.49	1.27	2.01	1.93	2.11	1.08	1.84	1.65	1.08	3.37	951673	2828533
2	16	7	2.357	16.5	0.75	17	343	12	741	17	343	12	741	3	276	3	284	1.48	1.24	2.05	1.88	2.12	1.06	2.05	1.65	1.06	3.77	890008	2710847
2	16	8	2.06	16.5	0.75	16	318	12	717	16	318	12	717	3	308	3	313	1.46	1.21	1.97	1.83	2.13	1.04	2.27	1.64	1.04	4.18	838235	2615657
2	16	9	1.83	16.5	0.75	15	297	12	695	15	297	12	695	3	348	3	333	1.43	1.17	1.99	1.78	2.13	1.01	2.42	1.62	1.01	4.56	790737	2525826
2	16	5	3.6	18	1.5	18	354	12	969	18	354	12	950	3	182	3	228	1.37	1.17	3.13	1.82	1.93	1.00	1.02	2.38	1.00	3.23	1100083	3296452
2	16	6	3	18	1.5	19	383	12	797	19	384	12	797	3	216	3	240	1.45	1.23	3.15	1.94	2.00	1.05	1.00	2.51	1.00	3.19	985378	2900770
2	16	7	2.57	18	1.5	18	359	12	759	18	359	12	759	3	250	3	267	1.45	1.22	2.74	1.91	2.03	1.04	1.93	2.29	1.04	3.54	927070	2782914
2	16	8	2.25	18	1.5	17	334	12	733	17	334	12	733	3	286	3	294	1.43	1.19	2.45	1.86	2.04	1.02	2.13	2.00	1.02	3.91	871819	2677766
2	16	9	2	18	1.5	16	313	12	712	16	313	12	711	3	320	3	320	1.42	1.17	2.12	1.82	2.05	1.00	2.33	1.77	1.00	4.27	828973	2599467
2	16	6	3.08	18.5	0	19	378	12	821	19	379	12	821	3	211	3	238	1.45	1.23	1.48	1.92	2.01	1.05	1.00	1.23	1.00	3.20	1000213	2951804
2	16	7	2.64	18.5	0	18	364	12	764	18	364	12	764	3	242	3	262	1.46	1.23	1.50	1.92	2.04	1.05	1.90	1.25	1.05	3.47	936726	2800569
2	16	8	2.32	18.5	0	17	340	12	738	17	340	12	738	3	276	3	287	1.45	1.21	1.54	1.88	2.06	1.03	2.08	1.25	1.03	3.82	883447	2698453
2	16	9	2.06	18.5	0	16	318	12	717	16	318	12	717	3	308	3	313	1.43	1.18	1.50	1.83	2.07	1.01	2.28	1.25	1.01	4.18	838235	2615657
2	16	10	1.85	18.5	0	15	300	12	699	15	300	12	695	3	348	3	332	1.42	1.17	1.46	1.80	2.09	1.00	2.43	1.25	1.00	4.53	804725	2557287
2	16	6	3.58	21.5	1.5	18	354	12	961	18	354	12	947	3	182	3	228	1.37	1.16	3.09	1.82	1.93	1.00	1.02	2.37	1.00	3.22	1086226	3258348
2	16	7	3.07	21.5	1.5	19	380	12	816	19	380	12	816	3	211	3	238	1.45	1.23	2.99	1.93	2.00	1.05	1.00	2.49	1.00	3.19	996989	2939964
2	16	8	2.69	21.5	1.5	18	368	12	767	18	368	12	767	3	242	3	258	1.46	1.23	2.89	1.93	2.03	1.05	1.87	2.40	1.05	3.42	944245	2813915
2	16	9	2.39	21.5	1.5	17	345	12	745	17	345	12	745	3	267	3	281	1.45	1.21	2.49	1.89	2.04	1.03	2.05	2.12	1.03	3.74	896528	2725089
2	16	10	2.15	21.5	1.5	16	326	12	724	16	326	12	724	3	296	3	303	1.43	1.19	2.31	1.85	2.05	1.02	2.21	1.91	1.02	4.04	853878	2643427
2	16	7	3.14	22	0	19	375	12	837	19	376	12	837	3	205	3	237	1.44	1.22	1.50	1.91	2.00	1.04	1.01	1.22	1.01	3.20	1009070	2983291
2	16	8	2.75	22	0	19	371	12	772	19	372	12	773	3	235	3	254	1.47	1.24	1.52	1.93	2.04	1.06	1.84	1.25	1.06	3.37	951673	2828533
2	16	9	2.44	22	0	17	349	12	749	17	349	12	749	3	267	3	277	1.45	1.22	1.47	1.89	2.05	1.04	2.01	1.25	1.04	3.68	905445	2742050
2	16	10	2.2	22	0	17	330	12	729	17	330	12	729	3	296	3	299	1.44	1.20	1.52	1.86	2.07	1.03	2.17	1.25	1.03	3.98	863978	2663579
2	16	11	2	22	0	16	313	12	711	16	313	12	711	3	320	3	320	1.43	1.18	1.48	1.82	2.07	1.01	2.33	1.25	1.01	4.27	826433	2592698
2	16	12	1.83	22	0	15	299	12	696	15	299	12	692	3	348	3	334	1.42	1.17	1.45	1.80	2.09	1.00	2.43	1.25	1.00	4.56	801647	2550233

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	16	7	3.57	25	1.5	18	354	12	956	18	354	12	946	3	182	3	227	1.37	1.16	3.07	1.81	1.93	1.00	1.02	2.36	1.00	3.21	1076842	3232711
2	16	8	3.125	25	1.5	19	377	12	831	19	378	12	831	3	205	3	237	1.44	1.23	3.03	1.92	1.99	1.05	1.01	2.48	1.01	3.19	1007261	2973763
2	16	9	2.78	25	1.5	19	374	12	774	19	374	12	774	3	235	3	252	1.47	1.24	3.02	1.94	2.03	1.06	1.83	2.48	1.06	3.34	957356	2839251
2	16	10	2.5	25	1.5	18	354	12	753	18	354	12	753	3	258	3	272	1.46	1.22	2.64	1.91	2.05	1.04	1.98	2.23	1.04	3.61	915264	2759692
2	16	11	2.27	25	1.5	17	336	12	734	17	336	12	734	3	286	3	292	1.44	1.20	2.48	1.87	2.05	1.03	2.12	2.02	1.03	3.88	875199	2683192
2	16	12	1.83	25	1.5	18	361	12	759	18	361	12	648	3	348	3	375	1.46	1.19	1.95	2.64	1.78	1.00	2.60	2.06	1.00	4.98	1314107	3682823
2	20	3	1.5	4.5	0	16	311	12	871	16	311	12	794	3	526	3	413	1.35	1.12	1.41	1.92	1.94	1.00	1.51	1.21	1.00	6.97	1707646	4779298
2	20	3	2	6	0.75	17	340	12	897	17	340	12	832	3	400	3	342	1.32	1.12	1.35	1.74	1.94	1.00	1.41	1.09	1.00	5.38	1568154	4412387
2	20	4	1.5	6	0.75	15	308	12	865	15	308	12	789	3	526	3	410	1.35	1.12	1.43	1.88	1.94	1.00	1.52	1.23	1.00	6.92	1657093	4669896
2	20	3	2.33	7	1.25	18	368	12	925	18	368	12	841	3	345	3	313	1.31	1.12	2.52	1.76	1.87	1.00	1.24	2.06	1.00	4.76	1633061	4512762
2	20	4	1.75	7	1.25	16	319	12	877	16	319	12	800	3	455	3	379	1.33	1.12	1.97	1.74	1.96	1.00	1.48	1.65	1.00	6.01	1544711	4398244
2	20	3	2.67	8	0	19	383	12	943	19	383	12	857	3	303	3	278	1.30	1.12	1.49	1.68	1.87	1.00	1.12	1.18	1.00	4.24	1585723	4384853
2	20	4	2	8	0	17	333	12	891	17	333	12	812	3	400	3	348	1.32	1.12	1.51	1.67	1.96	1.00	1.40	1.23	1.00	5.35	1495721	4260375
2	20	5	1.6	8	0	15	309	12	867	15	309	12	791	3	500	3	401	1.34	1.12	1.59	1.78	1.95	1.00	1.52	1.35	1.00	6.50	1569202	4472801
2	20	3	3.17	9.5	0.75	20	399	12	993	20	400	12	903	3	256	3	244	1.29	1.12	2.02	1.63	1.85	1.00	1.00	1.52	1.00	3.76	1600660	4416755
2	20	4	2.375	9.5	0.75	18	356	12	913	18	356	12	831	3	333	3	300	1.31	1.12	2.00	1.62	1.93	1.00	1.22	1.57	1.00	4.61	1476400	4174868
2	20	5	1.9	9.5	0.75	16	319	12	878	16	319	12	801	3	417	3	354	1.32	1.12	1.98	1.62	2.00	1.00	1.45	1.63	1.00	5.55	1426369	4127062
2	20	6	1.583	9.5	0.75	15	307	12	865	15	307	12	789	3	500	3	403	1.35	1.12	1.74	1.78	1.95	1.00	1.52	1.54	1.00	6.56	1562547	4461687
2	20	3	3.67	11	1.5	22	448	12	1005	22	448	12	910	3	222	3	218	1.28	1.12	3.04	1.72	1.74	1.00	1.35	2.35	1.00	3.29	1719958	4599030
2	20	4	2.75	11	1.5	20	391	12	951	20	391	12	864	3	294	3	272	1.30	1.12	3.08	1.71	1.82	1.00	1.10	2.43	1.00	4.15	1622107	4455576
2	20	5	2.2	11	1.5	18	351	12	911	18	351	12	829	3	370	3	324	1.32	1.12	3.02	1.70	1.89	1.00	1.31	2.50	1.00	4.97	1550903	4356801
2	20	6	1.833	11	1.5	16	321	12	879	16	321	12	801	3	435	3	366	1.33	1.12	3.10	1.69	1.95	1.00	1.50	2.56	1.00	5.75	1496489	4284403
2	20	7	1.57	11	1.5	15	296	12	856	15	296	12	782	3	500	3	398	1.34	1.12	3.07	1.68	2.01	1.00	1.65	2.63	1.00	6.54	1457545	4246546
2	20	4	2.875	11.5	1.75	20	397	12	955	20	397	12	867	3	278	3	262	1.30	1.12	3.36	1.68	1.82	1.00	1.06	2.62	1.00	3.99	1605574	4407986
2	20	5	2.3	11.5	1.75	18	357	12	914	18	357	12	831	3	345	3	311	1.31	1.12	3.28	1.68	1.89	1.00	1.26	2.70	1.00	4.77	1535057	4308114
2	20	6	1.917	11.5	1.75	16	326	12	883	16	326	12	805	3	417	3	355	1.33	1.12	3.37	1.67	1.95	1.00	1.45	2.77	1.00	5.53	1480148	4236562
2	20	7	1.643	11.5	1.75	15	301	12	859	15	301	12	785	3	476	3	386	1.34	1.12	3.34	1.66	2.01	1.00	1.60	2.84	1.00	6.27	1439079	4191567
2	20	4	3.25	13	2.5	20	403	12	1004	20	403	12	913	3	250	3	241	1.29	1.12	3.26	1.63	1.83	1.00	1.53	2.52	1.00	3.71	1621938	4465006
2	20	5	2.6	13	2.5	19	372	12	931	19	372	12	847	3	312	3	281	1.30	1.12	3.22	1.63	1.88	1.00	1.15	2.58	1.00	4.30	1510390	4228662
2	20	6	2.167	13	2.5	17	340	12	900	17	340	12	820	3	370	3	324	1.32	1.12	3.31	1.62	1.94	1.00	1.32	2.65	1.00	4.98	1457982	4162221
2	20	7	1.857	13	2.5	16	315	12	873	16	315	12	797	3	435	3	358	1.33	1.12	3.27	1.61	2.00	1.00	1.48	2.71	1.00	5.64	1413533	4104098
2	20	4	3.625	14.5	3.25	22	441	12	1004	22	442	12	909	3	222	3	219	1.28	1.12	3.36	1.70	1.75	1.00	1.38	2.60	1.00	3.32	1694782	4553735
2	20	5	2.9	14.5	3.25	20	399	12	957	20	399	12	868	3	278	3	260	1.30	1.12	3.26	1.69	1.81	1.00	1.06	2.66	1.00	3.96	1612295	4420394
2	20	6	2.417	14.5	3.25	18	366	12	923	18	366	12	839	3	333	3	300	1.31	1.12	3.35	1.68	1.86	1.00	1.22	2.72	1.00	4.58	1553158	4334829
2	20	7	2.07	14.5	3.25	17	339	12	897	17	339	12	817	3	385	3	339	1.32	1.12	3.30	1.67	1.91	1.00	1.38	2.78	1.00	5.20	1508145	4278132
2	20	4	2.875	11.5	0	20	397	12	955	20	397	12	867	3	278	3	262	1.30	1.12	1.53	1.68	1.82	1.00	1.06	1.19	1.00	3.99	1605574	4407986
2	20	5	2.3	11.5	0	18	357	12	914	18	357	12	831	3	345	3	311	1.31	1.12	1.50	1.68	1.89	1.00	1.26	1.23	1.00	4.77	1535057	4308114
2	20	6	1.917	11.5	0	16	326	12	883	16	326	12	805	3	417	3	355	1.33	1.12	1.54	1.67	1.95	1.00	1.45	1.26	1.00	5.53	1480148	4236562
2	20	7	1.643	11.5	0	15	301	12	859	15	301	12	785	3	476	3	386	1.34	1.12	1.52	1.66	2.01	1.00	1.60	1.29	1.00	6.27	1439079	4191567
2	20	4	3.25	13	0.75	20	403	12	1004	20	403	12	913	3	250	3	241	1.29	1.12	1.96	1.63	1.83	1.00	1.53	1.52	1.00	3.71	1621938	4465006
2	20	5	2.6	13	0.75	19	372	12	931	19	372	12	847	3	312	3	281	1.30	1.12	1.94	1.63	1.88	1.00	1.15	1.55	1.00	4.30	1510390	4228662
2	20	6	2.167	13	0.75	17	340	12	900	17	340	12	820	3	370	3	324	1.32	1.12	1.99	1.62	1.94	1.00	1.32	1.59	1.00	4.98	1457982	4162221
2	20	7	1.857	13	0.75	16	315	12	873	16	315	12	797	3	435	3	358	1.33	1.12	1.97	1.61	2.00	1.00	1.48	1.63	1.00	5.64	1413533	4104098
2	20	4	3.625	14.5	1.5	22	441	12	1004	22	442	12	909	3	222	3	219	1.28	1.12	3.05	1.70	1.75	1.00	1.38	2.36	1.00	3.32	1694782	4553735
2	20	5	2.9	14.5	1.5	20	399	12	957	20	399	12	868	3	278	3	260	1.30	1.12	2.96	1.69	1.81	1.00	1.06	2.41	1.00	3.96	1612295	4420394
2	20	6	2.417	14.5	1.5	18	366	12	923	18	366	12	839	3	333	3	300	1.31	1.12	2.59	1.68	1.86	1.00	1.22	2.10	1.00	4.58	1553158	4334829
2	20	7	2.07	14.5	1.5	17	339	12	897	17	339	12	817	3	385	3	339	1.32	1.12	2.19	1.67	1.91	1.00	1.38	1.84	1.00	5.20	1508145	4278132
2	20	5	3	15	0	20	403	12	962	20	403	12	873	3	270	3	253	1.29	1.12	1.46	1.67	1.81	1.00	1.03	1.18	1.00	3.85	1602465	4393087
2	20	6	2.5	15	0	19	370	12	927	19	370	12	843	3	323	3	291	1.31	1.12	1.49	1.66	1.86	1.00	1.19	1.21	1.00	4.45	1542641	4304434
2	20	7	2.14	15	0	17	343	12	901	17	343	12	820	3	370	3	329	1.32	1.12	1.47	1.66	1.91	1.00	1.35	1.23	1.00	5.05	1500548	4253623
2	20	8	1.875	15	0	16	320	12	880	16	320	12	803	3	417	3	359	1.33	1.12	1.52	1.65	1.96	1.00	1.48	1.25	1.00	5.63	1459680	4203306
2	20	9	1.67	15	0	15	307	12	865	15	307	12	790	3	476	3	385	1.34	1.12	1.48	1.69	1.96	1.00	1.52	1.31	1.00	6.22	1481145	4276400
2	20	5	3.3	16.5	0.75	20	405	12	1004	20	406	12	912	3	244	3	237	1.29	1.12	1.95	1.62	1.82	1.00	1.52	1.51	1.00	3.65	1613810	4440982
2	20	6	2.75	16.5	0.75	19	381	12	940	19	381	12	855	3	294	3	268	1.30	1.12	1.94	1.62	1.86	1.00	1.10	1.53	1.00	4.10	1515970	4227471
2	20	7	2.357	16.5	0.75	18	354	12	911	18	354	12	830	3	345	3	302	1.31	1.12	1.91	1.61	1.91	1.00	1.24	1.56	1.00	4.64	1467315	4157208
2	20	8	2.06	16.5	0.75	17	331	12	890	17	331	12	811	3	385	3	336	1.32	1.12	1.97	1.61	1.95	1.00	1.38	1.59	1.00	5.18	1435068	4124586
2	20	9	1.83	16.5	0.75	16	313	12	870	16	313	12	794	3	435	3	361	1.33	1.12	1.93	1.61	1.99	1.00	1.49	1.61	1.00	5.70	1409736	4098319
2	20	5	3.6	18	1.5	22	437	12	1004	22	438	12	909	3	227	3	220	1.28	1.12	3.03	1.68	1.75	1.00	1.39	2.34	1.00	3.35	1680290	4528425
2	20	6	3	18	1.5	20	404	12	961	20	404	12	872	3	270	3	253	1.29	1.12	2.94	1.68	1.80	1.00	1.04	2.39	1.00	3.84	1605493	4397242
2	20	7	2.57	18	1.5	19	375	12	934	19	375	12	849	3	312	3	285	1.31	1.12	2.75	1.67	1.84	1.00	1.17	2.20	1.00	4.36	1558926	4335291
2	20	8	2.25	18	1.5	18	352	12	909	18	352	12	827	3	357	3	316	1.32	1.12	2.37	1.66	1.89	1.00	1.30	1.96	1.00	4.85	1515987	4272790
2	20	9	2	18	1.5	17	332	12	889	17	332	12	810	3	400	3	347	1.32	1.12	2.09	1.66	1.93	1.00	1.42	1.77	1.00	5.33	1481374	4228329

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	20	6	3.08	18.5	0	20	407	12	967	20	407	12	877	3	263	3	247	1.29	1.12	1.45	1.67	1.80	1.00	1.02	1.17	1.00	3.77	1604519	4392822
2	20	7	2.64	18.5	0	19	379	12	936	19	379	12	850	3	303	3	279	1.30	1.12	1.49	1.66	1.84	1.00	1.14	1.19	1.00	4.25	1551219	4310057
2	20	8	2.32	18.5	0	18	355	12	915	18	355	12	832	3	345	3	308	1.31	1.12	1.48	1.65	1.89	1.00	1.27	1.21	1.00	4.73	1511856	4260576
2	20	9	2.06	18.5	0	17	335	12	894	17	335	12	814	3	385	3	338	1.32	1.12	1.46	1.65	1.93	1.00	1.39	1.23	1.00	5.21	1476674	4213702
2	20	10	1.85	18.5	0	16	317	12	877	16	317	12	800	3	435	3	361	1.33	1.12	1.45	1.64	1.96	1.00	1.49	1.25	1.00	5.69	1447262	4180354
2	20	6	3.58	21.5	1.5	22	434	12	1004	22	435	12	910	3	227	3	221	1.28	1.12	3.01	1.67	1.75	1.00	1.40	2.33	1.00	3.37	1670039	4510855
2	20	7	3.07	21.5	1.5	20	407	12	966	20	407	12	876	3	263	3	248	1.29	1.12	2.94	1.67	1.79	1.00	1.02	2.37	1.00	3.78	1606170	4395927
2	20	8	2.69	21.5	1.5	19	382	12	942	19	382	12	856	3	303	3	275	1.30	1.12	2.75	1.66	1.83	1.00	1.13	2.28	1.00	4.20	1563620	4335954
2	20	9	2.39	21.5	1.5	18	361	12	920	18	361	12	837	3	333	3	301	1.31	1.12	2.53	1.66	1.87	1.00	1.24	2.06	1.00	4.62	1525482	4281123
2	20	10	2.15	21.5	1.5	17	343	12	901	17	343	12	820	3	370	3	327	1.32	1.12	2.25	1.65	1.90	1.00	1.35	1.88	1.00	5.03	1493568	4237563
2	20	7	3.14	22	0	21	410	12	969	21	410	12	879	3	256	3	243	1.29	1.12	1.45	1.66	1.79	1.00	1.00	1.16	1.00	3.70	1600367	4378581
2	20	8	2.75	22	0	19	385	12	944	19	385	12	857	3	294	3	270	1.30	1.12	1.43	1.65	1.83	1.00	1.11	1.18	1.00	4.12	1556348	4314082
2	20	9	2.44	22	0	18	364	12	923	18	364	12	839	3	333	3	296	1.31	1.12	1.48	1.65	1.87	1.00	1.22	1.20	1.00	4.54	1525004	4275121
2	20	10	2.2	22	0	17	346	12	903	17	346	12	822	3	370	3	321	1.32	1.12	1.46	1.64	1.90	1.00	1.32	1.22	1.00	4.93	1487025	4216457
2	20	11	2	22	0	16	329	12	889	16	329	12	811	3	400	3	346	1.32	1.12	1.45	1.64	1.93	1.00	1.43	1.23	1.00	5.33	1460673	4188564
2	20	12	1.83	22	0	16	315	12	875	16	315	12	799	3	435	3	363	1.33	1.12	1.44	1.64	1.96	1.00	1.50	1.25	1.00	5.74	1441718	4171405
2	20	7	3.57	25	1.5	22	432	12	1004	22	433	12	910	3	227	3	222	1.28	1.12	2.87	1.67	1.75	1.00	1.41	2.32	1.00	3.37	1661668	4495663
2	20	8	3.125	25	1.5	21	410	12	967	21	410	12	877	3	256	3	244	1.29	1.12	2.93	1.66	1.78	1.00	1.01	2.36	1.00	3.71	1600932	4378592
2	20	9	2.78	25	1.5	19	388	12	945	19	388	12	858	3	294	3	267	1.30	1.12	2.84	1.66	1.82	1.00	1.10	2.34	1.00	4.08	1562871	4323139
2	20	10	2.5	25	1.5	18	368	12	928	18	368	12	844	3	323	3	291	1.31	1.12	2.65	1.65	1.85	1.00	1.20	2.13	1.00	4.45	1532780	4287241
2	20	11	2.27	25	1.5	18	352	12	910	18	352	12	828	3	357	3	314	1.32	1.12	2.38	1.65	1.88	1.00	1.29	1.97	1.00	4.81	1506253	4251218
2	20	12	1.83	25	1.5	19	379	12	937	19	379	12	847	3	435	3	406	1.35	1.12	2.01	2.32	1.64	1.00	1.57	2.00	1.00	6.14	2243011	5806366
2	24	3	1.5	4.5	0	17	331	12	1050	17	331	12	968	3	429	2	460	1.31	1.10	1.51	1.82	1.88	1.00	2.41	1.24	1.00	8.40	2849063	7390003
2	24	3	2	6	0.75	18	363	12	1083	18	363	12	996	3	480	3	380	1.29	1.10	1.45	1.66	1.89	1.00	2.19	1.13	1.00	6.50	2632476	6878689
2	24	4	1.5	6	0.75	16	327	12	1045	16	327	12	964	3	429	2	456	1.31	1.10	1.48	1.78	1.88	1.00	2.45	1.26	1.00	8.36	2768464	7233249
2	24	3	2.33	7	1.25	20	393	12	1113	20	393	12	1026	3	414	3	346	1.28	1.10	2.65	1.68	1.82	1.00	1.96	2.12	1.00	5.84	2729318	7036453
2	24	4	1.75	7	1.25	17	340	12	1060	17	340	12	977	3	545	3	421	1.30	1.10	2.06	1.66	1.91	1.00	2.35	1.70	1.00	7.27	2596280	6852486
2	24	3	2.67	8	0	21	410	12	1129	21	410	12	1043	3	364	3	306	1.27	1.10	1.57	1.61	1.83	1.00	1.79	1.23	1.00	5.25	2637719	6822876
2	24	4	2	8	0	18	356	12	1075	18	356	12	989	3	480	3	386	1.29	1.10	1.63	1.60	1.91	1.00	2.18	1.27	1.00	6.45	2513186	6640700
2	24	5	1.6	8	0	16	329	12	1046	16	329	12	964	3	400	2	445	1.31	1.10	1.65	1.70	1.90	1.00	2.42	1.39	1.00	7.85	2624532	6931007
2	24	3	3.17	9.5	0.75	22	437	13	1155	22	437	12	1068	3	308	3	263	1.26	1.11	2.08	1.56	1.82	1.00	1.60	1.57	1.00	4.62	2600201	6710982
2	24	4	2.375	9.5	0.75	19	381	12	1100	19	381	12	1011	3	400	3	333	1.28	1.11	2.09	1.55	1.89	1.00	1.90	1.62	1.00	5.60	2478198	6519354
2	24	5	1.9	9.5	0.75	17	341	12	1059	17	341	12	975	3	500	3	393	1.29	1.10	2.13	1.55	1.95	1.00	2.28	1.68	1.00	6.69	2396804	6424675
2	24	6	1.583	9.5	0.75	16	326	12	1045	16	326	12	964	3	414	2	447	1.31	1.10	1.82	1.69	1.89	1.00	2.45	1.58	1.00	7.92	2611511	6914495
2	24	3	3.67	11	1.5	24	478	13	1196	24	478	12	1108	3	267	3	237	1.26	1.10	3.12	1.63	1.73	1.00	1.50	2.44	1.00	4.28	2827055	7153175
2	24	4	2.75	11	1.5	21	418	13	1137	21	418	12	1051	3	353	3	299	1.27	1.10	3.13	1.63	1.79	1.00	1.78	2.51	1.00	5.17	2686867	6917634
2	24	5	2.2	11	1.5	19	376	12	1094	19	376	12	1007	3	444	3	359	1.28	1.10	3.16	1.62	1.84	1.00	2.03	2.57	1.00	5.98	2585857	6752724
2	24	6	1.833	11	1.5	17	342	12	1062	17	342	12	979	3	522	3	406	1.29	1.10	3.23	1.61	1.90	1.00	2.36	2.64	1.00	6.95	2511208	6669072
2	24	7	1.57	11	1.5	16	315	12	1035	16	315	12	956	3	414	2	442	1.31	1.10	3.20	1.61	1.95	1.00	2.67	2.70	1.00	7.91	2450777	6605623
2	24	4	2.875	11.5	1.75	21	424	13	1143	21	424	12	1057	3	333	3	288	1.27	1.10	3.42	1.61	1.79	1.00	1.73	2.72	1.00	4.99	2662686	6859442
2	24	5	2.3	11.5	1.75	19	381	12	1101	19	381	12	1014	3	414	3	345	1.28	1.10	3.46	1.60	1.84	1.00	1.97	2.78	1.00	5.79	2564664	6705456
2	24	6	1.917	11.5	1.75	17	348	12	1065	17	348	12	981	3	500	3	394	1.29	1.10	3.51	1.59	1.90	1.00	2.28	2.85	1.00	6.67	2480626	6586130
2	24	7	1.643	11.5	1.75	16	321	12	1037	16	321	12	957	3	571	3	428	1.30	1.10	3.47	1.59	1.95	1.00	2.57	2.92	1.00	7.57	2417511	6513422
2	24	4	3.25	13	2.5	22	442	13	1161	22	442	12	1074	3	300	3	258	1.26	1.11	3.36	1.56	1.79	1.00	1.59	2.61	1.00	4.56	2615697	6740610
2	24	5	2.6	13	2.5	20	398	12	1117	20	398	12	1029	3	375	3	309	1.27	1.11	3.39	1.55	1.84	1.00	1.81	2.67	1.00	5.27	2517189	6580473
2	24	6	2.167	13	2.5	18	364	12	1082	18	364	12	996	3	444	3	358	1.28	1.10	3.44	1.55	1.89	1.00	2.05	2.72	1.00	5.99	2434956	6455367
2	24	7	1.857	13	2.5	17	336	12	1054	17	336	12	972	3	522	3	397	1.29	1.10	3.41	1.54	1.94	1.00	2.35	2.78	1.00	6.81	2373382	6386101
2	24	4	3.625	14.5	3.25	24	472	13	1192	24	472	12	1104	3	267	3	239	1.26	1.11	3.45	1.61	1.73	1.00	1.52	2.70	1.00	4.31	2780664	7064028
2	24	5	2.9	14.5	3.25	21	426	13	1145	21	426	12	1058	3	333	3	286	1.27	1.11	3.48	1.61	1.78	1.00	1.73	2.76	1.00	4.97	2671038	6874955
2	24	6	2.417	14.5	3.25	20	391	12	1109	20	391	12	1022	3	400	3	331	1.28	1.10	3.41	1.60	1.82	1.00	1.92	2.81	1.00	5.59	2587292	6736401
2	24	7	2.07	14.5	3.25	18	362	12	1081	18	362	12	995	3	462	3	375	1.29	1.10	3.48	1.60	1.86	1.00	2.15	2.86	1.00	6.27	2522304	6647202
2	24	4	2.875	11.5	0	21	424	13	1143	21	424	12	1057	3	333	3	288	1.27	1.10	1.56	1.61	1.79	1.00	1.73	1.24	1.00	4.99	2662686	6859442
2	24	5	2.3	11.5	0	19	381	12	1101	19	381	12	1014	3	414	3	345	1.28	1.10	1.58	1.60	1.84	1.00	1.97	1.27	1.00	5.79	2564664	6705456
2	24	6	1.917	11.5	0	17	348	12	1065	17	348	12	981	3	500	3	394	1.29	1.10	1.60	1.59	1.90	1.00	2.28	1.30	1.00	6.67	2480626	6586130
2	24	7	1.643	11.5	0	16	321	12	1037	16	321	12	957	3	571	3	428	1.30	1.10	1.58	1.59	1.95	1.00	2.57	1.33	1.00	7.57	2417511	6513422
2	24	4	3.25	13	0.75	22	442	13	1161	22	442	12	1074	3	300	3	258	1.26	1.11	2.02	1.56	1.79	1.00	1.59	1.57	1.00	4.56	2615697	6740610
2	24	5	2.6	13	0.75	20	398	12	1117	20	398	12	1029	3	375	3	309	1.27	1.11	2.04	1.55	1.84	1.00	1.81	1.60	1.00	5.27	2517189	6580473
2	24	6	2.167	13	0.75	18	364	12	1082	18	364	12	996	3	444	3	358	1.28	1.10	2.07	1.55	1.89	1.00	2.05	1.64	1.00	5.99	2434956	6455367
2	24	7	1.857	13	0.75	17	336	12	1054	17	336	12	972	3	522	3	397	1.29	1.10	2.05	1.54	1.94	1.00	2.35	1.67	1.00	6.81	2373382	6386101
2	24	4	3.625	14.5	1.5	24	472	13	1192	24	472	12	1104	3	267	3	239	1.26	1.11	3.12	1.61	1.73	1.00	1.52	2.45	1.00	4.31	2780664	7064028
2	24	5	2.9	14.5	1.5	21	426	13	1145	21	426	12	1058	3	333	3	286	1.27	1.11	3.15	1.61	1.78	1.00	1.73	2.50	1.00	4.97	2671038	6874955
2	24	6	2.417	14.5	1.5	20	391	12	1109	20	391	12	1022	3	400	3	331	1.28	1.10	2.63	1.60	1.82	1.00	1.92	2.17	1.00	5.59	2587292	6736401

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	24	7	2.07	14.5	1.5	18	362	12	1081	18	362	12	995	3	462	3	375	1.29	1.10	2.30	1.60	1.86	1.00	2.15	1.89	1.00	6.27	2522304	6647202
2	24	5	3	15	0	22	431	13	1148	22	431	12	1062	3	324	3	277	1.27	1.10	1.55	1.59	1.78	1.00	1.69	1.22	1.00	4.83	2648321	6818428
2	24	6	2.5	15	0	20	395	12	1114	20	395	12	1027	3	387	3	321	1.28	1.10	1.52	1.59	1.82	1.00	1.88	1.25	1.00	5.45	2569860	6696445
2	24	7	2.14	15	0	18	366	12	1086	18	366	12	1000	3	444	3	364	1.28	1.10	1.55	1.58	1.86	1.00	2.09	1.27	1.00	6.09	2507060	6607864
2	24	8	1.875	15	0	17	342	12	1060	17	342	12	977	3	500	3	398	1.29	1.10	1.59	1.58	1.90	1.00	2.34	1.29	1.00	6.78	2444629	6524611
2	24	9	1.67	15	0	16	327	12	1043	16	327	12	963	3	571	3	427	1.30	1.10	1.56	1.61	1.91	1.00	2.43	1.35	1.00	7.49	2475939	6622832
2	24	5	3.3	16.5	0.75	22	444	13	1162	22	444	12	1076	3	293	3	254	1.26	1.11	2.01	1.55	1.78	1.00	1.58	1.56	1.00	4.50	2600923	6705845
2	24	6	2.75	16.5	0.75	20	408	12	1125	20	408	12	1037	3	353	3	295	1.27	1.11	2.04	1.55	1.82	1.00	1.75	1.59	1.00	5.06	2518985	6568244
2	24	7	2.357	16.5	0.75	19	379	12	1096	19	379	12	1008	3	414	3	334	1.28	1.11	2.01	1.54	1.86	1.00	1.92	1.61	1.00	5.60	2454746	6467948
2	24	8	2.06	16.5	0.75	18	354	12	1071	18	354	12	986	3	462	3	372	1.28	1.10	2.05	1.54	1.90	1.00	2.16	1.64	1.00	6.24	2399094	6398728
2	24	9	1.83	16.5	0.75	17	333	12	1053	17	333	12	971	3	522	3	400	1.29	1.10	2.02	1.54	1.94	1.00	2.37	1.66	1.00	6.90	2371408	6392010
2	24	5	3.6	18	1.5	23	469	13	1188	23	469	12	1100	3	273	3	240	1.26	1.11	3.10	1.60	1.73	1.00	1.53	2.43	1.00	4.31	2748754	6997446
2	24	6	3	18	1.5	22	431	13	1150	22	431	12	1064	3	324	3	277	1.27	1.10	3.03	1.60	1.77	1.00	1.70	2.47	1.00	4.84	2658811	6843768
2	24	7	2.57	18	1.5	20	401	12	1119	20	401	12	1032	3	375	3	314	1.27	1.10	2.79	1.59	1.80	1.00	1.85	2.28	1.00	5.35	2588355	6726355
2	24	8	2.25	18	1.5	19	376	12	1094	19	376	12	1007	3	429	3	350	1.28	1.10	2.50	1.59	1.83	1.00	2.01	2.02	1.00	5.85	2528926	6632916
2	24	9	2	18	1.5	18	354	12	1073	18	354	12	988	3	480	3	385	1.29	1.10	2.20	1.58	1.87	1.00	2.23	1.83	1.00	6.44	2481342	6577429
2	24	6	3.08	18.5	0	22	435	13	1153	22	435	12	1067	3	316	3	271	1.26	1.10	1.49	1.59	1.77	1.00	1.67	1.21	1.00	4.75	2645786	6810714
2	24	7	2.64	18.5	0	20	405	12	1122	20	405	12	1035	3	364	3	307	1.27	1.11	1.52	1.58	1.80	1.00	1.82	1.23	1.00	5.24	2576538	6694539
2	24	8	2.32	18.5	0	19	380	12	1098	19	380	12	1011	3	414	3	341	1.28	1.10	1.55	1.57	1.83	1.00	1.96	1.25	1.00	5.71	2515353	6598007
2	24	9	2.06	18.5	0	18	358	12	1076	18	358	12	991	3	462	3	374	1.29	1.10	1.54	1.57	1.87	1.00	2.17	1.27	1.00	6.27	2466112	6534830
2	24	10	1.85	18.5	0	17	338	12	1058	17	338	12	976	3	522	3	400	1.29	1.10	1.53	1.57	1.91	1.00	2.37	1.29	1.00	6.86	2424068	6493039
2	24	6	3.58	21.5	1.5	23	467	13	1185	23	467	12	1098	3	273	3	240	1.26	1.11	3.07	1.59	1.73	1.00	1.53	2.42	1.00	4.31	2728368	6954312
2	24	7	3.07	21.5	1.5	22	435	13	1153	22	435	12	1066	3	316	3	272	1.27	1.11	3.02	1.59	1.76	1.00	1.67	2.46	1.00	4.76	2653947	6827421
2	24	8	2.69	21.5	1.5	20	408	12	1128	20	408	12	1042	3	364	3	303	1.27	1.10	2.92	1.58	1.79	1.00	1.81	2.36	1.00	5.20	2591656	6728882
2	24	9	2.39	21.5	1.5	19	386	12	1105	19	386	12	1017	3	400	3	333	1.28	1.11	2.57	1.58	1.82	1.00	1.94	2.12	1.00	5.61	2541514	6647718
2	24	10	2.15	21.5	1.5	18	366	12	1086	18	366	12	1000	3	444	3	363	1.28	1.10	2.37	1.58	1.85	1.00	2.09	1.93	1.00	6.06	2495400	6583051
2	24	7	3.14	22	0	22	438	13	1157	22	438	12	1070	3	308	3	267	1.26	1.11	1.49	1.58	1.76	1.00	1.65	1.21	1.00	4.68	2645675	6808580
2	24	8	2.75	22	0	21	411	12	1131	21	411	12	1044	3	353	3	297	1.27	1.10	1.52	1.57	1.79	1.00	1.78	1.22	1.00	5.11	2581458	6703650
2	24	9	2.44	22	0	19	389	12	1108	19	389	12	1021	3	400	3	327	1.28	1.10	1.50	1.58	1.82	1.00	1.91	1.24	1.00	5.53	2536650	6633472
2	24	10	2.2	22	0	18	369	12	1089	18	369	12	1002	3	444	3	355	1.28	1.10	1.54	1.57	1.85	1.00	2.05	1.25	1.00	5.94	2484866	6554316
2	24	11	2	22	0	18	352	12	1069	18	352	12	985	3	480	3	383	1.29	1.10	1.53	1.56	1.88	1.00	2.23	1.27	1.00	6.41	2439633	6489978
2	24	12	1.83	22	0	17	336	12	1056	17	336	12	973	3	522	3	402	1.30	1.10	1.52	1.57	1.91	1.00	2.38	1.28	1.00	6.92	2418661	6486179
2	24	7	3.57	25	1.5	23	465	13	1184	23	465	12	1098	3	273	3	241	1.26	1.10	3.06	1.59	1.73	1.00	1.54	2.41	1.00	4.32	2711644	6922995
2	24	8	3.125	25	1.5	22	437	13	1157	22	437	12	1071	3	308	3	268	1.26	1.10	3.02	1.58	1.76	1.00	1.66	2.44	1.00	4.71	2648463	6817364
2	24	9	2.78	25	1.5	21	414	12	1133	21	414	12	1046	3	353	3	294	1.27	1.11	3.02	1.58	1.79	1.00	1.77	2.42	1.00	5.07	2594584	6726184
2	24	10	2.5	25	1.5	20	394	12	1111	20	394	12	1024	3	387	3	320	1.28	1.10	2.68	1.58	1.81	1.00	1.89	2.20	1.00	5.43	2543445	6638256
2	24	11	2.27	25	1.5	19	376	12	1095	19	376	12	1008	3	429	3	347	1.28	1.10	2.42	1.58	1.83	1.00	2.00	2.02	1.00	5.80	2511699	6597684
2	24	12	1.83	25	1.5	20	401	12	1119	20	401	12	1034	3	522	3	449	1.30	1.10	2.01	2.16	1.59	1.00	2.48	2.03	1.00	7.52	3635012	8827526
2	28	3	1.5	4.5	0	17	346	13	1223	17	346	13	1144	3	500	2	507	1.30	1.10	1.67	1.75	1.93	1.00	2.87	1.32	1.00	10.97	4436538	10955579
2	28	3	2	6	0.75	19	380	14	1259	19	380	13	1175	3	560	3	416	1.28	1.11	1.58	1.60	1.93	1.00	2.75	1.20	1.00	8.71	4098699	10259206
2	28	4	1.5	6	0.75	17	341	13	1220	17	341	13	1142	3	500	2	504	1.30	1.10	1.61	1.71	1.93	1.00	2.89	1.33	1.00	10.90	4318384	10746682
2	28	3	2.33	7	1.25	21	412	14	1292	21	412	13	1205	3	483	3	379	1.28	1.10	2.90	1.62	1.87	1.00	2.49	2.25	1.00	7.87	4233333	10480477
2	28	4	1.75	7	1.25	18	356	14	1235	18	356	13	1155	3	424	2	463	1.29	1.11	2.31	1.61	1.95	1.00	2.84	1.81	1.00	9.58	4059134	10221284
2	28	3	2.67	8	0	22	431	14	1309	22	431	13	1219	3	424	3	334	1.27	1.11	1.72	1.56	1.87	1.00	2.27	1.31	1.00	7.06	4087283	10160781
2	28	4	2	8	0	19	373	14	1250	19	373	13	1167	3	560	3	423	1.28	1.11	1.77	1.55	1.95	1.00	2.71	1.35	1.00	8.59	3918010	9907725
2	28	5	1.6	8	0	17	343	13	1222	17	343	13	1143	3	467	2	491	1.30	1.11	1.80	1.64	1.94	1.00	2.88	1.47	1.00	10.26	4099093	10321964
2	28	3	3.17	9.5	0.75	23	460	15	1339	23	460	14	1245	3	359	3	287	1.26	1.11	2.26	1.51	1.86	1.00	2.03	1.66	1.00	6.22	4024561	10000171
2	28	4	2.375	9.5	0.75	20	399	14	1278	20	399	13	1191	3	467	3	364	1.27	1.11	2.27	1.50	1.93	1.00	2.42	1.71	1.00	7.56	3851977	9737877
2	28	5	1.9	9.5	0.75	18	357	14	1234	18	357	13	1153	3	583	3	431	1.29	1.11	2.35	1.50	1.99	1.00	2.76	1.77	1.00	8.81	3745785	9591558
2	28	6	1.583	9.5	0.75	17	340	13	1220	17	340	13	1142	3	483	2	493	1.30	1.10	2.05	1.63	1.94	1.00	2.89	1.68	1.00	10.33	4075276	10284833
2	28	3	3.67	11	1.5	25	504	15	1384	25	504	14	1286	3	311	3	259	1.25	1.10	3.28	1.58	1.76	1.00	1.91	2.52	1.00	5.74	4352075	10613049
2	28	4	2.75	11	1.5	22	439	14	1319	22	439	14	1228	3	412	3	327	1.27	1.10	3.36	1.57	1.83	1.00	2.27	2.59	1.00	6.95	4158566	10297716
2	28	5	2.2	11	1.5	20	393	14	1272	20	393	13	1187	3	519	3	393	1.28	1.10	3.38	1.56	1.89	1.00	2.59	2.66	1.00	8.09	4018915	10082175
2	28	6	1.833	11	1.5	18	358	14	1237	18	358	13	1156	3	412	2	446	1.29	1.11	3.43	1.56	1.94	1.00	2.86	2.73	1.00	9.17	3922657	9949160
2	28	7	1.57	11	1.5	17	330	13	1208	17	330	12	1130	3	483	2	488	1.30	1.11	3.47	1.56	1.99	1.00	3.08	2.78	1.00	10.21	3842300	9840475
2	28	4	2.875	11.5	1.75	22	446	15	1324	22	446	14	1232	3	389	3	314	1.27	1.10	3.65	1.55	1.83	1.00	2.19	2.79	1.00	6.70	4114211	10194628
2	28	5	2.3	11.5	1.75	20	399	14	1278	20	399	13	1192	3	483	3	377	1.28	1.10	3.67	1.55	1.89	1.00	2.52	2.87	1.00	7.81	3978416	9992298
2	28	6	1.917	11.5	1.75	18	364	14	1241	18	364	13	1160	3	583	3	433	1.29	1.11	3.71	1.54	1.94	1.00	2.79	2.93	1.00	8.83	3872968	9832995
2	28	7	1.643	11.5	1.75	17	335	13	1214	17	335	12	1136	3	452	2	473	1.30	1.11	3.78	1.54	1.99	1.00	3.01	3.00	1.00	9.86	3797413	9744862
2	28	4	3.25	13	2.5	23	466	15	1343	23	466	14	1248	3	350	3	282	1.26	1.11	3.58	1.51	1.83	1.00	2.02	2.68	1.00	6.10	4035260	10009048
2	28	5	2.6	13	2.5	21	417	14	1297	21	417	13	1209	3	438	3	338	1.27	1.11	3.61	1.50	1.89	1.00	2.32	2.75	1.00	7.11	3900768	9811380
2	28	6	2.167	13	2.5	19	381	14	1259	19	381	13	1175	3	519	3	392	1.28	1.11	3.65	1.50	1.94	1.00	2.58	2.81	1.00	8.04	3797388	9654867

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
2	28	7	1.857	13	2.5	18	351	14	1231	18	351	13	1151	3	400	2	437	1.29	1.11	3.70	1.49	1.99	1.00	2.82	2.87	1.00	8.97	3718122	9557352
2	28	4	3.625	14.5	3.25	25	498	15	1377	25	498	14	1280	3	311	3	260	1.25	1.10	3.59	1.56	1.77	1.00	1.92	2.77	1.00	5.75	4270038	10452072
2	28	5	2.9	14.5	3.25	22	448	15	1326	22	448	14	1234	3	389	3	312	1.27	1.10	3.61	1.55	1.82	1.00	2.19	2.83	1.00	6.66	4122354	10208441
2	28	6	2.417	14.5	3.25	20	409	14	1289	20	409	13	1202	3	467	3	362	1.28	1.11	3.65	1.55	1.86	1.00	2.46	2.90	1.00	7.55	4012992	10048527
2	28	7	2.07	14.5	3.25	19	379	14	1256	19	379	13	1173	3	538	3	411	1.28	1.11	3.70	1.54	1.90	1.00	2.69	2.95	1.00	8.37	3921057	9902837
2	28	4	2.875	11.5	0	22	446	15	1324	22	446	14	1232	3	389	3	314	1.27	1.10	1.72	1.55	1.83	1.00	2.19	1.32	1.00	6.70	4114211	10194628
2	28	5	2.3	11.5	0	20	399	14	1278	20	399	13	1192	3	483	3	377	1.28	1.10	1.73	1.55	1.89	1.00	2.52	1.35	1.00	7.81	3978416	9992298
2	28	6	1.917	11.5	0	18	364	14	1241	18	364	13	1160	3	583	3	433	1.29	1.11	1.75	1.54	1.94	1.00	2.79	1.38	1.00	8.83	3872968	9832995
2	28	7	1.643	11.5	0	17	335	13	1214	17	335	12	1136	3	452	2	473	1.30	1.11	1.78	1.54	1.99	1.00	3.01	1.41	1.00	9.86	3797413	9744862
2	28	4	3.25	13	0.75	23	466	15	1343	23	466	14	1248	3	350	3	282	1.26	1.11	2.21	1.51	1.83	1.00	2.02	1.65	1.00	6.10	4035260	10009048
2	28	5	2.6	13	0.75	21	417	14	1297	21	417	13	1209	3	438	3	338	1.27	1.11	2.22	1.50	1.89	1.00	2.32	1.69	1.00	7.11	3900768	9811380
2	28	6	2.167	13	0.75	19	381	14	1259	19	381	13	1175	3	519	3	392	1.28	1.11	2.25	1.50	1.94	1.00	2.58	1.73	1.00	8.04	3797388	9654867
2	28	7	1.857	13	0.75	18	351	14	1231	18	351	13	1151	3	400	2	437	1.29	1.11	2.28	1.49	1.99	1.00	2.82	1.77	1.00	8.97	3718122	9557352
2	28	4	3.625	14.5	1.5	25	498	15	1377	25	498	14	1280	3	311	3	260	1.25	1.10	3.27	1.56	1.77	1.00	1.92	2.52	1.00	5.75	4270038	10452072
2	28	5	2.9	14.5	1.5	22	448	15	1326	22	448	14	1234	3	389	3	312	1.27	1.10	3.29	1.55	1.82	1.00	2.19	2.58	1.00	6.66	4122354	10208441
2	28	6	2.417	14.5	1.5	20	409	14	1289	20	409	13	1202	3	467	3	362	1.28	1.11	2.89	1.55	1.86	1.00	2.46	2.29	1.00	7.55	4012992	10048527
2	28	7	2.07	14.5	1.5	19	379	14	1256	19	379	13	1173	3	538	3	411	1.28	1.11	2.51	1.54	1.90	1.00	2.69	2.00	1.00	8.37	3921057	9902837
2	28	5	3	15	0	23	453	15	1331	23	453	14	1239	3	378	3	303	1.26	1.10	1.67	1.54	1.82	1.00	2.14	1.30	1.00	6.49	4091786	10141168
2	28	6	2.5	15	0	21	414	14	1293	21	414	13	1205	3	452	3	351	1.27	1.11	1.69	1.53	1.87	1.00	2.40	1.33	1.00	7.35	3982049	9976253
2	28	7	2.14	15	0	19	383	14	1262	19	383	13	1178	3	519	3	399	1.28	1.11	1.71	1.53	1.91	1.00	2.64	1.35	1.00	8.18	3898340	9857240
2	28	8	1.875	15	0	18	358	14	1235	18	358	13	1154	3	583	3	437	1.29	1.11	1.73	1.53	1.94	1.00	2.83	1.38	1.00	8.94	3818841	9736009
2	28	9	1.67	15	0	17	341	13	1220	17	341	13	1141	3	452	2	471	1.30	1.11	1.76	1.56	1.95	1.00	2.88	1.43	1.00	9.79	3878788	9894245
2	28	5	3.3	16.5	0.75	23	467	15	1347	23	467	14	1253	3	341	3	278	1.26	1.11	2.15	1.50	1.82	1.00	2.01	1.64	1.00	6.04	4016432	9977967
2	28	6	2.75	16.5	0.75	21	428	14	1306	21	428	13	1216	3	412	3	322	1.27	1.11	2.17	1.49	1.87	1.00	2.24	1.68	1.00	6.82	3903276	9794593
2	28	7	2.357	16.5	0.75	20	396	14	1275	20	396	13	1189	3	483	3	365	1.28	1.11	2.20	1.49	1.91	1.00	2.46	1.71	1.00	7.58	3815488	9669100
2	28	8	2.06	16.5	0.75	19	370	14	1248	19	370	13	1166	3	538	3	408	1.28	1.11	2.23	1.49	1.95	1.00	2.67	1.73	1.00	8.31	3743496	9565816
2	28	9	1.83	16.5	0.75	17	349	13	1226	17	349	13	1146	3	412	2	440	1.29	1.11	2.19	1.49	1.98	1.00	2.82	1.75	1.00	9.03	3703458	9522020
2	28	5	3.6	18	1.5	25	495	15	1372	25	495	14	1275	3	318	3	261	1.25	1.10	3.24	1.54	1.77	1.00	1.93	2.50	1.00	5.75	4221289	10351901
2	28	6	3	18	1.5	23	453	15	1333	23	453	14	1240	3	378	3	303	1.26	1.10	3.28	1.54	1.81	1.00	2.16	2.55	1.00	6.51	4106823	10177055
2	28	7	2.57	18	1.5	21	420	14	1300	21	420	13	1211	3	438	3	344	1.27	1.10	3.07	1.54	1.85	1.00	2.37	2.40	1.00	7.23	4012356	10031330
2	28	8	2.25	18	1.5	20	393	14	1272	20	393	13	1187	3	500	3	383	1.28	1.10	2.65	1.53	1.88	1.00	2.57	2.14	1.00	7.90	3928768	9901722
2	28	9	2	18	1.5	19	370	14	1249	19	370	13	1167	3	560	3	422	1.29	1.11	2.40	1.53	1.92	1.00	2.76	1.93	1.00	8.57	3863702	9810400
2	28	6	3.08	18.5	0	23	457	15	1337	23	457	14	1245	3	368	3	296	1.26	1.10	1.66	1.53	1.81	1.00	2.12	1.29	1.00	6.38	4085113	10128611
2	28	7	2.64	18.5	0	21	424	14	1304	21	424	13	1215	3	424	3	335	1.27	1.11	1.68	1.53	1.85	1.00	2.33	1.31	1.00	7.08	3992936	9986736
2	28	8	2.32	18.5	0	20	397	14	1277	20	397	13	1192	3	483	3	372	1.28	1.10	1.66	1.52	1.88	1.00	2.52	1.33	1.00	7.72	3906251	9853322
2	28	9	2.06	18.5	0	19	374	14	1253	19	374	13	1170	3	538	3	410	1.28	1.11	1.69	1.52	1.92	1.00	2.70	1.35	1.00	8.38	3841227	9758360
2	28	10	1.85	18.5	0	18	354	14	1232	18	354	13	1151	3	400	2	439	1.29	1.11	1.72	1.52	1.95	1.00	2.85	1.37	1.00	9.02	3785314	9679831
2	28	6	3.58	21.5	1.5	25	492	15	1371	25	492	14	1274	3	318	3	262	1.26	1.10	3.22	1.54	1.77	1.00	1.94	2.49	1.00	5.77	4196456	10310488
2	28	7	3.07	21.5	1.5	23	457	15	1336	23	457	14	1244	3	368	3	297	1.26	1.10	3.26	1.53	1.80	1.00	2.13	2.53	1.00	6.39	4090948	10137495
2	28	8	2.69	21.5	1.5	21	429	14	1306	21	429	13	1216	3	424	3	330	1.27	1.11	3.11	1.53	1.84	1.00	2.30	2.49	1.00	6.97	4004601	9994323
2	28	9	2.39	21.5	1.5	20	404	14	1283	20	404	13	1196	3	467	3	364	1.28	1.11	2.82	1.53	1.87	1.00	2.48	2.24	1.00	7.57	3937970	9902903
2	28	10	2.15	21.5	1.5	19	383	14	1261	19	383	13	1178	3	519	3	396	1.28	1.10	2.51	1.52	1.89	1.00	2.64	2.04	1.00	8.13	3873273	9804718
2	28	7	3.14	22	0	23	461	15	1339	23	461	14	1245	3	359	3	291	1.26	1.11	1.66	1.53	1.80	1.00	2.09	1.28	1.00	6.27	4076848	10101549
2	28	8	2.75	22	0	22	432	14	1310	22	432	13	1220	3	412	3	324	1.27	1.11	1.64	1.52	1.84	1.00	2.27	1.30	1.00	6.86	3989258	9962370
2	28	9	2.44	22	0	20	407	14	1287	20	407	13	1200	3	467	3	357	1.27	1.10	1.66	1.52	1.87	1.00	2.44	1.32	1.00	7.46	3930746	9886861
2	28	10	2.2	22	0	19	386	14	1265	19	386	13	1181	3	519	3	388	1.28	1.11	1.65	1.51	1.90	1.00	2.60	1.34	1.00	7.99	3858815	9773008
2	28	11	2	22	0	18	368	14	1245	18	368	13	1163	3	560	3	420	1.28	1.10	1.68	1.51	1.92	1.00	2.75	1.35	1.00	8.52	3802285	9684566
2	28	12	1.83	22	0	18	352	14	1229	18	352	13	1149	3	412	2	442	1.29	1.11	1.67	1.51	1.95	1.00	2.85	1.37	1.00	9.07	3772267	9654249
2	28	7	3.57	25	1.5	25	490	15	1370	25	490	14	1273	3	318	3	262	1.26	1.10	3.21	1.53	1.77	1.00	1.95	2.49	1.00	5.78	4173616	10269338
2	28	8	3.125	25	1.5	23	460	15	1339	23	460	14	1246	3	359	3	292	1.26	1.10	3.17	1.53	1.80	1.00	2.11	2.52	1.00	6.30	4082514	10116945
2	28	9	2.78	25	1.5	22	435	14	1312	22	435	13	1222	3	412	3	321	1.27	1.10	3.21	1.52	1.83	1.00	2.25	2.55	1.00	6.80	4003380	9983792
2	28	10	2.5	25	1.5	21	412	14	1292	21	412	13	1205	3	452	3	350	1.27	1.10	2.95	1.52	1.86	1.00	2.41	2.32	1.00	7.34	3945466	9908859
2	28	11	2.27	25	1.5	20	393	14	1272	20	393	13	1187	3	500	3	379	1.28	1.10	2.66	1.52	1.88	1.00	2.56	2.14	1.00	7.84	3894984	9834865
2	28	12	1.83	25	1.5	21	418	14	1297	21	418	13	1211	3	412	2	493	1.30	1.10	2.09	2.05	1.64	1.00	3.14	2.08	1.00	10.10	5562204	12960804
2	32	3	1.5	4.5	0	18	358	15	1395	18	358	14	1302	3	571	2	559	1.31	1.11	1.84	1.70	2.03	1.00	3.56	1.41	1.00	14.26	6576403	15601891
2	32	3	2	6	0.75	20	395	16	1435	20	395	15	1336	3	432	2	457	1.29	1.11	1.79	1.56	2.01	1.00	3.40	1.29	1.00	11.31	6069274	14642664
2	32	4	1.5	6	0.75	18	353	15	1390	18	353	14	1298	3	571	2	554	1.31	1.11	1.83	1.66	2.02	1.00	3.59	1.43	1.00	14.15	6394388	15285418
2	32	3	2.33	7	1.25	22	431	16	1468	22	431	15	1365	3	552	3	416	1.28	1.11	3.08	1.58	1.93	1.00	3.07	2.30	1.00	10.17	6249122	14910219
2	32	4	1.75	7	1.25	19	370	15	1407	19	370	14	1311	3	485	2	509	1.30	1.11	2.59	1.57	2.03	1.00	3.51	1.93	1.00	12.43	6025097	14588338
2	32	3	2.67	8	0	23	451	16	1489	23	451	15	1382	3	485	3	366	1.27	1.11	1.93	1.52	1.93	1.00	2.05	1.40	1.00	9.13	6037652	14491288
2	32	4	2	8	0	19	388	16	1425	19	388	15	1327	3	432	2	464	1.29	1.11	2.00	1.51	2.03	1.00	3.34	1.45	1.00	11.16	5814240	14165258
2	32	5	1.6	8	0	18	355	15	1393	18	355	14	1300	3	533	2	540	1.30	1.11	2.04	1.59	2.03	1.00	3.57	1.58	1.00	13.33	6074293	14709733

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	32	3	3.17	9.5	0.75	24	483	17	1520	24	483	15	1408	3	410	3	314	1.27	1.11	2.47	1.47	1.91	1.00	1.83	1.74	1.00	8.01	5929248	14238890
2	32	4	2.375	9.5	0.75	21	416	16	1456	21	416	15	1353	3	533	3	399	1.28	1.11	2.52	1.47	2.00	1.00	3.00	1.80	1.00	9.81	5705995	13924798
2	32	5	1.9	9.5	0.75	19	370	15	1409	19	370	14	1313	3	457	2	473	1.29	1.11	2.54	1.47	2.08	1.00	3.43	1.86	1.00	11.48	5570472	13749739
2	32	6	1.583	9.5	0.75	18	352	15	1390	18	352	14	1298	3	552	2	542	1.31	1.11	2.26	1.58	2.03	1.00	3.59	1.79	1.00	13.41	6036778	14646665
2	32	3	3.67	11	1.5	27	530	17	1569	27	530	16	1453	3	356	3	283	1.26	1.11	3.37	1.54	1.81	1.00	1.72	2.50	1.00	7.38	6384603	15064207
2	32	4	2.75	11	1.5	23	460	16	1498	23	460	15	1390	3	471	3	359	1.28	1.11	3.43	1.53	1.89	1.00	2.04	2.59	1.00	8.97	6127400	14648651
2	32	5	2.2	11	1.5	21	410	16	1447	21	410	15	1346	3	593	3	430	1.29	1.11	3.52	1.53	1.96	1.00	3.20	2.66	1.00	10.47	5940167	14365065
2	32	6	1.833	11	1.5	19	371	16	1411	19	371	14	1315	3	471	2	490	1.30	1.11	3.56	1.52	2.03	1.00	3.55	2.73	1.00	11.94	5816880	14215521
2	32	7	1.57	11	1.5	17	341	15	1378	17	341	14	1287	3	552	2	536	1.30	1.11	3.66	1.52	2.08	1.00	3.83	2.79	1.00	13.30	5708411	14059830
2	32	4	2.875	11.5	1.75	23	467	17	1505	23	467	15	1396	3	444	3	344	1.27	1.11	3.69	1.51	1.89	1.00	1.98	2.75	1.00	8.66	6064244	14520452
2	32	5	2.3	11.5	1.75	21	416	16	1455	21	416	15	1353	3	552	3	413	1.28	1.11	3.78	1.51	1.96	1.00	3.11	2.83	1.00	10.12	5882822	14256593
2	32	6	1.917	11.5	1.75	19	378	16	1415	19	378	14	1318	3	457	2	475	1.29	1.11	3.81	1.50	2.02	1.00	3.45	2.90	1.00	11.48	5746515	14056564
2	32	7	1.643	11.5	1.75	17	347	15	1384	17	347	14	1292	3	516	2	519	1.30	1.11	3.94	1.50	2.08	1.00	3.73	2.97	1.00	12.81	5643087	13924693
2	32	4	3.25	13	2.5	24	488	17	1527	24	488	16	1415	3	400	3	308	1.27	1.11	3.62	1.47	1.89	1.00	1.83	2.64	1.00	7.89	5942375	14266483
2	32	5	2.6	13	2.5	22	436	16	1475	22	436	15	1370	3	500	3	370	1.28	1.11	3.72	1.47	1.95	1.00	2.86	2.71	1.00	9.20	5762555	13995305
2	32	6	2.167	13	2.5	20	396	16	1436	20	396	15	1336	3	593	3	430	1.29	1.11	3.75	1.46	2.01	1.00	3.21	2.78	1.00	10.46	5631389	13818787
2	32	7	1.857	13	2.5	18	364	15	1404	18	364	14	1309	3	457	2	479	1.29	1.11	3.79	1.46	2.07	1.00	3.50	2.84	1.00	11.66	5524247	13679247
2	32	4	3.625	14.5	3.25	26	523	17	1563	26	523	16	1447	3	356	3	285	1.26	1.11	3.66	1.52	1.82	1.00	1.74	2.72	1.00	7.41	6272024	14859983
2	32	5	2.9	14.5	3.25	23	469	17	1507	23	469	15	1398	3	444	3	342	1.27	1.11	3.75	1.51	1.87	1.00	1.98	2.79	1.00	8.61	6070477	14529710
2	32	6	2.417	14.5	3.25	21	427	16	1466	21	427	15	1363	3	533	3	397	1.28	1.11	3.77	1.51	1.93	1.00	3.03	2.86	1.00	9.77	5922292	14312689
2	32	7	2.07	14.5	3.25	20	394	16	1432	20	394	15	1333	3	410	2	451	1.29	1.11	3.81	1.51	1.98	1.00	3.33	2.91	1.00	10.89	5811606	14154271
2	32	4	2.875	11.5	0	23	467	17	1505	23	467	15	1396	3	444	3	344	1.27	1.11	1.89	1.51	1.89	1.00	1.98	1.41	1.00	8.66	6064244	14520452
2	32	5	2.3	11.5	0	21	416	16	1455	21	416	15	1353	3	552	3	413	1.28	1.11	1.94	1.51	1.96	1.00	3.11	1.45	1.00	10.12	5882822	14256593
2	32	6	1.917	11.5	0	19	378	16	1415	19	378	14	1318	3	457	2	475	1.29	1.11	1.95	1.50	2.02	1.00	3.45	1.49	1.00	11.48	5746515	14056564
2	32	7	1.643	11.5	0	17	347	15	1384	17	347	14	1292	3	516	2	519	1.30	1.11	2.02	1.50	2.08	1.00	3.73	1.52	1.00	12.81	5643087	13924693
2	32	4	3.25	13	0.75	24	488	17	1527	24	488	16	1415	3	400	3	308	1.27	1.11	2.37	1.47	1.89	1.00	1.83	1.73	1.00	7.89	5942375	14266483
2	32	5	2.6	13	0.75	22	436	16	1475	22	436	15	1370	3	500	3	370	1.28	1.11	2.43	1.47	1.95	1.00	2.86	1.78	1.00	9.20	5762555	13995305
2	32	6	2.167	13	0.75	20	396	16	1436	20	396	15	1336	3	593	3	430	1.29	1.11	2.45	1.46	2.01	1.00	3.21	1.82	1.00	10.46	5631389	13818787
2	32	7	1.857	13	0.75	18	364	15	1404	18	364	14	1309	3	457	2	479	1.29	1.11	2.48	1.46	2.07	1.00	3.50	1.86	1.00	11.66	5524247	13679247
2	32	4	3.625	14.5	1.5	26	523	17	1563	26	523	16	1447	3	356	3	285	1.26	1.11	3.37	1.52	1.82	1.00	1.74	2.51	1.00	7.41	6272024	14859983
2	32	5	2.9	14.5	1.5	23	469	17	1507	23	469	15	1398	3	444	3	342	1.27	1.11	3.45	1.51	1.87	1.00	1.98	2.57	1.00	8.61	6070477	14529710
2	32	6	2.417	14.5	1.5	21	427	16	1466	21	427	15	1363	3	533	3	397	1.28	1.11	3.18	1.51	1.93	1.00	3.03	2.40	1.00	9.77	5922292	14312689
2	32	7	2.07	14.5	1.5	20	394	16	1432	20	394	15	1333	3	410	2	451	1.29	1.11	2.75	1.51	1.98	1.00	3.33	2.10	1.00	10.89	5811606	14154271
2	32	5	3	15	0	24	474	17	1514	24	474	15	1404	3	432	3	331	1.27	1.11	1.88	1.50	1.88	1.00	1.94	1.39	1.00	8.40	6031278	14457160
2	32	6	2.5	15	0	22	432	16	1472	22	432	15	1368	3	516	3	385	1.28	1.11	1.89	1.50	1.93	1.00	2.96	1.42	1.00	9.52	5883338	14235618
2	32	7	2.14	15	0	20	399	16	1436	20	399	15	1337	3	593	3	437	1.29	1.11	1.91	1.49	1.98	1.00	3.26	1.45	1.00	10.60	5763575	14051468
2	32	8	1.875	15	0	19	371	15	1409	19	371	14	1313	3	457	2	480	1.29	1.11	1.93	1.49	2.03	1.00	3.51	1.48	1.00	11.64	5665143	13921815
2	32	9	1.67	15	0	18	353	15	1390	18	353	14	1297	3	516	2	517	1.30	1.11	1.96	1.52	2.04	1.00	3.57	1.53	1.00	12.71	5743463	14099397
2	32	5	3.3	16.5	0.75	25	490	17	1529	25	490	16	1417	3	390	3	303	1.26	1.11	2.37	1.46	1.88	1.00	1.82	1.72	1.00	7.79	5906802	14194718
2	32	6	2.75	16.5	0.75	22	447	16	1486	22	447	15	1380	3	471	3	352	1.27	1.11	2.38	1.46	1.93	1.00	2.03	1.76	1.00	8.82	5756686	13966869
2	32	7	2.357	16.5	0.75	21	413	16	1451	21	413	15	1349	3	552	3	400	1.28	1.11	2.40	1.46	1.98	1.00	3.05	1.79	1.00	9.82	5640699	13796901
2	32	8	2.06	16.5	0.75	19	384	16	1424	19	384	15	1326	3	421	2	447	1.29	1.11	2.43	1.45	2.03	1.00	3.32	1.83	1.00	10.82	5555358	13697246
2	32	9	1.83	16.5	0.75	18	361	15	1400	18	361	14	1305	3	471	2	483	1.30	1.11	2.44	1.46	2.06	1.00	3.51	1.84	1.00	11.77	5502598	13640007
2	32	5	3.6	18	1.5	26	519	17	1559	26	519	16	1444	3	364	3	286	1.26	1.11	3.34	1.51	1.82	1.00	1.75	2.49	1.00	7.42	6202052	14730684
2	32	6	3	18	1.5	24	475	17	1513	24	475	15	1403	3	432	3	331	1.27	1.11	3.36	1.50	1.87	1.00	1.94	2.54	1.00	8.39	6040256	14464800
2	32	7	2.57	18	1.5	22	439	16	1478	22	439	15	1373	3	500	3	376	1.28	1.11	3.30	1.50	1.91	1.00	2.14	2.52	1.00	9.34	5918499	14287325
2	32	8	2.25	18	1.5	21	410	16	1447	21	410	15	1345	3	571	3	420	1.29	1.11	2.92	1.50	1.95	1.00	3.17	2.24	1.00	10.23	5806931	14113459
2	32	9	2	18	1.5	19	385	16	1422	19	385	15	1324	3	432	2	462	1.29	1.11	2.63	1.49	1.99	1.00	3.41	2.03	1.00	11.11	5721066	13995667
2	32	6	3.08	18.5	0	24	479	17	1519	24	479	15	1408	3	421	3	324	1.27	1.11	1.83	1.49	1.87	1.00	1.91	1.38	1.00	8.23	6016948	14423495
2	32	7	2.64	18.5	0	22	443	16	1483	22	443	15	1377	3	485	3	367	1.28	1.11	1.85	1.49	1.91	1.00	2.10	1.40	1.00	9.15	5888299	14228288
2	32	8	2.32	18.5	0	21	414	16	1453	21	414	15	1352	3	552	3	408	1.28	1.11	1.87	1.48	1.95	1.00	3.11	1.43	1.00	10.01	5771991	14050337
2	32	9	2.06	18.5	0	19	389	16	1427	19	389	15	1329	3	421	2	450	1.29	1.11	1.89	1.48	1.99	1.00	3.34	1.45	1.00	10.86	5685764	13926144
2	32	10	1.85	18.5	0	18	367	15	1405	18	367	14	1310	3	457	2	482	1.30	1.11	1.92	1.48	2.03	1.00	3.53	1.48	1.00	11.73	5616540	13838283
2	32	6	3.58	21.5	1.5	26	517	17	1555	26	517	16	1439	3	364	3	286	1.26	1.11	3.32	1.50	1.82	1.00	1.75	2.48	1.00	7.42	6160671	14646043
2	32	7	3.07	21.5	1.5	24	479	17	1517	24	479	15	1407	3	421	3	324	1.27	1.11	3.35	1.50	1.86	1.00	1.92	2.52	1.00	8.24	6016676	14414914
2	32	8	2.69	21.5	1.5	22	448	16	1486	22	448	15	1380	3	485	3	362	1.28	1.11	3.38	1.49	1.90	1.00	2.08	2.56	1.00	9.02	5904296	14242935
2	32	9	2.39	21.5	1.5	21	421	16	1461	21	421	15	1358	3	533	3	399	1.28	1.11	3.10	1.49	1.93	1.00	3.06	2.35	1.00	9.81	5818244	14129765
2	32	10	2.15	21.5	1.5	20	398	16	1438	20	398	15	1339	3	593	3	435	1.29	1.11	2.77	1.49	1.97	1.00	3.27	2.15	1.00	10.57	5736436	14014425
2	32	7	3.14	22	0	24	483	17	1521	24	483	15	1410	3	410	3	318	1.27	1.11	1.83	1.49	1.86	1.00	1.89	1.37	1.00	8.10	5995736	14369979
2	32	8	2.75	22	0	23	451	16	1491	23	451	15	1384	3	471	3	354	1.27	1.11	1.85	1.48	1.90	1.00	2.05	1.39	1.00	8.88	5882011	14204493
2	32	9	2.44	22	0	21	425	16	1463	21	425	15	1360	3	533	3	391	1.28	1.11	1.87	1.48	1.93	1.00	3.02	1.41	1.00	9.65	5797820	14076827
2	32	10	2.2	22	0	20	402	16	1440	20	402	15	1340	3	593	3	426	1.29	1.11	1.86	1.48	1.97	1.00	3.21	1.43	1.00	10.36	5705074	13938966

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	32	11	2	22	0	19	382	16	1420	19	382	15	1323	3	432	2	460	1.29	1.11	1.88	1.48	2.00	1.00	3.41	1.45	1.00	11.08	5639507	13851955
2	32	12	1.83	22	0	18	364	15	1404	18	364	14	1309	3	471	2	485	1.30	1.11	1.91	1.48	2.03	1.00	3.55	1.47	1.00	11.84	5605753	13833381
2	32	7	3.57	25	1.5	26	515	17	1553	26	515	16	1438	3	364	3	287	1.26	1.11	3.30	1.49	1.82	1.00	1.76	2.47	1.00	7.42	6121775	14573831
2	32	8	3.125	25	1.5	24	482	17	1521	24	482	15	1410	3	410	3	319	1.27	1.11	3.34	1.49	1.86	1.00	1.90	2.51	1.00	8.14	6005794	14394421
2	32	9	2.78	25	1.5	23	454	16	1494	23	454	15	1387	3	471	3	352	1.27	1.11	3.31	1.49	1.89	1.00	2.04	2.54	1.00	8.82	5905311	14244542
2	32	10	2.5	25	1.5	22	430	16	1470	22	430	15	1366	3	516	3	384	1.28	1.11	3.17	1.48	1.92	1.00	2.98	2.44	1.00	9.50	5823954	14126056
2	32	11	2.27	25	1.5	21	410	16	1447	21	410	15	1346	3	571	3	415	1.29	1.11	2.92	1.49	1.95	1.00	3.16	2.24	1.00	10.14	5755768	14016685
2	32	12	1.83	25	1.5	22	435	16	1472	22	435	15	1370	3	471	2	543	1.30	1.11	2.14	1.97	1.71	1.00	2.81	2.05	1.00	13.02	8119380	18215186
2	36	3	1.5	4.5	0	18	368	17	1568	18	368	16	1458	2	327	1	410	1.31	1.12	2.08	1.66	2.12	1.00	3.16	1.52	1.00	18.01	9370909	21432495
2	36	3	2	6	0.75	21	410	18	1607	21	410	16	1489	3	486	2	501	1.30	1.13	1.98	1.53	2.11	1.00	2.99	1.39	1.00	14.19	8619584	20075143
2	36	4	1.5	6	0.75	18	363	17	1561	18	363	16	1451	2	327	1	406	1.31	1.12	2.07	1.62	2.11	1.00	3.19	1.54	1.00	17.85	9101727	20971607
2	36	3	2.33	7	1.25	22	448	18	1645	22	448	17	1521	3	419	2	455	1.29	1.12	3.33	1.55	2.02	1.00	2.71	2.37	1.00	12.76	8865466	20458724
2	36	4	1.75	7	1.25	19	382	17	1579	19	382	16	1466	3	545	2	559	1.30	1.12	2.82	1.54	2.13	1.00	3.11	2.03	1.00	15.66	8577114	20041613
2	36	3	2.67	8	0	23	469	18	1669	23	469	17	1542	3	545	3	400	1.28	1.12	2.16	1.49	2.02	1.00	2.48	1.50	1.00	11.46	8561040	19910816
2	36	4	2	8	0	20	401	18	1600	20	401	16	1483	3	486	2	509	1.30	1.13	2.23	1.48	2.13	1.00	2.96	1.56	1.00	14.07	8278280	19500766
2	36	5	1.6	8	0	18	365	17	1565	18	365	16	1454	3	305	1	592	1.31	1.13	2.27	1.55	2.14	1.00	3.17	1.69	1.00	16.82	8651563	20215986
2	36	3	3.17	9.5	0.75	25	504	19	1701	25	504	17	1567	3	462	3	343	1.28	1.13	2.69	1.45	1.99	1.00	2.22	1.83	1.00	10.03	8388173	19538625
2	36	4	2.375	9.5	0.75	22	432	18	1632	22	432	17	1509	3	409	2	436	1.29	1.13	2.78	1.44	2.09	1.00	2.66	1.91	1.00	12.32	8107153	19147627
2	36	5	1.9	9.5	0.75	19	382	17	1582	19	382	16	1468	3	514	2	518	1.30	1.13	2.84	1.44	2.18	1.00	3.03	1.98	1.00	14.47	7941236	18939555
2	36	6	1.583	9.5	0.75	18	362	17	1561	18	362	16	1451	3	310	1	595	1.31	1.13	2.52	1.55	2.13	1.00	3.19	1.88	1.00	16.92	8595622	20117462
2	36	3	3.67	11	1.5	28	555	19	1752	28	555	18	1612	3	400	3	309	1.27	1.13	3.57	1.51	1.88	1.00	2.07	2.54	1.00	9.19	8997781	20595602
2	36	4	2.75	11	1.5	24	479	18	1677	24	479	17	1548	3	529	3	392	1.28	1.13	3.69	1.50	1.97	1.00	2.47	2.63	1.00	11.24	8668943	20080708
2	36	5	2.2	11	1.5	21	425	18	1623	21	425	17	1502	3	439	2	471	1.29	1.13	3.76	1.50	2.05	1.00	2.83	2.71	1.00	13.16	8437725	19739019
2	36	6	1.833	11	1.5	19	384	17	1581	19	384	16	1467	3	529	2	537	1.30	1.13	3.84	1.49	2.13	1.00	3.13	2.79	1.00	14.99	8271375	19503577
2	36	7	1.57	11	1.5	18	350	17	1550	18	350	16	1441	3	310	1	588	1.31	1.13	3.88	1.49	2.19	1.00	3.39	2.86	1.00	16.82	8159724	19387988
2	36	4	2.875	11.5	1.75	24	486	19	1686	24	486	17	1556	3	500	3	376	1.28	1.13	3.93	1.48	1.97	1.00	2.40	2.78	1.00	10.87	8582028	19927736
2	36	5	2.3	11.5	1.75	22	432	18	1630	22	432	17	1508	3	419	2	452	1.29	1.13	4.00	1.48	2.05	1.00	2.75	2.86	1.00	12.70	8346012	19566340
2	36	6	1.917	11.5	1.75	20	390	17	1589	20	390	16	1474	3	514	2	520	1.30	1.13	4.09	1.47	2.13	1.00	3.06	2.94	1.00	14.48	8179644	19344566
2	36	7	1.643	11.5	1.75	18	357	17	1554	18	357	16	1445	3	581	2	569	1.31	1.12	4.12	1.47	2.19	1.00	3.30	3.01	1.00	16.16	8044135	19153246
2	36	4	3.25	13	2.5	26	510	19	1707	26	510	17	1572	3	450	3	336	1.28	1.13	3.85	1.45	1.96	1.00	2.21	2.66	1.00	9.85	8398224	19549843
2	36	5	2.6	13	2.5	23	453	18	1653	23	453	17	1527	3	562	3	404	1.29	1.13	3.93	1.44	2.04	1.00	2.54	2.74	1.00	11.55	8170226	19228260
2	36	6	2.167	13	2.5	21	411	18	1608	21	411	16	1489	3	450	2	470	1.29	1.13	3.94	1.44	2.11	1.00	2.83	2.82	1.00	13.11	7994090	18962375
2	36	7	1.857	13	2.5	19	376	17	1575	19	376	16	1461	3	514	2	524	1.30	1.13	4.05	1.43	2.18	1.00	3.09	2.88	1.00	14.68	7869449	18816821
2	36	4	3.625	14.5	3.25	27	547	19	1746	27	547	18	1607	3	400	3	310	1.27	1.12	3.84	1.49	1.88	1.00	2.10	2.74	1.00	9.25	8838845	20325841
2	36	5	2.9	14.5	3.25	24	489	19	1686	24	489	17	1555	3	500	3	373	1.28	1.13	3.91	1.48	1.95	1.00	2.39	2.81	1.00	10.77	8582871	19909046
2	36	6	2.417	14.5	3.25	22	444	18	1641	22	444	17	1517	3	400	2	434	1.29	1.13	4.00	1.48	2.01	1.00	2.68	2.88	1.00	12.24	8388327	19617530
2	36	7	2.07	14.5	3.25	20	408	18	1605	20	408	16	1487	3	462	2	493	1.30	1.13	4.02	1.48	2.08	1.00	2.95	2.95	1.00	13.68	8247367	19420991
2	36	4	2.875	11.5	0	24	486	19	1686	24	486	17	1556	3	500	3	376	1.28	1.13	2.14	1.48	1.97	1.00	2.40	1.51	1.00	10.87	8582028	19927736
2	36	5	2.3	11.5	0	22	432	18	1630	22	432	17	1508	3	419	2	452	1.29	1.13	2.18	1.48	2.05	1.00	2.75	1.56	1.00	12.70	8346012	19566340
2	36	6	1.917	11.5	0	20	390	17	1589	20	390	16	1474	3	514	2	520	1.30	1.13	2.23	1.47	2.13	1.00	3.06	1.60	1.00	14.48	8179644	19344566
2	36	7	1.643	11.5	0	18	357	17	1554	18	357	16	1445	3	581	2	569	1.31	1.12	2.24	1.47	2.19	1.00	3.30	1.64	1.00	16.16	8044135	19153246
2	36	4	3.25	13	0.75	26	510	19	1707	26	510	17	1572	3	450	3	336	1.28	1.13	2.64	1.45	1.96	1.00	2.21	1.82	1.00	9.85	8398224	19549843
2	36	5	2.6	13	0.75	23	453	18	1653	23	453	17	1527	3	562	3	404	1.29	1.13	2.69	1.44	2.04	1.00	2.54	1.88	1.00	11.55	8170226	19228260
2	36	6	2.167	13	0.75	21	411	18	1608	21	411	16	1489	3	450	2	470	1.29	1.13	2.70	1.44	2.11	1.00	2.83	1.93	1.00	13.11	7994090	18962375
2	36	7	1.857	13	0.75	19	376	17	1575	19	376	16	1461	3	514	2	524	1.30	1.13	2.77	1.43	2.18	1.00	3.09	1.98	1.00	14.68	7869449	18816821
2	36	4	3.625	14.5	1.5	27	547	19	1746	27	547	18	1607	3	400	3	310	1.27	1.12	3.57	1.49	1.88	1.00	2.10	2.55	1.00	9.25	8838845	20325841
2	36	5	2.9	14.5	1.5	24	489	19	1686	24	489	17	1555	3	500	3	373	1.28	1.13	3.63	1.48	1.95	1.00	2.39	2.62	1.00	10.77	8582871	19909046
2	36	6	2.417	14.5	1.5	22	444	18	1641	22	444	17	1517	3	400	2	434	1.29	1.13	3.52	1.48	2.01	1.00	2.68	2.54	1.00	12.24	8388327	19617530
2	36	7	2.07	14.5	1.5	20	408	18	1605	20	408	16	1487	3	462	2	493	1.30	1.13	3.04	1.48	2.08	1.00	2.95	2.23	1.00	13.68	8247367	19420991
2	36	5	3	15	0	25	495	19	1692	25	495	17	1560	3	486	3	361	1.28	1.13	2.08	1.47	1.95	1.00	2.34	1.49	1.00	10.49	8520122	19788853
2	36	6	2.5	15	0	22	449	18	1648	22	449	17	1524	3	581	3	420	1.29	1.13	2.13	1.47	2.01	1.00	2.62	1.53	1.00	11.95	8329340	19517139
2	36	7	2.14	15	0	21	413	18	1612	21	413	16	1492	3	462	2	478	1.30	1.13	2.15	1.46	2.08	1.00	2.89	1.56	1.00	13.34	8201233	19342492
2	36	8	1.875	15	0	19	383	17	1581	19	383	16	1467	3	514	2	525	1.30	1.13	2.17	1.46	2.13	1.00	3.10	1.59	1.00	14.66	8061524	19141140
2	36	9	1.67	15	0	18	363	17	1562	18	363	16	1451	3	581	2	567	1.31	1.13	2.20	1.49	2.15	1.00	3.17	1.65	1.00	16.05	8189787	19409949
2	36	5	3.3	16.5	0.75	26	512	19	1709	26	512	17	1574	3	439	3	331	1.27	1.13	2.59	1.44	1.95	1.00	2.19	1.82	1.00	9.73	8342984	19446511
2	36	6	2.75	16.5	0.75	23	465	18	1665	23	465	17	1537	3	529	3	385	1.28	1.13	2.65	1.43	2.01	1.00	2.46	1.86	1.00	11.08	8162102	19195290
2	36	7	2.357	16.5	0.75	21	428	18	1628	21	428	17	1506	3	419	2	437	1.29	1.13	2.67	1.43	2.07	1.00	2.70	1.90	1.00	12.36	8015409	18988373
2	36	8	2.06	16.5	0.75	20	398	18	1595	20	398	16	1478	3	474	2	489	1.30	1.13	2.68	1.43	2.12	1.00	2.93	1.94	1.00	13.58	7892519	18804360
2	36	9	1.83	16.5	0.75	19	373	17	1570	19	373	16	1457	3	529	2	528	1.30	1.13	2.69	1.43	2.17	1.00	3.10	1.95	1.00	14.80	7837506	18753476
2	36	5	3.6	18	1.5	27	543	19	1741	27	543	18	1602	3	409	3	311	1.27	1.13	3.54	1.48	1.88	1.00	2.11	2.53	1.00	9.25	8738970	20141654
2	36	6	3	18	1.5	25	495	19	1693	25	495	17	1561	3	486	3	362	1.28	1.13	3.55	1.47	1.94	1.00	2.35	2.59	1.00	10.50	8533054	19817709
2	36	7	2.57	18	1.5	23	456	18	1656	23	456	17	1530	3	562	3	411	1.29	1.13	3.64	1.47	1.99	1.00	2.59	2.64	1.00	11.73	8380830	19604385

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	36	8	2.25	18	1.5	21	425	18	1622	21	425	16	1501	3	439	2	459	1.29	1.13	3.24	1.47	2.04	1.00	2.80	2.37	1.00	12.85	8236669	19374525
2	36	9	2	18	1.5	20	398	18	1595	20	398	16	1478	3	486	2	506	1.30	1.13	2.91	1.46	2.09	1.00	3.02	2.15	1.00	13.98	8127437	19224318
2	36	6	3.08	18.5	0	25	500	19	1698	25	500	17	1565	3	474	3	353	1.28	1.13	2.04	1.47	1.94	1.00	2.31	1.48	1.00	10.29	8496225	19745180
2	36	7	2.64	18.5	0	23	461	18	1660	23	461	17	1533	3	545	3	401	1.29	1.13	2.09	1.46	1.99	1.00	2.54	1.51	1.00	11.47	8335046	19509151
2	36	8	2.32	18.5	0	22	430	18	1627	22	430	17	1506	3	419	2	446	1.29	1.13	2.10	1.46	2.04	1.00	2.75	1.53	1.00	12.55	8182533	19270540
2	36	9	2.06	18.5	0	20	402	18	1602	20	402	16	1485	3	474	2	492	1.30	1.13	2.13	1.45	2.09	1.00	2.97	1.56	1.00	13.69	8088552	19165884
2	36	10	1.85	18.5	0	19	379	17	1576	19	379	16	1462	3	514	2	528	1.30	1.13	2.15	1.45	2.14	1.00	3.12	1.59	1.00	14.75	7991845	19017351
2	36	6	3.58	21.5	1.5	27	540	19	1738	27	540	18	1600	3	409	3	312	1.27	1.13	3.52	1.47	1.89	1.00	2.12	2.52	1.00	9.28	8679370	20037052
2	36	7	3.07	21.5	1.5	25	499	19	1699	25	499	17	1566	3	474	3	354	1.28	1.13	3.54	1.47	1.93	1.00	2.33	2.57	1.00	10.33	8512232	19786205
2	36	8	2.69	21.5	1.5	23	466	18	1664	23	466	17	1537	3	545	3	395	1.29	1.13	3.57	1.46	1.98	1.00	2.52	2.61	1.00	11.31	8356069	19534559
2	36	9	2.39	21.5	1.5	22	437	18	1637	22	437	17	1514	3	409	2	436	1.29	1.13	3.38	1.46	2.02	1.00	2.71	2.49	1.00	12.32	8248765	19394922
2	36	10	2.15	21.5	1.5	21	413	18	1610	21	413	16	1491	3	450	2	475	1.30	1.13	3.07	1.46	2.06	1.00	2.89	2.27	1.00	13.25	8135897	19213659
2	36	7	3.14	22	0	25	504	19	1701	25	504	17	1567	3	462	3	347	1.28	1.13	2.03	1.46	1.93	1.00	2.29	1.47	1.00	10.13	8468315	19684485
2	36	8	2.75	22	0	24	470	18	1668	24	470	17	1539	3	529	3	387	1.29	1.13	2.05	1.46	1.98	1.00	2.48	1.49	1.00	11.12	8323803	19470745
2	36	9	2.44	22	0	22	441	18	1640	22	441	17	1517	3	400	2	427	1.29	1.13	2.07	1.45	2.02	1.00	2.67	1.52	1.00	12.12	8221405	19334779
2	36	10	2.2	22	0	21	416	18	1616	21	416	16	1496	3	439	2	466	1.30	1.13	2.10	1.45	2.06	1.00	2.85	1.54	1.00	13.04	8107588	19175468
2	36	11	2	22	0	20	395	18	1593	20	395	16	1476	3	486	2	504	1.30	1.13	2.12	1.45	2.10	1.00	3.02	1.56	1.00	13.94	8021507	19046507
2	36	12	1.83	22	0	19	376	17	1574	19	376	16	1461	3	529	2	531	1.30	1.13	2.14	1.45	2.14	1.00	3.14	1.58	1.00	14.88	7971589	18993176
2	36	7	3.57	25	1.5	27	538	19	1736	27	538	18	1598	3	409	3	312	1.27	1.13	3.50	1.46	1.89	1.00	2.12	2.51	1.00	9.28	8629523	19947057
2	36	8	3.125	25	1.5	25	503	19	1700	25	503	17	1567	3	462	3	348	1.28	1.13	3.53	1.46	1.93	1.00	2.30	2.55	1.00	10.16	8471855	19692077
2	36	9	2.78	25	1.5	24	473	18	1671	24	473	17	1543	3	529	3	384	1.28	1.13	3.56	1.46	1.97	1.00	2.47	2.59	1.00	11.04	8348168	19511879
2	36	10	2.5	25	1.5	22	447	18	1646	22	447	17	1521	3	581	3	419	1.29	1.13	3.54	1.46	2.01	1.00	2.64	2.58	1.00	11.91	8250589	19377138
2	36	11	2.27	25	1.5	21	425	18	1622	21	425	16	1501	3	429	2	454	1.29	1.13	3.25	1.45	2.04	1.00	2.80	2.38	1.00	12.74	8164099	19244368
2	36	12	1.83	25	1.5	23	450	18	1649	23	450	17	1524	3	529	2	597	1.31	1.13	2.33	1.91	1.80	1.00	3.39	2.07	1.00	16.33	11429588	24773785
2	40	3	1.5	4.5	0	19	378	19	1736	19	378	18	1606	2	364	1	448	1.32	1.14	2.34	1.62	2.18	1.00	3.73	1.63	1.00	22.08	12879008	28422781
2	40	3	2	6	0.75	21	422	20	1781	21	422	18	1642	3	541	2	545	1.30	1.14	2.21	1.50	2.20	1.00	3.52	1.49	1.00	17.44	11838997	26714718
2	40	4	1.5	6	0.75	19	372	19	1729	19	372	18	1600	2	364	1	443	1.32	1.14	2.30	1.58	2.18	1.00	3.77	1.65	1.00	21.91	12503307	27819166
2	40	3	2.33	7	1.25	23	463	20	1822	23	463	18	1675	3	465	2	495	1.30	1.14	3.63	1.52	2.12	1.00	3.19	2.48	1.00	15.66	12162537	27218600
2	40	4	1.75	7	1.25	20	392	19	1752	20	392	18	1618	2	312	1	406	1.31	1.14	3.10	1.51	2.21	1.00	3.68	2.16	1.00	19.27	11820389	26720634
2	40	3	2.67	8	0	24	487	20	1844	24	487	19	1693	3	408	2	434	1.29	1.14	2.42	1.46	2.11	1.00	2.91	1.61	1.00	13.99	11717857	26431665
2	40	4	2	8	0	21	414	19	1771	21	414	18	1633	3	541	2	553	1.30	1.14	2.48	1.46	2.22	1.00	3.49	1.68	1.00	17.23	11382216	25941591
2	40	5	1.6	8	0	19	374	19	1734	19	374	18	1604	2	339	1	430	1.32	1.14	2.57	1.52	2.20	1.00	3.75	1.82	1.00	20.65	11888535	26849949
2	40	3	3.17	9.5	0.75	26	523	21	1882	26	523	19	1724	3	513	3	372	1.28	1.14	2.95	1.42	2.07	1.00	2.61	1.95	1.00	12.28	11478892	25999512
2	40	4	2.375	9.5	0.75	22	447	20	1805	22	447	18	1661	3	455	2	473	1.30	1.14	3.06	1.42	2.19	1.00	3.12	2.03	1.00	15.07	11116368	25453683
2	40	5	1.9	9.5	0.75	20	393	19	1753	20	393	18	1618	3	571	2	564	1.31	1.14	3.12	1.41	2.27	1.00	3.58	2.11	1.00	17.77	10937561	25242770
2	40	6	1.583	9.5	0.75	19	371	19	1729	19	371	18	1599	2	345	1	432	1.32	1.14	2.77	1.51	2.20	1.00	3.77	1.99	1.00	20.75	11808523	26705045
2	40	3	3.67	11	1.5	29	577	21	1936	29	577	19	1769	3	444	3	334	1.28	1.14	3.84	1.48	1.96	1.00	2.43	2.62	1.00	11.23	12263369	27323301
2	40	4	2.75	11	1.5	25	496	20	1856	25	496	19	1702	3	588	3	425	1.29	1.14	3.94	1.47	2.06	1.00	2.91	2.72	1.00	13.77	11863356	26694170
2	40	5	2.2	11	1.5	22	439	20	1796	22	439	18	1653	3	488	2	512	1.30	1.14	4.05	1.47	2.15	1.00	3.33	2.81	1.00	16.11	11569131	26227506
2	40	6	1.833	11	1.5	20	394	19	1754	20	394	18	1619	3	588	2	584	1.31	1.14	4.14	1.46	2.21	1.00	3.70	2.89	1.00	18.44	11389741	26003354
2	40	7	1.57	11	1.5	18	359	19	1716	18	359	17	1588	2	345	1	427	1.32	1.14	4.15	1.46	2.25	1.00	3.99	2.96	1.00	20.61	11228093	25755815
2	40	4	2.875	11.5	1.75	25	505	20	1862	25	505	19	1707	3	556	3	407	1.29	1.14	4.16	1.46	2.06	1.00	2.81	2.85	1.00	13.25	11727717	26432445
2	40	5	2.3	11.5	1.75	22	446	20	1806	22	446	18	1661	3	465	2	491	1.30	1.14	4.23	1.45	2.15	1.00	3.24	2.95	1.00	15.58	11463325	26063102
2	40	6	1.917	11.5	1.75	20	402	19	1759	20	402	18	1623	3	571	2	566	1.31	1.14	4.36	1.45	2.21	1.00	3.60	3.03	1.00	17.74	11244157	25724627
2	40	7	1.643	11.5	1.75	18	366	19	1723	18	366	18	1594	2	333	1	413	1.31	1.14	4.39	1.44	2.26	1.00	3.90	3.10	1.00	19.86	11092815	25521150
2	40	4	3.25	13	2.5	26	529	21	1889	26	529	19	1729	3	500	3	364	1.29	1.14	4.09	1.42	2.05	1.00	2.60	2.73	1.00	12.07	11486113	26013111
2	40	5	2.6	13	2.5	23	469	20	1829	23	469	18	1680	3	417	2	438	1.29	1.14	4.15	1.42	2.14	1.00	2.99	2.82	1.00	14.14	11199669	25582790
2	40	6	2.167	13	2.5	21	423	20	1783	21	423	18	1643	3	500	2	510	1.30	1.14	4.23	1.41	2.21	1.00	3.35	2.90	1.00	16.12	10990290	25286457
2	40	7	1.857	13	2.5	19	386	19	1746	19	386	18	1613	3	571	2	570	1.31	1.14	4.32	1.41	2.27	1.00	3.65	2.97	1.00	18.04	10834030	25078180
2	40	4	3.625	14.5	3.25	28	569	21	1929	28	569	19	1763	3	444	3	336	1.28	1.14	4.11	1.46	1.96	1.00	2.46	2.80	1.00	11.28	12053781	26970002
2	40	5	2.9	14.5	3.25	25	507	20	1864	25	507	19	1709	3	556	3	404	1.29	1.14	4.15	1.46	2.04	1.00	2.82	2.89	1.00	13.17	11722678	26422046
2	40	6	2.417	14.5	3.25	23	459	20	1816	23	459	18	1669	3	444	2	470	1.30	1.14	4.23	1.45	2.11	1.00	3.15	2.96	1.00	15.00	11492626	26076845
2	40	7	2.07	14.5	3.25	21	420	20	1779	21	420	18	1639	3	513	2	536	1.31	1.14	4.32	1.45	2.17	1.00	3.48	3.03	1.00	16.80	11334014	25868214
2	40	4	2.875	11.5	0	25	505	20	1862	25	505	19	1707	3	556	3	407	1.29	1.14	2.37	1.46	2.06	1.00	2.81	1.62	1.00	13.25	11727717	26432445
2	40	5	2.3	11.5	0	22	446	20	1806	22	446	18	1661	3	465	2	491	1.30	1.14	2.41	1.45	2.15	1.00	3.24	1.68	1.00	15.58	11463325	26063102
2	40	6	1.917	11.5	0	20	402	19	1759	20	402	18	1623	3	571	2	566	1.31	1.14	2.49	1.45	2.21	1.00	3.60	1.72	1.00	17.74	11244157	25724627
2	40	7	1.643	11.5	0	18	366	19	1723	18	366	18	1594	2	333	1	413	1.31	1.14	2.50	1.44	2.26	1.00	3.90	1.77	1.00	19.86	11092815	25521150
2	40	4	3.25	13	0.75	26	529	21	1889	26	529	19	1729	3	500	3	364	1.29	1.14	2.90	1.42	2.05	1.00	2.60	1.94	1.00	12.07	11486113	26013111
2	40	5	2.6	13	0.75	23	469	20	1829	23	469	18	1680	3	417	2	438	1.29	1.14	2.94	1.42	2.14	1.00	2.99	2.00	1.00	14.14	11199669	25582790
2	40	6	2.167	13	0.75	21	423	20	1783	21	423	18	1643	3	500	2	510	1.30	1.14	3.00	1.41	2.21	1.00	3.35	2.06	1.00	16.12	10990290	25286457
2	40	7	1.857	13	0.75	19	386	19	1746	19	386	18	1613	3	571	2	570	1.31	1.14	3.06	1.41	2.27	1.00	3.65	2.11	1.00	18.04	10834030	25078180
2	40	4	3.625	14.5	1.5	28	569	21	1929	28	569	19	1763	3	444	3	336	1.28	1.14	3.84	1.46	1.96	1.00	2.46	2.63	1.00	11.28	12053781	26970002

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	40	5	2.9	14.5	1.5	25	507	20	1864	25	507	19	1709	3	556	3	404	1.29	1.14	3.89	1.46	2.04	1.00	2.82	2.70	1.00	13.17	11722678	26422046
2	40	6	2.417	14.5	1.5	23	459	20	1816	23	459	18	1669	3	444	2	470	1.30	1.14	3.86	1.45	2.11	1.00	3.15	2.70	1.00	15.00	11492626	26076845
2	40	7	2.07	14.5	1.5	21	420	20	1779	21	420	18	1639	3	513	2	536	1.31	1.14	3.38	1.45	2.17	1.00	3.48	2.37	1.00	16.80	11334014	25868214
2	40	5	3	15	0	26	513	21	1872	26	513	19	1715	3	541	3	392	1.29	1.14	2.32	1.45	2.04	1.00	2.76	1.60	1.00	12.84	11646599	26299768
2	40	6	2.5	15	0	23	465	20	1823	23	465	18	1674	3	435	2	456	1.30	1.14	2.36	1.44	2.11	1.00	3.08	1.64	1.00	14.61	11416330	25945892
2	40	7	2.14	15	0	21	426	20	1784	21	426	18	1643	3	513	2	519	1.30	1.14	2.41	1.44	2.17	1.00	3.40	1.68	1.00	16.34	11244322	25700612
2	40	8	1.875	15	0	20	394	19	1751	20	394	18	1617	3	571	2	571	1.31	1.14	2.43	1.43	2.22	1.00	3.66	1.72	1.00	17.98	11083679	25466398
2	40	9	1.67	15	0	19	372	19	1731	19	372	18	1600	2	328	1	411	1.32	1.14	2.46	1.46	2.22	1.00	3.75	1.78	1.00	19.72	11264884	25815912
2	40	5	3.3	16.5	0.75	27	532	21	1889	27	532	19	1728	3	488	3	358	1.29	1.14	2.85	1.41	2.03	1.00	2.58	1.93	1.00	11.88	11401796	25842716
2	40	6	2.75	16.5	0.75	24	482	20	1841	24	482	19	1689	3	588	3	417	1.29	1.14	2.90	1.41	2.11	1.00	2.89	1.98	1.00	13.54	11172584	25512364
2	40	7	2.357	16.5	0.75	22	442	20	1802	22	442	18	1658	3	465	2	474	1.30	1.14	2.96	1.40	2.17	1.00	3.19	2.02	1.00	15.14	10991873	25261000
2	40	8	2.06	16.5	0.75	21	410	19	1767	21	410	18	1629	3	526	2	531	1.30	1.14	2.98	1.40	2.22	1.00	3.46	2.06	1.00	16.66	10852235	25047504
2	40	9	1.83	16.5	0.75	19	383	19	1740	19	383	18	1607	3	588	2	574	1.31	1.14	2.98	1.40	2.26	1.00	3.67	2.09	1.00	18.18	10788622	24982674
2	40	5	3.6	18	1.5	28	565	21	1923	28	565	19	1757	3	455	3	337	1.28	1.14	3.75	1.45	1.96	1.00	2.47	2.61	1.00	11.29	11919435	26725605
2	40	6	3	18	1.5	26	513	21	1873	26	513	19	1716	3	541	3	392	1.29	1.14	3.82	1.45	2.03	1.00	2.77	2.67	1.00	12.85	11662941	26335022
2	40	7	2.57	18	1.5	24	472	20	1832	24	472	18	1682	3	426	2	446	1.30	1.14	3.89	1.44	2.09	1.00	3.05	2.73	1.00	14.35	11476189	26055222
2	40	8	2.25	18	1.5	22	438	20	1798	22	438	18	1654	3	488	2	498	1.30	1.14	3.56	1.44	2.15	1.00	3.31	2.53	1.00	15.79	11313847	25818472
2	40	9	2	18	1.5	20	409	19	1769	20	409	18	1631	3	541	2	550	1.31	1.14	3.24	1.43	2.19	1.00	3.57	2.29	1.00	17.19	11179917	25629931
2	40	6	3.08	18.5	0	26	519	21	1876	26	519	19	1718	3	526	3	382	1.29	1.14	2.27	1.44	2.03	1.00	2.72	1.59	1.00	12.56	11594094	26190766
2	40	7	2.64	18.5	0	24	477	20	1837	24	477	19	1686	3	408	2	435	1.30	1.14	2.32	1.43	2.09	1.00	3.00	1.62	1.00	14.05	11411501	25938458
2	40	8	2.32	18.5	0	22	444	20	1802	22	444	18	1657	3	465	2	484	1.30	1.14	2.34	1.43	2.14	1.00	3.24	1.65	1.00	15.38	11231490	25655118
2	40	9	2.06	18.5	0	21	415	19	1772	21	415	18	1633	3	526	2	535	1.31	1.14	2.39	1.43	2.19	1.00	3.49	1.68	1.00	16.75	11100747	25463982
2	40	10	1.85	18.5	0	19	389	19	1747	19	389	18	1613	3	571	2	574	1.31	1.14	2.41	1.42	2.22	1.00	3.69	1.71	1.00	18.13	10991795	25325264
2	40	6	3.58	21.5	1.5	28	562	21	1919	28	562	19	1754	3	455	3	338	1.28	1.14	3.72	1.44	1.96	1.00	2.48	2.59	1.00	11.30	11831422	26567728
2	40	7	3.07	21.5	1.5	26	518	21	1877	26	518	19	1719	3	526	3	384	1.29	1.14	3.80	1.44	2.02	1.00	2.73	2.65	1.00	12.61	11615121	26240763
2	40	8	2.69	21.5	1.5	24	482	20	1842	24	482	19	1691	3	408	2	428	1.30	1.14	3.82	1.44	2.07	1.00	2.97	2.70	1.00	13.86	11438347	25979050
2	40	9	2.39	21.5	1.5	23	452	20	1810	23	452	18	1664	3	455	2	472	1.30	1.14	3.77	1.43	2.12	1.00	3.19	2.65	1.00	15.06	11289937	25744981
2	40	10	2.15	21.5	1.5	21	426	20	1783	21	426	18	1641	3	500	2	516	1.31	1.14	3.42	1.43	2.16	1.00	3.41	2.42	1.00	16.25	11174740	25574632
2	40	7	3.14	22	0	26	523	21	1880	26	523	19	1722	3	513	3	375	1.29	1.14	2.27	1.43	2.02	1.00	2.69	1.57	1.00	12.38	11558360	26125170
2	40	8	2.75	22	0	24	487	20	1844	24	487	19	1692	3	588	3	419	1.29	1.14	2.28	1.43	2.07	1.00	2.92	1.61	1.00	13.59	11376974	25846218
2	40	9	2.44	22	0	23	456	20	1815	23	456	18	1668	3	444	2	464	1.30	1.14	2.33	1.43	2.12	1.00	3.15	1.63	1.00	14.84	11268933	25711326
2	40	10	2.2	22	0	22	430	20	1787	22	430	18	1645	3	488	2	505	1.30	1.14	2.36	1.42	2.16	1.00	3.35	1.66	1.00	15.95	11117210	25471021
2	40	11	2	22	0	20	406	19	1766	20	406	18	1628	3	541	2	548	1.31	1.14	2.38	1.42	2.20	1.00	3.57	1.69	1.00	17.14	11028496	25377271
2	40	12	1.83	22	0	19	386	19	1744	19	386	18	1611	3	588	2	577	1.31	1.14	2.40	1.42	2.22	1.00	3.71	1.70	1.00	18.27	10960895	25278787
2	40	7	3.57	25	1.5	28	559	21	1919	28	559	19	1754	3	455	3	338	1.28	1.14	3.71	1.44	1.97	1.00	2.50	2.59	1.00	11.34	11773989	26489821
2	40	8	3.125	25	1.5	26	522	21	1880	26	522	19	1721	3	513	3	377	1.29	1.14	3.79	1.44	2.01	1.00	2.71	2.63	1.00	12.43	11581098	26171208
2	40	9	2.78	25	1.5	25	490	20	1849	25	490	19	1696	3	588	3	416	1.30	1.14	3.82	1.43	2.06	1.00	2.91	2.68	1.00	13.51	11429306	25947510
2	40	10	2.5	25	1.5	23	462	20	1822	23	462	18	1674	3	435	2	455	1.30	1.14	3.85	1.43	2.11	1.00	3.11	2.72	1.00	14.59	11303595	25770693
2	40	11	2.27	25	1.5	22	438	20	1798	22	438	18	1654	3	476	2	493	1.30	1.14	3.57	1.43	2.14	1.00	3.31	2.53	1.00	15.65	11214165	25648324
2	40	12	1.83	25	1.5	23	464	20	1822	23	464	18	1672	2	588	2	434	1.32	1.14	2.49	1.85	1.87	1.00	3.96	2.13	1.00	19.95	15532324	32598177
2	44	3	1.5	4.5	0	19	386	21	1904	19	386	19	1753	2	400	1	483	1.32	1.15	2.58	1.58	2.23	1.00	4.30	1.76	1.00	26.56	17209433	36737887
2	44	3	2	6	0.75	22	434	21	1951	22	434	20	1789	3	595	2	586	1.31	1.15	2.45	1.47	2.27	1.00	4.03	1.61	1.00	20.91	15796833	34550895
2	44	4	1.5	6	0.75	19	379	21	1898	19	379	19	1748	2	400	1	478	1.32	1.15	2.55	1.55	2.23	1.00	4.35	1.78	1.00	26.41	16724406	36010040
2	44	3	2.33	7	1.25	24	477	22	1996	24	477	20	1825	3	512	2	532	1.31	1.15	3.92	1.49	2.19	1.00	3.66	2.61	1.00	18.79	16198719	35203552
2	44	4	1.75	7	1.25	20	402	21	1920	20	402	19	1764	2	344	1	437	1.32	1.15	3.41	1.48	2.27	1.00	4.22	2.30	1.00	23.15	15801183	34574697
2	44	3	2.67	8	0	25	502	22	2022	25	502	20	1845	3	449	2	466	1.30	1.15	2.64	1.44	2.20	1.00	3.35	1.73	1.00	16.83	15621744	34273842
2	44	4	2	8	0	21	425	21	1942	21	425	20	1781	3	595	2	595	1.31	1.15	2.73	1.43	2.29	1.00	4.00	1.81	1.00	20.72	15215189	33625840
2	44	5	1.6	8	0	19	382	21	1902	19	382	19	1750	2	373	1	464	1.32	1.15	2.82	1.49	2.26	1.00	4.32	1.96	1.00	24.85	15905437	34760438
2	44	3	3.17	9.5	0.75	27	541	23	2060	27	541	21	1876	3	564	3	398	1.29	1.15	3.24	1.40	2.17	1.00	3.00	2.08	1.00	14.71	15256811	33643840
2	44	4	2.375	9.5	0.75	23	460	22	1979	23	460	20	1811	3	500	2	507	1.30	1.15	3.35	1.39	2.28	1.00	3.59	2.17	1.00	18.12	14841907	33013595
2	44	5	1.9	9.5	0.75	20	403	21	1921	20	403	19	1765	2	314	1	404	1.31	1.15	3.40	1.39	2.34	1.00	4.11	2.26	1.00	21.35	14619374	32693064
2	44	6	1.583	9.5	0.75	19	379	21	1896	19	379	19	1744	2	379	1	466	1.32	1.15	3.05	1.48	2.25	1.00	4.34	2.13	1.00	24.95	15794577	34556795
2	44	3	3.67	11	1.5	30	598	23	2118	30	598	21	1921	3	489	3	358	1.29	1.15	4.11	1.46	2.05	1.00	2.79	2.73	1.00	13.43	16260412	35306325
2	44	4	2.75	11	1.5	26	512	22	2032	26	512	20	1852	3	431	2	456	1.30	1.15	4.25	1.45	2.15	1.00	3.33	2.84	1.00	16.50	15767278	34508008
2	44	5	2.2	11	1.5	23	451	22	1970	23	451	20	1803	3	537	2	550	1.31	1.15	4.35	1.44	2.22	1.00	3.83	2.94	1.00	19.39	15446449	34003191
2	44	6	1.833	11	1.5	20	404	21	1922	20	404	19	1765	2	328	1	419	1.32	1.15	4.41	1.43	2.27	1.00	4.25	3.02	1.00	22.15	15214932	33646956
2	44	7	1.57	11	1.5	18	366	21	1883	18	366	19	1735	2	379	1	460	1.32	1.15	4.48	1.43	2.31	1.00	4.60	3.10	1.00	24.83	15047965	33393097
2	44	4	2.875	11.5	1.75	26	521	22	2040	26	521	20	1859	3	415	2	437	1.30	1.15	4.46	1.43	2.15	1.00	3.23	2.96	1.00	15.91	15592320	34208941
2	44	5	2.3	11.5	1.75	23	459	22	1978	23	459	20	1810	3	512	2	527	1.31	1.15	4.57	1.43	2.23	1.00	3.72	3.06	1.00	18.70	15266964	33709659
2	44	6	1.917	11.5	1.75	21	412	21	1929	21	412	19	1770	2	314	1	406	1.31	1.15	4.64	1.42	2.28	1.00	4.14	3.15	1.00	21.33	15028634	33334431
2	44	7	1.643	11.5	1.75	19	373	21	1892	19	373	19	1742	2	367	1	445	1.32	1.15	4.72	1.41	2.32	1.00	4.49	3.24	1.00	23.94	14870591	33127663
2	44	4	3.25	13	2.5	27	548	23	2065	27	548	21	1878	3	550	3	389	1.29	1.15	4.32	1.40	2.14	1.00	2.98	2.84	1.00	14.42	15237799	33591431

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	44	5	2.6	13	2.5	24	484	22	2002	24	484	20	1828	3	458	2	470	1.30	1.15	4.43	1.39	2.22	1.00	3.42	2.93	1.00	16.94	14905856	33090440
2	44	6	2.167	13	2.5	22	435	21	1953	22	435	20	1790	3	550	2	548	1.31	1.15	4.50	1.39	2.28	1.00	3.84	3.02	1.00	19.35	14664425	32737021
2	44	7	1.857	13	2.5	20	395	21	1915	20	395	19	1760	2	324	1	409	1.31	1.15	4.58	1.38	2.33	1.00	4.20	3.09	1.00	21.70	14494918	32517175
2	44	4	3.625	14.5	3.25	30	590	23	2108	30	590	21	1913	3	489	3	359	1.29	1.15	4.36	1.44	2.05	1.00	2.82	2.91	1.00	13.47	15957513	34786636
2	44	5	2.9	14.5	3.25	26	523	22	2043	26	523	20	1861	3	415	2	433	1.30	1.15	4.47	1.43	2.14	1.00	3.24	3.00	1.00	15.82	15597214	34225069
2	44	6	2.417	14.5	3.25	24	472	22	1992	24	472	20	1820	3	489	2	505	1.31	1.15	4.54	1.43	2.20	1.00	3.63	3.08	1.00	18.04	15327810	33808971
2	44	7	2.07	14.5	3.25	22	431	21	1951	22	431	20	1787	3	564	2	576	1.31	1.15	4.61	1.42	2.24	1.00	4.00	3.16	1.00	20.21	15139340	33528908
2	44	4	2.875	11.5	0	26	521	22	2040	26	521	20	1859	3	415	2	437	1.30	1.15	2.64	1.43	2.15	1.00	3.23	1.75	1.00	15.91	15592320	34208941
2	44	5	2.3	11.5	0	23	459	22	1978	23	459	20	1810	3	512	2	527	1.31	1.15	2.70	1.43	2.23	1.00	3.72	1.81	1.00	18.70	15266964	33709659
2	44	6	1.917	11.5	0	21	412	21	1929	21	412	19	1770	2	314	1	406	1.31	1.15	2.74	1.42	2.28	1.00	4.14	1.86	1.00	21.33	15028634	33334431
2	44	7	1.643	11.5	0	19	373	21	1892	19	373	19	1742	2	367	1	445	1.32	1.15	2.79	1.41	2.32	1.00	4.49	1.91	1.00	23.94	14870591	33127663
2	44	4	3.25	13	0.75	27	548	23	2065	27	548	21	1878	3	550	3	389	1.29	1.15	3.15	1.40	2.14	1.00	2.98	2.07	1.00	14.42	15237799	33591431
2	44	5	2.6	13	0.75	24	484	22	2002	24	484	20	1828	3	458	2	470	1.30	1.15	3.23	1.39	2.22	1.00	3.42	2.13	1.00	16.94	14905856	33090440
2	44	6	2.167	13	0.75	22	435	21	1953	22	435	20	1790	3	550	2	548	1.31	1.15	3.28	1.39	2.28	1.00	3.84	2.20	1.00	19.35	14664425	32737021
2	44	7	1.857	13	0.75	20	395	21	1915	20	395	19	1760	2	324	1	409	1.31	1.15	3.34	1.38	2.33	1.00	4.20	2.25	1.00	21.70	14494918	32517175
2	44	4	3.625	14.5	1.5	30	590	23	2108	30	590	21	1913	3	489	3	359	1.29	1.15	4.11	1.44	2.05	1.00	2.82	2.74	1.00	13.47	15957513	34786636
2	44	5	2.9	14.5	1.5	26	523	22	2043	26	523	20	1861	3	415	2	433	1.30	1.15	4.21	1.43	2.14	1.00	3.24	2.82	1.00	15.82	15597214	34225069
2	44	6	2.417	14.5	1.5	24	472	22	1992	24	472	20	1820	3	489	2	505	1.31	1.15	4.26	1.43	2.20	1.00	3.63	2.89	1.00	18.04	15327810	33808971
2	44	7	2.07	14.5	1.5	22	431	21	1951	22	431	20	1787	3	564	2	576	1.31	1.15	3.71	1.42	2.24	1.00	4.00	2.54	1.00	20.21	15139340	33528908
2	44	5	3	15	0	27	530	23	2049	27	530	21	1866	3	595	3	420	1.30	1.15	2.59	1.42	2.14	1.00	3.16	1.72	1.00	15.39	15467298	34000251
2	44	6	2.5	15	0	24	479	22	1997	24	479	20	1823	3	478	2	489	1.31	1.15	2.62	1.42	2.20	1.00	3.54	1.77	1.00	17.53	15197077	33572871
2	44	7	2.14	15	0	22	438	21	1955	22	438	20	1790	3	564	2	558	1.31	1.15	2.66	1.41	2.24	1.00	3.90	1.81	1.00	19.63	15010160	33286674
2	44	8	1.875	15	0	20	403	21	1922	20	403	19	1765	2	319	1	409	1.32	1.15	2.68	1.41	2.28	1.00	4.22	1.85	1.00	21.65	14833106	33046148
2	44	9	1.67	15	0	19	380	21	1898	19	380	19	1746	2	361	1	443	1.32	1.15	2.75	1.43	2.28	1.00	4.32	1.92	1.00	23.70	15060342	33414430
2	44	5	3.3	16.5	0.75	28	550	23	2068	28	550	21	1880	3	537	3	383	1.29	1.15	3.11	1.39	2.13	1.00	2.96	2.06	1.00	14.24	15138906	33433246
2	44	6	2.75	16.5	0.75	25	497	22	2017	25	497	20	1840	3	431	2	447	1.30	1.15	3.20	1.38	2.20	1.00	3.32	2.12	1.00	16.26	14873924	33044867
2	44	7	2.357	16.5	0.75	23	455	22	1974	23	455	20	1806	3	512	2	509	1.31	1.15	3.25	1.38	2.25	1.00	3.66	2.17	1.00	18.17	14654647	32710173
2	44	8	2.06	16.5	0.75	21	420	21	1939	21	420	20	1778	3	579	2	570	1.31	1.15	3.26	1.38	2.29	1.00	3.98	2.21	1.00	20.06	14508108	32504218
2	44	9	1.83	16.5	0.75	20	391	21	1911	20	391	19	1756	2	328	1	412	1.32	1.15	3.26	1.38	2.32	1.00	4.24	2.24	1.00	21.93	14458033	32461438
2	44	5	3.6	18	1.5	29	585	23	2103	29	585	21	1909	3	500	3	360	1.29	1.15	4.07	1.43	2.05	1.00	2.84	2.72	1.00	13.51	15783507	34498850
2	44	6	3	18	1.5	27	531	23	2048	27	531	20	1863	3	595	3	420	1.30	1.15	4.13	1.42	2.12	1.00	3.17	2.79	1.00	15.36	15483004	34006967
2	44	7	2.57	18	1.5	24	487	22	2005	24	487	20	1830	3	468	2	478	1.31	1.15	4.19	1.42	2.18	1.00	3.50	2.85	1.00	17.19	15260061	33671191
2	44	8	2.25	18	1.5	23	451	22	1968	23	451	20	1800	3	537	2	535	1.31	1.15	3.96	1.41	2.22	1.00	3.80	2.70	1.00	18.92	15060335	33359011
2	44	9	2	18	1.5	21	420	21	1938	21	420	20	1777	3	595	2	591	1.32	1.15	3.55	1.41	2.26	1.00	4.09	2.45	1.00	20.64	14921369	33165718
2	44	6	3.08	18.5	0	27	536	23	2055	27	536	21	1870	3	579	3	410	1.30	1.15	2.54	1.41	2.12	1.00	3.12	1.71	1.00	15.07	15409385	33900182
2	44	7	2.64	18.5	0	25	492	22	2011	25	492	20	1835	3	449	2	466	1.30	1.15	2.58	1.41	2.18	1.00	3.44	1.74	1.00	16.84	15174816	33538440
2	44	8	2.32	18.5	0	23	457	22	1974	23	457	20	1805	3	512	2	519	1.31	1.15	2.59	1.40	2.22	1.00	3.72	1.78	1.00	18.46	14967634	33203568
2	44	9	2.06	18.5	0	21	425	21	1945	21	425	20	1782	3	579	2	575	1.31	1.15	2.65	1.40	2.26	1.00	4.02	1.82	1.00	20.18	14837029	33044276
2	44	10	1.85	18.5	0	20	398	21	1917	20	398	19	1760	2	324	1	412	1.32	1.15	2.67	1.40	2.29	1.00	4.25	1.85	1.00	21.83	14715785	32861374
2	44	6	3.58	21.5	1.5	29	582	23	2099	29	582	21	1905	3	500	3	361	1.29	1.15	3.99	1.42	2.05	1.00	2.85	2.70	1.00	13.52	15678357	34314288
2	44	7	3.07	21.5	1.5	27	536	23	2053	27	536	21	1867	3	579	3	411	1.30	1.15	4.06	1.42	2.12	1.00	3.13	2.76	1.00	15.09	15419427	33899542
2	44	8	2.69	21.5	1.5	25	498	22	2015	25	498	20	1837	3	449	2	459	1.30	1.15	4.13	1.41	2.16	1.00	3.40	2.82	1.00	16.59	15203581	33562860
2	44	9	2.39	21.5	1.5	23	465	22	1984	23	465	20	1813	3	500	2	507	1.31	1.15	4.10	1.41	2.20	1.00	3.67	2.83	1.00	18.10	15049903	33350567
2	44	10	2.15	21.5	1.5	22	437	21	1955	22	437	20	1790	3	550	2	554	1.31	1.15	3.76	1.40	2.24	1.00	3.92	2.59	1.00	19.55	14903322	33124676
2	44	7	3.14	22	0	27	540	23	2060	27	540	21	1874	3	564	3	402	1.30	1.15	2.50	1.41	2.12	1.00	3.09	1.69	1.00	14.85	15364599	33832440
2	44	8	2.75	22	0	25	502	22	2021	25	502	20	1842	3	431	2	450	1.30	1.15	2.55	1.40	2.17	1.00	3.36	1.73	1.00	16.32	15146913	33484649
2	44	9	2.44	22	0	24	470	22	1987	24	470	20	1815	3	489	2	497	1.31	1.15	2.55	1.40	2.20	1.00	3.61	1.76	1.00	17.78	14999316	33245831
2	44	10	2.2	22	0	22	441	22	1961	22	441	20	1795	3	537	2	543	1.31	1.15	2.62	1.40	2.24	1.00	3.86	1.79	1.00	19.21	14846724	33046652
2	44	11	2	22	0	21	417	21	1934	21	417	19	1773	3	595	2	588	1.31	1.15	2.63	1.39	2.27	1.00	4.09	1.82	1.00	20.55	14712440	32820603
2	44	12	1.83	22	0	20	395	21	1913	20	395	19	1757	2	328	1	414	1.32	1.15	2.65	1.40	2.29	1.00	4.27	1.84	1.00	21.98	14664221	32771202
2	44	7	3.57	25	1.5	29	579	23	2099	29	579	21	1905	3	500	3	362	1.30	1.15	3.98	1.41	2.06	1.00	2.87	2.70	1.00	13.56	15610301	34226391
2	44	8	3.125	25	1.5	27	539	23	2059	27	539	21	1872	3	564	3	404	1.30	1.15	4.05	1.41	2.11	1.00	3.11	2.75	1.00	14.91	15380325	33859088
2	44	9	2.78	25	1.5	25	506	22	2023	25	506	20	1843	3	431	2	446	1.30	1.15	4.07	1.41	2.15	1.00	3.34	2.79	1.00	16.18	15177797	33515497
2	44	10	2.5	25	1.5	24	476	22	1995	24	476	20	1822	3	478	2	487	1.31	1.15	4.16	1.40	2.19	1.00	3.57	2.84	1.00	17.49	15037071	33321570
2	44	11	2.27	25	1.5	23	451	22	1968	23	451	20	1800	3	524	2	529	1.31	1.15	3.92	1.40	2.22	1.00	3.79	2.70	1.00	18.75	14927645	33142815
2	44	12	1.83	25	1.5	24	476	22	1996	24	476	20	1817	2	328	1	468	1.34	1.16	2.71	1.80	1.92	1.00	4.53	2.21	1.00	23.92	20570853	41900636
2	48	3	1.5	4.5	0	20	393	23	2071	20	393	21	1897	2	436	1	514	1.32	1.16	2.82	1.55	2.27	1.00	4.84	1.89	1.00	31.42	22482162	46484232
2	48	3	2	6	0.75	22	444	23	2122	22	444	21	1936	2	329	1	414	1.31	1.16	2.66	1.45	2.32	1.00	4.53	1.74	1.00	24.74	20613662	43785249
2	48	4	1.5	6	0.75	19	386	23	2063	19	386	21	1890	2	436	1	509	1.33	1.16	2.80	1.52	2.27	1.00	4.89	1.92	1.00	31.18	21825850	45504581
2	48	3	2.33	7	1.25	25	490	24	2168	25	490	22	1970	3	558	2	563	1.31	1.16	4.20	1.46	2.25	1.00	4.10	2.76	1.00	22.17	21067134	44513062
2	48	4	1.75	7	1.25	21	410	23	2089	21	410	21	1910	2	375	1	464	1.32	1.16	3.72	1.45	2.32	1.00	4.75	2.47	1.00	27.40	20652032	43827036
2	48	3	2.67	8	0	26	517	24	2194	26	517	22	1991	3	490	2	492	1.31	1.16	2.91	1.42	2.27	1.00	3.75	1.87	1.00	19.81	20280399	43297605

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	48	4	2	8	0	22	434	23	2113	22	434	21	1929	2	329	1	420	1.31	1.16	3.00	1.41	2.34	1.00	4.50	1.96	1.00	24.53	19856830	42634407
2	48	5	1.6	8	0	19	389	23	2068	19	389	21	1893	2	407	1	493	1.33	1.16	3.09	1.46	2.31	1.00	4.86	2.12	1.00	29.37	20770905	43982440
2	48	3	3.17	9.5	0.75	28	558	25	2236	28	558	22	2023	3	414	2	420	1.30	1.16	3.52	1.38	2.25	1.00	3.37	2.23	1.00	17.33	19807071	42567444
2	48	4	2.375	9.5	0.75	24	472	24	2151	24	472	22	1958	3	545	2	537	1.31	1.16	3.62	1.37	2.34	1.00	4.04	2.33	1.00	21.41	19344327	41842805
2	48	5	1.9	9.5	0.75	21	411	23	2091	21	411	21	1912	2	343	1	428	1.31	1.16	3.71	1.37	2.39	1.00	4.63	2.43	1.00	25.29	19124117	41511910
2	48	6	1.583	9.5	0.75	19	385	23	2063	19	385	21	1889	2	414	1	495	1.33	1.16	3.32	1.45	2.30	1.00	4.89	2.28	1.00	29.54	20628189	43753090
2	48	3	3.67	11	1.5	31	618	25	2296	31	618	23	2068	3	533	3	377	1.30	1.17	4.42	1.43	2.13	1.00	3.12	2.87	1.00	15.78	21021672	44532378
2	48	4	2.75	11	1.5	26	527	24	2206	26	527	22	1998	3	471	2	481	1.31	1.16	4.54	1.42	2.22	1.00	3.74	2.99	1.00	19.45	20468864	43619053
2	48	5	2.2	11	1.5	23	462	24	2141	23	462	21	1949	3	585	2	582	1.32	1.16	4.64	1.42	2.28	1.00	4.30	3.10	1.00	22.90	20106085	43028710
2	48	6	1.833	11	1.5	21	412	23	2091	21	412	21	1910	2	358	1	444	1.32	1.16	4.75	1.41	2.33	1.00	4.78	3.19	1.00	26.21	19873683	42651047
2	48	7	1.57	11	1.5	19	371	23	2051	19	371	21	1881	2	414	1	489	1.32	1.16	4.82	1.40	2.36	1.00	5.18	3.28	1.00	29.44	19708978	42389733
2	48	4	2.875	11.5	1.75	27	536	24	2216	27	536	22	2007	3	453	2	461	1.31	1.16	4.76	1.41	2.23	1.00	3.63	3.10	1.00	18.77	20248068	43285623
2	48	5	2.3	11.5	1.75	24	471	24	2149	24	471	21	1954	3	558	2	558	1.31	1.16	4.85	1.40	2.29	1.00	4.17	3.21	1.00	22.06	19873500	42659428
2	48	6	1.917	11.5	1.75	21	420	23	2100	21	420	21	1918	2	343	1	430	1.32	1.16	4.92	1.39	2.33	1.00	4.66	3.31	1.00	25.28	19639682	42307911
2	48	7	1.643	11.5	1.75	19	379	23	2059	19	379	21	1887	2	400	1	473	1.32	1.16	5.05	1.39	2.37	1.00	5.05	3.40	1.00	28.36	19455268	42011024
2	48	4	3.25	13	2.5	28	564	25	2244	28	564	22	2029	3	407	2	411	1.30	1.16	4.62	1.38	2.23	1.00	3.35	2.97	1.00	17.03	19778415	42542575
2	48	5	2.6	13	2.5	25	497	24	2176	25	497	22	1976	3	500	2	496	1.31	1.16	4.72	1.37	2.29	1.00	3.85	3.08	1.00	20.01	19401382	41931182
2	48	6	2.167	13	2.5	22	445	23	2124	22	445	21	1936	3	304	1	580	1.31	1.16	4.83	1.36	2.34	1.00	4.32	3.17	1.00	22.89	19128717	41508049
2	48	7	1.857	13	2.5	20	403	23	2083	20	403	21	1905	2	353	1	433	1.32	1.16	4.90	1.36	2.38	1.00	4.73	3.26	1.00	25.68	18955189	41250500
2	48	4	3.625	14.5	3.25	30	609	25	2287	30	609	23	2061	3	533	3	379	1.30	1.17	4.62	1.41	2.14	1.00	3.16	3.04	1.00	15.86	20648536	43930586
2	48	5	2.9	14.5	3.25	27	539	24	2216	27	539	22	2005	3	453	2	457	1.31	1.17	4.77	1.41	2.21	1.00	3.63	3.14	1.00	18.61	20215061	43202191
2	48	6	2.417	14.5	3.25	24	485	24	2162	24	485	22	1964	3	533	2	534	1.31	1.16	4.82	1.40	2.26	1.00	4.07	3.23	1.00	21.25	19907550	42704579
2	48	7	2.07	14.5	3.25	22	441	23	2120	22	441	21	1932	2	316	1	407	1.32	1.16	4.90	1.40	2.30	1.00	4.49	3.31	1.00	23.86	19713734	42415974
2	48	4	2.875	11.5	0	27	536	24	2216	27	536	22	2007	3	453	2	461	1.31	1.16	2.89	1.41	2.23	1.00	3.63	1.89	1.00	18.77	20248068	43285623
2	48	5	2.3	11.5	0	24	471	24	2149	24	471	21	1954	3	558	2	558	1.31	1.16	2.95	1.40	2.29	1.00	4.17	1.95	1.00	22.06	19873500	42659428
2	48	6	1.917	11.5	0	21	420	23	2100	21	420	21	1918	2	343	1	430	1.32	1.16	2.99	1.39	2.33	1.00	4.66	2.01	1.00	25.28	19639682	42307911
2	48	7	1.643	11.5	0	19	379	23	2059	19	379	21	1887	2	400	1	473	1.32	1.16	3.07	1.39	2.37	1.00	5.05	2.07	1.00	28.36	19455268	42011024
2	48	4	3.25	13	0.75	28	564	25	2244	28	564	22	2029	3	407	2	411	1.30	1.16	3.44	1.38	2.23	1.00	3.35	2.21	1.00	17.03	19778415	42542575
2	48	5	2.6	13	0.75	25	497	24	2176	25	497	22	1976	3	500	2	496	1.31	1.16	3.51	1.37	2.29	1.00	3.85	2.29	1.00	20.01	19401382	41931182
2	48	6	2.167	13	0.75	22	445	23	2124	22	445	21	1936	3	304	1	580	1.31	1.16	3.59	1.36	2.34	1.00	4.32	2.36	1.00	22.89	19128717	41508049
2	48	7	1.857	13	0.75	20	403	23	2083	20	403	21	1905	2	353	1	433	1.32	1.16	3.65	1.36	2.38	1.00	4.73	2.42	1.00	25.68	18955189	41250500
2	48	4	3.625	14.5	1.5	30	609	25	2287	30	609	23	2061	3	533	3	379	1.30	1.17	4.37	1.41	2.14	1.00	3.16	2.88	1.00	15.86	20648536	43930586
2	48	5	2.9	14.5	1.5	27	539	24	2216	27	539	22	2005	3	453	2	457	1.31	1.17	4.51	1.41	2.21	1.00	3.63	2.97	1.00	18.61	20215061	43202191
2	48	6	2.417	14.5	1.5	24	485	24	2162	24	485	22	1964	3	533	2	534	1.31	1.16	4.56	1.40	2.26	1.00	4.07	3.05	1.00	21.25	19907550	42704579
2	48	7	2.07	14.5	1.5	22	441	23	2120	22	441	21	1932	2	316	1	407	1.32	1.16	4.03	1.40	2.30	1.00	4.49	2.72	1.00	23.86	19713734	42415974
2	48	5	3	15	0	27	546	24	2224	27	546	22	2012	3	436	2	443	1.31	1.16	2.81	1.40	2.21	1.00	3.55	1.86	1.00	18.12	20059767	42968615
2	48	6	2.5	15	0	25	492	24	2169	25	492	22	1969	3	522	2	517	1.31	1.16	2.87	1.39	2.26	1.00	3.98	1.91	1.00	20.68	19755607	42467904
2	48	7	2.14	15	0	22	448	23	2126	22	448	21	1936	3	308	1	591	1.32	1.16	2.91	1.39	2.30	1.00	4.39	1.96	1.00	23.21	19564635	42174954
2	48	8	1.875	15	0	21	411	23	2091	21	411	21	1910	2	348	1	434	1.32	1.16	2.96	1.38	2.34	1.00	4.74	2.00	1.00	25.63	19379105	41905163
2	48	9	1.67	15	0	19	386	23	2066	19	386	21	1891	2	393	1	470	1.33	1.16	3.03	1.40	2.33	1.00	4.87	2.08	1.00	28.09	19689845	42370267
2	48	5	3.3	16.5	0.75	28	567	25	2245	28	567	22	2028	3	585	3	404	1.30	1.17	3.40	1.37	2.22	1.00	3.33	2.21	1.00	16.78	19636748	42294409
2	48	6	2.75	16.5	0.75	26	511	24	2190	26	511	22	1986	3	471	2	472	1.31	1.16	3.48	1.36	2.27	1.00	3.74	2.27	1.00	19.17	19316195	41795813
2	48	7	2.357	16.5	0.75	23	467	24	2144	23	467	21	1950	3	558	2	538	1.31	1.16	3.53	1.36	2.32	1.00	4.11	2.32	1.00	21.43	19075989	41398825
2	48	8	2.06	16.5	0.75	22	430	23	2107	22	430	21	1922	2	320	1	403	1.32	1.16	3.58	1.35	2.35	1.00	4.47	2.37	1.00	23.68	18927802	41171923
2	48	9	1.83	16.5	0.75	20	399	23	2077	20	399	21	1899	2	358	1	437	1.32	1.16	3.57	1.36	2.38	1.00	4.75	2.40	1.00	25.90	18876284	41105429
2	48	5	3.6	18	1.5	30	604	25	2281	30	604	23	2056	3	545	3	380	1.30	1.17	4.33	1.40	2.14	1.00	3.18	2.86	1.00	15.88	20419675	43551174
2	48	6	3	18	1.5	27	546	24	2225	27	546	22	2012	3	436	2	443	1.31	1.17	4.44	1.40	2.20	1.00	3.57	2.93	1.00	18.13	20084396	43018316
2	48	7	2.57	18	1.5	25	500	24	2178	25	500	22	1976	3	511	2	505	1.31	1.16	4.49	1.39	2.25	1.00	3.93	3.00	1.00	20.29	19824918	42590345
2	48	8	2.25	18	1.5	23	462	24	2139	23	462	21	1946	3	585	2	566	1.32	1.16	4.31	1.39	2.28	1.00	4.27	2.90	1.00	22.35	19606853	42231246
2	48	9	2	18	1.5	21	429	23	2108	21	429	21	1922	2	329	1	417	1.32	1.16	3.86	1.38	2.31	1.00	4.60	2.63	1.00	24.42	19473436	42042229
2	48	6	3.08	18.5	0	28	552	25	2231	28	552	22	2017	3	421	2	432	1.31	1.17	2.79	1.39	2.20	1.00	3.51	1.84	1.00	17.76	19983222	42858508
2	48	7	2.64	18.5	0	25	506	24	2183	25	506	22	1980	3	490	2	492	1.31	1.16	2.83	1.39	2.25	1.00	3.86	1.88	1.00	19.85	19705321	42391742
2	48	8	2.32	18.5	0	23	468	24	2146	23	468	21	1951	3	558	2	549	1.32	1.16	2.87	1.38	2.28	1.00	4.18	1.92	1.00	21.81	19479697	42044247
2	48	9	2.06	18.5	0	22	435	23	2113	22	435	21	1926	2	320	1	406	1.32	1.16	2.89	1.38	2.32	1.00	4.51	1.96	1.00	23.82	19327028	41804675
2	48	10	1.85	18.5	0	20	406	23	2084	20	406	21	1904	2	353	1	436	1.32	1.16	2.94	1.37	2.34	1.00	4.77	2.00	1.00	25.80	19200677	41606401
2	48	6	3.58	21.5	1.5	30	600	25	2279	30	600	23	2054	3	545	3	381	1.30	1.17	4.31	1.40	2.15	1.00	3.20	2.85	1.00	15.94	20304277	43384612
2	48	7	3.07	21.5	1.5	28	551	25	2231	28	551	22	2017	3	421	2	434	1.31	1.17	4.37	1.39	2.20	1.00	3.53	2.91	1.00	17.82	20001931	42898635
2	48	8	2.69	21.5	1.5	26	511	24	2191	26	511	22	1986	3	490	2	485	1.31	1.17	4.44	1.39	2.24	1.00	3.83	2.97	1.00	19.61	19768532	42523037
2	48	9	2.39	21.5	1.5	24	477	24	2155	24	477	22	1958	3	545	2	536	1.32	1.16	4.51	1.38	2.27	1.00	4.12	3.03	1.00	21.36	19566704	42182412
2	48	10	2.15	21.5	1.5	22	447	23	2126	22	447	21	1936	3	304	1	587	1.32	1.16	4.09	1.38	2.30	1.00	4.41	2.78	1.00	23.10	19425099	41969232
2	48	7	3.14	22	0	28	557	25	2234	28	557	22	2018	3	421	2	424	1.31	1.17	2.75	1.39	2.20	1.00	3.47	1.83	1.00	17.47	19901842	42708582
2	48	8	2.75	22	0	26	516	24	2195	26	516	22	1988	3	471	2	475	1.31	1.17	2.80	1.38	2.24	1.00	3.77	1.86	1.00	19.25	19668432	42354120

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	48	9	2.44	22	0	24	482	24	2160	24	482	22	1961	3	533	2	526	1.32	1.17	2.81	1.38	2.27	1.00	4.06	1.90	1.00	21.01	19525150	42115990
2	48	10	2.2	22	0	23	452	23	2130	23	452	21	1938	3	585	2	574	1.32	1.16	2.86	1.37	2.30	1.00	4.33	1.93	1.00	22.66	19326005	41803601
2	48	11	2	22	0	21	426	23	2103	21	426	21	1918	2	329	1	415	1.32	1.16	2.91	1.37	2.32	1.00	4.60	1.96	1.00	24.30	19192867	41584608
2	48	12	1.83	22	0	20	402	23	2082	20	402	21	1903	2	358	1	439	1.32	1.16	2.92	1.37	2.34	1.00	4.80	1.99	1.00	26.03	19158384	41564008
2	48	7	3.57	25	1.5	30	598	25	2275	30	598	23	2050	3	545	3	381	1.30	1.17	4.29	1.39	2.15	1.00	3.21	2.84	1.00	15.93	20175861	43157204
2	48	8	3.125	25	1.5	28	555	25	2235	28	555	22	2020	3	421	2	426	1.31	1.17	4.36	1.39	2.19	1.00	3.49	2.89	1.00	17.57	19929450	42783603
2	48	9	2.78	25	1.5	26	520	24	2198	26	520	22	1990	3	471	2	471	1.31	1.17	4.37	1.38	2.23	1.00	3.75	2.94	1.00	19.10	19716470	42419841
2	48	10	2.5	25	1.5	24	489	24	2166	24	489	22	1966	3	522	2	515	1.31	1.17	4.45	1.38	2.26	1.00	4.01	2.99	1.00	20.62	19536199	42122623
2	48	11	2.27	25	1.5	23	462	24	2139	23	462	21	1945	3	571	2	560	1.32	1.16	4.27	1.38	2.28	1.00	4.26	2.90	1.00	22.15	19434105	41961553
2	48	12	1.83	25	1.5	24	487	24	2167	24	487	22	1958	2	358	1	497	1.35	1.17	2.94	1.75	1.98	1.00	5.06	2.31	1.00	28.20	26593969	52652220
3	12	3	1.5	4.5	0	16	323	12	562	16	323	12	562	3	316	3	389	2.15	1.72	1.18	3.36	2.85	1.43	2.46	1.64	1.18	4.50	699700	2214665
3	12	3	2	6	0.75	19	370	12	610	19	370	12	610	3	240	3	339	2.36	1.94	1.15	3.51	3.12	1.63	2.44	1.69	1.15	3.66	789650	2392863
3	12	4	1.5	6	0.75	16	323	12	562	16	323	12	562	3	316	3	389	2.19	1.75	1.22	3.36	2.89	1.45	2.49	1.69	1.22	4.50	699700	2214665
3	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	311	2.36	1.96	1.95	3.57	3.07	1.63	2.16	3.21	1.63	3.27	835299	2481138
3	12	4	1.75	7	1.25	17	347	12	587	17	348	12	588	3	273	3	372	2.34	1.90	1.59	3.44	3.11	1.59	2.51	2.42	1.59	4.03	745925	2305811
3	12	3	2.67	8	0	21	419	12	657	21	419	12	657	3	182	3	281	2.43	2.03	1.21	3.57	3.15	1.70	1.96	1.92	1.21	2.95	861986	2529245
3	12	4	2	8	0	19	370	12	610	19	370	12	610	3	240	3	349	2.44	2.01	1.15	3.51	3.25	1.69	2.42	1.96	1.15	3.66	789650	2392863
3	12	5	1.6	8	0	17	332	12	573	17	333	12	573	3	300	3	388	2.29	1.85	1.26	3.39	3.04	1.54	2.52	1.96	1.26	4.30	718350	2252137
3	12	3	3.17	9.5	0.75	22	443	12	683	22	443	12	683	3	154	3	245	2.41	2.04	1.35	3.49	3.13	1.71	1.73	2.47	1.35	2.59	870337	2533691
3	12	4	2.375	9.5	0.75	20	399	12	639	20	400	12	640	3	200	3	307	2.52	2.11	1.61	3.57	3.33	1.77	2.15	2.62	1.61	3.23	839676	2490190
3	12	5	1.9	9.5	0.75	18	362	12	600	18	362	12	600	3	250	3	357	2.51	2.07	1.52	3.49	3.38	1.74	2.49	2.63	1.52	3.79	772623	2357808
3	12	6	1.583	9.5	0.75	17	331	12	571	17	331	12	571	3	300	3	390	2.30	1.85	1.41	3.38	3.03	1.53	2.52	2.19	1.41	4.33	715080	2245269
3	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	217	2.20	1.86	1.97	3.35	2.77	1.54	1.54	3.54	1.54	2.29	853966	2482392
3	12	4	2.75	11	1.5	21	422	12	663	21	423	12	663	3	176	3	275	2.38	1.99	2.05	3.56	3.05	1.65	1.94	3.88	1.65	2.89	865779	2536469
3	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	325	2.42	2.00	2.39	3.56	3.15	1.66	2.28	3.99	1.66	3.41	820529	2453482
3	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	363	2.40	1.96	2.28	3.47	3.17	1.63	2.55	4.00	1.63	3.89	761511	2335902
3	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	391	2.38	1.92	2.55	3.38	3.17	1.60	2.77	3.99	1.60	4.35	711954	2238259
3	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	265	2.39	2.01	2.25	3.55	3.06	1.67	1.87	4.23	1.67	2.79	868304	2536946
3	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	315	2.45	2.03	2.22	3.57	3.18	1.69	2.21	4.37	1.69	3.31	832062	2476056
3	12	6	1.917	11.5	1.75	18	362	12	603	18	363	12	603	3	250	3	356	2.43	2.00	2.54	3.49	3.21	1.66	2.50	4.39	1.66	3.77	775753	2365667
3	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	383	2.41	1.96	2.85	3.41	3.22	1.63	2.71	4.40	1.63	4.21	726503	2267767
3	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	240	2.39	2.02	2.23	3.47	3.06	1.68	1.70	4.08	1.68	2.53	868179	2525722
3	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	287	2.49	2.09	2.25	3.57	3.24	1.74	2.03	4.31	1.74	3.02	858043	2523686
3	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	329	2.52	2.09	2.19	3.55	3.31	1.74	2.31	4.39	1.74	3.46	816110	2445415
3	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	361	2.50	2.05	2.52	3.47	3.33	1.72	2.54	4.39	1.72	3.85	764454	2341371
3	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	220	2.23	1.89	2.21	3.37	2.81	1.56	1.57	3.96	1.56	2.32	857702	2492785
3	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	263	2.38	2.00	2.28	3.54	3.03	1.66	1.87	4.27	1.66	2.77	869809	2540035
3	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	303	2.44	2.03	2.26	3.58	3.14	1.68	2.14	4.41	1.68	3.18	843495	2496363
3	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	340	2.44	2.01	2.62	3.53	3.18	1.67	2.39	4.44	1.67	3.57	801170	2415795
3	12	4	2.875	11.5	0	22	430	12	668	22	430	12	668	3	167	3	265	2.39	2.01	1.02	3.55	3.06	1.67	1.87	1.92	1.02	2.79	868304	2536946
3	12	5	2.3	11.5	0	20	394	12	634	20	394	12	634	3	207	3	315	2.45	2.03	1.01	3.57	3.18	1.69	2.21	1.99	1.01	3.31	832062	2476056
3	12	6	1.917	11.5	0	18	362	12	603	18	363	12	603	3	250	3	356	2.43	2.00	1.16	3.49	3.21	1.66	2.50	1.99	1.16	3.77	775753	2365667
3	12	7	1.643	11.5	0	17	337	12	577	17	337	12	577	3	286	3	383	2.41	1.96	1.29	3.41	3.22	1.63	2.71	2.00	1.29	4.21	726503	2267767
3	12	4	3.25	13	0.75	22	447	12	685	22	447	12	685	3	150	3	240	2.39	2.02	1.34	3.47	3.06	1.68	1.70	2.45	1.34	2.53	868179	2525722
3	12	5	2.6	13	0.75	21	414	12	654	21	414	12	654	3	188	3	287	2.49	2.09	1.35	3.57	3.24	1.74	2.03	2.59	1.35	3.02	858043	2523686
3	12	6	2.167	13	0.75	19	384	12	624	19	384	12	624	3	222	3	329	2.52	2.09	1.31	3.55	3.31	1.74	2.31	2.63	1.31	3.46	816110	2445415
3	12	7	1.857	13	0.75	18	358	12	596	18	358	12	596	3	261	3	361	2.50	2.05	1.51	3.47	3.33	1.72	2.54	2.64	1.51	3.85	764454	2341371
3	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	220	2.23	1.89	2.00	3.37	2.81	1.56	1.57	3.59	1.56	2.32	857702	2492785
3	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	263	2.38	2.00	2.07	3.54	3.03	1.66	1.87	3.87	1.66	2.77	869809	2540035
3	12	6	2.417	14.5	1.5	20	403	12	641	20	403	12	641	3	200	3	303	2.44	2.03	1.74	3.58	3.14	1.68	2.14	3.40	1.68	3.18	843495	2496363
3	12	7	2.07	14.5	1.5	19	376	12	616	19	376	12	616	3	231	3	340	2.44	2.01	1.74	3.53	3.18	1.67	2.39	2.94	1.67	3.57	801170	2415795
3	12	5	3	15	0	22	436	12	675	22	436	12	675	3	162	3	256	2.39	2.01	1.02	3.53	3.04	1.67	1.82	1.90	1.02	2.70	871911	2541766
3	12	6	2.5	15	0	20	408	12	648	20	408	12	648	3	194	3	296	2.46	2.05	1.02	3.58	3.17	1.70	2.09	1.97	1.02	3.11	852762	2515287
3	12	7	2.14	15	0	19	383	12	624	19	384	12	624	3	222	3	333	2.49	2.06	1.00	3.58	3.23	1.71	2.35	2.01	1.00	3.50	824550	2466050
3	12	8	1.875	15	0	18	359	12	599	18	359	12	599	3	250	3	360	2.45	2.01	1.15	3.48	3.23	1.67	2.54	2.00	1.15	3.83	768885	2351744
3	12	9	1.67	15	0	17	340	12	579	17	340	12	579	3	286	3	380	2.36	1.91	1.11	3.41	3.10	1.58	2.55	2.00	1.11	4.16	731112	2276081
3	12	5	3.3	16.5	0.75	22	449	12	687	22	449	12	687	3	146	3	237	2.39	2.02	1.33	3.46	3.04	1.68	1.69	2.44	1.33	2.50	867222	2522180
3	12	6	2.75	16.5	0.75	21	422	12	663	21	423	12	663	3	176	3	275	2.49	2.09	1.35	3.56	3.21	1.74	1.95	2.56	1.35	2.89	865779	2536469
3	12	7	2.357	16.5	0.75	20	399	12	637	20	399	12	637	3	207	3	309	2.53	2.11	1.33	3.58	3.30	1.76	2.18	2.62	1.33	3.24	838657	2487692
3	12	8	2.06	16.5	0.75	19	376	12	614	19	376	12	614	3	231	3	341	2.52	2.08	1.55	3.53	3.32	1.74	2.40	2.63	1.55	3.58	799608	2411568
3	12	9	1.83	16.5	0.75	18	355	12	595	18	355	12	595	3	261	3	364	2.49	2.04	1.49	3.47	3.31	1.70	2.56	2.60	1.49	3.90	761704	2337708
3	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	221	2.25	1.90	2.00	3.37	2.83	1.57	1.58	3.60	1.57	2.33	857692	2493394

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
3	12	6	3	18	1.5	22	436	12	675	22	436	12	675	3	162	3	256	2.38	2.00	1.65	3.53	3.02	1.66	1.83	3.84	1.65	2.70	871911	2541766
3	12	7	2.57	18	1.5	21	413	12	651	21	413	12	651	3	188	3	289	2.44	2.04	1.87	3.58	3.13	1.69	2.05	3.59	1.69	3.04	856090	2519326
3	12	8	2.25	18	1.5	20	391	12	629	20	391	12	629	3	214	3	320	2.46	2.04	1.60	3.56	3.18	1.69	2.26	3.18	1.60	3.35	825313	2461716
3	12	9	2	18	1.5	19	370	12	610	19	370	12	610	3	240	3	349	2.45	2.02	1.66	3.51	3.20	1.67	2.46	2.84	1.66	3.66	789650	2392863
3	12	6	3.08	18.5	0	29	586	12	827	29	587	12	828	3	158	3	320	4.53	3.96	1.28	7.04	5.18	3.25	1.23	3.62	1.23	3.22	2231959	5359269
3	12	7	2.64	18.5	0	28	562	12	803	28	562	12	803	3	182	3	364	4.72	4.12	1.30	7.29	5.40	3.38	1.39	3.81	1.30	3.65	2262845	5408934
3	12	8	2.32	18.5	0	20	396	12	635	20	396	12	635	3	207	3	313	2.48	2.06	1.01	3.57	3.20	1.71	2.21	1.99	1.01	3.28	835122	2481656
3	12	9	2.06	18.5	0	19	379	12	618	19	379	12	618	3	231	3	343	2.52	2.08	1.00	3.60	3.28	1.73	2.42	2.03	1.00	3.60	822018	2462860
3	12	10	1.85	18.5	0	18	357	12	596	18	357	12	596	3	261	3	362	2.46	2.01	1.14	3.47	3.24	1.67	2.56	2.00	1.14	3.87	763597	2340378
3	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	222	2.26	1.92	2.00	3.38	2.84	1.58	1.59	3.60	1.58	2.34	857425	2492538
3	12	7	3.07	21.5	1.5	22	439	12	678	22	439	12	678	3	158	3	252	2.38	2.00	1.65	3.51	3.01	1.65	1.80	3.81	1.65	2.65	870663	2536877
3	12	8	2.69	21.5	1.5	21	419	12	659	21	420	12	659	3	182	3	279	2.44	2.04	1.57	3.57	3.11	1.69	1.99	3.72	1.57	2.94	862887	2531433
3	12	9	2.39	21.5	1.5	20	401	12	640	20	401	12	640	3	200	3	306	2.47	2.05	1.72	3.58	3.18	1.70	2.17	3.37	1.70	3.21	842707	2496114
3	12	10	2.15	21.5	1.5	19	383	12	622	19	383	12	622	3	222	3	331	2.47	2.04	1.52	3.55	3.20	1.69	2.34	3.05	1.52	3.47	813297	2439214
3	12	7	3.14	22	0	29	588	12	828	29	589	12	828	3	154	3	314	4.49	3.93	1.27	6.97	5.14	3.23	1.21	3.58	1.21	3.16	2208894	5314753
3	12	8	2.75	22	0	28	567	12	807	28	567	12	807	3	176	3	351	4.66	4.07	1.29	7.17	5.33	3.34	1.35	3.74	1.29	3.52	2231332	5350393
3	12	9	2.44	22	0	20	404	12	644	20	404	12	644	3	200	3	301	2.47	2.06	1.01	3.58	3.18	1.71	2.14	1.97	1.01	3.17	847443	2505462
3	12	10	2.2	22	0	19	387	12	627	19	387	12	627	3	222	3	326	2.49	2.06	1.00	3.56	3.23	1.71	2.31	2.00	1.00	3.42	823263	2460218
3	12	11	2	22	0	19	375	12	614	19	375	12	614	3	240	3	352	2.54	2.09	1.00	3.61	3.30	1.74	2.48	2.05	1.00	3.68	819724	2460377
3	12	12	1.83	22	0	18	355	12	595	18	355	12	595	3	261	3	364	2.46	2.01	1.14	3.47	3.23	1.67	2.57	1.99	1.14	3.90	761704	2337708
3	12	7	3.57	25	1.5	23	458	12	698	23	458	12	698	3	136	3	222	2.27	1.92	1.61	3.38	2.85	1.59	1.60	3.61	1.59	2.35	858915	2496946
3	12	8	3.125	25	1.5	22	441	12	681	22	441	12	681	3	154	3	248	2.37	2.00	1.64	3.50	3.00	1.65	1.78	3.79	1.64	2.62	870338	2534980
3	12	9	2.78	25	1.5	21	424	12	664	21	425	12	664	3	176	3	272	2.43	2.04	1.62	3.56	3.10	1.69	1.94	3.82	1.62	2.87	866487	2536625
3	12	10	2.5	25	1.5	20	408	12	648	20	408	12	648	3	194	3	296	2.47	2.06	1.45	3.58	3.16	1.70	2.11	3.51	1.45	3.11	852762	2515287
3	12	11	2.27	25	1.5	20	392	12	632	20	392	12	632	3	214	3	318	2.47	2.05	1.62	3.57	3.19	1.70	2.26	3.21	1.62	3.34	829958	2472496
3	12	12	1.83	25	1.5	18	355	12	595	18	355	12	595	3	261	3	364	1.77	1.40	1.39	3.47	2.10	1.11	2.54	2.36	1.11	3.90	761704	2337708
3	16	3	1.5	4.5	0	14	279	12	678	14	279	12	648	3	421	3	366	1.32	1.06	1.19	1.90	1.84	1.00	2.43	1.09	1.00	5.42	829026	2652023
3	16	3	2	6	0.75	16	313	12	711	16	313	12	711	3	320	3	310	1.36	1.12	1.14	1.82	1.91	1.07	2.32	1.04	1.04	4.27	826433	2592698
3	16	4	1.5	6	0.75	14	277	12	674	14	277	12	643	3	421	3	363	1.32	1.06	1.21	1.87	1.83	1.00	2.44	1.11	1.00	5.39	809259	2604433
3	16	3	2.33	7	1.25	17	341	12	739	17	341	12	739	3	276	3	285	1.37	1.14	2.28	1.88	1.87	1.09	2.05	1.99	1.09	3.81	886504	2704742
3	16	4	1.75	7	1.25	14	289	12	688	14	289	12	688	3	364	3	339	1.33	1.09	1.70	1.76	1.89	1.03	2.40	1.51	1.03	4.72	774922	2498142
3	16	3	2.67	8	0	18	367	12	765	18	367	12	765	3	242	3	259	1.45	1.22	1.36	1.93	1.96	1.16	1.86	1.21	1.16	3.44	941697	2808549
3	16	4	2	8	0	16	313	12	711	16	313	12	711	3	320	3	319	1.41	1.16	1.33	1.82	1.98	1.11	2.30	1.21	1.11	4.27	826433	2592698
3	16	5	1.6	8	0	14	277	12	676	14	276	12	667	3	400	3	356	1.31	1.06	1.35	1.76	1.84	1.00	2.43	1.22	1.00	5.07	763693	2488735
3	16	3	3.17	9.5	0.75	19	371	12	851	19	371	12	851	3	205	3	236	1.45	1.24	1.84	1.89	1.98	1.18	1.01	1.58	1.01	3.22	1015302	3010467
3	16	4	2.375	9.5	0.75	17	343	12	744	17	344	12	745	3	267	3	282	1.47	1.24	1.77	1.88	2.05	1.18	2.04	1.63	1.18	3.76	893184	2718998
3	16	5	1.9	9.5	0.75	15	303	12	703	15	303	12	703	3	333	3	327	1.43	1.18	1.76	1.79	2.04	1.13	2.39	1.62	1.13	4.44	805970	2556273
3	16	6	1.583	9.5	0.75	14	276	12	674	14	276	12	663	3	400	3	358	1.32	1.06	1.45	1.77	1.84	1.00	2.44	1.40	1.00	5.11	762612	2487213
3	16	3	3.67	11	1.5	17	340	12	986	17	341	12	986	3	178	3	224	1.29	1.09	2.60	1.73	1.76	1.04	1.02	2.23	1.02	3.22	1055878	3219750
3	16	4	2.75	11	1.5	19	371	12	772	19	372	12	773	3	235	3	253	1.43	1.20	2.61	1.93	1.90	1.14	1.84	2.46	1.14	3.37	951673	2828533
3	16	5	2.2	11	1.5	17	330	12	729	17	330	12	729	3	296	3	298	1.40	1.17	2.62	1.86	1.92	1.10	2.17	2.46	1.10	3.98	863978	2663579
3	16	6	1.833	11	1.5	15	297	12	696	15	297	12	696	3	348	3	332	1.38	1.13	2.63	1.78	1.93	1.07	2.44	2.44	1.07	4.56	791944	2529274
3	16	7	1.57	11	1.5	14	269	12	670	13	270	12	671	3	400	3	357	1.35	1.09	2.66	1.71	1.94	1.04	2.67	2.42	1.04	5.12	731937	2419590
3	16	4	2.875	11.5	1.75	19	381	12	779	19	381	12	779	3	222	3	245	1.45	1.23	2.90	1.95	1.93	1.16	1.78	2.71	1.16	3.25	968499	2857811
3	16	5	2.3	11.5	1.75	17	337	12	738	17	338	12	738	3	276	3	288	1.42	1.19	2.91	1.87	1.95	1.13	2.10	2.70	1.13	3.85	880444	2695198
3	16	6	1.917	11.5	1.75	15	305	12	704	15	305	12	704	3	333	3	325	1.40	1.15	2.94	1.80	1.96	1.10	2.39	2.69	1.10	4.41	809696	2562392
3	16	7	1.643	11.5	1.75	14	278	12	677	14	278	12	677	3	381	3	349	1.37	1.12	2.81	1.73	1.97	1.06	2.60	2.68	1.06	4.94	750266	2452307
3	16	4	3.25	13	2.5	19	369	12	867	18	370	12	867	3	200	3	233	1.44	1.22	2.90	1.88	1.94	1.17	1.01	2.61	1.01	3.20	1024144	3040207
3	16	5	2.6	13	2.5	18	361	12	761	18	361	12	761	3	250	3	264	1.48	1.25	2.84	1.92	2.01	1.19	1.93	2.71	1.19	3.51	930162	2788077
3	16	6	2.167	13	2.5	16	327	12	726	16	327	12	726	3	296	3	301	1.46	1.21	2.87	1.85	2.03	1.15	2.20	2.70	1.15	4.02	856514	2648998
3	16	7	1.857	13	2.5	15	299	12	699	15	299	12	699	3	348	3	330	1.43	1.18	2.91	1.79	2.04	1.13	2.44	2.69	1.13	4.52	797494	2540744
3	16	4	3.625	14.5	3.25	17	346	12	968	17	347	12	968	3	178	3	224	1.32	1.12	2.88	1.75	1.78	1.06	1.02	2.50	1.02	3.20	1054232	3195543
3	16	5	2.9	14.5	3.25	19	382	12	782	19	382	12	782	3	222	3	244	1.45	1.23	2.95	1.95	1.91	1.16	1.78	2.75	1.16	3.24	972367	2866690
3	16	6	2.417	14.5	3.25	17	347	12	747	17	347	12	747	3	267	3	278	1.43	1.20	2.99	1.89	1.93	1.13	2.04	2.74	1.13	3.71	900207	2731639
3	16	7	2.07	14.5	3.25	16	319	12	717	16	319	12	717	3	308	3	311	1.41	1.16	2.86	1.83	1.94	1.10	2.28	2.73	1.10	4.16	838410	2614333
3	16	4	2.875	11.5	0	19	381	12	779	19	381	12	779	3	222	3	245	1.45	1.23	1.32	1.95	1.93	1.16	1.78	1.23	1.16	3.25	968499	2857811
3	16	5	2.3	11.5	0	17	337	12	738	17	338	12	738	3	276	3	288	1.42	1.19	1.33	1.87	1.95	1.13	2.10	1.23	1.13	3.85	880444	2695198
3	16	6	1.917	11.5	0	15	305	12	704	15	305	12	704	3	333	3	325	1.40	1.15	1.34	1.80	1.96	1.10	2.39	1.22	1.10	4.41	809696	2562392
3	16	7	1.643	11.5	0	14	278	12	677	14	278	12	677	3	381	3	349	1.37	1.12	1.28	1.73	1.97	1.06	2.60	1.22	1.06	4.94	750266	2452307
3	16	4	3.25	13	0.75	19	369	12	867	18	370	12	867	3	200	3	233	1.44	1.22	1.74	1.88	1.94	1.17	1.01	1.57	1.01	3.20	1024144	3040207
3	16	5	2.6	13	0.75	18	361	12	761	18	361	12	761	3	250	3	264	1.48	1.25	1.70	1.92	2.01	1.19	1.93	1.63	1.19	3.51	930162	2788077
3	16	6	2.167	13	0.75	16	327	12	726	16	327	12	726	3	296	3	301	1.46	1.21	1.72	1.85	2.03	1.15	2.20	1.62	1.15	4.02	856514	2648998

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	16	7	1.857	13	0.75	15	299	12	699	15	299	12	699	3	348	3	330	1.43	1.18	1.75	1.79	2.04	1.13	2.44	1.62	1.13	4.52	797494	2540744
3	16	4	3.625	14.5	1.5	17	346	12	968	17	347	12	968	3	178	3	224	1.32	1.12	2.61	1.75	1.78	1.06	1.02	2.27	1.02	3.20	1054232	3195543
3	16	5	2.9	14.5	1.5	19	382	12	782	19	382	12	782	3	222	3	244	1.45	1.23	2.67	1.95	1.91	1.16	1.78	2.49	1.16	3.24	972367	2866690
3	16	6	2.417	14.5	1.5	17	347	12	747	17	347	12	747	3	267	3	278	1.43	1.20	2.31	1.89	1.93	1.13	2.04	2.12	1.13	3.71	900207	2731639
3	16	7	2.07	14.5	1.5	16	319	12	717	16	319	12	717	3	308	3	311	1.41	1.16	1.89	1.83	1.94	1.10	2.28	1.81	1.10	4.16	838410	2614333
3	16	5	3	15	0	19	386	12	790	19	387	12	791	3	216	3	238	1.46	1.24	1.33	1.95	1.93	1.17	1.00	1.23	1.00	3.16	982147	2885947
3	16	6	2.5	15	0	18	354	12	753	18	354	12	753	3	258	3	271	1.45	1.22	1.28	1.91	1.95	1.15	1.99	1.23	1.15	3.61	915264	2759692
3	16	7	2.14	15	0	16	324	12	724	16	325	12	725	3	296	3	304	1.42	1.18	1.30	1.84	1.96	1.12	2.23	1.22	1.12	4.06	851526	2640217
3	16	8	1.875	15	0	15	301	12	700	15	301	12	700	3	333	3	328	1.41	1.16	1.33	1.79	1.97	1.10	2.43	1.22	1.10	4.48	800678	2545457
3	16	9	1.67	15	0	14	281	12	679	14	281	12	679	3	381	3	346	1.35	1.09	1.28	1.74	1.90	1.04	2.45	1.22	1.04	4.88	755292	2460015
3	16	5	3.3	16.5	0.75	18	368	12	877	18	369	12	877	3	195	3	231	1.44	1.22	1.75	1.87	1.94	1.16	1.01	1.56	1.01	3.19	1029384	3058232
3	16	6	2.75	16.5	0.75	19	371	12	772	19	372	12	773	3	235	3	253	1.49	1.27	1.73	1.93	2.01	1.20	1.86	1.63	1.20	3.37	951673	2828533
3	16	7	2.357	16.5	0.75	17	343	12	741	17	343	12	741	3	276	3	283	1.48	1.24	1.76	1.88	2.03	1.18	2.08	1.63	1.18	3.77	890008	2710847
3	16	8	2.06	16.5	0.75	16	318	12	717	16	318	12	717	3	308	3	312	1.46	1.21	1.70	1.83	2.03	1.15	2.29	1.62	1.15	4.18	838235	2615657
3	16	9	1.83	16.5	0.75	15	297	12	695	15	297	12	695	3	348	3	332	1.43	1.17	1.71	1.78	2.03	1.12	2.44	1.59	1.12	4.56	790737	2525826
3	16	5	3.6	18	1.5	18	350	12	958	18	350	12	958	3	182	3	224	1.34	1.13	2.60	1.77	1.80	1.08	1.02	2.29	1.02	3.19	1053835	3183297
3	16	6	3	18	1.5	19	389	12	787	19	389	12	787	3	216	3	237	1.46	1.24	2.69	1.96	1.92	1.17	1.00	2.49	1.00	3.15	982752	2883557
3	16	7	2.57	18	1.5	18	359	12	759	18	359	12	759	3	250	3	266	1.45	1.22	2.35	1.91	1.94	1.15	1.95	2.26	1.15	3.54	927070	2782914
3	16	8	2.25	18	1.5	17	334	12	733	17	334	12	733	3	286	3	293	1.43	1.19	2.11	1.86	1.95	1.13	2.15	1.97	1.13	3.91	871819	2677766
3	16	9	2	18	1.5	16	313	12	711	16	313	12	711	3	320	3	319	1.41	1.17	1.82	1.82	1.96	1.11	2.35	1.75	1.11	4.27	826433	2592698
3	16	6	3.08	18.5	0	19	383	12	811	19	384	12	811	3	211	3	236	1.45	1.23	1.27	1.93	1.92	1.17	1.00	1.22	1.00	3.16	996114	2931138
3	16	7	2.64	18.5	0	18	364	12	764	18	364	12	764	3	242	3	261	1.46	1.23	1.29	1.92	1.95	1.16	1.92	1.23	1.16	3.47	936726	2800569
3	16	8	2.32	18.5	0	17	340	12	738	17	340	12	738	3	276	3	286	1.45	1.21	1.33	1.88	1.96	1.14	2.10	1.23	1.14	3.82	883447	2698453
3	16	9	2.06	18.5	0	16	318	12	717	16	318	12	717	3	308	3	312	1.43	1.18	1.29	1.83	1.97	1.12	2.30	1.23	1.12	4.18	838235	2615657
3	16	10	1.85	18.5	0	15	299	12	697	15	299	12	697	3	348	3	330	1.41	1.16	1.25	1.79	1.98	1.10	2.45	1.22	1.10	4.52	795486	2534895
3	16	6	3.58	21.5	1.5	18	352	12	951	18	352	12	951	3	182	3	225	1.35	1.14	2.59	1.78	1.81	1.08	1.02	2.29	1.02	3.19	1052103	3172186
3	16	7	3.07	21.5	1.5	19	385	12	806	19	386	12	806	3	211	3	236	1.46	1.24	2.55	1.94	1.91	1.17	1.00	2.47	1.00	3.15	994983	2923942
3	16	8	2.69	21.5	1.5	18	368	12	767	18	368	12	767	3	242	3	257	1.46	1.23	2.49	1.93	1.94	1.16	1.89	2.36	1.16	3.42	944245	2813915
3	16	9	2.39	21.5	1.5	17	345	12	745	17	345	12	745	3	267	3	280	1.45	1.21	2.14	1.89	1.95	1.14	2.07	2.09	1.14	3.74	896528	2725089
3	16	10	2.15	21.5	1.5	16	326	12	724	16	326	12	724	3	296	3	302	1.43	1.19	1.99	1.85	1.96	1.12	2.23	1.88	1.12	4.04	853878	2643427
3	16	7	3.14	22	0	19	381	12	827	19	381	12	827	3	205	3	234	1.45	1.23	1.28	1.92	1.91	1.16	1.00	1.21	1.00	3.16	1007550	2967651
3	16	8	2.75	22	0	19	371	12	772	19	372	12	773	3	235	3	253	1.47	1.24	1.31	1.93	1.95	1.17	1.86	1.23	1.17	3.37	951673	2828533
3	16	9	2.44	22	0	17	349	12	749	17	349	12	749	3	267	3	276	1.45	1.22	1.26	1.89	1.96	1.15	2.04	1.23	1.15	3.68	905445	2742050
3	16	10	2.2	22	0	17	330	12	729	17	330	12	729	3	296	3	298	1.44	1.20	1.31	1.86	1.97	1.14	2.20	1.23	1.14	3.98	863978	2663579
3	16	11	2	22	0	16	313	12	711	16	313	12	711	3	320	3	319	1.43	1.18	1.28	1.82	1.98	1.12	2.35	1.23	1.12	4.27	826433	2592698
3	16	12	1.83	22	0	15	297	12	695	15	297	12	695	3	348	3	332	1.41	1.16	1.24	1.78	1.98	1.10	2.45	1.22	1.10	4.56	790737	2525826
3	16	7	3.57	25	1.5	18	354	12	946	18	354	12	946	3	182	3	225	1.36	1.15	2.58	1.79	1.82	1.09	1.02	2.30	1.02	3.18	1052240	3166613
3	16	8	3.125	25	1.5	19	382	12	821	19	383	12	821	3	205	3	234	1.45	1.23	2.58	1.93	1.91	1.16	1.00	2.45	1.00	3.15	1003390	2953436
3	16	9	2.78	25	1.5	19	374	12	774	19	374	12	774	3	235	3	251	1.47	1.24	2.59	1.94	1.94	1.17	1.85	2.44	1.17	3.34	957356	2839251
3	16	10	2.5	25	1.5	18	354	12	753	18	354	12	753	3	258	3	271	1.46	1.22	2.27	1.91	1.95	1.15	2.00	2.19	1.15	3.61	915264	2759692
3	16	11	2.27	25	1.5	17	336	12	734	17	336	12	734	3	286	3	291	1.44	1.20	2.13	1.87	1.95	1.13	2.15	1.99	1.13	3.88	875199	2683192
3	16	12	1.83	25	1.5	17	346	12	746	17	346	12	685	3	348	3	364	1.36	1.10	1.67	2.43	1.62	1.00	2.59	1.89	1.00	4.89	1179893	3398164
3	20	3	1.5	4.5	0	15	293	12	851	15	293	12	847	3	526	3	397	1.23	1.01	1.29	1.72	1.71	1.00	1.50	1.08	1.00	6.81	1483148	4309575
3	20	3	2	6	0.75	16	325	12	884	16	325	12	884	3	400	3	332	1.23	1.03	1.26	1.60	1.74	1.03	1.41	1.00	1.00	5.30	1415567	4090372
3	20	4	1.5	6	0.75	15	290	12	847	15	290	12	842	3	526	3	394	1.23	1.01	1.26	1.68	1.71	1.00	1.51	1.10	1.00	6.78	1445487	4228343
3	20	3	2.33	7	1.25	17	347	12	905	17	347	12	903	3	345	3	301	1.19	1.00	2.30	1.57	1.64	1.00	1.23	1.83	1.00	4.66	1417342	4053672
3	20	4	1.75	7	1.25	15	299	12	859	15	299	12	859	3	455	3	364	1.21	1.00	1.80	1.55	1.73	1.00	1.47	1.47	1.00	5.89	1337767	3960242
3	20	3	2.67	8	0	18	362	12	919	18	362	12	919	3	303	3	267	1.17	1.00	1.35	1.50	1.62	1.00	1.10	1.05	1.00	4.13	1368329	3912245
3	20	4	2	8	0	16	313	12	872	16	313	12	872	3	400	3	334	1.19	1.00	1.38	1.49	1.72	1.00	1.39	1.10	1.00	5.23	1296527	3832383
3	20	5	1.6	8	0	15	291	12	848	15	291	12	844	3	500	3	385	1.22	1.01	1.40	1.60	1.72	1.00	1.50	1.21	1.00	6.36	1365625	4040366
3	20	3	3.17	9.5	0.75	19	373	12	983	19	373	12	983	3	256	3	237	1.16	1.00	1.79	1.45	1.62	1.00	1.01	1.35	1.00	3.72	1400624	4000801
3	20	4	2.375	9.5	0.75	17	335	12	893	17	335	12	893	3	333	3	289	1.18	1.00	1.81	1.44	1.68	1.00	1.21	1.39	1.00	4.51	1277661	3744062
3	20	5	1.9	9.5	0.75	15	300	12	858	15	300	12	858	3	417	3	341	1.20	1.00	1.86	1.44	1.75	1.01	1.43	1.45	1.00	5.42	1235046	3710271
3	20	6	1.583	9.5	0.75	14	289	12	847	14	289	12	842	3	500	3	387	1.22	1.01	1.59	1.60	1.72	1.00	1.51	1.38	1.00	6.42	1362796	4038957
3	20	3	3.67	11	1.5	21	418	12	1004	21	418	12	998	3	222	3	212	1.16	1.01	2.71	1.54	1.53	1.00	1.37	2.10	1.00	3.28	1526165	4212208
3	20	4	2.75	11	1.5	19	370	12	929	19	370	12	926	3	294	3	262	1.18	1.00	2.69	1.53	1.59	1.00	1.09	2.16	1.00	4.05	1408991	3996107
3	20	5	2.2	11	1.5	17	331	12	891	17	331	12	889	3	370	3	312	1.19	1.00	2.75	1.52	1.66	1.00	1.30	2.23	1.00	4.86	1347085	3918634
3	20	6	1.833	11	1.5	15	302	12	859	15	302	12	858	3	435	3	352	1.20	1.00	2.81	1.51	1.72	1.00	1.48	2.29	1.00	5.62	1296304	3852831
3	20	7	1.57	11	1.5	14	278	12	835	14	278	12	835	3	500	3	382	1.22	1.00	2.78	1.50	1.77	1.00	1.64	2.34	1.00	6.38	1257732	3812631
3	20	4	2.875	11.5	1.75	19	375	12	935	19	375	12	932	3	278	3	252	1.17	1.00	2.94	1.51	1.59	1.00	1.05	2.33	1.00	3.90	1396787	3960006
3	20	5	2.3	11.5	1.75	17	336	12	895	17	336	12	893	3	345	3	300	1.19	1.00	2.99	1.50	1.66	1.00	1.25	2.40	1.00	4.67	1332029	3872904
3	20	6	1.917	11.5	1.75	15	306	12	865	15	306	12	864	3	417	3	342	1.20	1.00	3.07	1.49	1.71	1.00	1.44	2.47	1.00	5.41	1283999	3816597

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	20	7	1.643	11.5	1.75	14	282	12	841	14	282	12	841	3	476	3	371	1.21	1.00	3.04	1.48	1.77	1.00	1.59	2.53	1.00	6.14	1246893	3779070
3	20	4	3.25	13	2.5	19	375	12	998	19	375	12	998	3	250	3	234	1.16	1.00	3.01	1.45	1.60	1.00	1.01	2.24	1.00	3.68	1424249	4060995
3	20	5	2.6	13	2.5	18	351	12	909	18	351	12	909	3	312	3	270	1.18	1.00	2.92	1.45	1.64	1.00	1.13	2.29	1.00	4.20	1305997	3783366
3	20	6	2.167	13	2.5	16	320	12	879	16	320	12	879	3	370	3	311	1.19	1.00	3.00	1.44	1.70	1.00	1.31	2.35	1.00	4.87	1259803	3730195
3	20	7	1.857	13	2.5	15	296	12	853	15	296	12	853	3	435	3	344	1.20	1.00	2.97	1.44	1.75	1.00	1.46	2.41	1.00	5.51	1222590	3687799
3	20	4	3.625	14.5	3.25	21	411	12	1004	21	412	12	998	3	222	3	214	1.16	1.01	3.00	1.52	1.53	1.00	1.40	2.32	1.00	3.32	1505321	4176631
3	20	5	2.9	14.5	3.25	19	378	12	935	19	378	12	930	3	278	3	251	1.18	1.01	2.98	1.51	1.58	1.00	1.05	2.37	1.00	3.87	1402817	3967709
3	20	6	2.417	14.5	3.25	17	345	12	904	17	345	12	901	3	333	3	289	1.19	1.00	3.06	1.50	1.63	1.00	1.21	2.43	1.00	4.49	1350631	3900813
3	20	7	2.07	14.5	3.25	16	319	12	879	16	319	12	876	3	385	3	326	1.20	1.00	3.02	1.50	1.68	1.00	1.37	2.48	1.00	5.10	1312545	3859483
3	20	4	2.875	11.5	0	19	375	12	935	19	375	12	932	3	278	3	252	1.17	1.00	1.34	1.51	1.59	1.00	1.05	1.06	1.00	3.90	1396787	3960006
3	20	5	2.3	11.5	0	17	336	12	895	17	336	12	893	3	345	3	300	1.19	1.00	1.36	1.50	1.66	1.00	1.25	1.09	1.00	4.67	1332029	3872904
3	20	6	1.917	11.5	0	15	306	12	865	15	306	12	864	3	417	3	342	1.20	1.00	1.40	1.49	1.71	1.00	1.44	1.12	1.00	5.41	1283999	3816597
3	20	7	1.643	11.5	0	14	282	12	841	14	282	12	841	3	476	3	371	1.21	1.00	1.38	1.48	1.77	1.00	1.59	1.15	1.00	6.14	1246893	3779070
3	20	4	3.25	13	0.75	19	375	12	998	19	375	12	998	3	250	3	234	1.16	1.00	1.81	1.45	1.60	1.00	1.01	1.35	1.00	3.68	1424249	4060995
3	20	5	2.6	13	0.75	18	351	12	909	18	351	12	909	3	312	3	270	1.18	1.00	1.76	1.45	1.64	1.00	1.13	1.38	1.00	4.20	1305997	3783366
3	20	6	2.167	13	0.75	16	320	12	879	16	320	12	879	3	370	3	311	1.19	1.00	1.80	1.44	1.70	1.00	1.31	1.41	1.00	4.87	1259803	3730195
3	20	7	1.857	13	0.75	15	296	12	853	15	296	12	853	3	435	3	344	1.20	1.00	1.78	1.44	1.75	1.00	1.46	1.45	1.00	5.51	1222590	3687799
3	20	4	3.625	14.5	1.5	21	411	12	1004	21	412	12	998	3	222	3	214	1.16	1.01	2.72	1.52	1.53	1.00	1.40	2.10	1.00	3.32	1505321	4176631
3	20	5	2.9	14.5	1.5	19	378	12	935	19	378	12	930	3	278	3	251	1.18	1.01	2.70	1.51	1.58	1.00	1.05	2.15	1.00	3.87	1402817	3967709
3	20	6	2.417	14.5	1.5	17	345	12	904	17	345	12	901	3	333	3	289	1.19	1.00	2.36	1.50	1.63	1.00	1.21	1.87	1.00	4.49	1350631	3900813
3	20	7	2.07	14.5	1.5	16	319	12	879	16	319	12	876	3	385	3	326	1.20	1.00	2.00	1.50	1.68	1.00	1.37	1.64	1.00	5.10	1312545	3859483
3	20	5	3	15	0	19	382	12	939	19	382	12	935	3	270	3	243	1.17	1.01	1.33	1.50	1.58	1.00	1.02	1.05	1.00	3.76	1392391	3936987
3	20	6	2.5	15	0	17	349	12	907	17	349	12	905	3	323	3	280	1.18	1.00	1.36	1.49	1.63	1.00	1.18	1.07	1.00	4.35	1339502	3866715
3	20	7	2.14	15	0	16	323	12	881	16	323	12	879	3	370	3	316	1.19	1.00	1.34	1.48	1.68	1.00	1.33	1.10	1.00	4.94	1300620	3821787
3	20	8	1.875	15	0	15	301	12	860	15	301	12	859	3	417	3	345	1.20	1.00	1.33	1.47	1.72	1.00	1.47	1.12	1.00	5.50	1264312	3779663
3	20	9	1.67	15	0	14	289	12	846	14	289	12	843	3	476	3	370	1.22	1.01	1.36	1.52	1.73	1.00	1.50	1.17	1.00	6.08	1288360	3861566
3	20	5	3.3	16.5	0.75	19	375	12	1004	19	376	12	1004	3	244	3	231	1.16	1.00	1.74	1.44	1.59	1.00	1.54	1.34	1.00	3.65	1424253	4063254
3	20	6	2.75	16.5	0.75	18	360	12	917	18	360	12	916	3	294	3	258	1.17	1.00	1.76	1.44	1.62	1.00	1.09	1.36	1.00	4.00	1310522	3778252
3	20	7	2.357	16.5	0.75	17	333	12	892	17	333	12	892	3	345	3	291	1.18	1.00	1.74	1.44	1.67	1.00	1.23	1.39	1.00	4.54	1272321	3735538
3	20	8	2.06	16.5	0.75	16	311	12	870	16	311	12	870	3	385	3	323	1.19	1.00	1.79	1.43	1.71	1.00	1.37	1.42	1.00	5.07	1240248	3700817
3	20	9	1.83	16.5	0.75	15	293	12	853	15	293	12	853	3	435	3	347	1.20	1.00	1.76	1.44	1.75	1.00	1.48	1.43	1.00	5.59	1222141	3695367
3	20	5	3.6	18	1.5	20	407	12	1004	20	408	12	998	3	227	3	215	1.16	1.01	2.71	1.51	1.54	1.00	1.41	2.09	1.00	3.35	1491412	4152169
3	20	6	3	18	1.5	19	382	12	942	19	382	12	937	3	270	3	244	1.17	1.01	2.70	1.50	1.57	1.00	1.03	2.13	1.00	3.77	1402046	3961385
3	20	7	2.57	18	1.5	18	355	12	912	18	355	12	908	3	312	3	275	1.18	1.01	2.40	1.50	1.61	1.00	1.16	1.96	1.00	4.26	1355016	3892533
3	20	8	2.25	18	1.5	17	332	12	889	17	332	12	886	3	357	3	304	1.19	1.00	2.16	1.49	1.65	1.00	1.29	1.75	1.00	4.74	1316777	3842639
3	20	9	2	18	1.5	16	312	12	871	16	312	12	869	3	400	3	334	1.20	1.00	1.91	1.48	1.69	1.00	1.41	1.58	1.00	5.23	1286964	3811475
3	20	6	3.08	18.5	0	19	386	12	943	19	386	12	939	3	263	3	238	1.17	1.01	1.32	1.49	1.57	1.00	1.00	1.04	1.00	3.67	1392325	3930708
3	20	7	2.64	18.5	0	18	358	12	916	18	358	12	912	3	303	3	268	1.18	1.01	1.31	1.48	1.61	1.00	1.13	1.06	1.00	4.16	1349786	3875659
3	20	8	2.32	18.5	0	17	335	12	894	17	335	12	892	3	345	3	297	1.19	1.00	1.34	1.48	1.65	1.00	1.26	1.08	1.00	4.62	1311185	3825056
3	20	9	2.06	18.5	0	16	315	12	875	16	315	12	873	3	385	3	326	1.20	1.00	1.33	1.47	1.69	1.00	1.38	1.10	1.00	5.10	1280749	3791237
3	20	10	1.85	18.5	0	15	298	12	857	15	298	12	856	3	435	3	347	1.20	1.00	1.32	1.46	1.72	1.00	1.48	1.12	1.00	5.56	1252610	3757771
3	20	6	3.58	21.5	1.5	20	405	12	1004	20	405	12	998	3	227	3	216	1.17	1.01	2.70	1.50	1.54	1.00	1.42	2.08	1.00	3.37	1484504	4140965
3	20	7	3.07	21.5	1.5	19	386	12	944	19	386	12	938	3	263	3	239	1.17	1.01	2.69	1.50	1.57	1.00	1.01	2.11	1.00	3.69	1400067	3949469
3	20	8	2.69	21.5	1.5	18	362	12	919	18	362	12	914	3	303	3	265	1.18	1.01	2.51	1.49	1.60	1.00	1.12	2.03	1.00	4.10	1358155	3888188
3	20	9	2.39	21.5	1.5	17	341	12	900	17	341	12	896	3	333	3	290	1.19	1.01	2.21	1.48	1.64	1.00	1.23	1.84	1.00	4.52	1328048	3854318
3	20	10	2.15	21.5	1.5	16	323	12	882	16	323	12	879	3	370	3	315	1.19	1.00	2.05	1.48	1.67	1.00	1.34	1.67	1.00	4.92	1297833	3815805
3	20	7	3.14	22	0	19	385	12	956	19	386	12	951	3	256	3	236	1.17	1.01	1.34	1.49	1.57	1.00	1.00	1.04	1.00	3.65	1403875	3966178
3	20	8	2.75	22	0	18	364	12	923	18	364	12	919	3	294	3	260	1.18	1.01	1.31	1.48	1.60	1.00	1.10	1.05	1.00	4.03	1353095	3874062
3	20	9	2.44	22	0	17	344	12	902	17	344	12	898	3	333	3	285	1.19	1.01	1.29	1.48	1.64	1.00	1.21	1.07	1.00	4.44	1325328	3841822
3	20	10	2.2	22	0	16	326	12	883	16	326	12	881	3	370	3	309	1.19	1.00	1.33	1.47	1.67	1.00	1.31	1.08	1.00	4.82	1289747	3789318
3	20	11	2	22	0	16	310	12	869	16	310	12	867	3	400	3	333	1.20	1.00	1.33	1.46	1.70	1.00	1.42	1.10	1.00	5.21	1268000	3769930
3	20	12	1.83	22	0	15	297	12	854	15	297	12	852	3	435	3	349	1.21	1.00	1.31	1.47	1.72	1.00	1.48	1.11	1.00	5.60	1250122	3752391
3	20	7	3.57	25	1.5	20	403	12	1004	20	403	12	998	3	227	3	217	1.17	1.01	2.69	1.49	1.54	1.00	1.43	2.07	1.00	3.37	1476554	4126406
3	20	8	3.125	25	1.5	19	387	12	950	19	387	12	945	3	256	3	236	1.17	1.01	2.69	1.49	1.56	1.00	1.00	2.10	1.00	3.65	1400340	3951319
3	20	9	2.78	25	1.5	18	367	12	925	18	367	12	920	3	294	3	258	1.18	1.01	2.60	1.49	1.59	1.00	1.09	2.09	1.00	3.99	1362718	3891340
3	20	10	2.5	25	1.5	17	348	12	907	17	348	12	903	3	323	3	280	1.19	1.01	2.31	1.48	1.63	1.00	1.19	1.90	1.00	4.35	1333432	3854662
3	20	11	2.27	25	1.5	17	332	12	891	17	332	12	887	3	357	3	302	1.19	1.01	2.09	1.48	1.65	1.00	1.28	1.75	1.00	4.71	1311671	3831791
3	20	12	1.83	25	1.5	18	364	12	921	18	364	12	891	3	435	3	393	1.26	1.04	1.83	2.14	1.49	1.00	1.57	1.83	1.00	6.04	2023745	5369026
3	24	3	1.5	4.5	0	16	312	12	1030	16	312	12	1030	3	429	2	441	1.20	1.00	1.44	1.64	1.67	1.01	2.44	1.12	1.00	8.24	2502353	6718378
3	24	3	2	6	0.75	17	343	12	1062	17	343	12	1062	3	480	3	365	1.17	1.00	1.38	1.50	1.67	1.02	2.22	1.01	1.00	6.37	2311653	6237752
3	24	4	1.5	6	0.75	15	308	12	1026	15	308	12	1026	3	429	2	438	1.20	1.00	1.42	1.61	1.67	1.01	2.47	1.14	1.00	8.21	2434844	6586130
3	24	3	2.33	7	1.25	19	373	12	1092	19	373	12	1092	3	414	3	333	1.17	1.00	2.60	1.52	1.60	1.01	1.90	1.90	1.00	5.62	2400479	6363642

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	24	4	1.75	7	1.25	16	321	12	1040	16	321	12	1040	3	545	3	404	1.19	1.00	2.03	1.50	1.69	1.01	2.37	1.53	1.00	7.13	2284557	6232496
3	24	3	2.67	8	0	19	389	12	1108	20	389	12	1107	3	364	3	295	1.16	1.00	1.54	1.45	1.60	1.01	1.74	1.10	1.00	5.06	2318604	6163899
3	24	4	2	8	0	17	336	12	1055	17	336	12	1055	3	480	3	371	1.17	1.00	1.56	1.44	1.68	1.02	2.20	1.14	1.00	6.33	2208377	6028826
3	24	5	1.6	8	0	16	310	12	1026	16	310	12	1026	3	400	2	427	1.19	1.00	1.58	1.53	1.68	1.01	2.45	1.25	1.00	7.70	2303927	6297924
3	24	3	3.17	9.5	0.75	21	415	12	1133	21	415	12	1133	3	308	3	254	1.15	1.00	2.04	1.40	1.58	1.01	1.55	1.41	1.00	4.45	2284237	6051725
3	24	4	2.375	9.5	0.75	18	360	12	1080	18	360	12	1080	3	400	3	320	1.16	1.00	2.05	1.40	1.65	1.02	1.89	1.45	1.00	5.46	2175250	5900732
3	24	5	1.9	9.5	0.75	16	321	12	1041	16	321	12	1041	3	500	3	378	1.18	1.00	2.09	1.40	1.72	1.02	2.31	1.51	1.00	6.57	2108772	5847446
3	24	6	1.583	9.5	0.75	15	307	12	1027	15	307	12	1027	3	414	2	430	1.20	1.00	1.81	1.53	1.69	1.01	2.47	1.43	1.00	7.79	2301589	6307164
3	24	3	3.67	11	1.5	23	455	13	1172	23	455	13	1172	3	267	3	229	1.14	1.00	2.98	1.48	1.51	1.01	1.46	2.19	1.00	4.11	2484060	6440797
3	24	4	2.75	11	1.5	20	397	12	1116	20	397	12	1116	3	353	3	289	1.16	1.00	3.09	1.47	1.57	1.01	1.73	2.25	1.00	4.98	2365271	6254162
3	24	5	2.2	11	1.5	18	356	12	1072	18	356	12	1072	3	444	3	345	1.17	1.00	3.11	1.46	1.62	1.01	2.04	2.31	1.00	5.85	2270570	6114574
3	24	6	1.833	11	1.5	16	323	12	1041	16	323	12	1041	3	522	3	390	1.18	1.00	3.08	1.46	1.68	1.01	2.39	2.38	1.00	6.82	2205784	6054065
3	24	7	1.57	11	1.5	15	297	12	1014	15	297	12	1014	3	414	2	424	1.19	1.00	3.15	1.45	1.73	1.01	2.70	2.44	1.00	7.75	2150990	6001269
3	24	4	2.875	11.5	1.75	20	403	12	1120	20	403	12	1119	3	333	3	277	1.15	1.00	3.36	1.45	1.57	1.01	1.67	2.43	1.00	4.80	2337685	6183274
3	24	5	2.3	11.5	1.75	18	361	12	1079	18	361	12	1079	3	414	3	332	1.17	1.00	3.40	1.44	1.62	1.01	1.96	2.50	1.00	5.63	2251158	6063478
3	24	6	1.917	11.5	1.75	16	328	12	1047	16	328	12	1047	3	500	3	379	1.18	1.00	3.36	1.44	1.68	1.01	2.31	2.57	1.00	6.55	2185406	5998017
3	24	7	1.643	11.5	1.75	15	302	12	1019	15	302	12	1019	3	571	3	412	1.19	1.00	3.43	1.43	1.73	1.01	2.60	2.63	1.00	7.44	2128130	5937017
3	24	4	3.25	13	2.5	21	420	13	1138	21	420	13	1138	3	300	3	249	1.15	1.00	3.30	1.41	1.56	1.01	1.54	2.33	1.00	4.38	2295495	6070249
3	24	5	2.6	13	2.5	19	377	12	1097	19	377	12	1097	3	375	3	298	1.16	1.00	3.33	1.40	1.61	1.01	1.77	2.39	1.00	5.09	2211847	5947746
3	24	6	2.167	13	2.5	17	344	12	1062	17	344	12	1062	3	444	3	344	1.17	1.00	3.39	1.40	1.67	1.02	2.07	2.45	1.00	5.88	2142884	5863562
3	24	7	1.857	13	2.5	16	317	12	1034	16	317	12	1034	3	522	3	381	1.18	1.00	3.35	1.39	1.72	1.02	2.37	2.51	1.00	6.68	2086513	5804316
3	24	4	3.625	14.5	3.25	22	449	13	1168	22	449	13	1168	3	267	3	230	1.14	1.00	3.28	1.46	1.51	1.01	1.47	2.42	1.00	4.14	2440755	6356241
3	24	5	2.9	14.5	3.25	20	405	12	1122	20	405	12	1122	3	333	3	275	1.15	1.00	3.31	1.45	1.56	1.01	1.67	2.47	1.00	4.77	2345538	6197225
3	24	6	2.417	14.5	3.25	19	370	12	1090	19	370	12	1090	3	400	3	319	1.16	1.00	3.36	1.45	1.60	1.01	1.88	2.52	1.00	5.41	2275917	6100552
3	24	7	2.07	14.5	3.25	17	342	12	1061	17	342	12	1061	3	462	3	361	1.17	1.00	3.43	1.44	1.64	1.01	2.17	2.58	1.00	6.15	2219012	6037773
3	24	4	2.875	11.5	0	20	403	12	1120	20	403	12	1119	3	333	3	277	1.15	1.00	1.53	1.45	1.57	1.01	1.67	1.11	1.00	4.80	2337685	6183274
3	24	5	2.3	11.5	0	18	361	12	1079	18	361	12	1079	3	414	3	332	1.17	1.00	1.55	1.44	1.62	1.01	1.96	1.14	1.00	5.63	2251158	6063478
3	24	6	1.917	11.5	0	16	328	12	1047	16	328	12	1047	3	500	3	379	1.18	1.00	1.53	1.44	1.68	1.01	2.31	1.17	1.00	6.55	2185406	5998017
3	24	7	1.643	11.5	0	15	302	12	1019	15	302	12	1019	3	571	3	412	1.19	1.00	1.56	1.43	1.73	1.01	2.60	1.20	1.00	7.44	2128130	5937017
3	24	4	3.25	13	0.75	21	420	13	1138	21	420	13	1138	3	300	3	249	1.15	1.00	1.98	1.41	1.56	1.01	1.54	1.40	1.00	4.38	2295495	6070249
3	24	5	2.6	13	0.75	19	377	12	1097	19	377	12	1097	3	375	3	298	1.16	1.00	2.00	1.40	1.61	1.01	1.77	1.44	1.00	5.09	2211847	5947746
3	24	6	2.167	13	0.75	17	344	12	1062	17	344	12	1062	3	444	3	344	1.17	1.00	2.04	1.40	1.67	1.02	2.07	1.47	1.00	5.88	2142884	5863562
3	24	7	1.857	13	0.75	16	317	12	1034	16	317	12	1034	3	522	3	381	1.18	1.00	2.02	1.39	1.72	1.02	2.37	1.51	1.00	6.68	2086513	5804316
3	24	4	3.625	14.5	1.5	22	449	13	1168	22	449	13	1168	3	267	3	230	1.14	1.00	2.98	1.46	1.51	1.01	1.47	2.19	1.00	4.14	2440755	6356241
3	24	5	2.9	14.5	1.5	20	405	12	1122	20	405	12	1122	3	333	3	275	1.15	1.00	3.00	1.45	1.56	1.01	1.67	2.24	1.00	4.77	2345538	6197225
3	24	6	2.417	14.5	1.5	19	370	12	1090	19	370	12	1090	3	400	3	319	1.16	1.00	2.60	1.45	1.60	1.01	1.88	1.94	1.00	5.41	2275917	6100552
3	24	7	2.07	14.5	1.5	17	342	12	1061	17	342	12	1061	3	462	3	361	1.17	1.00	2.27	1.44	1.64	1.01	2.17	1.71	1.00	6.15	2219012	6037773
3	24	5	3	15	0	20	409	12	1128	20	409	12	1128	3	324	3	267	1.15	1.00	1.48	1.44	1.56	1.01	1.64	1.10	1.00	4.66	2332992	6168057
3	24	6	2.5	15	0	19	375	12	1092	19	375	12	1092	3	387	3	309	1.16	1.00	1.50	1.43	1.59	1.01	1.82	1.12	1.00	5.24	2256016	6042758
3	24	7	2.14	15	0	17	346	12	1065	17	346	12	1065	3	444	3	350	1.17	1.00	1.53	1.43	1.64	1.01	2.11	1.14	1.00	5.97	2202828	5992692
3	24	8	1.875	15	0	16	323	12	1039	16	323	12	1039	3	500	3	382	1.18	1.00	1.51	1.42	1.68	1.01	2.36	1.16	1.00	6.65	2147037	5921890
3	24	9	1.67	15	0	15	308	12	1025	15	308	12	1025	3	571	3	410	1.19	1.00	1.54	1.46	1.70	1.01	2.46	1.21	1.00	7.37	2182140	6039774
3	24	5	3.3	16.5	0.75	21	422	13	1139	21	422	13	1139	3	293	3	245	1.14	1.00	1.97	1.40	1.56	1.01	1.53	1.39	1.00	4.32	2282935	6038534
3	24	6	2.75	16.5	0.75	19	387	12	1104	19	387	12	1104	3	353	3	284	1.15	1.00	1.94	1.39	1.60	1.01	1.70	1.42	1.00	4.87	2212990	5930534
3	24	7	2.357	16.5	0.75	18	358	12	1076	18	358	12	1076	3	414	3	321	1.16	1.00	1.98	1.39	1.64	1.01	1.93	1.45	1.00	5.48	2155363	5858802
3	24	8	2.06	16.5	0.75	17	334	12	1052	17	334	12	1052	3	462	3	358	1.17	1.00	1.96	1.39	1.68	1.01	2.18	1.48	1.00	6.13	2111539	5818087
3	24	9	1.83	16.5	0.75	16	314	12	1033	16	314	12	1033	3	522	3	385	1.18	1.00	1.99	1.39	1.72	1.02	2.39	1.49	1.00	6.77	2083788	5808826
3	24	5	3.6	18	1.5	22	446	13	1164	22	446	13	1163	3	273	3	231	1.14	1.00	2.95	1.44	1.51	1.01	1.48	2.18	1.00	4.14	2411598	6294953
3	24	6	3	18	1.5	20	409	12	1129	20	409	12	1129	3	324	3	267	1.15	1.00	2.99	1.44	1.55	1.01	1.65	2.22	1.00	4.67	2337950	6180587
3	24	7	2.57	18	1.5	19	380	12	1100	19	380	12	1100	3	375	3	303	1.16	1.00	2.67	1.44	1.58	1.01	1.81	2.04	1.00	5.17	2280734	6094975
3	24	8	2.25	18	1.5	18	356	12	1072	18	356	12	1072	3	429	3	336	1.17	1.00	2.38	1.43	1.62	1.01	2.01	1.82	1.00	5.72	2220113	6004001
3	24	9	2	18	1.5	17	334	12	1054	17	334	12	1054	3	480	3	370	1.18	1.00	2.11	1.43	1.66	1.01	2.25	1.65	1.00	6.32	2184178	5981730
3	24	6	3.08	18.5	0	21	413	12	1132	21	413	12	1132	3	316	3	261	1.15	1.00	1.47	1.43	1.55	1.01	1.62	1.09	1.00	4.57	2327848	6151694
3	24	7	2.64	18.5	0	19	384	12	1102	19	384	12	1102	3	364	3	296	1.16	1.00	1.50	1.43	1.58	1.01	1.77	1.10	1.00	5.05	2267089	6055738
3	24	8	2.32	18.5	0	18	360	12	1076	18	360	12	1076	3	414	3	327	1.17	1.00	1.48	1.42	1.62	1.01	1.96	1.12	1.00	5.57	2208563	5969636
3	24	9	2.06	18.5	0	17	338	12	1056	17	338	12	1056	3	462	3	360	1.17	1.00	1.52	1.42	1.65	1.01	2.19	1.14	1.00	6.15	2167744	5933060
3	24	10	1.85	18.5	0	16	319	12	1038	16	319	12	1038	3	522	3	385	1.18	1.00	1.51	1.41	1.69	1.01	2.39	1.16	1.00	6.73	2132180	5903342
3	24	6	3.58	21.5	1.5	22	444	13	1162	22	444	13	1162	3	273	3	232	1.14	1.00	2.93	1.44	1.51	1.01	1.48	2.16	1.00	4.14	2397098	6264924
3	24	7	3.07	21.5	1.5	21	413	12	1131	21	413	12	1131	3	316	3	262	1.15	1.00	2.98	1.43	1.54	1.01	1.62	2.20	1.00	4.58	2330501	6155852
3	24	8	2.69	21.5	1.5	19	388	12	1105	19	388	12	1105	3	364	3	291	1.16	1.00	2.78	1.43	1.57	1.01	1.75	2.11	1.00	4.99	2276578	6069168
3	24	9	2.39	21.5	1.5	18	366	12	1083	18	366	12	1083	3	400	3	320	1.16	1.00	2.53	1.43	1.60	1.01	1.91	1.90	1.00	5.44	2231115	6007287
3	24	10	2.15	21.5	1.5	17	346	12	1065	17	346	12	1065	3	444	3	348	1.17	1.00	2.26	1.42	1.63	1.01	2.11	1.74	1.00	5.94	2192582	5970095

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	24	7	3.14	22	0	21	416	12	1135	21	416	12	1135	3	308	3	257	1.15	1.00	1.47	1.43	1.54	1.01	1.60	1.08	1.00	4.51	2324796	6141226
3	24	8	2.75	22	0	20	390	12	1110	20	390	12	1110	3	353	3	286	1.16	1.00	1.45	1.42	1.57	1.01	1.73	1.10	1.00	4.92	2269736	6056500
3	24	9	2.44	22	0	18	369	12	1086	18	369	12	1086	3	400	3	315	1.16	1.00	1.48	1.42	1.60	1.01	1.87	1.11	1.00	5.34	2226833	5991375
3	24	10	2.2	22	0	17	349	12	1068	17	349	12	1068	3	444	3	341	1.17	1.00	1.47	1.41	1.63	1.01	2.06	1.13	1.00	5.83	2184613	5945465
3	24	11	2	22	0	17	332	12	1050	17	332	12	1050	3	480	3	368	1.18	1.00	1.51	1.41	1.66	1.01	2.26	1.14	1.00	6.30	2146373	5900452
3	24	12	1.83	22	0	16	317	12	1036	16	317	12	1036	3	522	3	387	1.18	1.00	1.50	1.41	1.69	1.01	2.40	1.16	1.00	6.79	2126580	5896146
3	24	7	3.57	25	1.5	22	442	13	1162	22	442	13	1162	3	273	3	232	1.14	1.00	2.92	1.43	1.52	1.01	1.49	2.16	1.00	4.16	2386083	6246212
3	24	8	3.125	25	1.5	21	416	12	1133	21	416	12	1133	3	308	3	258	1.15	1.00	2.97	1.43	1.54	1.01	1.60	2.19	1.00	4.51	2326141	6140902
3	24	9	2.78	25	1.5	20	393	12	1111	20	393	12	1111	3	353	3	283	1.16	1.00	2.88	1.42	1.56	1.01	1.72	2.17	1.00	4.88	2277611	6066214
3	24	10	2.5	25	1.5	19	373	12	1093	19	373	12	1093	3	387	3	309	1.16	1.00	2.57	1.42	1.59	1.01	1.84	1.97	1.00	5.25	2242249	6020833
3	24	11	2.27	25	1.5	18	356	12	1073	18	356	12	1073	3	429	3	333	1.17	1.00	2.39	1.42	1.62	1.01	2.01	1.82	1.00	5.67	2205116	5972208
3	24	12	1.83	25	1.5	19	384	12	1104	19	384	12	1090	3	522	3	434	1.21	1.02	1.91	1.99	1.44	1.00	2.44	1.86	1.00	7.32	3284970	8168947
3	28	3	1.5	4.5	0	16	325	13	1205	16	325	13	1205	3	500	2	486	1.19	1.00	1.66	1.58	1.71	1.01	2.81	1.19	1.00	10.64	3912896	9996811
3	28	3	2	6	0.75	18	358	14	1238	18	358	14	1238	3	560	3	399	1.17	1.00	1.60	1.45	1.70	1.02	2.69	1.08	1.00	8.42	3602609	9309253
3	28	4	1.5	6	0.75	16	321	13	1199	16	321	13	1199	3	500	2	482	1.19	1.00	1.64	1.55	1.70	1.01	2.82	1.20	1.00	10.53	3797271	9770177
3	28	3	2.33	7	1.25	20	390	14	1268	20	390	14	1268	3	483	3	363	1.16	1.00	2.93	1.46	1.64	1.02	2.43	2.02	1.00	7.58	3721470	9485633
3	28	4	1.75	7	1.25	17	335	13	1215	17	335	13	1215	3	424	2	444	1.18	1.00	2.29	1.45	1.72	1.02	2.78	1.64	1.00	9.27	3572926	9297055
3	28	3	2.67	8	0	20	408	14	1285	20	408	14	1285	3	424	3	321	1.15	1.00	1.75	1.40	1.64	1.02	2.21	1.18	1.00	6.80	3591411	9185720
3	28	4	2	8	0	18	351	14	1230	18	351	14	1230	3	560	3	406	1.17	1.00	1.79	1.40	1.72	1.02	2.65	1.22	1.00	8.31	3445020	8997277
3	28	5	1.6	8	0	16	323	13	1200	16	323	13	1199	3	467	2	470	1.19	1.00	1.82	1.48	1.71	1.01	2.81	1.33	1.00	9.90	3598956	9367199
3	28	3	3.17	9.5	0.75	22	436	14	1313	22	436	14	1313	3	359	3	276	1.14	1.00	2.28	1.36	1.62	1.02	1.98	1.49	1.00	5.98	3529885	9012920
3	28	4	2.375	9.5	0.75	19	377	14	1254	19	377	14	1254	3	467	3	349	1.16	1.00	2.29	1.35	1.70	1.02	2.36	1.54	1.00	7.28	3377534	8797940
3	28	5	1.9	9.5	0.75	17	336	13	1213	17	336	13	1213	3	583	3	414	1.17	1.00	2.31	1.35	1.75	1.02	2.69	1.60	1.00	8.51	3290221	8703311
3	28	6	1.583	9.5	0.75	16	320	13	1199	16	320	13	1199	3	483	2	472	1.19	1.00	2.04	1.47	1.71	1.01	2.82	1.52	1.00	9.98	3583028	9347754
3	28	3	3.67	11	1.5	24	479	15	1357	24	479	15	1357	3	311	3	249	1.14	1.00	3.33	1.43	1.55	1.01	1.85	2.26	1.00	5.51	3826997	9571529
3	28	4	2.75	11	1.5	21	416	14	1294	21	416	14	1293	3	412	3	314	1.15	1.00	3.33	1.42	1.61	1.01	2.21	2.34	1.00	6.70	3654246	9305616
3	28	5	2.2	11	1.5	19	371	14	1251	19	371	14	1251	3	519	3	377	1.17	1.00	3.36	1.41	1.67	1.02	2.53	2.40	1.00	7.82	3540625	9156503
3	28	6	1.833	11	1.5	17	337	13	1216	17	337	13	1216	3	412	2	428	1.18	1.00	3.47	1.41	1.71	1.02	2.80	2.46	1.00	8.86	3446743	9031457
3	28	7	1.57	11	1.5	16	310	13	1188	16	310	13	1188	3	483	2	467	1.19	1.00	3.44	1.41	1.76	1.02	3.01	2.52	1.00	9.88	3378395	8951489
3	28	4	2.875	11.5	1.75	21	422	14	1301	21	422	14	1301	3	389	3	302	1.15	1.00	3.61	1.40	1.61	1.01	2.14	2.52	1.00	6.47	3619560	9226383
3	28	5	2.3	11.5	1.75	19	377	14	1256	19	377	14	1256	3	483	3	362	1.16	1.00	3.73	1.40	1.67	1.02	2.45	2.59	1.00	7.54	3501839	9061954
3	28	6	1.917	11.5	1.75	17	343	13	1220	17	343	13	1220	3	583	3	415	1.17	1.00	3.76	1.39	1.71	1.02	2.72	2.65	1.00	8.53	3406701	8929443
3	28	7	1.643	11.5	1.75	16	315	13	1193	16	315	13	1193	3	452	2	453	1.18	1.00	3.82	1.39	1.76	1.02	2.94	2.71	1.00	9.52	3335099	8849874
3	28	4	3.25	13	2.5	22	441	15	1320	22	441	15	1320	3	350	3	270	1.14	1.00	3.55	1.36	1.61	1.02	1.97	2.41	1.00	5.89	3550140	9052517
3	28	5	2.6	13	2.5	20	395	14	1272	20	395	14	1272	3	438	3	324	1.16	1.00	3.65	1.36	1.66	1.02	2.25	2.47	1.00	6.84	3425569	8864121
3	28	6	2.167	13	2.5	18	359	14	1238	18	359	14	1238	3	519	3	376	1.17	1.00	3.69	1.35	1.71	1.02	2.53	2.53	1.00	7.77	3338209	8758204
3	28	7	1.857	13	2.5	17	331	13	1208	17	331	13	1208	3	400	2	418	1.17	1.00	3.73	1.35	1.75	1.02	2.74	2.59	1.00	8.64	3261996	8656071
3	28	4	3.625	14.5	3.25	24	473	15	1351	24	473	15	1351	3	311	3	250	1.14	1.00	3.56	1.41	1.55	1.01	1.87	2.49	1.00	5.53	3757530	9435858
3	28	5	2.9	14.5	3.25	21	424	14	1303	21	424	14	1303	3	389	3	300	1.15	1.00	3.68	1.40	1.60	1.01	2.14	2.55	1.00	6.43	3628045	9240749
3	28	6	2.417	14.5	3.25	19	387	14	1265	19	387	14	1265	3	467	3	347	1.16	1.00	3.71	1.40	1.64	1.01	2.39	2.61	1.00	7.28	3525757	9089747
3	28	7	2.07	14.5	3.25	18	357	14	1236	18	357	14	1236	3	538	3	394	1.17	1.00	3.67	1.39	1.68	1.01	2.63	2.66	1.00	8.11	3452541	9000143
3	28	4	2.875	11.5	0	21	422	14	1301	21	422	14	1301	3	389	3	302	1.15	1.00	1.71	1.40	1.61	1.01	2.14	1.19	1.00	6.47	3619560	9226383
3	28	5	2.3	11.5	0	19	377	14	1256	19	377	14	1256	3	483	3	362	1.16	1.00	1.76	1.40	1.67	1.02	2.45	1.22	1.00	7.54	3501839	9061954
3	28	6	1.917	11.5	0	17	343	13	1220	17	343	13	1220	3	583	3	415	1.17	1.00	1.78	1.39	1.71	1.02	2.72	1.25	1.00	8.53	3406701	8929443
3	28	7	1.643	11.5	0	16	315	13	1193	16	315	13	1193	3	452	2	453	1.18	1.00	1.80	1.39	1.76	1.02	2.94	1.28	1.00	9.52	3335099	8849874
3	28	4	3.25	13	0.75	22	441	15	1320	22	441	15	1320	3	350	3	270	1.14	1.00	2.19	1.36	1.61	1.02	1.97	1.49	1.00	5.89	3550140	9052517
3	28	5	2.6	13	0.75	20	395	14	1272	20	395	14	1272	3	438	3	324	1.16	1.00	2.25	1.36	1.66	1.02	2.25	1.52	1.00	6.84	3425569	8864121
3	28	6	2.167	13	0.75	18	359	14	1238	18	359	14	1238	3	519	3	376	1.17	1.00	2.28	1.35	1.71	1.02	2.53	1.56	1.00	7.77	3338209	8758204
3	28	7	1.857	13	0.75	17	331	13	1208	17	331	13	1208	3	400	2	418	1.17	1.00	2.30	1.35	1.75	1.02	2.74	1.59	1.00	8.64	3261996	8656071
3	28	4	3.625	14.5	1.5	24	473	15	1351	24	473	15	1351	3	311	3	250	1.14	1.00	3.25	1.41	1.55	1.01	1.87	2.27	1.00	5.53	3757530	9435858
3	28	5	2.9	14.5	1.5	21	424	14	1303	21	424	14	1303	3	389	3	300	1.15	1.00	3.35	1.40	1.60	1.01	2.14	2.33	1.00	6.43	3628045	9240749
3	28	6	2.417	14.5	1.5	19	387	14	1265	19	387	14	1265	3	467	3	347	1.16	1.00	2.94	1.40	1.64	1.01	2.39	2.07	1.00	7.28	3525757	9089747
3	28	7	2.07	14.5	1.5	18	357	14	1236	18	357	14	1236	3	538	3	394	1.17	1.00	2.49	1.39	1.68	1.01	2.63	1.81	1.00	8.11	3452541	9000143
3	28	5	3	15	0	21	429	14	1307	22	429	14	1306	3	378	3	290	1.15	1.00	1.69	1.39	1.60	1.01	2.09	1.17	1.00	6.26	3598270	9169383
3	28	6	2.5	15	0	20	391	14	1271	20	391	14	1271	3	452	3	337	1.16	1.00	1.71	1.38	1.64	1.01	2.34	1.20	1.00	7.10	3502373	9039522
3	28	7	2.14	15	0	18	361	14	1241	18	361	14	1241	3	519	3	383	1.17	1.00	1.69	1.38	1.68	1.01	2.58	1.22	1.00	7.91	3428514	8944972
3	28	8	1.875	15	0	17	337	13	1214	17	337	13	1214	3	583	3	419	1.17	1.00	1.72	1.38	1.72	1.02	2.76	1.24	1.00	8.64	3355067	8835957
3	28	9	1.67	15	0	16	321	13	1198	16	321	13	1197	3	452	2	451	1.18	1.00	1.74	1.41	1.72	1.01	2.81	1.29	1.00	9.45	3404142	8975288
3	28	5	3.3	16.5	0.75	22	443	15	1321	22	443	15	1321	3	341	3	267	1.14	1.00	2.18	1.35	1.60	1.02	1.95	1.48	1.00	5.81	3527425	8999539
3	28	6	2.75	16.5	0.75	20	405	14	1282	20	405	14	1282	3	412	3	309	1.15	1.00	2.20	1.35	1.64	1.02	2.18	1.51	1.00	6.57	3428446	8852161
3	28	7	2.357	16.5	0.75	19	374	14	1252	19	374	14	1252	3	483	3	350	1.16	1.00	2.23	1.34	1.68	1.02	2.40	1.54	1.00	7.31	3350378	8749828
3	28	8	2.06	16.5	0.75	17	349	13	1226	17	349	13	1226	3	538	3	391	1.17	1.00	2.25	1.34	1.72	1.02	2.61	1.56	1.00	8.02	3289965	8673300

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	28	9	1.83	16.5	0.75	16	328	13	1206	16	328	13	1206	3	412	2	422	1.17	1.00	2.22	1.35	1.75	1.02	2.76	1.58	1.00	8.73	3254848	8651260
3	28	5	3.6	18	1.5	23	469	15	1349	23	469	15	1349	3	318	3	251	1.14	1.00	3.22	1.40	1.55	1.01	1.88	2.25	1.00	5.55	3719929	9368228
3	28	6	3	18	1.5	21	429	14	1309	21	429	14	1309	3	378	3	291	1.15	1.00	3.25	1.39	1.59	1.01	2.10	2.30	1.00	6.28	3611209	9200661
3	28	7	2.57	18	1.5	20	398	14	1275	20	398	14	1275	3	438	3	330	1.16	1.00	3.04	1.39	1.63	1.01	2.30	2.16	1.00	6.95	3525564	9066744
3	28	8	2.25	18	1.5	19	371	14	1250	19	371	14	1250	3	500	3	367	1.16	1.00	2.70	1.38	1.66	1.01	2.50	1.93	1.00	7.63	3454879	8976447
3	28	9	2	18	1.5	17	349	13	1227	17	349	13	1227	3	560	3	404	1.17	1.00	2.38	1.38	1.69	1.01	2.69	1.74	1.00	8.27	3395831	8896812
3	28	6	3.08	18.5	0	22	433	14	1313	22	433	14	1313	3	368	3	284	1.15	1.00	1.65	1.38	1.59	1.01	2.06	1.16	1.00	6.15	3594713	9160186
3	28	7	2.64	18.5	0	20	401	14	1281	20	401	14	1281	3	424	3	322	1.16	1.00	1.67	1.38	1.63	1.01	2.27	1.18	1.00	6.83	3511838	9041116
3	28	8	2.32	18.5	0	19	375	14	1255	19	375	14	1255	3	483	3	357	1.16	1.00	1.69	1.37	1.66	1.01	2.46	1.20	1.00	7.46	3437934	8936154
3	28	9	2.06	18.5	0	18	353	14	1230	18	353	14	1229	3	538	3	393	1.17	1.00	1.72	1.37	1.69	1.01	2.64	1.22	1.00	8.08	3372482	8837569
3	28	10	1.85	18.5	0	17	333	13	1212	17	333	13	1212	3	400	2	422	1.18	1.00	1.71	1.37	1.72	1.02	2.79	1.24	1.00	8.73	3330356	8799875
3	28	6	3.58	21.5	1.5	23	467	15	1345	23	467	15	1344	3	318	3	251	1.14	1.00	3.20	1.39	1.55	1.01	1.89	2.24	1.00	5.56	3689588	9303818
3	28	7	3.07	21.5	1.5	22	433	14	1312	22	433	14	1312	3	368	3	285	1.15	1.00	3.24	1.38	1.59	1.01	2.07	2.28	1.00	6.16	3599651	9167865
3	28	8	2.69	21.5	1.5	20	405	14	1285	20	405	14	1285	3	424	3	317	1.16	1.00	3.18	1.38	1.62	1.01	2.25	2.24	1.00	6.75	3525479	9062432
3	28	9	2.39	21.5	1.5	19	382	14	1260	19	382	14	1260	3	467	3	349	1.16	1.00	2.79	1.38	1.65	1.01	2.41	2.02	1.00	7.30	3463270	8969635
3	28	10	2.15	21.5	1.5	18	361	14	1241	18	361	14	1241	3	519	3	381	1.17	1.00	2.56	1.38	1.68	1.01	2.58	1.84	1.00	7.87	3412568	8911857
3	28	7	3.14	22	0	22	437	14	1314	22	437	14	1314	3	359	3	279	1.15	1.00	1.64	1.38	1.58	1.01	2.03	1.15	1.00	6.04	3582904	9121831
3	28	8	2.75	22	0	20	409	14	1286	20	409	14	1286	3	412	3	311	1.15	1.00	1.67	1.37	1.62	1.01	2.21	1.17	1.00	6.61	3506592	9008263
3	28	9	2.44	22	0	19	385	14	1263	19	385	14	1263	3	467	3	343	1.16	1.00	1.65	1.37	1.64	1.01	2.38	1.19	1.00	7.18	3452174	8940884
3	28	10	2.2	22	0	18	364	14	1244	18	364	14	1244	3	519	3	373	1.17	1.00	1.68	1.37	1.67	1.01	2.54	1.21	1.00	7.73	3395734	8870588
3	28	11	2	22	0	17	346	13	1226	17	346	13	1226	3	560	3	403	1.17	1.00	1.67	1.36	1.70	1.01	2.70	1.22	1.00	8.26	3347803	8809476
3	28	12	1.83	22	0	17	331	13	1209	17	331	13	1209	3	412	2	424	1.18	1.00	1.70	1.37	1.72	1.01	2.79	1.23	1.00	8.78	3317324	8774447
3	28	7	3.57	25	1.5	23	465	15	1345	23	465	15	1345	3	318	3	252	1.14	1.00	3.19	1.38	1.55	1.01	1.90	2.24	1.00	5.57	3674439	9279236
3	28	8	3.125	25	1.5	22	436	14	1314	22	436	14	1314	3	359	3	280	1.15	1.00	3.23	1.38	1.58	1.01	2.05	2.27	1.00	6.07	3587433	9135315
3	28	9	2.78	25	1.5	21	411	14	1291	21	411	14	1291	3	412	3	308	1.15	1.00	3.20	1.38	1.61	1.01	2.21	2.30	1.00	6.59	3528304	9057961
3	28	10	2.5	25	1.5	20	390	14	1268	20	390	14	1268	3	452	3	336	1.16	1.00	2.92	1.37	1.64	1.01	2.35	2.09	1.00	7.07	3468410	8965311
3	28	11	2.27	25	1.5	19	371	14	1251	19	371	14	1251	3	500	3	364	1.17	1.00	2.64	1.37	1.66	1.01	2.50	1.93	1.00	7.58	3431442	8930621
3	28	12	1.83	25	1.5	20	399	14	1277	20	399	14	1266	3	412	2	474	1.20	1.01	2.08	1.89	1.48	1.00	3.08	1.90	1.00	9.79	4989334	11927128
3	32	3	1.5	4.5	0	17	334	15	1371	17	334	15	1371	3	571	2	532	1.19	1.00	1.87	1.53	1.78	1.01	3.48	1.28	1.00	13.77	5737513	14127388
3	32	3	2	6	0.75	19	370	15	1408	19	370	15	1408	3	432	2	436	1.17	1.00	1.80	1.40	1.76	1.02	3.32	1.16	1.00	10.89	5281947	13193901
3	32	4	1.5	6	0.75	16	329	15	1366	16	329	15	1366	3	571	2	527	1.19	1.00	1.86	1.49	1.78	1.01	3.51	1.29	1.00	13.67	5573578	13834195
3	32	3	2.33	7	1.25	20	404	16	1443	20	404	16	1443	3	552	3	397	1.16	1.00	3.14	1.42	1.69	1.01	3.00	2.07	1.00	9.82	5453640	13458762
3	32	4	1.75	7	1.25	17	345	15	1383	17	345	15	1383	3	485	2	485	1.18	1.00	2.58	1.41	1.78	1.01	3.44	1.74	1.00	12.01	5248439	13187156
3	32	3	2.67	8	0	21	423	16	1463	21	423	16	1463	3	485	3	349	1.15	1.00	1.95	1.36	1.69	1.02	2.73	1.26	1.00	8.81	5261822	13052876
3	32	4	2	8	0	18	362	15	1401	18	362	15	1401	3	432	2	443	1.17	1.00	1.99	1.35	1.78	1.02	3.28	1.31	1.00	10.78	5062963	12791530
3	32	5	1.6	8	0	17	331	15	1368	17	331	15	1368	3	533	2	513	1.18	1.00	2.07	1.43	1.79	1.01	3.49	1.42	1.00	12.85	5286294	13288715
3	32	3	3.17	9.5	0.75	23	454	16	1492	23	454	16	1492	3	410	3	300	1.14	1.00	2.50	1.32	1.67	1.02	1.78	1.56	1.00	7.72	5161244	12789016
3	32	4	2.375	9.5	0.75	20	390	16	1428	20	390	16	1428	3	533	3	380	1.16	1.00	2.55	1.31	1.75	1.02	2.92	1.62	1.00	9.44	4958162	12515408
3	32	5	1.9	9.5	0.75	17	345	15	1384	17	345	15	1384	3	457	2	451	1.17	1.00	2.57	1.31	1.82	1.02	3.35	1.68	1.00	11.08	4843581	12403605
3	32	6	1.583	9.5	0.75	16	328	15	1366	16	328	15	1366	3	552	2	516	1.18	1.00	2.30	1.42	1.79	1.01	3.51	1.61	1.00	12.95	5261277	13253169
3	32	3	3.67	11	1.5	25	500	17	1539	25	500	17	1539	3	356	3	270	1.14	1.00	3.44	1.38	1.59	1.01	1.67	2.25	1.00	7.09	5565849	13519015
3	32	4	2.75	11	1.5	22	432	16	1471	22	432	16	1471	3	471	3	342	1.15	1.00	3.50	1.37	1.66	1.01	2.72	2.33	1.00	8.65	5339179	13183677
3	32	5	2.2	11	1.5	19	384	16	1421	19	384	16	1421	3	593	3	410	1.16	1.00	3.57	1.37	1.72	1.01	3.12	2.39	1.00	10.09	5172963	12947358
3	32	6	1.833	11	1.5	17	347	15	1384	17	347	15	1384	3	471	2	467	1.17	1.00	3.60	1.36	1.78	1.01	3.46	2.46	1.00	11.48	5058151	12810444
3	32	7	1.57	11	1.5	16	317	15	1355	16	317	15	1355	3	552	2	510	1.18	1.00	3.65	1.36	1.83	1.01	3.74	2.52	1.00	12.85	4973403	12729090
3	32	4	2.875	11.5	1.75	22	439	16	1477	22	439	16	1477	3	444	3	328	1.15	1.00	3.75	1.36	1.66	1.01	1.93	2.48	1.00	8.34	5281489	13053893
3	32	5	2.3	11.5	1.75	20	390	16	1428	20	390	16	1428	3	552	3	394	1.16	1.00	3.84	1.35	1.72	1.01	3.03	2.55	1.00	9.74	5119841	12834351
3	32	6	1.917	11.5	1.75	18	353	15	1390	18	353	15	1390	3	457	2	453	1.17	1.00	3.87	1.35	1.77	1.01	3.37	2.62	1.00	11.08	5003434	12688796
3	32	7	1.643	11.5	1.75	16	322	15	1362	16	322	15	1362	3	516	2	495	1.18	1.00	3.92	1.34	1.83	1.01	3.66	2.68	1.00	12.41	4914368	12609413
3	32	4	3.25	13	2.5	23	459	16	1499	23	459	16	1499	3	400	3	294	1.14	1.00	3.68	1.32	1.65	1.01	1.78	2.37	1.00	7.60	5176843	12818260
3	32	5	2.6	13	2.5	20	409	16	1448	20	409	16	1448	3	500	3	353	1.15	1.00	3.77	1.31	1.71	1.02	2.79	2.44	1.00	8.86	5017026	12594173
3	32	6	2.167	13	2.5	19	371	15	1408	19	371	15	1408	3	593	3	409	1.16	1.00	3.79	1.31	1.76	1.02	3.12	2.50	1.00	10.05	4892518	12426103
3	32	7	1.857	13	2.5	17	340	15	1377	17	340	15	1377	3	457	2	456	1.17	1.00	3.83	1.31	1.81	1.02	3.41	2.56	1.00	11.22	4797326	12317300
3	32	4	3.625	14.5	3.25	25	494	17	1531	25	494	17	1531	3	356	3	272	1.14	1.00	3.73	1.36	1.59	1.01	1.68	2.44	1.00	7.11	5461498	13315190
3	32	5	2.9	14.5	3.25	22	441	16	1479	22	441	16	1479	3	444	3	326	1.15	1.00	3.73	1.36	1.64	1.01	1.93	2.51	1.00	8.29	5288772	13064601
3	32	6	2.417	14.5	3.25	20	401	16	1438	20	401	16	1438	3	533	3	378	1.16	1.00	3.83	1.35	1.69	1.01	2.95	2.57	1.00	9.40	5156177	12878076
3	32	7	2.07	14.5	3.25	18	368	15	1407	18	368	15	1407	3	410	2	430	1.17	1.00	3.87	1.35	1.74	1.01	3.26	2.63	1.00	10.51	5056987	12765466
3	32	4	2.875	11.5	0	22	439	16	1477	22	439	16	1477	3	444	3	328	1.15	1.00	1.92	1.36	1.66	1.01	1.93	1.27	1.00	8.34	5281489	13053893
3	32	5	2.3	11.5	0	20	390	16	1428	20	390	16	1428	3	552	3	394	1.16	1.00	1.97	1.35	1.72	1.01	3.03	1.31	1.00	9.74	5119841	12834351
3	32	6	1.917	11.5	0	18	353	15	1390	18	353	15	1390	3	457	2	453	1.17	1.00	1.98	1.35	1.77	1.01	3.37	1.34	1.00	11.08	5003434	12688796
3	32	7	1.643	11.5	0	16	322	15	1362	16	322	15	1362	3	516	2	495	1.18	1.00	2.01	1.34	1.83	1.01	3.66	1.37	1.00	12.41	4914368	12609413
3	32	4	3.25	13	0.75	23	459	16	1499	23	459	16	1499	3	400	3	294	1.14	1.00	2.41	1.32	1.65	1.01	1.78	1.55	1.00	7.60	5176843	12818260

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	32	5	2.6	13	0.75	20	409	16	1448	20	409	16	1448	3	500	3	353	1.15	1.00	2.47	1.31	1.71	1.02	2.79	1.60	1.00	8.86	5017026	12594173
3	32	6	2.167	13	0.75	19	371	15	1408	19	371	15	1408	3	593	3	409	1.16	1.00	2.48	1.31	1.76	1.02	3.12	1.64	1.00	10.05	4892518	12426103
3	32	7	1.857	13	0.75	17	340	15	1377	17	340	15	1377	3	457	2	456	1.17	1.00	2.51	1.31	1.81	1.02	3.41	1.68	1.00	11.22	4797326	12317300
3	32	4	3.625	14.5	1.5	25	494	17	1531	25	494	17	1531	3	356	3	272	1.14	1.00	3.43	1.36	1.59	1.01	1.68	2.25	1.00	7.11	5461498	13315190
3	32	5	2.9	14.5	1.5	22	441	16	1479	22	441	16	1479	3	444	3	326	1.15	1.00	3.44	1.36	1.64	1.01	1.93	2.31	1.00	8.29	5288772	13064601
3	32	6	2.417	14.5	1.5	20	401	16	1438	20	401	16	1438	3	533	3	378	1.16	1.00	3.23	1.35	1.69	1.01	2.95	2.16	1.00	9.40	5156177	12878076
3	32	7	2.07	14.5	1.5	18	368	15	1407	18	368	15	1407	3	410	2	430	1.17	1.00	2.79	1.35	1.74	1.01	3.26	1.89	1.00	10.51	5056987	12765466
3	32	5	3	15	0	22	446	16	1485	22	446	16	1485	3	432	3	316	1.15	1.00	1.87	1.35	1.64	1.01	1.88	1.25	1.00	8.08	5250778	12984441
3	32	6	2.5	15	0	20	406	16	1443	20	406	16	1443	3	516	3	367	1.16	1.00	1.92	1.34	1.69	1.01	2.88	1.28	1.00	9.15	5117963	12792491
3	32	7	2.14	15	0	19	373	16	1411	19	373	16	1410	3	593	3	417	1.17	1.00	1.94	1.34	1.74	1.01	3.19	1.31	1.00	10.23	5019598	12677089
3	32	8	1.875	15	0	17	346	15	1385	17	346	15	1385	3	457	2	457	1.17	1.00	1.97	1.33	1.78	1.01	3.43	1.34	1.00	11.24	4936138	12583216
3	32	9	1.67	15	0	16	328	15	1368	16	328	15	1368	3	516	2	493	1.18	1.00	1.96	1.36	1.80	1.01	3.50	1.39	1.00	12.31	5007304	12773949
3	32	5	3.3	16.5	0.75	23	461	16	1501	23	461	16	1501	3	390	3	290	1.14	1.00	2.36	1.31	1.65	1.01	1.77	1.55	1.00	7.50	5148491	12758218
3	32	6	2.75	16.5	0.75	21	420	16	1458	21	420	16	1458	3	471	3	336	1.15	1.00	2.42	1.31	1.69	1.01	2.70	1.58	1.00	8.49	5012882	12559133
3	32	7	2.357	16.5	0.75	19	387	16	1424	19	387	16	1424	3	552	3	381	1.16	1.00	2.44	1.30	1.73	1.02	2.97	1.61	1.00	9.45	4907133	12417095
3	32	8	2.06	16.5	0.75	18	359	15	1398	18	359	15	1398	3	421	2	426	1.17	1.00	2.47	1.30	1.78	1.02	3.24	1.65	1.00	10.43	4834039	12348128
3	32	9	1.83	16.5	0.75	17	337	15	1374	17	337	15	1374	3	471	2	460	1.17	1.00	2.47	1.30	1.81	1.02	3.43	1.66	1.00	11.34	4784947	12300977
3	32	5	3.6	18	1.5	25	490	17	1527	25	490	17	1527	3	364	3	272	1.14	1.00	3.33	1.35	1.59	1.01	1.69	2.23	1.00	7.12	5396954	13193698
3	32	6	3	18	1.5	22	447	16	1484	22	447	16	1484	3	432	3	316	1.15	1.00	3.42	1.35	1.64	1.01	1.89	2.29	1.00	8.07	5258926	12991347
3	32	7	2.57	18	1.5	21	412	16	1450	21	412	16	1449	3	500	3	359	1.16	1.00	3.35	1.34	1.68	1.01	2.85	2.27	1.00	9.00	5147454	12843020
3	32	8	2.25	18	1.5	19	383	16	1423	19	383	16	1423	3	571	3	400	1.16	1.00	2.97	1.34	1.72	1.01	3.10	2.02	1.00	9.89	5058853	12738230
3	32	9	2	18	1.5	18	359	15	1398	18	359	15	1397	3	432	2	441	1.17	1.00	2.67	1.34	1.75	1.01	3.34	1.83	1.00	10.75	4980311	12637879
3	32	6	3.08	18.5	0	23	451	16	1489	23	451	16	1489	3	421	3	309	1.15	1.00	1.86	1.34	1.64	1.01	1.86	1.24	1.00	7.91	5233939	12938555
3	32	7	2.64	18.5	0	21	416	16	1455	21	416	16	1455	3	485	3	350	1.15	1.00	1.88	1.34	1.68	1.01	2.80	1.26	1.00	8.81	5124117	12791734
3	32	8	2.32	18.5	0	19	388	16	1427	19	388	16	1427	3	552	3	389	1.16	1.00	1.90	1.33	1.71	1.01	3.03	1.29	1.00	9.65	5030812	12667611
3	32	9	2.06	18.5	0	18	363	15	1403	18	363	15	1403	3	421	2	429	1.17	1.00	1.93	1.33	1.75	1.01	3.27	1.31	1.00	10.50	4952330	12576080
3	32	10	1.85	18.5	0	17	342	15	1381	17	342	15	1381	3	457	2	460	1.17	1.00	1.92	1.33	1.79	1.01	3.46	1.33	1.00	11.33	4890163	12503387
3	32	6	3.58	21.5	1.5	24	487	17	1526	24	487	17	1526	3	364	3	273	1.14	1.00	3.32	1.35	1.59	1.01	1.70	2.23	1.00	7.15	5368279	13148520
3	32	7	3.07	21.5	1.5	23	451	16	1488	23	451	16	1488	3	421	3	310	1.15	1.00	3.34	1.34	1.63	1.01	1.86	2.27	1.00	7.93	5242047	12950939
3	32	8	2.69	21.5	1.5	21	421	16	1458	21	421	16	1458	3	485	3	345	1.15	1.00	3.37	1.34	1.66	1.01	2.77	2.31	1.00	8.68	5142036	12809472
3	32	9	2.39	21.5	1.5	20	395	16	1433	20	395	16	1433	3	533	3	380	1.16	1.00	3.09	1.33	1.70	1.01	2.98	2.12	1.00	9.44	5060361	12706380
3	32	10	2.15	21.5	1.5	19	373	16	1411	19	373	16	1411	3	593	3	415	1.17	1.00	2.82	1.33	1.73	1.01	3.19	1.93	1.00	10.18	4995054	12627860
3	32	7	3.14	22	0	23	454	16	1494	23	454	16	1494	3	410	3	304	1.15	1.00	1.82	1.33	1.63	1.01	1.84	1.23	1.00	7.81	5228269	12929269
3	32	8	2.75	22	0	21	424	16	1462	21	424	16	1462	3	471	3	338	1.15	1.00	1.84	1.33	1.66	1.01	2.73	1.25	1.00	8.54	5116940	12757675
3	32	9	2.44	22	0	20	398	16	1438	20	398	16	1438	3	533	3	373	1.16	1.00	1.86	1.33	1.70	1.01	2.95	1.27	1.00	9.31	5054647	12696346
3	32	10	2.2	22	0	19	376	16	1415	19	376	16	1415	3	593	3	406	1.16	1.00	1.89	1.32	1.73	1.01	3.14	1.29	1.00	10.00	4971606	12578524
3	32	11	2	22	0	18	357	15	1394	18	357	15	1394	3	432	2	439	1.17	1.00	1.91	1.32	1.76	1.01	3.33	1.31	1.00	10.68	4904767	12485020
3	32	12	1.83	22	0	17	340	15	1377	17	340	15	1377	3	471	2	462	1.17	1.00	1.90	1.32	1.78	1.01	3.46	1.32	1.00	11.39	4868106	12456887
3	32	7	3.57	25	1.5	24	485	17	1524	24	485	17	1523	3	364	3	274	1.14	1.00	3.30	1.34	1.60	1.01	1.71	2.22	1.00	7.15	5333502	13083609
3	32	8	3.125	25	1.5	23	454	16	1491	23	454	16	1491	3	410	3	305	1.15	1.00	3.33	1.34	1.63	1.01	1.85	2.25	1.00	7.82	5226683	12915272
3	32	9	2.78	25	1.5	21	427	16	1465	21	427	16	1465	3	471	3	335	1.15	1.00	3.37	1.33	1.66	1.01	2.72	2.29	1.00	8.48	5139962	12797335
3	32	10	2.5	25	1.5	20	404	16	1441	20	404	16	1441	3	516	3	366	1.16	1.00	3.22	1.33	1.68	1.01	2.90	2.19	1.00	9.13	5064460	12691147
3	32	11	2.27	25	1.5	19	384	16	1421	19	384	16	1421	3	571	3	396	1.16	1.00	2.92	1.33	1.71	1.01	3.08	2.02	1.00	9.78	5013444	12634497
3	32	12	1.83	25	1.5	21	412	16	1451	21	412	16	1437	3	471	2	519	1.20	1.02	2.17	1.81	1.54	1.00	3.78	1.88	1.00	12.64	7240344	16723674
3	36	3	1.5	4.5	0	17	339	17	1539	17	339	17	1539	3	327	1	581	1.18	1.00	2.08	1.48	1.86	1.01	3.09	1.37	1.00	17.35	8062051	19238392
3	36	3	2	6	0.75	19	379	17	1577	19	379	17	1577	3	486	2	474	1.16	1.00	1.98	1.36	1.84	1.01	2.92	1.24	1.00	13.66	7405362	17963419
3	36	4	1.5	6	0.75	17	334	17	1532	17	334	17	1532	3	327	1	575	1.18	1.00	2.07	1.44	1.85	1.01	3.11	1.38	1.00	17.19	7822527	18814677
3	36	3	2.33	7	1.25	21	416	18	1613	21	416	18	1612	3	419	2	431	1.16	1.00	3.33	1.38	1.76	1.01	2.64	2.13	1.00	12.28	7618815	18271459
3	36	4	1.75	7	1.25	18	352	17	1550	18	352	17	1549	3	545	2	528	1.17	1.00	2.82	1.37	1.86	1.01	3.04	1.83	1.00	15.10	7372228	17967595
3	36	3	2.67	8	0	22	437	18	1634	22	437	18	1634	3	545	3	379	1.15	1.00	2.16	1.32	1.75	1.01	2.41	1.34	1.00	10.99	7347940	17725864
3	36	4	2	8	0	19	371	17	1569	19	371	17	1569	3	486	2	481	1.16	1.00	2.22	1.32	1.85	1.01	2.89	1.40	1.00	13.53	7111278	17440074
3	36	5	1.6	8	0	17	336	17	1535	17	336	17	1535	3	305	1	559	1.18	1.00	2.27	1.38	1.87	1.01	3.09	1.52	1.00	16.18	7425564	18108108
3	36	3	3.17	9.5	0.75	23	469	18	1669	23	469	18	1669	3	462	3	325	1.14	1.00	2.69	1.28	1.72	1.01	2.16	1.64	1.00	9.66	7210718	17417689
3	36	4	2.375	9.5	0.75	20	401	18	1598	20	401	18	1597	3	409	2	412	1.15	1.00	2.76	1.28	1.81	1.01	2.58	1.71	1.00	11.82	6947604	17054733
3	36	5	1.9	9.5	0.75	18	353	17	1550	18	353	17	1550	3	514	2	490	1.17	1.00	2.82	1.28	1.90	1.01	2.95	1.78	1.00	13.90	6811469	16922944
3	36	6	1.583	9.5	0.75	17	333	17	1532	17	333	17	1532	3	310	1	562	1.18	1.00	2.48	1.37	1.87	1.01	3.11	1.69	1.00	16.29	7386838	18045611
3	36	3	3.67	11	1.5	26	519	19	1716	26	519	19	1716	3	400	3	293	1.14	1.00	3.59	1.34	1.63	1.01	2.01	2.27	1.00	8.82	7731783	18303380
3	36	4	2.75	11	1.5	22	446	18	1643	22	446	18	1643	3	529	3	371	1.15	1.00	3.69	1.33	1.71	1.01	2.40	2.36	1.00	10.79	7441778	17883456
3	36	5	2.2	11	1.5	20	394	17	1591	20	394	17	1591	3	439	2	446	1.16	1.00	3.76	1.33	1.79	1.01	2.76	2.43	1.00	12.64	7243863	17625278
3	36	6	1.833	11	1.5	18	354	17	1551	18	354	17	1550	3	529	2	507	1.17	1.00	3.84	1.32	1.86	1.01	3.06	2.50	1.00	14.43	7099083	17456260
3	36	7	1.57	11	1.5	16	322	17	1519	16	322	17	1519	3	310	1	556	1.18	1.00	3.87	1.32	1.91	1.01	3.30	2.57	1.00	16.15	6996160	17351611
3	36	4	2.875	11.5	1.75	23	453	18	1651	23	453	18	1651	3	500	3	356	1.15	1.00	3.93	1.32	1.71	1.01	2.33	2.49	1.00	10.42	7365285	17731556

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	36	5	2.3	11.5	1.75	20	400	18	1600	20	400	18	1600	3	419	2	428	1.16	1.00	4.00	1.31	1.78	1.01	2.68	2.57	1.00	12.23	7173738	17496817
3	36	6	1.917	11.5	1.75	18	360	17	1559	18	360	17	1559	3	514	2	492	1.17	1.00	4.03	1.31	1.85	1.01	2.99	2.64	1.00	13.93	7025330	17314257
3	36	7	1.643	11.5	1.75	16	328	17	1526	16	328	17	1526	3	581	2	539	1.18	1.00	4.13	1.30	1.91	1.01	3.22	2.71	1.00	15.58	6917021	17195038
3	36	4	3.25	13	2.5	24	475	18	1674	24	475	18	1674	3	450	3	319	1.14	1.00	3.86	1.28	1.70	1.01	2.15	2.38	1.00	9.48	7215541	17410435
3	36	5	2.6	13	2.5	21	421	18	1620	21	421	18	1620	3	562	3	383	1.15	1.00	3.92	1.28	1.77	1.01	2.47	2.46	1.00	11.09	7015699	17145109
3	36	6	2.167	13	2.5	19	380	17	1577	19	380	17	1577	3	450	2	444	1.16	1.00	3.94	1.27	1.83	1.01	2.76	2.52	1.00	12.61	6857238	16936202
3	36	7	1.857	13	2.5	17	346	17	1546	17	346	17	1546	3	514	2	496	1.17	1.00	4.04	1.27	1.90	1.01	3.02	2.59	1.00	14.14	6756078	16855277
3	36	4	3.625	14.5	3.25	26	512	19	1709	26	512	19	1709	3	400	3	294	1.14	1.00	3.86	1.32	1.63	1.00	2.03	2.45	1.00	8.85	7594993	18056182
3	36	5	2.9	14.5	3.25	23	455	18	1653	23	455	18	1653	3	500	3	353	1.15	1.00	3.92	1.32	1.70	1.01	2.33	2.52	1.00	10.35	7369591	17735752
3	36	6	2.417	14.5	3.25	21	412	18	1609	21	412	18	1609	3	400	2	410	1.16	1.00	4.00	1.31	1.75	1.01	2.61	2.58	1.00	11.77	7202122	17506447
3	36	7	2.07	14.5	3.25	19	377	17	1575	19	377	17	1574	3	462	2	467	1.16	1.00	4.03	1.31	1.81	1.01	2.88	2.64	1.00	13.18	7084800	17376857
3	36	4	2.875	11.5	0	23	453	18	1651	23	453	18	1651	3	500	3	356	1.15	1.00	2.14	1.32	1.71	1.01	2.33	1.35	1.00	10.42	7365285	17731556
3	36	5	2.3	11.5	0	20	400	18	1600	20	400	18	1600	3	419	2	428	1.16	1.00	2.18	1.31	1.78	1.01	2.68	1.40	1.00	12.23	7173738	17496817
3	36	6	1.917	11.5	0	18	360	17	1559	18	360	17	1559	3	514	2	492	1.17	1.00	2.19	1.31	1.85	1.01	2.99	1.44	1.00	13.93	7025330	17314257
3	36	7	1.643	11.5	0	16	328	17	1526	16	328	17	1526	3	581	2	539	1.18	1.00	2.25	1.30	1.91	1.01	3.22	1.48	1.00	15.58	6917021	17195038
3	36	4	3.25	13	0.75	24	475	18	1674	24	475	18	1674	3	450	3	319	1.14	1.00	2.64	1.28	1.70	1.01	2.15	1.63	1.00	9.48	7215541	17410435
3	36	5	2.6	13	0.75	21	421	18	1620	21	421	18	1620	3	562	3	383	1.15	1.00	2.69	1.28	1.77	1.01	2.47	1.68	1.00	11.09	7015699	17145109
3	36	6	2.167	13	0.75	19	380	17	1577	19	380	17	1577	3	450	2	444	1.16	1.00	2.70	1.27	1.83	1.01	2.76	1.73	1.00	12.61	6857238	16936202
3	36	7	1.857	13	0.75	17	346	17	1546	17	346	17	1546	3	514	2	496	1.17	1.00	2.77	1.27	1.90	1.01	3.02	1.77	1.00	14.14	6756078	16855277
3	36	4	3.625	14.5	1.5	26	512	19	1709	26	512	19	1709	3	400	3	294	1.14	1.00	3.58	1.32	1.63	1.00	2.03	2.28	1.00	8.85	7594993	18056182
3	36	5	2.9	14.5	1.5	23	455	18	1653	23	455	18	1653	3	500	3	353	1.15	1.00	3.64	1.32	1.70	1.01	2.33	2.34	1.00	10.35	7369591	17735752
3	36	6	2.417	14.5	1.5	21	412	18	1609	21	412	18	1609	3	400	2	410	1.16	1.00	3.53	1.31	1.75	1.01	2.61	2.28	1.00	11.77	7202122	17506447
3	36	7	2.07	14.5	1.5	19	377	17	1575	19	377	17	1574	3	462	2	467	1.16	1.00	3.05	1.31	1.81	1.01	2.88	2.00	1.00	13.18	7084800	17376857
3	36	5	3	15	0	23	461	18	1658	23	461	18	1658	3	486	3	342	1.15	1.00	2.09	1.31	1.69	1.01	2.27	1.33	1.00	10.07	7311774	17610240
3	36	6	2.5	15	0	21	417	18	1616	21	417	18	1616	3	581	3	398	1.16	1.00	2.14	1.30	1.75	1.01	2.55	1.37	1.00	11.48	7157281	17421513
3	36	7	2.14	15	0	19	382	17	1581	19	382	17	1581	3	462	2	453	1.16	1.00	2.15	1.30	1.81	1.01	2.81	1.40	1.00	12.84	7038402	17282088
3	36	8	1.875	15	0	18	353	17	1552	18	353	17	1552	3	514	2	497	1.17	1.00	2.17	1.29	1.86	1.01	3.03	1.43	1.00	14.12	6927292	17150492
3	36	9	1.67	15	0	17	334	17	1532	17	334	17	1532	3	581	2	536	1.18	1.00	2.20	1.32	1.88	1.01	3.09	1.49	1.00	15.44	7026222	17379774
3	36	5	3.3	16.5	0.75	24	477	18	1676	24	477	18	1676	3	439	3	314	1.14	1.00	2.59	1.27	1.69	1.01	2.13	1.62	1.00	9.35	7170527	17320744
3	36	6	2.75	16.5	0.75	22	433	18	1630	22	433	18	1630	3	529	3	364	1.15	1.00	2.64	1.27	1.75	1.01	2.38	1.67	1.00	10.62	7000593	17079120
3	36	7	2.357	16.5	0.75	20	397	18	1595	20	397	18	1595	3	419	2	414	1.16	1.00	2.66	1.27	1.80	1.01	2.63	1.70	1.00	11.86	6874162	16929784
3	36	8	2.06	16.5	0.75	18	367	17	1566	18	367	17	1565	3	474	2	463	1.16	1.00	2.69	1.26	1.85	1.01	2.87	1.74	1.00	13.09	6778426	16833960
3	36	9	1.83	16.5	0.75	17	343	17	1541	17	343	17	1541	3	529	2	500	1.17	1.00	2.69	1.27	1.89	1.01	3.03	1.76	1.00	14.26	6724102	16792872
3	36	5	3.6	18	1.5	25	507	19	1707	25	507	19	1707	3	409	3	295	1.14	1.00	3.56	1.31	1.64	1.00	2.05	2.26	1.00	8.89	7517197	17931140
3	36	6	3	18	1.5	23	461	18	1660	23	461	18	1660	3	486	3	343	1.15	1.00	3.57	1.31	1.69	1.01	2.29	2.32	1.00	10.09	7334840	17663629
3	36	7	2.57	18	1.5	21	424	18	1622	21	424	18	1621	3	562	3	389	1.15	1.00	3.65	1.30	1.74	1.01	2.52	2.36	1.00	11.26	7190021	17463361
3	36	8	2.25	18	1.5	20	393	18	1593	20	393	18	1593	3	439	2	435	1.16	1.00	3.25	1.30	1.78	1.01	2.74	2.13	1.00	12.39	7084124	17345843
3	36	9	2	18	1.5	18	367	17	1567	18	367	17	1567	3	486	2	479	1.17	1.00	2.92	1.30	1.83	1.01	2.95	1.93	1.00	13.49	6992397	17240069
3	36	6	3.08	18.5	0	23	466	18	1663	23	466	18	1662	3	474	3	334	1.15	1.00	2.04	1.30	1.69	1.00	2.24	1.32	1.00	9.87	7287941	17556627
3	36	7	2.64	18.5	0	21	429	18	1626	21	429	18	1626	3	545	3	380	1.15	1.00	2.09	1.30	1.73	1.01	2.47	1.35	1.00	11.01	7155106	17380510
3	36	8	2.32	18.5	0	20	398	18	1597	20	398	18	1596	3	419	2	422	1.16	1.00	2.11	1.29	1.78	1.01	2.68	1.38	1.00	12.09	7031889	17231365
3	36	9	2.06	18.5	0	19	372	17	1570	19	372	17	1570	3	474	2	466	1.16	1.00	2.13	1.29	1.82	1.01	2.89	1.40	1.00	13.15	6939357	17116850
3	36	10	1.85	18.5	0	17	349	17	1547	17	349	17	1547	3	514	2	500	1.17	1.00	2.16	1.29	1.86	1.01	3.05	1.43	1.00	14.22	6863749	17037366
3	36	6	3.58	21.5	1.5	25	504	19	1704	25	504	19	1704	3	409	3	296	1.14	1.00	3.48	1.30	1.64	1.00	2.06	2.25	1.00	8.91	7461052	17829662
3	36	7	3.07	21.5	1.5	23	465	18	1665	23	465	18	1665	3	474	3	336	1.15	1.00	3.56	1.30	1.68	1.00	2.26	2.30	1.00	9.92	7311329	17616368
3	36	8	2.69	21.5	1.5	22	433	18	1632	22	433	18	1632	3	545	3	374	1.15	1.00	3.58	1.30	1.72	1.01	2.45	2.34	1.00	10.88	7180075	17429039
3	36	9	2.39	21.5	1.5	20	406	18	1603	20	406	18	1603	3	409	2	412	1.16	1.00	3.39	1.29	1.76	1.01	2.63	2.23	1.00	11.81	7073709	17279360
3	36	10	2.15	21.5	1.5	19	382	17	1580	19	382	17	1580	3	450	2	450	1.16	1.00	3.08	1.29	1.80	1.01	2.82	2.04	1.00	12.76	6993511	17192631
3	36	7	3.14	22	0	23	469	18	1669	23	469	18	1669	3	462	3	329	1.15	1.00	2.04	1.29	1.68	1.00	2.23	1.31	1.00	9.75	7279610	17548549
3	36	8	2.75	22	0	22	437	18	1635	22	437	18	1635	3	529	3	367	1.15	1.00	2.06	1.29	1.72	1.01	2.41	1.34	1.00	10.68	7145749	17350548
3	36	9	2.44	22	0	20	409	18	1609	20	409	18	1609	3	400	2	405	1.16	1.00	2.08	1.29	1.76	1.01	2.61	1.36	1.00	11.66	7066373	17274072
3	36	10	2.2	22	0	19	385	17	1585	19	385	17	1585	3	439	2	441	1.16	1.00	2.10	1.28	1.80	1.01	2.78	1.38	1.00	12.55	6962217	17136918
3	36	11	2	22	0	18	364	17	1564	18	364	17	1564	3	486	2	477	1.17	1.00	2.12	1.28	1.83	1.01	2.95	1.40	1.00	13.44	6885888	17048723
3	36	12	1.83	22	0	17	346	17	1545	17	346	17	1545	3	529	2	503	1.17	1.00	2.11	1.28	1.87	1.01	3.06	1.42	1.00	14.33	6843256	17013030
3	36	7	3.57	25	1.5	25	502	19	1702	25	502	19	1702	3	409	3	296	1.14	1.00	3.46	1.30	1.64	1.00	2.06	2.24	1.00	8.92	7416871	17749148
3	36	8	3.125	25	1.5	23	469	18	1666	23	469	18	1666	3	462	3	330	1.15	1.00	3.54	1.30	1.68	1.00	2.23	2.28	1.00	9.76	7280394	17535537
3	36	9	2.78	25	1.5	22	440	18	1638	22	440	18	1638	3	529	3	364	1.15	1.00	3.57	1.29	1.71	1.00	2.40	2.32	1.00	10.61	7169109	17388300
3	36	10	2.5	25	1.5	21	415	18	1613	21	415	18	1613	3	581	3	397	1.16	1.00	3.54	1.29	1.75	1.00	2.57	2.31	1.00	11.44	7076733	17269276
3	36	11	2.27	25	1.5	20	393	18	1593	20	393	18	1593	3	429	2	430	1.16	1.00	3.21	1.29	1.78	1.01	2.73	2.13	1.00	12.28	7021709	17228695
3	36	12	1.83	25	1.5	21	424	18	1622	21	424	18	1600	3	529	2	567	1.20	1.02	2.33	1.74	1.61	1.00	3.33	1.90	1.00	15.80	10095326	22586251
3	40	3	1.5	4.5	0	17	343	19	1702	17	343	19	1702	2	364	1	419	1.18	1.00	2.29	1.43	1.90	1.00	3.65	1.46	1.00	21.22	10918340	25281155
3	40	3	2	6	0.75	19	386	19	1744	19	386	19	1744	3	541	2	512	1.16	1.00	2.18	1.32	1.90	1.01	3.44	1.33	1.00	16.71	10026790	23671560

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
3	40	4	1.5	6	0.75	17	337	19	1696	17	337	19	1696	2	364	1	415	1.18	1.00	2.26	1.39	1.90	1.00	3.68	1.48	1.00	21.07	10604570	24766471
3	40	3	2.33	7	1.25	21	425	20	1784	21	425	20	1784	3	465	2	465	1.16	1.00	3.55	1.34	1.83	1.00	3.11	2.21	1.00	15.01	10297292	24073785
3	40	4	1.75	7	1.25	18	357	19	1716	18	357	19	1716	3	312	1	571	1.17	1.00	3.04	1.33	1.92	1.01	3.59	1.93	1.00	18.49	10011061	23714616
3	40	3	2.67	8	0	22	448	20	1805	22	448	20	1805	3	408	2	408	1.15	1.00	2.36	1.29	1.81	1.00	2.83	1.43	1.00	13.41	9916484	23339415
3	40	4	2	8	0	19	377	19	1737	19	377	19	1737	3	541	2	520	1.16	1.00	2.43	1.28	1.92	1.01	3.41	1.50	1.00	16.58	9645705	23035752
3	40	5	1.6	8	0	17	340	19	1697	17	340	19	1696	2	339	1	403	1.17	1.00	2.51	1.34	1.92	1.00	3.65	1.63	1.00	19.79	10055988	23814784
3	40	3	3.17	9.5	0.75	24	483	20	1840	24	483	20	1840	3	513	3	350	1.14	1.00	2.92	1.25	1.78	1.01	2.54	1.73	1.00	11.74	9705059	22886796
3	40	4	2.375	9.5	0.75	20	409	19	1769	20	409	19	1769	3	455	2	445	1.15	1.00	2.99	1.24	1.89	1.01	3.05	1.81	1.00	14.48	9414667	22543903
3	40	5	1.9	9.5	0.75	18	358	19	1716	18	358	19	1716	3	571	2	530	1.16	1.00	3.05	1.24	1.97	1.01	3.49	1.88	1.00	17.03	9249291	22365410
3	40	6	1.583	9.5	0.75	17	336	19	1695	17	336	19	1695	2	345	1	405	1.17	1.00	2.71	1.33	1.92	1.00	3.68	1.78	1.00	19.94	9999676	23741070
3	40	3	3.67	11	1.5	27	535	21	1894	27	535	21	1892	3	444	3	315	1.14	1.00	3.78	1.30	1.69	1.00	2.36	2.33	1.00	10.74	10404615	24079583
3	40	4	2.75	11	1.5	23	457	20	1815	23	457	20	1815	3	588	3	400	1.15	1.00	3.86	1.29	1.78	1.00	2.82	2.42	1.00	13.16	10027002	23526142
3	40	5	2.2	11	1.5	20	401	19	1761	20	401	19	1761	3	488	2	481	1.16	1.00	3.98	1.29	1.86	1.00	3.26	2.50	1.00	15.49	9799704	23252402
3	40	6	1.833	11	1.5	18	359	19	1717	18	359	19	1717	3	588	2	548	1.17	1.00	4.04	1.28	1.92	1.00	3.61	2.58	1.00	17.67	9633283	23043338
3	40	7	1.57	11	1.5	16	324	19	1684	16	324	19	1684	2	345	1	401	1.17	1.00	4.08	1.28	1.97	1.01	3.92	2.65	1.00	19.85	9522976	22951918
3	40	4	2.875	11.5	1.75	23	465	20	1823	23	465	20	1823	3	556	3	383	1.15	1.00	4.08	1.28	1.77	1.00	2.74	2.54	1.00	12.70	9927243	23331394
3	40	5	2.3	11.5	1.75	20	409	19	1767	20	409	19	1767	3	465	2	461	1.16	1.00	4.20	1.27	1.86	1.00	3.15	2.62	1.00	14.92	9691056	23026977
3	40	6	1.917	11.5	1.75	18	366	19	1724	18	366	19	1724	3	571	2	532	1.16	1.00	4.27	1.27	1.92	1.00	3.52	2.70	1.00	17.04	9523168	22831707
3	40	7	1.643	11.5	1.75	17	331	19	1689	17	331	19	1688	3	333	1	582	1.17	1.00	4.30	1.26	1.97	1.01	3.81	2.78	1.00	19.09	9388077	22684098
3	40	4	3.25	13	2.5	24	488	20	1848	24	488	20	1848	3	500	3	343	1.14	1.00	4.01	1.25	1.76	1.00	2.53	2.43	1.00	11.55	9708967	22902262
3	40	5	2.6	13	2.5	22	431	20	1789	22	431	20	1789	3	417	2	412	1.15	1.00	4.11	1.24	1.84	1.00	2.90	2.51	1.00	13.53	9463308	22565920
3	40	6	2.167	13	2.5	19	387	19	1744	19	387	19	1743	3	500	2	479	1.16	1.00	4.13	1.24	1.91	1.01	3.26	2.58	1.00	15.43	9284351	22345824
3	40	7	1.857	13	2.5	18	351	19	1710	18	351	19	1710	3	571	2	536	1.16	1.00	4.22	1.23	1.96	1.01	3.56	2.65	1.00	17.30	9166631	22243758
3	40	4	3.625	14.5	3.25	26	528	21	1885	26	528	21	1882	3	444	3	317	1.14	1.00	4.04	1.29	1.69	1.00	2.39	2.49	1.00	10.77	10214188	23733234
3	40	5	2.9	14.5	3.25	23	467	20	1826	23	467	20	1825	3	556	3	381	1.15	1.00	4.09	1.28	1.76	1.00	2.75	2.57	1.00	12.63	9940995	23358669
3	40	6	2.417	14.5	3.25	21	421	20	1778	21	421	20	1778	3	444	2	442	1.15	1.00	4.15	1.27	1.83	1.00	3.07	2.64	1.00	14.37	9720224	23045252
3	40	7	2.07	14.5	3.25	19	384	19	1741	19	384	19	1741	3	513	2	504	1.16	1.00	4.23	1.27	1.88	1.00	3.39	2.70	1.00	16.09	9582347	22885379
3	40	4	2.875	11.5	0	23	465	20	1823	23	465	20	1823	3	556	3	383	1.15	1.00	2.33	1.28	1.77	1.00	2.74	1.45	1.00	12.70	9927243	23331394
3	40	5	2.3	11.5	0	20	409	19	1767	20	409	19	1767	3	465	2	461	1.16	1.00	2.39	1.27	1.86	1.00	3.15	1.50	1.00	14.92	9691056	23026977
3	40	6	1.917	11.5	0	18	366	19	1724	18	366	19	1724	3	571	2	532	1.16	1.00	2.44	1.27	1.92	1.00	3.52	1.54	1.00	17.04	9523168	22831707
3	40	7	1.643	11.5	0	17	331	19	1689	17	331	19	1688	3	333	1	582	1.17	1.00	2.45	1.26	1.97	1.01	3.81	1.58	1.00	19.09	9388077	22684098
3	40	4	3.25	13	0.75	24	488	20	1848	24	488	20	1848	3	500	3	343	1.14	1.00	2.84	1.25	1.76	1.00	2.53	1.72	1.00	11.55	9708967	22902262
3	40	5	2.6	13	0.75	22	431	20	1789	22	431	20	1789	3	417	2	412	1.15	1.00	2.92	1.24	1.84	1.00	2.90	1.78	1.00	13.53	9463308	22565920
3	40	6	2.167	13	0.75	19	387	19	1744	19	387	19	1743	3	500	2	479	1.16	1.00	2.93	1.24	1.91	1.01	3.26	1.83	1.00	15.43	9284351	22345824
3	40	7	1.857	13	0.75	18	351	19	1710	18	351	19	1710	3	571	2	536	1.16	1.00	2.99	1.23	1.96	1.01	3.56	1.88	1.00	17.30	9166631	22243758
3	40	4	3.625	14.5	1.5	26	528	21	1885	26	528	21	1882	3	444	3	317	1.14	1.00	3.78	1.29	1.69	1.00	2.39	2.33	1.00	10.77	10214188	23733234
3	40	5	2.9	14.5	1.5	23	467	20	1826	23	467	20	1825	3	556	3	381	1.15	1.00	3.83	1.28	1.76	1.00	2.75	2.41	1.00	12.63	9940995	23358669
3	40	6	2.417	14.5	1.5	21	421	20	1778	21	421	20	1778	3	444	2	442	1.15	1.00	3.79	1.27	1.83	1.00	3.07	2.41	1.00	14.37	9720224	23045252
3	40	7	2.07	14.5	1.5	19	384	19	1741	19	384	19	1741	3	513	2	504	1.16	1.00	3.31	1.27	1.88	1.00	3.39	2.12	1.00	16.09	9582347	22885379
3	40	5	3	15	0	24	473	20	1832	24	473	20	1831	3	541	3	369	1.15	1.00	2.28	1.27	1.76	1.00	2.68	1.42	1.00	12.29	9858733	23198305
3	40	6	2.5	15	0	21	426	20	1786	21	426	20	1786	3	435	2	429	1.15	1.00	2.32	1.26	1.82	1.00	3.01	1.46	1.00	14.02	9654918	22936700
3	40	7	2.14	15	0	19	389	19	1748	19	389	19	1748	3	513	2	488	1.16	1.00	2.36	1.26	1.88	1.00	3.32	1.50	1.00	15.69	9517634	22771633
3	40	8	1.875	15	0	18	358	19	1717	18	358	19	1717	3	571	2	537	1.16	1.00	2.38	1.26	1.93	1.00	3.58	1.53	1.00	17.28	9388423	22620233
3	40	9	1.67	15	0	17	337	19	1696	17	337	19	1695	3	328	1	579	1.17	1.00	2.41	1.28	1.94	1.00	3.66	1.59	1.00	18.94	9527738	22921098
3	40	5	3.3	16.5	0.75	25	490	20	1850	25	490	20	1850	3	488	3	338	1.14	1.00	2.80	1.24	1.75	1.00	2.51	1.71	1.00	11.40	9642164	22775932
3	40	6	2.75	16.5	0.75	22	443	20	1802	22	443	20	1802	3	588	3	392	1.15	1.00	2.85	1.23	1.82	1.00	2.81	1.76	1.00	12.98	9448132	22516740
3	40	7	2.357	16.5	0.75	20	405	19	1763	20	405	19	1763	3	465	2	446	1.15	1.00	2.90	1.23	1.87	1.00	3.10	1.80	1.00	14.49	9286074	22308136
3	40	8	2.06	16.5	0.75	19	373	19	1733	19	373	19	1733	3	526	2	499	1.16	1.00	2.92	1.23	1.93	1.01	3.39	1.84	1.00	16.02	9190487	22233056
3	40	9	1.83	16.5	0.75	17	347	19	1706	17	347	19	1705	3	588	2	540	1.16	1.00	2.92	1.23	1.96	1.01	3.59	1.86	1.00	17.49	9126785	22184726
3	40	5	3.6	18	1.5	26	523	21	1883	26	523	21	1879	3	455	3	318	1.14	1.00	3.70	1.28	1.70	1.00	2.41	2.32	1.00	10.82	10121841	23591601
3	40	6	3	18	1.5	24	474	20	1832	24	474	20	1829	3	541	3	369	1.15	1.00	3.75	1.27	1.75	1.00	2.69	2.38	1.00	12.29	9886257	23239849
3	40	7	2.57	18	1.5	22	434	20	1792	22	434	20	1791	3	426	2	419	1.15	1.00	3.82	1.27	1.81	1.00	2.97	2.43	1.00	13.74	9704044	22995225
3	40	8	2.25	18	1.5	20	401	19	1759	20	401	19	1758	3	488	2	468	1.16	1.00	3.54	1.26	1.86	1.00	3.23	2.25	1.00	15.12	9553676	22801246
3	40	9	2	18	1.5	19	373	19	1732	19	373	19	1732	3	541	2	517	1.16	1.00	3.17	1.26	1.90	1.00	3.48	2.04	1.00	16.48	9450586	22692126
3	40	6	3.08	18.5	0	24	479	20	1836	24	479	20	1835	3	526	3	360	1.14	1.00	2.27	1.26	1.75	1.00	2.64	1.41	1.00	12.03	9821430	23106407
3	40	7	2.64	18.5	0	22	439	20	1796	22	439	20	1796	3	408	2	409	1.15	1.00	2.28	1.26	1.80	1.00	2.91	1.44	1.00	13.43	9642952	22867584
3	40	8	2.32	18.5	0	20	406	19	1766	20	406	19	1766	3	465	2	455	1.16	1.00	2.30	1.25	1.85	1.00	3.17	1.47	1.00	14.77	9507324	22718270
3	40	9	2.06	18.5	0	19	378	19	1737	19	378	19	1737	3	526	2	503	1.16	1.00	2.35	1.25	1.90	1.00	3.41	1.50	1.00	16.10	9393317	22577096
3	40	10	1.85	18.5	0	18	353	19	1713	18	353	19	1713	3	571	2	539	1.17	1.00	2.37	1.25	1.93	1.00	3.61	1.53	1.00	17.43	9305936	22493847
3	40	6	3.58	21.5	1.5	26	520	21	1880	26	520	21	1876	3	455	3	319	1.14	1.00	3.68	1.27	1.70	1.00	2.42	2.31	1.00	10.85	10055598	23476018
3	40	7	3.07	21.5	1.5	24	478	20	1838	24	478	20	1835	3	526	3	362	1.15	1.00	3.74	1.27	1.75	1.00	2.66	2.36	1.00	12.09	9854756	23187539
3	40	8	2.69	21.5	1.5	22	444	20	1802	22	444	20	1800	3	408	2	403	1.15	1.00	3.76	1.26	1.79	1.00	2.89	2.40	1.00	13.27	9686638	22940808

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
3	40	9	2.39	21.5	1.5	21	414	19	1773	21	414	19	1773	3	455	2	444	1.16	1.00	3.70	1.26	1.84	1.00	3.11	2.36	1.00	14.46	9556914	22782782
3	40	10	2.15	21.5	1.5	19	389	19	1746	19	389	19	1746	3	500	2	485	1.16	1.00	3.36	1.25	1.87	1.00	3.32	2.16	1.00	15.58	9442766	22624062
3	40	7	3.14	22	0	24	483	20	1840	24	483	20	1838	3	513	3	354	1.14	1.00	2.23	1.26	1.74	1.00	2.61	1.40	1.00	11.85	9797783	23055671
3	40	8	2.75	22	0	22	448	20	1805	22	448	20	1804	3	588	3	395	1.15	1.00	2.28	1.25	1.79	1.00	2.84	1.43	1.00	13.03	9629963	22824376
3	40	9	2.44	22	0	21	418	20	1777	21	418	20	1777	3	444	2	436	1.15	1.00	2.29	1.25	1.83	1.00	3.07	1.45	1.00	14.23	9531393	22727361
3	40	10	2.2	22	0	20	393	19	1750	20	393	19	1750	3	488	2	475	1.16	1.00	2.31	1.25	1.87	1.00	3.27	1.48	1.00	15.30	9400585	22538414
3	40	11	2	22	0	19	370	19	1729	19	370	19	1729	3	541	2	514	1.16	1.00	2.34	1.25	1.91	1.00	3.48	1.50	1.00	16.43	9317858	22462928
3	40	12	1.83	22	0	18	351	19	1708	18	351	19	1708	3	588	2	542	1.17	1.00	2.35	1.25	1.93	1.00	3.61	1.52	1.00	17.52	9270270	22414598
3	40	7	3.57	25	1.5	26	518	21	1878	26	518	21	1873	3	455	3	319	1.14	1.00	3.67	1.27	1.70	1.00	2.43	2.30	1.00	10.86	10002297	23382270
3	40	8	3.125	25	1.5	24	482	20	1840	24	482	20	1837	3	513	3	356	1.15	1.00	3.73	1.26	1.74	1.00	2.63	2.34	1.00	11.91	9817635	23099885
3	40	9	2.78	25	1.5	23	451	20	1810	23	451	20	1808	3	588	3	392	1.15	1.00	3.76	1.26	1.78	1.00	2.84	2.38	1.00	12.96	9680440	22922060
3	40	10	2.5	25	1.5	21	424	20	1784	21	424	20	1783	3	435	2	428	1.15	1.00	3.79	1.25	1.82	1.00	3.03	2.42	1.00	13.99	9569080	22786638
3	40	11	2.27	25	1.5	20	401	19	1760	20	401	19	1759	3	476	2	464	1.16	1.00	3.50	1.25	1.85	1.00	3.22	2.26	1.00	15.00	9482399	22678984
3	40	12	1.83	25	1.5	22	434	20	1791	22	434	19	1759	2	588	2	410	1.21	1.03	2.48	1.68	1.67	1.00	3.90	1.94	1.00	19.26	13604364	29560987
3	44	3	1.5	4.5	0	17	346	20	1863	17	346	20	1861	2	400	1	450	1.17	1.00	2.47	1.38	1.93	1.00	4.20	1.56	1.00	25.43	14408756	32393339
3	44	3	2	6	0.75	20	391	21	1909	20	391	21	1908	3	595	2	547	1.15	1.00	2.34	1.28	1.95	1.00	3.95	1.43	1.00	20.03	13192012	30361356
3	44	4	1.5	6	0.75	17	340	20	1857	17	340	20	1853	2	400	1	446	1.17	1.00	2.45	1.36	1.93	1.00	4.25	1.59	1.00	25.28	14030261	31796183
3	44	3	2.33	7	1.25	22	434	21	1951	22	434	21	1947	3	512	2	497	1.15	1.00	3.75	1.30	1.89	1.00	3.57	2.31	1.00	17.96	13562432	30902813
3	44	4	1.75	7	1.25	18	360	21	1880	18	360	21	1879	2	344	1	408	1.16	1.00	3.27	1.29	1.96	1.00	4.13	2.05	1.00	22.19	13206677	30456232
3	44	3	2.67	8	0	23	457	22	1975	23	457	22	1974	3	449	2	436	1.14	1.00	2.55	1.25	1.88	1.00	3.26	1.53	1.00	16.06	13026600	29960758
3	44	4	2	8	0	19	382	21	1900	19	382	21	1899	3	595	2	555	1.15	1.00	2.63	1.24	1.97	1.00	3.92	1.61	1.00	19.85	12688317	29530339
3	44	5	1.6	8	0	17	342	20	1861	17	342	20	1858	2	373	1	432	1.17	1.00	2.70	1.30	1.96	1.00	4.22	1.75	1.00	23.79	13311502	30648353
3	44	3	3.17	9.5	0.75	25	494	22	2012	25	494	22	2012	3	564	3	373	1.14	1.00	3.13	1.22	1.85	1.00	2.91	1.83	1.00	14.03	12717827	29353595
3	44	4	2.375	9.5	0.75	21	416	21	1935	21	416	21	1935	3	500	2	475	1.15	1.00	3.19	1.21	1.95	1.00	3.50	1.92	1.00	17.32	12373845	28925063
3	44	5	1.9	9.5	0.75	18	361	21	1880	18	361	21	1879	3	314	1	566	1.16	1.00	3.28	1.21	2.01	1.00	4.02	2.00	1.00	20.45	12201750	28757726
3	44	6	1.583	9.5	0.75	17	339	20	1857	17	339	20	1852	2	379	1	435	1.17	1.01	2.93	1.30	1.96	1.00	4.25	1.90	1.00	23.94	13252919	30547576
3	44	3	3.67	11	1.5	28	551	23	2070	28	551	23	2059	3	489	3	336	1.14	1.01	3.97	1.27	1.75	1.00	2.71	2.42	1.00	12.83	13681035	30952683
3	44	4	2.75	11	1.5	23	468	22	1987	23	468	22	1979	3	431	2	427	1.15	1.01	4.09	1.27	1.85	1.00	3.25	2.52	1.00	15.78	13238741	30312723
3	44	5	2.2	11	1.5	20	409	21	1926	20	409	21	1921	3	537	2	514	1.16	1.00	4.17	1.26	1.92	1.00	3.74	2.61	1.00	18.53	12929915	29876376
3	44	6	1.833	11	1.5	18	363	21	1880	18	363	21	1877	3	328	1	587	1.16	1.00	4.23	1.25	1.96	1.00	4.15	2.69	1.00	21.19	12716264	29606028
3	44	7	1.57	11	1.5	16	325	20	1844	16	325	20	1844	2	379	1	429	1.17	1.00	4.30	1.24	2.00	1.00	4.51	2.76	1.00	23.81	12568223	29452423
3	44	4	2.875	11.5	1.75	24	476	22	1995	24	476	22	1989	3	415	2	409	1.15	1.01	4.29	1.25	1.85	1.00	3.15	2.62	1.00	15.22	13078243	30023592
3	44	5	2.3	11.5	1.75	21	416	21	1935	21	416	21	1931	3	512	2	493	1.15	1.00	4.39	1.24	1.92	1.00	3.63	2.72	1.00	17.89	12777340	29619444
3	44	6	1.917	11.5	1.75	19	370	21	1888	19	370	21	1886	3	314	1	568	1.16	1.00	4.45	1.24	1.97	1.00	4.05	2.80	1.00	20.43	12559104	29335393
3	44	7	1.643	11.5	1.75	17	332	20	1851	17	332	20	1850	2	367	1	415	1.16	1.00	4.52	1.23	2.00	1.00	4.39	2.88	1.00	22.93	12396388	29151434
3	44	4	3.25	13	2.5	25	501	22	2019	25	501	22	2015	3	550	3	365	1.14	1.00	4.20	1.22	1.83	1.00	2.90	2.51	1.00	13.78	12749546	29396111
3	44	5	2.6	13	2.5	22	439	22	1959	22	439	22	1957	3	458	2	440	1.15	1.00	4.25	1.21	1.91	1.00	3.34	2.60	1.00	16.22	12459416	29030316
3	44	6	2.167	13	2.5	20	392	21	1910	20	392	21	1910	3	550	2	512	1.15	1.00	4.35	1.20	1.96	1.00	3.75	2.67	1.00	18.50	12224979	28715102
3	44	7	1.857	13	2.5	18	354	21	1872	18	354	21	1872	3	324	1	572	1.16	1.00	4.43	1.20	2.01	1.00	4.10	2.75	1.00	20.74	12080709	28557808
3	44	4	3.625	14.5	3.25	27	543	23	2063	27	543	23	2050	3	489	3	338	1.14	1.01	4.22	1.26	1.76	1.00	2.75	2.58	1.00	12.90	13459842	30585877
3	44	5	2.9	14.5	3.25	24	479	22	1997	24	479	22	1988	3	415	2	406	1.15	1.01	4.31	1.25	1.84	1.00	3.15	2.66	1.00	15.11	13100929	30048271
3	44	6	2.417	14.5	3.25	22	430	21	1947	22	430	21	1939	3	489	2	473	1.16	1.01	4.36	1.25	1.90	1.00	3.54	2.74	1.00	17.24	12855779	29709153
3	44	7	2.07	14.5	3.25	20	390	21	1907	20	390	21	1902	3	564	2	539	1.16	1.01	4.43	1.24	1.94	1.00	3.90	2.80	1.00	19.31	12668644	29470612
3	44	4	2.875	11.5	0	24	476	22	1995	24	476	22	1989	3	415	2	409	1.15	1.01	2.54	1.25	1.85	1.00	3.15	1.55	1.00	15.22	13078243	30023592
3	44	5	2.3	11.5	0	21	416	21	1935	21	416	21	1931	3	512	2	493	1.15	1.00	2.59	1.24	1.92	1.00	3.63	1.60	1.00	17.89	12777340	29619444
3	44	6	1.917	11.5	0	19	370	21	1888	19	370	21	1886	3	314	1	568	1.16	1.00	2.63	1.24	1.97	1.00	4.05	1.65	1.00	20.43	12559104	29335393
3	44	7	1.643	11.5	0	17	332	20	1851	17	332	20	1850	2	367	1	415	1.16	1.00	2.67	1.23	2.00	1.00	4.39	1.70	1.00	22.93	12396388	29151434
3	44	4	3.25	13	0.75	25	501	22	2019	25	501	22	2015	3	550	3	365	1.14	1.00	3.06	1.22	1.83	1.00	2.90	1.83	1.00	13.78	12749546	29396111
3	44	5	2.6	13	0.75	22	439	22	1959	22	439	22	1957	3	458	2	440	1.15	1.00	3.10	1.21	1.91	1.00	3.34	1.89	1.00	16.22	12459416	29030316
3	44	6	2.167	13	0.75	20	392	21	1910	20	392	21	1910	3	550	2	512	1.15	1.00	3.17	1.20	1.96	1.00	3.75	1.95	1.00	18.50	12224979	28715102
3	44	7	1.857	13	0.75	18	354	21	1872	18	354	21	1872	3	324	1	572	1.16	1.00	3.22	1.20	2.01	1.00	4.10	2.00	1.00	20.74	12080709	28557808
3	44	4	3.625	14.5	1.5	27	543	23	2063	27	543	23	2050	3	489	3	338	1.14	1.01	3.98	1.26	1.76	1.00	2.75	2.43	1.00	12.90	13459842	30585877
3	44	5	2.9	14.5	1.5	24	479	22	1997	24	479	22	1988	3	415	2	406	1.15	1.01	4.06	1.25	1.84	1.00	3.15	2.51	1.00	15.11	13100929	30048271
3	44	6	2.417	14.5	1.5	22	430	21	1947	22	430	21	1939	3	489	2	473	1.16	1.01	4.10	1.25	1.90	1.00	3.54	2.57	1.00	17.24	12855779	29709153
3	44	7	2.07	14.5	1.5	20	390	21	1907	20	390	21	1902	3	564	2	539	1.16	1.01	3.56	1.24	1.94	1.00	3.90	2.26	1.00	19.31	12668644	29470612
3	44	5	3	15	0	24	485	22	2005	24	485	22	1996	3	595	3	394	1.15	1.01	2.49	1.24	1.84	1.00	3.09	1.53	1.00	14.73	13005267	29887615
3	44	6	2.5	15	0	22	436	21	1953	22	436	21	1946	3	478	2	458	1.15	1.01	2.52	1.24	1.89	1.00	3.45	1.57	1.00	16.77	12742739	29503042
3	44	7	2.14	15	0	20	395	21	1915	20	395	21	1910	3	564	2	522	1.16	1.00	2.56	1.23	1.94	1.00	3.82	1.61	1.00	18.83	12578067	29331206
3	44	8	1.875	15	0	18	362	21	1880	18	362	21	1877	3	319	1	574	1.16	1.00	2.60	1.22	1.97	1.00	4.12	1.65	1.00	20.71	12396257	29076690
3	44	9	1.67	15	0	17	340	20	1858	17	340	20	1854	2	361	1	413	1.17	1.00	2.64	1.25	1.98	1.00	4.22	1.71	1.00	22.72	12619065	29497766
3	44	5	3.3	16.5	0.75	25	503	22	2023	25	503	22	2017	3	537	3	360	1.14	1.01	3.03	1.21	1.82	1.00	2.89	1.82	1.00	13.63	12688745	29300381
3	44	6	2.75	16.5	0.75	23	453	22	1970	23	453	22	1966	3	431	2	418	1.15	1.00	3.06	1.20	1.89	1.00	3.23	1.87	1.00	15.51	12423165	28912984

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	44	7	2.357	16.5	0.75	21	412	21	1930	21	412	21	1927	3	512	2	476	1.15	1.00	3.11	1.20	1.94	1.00	3.57	1.92	1.00	17.37	12241305	28696399
3	44	8	2.06	16.5	0.75	19	378	21	1896	19	378	21	1895	3	579	2	533	1.15	1.00	3.16	1.20	1.98	1.00	3.89	1.96	1.00	19.18	12103266	28538733
3	44	9	1.83	16.5	0.75	18	350	21	1867	18	350	21	1867	3	328	1	577	1.16	1.00	3.15	1.20	2.00	1.00	4.13	1.98	1.00	20.93	12023329	28460790
3	44	5	3.6	18	1.5	27	539	23	2056	27	539	22	2043	3	500	3	339	1.14	1.01	3.94	1.25	1.76	1.00	2.76	2.41	1.00	12.90	13299157	30288458
3	44	6	3	18	1.5	24	486	22	2005	24	486	22	1994	3	595	3	394	1.15	1.01	3.99	1.24	1.83	1.00	3.10	2.48	1.00	14.73	13038990	29936559
3	44	7	2.57	18	1.5	22	444	22	1961	22	444	21	1953	3	468	2	448	1.16	1.01	4.04	1.24	1.88	1.00	3.41	2.53	1.00	16.45	12814658	29612336
3	44	8	2.25	18	1.5	20	409	21	1926	20	409	21	1919	3	537	2	501	1.16	1.01	3.77	1.23	1.92	1.00	3.71	2.40	1.00	18.12	12642583	29386546
3	44	9	2	18	1.5	19	379	21	1896	19	379	21	1890	3	595	2	553	1.16	1.01	3.41	1.23	1.95	1.00	4.00	2.18	1.00	19.75	12501408	29209566
3	44	6	3.08	18.5	0	25	491	22	2010	25	491	22	2000	3	579	3	384	1.15	1.01	2.45	1.24	1.82	1.00	3.04	1.51	1.00	14.42	12955889	29784416
3	44	7	2.64	18.5	0	22	449	22	1967	22	449	22	1958	3	449	2	437	1.15	1.01	2.49	1.23	1.88	1.00	3.35	1.55	1.00	16.11	12749043	29495936
3	44	8	2.32	18.5	0	21	414	21	1933	21	414	21	1926	3	512	2	487	1.16	1.01	2.50	1.23	1.92	1.00	3.64	1.58	1.00	17.70	12560756	29252090
3	44	9	2.06	18.5	0	19	384	21	1901	19	384	21	1896	3	579	2	537	1.16	1.00	2.54	1.22	1.95	1.00	3.92	1.61	1.00	19.28	12403947	29032379
3	44	10	1.85	18.5	0	18	357	21	1875	18	357	21	1872	3	324	1	577	1.16	1.00	2.56	1.22	1.98	1.00	4.16	1.64	1.00	20.89	12292202	28912345
3	44	6	3.58	21.5	1.5	27	536	23	2053	27	536	22	2039	3	500	3	340	1.15	1.01	3.87	1.24	1.76	1.00	2.77	2.40	1.00	12.94	13222805	30159372
3	44	7	3.07	21.5	1.5	25	491	22	2009	25	491	22	1998	3	579	3	386	1.15	1.01	3.92	1.24	1.82	1.00	3.06	2.46	1.00	14.45	12980418	29819380
3	44	8	2.69	21.5	1.5	23	454	22	1973	23	454	22	1964	3	449	2	430	1.15	1.01	3.99	1.23	1.87	1.00	3.33	2.51	1.00	15.91	12790955	29567839
3	44	9	2.39	21.5	1.5	21	423	21	1940	21	423	21	1932	3	500	2	475	1.16	1.01	3.95	1.23	1.90	1.00	3.58	2.52	1.00	17.31	12628949	29335079
3	44	10	2.15	21.5	1.5	20	395	21	1915	20	395	21	1908	3	550	2	519	1.16	1.01	3.63	1.23	1.94	1.00	3.84	2.31	1.00	18.74	12519564	29231141
3	44	7	3.14	22	0	25	495	22	2015	25	495	22	2004	3	564	3	378	1.15	1.01	2.42	1.23	1.82	1.00	3.01	1.51	1.00	14.21	12924825	29729409
3	44	8	2.75	22	0	23	458	22	1978	23	458	22	1968	3	431	2	422	1.15	1.01	2.46	1.23	1.87	1.00	3.28	1.54	1.00	15.63	12732395	29465008
3	44	9	2.44	22	0	21	427	21	1945	21	427	21	1937	3	489	2	466	1.16	1.01	2.46	1.23	1.90	1.00	3.53	1.56	1.00	17.04	12594583	29274359
3	44	10	2.2	22	0	20	399	21	1919	20	399	21	1913	3	537	2	508	1.16	1.01	2.52	1.22	1.94	1.00	3.78	1.59	1.00	18.39	12446487	29096932
3	44	11	2	22	0	19	375	21	1894	19	375	21	1889	3	595	2	550	1.16	1.00	2.53	1.22	1.96	1.00	4.01	1.62	1.00	19.71	12323422	28932016
3	44	12	1.83	22	0	18	354	21	1873	18	354	21	1869	3	328	1	581	1.16	1.00	2.55	1.22	1.98	1.00	4.17	1.64	1.00	21.07	12278562	28903464
3	44	7	3.57	25	1.5	27	533	23	2053	27	533	22	2039	3	500	3	340	1.15	1.01	3.86	1.24	1.77	1.00	2.79	2.40	1.00	12.97	13161448	30078954
3	44	8	3.125	25	1.5	25	495	22	2012	25	495	22	2000	3	564	3	379	1.15	1.01	3.91	1.23	1.81	1.00	3.02	2.44	1.00	14.24	12934186	29722664
3	44	9	2.78	25	1.5	23	462	22	1981	23	462	22	1970	3	431	2	418	1.15	1.01	3.94	1.23	1.86	1.00	3.26	2.49	1.00	15.51	12782760	29536593
3	44	10	2.5	25	1.5	22	433	21	1953	22	433	21	1944	3	478	2	457	1.16	1.01	4.01	1.23	1.89	1.00	3.49	2.53	1.00	16.77	12639951	29356299
3	44	11	2.27	25	1.5	20	409	21	1926	20	409	21	1918	3	524	2	495	1.16	1.01	3.78	1.23	1.92	1.00	3.70	2.41	1.00	17.97	12534077	29201710
3	44	12	1.83	25	1.5	22	442	22	1959	22	442	21	1915	2	328	1	441	1.21	1.04	2.64	1.62	1.71	1.00	4.46	2.01	1.00	23.06	17848950	37745393
3	48	3	1.5	4.5	0	17	347	22	2026	17	347	22	2019	2	436	1	477	1.17	1.01	2.65	1.35	1.96	1.00	4.74	1.68	1.00	30.07	18665158	40785996
3	48	3	2	6	0.75	20	395	23	2074	20	395	23	2071	3	329	1	578	1.15	1.00	2.52	1.25	1.99	1.00	4.44	1.53	1.00	23.65	17026027	38205946
3	48	4	1.5	6	0.75	17	341	22	2019	17	341	22	2008	2	436	1	473	1.17	1.01	2.64	1.32	1.96	1.00	4.79	1.71	1.00	29.86	18178752	40030276
3	48	3	2.33	7	1.25	22	441	23	2121	22	441	23	2109	3	558	2	525	1.16	1.01	3.96	1.27	1.93	1.00	4.03	2.45	1.00	21.22	17537849	38991728
3	48	4	1.75	7	1.25	18	363	22	2043	18	363	22	2036	2	375	1	432	1.16	1.01	3.49	1.26	1.99	1.00	4.66	2.19	1.00	26.21	17113519	38385746
3	48	3	2.67	8	0	23	466	24	2145	23	466	23	2136	3	490	2	460	1.15	1.01	2.74	1.23	1.94	1.00	3.67	1.65	1.00	18.94	16820606	37780139
3	48	4	2	8	0	19	386	23	2064	19	386	23	2060	3	329	1	586	1.15	1.00	2.80	1.21	2.00	1.00	4.41	1.73	1.00	23.42	16397264	37191449
3	48	5	1.6	8	0	17	344	22	2021	17	344	22	2012	2	407	1	458	1.17	1.01	2.91	1.27	1.99	1.00	4.75	1.88	1.00	28.07	17234357	38556644
3	48	3	3.17	9.5	0.75	25	505	24	2184	25	505	24	2176	3	414	2	392	1.14	1.01	3.34	1.19	1.91	1.00	3.29	1.96	1.00	16.54	16392329	37007428
3	48	4	2.375	9.5	0.75	21	422	23	2101	21	422	23	2098	3	545	2	500	1.14	1.00	3.42	1.18	1.99	1.00	3.94	2.05	1.00	20.42	15955117	36415841
3	48	5	1.9	9.5	0.75	18	363	22	2042	18	363	22	2041	3	343	1	597	1.15	1.00	3.50	1.18	2.04	1.00	4.52	2.14	1.00	24.12	15738879	36163025
3	48	6	1.583	9.5	0.75	17	340	22	2018	17	340	22	2007	2	414	1	460	1.17	1.01	3.10	1.26	1.99	1.00	4.79	2.03	1.00	28.28	17158936	38451937
3	48	3	3.67	11	1.5	28	565	25	2245	28	565	24	2223	3	533	3	353	1.15	1.02	4.19	1.25	1.82	1.00	3.05	2.54	1.00	15.09	17576320	38930589
3	48	4	2.75	11	1.5	24	478	24	2155	24	478	24	2139	3	471	2	450	1.15	1.01	4.29	1.24	1.91	1.00	3.65	2.64	1.00	18.57	17046916	38119847
3	48	5	2.2	11	1.5	21	415	23	2092	21	415	23	2080	3	585	2	543	1.16	1.01	4.37	1.23	1.96	1.00	4.21	2.74	1.00	21.86	16708849	37646679
3	48	6	1.833	11	1.5	18	366	22	2043	18	366	22	2034	2	358	1	413	1.16	1.01	4.46	1.22	2.00	1.00	4.67	2.83	1.00	25.02	16466459	37317733
3	48	7	1.57	11	1.5	16	326	22	2004	16	326	22	1997	2	414	1	454	1.16	1.01	4.52	1.22	2.03	1.00	5.07	2.91	1.00	28.11	16314811	37129755
3	48	4	2.875	11.5	1.75	24	486	24	2166	24	486	24	2150	3	453	2	431	1.15	1.01	4.49	1.22	1.91	1.00	3.55	2.74	1.00	17.93	16864601	37835106
3	48	5	2.3	11.5	1.75	21	423	23	2100	21	423	23	2089	3	558	2	520	1.15	1.01	4.57	1.22	1.96	1.00	4.08	2.84	1.00	21.08	16497845	37291879
3	48	6	1.917	11.5	1.75	19	373	23	2053	19	373	22	2045	2	343	1	400	1.16	1.01	4.67	1.21	2.01	1.00	4.57	2.93	1.00	24.16	16273334	37028321
3	48	7	1.643	11.5	1.75	17	333	22	2012	17	333	22	2007	2	400	1	439	1.16	1.00	4.73	1.20	2.04	1.00	4.94	3.01	1.00	27.08	16077888	36755145
3	48	4	3.25	13	2.5	26	513	24	2190	26	513	24	2176	3	407	2	384	1.14	1.01	4.35	1.19	1.90	1.00	3.26	2.62	1.00	16.22	16419747	37021451
3	48	5	2.6	13	2.5	22	447	23	2127	22	447	23	2117	3	500	2	463	1.15	1.01	4.44	1.18	1.96	1.00	3.77	2.72	1.00	19.12	16084867	36596992
3	48	6	2.167	13	2.5	20	397	23	2075	20	397	23	2069	3	304	1	540	1.15	1.01	4.53	1.18	2.01	1.00	4.22	2.80	1.00	21.83	15813729	36216706
3	48	7	1.857	13	2.5	18	356	22	2034	18	356	22	2031	2	353	1	403	1.15	1.00	4.59	1.17	2.04	1.00	4.62	2.87	1.00	24.48	15623574	35975880
3	48	4	3.625	14.5	3.25	28	557	25	2236	28	557	24	2213	3	533	3	355	1.15	1.02	4.39	1.23	1.83	1.00	3.09	2.69	1.00	15.16	17281042	38433936
3	48	5	2.9	14.5	3.25	24	489	24	2168	24	489	24	2149	3	453	2	428	1.15	1.01	4.47	1.22	1.90	1.00	3.55	2.78	1.00	17.81	16885327	37855840
3	48	6	2.417	14.5	3.25	22	437	23	2114	22	437	23	2099	3	533	2	499	1.16	1.01	4.56	1.22	1.94	1.00	3.98	2.86	1.00	20.33	16581731	37409123
3	48	7	2.07	14.5	3.25	20	394	23	2074	20	394	23	2061	3	316	1	569	1.16	1.01	4.62	1.21	1.98	1.00	4.40	2.94	1.00	22.84	16404153	37210684
3	48	4	2.875	11.5	0	24	486	24	2166	24	486	24	2150	3	453	2	431	1.15	1.01	2.73	1.22	1.91	1.00	3.55	1.67	1.00	17.93	16864601	37835106
3	48	5	2.3	11.5	0	21	423	23	2100	21	423	23	2089	3	558	2	520	1.15	1.01	2.78	1.22	1.96	1.00	4.08	1.73	1.00	21.08	16497845	37291879
3	48	6	1.917	11.5	0	19	373	23	2053	19	373	22	2045	2	343	1	400	1.16	1.01	2.84	1.21	2.01	1.00	4.57	1.78	1.00	24.16	16273334	37028321

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	48	7	1.643	11.5	0	17	333	22	2012	17	333	22	2007	2	400	1	439	1.16	1.00	2.88	1.20	2.04	1.00	4.94	1.83	1.00	27.08	16077888	36755145
3	48	4	3.25	13	0.75	26	513	24	2190	26	513	24	2176	3	407	2	384	1.14	1.01	3.24	1.19	1.90	1.00	3.26	1.95	1.00	16.22	16419747	37021451
3	48	5	2.6	13	0.75	22	447	23	2127	22	447	23	2117	3	500	2	463	1.15	1.01	3.30	1.18	1.96	1.00	3.77	2.02	1.00	19.12	16084867	36596992
3	48	6	2.167	13	0.75	20	397	23	2075	20	397	23	2069	3	304	1	540	1.15	1.01	3.37	1.18	2.01	1.00	4.22	2.08	1.00	21.83	15813729	36216706
3	48	7	1.857	13	0.75	18	356	22	2034	18	356	22	2031	2	353	1	403	1.15	1.00	3.41	1.17	2.04	1.00	4.62	2.14	1.00	24.48	15623574	35975880
3	48	4	3.625	14.5	1.5	28	557	25	2236	28	557	24	2213	3	533	3	355	1.15	1.02	4.15	1.23	1.83	1.00	3.09	2.55	1.00	15.16	17281042	38433936
3	48	5	2.9	14.5	1.5	24	489	24	2168	24	489	24	2149	3	453	2	428	1.15	1.01	4.23	1.22	1.90	1.00	3.55	2.63	1.00	17.81	16885327	37855840
3	48	6	2.417	14.5	1.5	22	437	23	2114	22	437	23	2099	3	533	2	499	1.16	1.01	4.31	1.22	1.94	1.00	3.98	2.71	1.00	20.33	16581731	37409123
3	48	7	2.07	14.5	1.5	20	394	23	2074	20	394	23	2061	3	316	1	569	1.16	1.01	3.80	1.21	1.98	1.00	4.40	2.42	1.00	22.84	16404153	37210684
3	48	5	3	15	0	25	496	24	2174	25	496	24	2156	3	436	2	414	1.15	1.01	2.66	1.21	1.90	1.00	3.47	1.64	1.00	17.31	16730829	37579009
3	48	6	2.5	15	0	22	443	23	2122	22	443	23	2107	3	522	2	483	1.16	1.01	2.71	1.21	1.95	1.00	3.90	1.69	1.00	19.79	16449725	37200722
3	48	7	2.14	15	0	20	401	23	2078	20	401	23	2066	3	308	1	551	1.16	1.01	2.74	1.20	1.98	1.00	4.29	1.73	1.00	22.17	16248081	36914533
3	48	8	1.875	15	0	18	365	22	2043	18	365	22	2034	2	348	1	404	1.16	1.01	2.79	1.20	2.01	1.00	4.64	1.78	1.00	24.46	16055829	36666110
3	48	9	1.67	15	0	17	341	22	2020	17	341	22	2010	2	393	1	437	1.17	1.01	2.85	1.22	2.01	1.00	4.77	1.85	1.00	26.85	16353376	37186903
3	48	5	3.3	16.5	0.75	26	515	24	2194	26	515	24	2179	3	585	3	378	1.14	1.01	3.21	1.19	1.89	1.00	3.25	1.95	1.00	16.03	16330735	36885762
3	48	6	2.75	16.5	0.75	23	461	24	2141	23	461	23	2129	3	471	2	441	1.15	1.01	3.28	1.18	1.95	1.00	3.65	2.00	1.00	18.32	16045149	36505323
3	48	7	2.357	16.5	0.75	21	418	23	2097	21	418	23	2087	3	558	2	502	1.15	1.01	3.32	1.17	1.99	1.00	4.02	2.06	1.00	20.50	15825971	36208321
3	48	8	2.06	16.5	0.75	19	382	23	2060	19	382	23	2053	3	320	1	562	1.15	1.01	3.36	1.17	2.02	1.00	4.38	2.10	1.00	22.64	15660631	35991042
3	48	9	1.83	16.5	0.75	18	352	22	2030	18	352	22	2024	2	358	1	406	1.16	1.01	3.35	1.17	2.04	1.00	4.65	2.12	1.00	24.75	15594883	35935670
3	48	5	3.6	18	1.5	28	552	25	2231	28	552	24	2207	3	545	3	356	1.15	1.02	4.12	1.22	1.83	1.00	3.11	2.53	1.00	15.19	17096757	38129354
3	48	6	3	18	1.5	25	497	24	2174	25	497	24	2153	3	436	2	415	1.15	1.02	4.20	1.22	1.89	1.00	3.48	2.60	1.00	17.31	16771292	37635732
3	48	7	2.57	18	1.5	23	452	23	2130	23	452	23	2112	3	511	2	472	1.16	1.01	4.25	1.21	1.93	1.00	3.84	2.66	1.00	19.40	16543662	37332505
3	48	8	2.25	18	1.5	21	414	23	2094	21	414	23	2079	3	585	2	528	1.16	1.01	4.04	1.21	1.97	1.00	4.19	2.57	1.00	21.42	16341975	37078615
3	48	9	2	18	1.5	19	383	23	2060	19	383	23	2048	3	329	1	584	1.16	1.01	3.64	1.20	1.99	1.00	4.50	2.33	1.00	23.32	16172169	36818089
3	48	6	3.08	18.5	0	25	502	24	2181	25	502	24	2161	3	421	2	405	1.15	1.02	2.62	1.21	1.89	1.00	3.42	1.63	1.00	16.97	16682996	37499733
3	48	7	2.64	18.5	0	23	457	23	2136	23	457	23	2119	3	490	2	461	1.16	1.01	2.68	1.20	1.93	1.00	3.78	1.67	1.00	18.99	16438535	37160094
3	48	8	2.32	18.5	0	21	420	23	2099	21	420	23	2086	3	558	2	513	1.16	1.01	2.71	1.20	1.97	1.00	4.10	1.70	1.00	20.88	16209111	36841390
3	48	9	2.06	18.5	0	19	388	23	2066	19	388	23	2055	3	320	1	567	1.16	1.01	2.73	1.19	1.99	1.00	4.42	1.74	1.00	22.78	16048535	36619745
3	48	10	1.85	18.5	0	18	360	22	2037	18	360	22	2028	2	353	1	406	1.16	1.01	2.77	1.19	2.02	1.00	4.67	1.77	1.00	24.65	15918743	36440462
3	48	6	3.58	21.5	1.5	27	549	24	2227	27	549	24	2202	3	545	3	357	1.15	1.02	4.09	1.22	1.84	1.00	3.12	2.52	1.00	15.22	16989847	37943565
3	48	7	3.07	21.5	1.5	25	502	24	2180	25	502	24	2158	3	421	2	406	1.15	1.02	4.14	1.21	1.89	1.00	3.44	2.58	1.00	17.01	16715915	37545512
3	48	8	2.69	21.5	1.5	23	463	24	2141	23	463	23	2122	3	490	2	453	1.16	1.01	4.20	1.21	1.92	1.00	3.74	2.63	1.00	18.73	16484333	37217158
3	48	9	2.39	21.5	1.5	21	429	23	2109	21	429	23	2093	3	545	2	501	1.16	1.01	4.22	1.20	1.95	1.00	4.04	2.68	1.00	20.45	16318330	37015666
3	48	10	2.15	21.5	1.5	20	400	23	2080	20	400	23	2066	3	304	1	548	1.16	1.01	3.87	1.20	1.98	1.00	4.32	2.47	1.00	22.11	16177357	36830615
3	48	7	3.14	22	0	25	507	24	2184	25	507	24	2163	3	421	2	397	1.15	1.02	2.61	1.21	1.88	1.00	3.39	1.62	1.00	16.69	16625469	37377224
3	48	8	2.75	22	0	23	467	24	2146	23	467	23	2128	3	471	2	444	1.15	1.01	2.65	1.20	1.92	1.00	3.69	1.65	1.00	18.40	16393344	37068798
3	48	9	2.44	22	0	22	434	23	2112	22	434	23	2096	3	533	2	491	1.16	1.01	2.65	1.20	1.95	1.00	3.98	1.68	1.00	20.09	16253700	36880796
3	48	10	2.2	22	0	20	405	23	2082	20	405	23	2069	3	585	2	536	1.16	1.01	2.70	1.19	1.98	1.00	4.24	1.71	1.00	21.66	16062800	36605075
3	48	11	2	22	0	19	379	23	2058	19	379	22	2046	3	329	1	581	1.16	1.01	2.72	1.19	2.00	1.00	4.51	1.74	1.00	23.27	15959067	36496853
3	48	12	1.83	22	0	18	356	22	2036	18	356	22	2026	2	358	1	409	1.16	1.01	2.73	1.19	2.02	1.00	4.71	1.76	1.00	24.89	15902039	36450612
3	48	7	3.57	25	1.5	27	546	24	2226	27	546	24	2202	3	545	3	357	1.15	1.02	4.08	1.21	1.84	1.00	3.14	2.51	1.00	15.25	16898360	37810965
3	48	8	3.125	25	1.5	25	506	24	2183	25	506	24	2161	3	421	2	399	1.15	1.02	4.13	1.21	1.88	1.00	3.40	2.56	1.00	16.76	16644007	37409813
3	48	9	2.78	25	1.5	24	471	24	2150	24	471	23	2130	3	471	2	440	1.16	1.02	4.15	1.20	1.92	1.00	3.67	2.61	1.00	18.27	16463861	37180136
3	48	10	2.5	25	1.5	22	441	23	2119	22	441	23	2101	3	522	2	482	1.16	1.01	4.21	1.20	1.94	1.00	3.92	2.66	1.00	19.74	16300691	36947199
3	48	11	2.27	25	1.5	21	415	23	2092	21	415	23	2076	3	571	2	523	1.16	1.01	4.04	1.20	1.96	1.00	4.17	2.57	1.00	21.19	16193598	36802761
3	48	12	1.83	25	1.5	22	448	23	2126	22	448	23	2069	2	358	1	467	1.21	1.05	2.82	1.57	1.75	1.00	4.99	2.10	1.00	27.14	22878862	47173121
4	12	3	1.5	4.5	0	16	323	12	562	16	323	12	562	3	316	3	389	2.15	1.72	1.04	3.36	2.88	1.42	2.45	1.64	1.04	4.50	699700	2214665
4	12	3	2	6	0.75	19	370	12	610	19	370	12	610	3	240	3	339	2.36	1.94	1.01	3.51	3.16	1.61	2.44	1.69	1.01	3.66	789650	2392863
4	12	4	1.5	6	0.75	16	323	12	562	16	323	12	562	3	316	3	389	2.19	1.75	1.07	3.36	2.91	1.43	2.48	1.70	1.07	4.50	699700	2214665
4	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	312	2.36	1.96	1.72	3.57	3.10	1.61	2.15	3.21	1.61	3.27	835299	2481138
4	12	4	1.75	7	1.25	17	347	12	587	17	348	12	588	3	273	3	372	2.34	1.90	1.40	3.44	3.14	1.57	2.50	2.43	1.40	4.03	745925	2305811
4	12	3	2.67	8	0	29	578	12	819	29	579	12	820	3	182	3	370	4.94	4.34	1.21	7.73	5.75	3.55	1.37	3.98	1.21	3.68	2459701	5783606
4	12	4	2	8	0	19	370	12	610	19	370	12	610	3	240	3	349	2.44	2.01	1.01	3.51	3.28	1.67	2.41	1.97	1.01	3.66	789650	2392863
4	12	5	1.6	8	0	17	332	12	573	17	333	12	573	3	300	3	388	2.29	1.85	1.11	3.39	3.07	1.52	2.51	1.97	1.11	4.30	718350	2252137
4	12	3	3.17	9.5	0.75	22	443	12	683	22	443	12	683	3	154	3	245	2.41	2.04	1.18	3.49	3.16	1.69	1.72	2.48	1.18	2.59	870337	2533691
4	12	4	2.375	9.5	0.75	20	399	12	639	20	400	12	640	3	200	3	307	2.52	2.11	1.41	3.57	3.37	1.75	2.14	2.63	1.41	3.23	839676	2490190
4	12	5	1.9	9.5	0.75	18	362	12	600	18	362	12	600	3	250	3	357	2.51	2.07	1.33	3.49	3.41	1.72	2.49	2.64	1.33	3.79	772623	2357808
4	12	6	1.583	9.5	0.75	17	331	12	571	17	331	12	571	3	300	3	390	2.30	1.85	1.24	3.38	3.06	1.52	2.52	2.20	1.24	4.33	715080	2245269
4	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	217	2.20	1.86	1.74	3.35	2.80	1.53	1.54	3.55	1.53	2.29	853966	2482392
4	12	4	2.75	11	1.5	21	422	12	663	21	423	12	663	3	176	3	275	2.38	1.99	1.80	3.56	3.08	1.64	1.93	3.89	1.64	2.89	865779	2536469
4	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	325	2.42	2.00	2.11	3.56	3.18	1.65	2.27	4.00	1.65	3.41	820529	2453482
4	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	363	2.40	1.96	2.01	3.47	3.20	1.62	2.54	4.01	1.62	3.89	761511	2335902

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	392	2.38	1.92	2.24	3.38	3.21	1.58	2.76	4.00	1.58	4.35	711954	2238259
4	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	265	2.39	2.01	1.98	3.55	3.09	1.65	1.86	4.24	1.65	2.79	868304	2536946
4	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	315	2.45	2.03	1.95	3.57	3.21	1.67	2.20	4.38	1.67	3.31	832062	2476056
4	12	6	1.917	11.5	1.75	18	362	12	603	18	363	12	603	3	250	3	356	2.43	2.00	2.24	3.49	3.24	1.64	2.49	4.40	1.64	3.77	775753	2365667
4	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	383	2.41	1.96	2.50	3.41	3.26	1.62	2.70	4.41	1.62	4.21	726503	2267767
4	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	240	2.39	2.02	1.96	3.47	3.09	1.66	1.70	4.09	1.66	2.53	868179	2525722
4	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	287	2.49	2.09	1.98	3.57	3.28	1.72	2.02	4.32	1.72	3.02	858043	2523686
4	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	329	2.52	2.09	1.93	3.55	3.35	1.72	2.31	4.40	1.72	3.46	816110	2445415
4	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	361	2.50	2.05	2.21	3.47	3.36	1.69	2.53	4.41	1.69	3.85	764454	2341371
4	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	220	2.23	1.89	1.94	3.37	2.84	1.55	1.56	3.97	1.55	2.32	857702	2492785
4	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	263	2.38	2.00	2.01	3.54	3.06	1.64	1.86	4.28	1.64	2.77	869809	2540035
4	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	303	2.44	2.03	1.98	3.58	3.17	1.67	2.13	4.42	1.67	3.18	843495	2496363
4	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	340	2.44	2.01	2.31	3.53	3.21	1.65	2.39	4.45	1.65	3.57	801170	2415795
4	12	4	2.875	11.5	0	29	582	12	823	29	583	12	823	3	167	3	343	4.69	4.11	1.18	7.36	5.43	3.34	1.29	3.83	1.18	3.44	2337253	5557403
4	12	5	2.3	11.5	0	28	550	12	789	28	550	12	789	3	207	3	416	5.02	4.38	1.21	7.80	5.78	3.56	1.54	4.14	1.21	4.12	2406428	5666548
4	12	6	1.917	11.5	0	18	362	12	603	18	363	12	603	3	250	3	356	2.43	2.00	1.02	3.49	3.24	1.64	2.49	2.00	1.02	3.77	775753	2365667
4	12	7	1.643	11.5	0	17	337	12	577	17	337	12	577	3	286	3	383	2.41	1.96	1.14	3.41	3.26	1.62	2.70	2.00	1.14	4.21	726503	2267767
4	12	4	3.25	13	0.75	22	447	12	685	22	447	12	685	3	150	3	240	2.39	2.02	1.18	3.47	3.09	1.66	1.70	2.45	1.18	2.53	868179	2525722
4	12	5	2.6	13	0.75	21	414	12	654	21	414	12	654	3	188	3	287	2.49	2.09	1.19	3.57	3.28	1.72	2.02	2.59	1.19	3.02	858043	2523686
4	12	6	2.167	13	0.75	19	384	12	624	19	384	12	624	3	222	3	329	2.52	2.09	1.16	3.55	3.35	1.72	2.31	2.64	1.16	3.46	816110	2445415
4	12	7	1.857	13	0.75	18	358	12	596	18	358	12	596	3	261	3	361	2.50	2.05	1.33	3.47	3.36	1.69	2.53	2.64	1.33	3.85	764454	2341371
4	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	220	2.23	1.89	1.76	3.37	2.84	1.55	1.56	3.60	1.55	2.32	857702	2492785
4	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	263	2.38	2.00	1.82	3.54	3.06	1.64	1.86	3.88	1.64	2.77	869809	2540035
4	12	6	2.417	14.5	1.5	20	403	12	641	20	403	12	641	3	200	3	303	2.44	2.03	1.53	3.58	3.17	1.67	2.13	3.41	1.53	3.18	843495	2496363
4	12	7	2.07	14.5	1.5	19	376	12	616	19	376	12	616	3	231	3	340	2.44	2.01	1.53	3.53	3.21	1.65	2.39	2.94	1.53	3.57	801170	2415795
4	12	5	3	15	0	29	585	12	825	29	586	12	825	3	162	3	329	4.59	4.02	1.15	7.17	5.32	3.27	1.25	3.71	1.15	3.30	2272927	5435968
4	12	6	2.5	15	0	28	557	12	797	28	558	12	797	3	194	3	384	4.84	4.23	1.17	7.49	5.59	3.43	1.45	3.95	1.17	3.83	2318222	5508842
4	12	7	2.14	15	0	27	536	12	775	27	536	12	775	3	222	3	440	5.08	4.42	1.19	7.82	5.83	3.59	2.84	4.17	1.19	4.35	2376004	5602155
4	12	8	1.875	15	0	18	359	12	599	18	359	12	599	3	250	3	360	2.45	2.01	1.01	3.48	3.26	1.65	2.53	2.00	1.01	3.83	768885	2351744
4	12	9	1.67	15	0	17	343	12	583	17	344	12	583	3	286	3	383	2.41	1.95	1.00	3.50	3.18	1.60	2.56	2.04	1.00	4.19	755139	2331350
4	12	5	3.3	16.5	0.75	22	449	12	687	22	449	12	687	3	146	3	237	2.39	2.02	1.17	3.46	3.08	1.66	1.68	2.44	1.17	2.50	867222	2522180
4	12	6	2.75	16.5	0.75	21	422	12	663	21	423	12	663	3	176	3	275	2.49	2.09	1.19	3.56	3.24	1.72	1.95	2.57	1.19	2.89	865779	2536469
4	12	7	2.357	16.5	0.75	20	399	12	637	20	399	12	637	3	207	3	309	2.53	2.11	1.17	3.58	3.33	1.74	2.18	2.63	1.17	3.24	838657	2487692
4	12	8	2.06	16.5	0.75	19	376	12	614	19	376	12	614	3	231	3	341	2.52	2.08	1.36	3.53	3.36	1.72	2.39	2.64	1.36	3.58	799608	2411568
4	12	9	1.83	16.5	0.75	18	355	12	595	18	355	12	595	3	261	3	364	2.49	2.04	1.31	3.47	3.34	1.68	2.55	2.61	1.31	3.90	761704	2337708
4	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	221	2.25	1.90	1.76	3.37	2.86	1.56	1.58	3.61	1.56	2.33	857692	2493394
4	12	6	3	18	1.5	22	436	12	675	22	436	12	675	3	162	3	256	2.38	2.00	1.45	3.53	3.05	1.64	1.82	3.85	1.45	2.70	871911	2541766
4	12	7	2.57	18	1.5	21	413	12	651	21	413	12	651	3	188	3	289	2.44	2.04	1.64	3.58	3.16	1.67	2.04	3.60	1.64	3.04	856090	2519326
4	12	8	2.25	18	1.5	20	391	12	629	20	391	12	629	3	214	3	320	2.46	2.04	1.41	3.56	3.21	1.67	2.25	3.19	1.41	3.35	825313	2461716
4	12	9	2	18	1.5	19	370	12	610	19	370	12	610	3	240	3	349	2.45	2.02	1.46	3.51	3.23	1.65	2.45	2.84	1.46	3.66	789650	2392863
4	12	6	3.08	18.5	0	29	586	12	827	29	587	12	828	3	158	3	320	4.53	3.96	1.13	7.04	5.24	3.22	1.23	3.63	1.13	3.22	2231959	5359269
4	12	7	2.64	18.5	0	28	562	12	803	28	562	12	803	3	182	3	364	4.72	4.12	1.15	7.29	5.46	3.34	1.39	3.82	1.15	3.65	2262845	5408934
4	12	8	2.32	18.5	0	27	544	12	784	27	544	12	784	3	207	3	408	4.92	4.29	1.17	7.55	5.67	3.48	2.67	4.01	1.17	4.06	2306982	5481440
4	12	9	2.06	18.5	0	26	528	12	768	26	528	12	768	3	231	3	454	5.12	4.45	1.18	7.81	5.87	3.61	2.93	4.20	1.18	4.47	2355786	5561601
4	12	10	1.85	18.5	0	18	357	12	596	18	357	12	596	3	261	3	362	2.46	2.01	1.01	3.47	3.27	1.65	2.55	2.00	1.01	3.87	763597	2340378
4	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	222	2.26	1.92	1.76	3.38	2.87	1.57	1.58	3.61	1.57	2.34	857425	2492538
4	12	7	3.07	21.5	1.5	22	439	12	678	22	439	12	678	3	158	3	252	2.38	2.00	1.45	3.51	3.04	1.64	1.79	3.81	1.45	2.65	870663	2536877
4	12	8	2.69	21.5	1.5	21	419	12	659	21	420	12	659	3	182	3	279	2.44	2.04	1.38	3.57	3.14	1.67	1.98	3.73	1.38	2.94	862887	2531433
4	12	9	2.39	21.5	1.5	20	401	12	640	20	401	12	640	3	200	3	306	2.47	2.05	1.52	3.58	3.21	1.68	2.16	3.38	1.52	3.21	842707	2496114
4	12	10	2.15	21.5	1.5	19	383	12	622	19	383	12	622	3	222	3	331	2.47	2.04	1.33	3.55	3.24	1.67	2.33	3.06	1.33	3.47	813297	2439214
4	12	7	3.14	22	0	29	588	12	828	29	589	12	828	3	154	3	314	4.49	3.93	1.12	6.97	5.19	3.19	1.21	3.59	1.12	3.16	2208894	5314753
4	12	8	2.75	22	0	28	567	12	807	28	567	12	807	3	176	3	351	4.66	4.07	1.14	7.17	5.39	3.30	1.34	3.75	1.14	3.52	2231332	5350393
4	12	9	2.44	22	0	28	549	12	789	27	550	12	789	3	200	3	389	4.81	4.19	1.15	7.39	5.55	3.40	1.48	3.89	1.15	3.88	2264596	5405004
4	12	10	2.2	22	0	27	535	12	775	27	535	12	775	3	222	3	426	4.99	4.34	1.16	7.61	5.73	3.52	2.79	4.06	1.16	4.23	2303113	5469378
4	12	11	2	22	0	26	522	12	762	26	523	12	763	3	240	3	464	5.14	4.46	1.18	7.81	5.89	3.62	3.00	4.21	1.18	4.57	2341828	5532137
4	12	12	1.83	22	0	18	355	12	595	18	356	12	595	3	261	3	364	2.46	2.01	1.00	3.47	3.27	1.65	2.56	2.00	1.00	3.90	763632	2341903
4	12	7	3.57	25	1.5	23	458	12	698	23	458	12	698	3	136	3	222	2.27	1.92	1.41	3.38	2.88	1.57	1.59	3.62	1.41	2.35	858915	2496946
4	12	8	3.125	25	1.5	22	441	12	681	22	441	12	681	3	154	3	248	2.37	2.00	1.45	3.50	3.03	1.63	1.77	3.80	1.45	2.62	870338	2534980
4	12	9	2.78	25	1.5	21	424	12	664	21	425	12	664	3	176	3	272	2.43	2.04	1.43	3.56	3.13	1.67	1.94	3.83	1.43	2.87	866487	2536625
4	12	10	2.5	25	1.5	20	408	12	648	20	408	12	648	3	194	3	296	2.47	2.06	1.28	3.58	3.20	1.69	2.10	3.51	1.28	3.11	852762	2515287
4	12	11	2.27	25	1.5	20	392	12	632	20	392	12	632	3	214	3	318	2.47	2.05	1.43	3.57	3.22	1.68	2.25	3.22	1.43	3.34	829958	2472496
4	12	12	1.83	25	1.5	18	355	12	595	18	355	12	595	3	261	3	364	1.77	1.40	1.22	3.47	2.12	1.11	2.53	2.36	1.11	3.90	761704	2337708

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	16	3	1.5	4.5	0	14	283	12	681	14	283	12	638	3	421	3	368	1.35	1.08	1.18	1.95	1.92	1.00	2.43	1.15	1.00	5.45	855665	2711795
4	16	3	2	6	0.75	16	313	12	711	16	313	12	711	3	320	3	310	1.36	1.12	1.11	1.82	1.97	1.04	2.31	1.07	1.04	4.27	826433	2592698
4	16	4	1.5	6	0.75	14	280	12	680	14	280	12	635	3	421	3	367	1.35	1.08	1.14	1.91	1.93	1.00	2.46	1.17	1.00	5.44	839044	2676063
4	16	3	2.33	7	1.25	17	341	12	739	17	341	12	739	3	276	3	285	1.37	1.14	2.21	1.88	1.93	1.06	2.04	2.05	1.06	3.81	886504	2704742
4	16	4	1.75	7	1.25	14	289	12	688	14	289	12	688	3	364	3	339	1.33	1.09	1.65	1.76	1.95	1.01	2.39	1.56	1.01	4.72	774922	2498142
4	16	3	2.67	8	0	18	367	12	765	18	367	12	765	3	242	3	259	1.45	1.22	1.31	1.93	2.02	1.13	1.86	1.25	1.13	3.44	941697	2808549
4	16	4	2	8	0	16	313	12	711	16	313	12	711	3	320	3	319	1.41	1.16	1.29	1.82	2.04	1.08	2.30	1.24	1.08	4.27	826433	2592698
4	16	5	1.6	8	0	14	281	12	679	14	281	12	660	3	400	3	358	1.34	1.08	1.26	1.81	1.93	1.00	2.43	1.28	1.00	5.09	788336	2545048
4	16	3	3.17	9.5	0.75	18	369	12	855	18	369	12	855	3	205	3	236	1.45	1.23	1.79	1.89	2.04	1.15	1.01	1.63	1.01	3.24	1016528	3018210
4	16	4	2.375	9.5	0.75	17	343	12	744	17	344	12	745	3	267	3	282	1.47	1.24	1.71	1.88	2.11	1.15	2.04	1.67	1.15	3.76	893184	2718998
4	16	5	1.9	9.5	0.75	15	303	12	703	15	303	12	703	3	333	3	326	1.43	1.18	1.71	1.79	2.11	1.10	2.38	1.67	1.10	4.44	805970	2556273
4	16	6	1.583	9.5	0.75	14	279	12	679	14	279	12	658	3	400	3	361	1.34	1.08	1.44	1.81	1.93	1.00	2.45	1.47	1.00	5.15	788133	2548658
4	16	3	3.67	11	1.5	17	338	12	990	17	339	12	990	3	178	3	224	1.29	1.09	2.52	1.72	1.81	1.01	1.02	2.29	1.01	3.24	1055880	3225874
4	16	4	2.75	11	1.5	19	371	12	772	19	372	12	773	3	235	3	253	1.43	1.20	2.53	1.93	1.96	1.11	1.83	2.54	1.11	3.37	951673	2828533
4	16	5	2.2	11	1.5	17	330	12	729	17	330	12	729	3	296	3	298	1.40	1.17	2.54	1.86	1.98	1.08	2.16	2.53	1.08	3.98	863978	2663579
4	16	6	1.833	11	1.5	15	297	12	696	15	297	12	696	3	348	3	332	1.38	1.13	2.55	1.78	1.99	1.04	2.44	2.51	1.04	4.56	791944	2529274
4	16	7	1.57	11	1.5	14	269	12	670	13	270	12	671	3	400	3	357	1.35	1.09	2.58	1.71	2.00	1.01	2.66	2.49	1.01	5.12	731937	2419590
4	16	4	2.875	11.5	1.75	19	381	12	779	19	381	12	779	3	222	3	245	1.45	1.23	2.81	1.95	1.99	1.14	1.77	2.79	1.14	3.25	968499	2857811
4	16	5	2.3	11.5	1.75	17	337	12	738	17	338	12	738	3	276	3	288	1.42	1.19	2.82	1.87	2.01	1.10	2.10	2.78	1.10	3.85	880444	2695198
4	16	6	1.917	11.5	1.75	15	305	12	704	15	305	12	704	3	333	3	325	1.40	1.15	2.84	1.80	2.02	1.07	2.38	2.77	1.07	4.41	809696	2562392
4	16	7	1.643	11.5	1.75	14	278	12	677	14	278	12	677	3	381	3	349	1.37	1.12	2.72	1.73	2.04	1.04	2.59	2.76	1.04	4.94	750266	2452307
4	16	4	3.25	13	2.5	18	367	12	871	18	368	12	871	3	200	3	234	1.44	1.22	2.81	1.87	2.00	1.13	1.01	2.68	1.01	3.22	1025230	3047733
4	16	5	2.6	13	2.5	18	361	12	761	18	361	12	761	3	250	3	264	1.48	1.25	2.75	1.92	2.08	1.16	1.92	2.79	1.16	3.51	930162	2788077
4	16	6	2.167	13	2.5	16	327	12	726	16	327	12	726	3	296	3	301	1.46	1.21	2.78	1.85	2.09	1.13	2.19	2.78	1.13	4.02	856514	2648998
4	16	7	1.857	13	2.5	15	299	12	699	15	299	12	699	3	348	3	330	1.43	1.18	2.82	1.79	2.10	1.10	2.43	2.77	1.10	4.52	797494	2540744
4	16	4	3.625	14.5	3.25	17	344	12	972	17	345	12	972	3	178	3	225	1.31	1.11	2.79	1.75	1.84	1.03	1.02	2.57	1.02	3.22	1054394	3201840
4	16	5	2.9	14.5	3.25	19	382	12	782	19	382	12	782	3	222	3	244	1.45	1.23	2.86	1.95	1.97	1.13	1.77	2.83	1.13	3.24	972367	2866690
4	16	6	2.417	14.5	3.25	17	347	12	747	17	347	12	747	3	267	3	278	1.43	1.20	2.90	1.89	1.99	1.10	2.03	2.82	1.10	3.71	900207	2731639
4	16	7	2.07	14.5	3.25	16	319	12	717	16	319	12	717	3	308	3	311	1.41	1.16	2.77	1.83	2.00	1.08	2.27	2.81	1.08	4.16	838410	2614333
4	16	4	2.875	11.5	0	19	381	12	779	19	381	12	779	3	222	3	245	1.45	1.23	1.28	1.95	1.99	1.14	1.77	1.27	1.14	3.25	968499	2857811
4	16	5	2.3	11.5	0	17	337	12	738	17	338	12	738	3	276	3	288	1.42	1.19	1.28	1.87	2.01	1.10	2.10	1.26	1.10	3.85	880444	2695198
4	16	6	1.917	11.5	0	15	305	12	704	15	305	12	704	3	333	3	325	1.40	1.15	1.29	1.80	2.02	1.07	2.38	1.26	1.07	4.41	809696	2562392
4	16	7	1.643	11.5	0	14	278	12	677	14	278	12	677	3	381	3	349	1.37	1.12	1.24	1.73	2.04	1.04	2.59	1.25	1.04	4.94	750266	2452307
4	16	4	3.25	13	0.75	18	367	12	871	18	368	12	871	3	200	3	234	1.44	1.22	1.69	1.87	2.00	1.13	1.01	1.61	1.01	3.22	1025230	3047733
4	16	5	2.6	13	0.75	18	361	12	761	18	361	12	761	3	250	3	264	1.48	1.25	1.65	1.92	2.08	1.16	1.92	1.68	1.16	3.51	930162	2788077
4	16	6	2.167	13	0.75	16	327	12	726	16	327	12	726	3	296	3	301	1.46	1.21	1.67	1.85	2.09	1.13	2.19	1.67	1.13	4.02	856514	2648998
4	16	7	1.857	13	0.75	15	299	12	699	15	299	12	699	3	348	3	330	1.43	1.18	1.69	1.79	2.10	1.10	2.43	1.66	1.10	4.52	797494	2540744
4	16	4	3.625	14.5	1.5	17	344	12	972	17	345	12	972	3	178	3	225	1.31	1.11	2.53	1.75	1.84	1.03	1.02	2.33	1.02	3.22	1054394	3201840
4	16	5	2.9	14.5	1.5	19	382	12	782	19	382	12	782	3	222	3	244	1.45	1.23	2.59	1.95	1.97	1.13	1.77	2.56	1.13	3.24	972367	2866690
4	16	6	2.417	14.5	1.5	17	347	12	747	17	347	12	747	3	267	3	278	1.43	1.20	2.24	1.89	1.99	1.10	2.03	2.18	1.10	3.71	900207	2731639
4	16	7	2.07	14.5	1.5	16	319	12	717	16	319	12	717	3	308	3	311	1.41	1.16	1.83	1.83	2.00	1.08	2.27	1.86	1.08	4.16	838410	2614333
4	16	5	3	15	0	19	385	12	793	19	386	12	793	3	216	3	238	1.46	1.24	1.29	1.95	1.99	1.14	1.00	1.26	1.00	3.17	983526	2892202
4	16	6	2.5	15	0	18	354	12	753	18	354	12	753	3	258	3	271	1.45	1.22	1.24	1.91	2.01	1.12	1.98	1.27	1.12	3.61	915264	2759692
4	16	7	2.14	15	0	16	324	12	724	16	325	12	725	3	296	3	303	1.42	1.18	1.26	1.84	2.02	1.09	2.22	1.26	1.09	4.06	851526	2640217
4	16	8	1.875	15	0	15	301	12	700	15	301	12	700	3	333	3	328	1.41	1.16	1.29	1.79	2.04	1.07	2.42	1.26	1.07	4.48	800678	2545457
4	16	9	1.67	15	0	14	281	12	679	14	281	12	679	3	381	3	346	1.35	1.09	1.24	1.74	1.96	1.01	2.44	1.25	1.01	4.88	755292	2460015
4	16	5	3.3	16.5	0.75	18	366	12	881	18	367	12	881	3	195	3	232	1.44	1.22	1.70	1.86	2.00	1.13	1.01	1.60	1.01	3.20	1030384	3065625
4	16	6	2.75	16.5	0.75	19	371	12	772	19	372	12	773	3	235	3	253	1.49	1.27	1.67	1.93	2.07	1.17	1.85	1.68	1.17	3.37	951673	2828533
4	16	7	2.357	16.5	0.75	17	343	12	741	17	343	12	741	3	276	3	283	1.48	1.24	1.71	1.88	2.09	1.15	2.07	1.67	1.15	3.77	890008	2710847
4	16	8	2.06	16.5	0.75	16	318	12	717	16	318	12	717	3	308	3	312	1.46	1.21	1.64	1.83	2.10	1.12	2.29	1.67	1.12	4.18	838235	2615657
4	16	9	1.83	16.5	0.75	15	297	12	695	15	297	12	695	3	348	3	332	1.43	1.17	1.66	1.78	2.09	1.09	2.44	1.64	1.09	4.56	790737	2525826
4	16	5	3.6	18	1.5	17	348	12	962	17	348	12	962	3	182	3	225	1.33	1.13	2.52	1.76	1.86	1.05	1.02	2.35	1.02	3.21	1054092	3189701
4	16	6	3	18	1.5	19	386	12	790	19	387	12	791	3	216	3	238	1.46	1.24	2.61	1.95	1.97	1.14	1.00	2.55	1.00	3.16	982147	2885947
4	16	7	2.57	18	1.5	18	359	12	759	18	359	12	759	3	250	3	266	1.45	1.22	2.28	1.91	2.00	1.12	1.95	2.32	1.12	3.54	927070	2782914
4	16	8	2.25	18	1.5	17	334	12	733	17	334	12	733	3	286	3	293	1.43	1.19	2.04	1.86	2.01	1.10	2.15	2.02	1.10	3.91	871819	2677766
4	16	9	2	18	1.5	16	313	12	711	16	313	12	711	3	320	3	319	1.41	1.17	1.76	1.82	2.02	1.08	2.34	1.80	1.08	4.27	826433	2592698
4	16	6	3.08	18.5	0	19	381	12	815	19	382	12	815	3	211	3	236	1.45	1.23	1.23	1.93	1.98	1.14	1.00	1.25	1.00	3.18	997795	2939450
4	16	7	2.64	18.5	0	18	364	12	764	18	364	12	764	3	242	3	261	1.46	1.23	1.25	1.92	2.01	1.13	1.91	1.27	1.13	3.47	936726	2800569
4	16	8	2.32	18.5	0	17	340	12	738	17	340	12	738	3	276	3	286	1.45	1.21	1.28	1.88	2.02	1.12	2.10	1.27	1.12	3.82	883447	2698453
4	16	9	2.06	18.5	0	16	318	12	717	16	318	12	717	3	308	3	312	1.43	1.18	1.25	1.83	2.04	1.09	2.29	1.26	1.09	4.18	838235	2615657
4	16	10	1.85	18.5	0	15	299	12	697	15	299	12	697	3	348	3	330	1.41	1.16	1.21	1.79	2.04	1.07	2.44	1.26	1.07	4.52	795486	2534895
4	16	6	3.58	21.5	1.5	18	350	12	954	18	351	12	954	3	182	3	225	1.34	1.14	2.51	1.77	1.87	1.06	1.02	2.35	1.02	3.20	1052388	3177251

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	16	7	3.07	21.5	1.5	19	383	12	810	19	384	12	810	3	211	3	236	1.45	1.23	2.48	1.94	1.97	1.14	1.00	2.53	1.00	3.17	996730	2932340
4	16	8	2.69	21.5	1.5	18	368	12	767	18	368	12	767	3	242	3	257	1.46	1.23	2.41	1.93	2.00	1.14	1.89	2.43	1.14	3.42	944245	2813915
4	16	9	2.39	21.5	1.5	17	345	12	745	17	345	12	745	3	267	3	280	1.45	1.21	2.08	1.89	2.01	1.12	2.06	2.15	1.12	3.74	896528	2725089
4	16	10	2.15	21.5	1.5	16	326	12	724	16	326	12	724	3	296	3	302	1.43	1.19	1.93	1.85	2.02	1.10	2.22	1.93	1.10	4.04	853878	2643427
4	16	7	3.14	22	0	19	379	12	830	19	379	12	830	3	205	3	235	1.45	1.23	1.24	1.92	1.97	1.13	1.00	1.24	1.00	3.17	1006473	2969052
4	16	8	2.75	22	0	19	371	12	772	19	372	12	773	3	235	3	253	1.47	1.24	1.27	1.93	2.01	1.14	1.86	1.27	1.14	3.37	951673	2828533
4	16	9	2.44	22	0	17	349	12	749	17	349	12	749	3	267	3	276	1.45	1.22	1.22	1.89	2.02	1.12	2.03	1.26	1.12	3.68	905445	2742050
4	16	10	2.2	22	0	17	330	12	729	17	330	12	729	3	296	3	298	1.44	1.20	1.27	1.86	2.03	1.11	2.19	1.27	1.11	3.98	863978	2663579
4	16	11	2	22	0	16	313	12	711	16	313	12	711	3	320	3	319	1.43	1.18	1.24	1.82	2.04	1.09	2.34	1.26	1.09	4.27	826433	2592698
4	16	12	1.83	22	0	15	297	12	695	15	297	12	695	3	348	3	332	1.41	1.16	1.20	1.78	2.04	1.07	2.45	1.25	1.07	4.56	790737	2525826
4	16	7	3.57	25	1.5	18	352	12	950	18	352	12	950	3	182	3	225	1.35	1.15	2.51	1.78	1.87	1.06	1.02	2.36	1.02	3.19	1052611	3173147
4	16	8	3.125	25	1.5	19	381	12	824	19	381	12	824	3	205	3	235	1.45	1.23	2.51	1.92	1.97	1.13	1.00	2.52	1.00	3.16	1004539	2959358
4	16	9	2.78	25	1.5	19	374	12	774	19	374	12	774	3	235	3	251	1.47	1.24	2.51	1.94	2.00	1.14	1.85	2.51	1.14	3.34	957356	2839251
4	16	10	2.5	25	1.5	18	354	12	753	18	354	12	753	3	258	3	271	1.46	1.22	2.20	1.91	2.01	1.13	1.99	2.26	1.13	3.61	915264	2759692
4	16	11	2.27	25	1.5	17	336	12	734	17	336	12	734	3	286	3	291	1.44	1.20	2.06	1.87	2.02	1.11	2.14	2.04	1.11	3.88	875199	2683192
4	16	12	1.83	25	1.5	17	349	12	748	17	349	12	678	3	348	3	366	1.38	1.12	1.64	2.47	1.69	1.00	2.58	1.97	1.00	4.90	1203792	3448588
4	20	3	1.5	4.5	0	15	299	12	856	15	299	12	829	3	526	3	401	1.26	1.04	1.26	1.78	1.82	1.00	1.50	1.15	1.00	6.85	1548517	4444794
4	20	3	2	6	0.75	16	326	12	883	16	326	12	858	3	400	3	332	1.23	1.04	1.24	1.60	1.80	1.00	1.41	1.04	1.00	5.30	1418722	4094233
4	20	4	1.5	6	0.75	15	295	12	855	15	295	12	827	3	526	3	399	1.27	1.04	1.28	1.74	1.82	1.00	1.52	1.17	1.00	6.84	1513979	4377923
4	20	3	2.33	7	1.25	18	353	12	913	18	353	12	885	3	345	3	304	1.23	1.04	2.34	1.63	1.74	1.00	1.24	1.96	1.00	4.70	1484763	4201502
4	20	4	1.75	7	1.25	15	305	12	865	15	305	12	841	3	455	3	368	1.24	1.04	1.76	1.61	1.83	1.00	1.48	1.56	1.00	5.93	1399647	4093451
4	20	3	2.67	8	0	18	368	12	928	18	368	12	901	3	303	3	270	1.21	1.04	1.38	1.55	1.73	1.00	1.11	1.12	1.00	4.17	1435188	4061312
4	20	4	2	8	0	16	319	12	877	16	319	12	853	3	400	3	338	1.23	1.03	1.40	1.54	1.82	1.00	1.39	1.17	1.00	5.26	1351622	3950860
4	20	5	1.6	8	0	15	296	12	856	15	296	12	829	3	500	3	390	1.26	1.04	1.42	1.65	1.83	1.00	1.51	1.29	1.00	6.42	1430216	4183341
4	20	3	3.17	9.5	0.75	19	380	12	986	19	381	12	960	3	256	3	239	1.20	1.03	1.81	1.50	1.71	1.00	1.00	1.43	1.00	3.73	1455890	4116947
4	20	4	2.375	9.5	0.75	17	341	12	899	17	341	12	875	3	333	3	292	1.21	1.03	1.77	1.49	1.79	1.00	1.21	1.48	1.00	4.54	1333169	3865858
4	20	5	1.9	9.5	0.75	15	305	12	864	15	305	12	843	3	417	3	344	1.23	1.03	1.82	1.49	1.86	1.00	1.44	1.54	1.00	5.46	1285815	3823020
4	20	6	1.583	9.5	0.75	15	294	12	854	15	294	12	827	3	500	3	392	1.26	1.04	1.62	1.65	1.83	1.00	1.52	1.47	1.00	6.47	1423684	4172403
4	20	3	3.67	11	1.5	21	427	12	1004	21	428	12	969	3	222	3	214	1.20	1.04	2.75	1.59	1.62	1.00	1.36	2.24	1.00	3.28	1584930	4329875
4	20	4	2.75	11	1.5	19	377	12	935	19	377	12	905	3	294	3	265	1.22	1.04	2.74	1.58	1.69	1.00	1.09	2.31	1.00	4.08	1472964	4133607
4	20	5	2.2	11	1.5	17	338	12	895	17	338	12	868	3	370	3	315	1.23	1.04	2.68	1.57	1.76	1.00	1.30	2.37	1.00	4.88	1405551	4041348
4	20	6	1.833	11	1.5	15	308	12	865	15	308	12	840	3	435	3	355	1.24	1.04	2.75	1.56	1.82	1.00	1.49	2.44	1.00	5.66	1356050	3982377
4	20	7	1.57	11	1.5	14	283	12	843	14	283	12	820	3	500	3	386	1.25	1.04	2.73	1.55	1.88	1.00	1.64	2.50	1.00	6.44	1318635	3949632
4	20	4	2.875	11.5	1.75	19	382	12	941	19	382	12	911	3	278	3	255	1.21	1.04	2.99	1.56	1.69	1.00	1.06	2.49	1.00	3.93	1459642	4095533
4	20	5	2.3	11.5	1.75	17	342	12	902	17	342	12	875	3	345	3	303	1.22	1.04	2.93	1.55	1.76	1.00	1.26	2.56	1.00	4.71	1393163	4007252
4	20	6	1.917	11.5	1.75	16	312	12	871	16	312	12	846	3	417	3	346	1.24	1.04	3.00	1.54	1.82	1.00	1.44	2.63	1.00	5.45	1342686	3944327
4	20	7	1.643	11.5	1.75	14	288	12	846	14	288	12	823	3	476	3	375	1.25	1.04	2.97	1.53	1.87	1.00	1.59	2.69	1.00	6.18	1302922	3899380
4	20	4	3.25	13	2.5	19	382	12	1003	19	383	12	975	3	250	3	236	1.20	1.03	2.94	1.50	1.70	1.00	1.01	2.39	1.00	3.70	1486447	4194534
4	20	5	2.6	13	2.5	18	357	12	917	18	357	12	890	3	312	3	273	1.21	1.04	2.98	1.50	1.74	1.00	1.14	2.45	1.00	4.23	1367699	3920999
4	20	6	2.167	13	2.5	16	326	12	885	16	326	12	861	3	370	3	314	1.22	1.03	2.93	1.49	1.80	1.00	1.31	2.51	1.00	4.90	1315967	3853381
4	20	7	1.857	13	2.5	15	301	12	860	15	301	12	838	3	435	3	348	1.23	1.03	2.90	1.49	1.85	1.00	1.47	2.57	1.00	5.56	1276567	3809160
4	20	4	3.625	14.5	3.25	21	420	12	1004	21	421	12	970	3	222	3	216	1.20	1.04	3.04	1.57	1.63	1.00	1.39	2.47	1.00	3.32	1560674	4287474
4	20	5	2.9	14.5	3.25	19	384	12	943	19	384	12	912	3	278	3	253	1.21	1.04	3.04	1.56	1.68	1.00	1.05	2.53	1.00	3.90	1466204	4107723
4	20	6	2.417	14.5	3.25	18	352	12	909	18	352	12	880	3	333	3	292	1.22	1.04	2.98	1.56	1.73	1.00	1.21	2.59	1.00	4.51	1411241	4030041
4	20	7	2.07	14.5	3.25	16	325	12	885	16	325	12	858	3	385	3	329	1.23	1.04	2.95	1.55	1.78	1.00	1.38	2.64	1.00	5.13	1371130	3986863
4	20	4	2.875	11.5	0	19	382	12	941	19	382	12	911	3	278	3	255	1.21	1.04	1.36	1.56	1.69	1.00	1.06	1.13	1.00	3.93	1459642	4095533
4	20	5	2.3	11.5	0	17	342	12	902	17	342	12	875	3	345	3	303	1.22	1.04	1.33	1.55	1.76	1.00	1.26	1.17	1.00	4.71	1393163	4007252
4	20	6	1.917	11.5	0	16	312	12	871	16	312	12	846	3	417	3	346	1.24	1.04	1.37	1.54	1.82	1.00	1.44	1.20	1.00	5.45	1342686	3944327
4	20	7	1.643	11.5	0	14	288	12	846	14	288	12	823	3	476	3	375	1.25	1.04	1.35	1.53	1.87	1.00	1.59	1.23	1.00	6.18	1302922	3899380
4	20	4	3.25	13	0.75	19	382	12	1003	19	383	12	975	3	250	3	236	1.20	1.03	1.77	1.50	1.70	1.00	1.01	1.44	1.00	3.70	1486447	4194534
4	20	5	2.6	13	0.75	18	357	12	917	18	357	12	890	3	312	3	273	1.21	1.04	1.79	1.50	1.74	1.00	1.14	1.47	1.00	4.23	1367699	3920999
4	20	6	2.167	13	0.75	16	326	12	885	16	326	12	861	3	370	3	314	1.22	1.03	1.76	1.49	1.80	1.00	1.31	1.51	1.00	4.90	1315967	3853381
4	20	7	1.857	13	0.75	15	301	12	860	15	301	12	838	3	435	3	348	1.23	1.03	1.74	1.49	1.85	1.00	1.47	1.54	1.00	5.56	1276567	3809160
4	20	4	3.625	14.5	1.5	21	420	12	1004	21	421	12	970	3	222	3	216	1.20	1.04	2.75	1.57	1.63	1.00	1.39	2.24	1.00	3.32	1560674	4287474
4	20	5	2.9	14.5	1.5	19	384	12	943	19	384	12	912	3	278	3	253	1.21	1.04	2.76	1.56	1.68	1.00	1.05	2.29	1.00	3.90	1466204	4107723
4	20	6	2.417	14.5	1.5	18	352	12	909	18	352	12	880	3	333	3	292	1.22	1.04	2.30	1.56	1.73	1.00	1.21	2.00	1.00	4.51	1411241	4030041
4	20	7	2.07	14.5	1.5	16	325	12	885	16	325	12	858	3	385	3	329	1.23	1.04	1.95	1.55	1.78	1.00	1.38	1.75	1.00	5.13	1371130	3986863
4	20	5	3	15	0	19	388	12	948	19	388	12	917	3	270	3	246	1.21	1.04	1.36	1.55	1.68	1.00	1.03	1.12	1.00	3.79	1458219	4083666
4	20	6	2.5	15	0	18	355	12	915	18	355	12	887	3	323	3	283	1.22	1.04	1.33	1.54	1.73	1.00	1.18	1.15	1.00	4.39	1403003	4007608
4	20	7	2.14	15	0	16	329	12	888	16	329	12	861	3	370	3	320	1.23	1.04	1.31	1.54	1.78	1.00	1.34	1.17	1.00	4.98	1361720	3956318
4	20	8	1.875	15	0	15	307	12	866	15	307	12	841	3	417	3	349	1.24	1.04	1.35	1.53	1.82	1.00	1.47	1.19	1.00	5.54	1322619	3906822
4	20	9	1.67	15	0	15	294	12	854	15	294	12	828	3	476	3	375	1.25	1.04	1.39	1.57	1.84	1.00	1.51	1.25	1.00	6.14	1349516	3998682

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	20	5	3.3	16.5	0.75	19	384	12	1004	19	385	12	975	3	244	3	233	1.20	1.03	1.76	1.50	1.69	1.00	1.53	1.43	1.00	3.65	1479505	4174035
4	20	6	2.75	16.5	0.75	18	366	12	926	18	366	12	898	3	294	3	261	1.21	1.04	1.72	1.50	1.72	1.00	1.09	1.45	1.00	4.04	1374771	3922654
4	20	7	2.357	16.5	0.75	17	339	12	899	17	339	12	874	3	345	3	294	1.22	1.04	1.77	1.49	1.77	1.00	1.23	1.48	1.00	4.58	1331020	3865672
4	20	8	2.06	16.5	0.75	16	317	12	876	16	317	12	852	3	385	3	326	1.23	1.03	1.75	1.48	1.81	1.00	1.37	1.51	1.00	5.10	1296430	3824180
4	20	9	1.83	16.5	0.75	15	299	12	858	15	299	12	835	3	435	3	351	1.24	1.03	1.72	1.49	1.85	1.00	1.48	1.53	1.00	5.63	1275944	3811883
4	20	5	3.6	18	1.5	21	417	12	1004	21	417	12	969	3	227	3	217	1.20	1.04	2.62	1.56	1.63	1.00	1.40	2.23	1.00	3.35	1549624	4268674
4	20	6	3	18	1.5	19	389	12	947	19	389	12	916	3	270	3	246	1.21	1.04	2.63	1.55	1.67	1.00	1.03	2.27	1.00	3.79	1461066	4087604
4	20	7	2.57	18	1.5	18	361	12	920	18	361	12	890	3	312	3	278	1.22	1.04	2.45	1.55	1.72	1.00	1.16	2.10	1.00	4.30	1418639	4033485
4	20	8	2.25	18	1.5	17	338	12	896	17	338	12	868	3	357	3	308	1.23	1.04	2.12	1.54	1.76	1.00	1.29	1.87	1.00	4.78	1377702	3976673
4	20	9	2	18	1.5	16	318	12	878	16	318	12	851	3	400	3	338	1.24	1.04	1.87	1.54	1.80	1.00	1.42	1.69	1.00	5.27	1348573	3947127
4	20	6	3.08	18.5	0	20	392	12	952	20	392	12	921	3	263	3	241	1.21	1.04	1.30	1.54	1.67	1.00	1.01	1.11	1.00	3.71	1457724	4076507
4	20	7	2.64	18.5	0	18	364	12	924	18	364	12	894	3	303	3	271	1.22	1.04	1.33	1.54	1.71	1.00	1.14	1.13	1.00	4.20	1412806	4015484
4	20	8	2.32	18.5	0	17	341	12	901	17	341	12	873	3	345	3	300	1.23	1.04	1.32	1.53	1.75	1.00	1.26	1.15	1.00	4.66	1371466	3957934
4	20	9	2.06	18.5	0	16	322	12	879	16	322	12	852	3	385	3	329	1.23	1.04	1.30	1.52	1.79	1.00	1.38	1.17	1.00	5.12	1337950	3911914
4	20	10	1.85	18.5	0	15	304	12	863	15	304	12	838	3	435	3	351	1.24	1.04	1.35	1.52	1.83	1.00	1.48	1.19	1.00	5.60	1310689	3884589
4	20	6	3.58	21.5	1.5	21	414	12	1004	21	414	12	970	3	227	3	218	1.20	1.04	2.61	1.55	1.63	1.00	1.42	2.22	1.00	3.37	1539622	4251458
4	20	7	3.07	21.5	1.5	20	392	12	952	20	392	12	920	3	263	3	242	1.21	1.04	2.63	1.55	1.67	1.00	1.01	2.25	1.00	3.72	1462472	4087565
4	20	8	2.69	21.5	1.5	18	368	12	927	18	368	12	896	3	303	3	268	1.22	1.04	2.56	1.54	1.70	1.00	1.12	2.17	1.00	4.14	1421177	4027909
4	20	9	2.39	21.5	1.5	17	347	12	907	17	347	12	878	3	333	3	293	1.23	1.04	2.25	1.54	1.74	1.00	1.23	1.96	1.00	4.55	1388473	3987331
4	20	10	2.15	21.5	1.5	16	329	12	889	16	329	12	861	3	370	3	319	1.23	1.04	2.01	1.53	1.77	1.00	1.34	1.79	1.00	4.96	1358766	3950061
4	20	7	3.14	22	0	20	393	12	961	20	393	12	929	3	256	3	238	1.21	1.04	1.30	1.54	1.67	1.00	1.00	1.11	1.00	3.67	1465364	4097425
4	20	8	2.75	22	0	19	371	12	928	19	371	12	898	3	294	3	262	1.22	1.04	1.33	1.53	1.70	1.00	1.10	1.12	1.00	4.05	1411849	3999974
4	20	9	2.44	22	0	18	350	12	909	18	350	12	880	3	333	3	288	1.22	1.04	1.32	1.53	1.74	1.00	1.21	1.14	1.00	4.47	1385352	3974058
4	20	10	2.2	22	0	17	332	12	890	17	332	12	863	3	370	3	312	1.23	1.04	1.30	1.52	1.77	1.00	1.31	1.16	1.00	4.85	1350052	3922389
4	20	11	2	22	0	16	316	12	875	16	316	12	849	3	400	3	336	1.24	1.04	1.30	1.52	1.80	1.00	1.42	1.17	1.00	5.25	1325542	3895648
4	20	12	1.83	22	0	15	302	12	862	15	302	12	837	3	435	3	353	1.24	1.04	1.34	1.52	1.83	1.00	1.49	1.19	1.00	5.65	1308617	3884599
4	20	7	3.57	25	1.5	21	412	12	1004	21	413	12	969	3	227	3	218	1.20	1.04	2.61	1.55	1.63	1.00	1.42	2.21	1.00	3.37	1534693	4243145
4	20	8	3.125	25	1.5	20	394	12	955	20	395	12	922	3	256	3	238	1.21	1.04	2.62	1.54	1.66	1.00	1.00	2.24	1.00	3.67	1461836	4082786
4	20	9	2.78	25	1.5	19	373	12	933	19	373	12	902	3	294	3	261	1.22	1.04	2.54	1.54	1.69	1.00	1.10	2.23	1.00	4.03	1425389	4030334
4	20	10	2.5	25	1.5	18	354	12	914	18	354	12	885	3	323	3	283	1.22	1.04	2.36	1.53	1.73	1.00	1.19	2.03	1.00	4.39	1393376	3986693
4	20	11	2.27	25	1.5	17	338	12	897	17	338	12	869	3	357	3	305	1.23	1.04	2.12	1.53	1.75	1.00	1.29	1.87	1.00	4.74	1368925	3956677
4	20	12	1.83	25	1.5	18	368	12	928	18	368	12	879	3	435	3	397	1.28	1.07	1.85	2.20	1.57	1.00	1.57	1.94	1.00	6.09	2093962	5514702
4	24	3	1.5	4.5	0	16	317	12	1037	16	317	12	1014	3	429	2	446	1.23	1.03	1.43	1.69	1.76	1.00	2.43	1.19	1.00	8.30	2600101	6913931
4	24	3	2	6	0.75	17	348	12	1066	17	348	12	1045	3	480	3	367	1.20	1.02	1.40	1.53	1.75	1.00	2.21	1.07	1.00	6.40	2382662	6378259
4	24	4	1.5	6	0.75	16	314	12	1031	16	314	12	1006	3	429	2	442	1.23	1.03	1.44	1.66	1.76	1.00	2.46	1.20	1.00	8.25	2531075	6771829
4	24	3	2.33	7	1.25	19	379	12	1096	19	379	12	1072	3	414	3	336	1.20	1.03	2.56	1.56	1.69	1.00	1.91	2.01	1.00	5.67	2483192	6528793
4	24	4	1.75	7	1.25	16	326	12	1045	16	326	12	1023	3	545	3	408	1.21	1.03	2.00	1.54	1.78	1.00	2.36	1.62	1.00	7.17	2362298	6387904
4	24	3	2.67	8	0	20	395	12	1112	20	395	12	1091	3	364	3	297	1.18	1.03	1.52	1.49	1.69	1.00	1.74	1.16	1.00	5.09	2396305	6321196
4	24	4	2	8	0	17	341	12	1059	17	341	12	1038	3	480	3	374	1.20	1.02	1.57	1.48	1.77	1.00	2.20	1.21	1.00	6.35	2276963	6165633
4	24	5	1.6	8	0	16	315	12	1033	16	315	12	1010	3	400	2	431	1.22	1.03	1.61	1.58	1.78	1.00	2.44	1.32	1.00	7.75	2394306	6482209
4	24	3	3.17	9.5	0.75	21	420	13	1140	21	420	12	1119	3	308	3	256	1.17	1.03	2.01	1.44	1.67	1.00	1.57	1.49	1.00	4.51	2363295	6222210
4	24	4	2.375	9.5	0.75	18	365	12	1085	18	365	12	1064	3	400	3	323	1.19	1.02	2.02	1.43	1.74	1.00	1.88	1.53	1.00	5.48	2244869	6043285
4	24	5	1.9	9.5	0.75	16	326	12	1043	16	326	12	1024	3	500	3	380	1.20	1.02	2.05	1.43	1.81	1.00	2.30	1.59	1.00	6.59	2166428	5958484
4	24	6	1.583	9.5	0.75	16	313	12	1030	16	313	12	1007	3	414	2	433	1.23	1.03	1.77	1.57	1.77	1.00	2.46	1.51	1.00	7.81	2382104	6459570
4	24	3	3.67	11	1.5	23	462	13	1179	23	462	13	1153	3	267	3	231	1.18	1.03	3.04	1.52	1.60	1.00	1.47	2.32	1.00	4.16	2583454	6648199
4	24	4	2.75	11	1.5	20	403	12	1122	20	403	12	1099	3	353	3	291	1.19	1.03	3.05	1.51	1.66	1.00	1.74	2.39	1.00	5.03	2454438	6440092
4	24	5	2.2	11	1.5	18	361	12	1080	18	361	12	1056	3	444	3	348	1.20	1.03	3.08	1.50	1.71	1.00	2.03	2.45	1.00	5.89	2358323	6298186
4	24	6	1.833	11	1.5	16	328	12	1047	16	328	12	1024	3	522	3	394	1.21	1.03	3.13	1.50	1.77	1.00	2.38	2.52	1.00	6.85	2285556	6217158
4	24	7	1.57	11	1.5	15	302	12	1019	15	302	12	998	3	414	2	428	1.22	1.03	3.10	1.49	1.82	1.00	2.68	2.58	1.00	7.79	2227081	6154171
4	24	4	2.875	11.5	1.75	20	409	12	1127	20	409	12	1103	3	333	3	280	1.19	1.03	3.32	1.49	1.66	1.00	1.69	2.58	1.00	4.85	2429261	6375802
4	24	5	2.3	11.5	1.75	18	367	12	1084	18	367	12	1059	3	414	3	334	1.20	1.03	3.35	1.49	1.71	1.00	1.95	2.64	1.00	5.66	2333003	6227751
4	24	6	1.917	11.5	1.75	17	333	12	1052	17	333	12	1030	3	500	3	382	1.21	1.03	3.41	1.48	1.77	1.00	2.30	2.71	1.00	6.59	2258959	6146959
4	24	7	1.643	11.5	1.75	15	306	12	1026	15	306	12	1006	3	571	3	416	1.22	1.03	3.38	1.47	1.82	1.00	2.59	2.78	1.00	7.49	2202361	6093984
4	24	4	3.25	13	2.5	21	426	13	1145	21	426	12	1121	3	300	3	251	1.18	1.03	3.26	1.45	1.65	1.00	1.56	2.48	1.00	4.43	2383388	6257207
4	24	5	2.6	13	2.5	19	383	12	1101	19	383	12	1078	3	375	3	300	1.19	1.03	3.28	1.44	1.70	1.00	1.77	2.53	1.00	5.13	2287963	6103557
4	24	6	2.167	13	2.5	17	349	12	1066	17	349	12	1045	3	444	3	347	1.19	1.02	3.33	1.43	1.75	1.00	2.06	2.59	1.00	5.90	2208634	5995960
4	24	7	1.857	13	2.5	16	321	12	1040	16	321	12	1021	3	522	3	385	1.20	1.02	3.30	1.42	1.81	1.00	2.36	2.65	1.00	6.72	2152922	5944101
4	24	4	3.625	14.5	3.25	23	456	13	1176	23	456	13	1149	3	267	3	232	1.18	1.03	3.25	1.50	1.61	1.00	1.49	2.57	1.00	4.19	2544309	6574856
4	24	5	2.9	14.5	3.25	21	411	12	1130	21	411	12	1105	3	333	3	278	1.19	1.03	3.28	1.50	1.65	1.00	1.69	2.63	1.00	4.84	2442757	6404285
4	24	6	2.417	14.5	3.25	19	377	12	1094	19	377	12	1067	3	400	3	322	1.20	1.03	3.32	1.49	1.69	1.00	1.88	2.68	1.00	5.44	2363507	6274197
4	24	7	2.07	14.5	3.25	17	348	12	1065	17	348	12	1041	3	462	3	364	1.20	1.03	3.38	1.48	1.73	1.00	2.16	2.73	1.00	6.17	2297276	6192198
4	24	4	2.875	11.5	0	20	409	12	1127	20	409	12	1103	3	333	3	280	1.19	1.03	1.51	1.49	1.66	1.00	1.69	1.18	1.00	4.85	2429261	6375802

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	24	5	2.3	11.5	0	18	367	12	1084	18	367	12	1059	3	414	3	334	1.20	1.03	1.53	1.49	1.71	1.00	1.95	1.21	1.00	5.66	2333003	6227751
4	24	6	1.917	11.5	0	17	333	12	1052	17	333	12	1030	3	500	3	382	1.21	1.03	1.55	1.48	1.77	1.00	2.30	1.24	1.00	6.59	2258959	6146959
4	24	7	1.643	11.5	0	15	306	12	1026	15	306	12	1006	3	571	3	416	1.22	1.03	1.54	1.47	1.82	1.00	2.59	1.27	1.00	7.49	2202361	6093984
4	24	4	3.25	13	0.75	21	426	13	1145	21	426	12	1121	3	300	3	251	1.18	1.03	1.96	1.45	1.65	1.00	1.56	1.49	1.00	4.43	2383388	6257207
4	24	5	2.6	13	0.75	19	383	12	1101	19	383	12	1078	3	375	3	300	1.19	1.03	1.97	1.44	1.70	1.00	1.77	1.52	1.00	5.13	2287963	6103557
4	24	6	2.167	13	0.75	17	349	12	1066	17	349	12	1045	3	444	3	347	1.19	1.02	2.00	1.43	1.75	1.00	2.06	1.56	1.00	5.90	2208634	5995960
4	24	7	1.857	13	0.75	16	321	12	1040	16	321	12	1021	3	522	3	385	1.20	1.02	1.98	1.42	1.81	1.00	2.36	1.59	1.00	6.72	2152922	5944101
4	24	4	3.625	14.5	1.5	23	456	13	1176	23	456	13	1149	3	267	3	232	1.18	1.03	2.95	1.50	1.61	1.00	1.49	2.33	1.00	4.19	2544309	6574856
4	24	5	2.9	14.5	1.5	21	411	12	1130	21	411	12	1105	3	333	3	278	1.19	1.03	2.97	1.50	1.65	1.00	1.69	2.38	1.00	4.84	2442757	6404285
4	24	6	2.417	14.5	1.5	19	377	12	1094	19	377	12	1067	3	400	3	322	1.20	1.03	2.56	1.49	1.69	1.00	1.88	2.07	1.00	5.44	2363507	6274197
4	24	7	2.07	14.5	1.5	17	348	12	1065	17	348	12	1041	3	462	3	364	1.20	1.03	2.24	1.48	1.73	1.00	2.16	1.81	1.00	6.17	2297276	6192198
4	24	5	3	15	0	21	415	12	1135	21	415	12	1111	3	324	3	270	1.18	1.03	1.46	1.48	1.65	1.00	1.65	1.16	1.00	4.72	2423867	6360222
4	24	6	2.5	15	0	19	381	12	1098	19	381	12	1072	3	387	3	312	1.19	1.03	1.48	1.48	1.69	1.00	1.83	1.18	1.00	5.30	2343906	6226007
4	24	7	2.14	15	0	18	352	12	1069	18	352	12	1045	3	444	3	353	1.20	1.03	1.50	1.47	1.73	1.00	2.10	1.21	1.00	5.99	2280031	6145519
4	24	8	1.875	15	0	16	328	12	1045	16	328	12	1023	3	500	3	386	1.21	1.03	1.49	1.46	1.78	1.00	2.35	1.23	1.00	6.69	2224763	6081715
4	24	9	1.67	15	0	16	313	12	1031	16	313	12	1008	3	571	3	415	1.22	1.03	1.52	1.50	1.79	1.00	2.45	1.29	1.00	7.41	2262982	6204653
4	24	5	3.3	16.5	0.75	21	428	13	1146	21	428	12	1122	3	293	3	247	1.18	1.03	1.95	1.44	1.65	1.00	1.55	1.48	1.00	4.38	2370529	6225718
4	24	6	2.75	16.5	0.75	20	392	12	1112	20	392	12	1089	3	353	3	287	1.19	1.03	1.92	1.43	1.69	1.00	1.72	1.51	1.00	4.94	2298165	6116136
4	24	7	2.357	16.5	0.75	18	363	12	1083	18	363	12	1060	3	414	3	324	1.19	1.03	1.95	1.43	1.73	1.00	1.92	1.53	1.00	5.51	2233751	6023242
4	24	8	2.06	16.5	0.75	17	339	12	1057	17	339	12	1035	3	462	3	361	1.20	1.03	1.99	1.42	1.77	1.00	2.18	1.56	1.00	6.16	2181973	5962080
4	24	9	1.83	16.5	0.75	16	319	12	1037	16	319	12	1016	3	522	3	388	1.21	1.03	1.96	1.43	1.80	1.00	2.38	1.58	1.00	6.80	2150789	5943186
4	24	5	3.6	18	1.5	23	453	13	1172	23	453	13	1145	3	273	3	233	1.18	1.03	2.92	1.49	1.61	1.00	1.49	2.32	1.00	4.19	2514015	6510903
4	24	6	3	18	1.5	21	416	12	1135	21	416	12	1109	3	324	3	270	1.19	1.03	2.96	1.49	1.64	1.00	1.66	2.36	1.00	4.72	2433286	6377684
4	24	7	2.57	18	1.5	19	387	12	1104	19	387	12	1078	3	375	3	306	1.19	1.03	2.72	1.48	1.68	1.00	1.81	2.17	1.00	5.21	2367985	6269944
4	24	8	2.25	18	1.5	18	361	12	1081	18	361	12	1056	3	429	3	340	1.20	1.03	2.36	1.48	1.71	1.00	2.01	1.93	1.00	5.77	2310654	6196012
4	24	9	2	18	1.5	17	340	12	1057	17	340	12	1034	3	480	3	373	1.21	1.03	2.14	1.47	1.75	1.00	2.24	1.74	1.00	6.34	2257378	6123915
4	24	6	3.08	18.5	0	21	420	13	1138	21	420	12	1112	3	316	3	264	1.18	1.03	1.46	1.48	1.64	1.00	1.63	1.15	1.00	4.62	2422194	6347109
4	24	7	2.64	18.5	0	20	390	12	1108	20	390	12	1084	3	364	3	298	1.19	1.03	1.48	1.47	1.67	1.00	1.78	1.17	1.00	5.11	2354493	6238975
4	24	8	2.32	18.5	0	18	365	12	1085	18	365	12	1060	3	414	3	331	1.20	1.03	1.46	1.46	1.71	1.00	1.95	1.19	1.00	5.61	2298088	6159845
4	24	9	2.06	18.5	0	17	343	12	1063	17	343	12	1039	3	462	3	364	1.20	1.03	1.50	1.46	1.75	1.00	2.18	1.21	1.00	6.19	2249050	6102616
4	24	10	1.85	18.5	0	16	324	12	1044	16	324	12	1021	3	522	3	388	1.21	1.03	1.49	1.45	1.78	1.00	2.38	1.23	1.00	6.77	2209736	6063010
4	24	6	3.58	21.5	1.5	23	451	13	1170	23	451	13	1142	3	273	3	234	1.18	1.03	2.90	1.49	1.61	1.00	1.50	2.31	1.00	4.20	2499630	6481877
4	24	7	3.07	21.5	1.5	21	420	13	1137	21	420	12	1111	3	316	3	264	1.19	1.03	2.94	1.48	1.64	1.00	1.64	2.34	1.00	4.63	2425438	6353034
4	24	8	2.69	21.5	1.5	20	394	12	1112	20	394	12	1087	3	364	3	294	1.19	1.03	2.75	1.48	1.67	1.00	1.77	2.25	1.00	5.05	2368463	6263321
4	24	9	2.39	21.5	1.5	19	372	12	1090	19	372	12	1063	3	400	3	324	1.20	1.03	2.50	1.47	1.69	1.00	1.90	2.02	1.00	5.47	2321027	6192356
4	24	10	2.15	21.5	1.5	18	352	12	1070	18	352	12	1045	3	444	3	352	1.20	1.03	2.23	1.47	1.72	1.00	2.10	1.84	1.00	5.97	2274155	6133999
4	24	7	3.14	22	0	21	423	13	1141	21	423	12	1115	3	308	3	259	1.18	1.03	1.45	1.47	1.64	1.00	1.61	1.15	1.00	4.56	2418558	6335653
4	24	8	2.75	22	0	20	397	12	1114	20	397	12	1090	3	353	3	288	1.19	1.03	1.48	1.47	1.66	1.00	1.74	1.16	1.00	4.96	2355535	6230056
4	24	9	2.44	22	0	19	375	12	1093	19	375	12	1066	3	400	3	318	1.20	1.03	1.46	1.47	1.69	1.00	1.87	1.18	1.00	5.38	2316651	6177158
4	24	10	2.2	22	0	18	355	12	1072	18	355	12	1048	3	444	3	344	1.20	1.03	1.45	1.46	1.72	1.00	2.06	1.19	1.00	5.85	2260817	6096772
4	24	11	2	22	0	17	337	12	1057	17	337	12	1034	3	480	3	372	1.21	1.03	1.49	1.45	1.75	1.00	2.25	1.21	1.00	6.34	2227632	6070034
4	24	12	1.83	22	0	16	322	12	1042	16	322	12	1019	3	522	3	390	1.21	1.03	1.48	1.45	1.78	1.00	2.39	1.22	1.00	6.83	2204176	6055898
4	24	7	3.57	25	1.5	23	450	13	1167	23	450	13	1139	3	273	3	234	1.18	1.03	2.88	1.48	1.61	1.00	1.50	2.30	1.00	4.19	2482442	6442478
4	24	8	3.125	25	1.5	21	422	13	1142	21	422	12	1116	3	308	3	261	1.19	1.03	2.95	1.48	1.64	1.00	1.63	2.33	1.00	4.59	2425926	6356224
4	24	9	2.78	25	1.5	20	399	12	1119	20	399	12	1094	3	353	3	286	1.19	1.03	2.85	1.47	1.66	1.00	1.74	2.31	1.00	4.95	2373834	6271907
4	24	10	2.5	25	1.5	19	380	12	1097	19	380	12	1070	3	387	3	312	1.20	1.03	2.62	1.47	1.68	1.00	1.85	2.10	1.00	5.29	2329086	6195195
4	24	11	2.27	25	1.5	18	362	12	1079	18	362	12	1053	3	429	3	337	1.20	1.03	2.36	1.47	1.71	1.00	2.00	1.93	1.00	5.70	2290652	6146409
4	24	12	1.83	25	1.5	20	391	12	1108	20	391	12	1066	3	522	3	438	1.24	1.05	1.95	2.06	1.52	1.00	2.45	1.97	1.00	7.38	3410447	8400248
4	28	3	1.5	4.5	0	17	331	13	1209	17	331	13	1188	3	500	2	491	1.22	1.03	1.65	1.63	1.79	1.00	2.82	1.25	1.00	10.71	4047136	10239425
4	28	3	2	6	0.75	18	363	14	1243	18	363	13	1224	3	560	3	403	1.20	1.02	1.59	1.48	1.79	1.00	2.70	1.14	1.00	8.49	3712942	9523502
4	28	4	1.5	6	0.75	16	327	13	1205	16	327	13	1182	3	500	2	487	1.22	1.03	1.64	1.60	1.79	1.00	2.84	1.27	1.00	10.64	3945750	10049757
4	28	3	2.33	7	1.25	20	396	14	1274	20	396	14	1251	3	483	3	367	1.19	1.03	2.92	1.50	1.73	1.00	2.44	2.14	1.00	7.65	3852092	9739913
4	28	4	1.75	7	1.25	17	341	13	1218	17	341	13	1198	3	424	2	448	1.21	1.03	2.33	1.49	1.80	1.00	2.78	1.72	1.00	9.32	3685676	9502404
4	28	3	2.67	8	0	21	413	14	1292	21	413	14	1271	3	424	3	323	1.18	1.02	1.74	1.44	1.73	1.00	2.23	1.24	1.00	6.88	3708517	9424623
4	28	4	2	8	0	18	356	14	1235	18	356	13	1216	3	560	3	409	1.20	1.02	1.78	1.43	1.80	1.00	2.66	1.28	1.00	8.38	3551742	9206286
4	28	5	1.6	8	0	16	328	13	1208	16	328	13	1186	3	467	2	475	1.22	1.03	1.82	1.52	1.81	1.00	2.83	1.40	1.00	10.02	3739010	9646607
4	28	3	3.17	9.5	0.75	22	441	15	1321	22	441	14	1299	3	359	3	278	1.17	1.02	2.28	1.39	1.71	1.00	1.99	1.57	1.00	6.05	3646512	9255489
4	28	4	2.375	9.5	0.75	19	382	14	1259	19	382	14	1240	3	467	3	351	1.18	1.02	2.27	1.39	1.78	1.00	2.37	1.62	1.00	7.33	3478133	8997679
4	28	5	1.9	9.5	0.75	17	340	13	1219	17	340	13	1202	3	583	3	417	1.20	1.02	2.30	1.38	1.84	1.00	2.71	1.68	1.00	8.60	3388963	8906260
4	28	6	1.583	9.5	0.75	16	326	13	1205	16	326	13	1182	3	483	2	478	1.22	1.03	2.03	1.52	1.80	1.00	2.84	1.60	1.00	10.08	3723276	9616018
4	28	3	3.67	11	1.5	24	486	15	1365	24	486	15	1337	3	311	3	251	1.17	1.03	3.24	1.47	1.63	1.00	1.87	2.39	1.00	5.58	3972114	9862956
4	28	4	2.75	11	1.5	21	422	14	1302	21	422	14	1277	3	412	3	317	1.19	1.03	3.32	1.46	1.70	1.00	2.22	2.47	1.00	6.77	3791304	9581757

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	28	5	2.2	11	1.5	19	377	14	1256	19	377	14	1233	3	519	3	380	1.20	1.03	3.34	1.45	1.75	1.00	2.54	2.53	1.00	7.88	3661013	9388722
4	28	6	1.833	11	1.5	17	343	13	1220	17	343	13	1199	3	412	2	432	1.21	1.03	3.45	1.45	1.80	1.00	2.80	2.59	1.00	8.92	3562818	9249674
4	28	7	1.57	11	1.5	16	315	13	1193	16	315	13	1173	3	483	2	472	1.21	1.03	3.42	1.44	1.85	1.00	3.03	2.65	1.00	9.96	3490171	9167849
4	28	4	2.875	11.5	1.75	21	428	14	1308	21	428	14	1284	3	389	3	305	1.18	1.03	3.60	1.44	1.70	1.00	2.15	2.65	1.00	6.54	3747722	9483564
4	28	5	2.3	11.5	1.75	19	383	14	1261	19	383	14	1238	3	483	3	365	1.19	1.03	3.71	1.43	1.75	1.00	2.46	2.72	1.00	7.60	3619870	9290712
4	28	6	1.917	11.5	1.75	17	348	13	1226	17	348	13	1205	3	583	3	419	1.20	1.03	3.75	1.43	1.80	1.00	2.74	2.79	1.00	8.62	3521130	9157134
4	28	7	1.643	11.5	1.75	16	320	13	1198	16	320	13	1179	3	452	2	457	1.21	1.03	3.80	1.42	1.84	1.00	2.95	2.85	1.00	9.61	3445517	9065717
4	28	4	3.25	13	2.5	22	447	15	1326	22	447	14	1303	3	350	3	273	1.17	1.03	3.53	1.40	1.69	1.00	1.98	2.54	1.00	5.95	3666338	9285945
4	28	5	2.6	13	2.5	20	400	14	1279	20	400	14	1257	3	438	3	327	1.18	1.03	3.63	1.39	1.74	1.00	2.27	2.61	1.00	6.91	3538717	9095943
4	28	6	2.167	13	2.5	18	364	14	1243	18	364	13	1223	3	519	3	379	1.19	1.02	3.67	1.38	1.79	1.00	2.54	2.66	1.00	7.84	3441150	8962892
4	28	7	1.857	13	2.5	17	336	13	1213	17	336	13	1194	3	400	2	422	1.20	1.03	3.71	1.38	1.84	1.00	2.76	2.72	1.00	8.71	3366408	8861742
4	28	4	3.625	14.5	3.25	24	480	15	1359	24	480	15	1331	3	311	3	253	1.17	1.03	3.55	1.45	1.64	1.00	1.88	2.63	1.00	5.60	3901184	9725077
4	28	5	2.9	14.5	3.25	22	431	14	1308	22	431	14	1283	3	389	3	302	1.18	1.03	3.66	1.44	1.68	1.00	2.15	2.70	1.00	6.49	3756028	9488678
4	28	6	2.417	14.5	3.25	20	393	14	1272	20	393	14	1248	3	467	3	351	1.19	1.03	3.70	1.44	1.73	1.00	2.41	2.76	1.00	7.36	3657314	9352471
4	28	7	2.07	14.5	3.25	18	363	14	1241	18	363	13	1219	3	538	3	398	1.20	1.03	3.65	1.43	1.77	1.00	2.64	2.81	1.00	8.18	3572581	9231833
4	28	4	2.875	11.5	0	21	428	14	1308	21	428	14	1284	3	389	3	305	1.18	1.03	1.70	1.44	1.70	1.00	2.15	1.25	1.00	6.54	3747722	9483564
4	28	5	2.3	11.5	0	19	383	14	1261	19	383	14	1238	3	483	3	365	1.19	1.03	1.75	1.43	1.75	1.00	2.46	1.29	1.00	7.60	3619870	9290712
4	28	6	1.917	11.5	0	17	348	13	1226	17	348	13	1205	3	583	3	419	1.20	1.03	1.77	1.43	1.80	1.00	2.74	1.32	1.00	8.62	3521130	9157134
4	28	7	1.643	11.5	0	16	320	13	1198	16	320	13	1179	3	452	2	457	1.21	1.03	1.79	1.42	1.84	1.00	2.95	1.34	1.00	9.61	3445517	9065717
4	28	4	3.25	13	0.75	22	447	15	1326	22	447	14	1303	3	350	3	273	1.17	1.03	2.17	1.40	1.69	1.00	1.98	1.57	1.00	5.95	3666338	9285945
4	28	5	2.6	13	0.75	20	400	14	1279	20	400	14	1257	3	438	3	327	1.18	1.03	2.24	1.39	1.74	1.00	2.27	1.61	1.00	6.91	3538717	9095943
4	28	6	2.167	13	0.75	18	364	14	1243	18	364	13	1223	3	519	3	379	1.19	1.02	2.26	1.38	1.79	1.00	2.54	1.64	1.00	7.84	3441150	8962892
4	28	7	1.857	13	0.75	17	336	13	1213	17	336	13	1194	3	400	2	422	1.20	1.03	2.29	1.38	1.84	1.00	2.76	1.68	1.00	8.71	3366408	8861742
4	28	4	3.625	14.5	1.5	24	480	15	1359	24	480	15	1331	3	311	3	253	1.17	1.03	3.24	1.45	1.64	1.00	1.88	2.40	1.00	5.60	3901184	9725077
4	28	5	2.9	14.5	1.5	22	431	14	1308	22	431	14	1283	3	389	3	302	1.18	1.03	3.33	1.44	1.68	1.00	2.15	2.46	1.00	6.49	3756028	9488678
4	28	6	2.417	14.5	1.5	20	393	14	1272	20	393	14	1248	3	467	3	351	1.19	1.03	2.93	1.44	1.73	1.00	2.41	2.18	1.00	7.36	3657314	9352471
4	28	7	2.07	14.5	1.5	18	363	14	1241	18	363	13	1219	3	538	3	398	1.20	1.03	2.48	1.43	1.77	1.00	2.64	1.90	1.00	8.18	3572581	9231833
4	28	5	3	15	0	22	436	14	1313	22	436	14	1287	3	378	3	293	1.18	1.03	1.69	1.43	1.68	1.00	2.10	1.24	1.00	6.31	3729912	9427038
4	28	6	2.5	15	0	20	398	14	1275	20	398	14	1251	3	452	3	340	1.19	1.03	1.70	1.42	1.73	1.00	2.34	1.26	1.00	7.15	3624280	9270361
4	28	7	2.14	15	0	18	367	14	1246	18	367	13	1224	3	519	3	386	1.20	1.03	1.73	1.42	1.77	1.00	2.59	1.29	1.00	7.98	3547743	9176832
4	28	8	1.875	15	0	17	342	13	1221	17	342	13	1200	3	583	3	423	1.20	1.03	1.71	1.41	1.81	1.00	2.78	1.31	1.00	8.74	3476249	9081055
4	28	9	1.67	15	0	16	326	13	1206	16	326	13	1184	3	452	2	456	1.21	1.03	1.74	1.45	1.82	1.00	2.83	1.36	1.00	9.57	3537039	9244195
4	28	5	3.3	16.5	0.75	22	449	15	1329	22	449	14	1304	3	341	3	269	1.17	1.03	2.17	1.39	1.69	1.00	1.97	1.56	1.00	5.88	3655399	9262172
4	28	6	2.75	16.5	0.75	21	410	14	1290	21	410	14	1267	3	412	3	312	1.18	1.03	2.19	1.38	1.73	1.00	2.20	1.59	1.00	6.65	3546883	9098272
4	28	7	2.357	16.5	0.75	19	379	14	1259	19	379	14	1238	3	483	3	353	1.19	1.03	2.22	1.38	1.77	1.00	2.42	1.62	1.00	7.39	3464549	8983648
4	28	8	2.06	16.5	0.75	18	354	14	1232	18	354	13	1212	3	538	3	394	1.20	1.03	2.24	1.38	1.80	1.00	2.62	1.65	1.00	8.10	3399433	8893533
4	28	9	1.83	16.5	0.75	17	333	13	1211	17	333	13	1192	3	412	2	426	1.20	1.03	2.21	1.38	1.83	1.00	2.77	1.66	1.00	8.81	3359473	8857292
4	28	5	3.6	18	1.5	24	477	15	1354	24	477	15	1326	3	318	3	253	1.17	1.03	3.21	1.44	1.64	1.00	1.89	2.38	1.00	5.60	3854969	9628927
4	28	6	3	18	1.5	22	436	14	1315	22	436	14	1289	3	378	3	294	1.18	1.03	3.24	1.43	1.68	1.00	2.11	2.43	1.00	6.33	3743917	9461143
4	28	7	2.57	18	1.5	20	404	14	1282	20	404	14	1257	3	438	3	333	1.19	1.03	3.03	1.43	1.71	1.00	2.32	2.29	1.00	7.03	3655016	9326104
4	28	8	2.25	18	1.5	19	377	14	1256	19	377	14	1233	3	500	3	371	1.20	1.03	2.69	1.42	1.75	1.00	2.52	2.03	1.00	7.70	3579657	9222298
4	28	9	2	18	1.5	18	355	14	1232	18	355	13	1210	3	560	3	408	1.20	1.03	2.43	1.42	1.78	1.00	2.70	1.83	1.00	8.34	3515456	9127872
4	28	6	3.08	18.5	0	22	440	14	1319	22	440	14	1293	3	368	3	287	1.18	1.03	1.64	1.42	1.68	1.00	2.07	1.23	1.00	6.21	3726048	9418581
4	28	7	2.64	18.5	0	20	408	14	1285	20	408	14	1261	3	424	3	325	1.19	1.03	1.66	1.42	1.71	1.00	2.27	1.25	1.00	6.87	3632222	9269822
4	28	8	2.32	18.5	0	19	381	14	1261	19	381	14	1238	3	483	3	361	1.19	1.03	1.69	1.41	1.75	1.00	2.47	1.27	1.00	7.53	3561276	9179885
4	28	9	2.06	18.5	0	18	358	14	1238	18	358	13	1216	3	538	3	398	1.20	1.03	1.67	1.41	1.78	1.00	2.66	1.29	1.00	8.18	3497678	9094180
4	28	10	1.85	18.5	0	17	339	13	1216	17	339	13	1194	3	400	2	425	1.21	1.03	1.70	1.41	1.81	1.00	2.79	1.31	1.00	8.78	3443226	9013588
4	28	6	3.58	21.5	1.5	24	474	15	1354	24	474	15	1325	3	318	3	254	1.17	1.03	3.19	1.43	1.64	1.00	1.91	2.37	1.00	5.63	3838026	9605437
4	28	7	3.07	21.5	1.5	22	440	14	1319	22	440	14	1292	3	368	3	288	1.18	1.03	3.23	1.43	1.67	1.00	2.09	2.41	1.00	6.23	3738185	9443540
4	28	8	2.69	21.5	1.5	21	412	14	1290	21	412	14	1265	3	424	3	320	1.19	1.03	3.16	1.42	1.70	1.00	2.26	2.37	1.00	6.80	3652654	9308037
4	28	9	2.39	21.5	1.5	19	388	14	1266	19	388	14	1242	3	467	3	352	1.19	1.03	2.78	1.42	1.73	1.00	2.43	2.13	1.00	7.38	3587094	9215186
4	28	10	2.15	21.5	1.5	18	367	14	1247	18	367	13	1224	3	519	3	384	1.20	1.03	2.55	1.42	1.76	1.00	2.60	1.95	1.00	7.95	3537680	9158311
4	28	7	3.14	22	0	22	443	15	1323	22	443	14	1297	3	359	3	282	1.18	1.03	1.64	1.42	1.67	1.00	2.06	1.22	1.00	6.13	3720958	9406379
4	28	8	2.75	22	0	21	415	14	1294	21	415	14	1269	3	412	3	314	1.19	1.03	1.66	1.41	1.71	1.00	2.22	1.24	1.00	6.69	3640257	9280377
4	28	9	2.44	22	0	20	391	14	1270	20	391	14	1246	3	467	3	346	1.19	1.03	1.64	1.41	1.73	1.00	2.39	1.25	1.00	7.26	3581377	9200075
4	28	10	2.2	22	0	19	370	14	1250	19	370	13	1227	3	519	3	376	1.20	1.03	1.68	1.41	1.76	1.00	2.56	1.27	1.00	7.80	3519649	9115253
4	28	11	2	22	0	18	352	14	1231	18	352	13	1209	3	560	3	407	1.20	1.03	1.66	1.40	1.79	1.00	2.71	1.29	1.00	8.33	3466170	9038797
4	28	12	1.83	22	0	17	336	13	1216	17	336	13	1195	3	412	2	428	1.21	1.03	1.69	1.40	1.81	1.00	2.81	1.30	1.00	8.88	3438228	9019275
4	28	7	3.57	25	1.5	24	473	15	1350	24	473	15	1322	3	318	3	254	1.17	1.03	3.17	1.42	1.64	1.00	1.90	2.36	1.00	5.61	3808586	9538602
4	28	8	3.125	25	1.5	22	443	15	1321	22	443	14	1294	3	359	3	283	1.18	1.03	3.22	1.42	1.67	1.00	2.06	2.40	1.00	6.14	3724961	9409381
4	28	9	2.78	25	1.5	21	418	14	1296	21	418	14	1271	3	412	3	311	1.19	1.03	3.18	1.42	1.70	1.00	2.21	2.43	1.00	6.64	3654439	9302036
4	28	10	2.5	25	1.5	20	396	14	1275	20	396	14	1251	3	452	3	339	1.19	1.03	2.91	1.41	1.72	1.00	2.36	2.21	1.00	7.15	3597242	9223873

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
4	28	11	2.27	25	1.5	19	377	14	1257	19	377	14	1233	3	500	3	367	1.20	1.03	2.63	1.41	1.75	1.00	2.51	2.04	1.00	7.65	3555312	9175166
4	28	12	1.83	25	1.5	20	407	14	1284	20	407	14	1243	3	412	2	480	1.24	1.05	2.07	1.95	1.56	1.00	3.10	2.02	1.00	9.90	5210508	12322659
4	32	3	1.5	4.5	0	17	340	15	1380	17	340	15	1354	3	571	2	539	1.22	1.03	1.89	1.58	1.88	1.00	3.51	1.34	1.00	13.95	5974412	14565591
4	32	3	2	6	0.75	19	376	16	1416	19	376	15	1391	3	432	2	441	1.20	1.03	1.78	1.44	1.85	1.00	3.34	1.22	1.00	11.02	5479030	13567973
4	32	4	1.5	6	0.75	17	336	15	1374	17	336	15	1346	3	571	2	535	1.22	1.03	1.84	1.54	1.87	1.00	3.53	1.36	1.00	13.83	5815673	14272364
4	32	3	2.33	7	1.25	21	412	16	1449	21	412	16	1420	3	552	3	401	1.19	1.03	3.16	1.46	1.78	1.00	3.01	2.18	1.00	9.90	5666323	13843272
4	32	4	1.75	7	1.25	18	352	15	1389	18	352	15	1363	3	485	2	491	1.21	1.03	2.59	1.45	1.87	1.00	3.45	1.83	1.00	12.12	5450100	13550868
4	32	3	2.67	8	0	22	431	16	1468	22	431	16	1440	3	485	3	353	1.18	1.03	1.96	1.40	1.78	1.00	2.74	1.32	1.00	8.88	5453354	13401130
4	32	4	2	8	0	18	369	15	1406	18	369	15	1381	3	432	2	447	1.20	1.03	2.00	1.39	1.86	1.00	3.29	1.37	1.00	10.87	5244270	13120025
4	32	5	1.6	8	0	17	338	15	1376	17	338	15	1348	3	533	2	520	1.22	1.03	2.05	1.47	1.88	1.00	3.51	1.50	1.00	13.00	5515277	13709790
4	32	3	3.17	9.5	0.75	23	461	16	1500	23	461	16	1471	3	410	3	303	1.17	1.03	2.47	1.36	1.76	1.00	1.80	1.64	1.00	7.80	5350617	13155319
4	32	4	2.375	9.5	0.75	20	396	16	1436	20	396	16	1411	3	533	3	384	1.19	1.03	2.51	1.35	1.84	1.00	2.94	1.70	1.00	9.54	5138197	12865333
4	32	5	1.9	9.5	0.75	18	351	15	1391	18	351	15	1367	3	457	2	456	1.20	1.03	2.59	1.35	1.91	1.00	3.37	1.76	1.00	11.19	5020780	12740439
4	32	6	1.583	9.5	0.75	17	335	15	1374	17	335	15	1346	3	552	2	523	1.22	1.03	2.28	1.47	1.88	1.00	3.54	1.70	1.00	13.11	5489998	13673931
4	32	3	3.67	11	1.5	25	509	17	1549	25	509	17	1513	3	356	3	274	1.18	1.03	3.40	1.43	1.68	1.00	1.69	2.37	1.00	7.18	5811810	13991020
4	32	4	2.75	11	1.5	22	440	16	1480	22	440	16	1448	3	471	3	346	1.19	1.03	3.53	1.42	1.75	1.00	2.00	2.45	1.00	8.75	5568537	13619859
4	32	5	2.2	11	1.5	20	391	16	1430	20	391	15	1401	3	593	3	416	1.20	1.03	3.54	1.41	1.81	1.00	3.15	2.53	1.00	10.22	5392411	13367449
4	32	6	1.833	11	1.5	18	354	15	1391	18	354	15	1364	3	471	2	472	1.21	1.03	3.63	1.41	1.87	1.00	3.48	2.59	1.00	11.60	5262259	13187974
4	32	7	1.57	11	1.5	16	323	15	1363	16	323	15	1338	3	552	2	517	1.22	1.03	3.68	1.40	1.93	1.00	3.77	2.65	1.00	13.00	5173089	13106791
4	32	4	2.875	11.5	1.75	22	447	16	1485	22	447	16	1454	3	444	3	332	1.18	1.03	3.78	1.40	1.74	1.00	1.94	2.61	1.00	8.43	5498022	13464410
4	32	5	2.3	11.5	1.75	20	397	16	1437	20	397	15	1408	3	552	3	399	1.20	1.03	3.80	1.40	1.81	1.00	3.05	2.69	1.00	9.87	5333978	13245410
4	32	6	1.917	11.5	1.75	18	360	15	1397	18	360	15	1370	3	457	2	458	1.20	1.03	3.90	1.39	1.87	1.00	3.39	2.75	1.00	11.19	5203678	13061177
4	32	7	1.643	11.5	1.75	16	329	15	1368	16	329	15	1343	3	516	2	501	1.21	1.03	3.94	1.38	1.92	1.00	3.67	2.82	1.00	12.52	5108981	12963500
4	32	4	3.25	13	2.5	23	467	17	1507	23	467	16	1476	3	400	3	297	1.18	1.03	3.71	1.36	1.74	1.00	1.79	2.50	1.00	7.68	5382486	13211830
4	32	5	2.6	13	2.5	21	416	16	1456	21	416	16	1427	3	500	3	357	1.19	1.03	3.72	1.35	1.80	1.00	2.81	2.57	1.00	8.96	5212207	12969182
4	32	6	2.167	13	2.5	19	377	16	1417	19	377	15	1391	3	593	3	414	1.19	1.03	3.82	1.35	1.85	1.00	3.15	2.63	1.00	10.18	5084421	12802253
4	32	7	1.857	13	2.5	17	346	15	1385	17	346	15	1360	3	457	2	462	1.20	1.03	3.86	1.35	1.91	1.00	3.43	2.69	1.00	11.35	4983984	12676953
4	32	4	3.625	14.5	3.25	25	503	17	1541	25	503	17	1505	3	356	3	275	1.18	1.03	3.69	1.41	1.68	1.00	1.70	2.58	1.00	7.20	5704836	13783261
4	32	5	2.9	14.5	3.25	22	449	16	1489	22	449	16	1456	3	444	3	330	1.19	1.03	3.78	1.40	1.73	1.00	1.95	2.65	1.00	8.40	5522820	13516147
4	32	6	2.417	14.5	3.25	20	408	16	1448	20	408	16	1417	3	533	3	383	1.20	1.03	3.80	1.40	1.78	1.00	2.98	2.71	1.00	9.53	5378406	13309593
4	32	7	2.07	14.5	3.25	19	376	16	1413	19	376	15	1384	3	410	2	435	1.20	1.03	3.82	1.39	1.83	1.00	3.28	2.77	1.00	10.61	5265289	13145154
4	32	4	2.875	11.5	0	22	447	16	1485	22	447	16	1454	3	444	3	332	1.18	1.03	1.94	1.40	1.74	1.00	1.94	1.34	1.00	8.43	5498022	13464410
4	32	5	2.3	11.5	0	20	397	16	1437	20	397	15	1408	3	552	3	399	1.20	1.03	1.95	1.40	1.81	1.00	3.05	1.38	1.00	9.87	5333978	13245410
4	32	6	1.917	11.5	0	18	360	15	1397	18	360	15	1370	3	457	2	458	1.20	1.03	2.00	1.39	1.87	1.00	3.39	1.41	1.00	11.19	5203678	13061177
4	32	7	1.643	11.5	0	16	329	15	1368	16	329	15	1343	3	516	2	501	1.21	1.03	2.02	1.38	1.92	1.00	3.67	1.44	1.00	12.52	5108981	12963500
4	32	4	3.25	13	0.75	23	467	17	1507	23	467	16	1476	3	400	3	297	1.18	1.03	2.43	1.36	1.74	1.00	1.79	1.64	1.00	7.68	5382486	13211830
4	32	5	2.6	13	0.75	21	416	16	1456	21	416	16	1427	3	500	3	357	1.19	1.03	2.44	1.35	1.80	1.00	2.81	1.68	1.00	8.96	5212207	12969182
4	32	6	2.167	13	0.75	19	377	16	1417	19	377	15	1391	3	593	3	414	1.19	1.03	2.50	1.35	1.85	1.00	3.15	1.72	1.00	10.18	5084421	12802253
4	32	7	1.857	13	0.75	17	346	15	1385	17	346	15	1360	3	457	2	462	1.20	1.03	2.53	1.35	1.91	1.00	3.43	1.76	1.00	11.35	4983984	12676953
4	32	4	3.625	14.5	1.5	25	503	17	1541	25	503	17	1505	3	356	3	275	1.18	1.03	3.40	1.41	1.68	1.00	1.70	2.38	1.00	7.20	5704836	13783261
4	32	5	2.9	14.5	1.5	22	449	16	1489	22	449	16	1456	3	444	3	330	1.19	1.03	3.48	1.40	1.73	1.00	1.95	2.44	1.00	8.40	5522820	13516147
4	32	6	2.417	14.5	1.5	20	408	16	1448	20	408	16	1417	3	533	3	383	1.20	1.03	3.20	1.40	1.78	1.00	2.98	2.28	1.00	9.53	5378406	13309593
4	32	7	2.07	14.5	1.5	19	376	16	1413	19	376	15	1384	3	410	2	435	1.20	1.03	2.76	1.39	1.83	1.00	3.28	2.00	1.00	10.61	5265289	13145154
4	32	5	3	15	0	23	455	16	1492	23	455	16	1459	3	432	3	320	1.18	1.03	1.89	1.39	1.73	1.00	1.89	1.32	1.00	8.15	5471358	13394502
4	32	6	2.5	15	0	21	413	16	1453	21	413	16	1422	3	516	3	371	1.19	1.03	1.90	1.39	1.78	1.00	2.91	1.35	1.00	9.28	5337070	13219447
4	32	7	2.14	15	0	19	380	16	1420	19	380	15	1391	3	593	3	422	1.20	1.03	1.92	1.38	1.83	1.00	3.21	1.38	1.00	10.35	5233206	13085906
4	32	8	1.875	15	0	18	353	15	1392	18	353	15	1365	3	457	2	463	1.21	1.03	1.94	1.38	1.87	1.00	3.45	1.41	1.00	11.36	5135388	12954302
4	32	9	1.67	15	0	17	336	15	1373	17	336	15	1346	3	516	2	499	1.22	1.03	1.97	1.41	1.89	1.00	3.51	1.46	1.00	12.41	5214695	13140748
4	32	5	3.3	16.5	0.75	23	469	17	1509	23	469	16	1477	3	390	3	293	1.18	1.03	2.38	1.35	1.73	1.00	1.78	1.63	1.00	7.58	5352483	13149392
4	32	6	2.75	16.5	0.75	21	427	16	1467	21	427	16	1437	3	471	3	340	1.18	1.03	2.39	1.35	1.78	1.00	2.72	1.67	1.00	8.60	5214289	12951657
4	32	7	2.357	16.5	0.75	20	394	16	1431	20	394	15	1404	3	552	3	386	1.19	1.03	2.45	1.34	1.82	1.00	2.99	1.70	1.00	9.55	5095757	12775261
4	32	8	2.06	16.5	0.75	18	366	15	1404	18	366	15	1378	3	421	2	431	1.20	1.03	2.48	1.34	1.87	1.00	3.25	1.73	1.00	10.52	5016172	12686096
4	32	9	1.83	16.5	0.75	17	343	15	1382	17	343	15	1357	3	471	2	465	1.20	1.03	2.45	1.34	1.90	1.00	3.45	1.75	1.00	11.47	4971900	12661060
4	32	5	3.6	18	1.5	25	499	17	1537	25	499	17	1501	3	364	3	276	1.18	1.03	3.37	1.40	1.68	1.00	1.71	2.36	1.00	7.22	5639540	13662054
4	32	6	3	18	1.5	23	455	16	1494	23	455	16	1461	3	432	3	320	1.19	1.03	3.39	1.39	1.73	1.00	1.91	2.41	1.00	8.18	5489944	13438381
4	32	7	2.57	18	1.5	21	420	16	1459	21	420	16	1427	3	500	3	363	1.19	1.03	3.32	1.39	1.77	1.00	2.87	2.39	1.00	9.10	5373478	13272934
4	32	8	2.25	18	1.5	20	391	16	1430	20	391	15	1400	3	571	3	405	1.20	1.03	2.94	1.39	1.81	1.00	3.12	2.13	1.00	9.99	5272580	13135467
4	32	9	2	18	1.5	18	367	15	1404	18	367	15	1376	3	432	2	446	1.20	1.03	2.64	1.38	1.84	1.00	3.36	1.92	1.00	10.84	5186701	13013120
4	32	6	3.08	18.5	0	23	460	16	1497	23	460	16	1463	3	421	3	313	1.18	1.03	1.84	1.39	1.72	1.00	1.87	1.31	1.00	8.00	5461676	13367488
4	32	7	2.64	18.5	0	21	424	16	1464	21	424	16	1432	3	485	3	355	1.19	1.03	1.86	1.38	1.77	1.00	2.82	1.33	1.00	8.92	5348942	13221528
4	32	8	2.32	18.5	0	20	396	16	1434	20	396	15	1404	3	552	3	394	1.20	1.03	1.88	1.38	1.80	1.00	3.05	1.36	1.00	9.74	5240844	13058150
4	32	9	2.06	18.5	0	19	371	15	1409	19	371	15	1381	3	421	2	434	1.20	1.03	1.90	1.37	1.84	1.00	3.29	1.38	1.00	10.59	5156380	12948346

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
4	32	10	1.85	18.5	0	17	349	15	1388	17	349	15	1361	3	457	2	465	1.21	1.03	1.93	1.37	1.88	1.00	3.48	1.40	1.00	11.44	5088644	12873390
4	32	6	3.58	21.5	1.5	25	496	17	1536	25	496	16	1500	3	364	3	277	1.18	1.03	3.35	1.39	1.68	1.00	1.72	2.35	1.00	7.24	5609372	13613486
4	32	7	3.07	21.5	1.5	23	459	16	1499	23	459	16	1465	3	421	3	314	1.19	1.03	3.38	1.39	1.72	1.00	1.89	2.40	1.00	8.04	5480372	13416953
4	32	8	2.69	21.5	1.5	21	429	16	1467	21	429	16	1435	3	485	3	349	1.19	1.03	3.41	1.38	1.75	1.00	2.79	2.43	1.00	8.79	5366353	13238388
4	32	9	2.39	21.5	1.5	20	403	16	1441	20	403	15	1410	3	533	3	385	1.20	1.03	3.12	1.38	1.79	1.00	3.00	2.23	1.00	9.55	5279278	13118664
4	32	10	2.15	21.5	1.5	19	380	16	1420	19	380	15	1391	3	593	3	420	1.20	1.03	2.79	1.38	1.82	1.00	3.22	2.04	1.00	10.31	5208865	13038572
4	32	7	3.14	22	0	23	463	17	1502	23	463	16	1468	3	410	3	307	1.18	1.03	1.84	1.38	1.72	1.00	1.86	1.30	1.00	7.90	5454688	13356464
4	32	8	2.75	22	0	22	432	16	1471	22	432	16	1439	3	471	3	342	1.19	1.03	1.86	1.37	1.75	1.00	2.75	1.32	1.00	8.65	5340238	13186683
4	32	9	2.44	22	0	20	406	16	1446	20	406	16	1415	3	533	3	378	1.20	1.03	1.88	1.38	1.79	1.00	2.97	1.34	1.00	9.42	5272232	13106906
4	32	10	2.2	22	0	19	384	16	1421	19	384	15	1392	3	593	3	411	1.20	1.03	1.90	1.37	1.82	1.00	3.16	1.36	1.00	10.09	5174157	12950632
4	32	11	2	22	0	18	364	15	1403	18	364	15	1374	3	432	2	445	1.20	1.03	1.90	1.37	1.85	1.00	3.36	1.38	1.00	10.82	5119491	12897044
4	32	12	1.83	22	0	17	347	15	1385	17	347	15	1357	3	471	2	468	1.21	1.03	1.92	1.37	1.88	1.00	3.48	1.39	1.00	11.52	5076367	12850178
4	32	7	3.57	25	1.5	25	495	17	1532	25	495	16	1496	3	364	3	277	1.18	1.04	3.33	1.39	1.68	1.00	1.72	2.34	1.00	7.22	5571696	13530296
4	32	8	3.125	25	1.5	23	462	17	1502	23	462	16	1468	3	410	3	309	1.18	1.03	3.37	1.38	1.72	1.00	1.87	2.38	1.00	7.93	5463395	13378866
4	32	9	2.78	25	1.5	22	435	16	1475	22	435	16	1442	3	471	3	340	1.19	1.03	3.34	1.38	1.75	1.00	2.74	2.42	1.00	8.60	5371634	13245577
4	32	10	2.5	25	1.5	21	412	16	1450	21	412	16	1418	3	516	3	370	1.19	1.03	3.19	1.38	1.78	1.00	2.92	2.32	1.00	9.24	5290466	13122526
4	32	11	2.27	25	1.5	20	391	16	1431	20	391	15	1401	3	571	3	401	1.20	1.03	2.95	1.38	1.80	1.00	3.11	2.13	1.00	9.91	5234552	13064628
4	32	12	1.83	25	1.5	21	421	16	1461	21	421	16	1410	3	471	2	528	1.24	1.05	2.19	1.87	1.63	1.00	3.82	1.99	1.00	12.82	7598691	17346109
4	36	3	1.5	4.5	0	17	348	17	1548	17	348	17	1514	3	327	1	590	1.22	1.04	2.09	1.53	1.95	1.00	3.11	1.44	1.00	17.56	8451908	19899135
4	36	3	2	6	0.75	19	388	17	1585	19	388	17	1552	3	486	2	481	1.20	1.03	2.01	1.41	1.93	1.00	2.94	1.31	1.00	13.81	7735777	18541003
4	36	4	1.5	6	0.75	17	343	17	1543	17	343	17	1507	3	327	1	585	1.23	1.04	2.09	1.50	1.95	1.00	3.14	1.46	1.00	17.44	8233541	19529840
4	36	3	2.33	7	1.25	21	426	18	1624	21	426	17	1585	3	419	2	438	1.20	1.04	3.35	1.43	1.85	1.00	2.67	2.24	1.00	12.44	8005093	18961718
4	36	4	1.75	7	1.25	18	361	17	1560	18	361	17	1525	3	545	2	537	1.21	1.04	2.83	1.42	1.96	1.00	3.06	1.92	1.00	15.28	7735472	18607947
4	36	3	2.67	8	0	22	446	18	1646	22	446	18	1608	3	545	3	385	1.19	1.04	2.17	1.37	1.84	1.00	2.43	1.41	1.00	11.15	7701684	18382128
4	36	4	2	8	0	19	380	17	1577	19	380	17	1543	3	486	2	488	1.20	1.04	2.23	1.36	1.95	1.00	2.90	1.47	1.00	13.66	7429817	18000241
4	36	5	1.6	8	0	17	346	17	1543	17	346	17	1508	3	305	1	569	1.22	1.04	2.28	1.43	1.97	1.00	3.11	1.60	1.00	16.35	7798439	18739954
4	36	3	3.17	9.5	0.75	24	479	18	1678	24	479	18	1640	3	462	3	330	1.18	1.04	2.73	1.33	1.81	1.00	2.18	1.73	1.00	9.77	7533353	18005275
4	36	4	2.375	9.5	0.75	21	410	18	1607	21	410	17	1573	3	409	2	418	1.19	1.03	2.77	1.32	1.91	1.00	2.60	1.79	1.00	11.95	7258597	17616422
4	36	5	1.9	9.5	0.75	18	361	17	1559	18	361	17	1527	3	514	2	497	1.20	1.03	2.83	1.32	1.99	1.00	2.97	1.86	1.00	14.06	7112054	17466858
4	36	6	1.583	9.5	0.75	17	343	17	1540	17	343	17	1504	3	310	1	571	1.22	1.04	2.53	1.43	1.96	1.00	3.13	1.78	1.00	16.46	7759035	18676417
4	36	3	3.67	11	1.5	27	531	19	1728	27	531	18	1681	3	400	3	297	1.18	1.04	3.61	1.40	1.72	1.00	2.03	2.40	1.00	8.94	8138045	19045940
4	36	4	2.75	11	1.5	23	457	18	1654	23	457	18	1611	3	529	3	377	1.19	1.04	3.71	1.39	1.81	1.00	2.42	2.49	1.00	10.93	7831162	18585733
4	36	5	2.2	11	1.5	20	404	18	1601	20	404	17	1563	3	439	2	453	1.20	1.04	3.78	1.38	1.88	1.00	2.78	2.57	1.00	12.80	7609777	18278000
4	36	6	1.833	11	1.5	18	363	17	1562	18	363	17	1526	3	529	2	516	1.21	1.04	3.86	1.37	1.96	1.00	3.09	2.64	1.00	14.63	7461508	18108740
4	36	7	1.57	11	1.5	17	330	17	1530	17	330	16	1497	3	310	1	565	1.22	1.04	3.89	1.37	2.01	1.00	3.34	2.70	1.00	16.38	7343752	17981415
4	36	4	2.875	11.5	1.75	23	464	18	1662	23	464	18	1620	3	500	3	362	1.19	1.04	3.95	1.37	1.81	1.00	2.35	2.63	1.00	10.56	7747343	18424326
4	36	5	2.3	11.5	1.75	21	410	18	1610	21	410	17	1572	3	419	2	435	1.20	1.04	4.02	1.36	1.88	1.00	2.70	2.71	1.00	12.38	7533033	18141396
4	36	6	1.917	11.5	1.75	18	369	17	1569	18	369	17	1534	3	514	2	500	1.21	1.04	4.11	1.36	1.95	1.00	3.01	2.78	1.00	14.11	7369961	17933347
4	36	7	1.643	11.5	1.75	17	336	17	1536	17	336	17	1504	3	581	2	547	1.21	1.04	4.14	1.35	2.01	1.00	3.25	2.85	1.00	15.78	7244629	17786201
4	36	4	3.25	13	2.5	24	486	19	1683	24	486	18	1642	3	450	3	323	1.18	1.04	3.87	1.33	1.79	1.00	2.16	2.51	1.00	9.58	7558347	18030372
4	36	5	2.6	13	2.5	22	431	18	1629	22	431	17	1591	3	562	3	388	1.19	1.04	3.94	1.32	1.86	1.00	2.48	2.59	1.00	11.22	7346558	17740792
4	36	6	2.167	13	2.5	19	389	17	1587	19	389	17	1552	3	450	2	451	1.20	1.04	4.02	1.32	1.93	1.00	2.78	2.66	1.00	12.77	7185991	17534889
4	36	7	1.857	13	2.5	18	355	17	1553	18	355	17	1521	3	514	2	503	1.21	1.04	4.05	1.31	1.99	1.00	3.04	2.72	1.00	14.28	7056499	17380616
4	36	4	3.625	14.5	3.25	26	524	19	1721	26	524	18	1674	3	400	3	299	1.18	1.04	3.88	1.38	1.73	1.00	2.05	2.59	1.00	8.98	7997243	18793158
4	36	5	2.9	14.5	3.25	23	466	18	1665	23	466	18	1622	3	500	3	359	1.19	1.04	3.95	1.37	1.79	1.00	2.36	2.66	1.00	10.50	7763118	18455357
4	36	6	2.417	14.5	3.25	21	422	18	1621	21	422	17	1581	3	400	2	417	1.20	1.04	3.96	1.37	1.85	1.00	2.64	2.73	1.00	11.95	7583167	18203804
4	36	7	2.07	14.5	3.25	19	387	17	1585	19	387	17	1547	3	462	2	474	1.21	1.04	4.05	1.36	1.91	1.00	2.90	2.79	1.00	13.34	7448033	18023608
4	36	4	2.875	11.5	0	23	464	18	1662	23	464	18	1620	3	500	3	362	1.19	1.04	2.15	1.37	1.81	1.00	2.35	1.43	1.00	10.56	7747343	18424326
4	36	5	2.3	11.5	0	21	410	18	1610	21	410	17	1572	3	419	2	435	1.20	1.04	2.19	1.36	1.88	1.00	2.70	1.47	1.00	12.38	7533033	18141396
4	36	6	1.917	11.5	0	18	369	17	1569	18	369	17	1534	3	514	2	500	1.21	1.04	2.24	1.36	1.95	1.00	3.01	1.51	1.00	14.11	7369961	17933347
4	36	7	1.643	11.5	0	17	336	17	1536	17	336	17	1504	3	581	2	547	1.21	1.04	2.25	1.35	2.01	1.00	3.25	1.55	1.00	15.78	7244629	17786201
4	36	4	3.25	13	0.75	24	486	19	1683	24	486	18	1642	3	450	3	323	1.18	1.04	2.65	1.33	1.79	1.00	2.16	1.72	1.00	9.58	7558347	18030372
4	36	5	2.6	13	0.75	22	431	18	1629	22	431	17	1591	3	562	3	388	1.19	1.04	2.70	1.32	1.86	1.00	2.48	1.77	1.00	11.22	7346558	17740792
4	36	6	2.167	13	0.75	19	389	17	1587	19	389	17	1552	3	450	2	451	1.20	1.04	2.75	1.32	1.93	1.00	2.78	1.82	1.00	12.77	7185991	17534889
4	36	7	1.857	13	0.75	18	355	17	1553	18	355	17	1521	3	514	2	503	1.21	1.04	2.77	1.31	1.99	1.00	3.04	1.86	1.00	14.28	7056499	17380616
4	36	4	3.625	14.5	1.5	26	524	19	1721	26	524	18	1674	3	400	3	299	1.18	1.04	3.61	1.38	1.73	1.00	2.05	2.41	1.00	8.98	7997243	18793158
4	36	5	2.9	14.5	1.5	23	466	18	1665	23	466	18	1622	3	500	3	359	1.19	1.04	3.67	1.37	1.79	1.00	2.36	2.48	1.00	10.50	7763118	18455357
4	36	6	2.417	14.5	1.5	21	422	18	1621	21	422	17	1581	3	400	2	417	1.20	1.04	3.49	1.37	1.85	1.00	2.64	2.41	1.00	11.95	7583167	18203804
4	36	7	2.07	14.5	1.5	19	387	17	1585	19	387	17	1547	3	462	2	474	1.21	1.04	3.06	1.36	1.91	1.00	2.90	2.11	1.00	13.34	7448033	18023608
4	36	5	3	15	0	24	472	18	1670	24	472	18	1627	3	486	3	348	1.19	1.04	2.10	1.36	1.79	1.00	2.30	1.41	1.00	10.22	7699630	18322152
4	36	6	2.5	15	0	21	428	18	1625	21	428	17	1584	3	581	3	404	1.20	1.04	2.15	1.35	1.85	1.00	2.57	1.44	1.00	11.61	7519901	18064135
4	36	7	2.14	15	0	20	392	17	1591	20	392	17	1553	3	462	2	460	1.21	1.04	2.16	1.35	1.91	1.00	2.84	1.48	1.00	13.00	7398735	17927391

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	36	8	1.875	15	0	18	362	17	1562	18	362	17	1527	3	514	2	505	1.21	1.04	2.18	1.34	1.96	1.00	3.06	1.51	1.00	14.30	7269956	17766838
4	36	9	1.67	15	0	17	343	17	1543	17	343	17	1507	3	581	2	545	1.22	1.04	2.21	1.37	1.98	1.00	3.12	1.57	1.00	15.67	7395396	18042520
4	36	5	3.3	16.5	0.75	24	488	19	1686	24	488	18	1644	3	439	3	319	1.18	1.04	2.60	1.32	1.79	1.00	2.15	1.71	1.00	9.47	7521887	17963257
4	36	6	2.75	16.5	0.75	22	443	18	1640	22	443	18	1601	3	529	3	370	1.19	1.04	2.65	1.32	1.84	1.00	2.41	1.76	1.00	10.75	7339627	17699215
4	36	7	2.357	16.5	0.75	20	406	18	1606	20	406	17	1569	3	419	2	420	1.20	1.04	2.68	1.31	1.90	1.00	2.65	1.79	1.00	12.03	7209050	17548889
4	36	8	2.06	16.5	0.75	19	376	17	1576	19	376	17	1541	3	474	2	470	1.20	1.04	2.70	1.31	1.95	1.00	2.89	1.83	1.00	13.25	7106389	17429491
4	36	9	1.83	16.5	0.75	18	352	17	1550	18	352	17	1516	3	529	2	508	1.21	1.04	2.70	1.31	1.99	1.00	3.05	1.85	1.00	14.43	7048081	17371871
4	36	5	3.6	18	1.5	26	520	19	1717	26	520	18	1669	3	409	3	300	1.18	1.04	3.58	1.37	1.73	1.00	2.07	2.39	1.00	9.00	7916038	18647143
4	36	6	3	18	1.5	24	473	18	1670	24	473	18	1625	3	486	3	348	1.19	1.04	3.59	1.36	1.78	1.00	2.31	2.45	1.00	10.22	7722536	18357968
4	36	7	2.57	18	1.5	22	435	18	1633	22	435	17	1591	3	562	3	396	1.20	1.04	3.67	1.36	1.83	1.00	2.54	2.50	1.00	11.40	7574415	18156708
4	36	8	2.25	18	1.5	20	404	18	1601	20	404	17	1561	3	439	2	441	1.20	1.04	3.26	1.35	1.88	1.00	2.76	2.25	1.00	12.52	7440671	17967276
4	36	9	2	18	1.5	19	377	17	1576	19	377	17	1538	3	486	2	487	1.21	1.04	2.93	1.35	1.93	1.00	2.97	2.03	1.00	13.65	7343806	17860722
4	36	6	3.08	18.5	0	24	477	18	1676	24	477	18	1632	3	474	3	340	1.19	1.04	2.06	1.35	1.78	1.00	2.27	1.40	1.00	10.02	7682708	18287255
4	36	7	2.64	18.5	0	22	439	18	1639	22	439	18	1597	3	545	3	386	1.20	1.04	2.11	1.35	1.83	1.00	2.50	1.43	1.00	11.18	7538211	18092377
4	36	8	2.32	18.5	0	20	408	18	1608	20	408	17	1569	3	419	2	429	1.20	1.04	2.12	1.34	1.88	1.00	2.71	1.45	1.00	12.25	7395790	17892038
4	36	9	2.06	18.5	0	19	382	17	1579	19	382	17	1542	3	474	2	473	1.21	1.04	2.14	1.34	1.92	1.00	2.91	1.48	1.00	13.30	7286383	17731930
4	36	10	1.85	18.5	0	18	358	17	1557	18	358	17	1522	3	514	2	508	1.21	1.04	2.17	1.34	1.97	1.00	3.08	1.50	1.00	14.40	7205057	17651750
4	36	6	3.58	21.5	1.5	26	517	19	1715	26	517	18	1667	3	409	3	301	1.19	1.04	3.50	1.36	1.73	1.00	2.08	2.38	1.00	9.03	7869929	18570051
4	36	7	3.07	21.5	1.5	24	477	18	1675	24	477	18	1630	3	474	3	341	1.19	1.04	3.58	1.36	1.78	1.00	2.28	2.43	1.00	10.05	7697225	18310343
4	36	8	2.69	21.5	1.5	22	444	18	1643	22	444	18	1600	3	545	3	380	1.20	1.04	3.60	1.35	1.82	1.00	2.48	2.47	1.00	11.03	7561273	18120351
4	36	9	2.39	21.5	1.5	21	416	18	1615	21	416	17	1574	3	409	2	419	1.20	1.04	3.41	1.35	1.86	1.00	2.66	2.36	1.00	11.99	7450665	17971179
4	36	10	2.15	21.5	1.5	20	392	17	1590	20	392	17	1551	3	450	2	457	1.21	1.04	3.10	1.34	1.90	1.00	2.84	2.15	1.00	12.93	7353426	17839309
4	36	7	3.14	22	0	24	481	18	1679	24	481	18	1634	3	462	3	334	1.19	1.04	2.05	1.35	1.78	1.00	2.25	1.39	1.00	9.87	7662032	18237991
4	36	8	2.75	22	0	22	448	18	1646	22	448	18	1603	3	529	3	373	1.19	1.04	2.07	1.34	1.82	1.00	2.44	1.41	1.00	10.83	7523489	18037230
4	36	9	2.44	22	0	21	420	18	1618	21	420	17	1577	3	400	2	411	1.20	1.04	2.08	1.34	1.86	1.00	2.62	1.43	1.00	11.79	7427642	17914732
4	36	10	2.2	22	0	20	396	18	1593	20	396	17	1554	3	439	2	448	1.20	1.04	2.11	1.34	1.90	1.00	2.79	1.46	1.00	12.68	7315948	17754375
4	36	11	2	22	0	19	374	17	1573	19	374	17	1536	3	486	2	484	1.21	1.04	2.13	1.33	1.93	1.00	2.97	1.48	1.00	13.60	7234952	17668331
4	36	12	1.83	22	0	18	356	17	1553	18	356	17	1517	3	529	2	510	1.21	1.04	2.15	1.33	1.97	1.00	3.08	1.50	1.00	14.48	7182976	17604668
4	36	7	3.57	25	1.5	26	515	19	1713	26	515	18	1665	3	409	3	301	1.19	1.04	3.48	1.36	1.74	1.00	2.08	2.38	1.00	9.03	7824259	18487476
4	36	8	3.125	25	1.5	24	480	18	1679	24	480	18	1634	3	462	3	336	1.19	1.04	3.51	1.35	1.77	1.00	2.26	2.42	1.00	9.92	7676195	18271129
4	36	9	2.78	25	1.5	23	451	18	1650	23	451	18	1607	3	529	3	370	1.20	1.04	3.60	1.35	1.81	1.00	2.43	2.45	1.00	10.76	7558770	18102477
4	36	10	2.5	25	1.5	21	426	18	1624	21	426	17	1582	3	581	3	403	1.20	1.04	3.51	1.35	1.85	1.00	2.59	2.44	1.00	11.59	7460746	17963814
4	36	11	2.27	25	1.5	20	404	18	1602	20	404	17	1562	3	429	2	437	1.20	1.04	3.22	1.34	1.88	1.00	2.75	2.25	1.00	12.42	7387573	17874652
4	36	12	1.83	25	1.5	22	434	18	1634	22	434	17	1571	3	529	2	578	1.25	1.06	2.33	1.81	1.70	1.00	3.36	2.00	1.00	16.03	10621600	23467244
4	40	3	1.5	4.5	0	18	355	19	1713	18	355	18	1670	2	364	1	428	1.22	1.04	2.30	1.49	2.00	1.00	3.68	1.54	1.00	21.50	11548738	26297045
4	40	3	2	6	0.75	20	397	19	1757	20	397	19	1714	3	541	2	522	1.20	1.04	2.20	1.38	2.01	1.00	3.47	1.40	1.00	16.96	10583784	24631131
4	40	4	1.5	6	0.75	17	349	19	1709	17	349	18	1664	2	364	1	424	1.23	1.05	2.30	1.46	2.00	1.00	3.72	1.56	1.00	21.40	11258734	25844914
4	40	3	2.33	7	1.25	22	438	20	1797	22	438	19	1747	3	465	2	474	1.20	1.05	3.62	1.40	1.93	1.00	3.14	2.33	1.00	15.23	10908768	25116236
4	40	4	1.75	7	1.25	18	369	19	1727	18	369	18	1683	3	312	1	583	1.21	1.04	3.09	1.38	2.02	1.00	3.62	2.03	1.00	18.73	10581210	24661905
4	40	3	2.67	8	0	23	460	20	1820	23	460	19	1771	3	408	2	416	1.19	1.04	2.38	1.34	1.92	1.00	2.87	1.51	1.00	13.63	10493191	24362638
4	40	4	2	8	0	19	389	19	1747	19	389	19	1704	3	541	2	530	1.20	1.04	2.47	1.33	2.03	1.00	3.43	1.58	1.00	16.77	10167411	23910710
4	40	5	1.6	8	0	18	352	19	1710	18	352	18	1665	2	339	1	412	1.22	1.05	2.53	1.40	2.02	1.00	3.69	1.72	1.00	20.08	10672139	24845933
4	40	3	3.17	9.5	0.75	25	496	20	1853	25	496	20	1803	3	513	3	356	1.18	1.04	2.97	1.30	1.88	1.00	2.56	1.83	1.00	11.90	10247568	23845053
4	40	4	2.375	9.5	0.75	21	421	20	1780	21	421	19	1735	3	455	2	453	1.20	1.04	3.04	1.30	1.99	1.00	3.07	1.91	1.00	14.66	9922919	23420378
4	40	5	1.9	9.5	0.75	18	369	19	1726	18	369	19	1686	3	571	2	539	1.20	1.04	3.09	1.29	2.07	1.00	3.51	1.98	1.00	17.23	9729677	23181643
4	40	6	1.583	9.5	0.75	17	349	19	1706	17	349	18	1660	2	345	1	414	1.22	1.05	2.73	1.39	2.02	1.00	3.71	1.88	1.00	20.20	10613948	24745059
4	40	3	3.67	11	1.5	28	550	21	1909	28	550	20	1848	3	444	3	321	1.19	1.05	3.86	1.37	1.79	1.00	2.39	2.47	1.00	10.91	11041803	25202348
4	40	4	2.75	11	1.5	24	471	20	1829	24	471	20	1775	3	588	3	408	1.20	1.05	3.94	1.36	1.88	1.00	2.86	2.56	1.00	13.37	10650217	24609045
4	40	5	2.2	11	1.5	21	414	19	1774	21	414	19	1725	3	488	2	491	1.21	1.05	4.00	1.35	1.97	1.00	3.29	2.65	1.00	15.72	10396241	24274858
4	40	6	1.833	11	1.5	19	371	19	1729	19	371	19	1684	3	588	2	559	1.21	1.05	4.06	1.34	2.03	1.00	3.64	2.72	1.00	17.92	10197977	24000728
4	40	7	1.57	11	1.5	17	336	19	1693	17	336	18	1652	2	345	1	409	1.22	1.04	4.14	1.34	2.07	1.00	3.94	2.79	1.00	20.07	10050321	23813596
4	40	4	2.875	11.5	1.75	24	479	20	1836	24	479	20	1782	3	556	3	391	1.20	1.05	4.16	1.34	1.88	1.00	2.77	2.68	1.00	12.89	10523712	24366435
4	40	5	2.3	11.5	1.75	21	422	20	1779	21	422	19	1730	3	465	2	470	1.20	1.05	4.22	1.33	1.96	1.00	3.18	2.77	1.00	15.12	10260621	24001057
4	40	6	1.917	11.5	1.75	19	378	19	1736	19	378	19	1690	3	571	2	542	1.21	1.05	4.30	1.33	2.03	1.00	3.55	2.85	1.00	17.28	10077471	23777086
4	40	7	1.643	11.5	1.75	17	342	19	1701	17	342	18	1660	3	333	1	593	1.22	1.04	4.38	1.32	2.07	1.00	3.85	2.93	1.00	19.36	9922583	23596038
4	40	4	3.25	13	2.5	25	502	20	1862	25	502	20	1808	3	500	3	349	1.19	1.05	4.03	1.30	1.86	1.00	2.55	2.57	1.00	11.72	10290643	23931521
4	40	5	2.6	13	2.5	22	444	20	1801	22	444	19	1752	3	417	2	420	1.20	1.04	4.13	1.30	1.94	1.00	2.93	2.65	1.00	13.71	10006794	23508923
4	40	6	2.167	13	2.5	20	399	19	1756	20	399	19	1711	3	500	2	488	1.20	1.04	4.20	1.29	2.01	1.00	3.28	2.72	1.00	15.64	9811102	23256293
4	40	7	1.857	13	2.5	18	362	19	1721	18	362	18	1680	3	571	2	545	1.21	1.04	4.29	1.29	2.07	1.00	3.59	2.79	1.00	17.54	9664467	23099243
4	40	4	3.625	14.5	3.25	27	543	21	1900	27	543	20	1839	3	444	3	323	1.19	1.05	4.06	1.35	1.79	1.00	2.41	2.64	1.00	10.94	10844693	24846728
4	40	5	2.9	14.5	3.25	24	481	20	1840	24	481	20	1784	3	556	3	388	1.20	1.05	4.17	1.34	1.87	1.00	2.78	2.72	1.00	12.84	10552093	24426867
4	40	6	2.417	14.5	3.25	22	434	20	1793	22	434	19	1741	3	444	2	452	1.20	1.05	4.24	1.34	1.94	1.00	3.11	2.79	1.00	14.62	10331943	24117787

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	40	7	2.07	14.5	3.25	20	396	19	1756	20	396	19	1707	3	513	2	514	1.21	1.05	4.26	1.33	1.99	1.00	3.43	2.86	1.00	16.37	10178984	23931060
4	40	4	2.875	11.5	0	24	479	20	1836	24	479	20	1782	3	556	3	391	1.20	1.05	2.37	1.34	1.88	1.00	2.77	1.53	1.00	12.89	10523712	24366435
4	40	5	2.3	11.5	0	21	422	20	1779	21	422	19	1730	3	465	2	470	1.20	1.05	2.40	1.33	1.96	1.00	3.18	1.58	1.00	15.12	10260621	24001057
4	40	6	1.917	11.5	0	19	378	19	1736	19	378	19	1690	3	571	2	542	1.21	1.05	2.45	1.33	2.03	1.00	3.55	1.63	1.00	17.28	10077471	23777086
4	40	7	1.643	11.5	0	17	342	19	1701	17	342	18	1660	3	333	1	593	1.22	1.04	2.50	1.32	2.07	1.00	3.85	1.67	1.00	19.36	9922583	23596038
4	40	4	3.25	13	0.75	25	502	20	1862	25	502	20	1808	3	500	3	349	1.19	1.05	2.86	1.30	1.86	1.00	2.55	1.82	1.00	11.72	10290643	23931521
4	40	5	2.6	13	0.75	22	444	20	1801	22	444	19	1752	3	417	2	420	1.20	1.04	2.93	1.30	1.94	1.00	2.93	1.88	1.00	13.71	10006794	23508923
4	40	6	2.167	13	0.75	20	399	19	1756	20	399	19	1711	3	500	2	488	1.20	1.04	2.98	1.29	2.01	1.00	3.28	1.93	1.00	15.64	9811102	23256293
4	40	7	1.857	13	0.75	18	362	19	1721	18	362	18	1680	3	571	2	545	1.21	1.04	3.04	1.29	2.07	1.00	3.59	1.98	1.00	17.54	9664467	23099243
4	40	4	3.625	14.5	1.5	27	543	21	1900	27	543	20	1839	3	444	3	323	1.19	1.05	3.80	1.35	1.79	1.00	2.41	2.47	1.00	10.94	10844693	24846728
4	40	5	2.9	14.5	1.5	24	481	20	1840	24	481	20	1784	3	556	3	388	1.20	1.05	3.91	1.34	1.87	1.00	2.78	2.55	1.00	12.84	10552093	24426867
4	40	6	2.417	14.5	1.5	22	434	20	1793	22	434	19	1741	3	444	2	452	1.20	1.05	3.87	1.34	1.94	1.00	3.11	2.55	1.00	14.62	10331943	24117787
4	40	7	2.07	14.5	1.5	20	396	19	1756	20	396	19	1707	3	513	2	514	1.21	1.05	3.34	1.33	1.99	1.00	3.43	2.24	1.00	16.37	10178984	23931060
4	40	5	3	15	0	24	487	20	1847	24	487	20	1791	3	541	3	376	1.20	1.05	2.33	1.33	1.86	1.00	2.71	1.51	1.00	12.50	10474090	24284187
4	40	6	2.5	15	0	22	440	20	1798	22	440	19	1746	3	435	2	437	1.20	1.05	2.36	1.32	1.93	1.00	3.03	1.55	1.00	14.21	10241332	23939904
4	40	7	2.14	15	0	20	402	19	1760	20	402	19	1712	3	513	2	498	1.21	1.05	2.37	1.32	1.99	1.00	3.35	1.58	1.00	15.91	10088496	23745893
4	40	8	1.875	15	0	19	370	19	1729	19	370	19	1684	3	571	2	547	1.21	1.05	2.43	1.31	2.03	1.00	3.61	1.62	1.00	17.52	9939048	23560595
4	40	9	1.67	15	0	17	349	19	1709	17	349	18	1664	3	328	1	591	1.22	1.05	2.46	1.34	2.04	1.00	3.70	1.68	1.00	19.22	10112636	23914843
4	40	5	3.3	16.5	0.75	25	505	20	1862	25	505	20	1807	3	488	3	344	1.19	1.05	2.85	1.30	1.85	1.00	2.53	1.81	1.00	11.55	10217329	23775740
4	40	6	2.75	16.5	0.75	23	456	20	1816	23	456	19	1765	3	588	3	400	1.20	1.05	2.90	1.29	1.92	1.00	2.85	1.86	1.00	13.18	10013538	23517078
4	40	7	2.357	16.5	0.75	21	417	20	1777	21	417	19	1730	3	465	2	455	1.20	1.04	2.91	1.29	1.98	1.00	3.13	1.90	1.00	14.72	9835891	23280947
4	40	8	2.06	16.5	0.75	19	385	19	1744	19	385	19	1700	3	526	2	509	1.21	1.04	2.97	1.28	2.03	1.00	3.41	1.94	1.00	16.23	9707694	23120508
4	40	9	1.83	16.5	0.75	18	359	19	1717	18	359	18	1674	3	588	2	550	1.21	1.04	2.97	1.29	2.07	1.00	3.62	1.96	1.00	17.70	9649075	23071101
4	40	5	3.6	18	1.5	27	538	21	1897	27	538	20	1836	3	455	3	324	1.19	1.05	3.77	1.34	1.80	1.00	2.43	2.46	1.00	10.98	10734540	24668701
4	40	6	3	18	1.5	24	488	20	1846	24	488	20	1789	3	541	3	376	1.20	1.05	3.83	1.33	1.86	1.00	2.72	2.52	1.00	12.49	10489726	24298497
4	40	7	2.57	18	1.5	22	448	20	1805	22	448	19	1752	3	426	2	428	1.20	1.05	3.90	1.33	1.91	1.00	3.00	2.57	1.00	13.94	10304435	24031059
4	40	8	2.25	18	1.5	21	414	19	1774	21	414	19	1723	3	488	2	478	1.21	1.05	3.57	1.32	1.97	1.00	3.26	2.39	1.00	15.37	10165213	23870273
4	40	9	2	18	1.5	19	386	19	1744	19	386	19	1696	3	541	2	527	1.21	1.05	3.19	1.32	2.01	1.00	3.51	2.16	1.00	16.71	10026790	23671560
4	40	6	3.08	18.5	0	25	493	20	1851	25	493	20	1794	3	526	3	367	1.20	1.05	2.28	1.32	1.85	1.00	2.67	1.49	1.00	12.23	10432937	24189414
4	40	7	2.64	18.5	0	23	453	20	1810	23	453	19	1756	3	408	2	417	1.20	1.05	2.33	1.32	1.91	1.00	2.94	1.53	1.00	13.64	10249955	23924331
4	40	8	2.32	18.5	0	21	420	20	1777	21	420	19	1726	3	465	2	464	1.21	1.05	2.34	1.31	1.96	1.00	3.19	1.56	1.00	14.96	10081249	23689217
4	40	9	2.06	18.5	0	20	391	19	1749	20	391	19	1701	3	526	2	513	1.21	1.05	2.36	1.31	2.00	1.00	3.44	1.59	1.00	16.32	9963119	23549147
4	40	10	1.85	18.5	0	18	366	19	1723	18	366	18	1678	3	571	2	550	1.21	1.05	2.38	1.31	2.04	1.00	3.63	1.61	1.00	17.63	9851619	23402297
4	40	6	3.58	21.5	1.5	27	535	21	1894	27	535	20	1832	3	455	3	325	1.19	1.05	3.75	1.33	1.80	1.00	2.45	2.45	1.00	11.02	10667922	24554564
4	40	7	3.07	21.5	1.5	25	493	20	1850	25	493	20	1792	3	526	3	369	1.20	1.05	3.76	1.33	1.85	1.00	2.69	2.50	1.00	12.26	10451934	24216803
4	40	8	2.69	21.5	1.5	23	458	20	1815	23	458	19	1760	3	408	2	411	1.20	1.05	3.83	1.32	1.90	1.00	2.92	2.54	1.00	13.46	10281772	23972956
4	40	9	2.39	21.5	1.5	21	428	20	1786	21	428	19	1733	3	455	2	454	1.21	1.05	3.73	1.32	1.94	1.00	3.14	2.50	1.00	14.67	10158341	23816329
4	40	10	2.15	21.5	1.5	20	402	19	1760	20	402	19	1710	3	500	2	495	1.21	1.05	3.38	1.32	1.98	1.00	3.36	2.28	1.00	15.83	10041572	23663469
4	40	7	3.14	22	0	25	497	20	1856	25	497	20	1797	3	513	3	361	1.20	1.05	2.25	1.32	1.85	1.00	2.65	1.49	1.00	12.06	10418222	24162015
4	40	8	2.75	22	0	23	462	20	1819	23	462	19	1764	3	588	3	403	1.20	1.05	2.29	1.32	1.89	1.00	2.87	1.51	1.00	13.22	10230421	23873328
4	40	9	2.44	22	0	22	432	20	1790	22	432	19	1737	3	444	2	445	1.21	1.05	2.31	1.31	1.94	1.00	3.10	1.54	1.00	14.43	10128716	23756088
4	40	10	2.2	22	0	20	406	19	1763	20	406	19	1713	3	488	2	485	1.21	1.05	2.33	1.31	1.98	1.00	3.30	1.56	1.00	15.53	9978405	23536729
4	40	11	2	22	0	19	383	19	1741	19	383	19	1693	3	541	2	525	1.21	1.05	2.35	1.30	2.01	1.00	3.51	1.59	1.00	16.65	9887699	23434334
4	40	12	1.83	22	0	18	363	19	1721	18	363	18	1675	3	588	2	554	1.22	1.05	2.36	1.31	2.04	1.00	3.65	1.61	1.00	17.79	9834777	23387056
4	40	7	3.57	25	1.5	27	533	21	1892	27	533	20	1830	3	455	3	325	1.19	1.05	3.74	1.33	1.80	1.00	2.45	2.44	1.00	11.02	10610909	24453841
4	40	8	3.125	25	1.5	25	496	20	1855	25	496	20	1797	3	513	3	363	1.20	1.05	3.75	1.32	1.84	1.00	2.66	2.48	1.00	12.11	10426734	24180029
4	40	9	2.78	25	1.5	23	465	20	1824	23	465	19	1768	3	588	3	400	1.20	1.05	3.78	1.32	1.89	1.00	2.86	2.52	1.00	13.15	10281655	23972410
4	40	10	2.5	25	1.5	22	438	20	1796	22	438	19	1743	3	435	2	436	1.20	1.05	3.81	1.32	1.93	1.00	3.06	2.56	1.00	14.19	10153622	23789684
4	40	11	2.27	25	1.5	21	414	19	1774	21	414	19	1723	3	476	2	473	1.21	1.05	3.53	1.31	1.96	1.00	3.26	2.39	1.00	15.23	10075652	23712509
4	40	12	1.83	25	1.5	22	446	20	1803	22	446	19	1724	2	588	2	419	1.25	1.07	2.50	1.75	1.75	1.00	3.93	2.04	1.00	19.52	14342388	30728751
4	44	3	1.5	4.5	0	18	360	21	1877	18	360	20	1824	2	400	1	461	1.22	1.05	2.52	1.45	2.03	1.00	4.24	1.65	1.00	25.81	15334648	33843507
4	44	3	2	6	0.75	20	405	21	1925	20	405	21	1871	3	595	2	560	1.21	1.05	2.39	1.34	2.06	1.00	3.99	1.51	1.00	20.36	14046046	31773692
4	44	4	1.5	6	0.75	18	354	21	1871	18	354	20	1816	2	400	1	457	1.23	1.05	2.49	1.42	2.04	1.00	4.28	1.67	1.00	25.65	14932018	33215179
4	44	3	2.33	7	1.25	22	449	22	1967	22	449	21	1905	3	512	2	509	1.21	1.05	3.82	1.37	1.99	1.00	3.61	2.44	1.00	18.25	14445267	32361867
4	44	4	1.75	7	1.25	19	375	21	1893	19	375	20	1839	2	344	1	417	1.21	1.05	3.32	1.35	2.07	1.00	4.16	2.16	1.00	22.50	14062018	31817858
4	44	3	2.67	8	0	24	473	22	1990	24	473	21	1929	3	449	2	446	1.20	1.05	2.60	1.32	1.99	1.00	3.29	1.62	1.00	16.31	13875939	31374818
4	44	4	2	8	0	20	396	21	1916	20	396	20	1862	3	595	2	568	1.21	1.05	2.69	1.31	2.08	1.00	3.96	1.70	1.00	20.17	13516384	30910852
4	44	5	1.6	8	0	18	356	21	1876	18	356	20	1821	2	373	1	443	1.22	1.05	2.75	1.36	2.07	1.00	4.26	1.84	1.00	24.17	14191394	32066950
4	44	3	3.17	9.5	0.75	26	510	22	2029	26	510	22	1966	3	564	3	381	1.19	1.05	3.19	1.28	1.96	1.00	2.95	1.94	1.00	14.27	13554815	30790145
4	44	4	2.375	9.5	0.75	22	431	21	1949	22	431	21	1894	3	500	2	485	1.20	1.05	3.25	1.27	2.06	1.00	3.53	2.03	1.00	17.58	13156837	30229410
4	44	5	1.9	9.5	0.75	19	375	21	1893	19	375	20	1843	3	314	1	578	1.20	1.05	3.33	1.27	2.12	1.00	4.05	2.11	1.00	20.73	12951859	29986983
4	44	6	1.583	9.5	0.75	18	353	21	1871	18	353	20	1815	2	379	1	445	1.22	1.05	2.98	1.36	2.06	1.00	4.29	2.00	1.00	24.30	14108898	31917862

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
4	44	3	3.67	11	1.5	28	568	23	2086	28	568	22	2009	3	489	3	343	1.19	1.06	4.03	1.34	1.86	1.00	2.74	2.56	1.00	13.03	14550508	32425026
4	44	4	2.75	11	1.5	24	484	22	2001	24	484	21	1934	3	431	2	436	1.20	1.06	4.15	1.33	1.96	1.00	3.28	2.66	1.00	16.01	14076169	31698670
4	44	5	2.2	11	1.5	21	423	21	1943	21	423	21	1882	3	537	2	526	1.21	1.05	4.25	1.32	2.03	1.00	3.78	2.76	1.00	18.86	13777091	31303781
4	44	6	1.833	11	1.5	19	377	21	1895	19	377	20	1840	2	328	1	400	1.21	1.05	4.31	1.31	2.07	1.00	4.20	2.84	1.00	21.54	13546379	30972914
4	44	7	1.57	11	1.5	17	339	20	1859	17	339	20	1807	2	379	1	439	1.22	1.05	4.38	1.31	2.11	1.00	4.55	2.91	1.00	24.19	13406311	30817196
4	44	4	2.875	11.5	1.75	25	492	22	2010	25	492	21	1943	3	415	2	418	1.20	1.06	4.36	1.31	1.96	1.00	3.18	2.77	1.00	15.45	13915514	31425180
4	44	5	2.3	11.5	1.75	22	431	21	1950	22	431	21	1889	3	512	2	504	1.21	1.05	4.46	1.30	2.03	1.00	3.67	2.87	1.00	18.18	13608577	31002345
4	44	6	1.917	11.5	1.75	19	384	21	1904	19	384	20	1848	3	314	1	582	1.21	1.05	4.53	1.30	2.08	1.00	4.10	2.96	1.00	20.78	13390875	30721629
4	44	7	1.643	11.5	1.75	17	346	21	1866	17	346	20	1815	2	367	1	425	1.22	1.05	4.60	1.29	2.12	1.00	4.43	3.03	1.00	23.29	13218596	30499021
4	44	4	3.25	13	2.5	26	517	22	2036	26	517	22	1969	3	550	3	373	1.19	1.05	4.28	1.28	1.94	1.00	2.93	2.65	1.00	14.02	13583052	30828816
4	44	5	2.6	13	2.5	23	455	22	1973	23	455	21	1911	3	458	2	449	1.20	1.05	4.32	1.27	2.02	1.00	3.37	2.74	1.00	16.45	13266225	30373773
4	44	6	2.167	13	2.5	20	407	21	1925	20	407	21	1869	3	550	2	524	1.20	1.05	4.43	1.27	2.08	1.00	3.78	2.82	1.00	18.79	13035231	30067208
4	44	7	1.857	13	2.5	18	368	21	1886	18	368	20	1835	3	324	1	585	1.21	1.05	4.50	1.26	2.12	1.00	4.14	2.90	1.00	21.06	12854872	29838908
4	44	4	3.625	14.5	3.25	28	560	23	2077	28	560	22	2001	3	489	3	345	1.20	1.06	4.28	1.32	1.86	1.00	2.77	2.73	1.00	13.08	14287338	31975166
4	44	5	2.9	14.5	3.25	25	495	22	2012	25	495	21	1942	3	415	2	415	1.20	1.06	4.38	1.31	1.94	1.00	3.18	2.81	1.00	15.34	13937700	31449412
4	44	6	2.417	14.5	3.25	22	445	22	1962	22	445	21	1897	3	489	2	484	1.21	1.06	4.43	1.31	2.00	1.00	3.57	2.89	1.00	17.50	13679128	31081174
4	44	7	2.07	14.5	3.25	20	404	21	1923	20	404	20	1863	3	564	2	551	1.21	1.05	4.50	1.30	2.05	1.00	3.94	2.96	1.00	19.63	13493165	30850456
4	44	4	2.875	11.5	0	25	492	22	2010	25	492	21	1943	3	415	2	418	1.20	1.06	2.58	1.31	1.96	1.00	3.18	1.64	1.00	15.45	13915514	31425180
4	44	5	2.3	11.5	0	22	431	21	1950	22	431	21	1889	3	512	2	504	1.21	1.05	2.64	1.30	2.03	1.00	3.67	1.69	1.00	18.18	13608577	31002345
4	44	6	1.917	11.5	0	19	384	21	1904	19	384	20	1848	3	314	1	582	1.21	1.05	2.68	1.30	2.08	1.00	4.10	1.75	1.00	20.78	13390875	30721629
4	44	7	1.643	11.5	0	17	346	21	1866	17	346	20	1815	2	367	1	425	1.22	1.05	2.72	1.29	2.12	1.00	4.43	1.79	1.00	23.29	13218596	30499021
4	44	4	3.25	13	0.75	26	517	22	2036	26	517	22	1969	3	550	3	373	1.19	1.05	3.12	1.28	1.94	1.00	2.93	1.93	1.00	14.02	13583052	30828816
4	44	5	2.6	13	0.75	23	455	22	1973	23	455	21	1911	3	458	2	449	1.20	1.05	3.15	1.27	2.02	1.00	3.37	2.00	1.00	16.45	13266225	30373773
4	44	6	2.167	13	0.75	20	407	21	1925	20	407	21	1869	3	550	2	524	1.20	1.05	3.23	1.27	2.08	1.00	3.78	2.06	1.00	18.79	13035231	30067208
4	44	7	1.857	13	0.75	18	368	21	1886	18	368	20	1835	3	324	1	585	1.21	1.05	3.28	1.26	2.12	1.00	4.14	2.11	1.00	21.06	12854872	29838908
4	44	4	3.625	14.5	1.5	28	560	23	2077	28	560	22	2001	3	489	3	345	1.20	1.06	4.03	1.32	1.86	1.00	2.77	2.57	1.00	13.08	14287338	31975166
4	44	5	2.9	14.5	1.5	25	495	22	2012	25	495	21	1942	3	415	2	415	1.20	1.06	4.12	1.31	1.94	1.00	3.18	2.65	1.00	15.34	13937700	31449412
4	44	6	2.417	14.5	1.5	22	445	22	1962	22	445	21	1897	3	489	2	484	1.21	1.06	4.16	1.31	2.00	1.00	3.57	2.71	1.00	17.50	13679128	31081174
4	44	7	2.07	14.5	1.5	20	404	21	1923	20	404	20	1863	3	564	2	551	1.21	1.05	3.63	1.30	2.05	1.00	3.94	2.38	1.00	19.63	13493165	30850456
4	44	5	3	15	0	25	501	22	2020	25	501	21	1950	3	595	3	402	1.20	1.06	2.53	1.30	1.94	1.00	3.11	1.62	1.00	14.95	13830617	31275728
4	44	6	2.5	15	0	23	451	22	1968	23	451	21	1904	3	478	2	468	1.21	1.06	2.56	1.30	2.00	1.00	3.49	1.66	1.00	17.03	13557094	30867549
4	44	7	2.14	15	0	21	410	21	1929	21	410	21	1869	3	564	2	534	1.21	1.05	2.60	1.29	2.05	1.00	3.86	1.70	1.00	19.11	13388795	30666073
4	44	8	1.875	15	0	19	376	21	1896	19	376	20	1840	3	319	1	587	1.21	1.05	2.65	1.29	2.09	1.00	4.16	1.74	1.00	21.07	13223000	30455962
4	44	9	1.67	15	0	18	354	21	1872	18	354	20	1817	2	361	1	423	1.22	1.05	2.68	1.31	2.09	1.00	4.26	1.81	1.00	23.06	13433459	30820639
4	44	5	3.3	16.5	0.75	26	520	22	2037	26	520	22	1968	3	537	3	367	1.19	1.05	3.08	1.27	1.93	1.00	2.91	1.93	1.00	13.82	13496545	30659415
4	44	6	2.75	16.5	0.75	23	468	22	1987	23	468	21	1923	3	431	2	428	1.20	1.05	3.12	1.27	2.00	1.00	3.27	1.98	1.00	15.78	13238741	30312723
4	44	7	2.357	16.5	0.75	21	427	21	1945	21	427	21	1886	3	512	2	487	1.20	1.05	3.17	1.26	2.05	1.00	3.60	2.03	1.00	17.64	13038092	30034684
4	44	8	2.06	16.5	0.75	20	393	21	1910	20	393	20	1854	3	579	2	545	1.21	1.05	3.22	1.26	2.09	1.00	3.92	2.07	1.00	19.46	12895802	29849494
4	44	9	1.83	16.5	0.75	18	364	21	1883	18	364	20	1830	3	328	1	590	1.21	1.05	3.21	1.26	2.12	1.00	4.17	2.09	1.00	21.29	12833868	29819148
4	44	5	3.6	18	1.5	28	555	23	2074	28	555	22	1996	3	500	3	346	1.20	1.06	4.00	1.31	1.87	1.00	2.79	2.55	1.00	13.13	14156171	31769252
4	44	6	3	18	1.5	25	502	22	2019	25	502	21	1948	3	595	3	402	1.20	1.06	4.05	1.30	1.93	1.00	3.13	2.62	1.00	14.94	13849875	31292304
4	44	7	2.57	18	1.5	23	459	22	1977	23	459	21	1910	3	468	2	458	1.21	1.06	4.11	1.30	1.99	1.00	3.45	2.68	1.00	16.71	13641063	31004661
4	44	8	2.25	18	1.5	21	423	21	1943	21	423	21	1880	3	537	2	512	1.21	1.06	3.84	1.30	2.03	1.00	3.76	2.54	1.00	18.44	13470933	30791247
4	44	9	2	18	1.5	20	393	21	1912	20	393	20	1852	3	595	2	566	1.21	1.06	3.47	1.29	2.06	1.00	4.04	2.30	1.00	20.09	13323148	30584826
4	44	6	3.08	18.5	0	25	507	22	2026	25	507	21	1954	3	579	3	393	1.20	1.06	2.49	1.30	1.93	1.00	3.07	1.60	1.00	14.64	13789634	31197670
4	44	7	2.64	18.5	0	23	464	22	1983	23	464	21	1916	3	449	2	447	1.21	1.06	2.53	1.29	1.99	1.00	3.39	1.64	1.00	16.37	13569855	30884731
4	44	8	2.32	18.5	0	21	429	21	1947	21	429	21	1884	3	512	2	497	1.21	1.06	2.57	1.29	2.03	1.00	3.67	1.67	1.00	17.96	13357022	30572060
4	44	9	2.06	18.5	0	20	398	21	1917	20	398	20	1858	3	579	2	550	1.21	1.05	2.59	1.28	2.06	1.00	3.96	1.70	1.00	19.61	13218764	30402711
4	44	10	1.85	18.5	0	19	371	21	1891	19	371	20	1835	3	324	1	591	1.22	1.05	2.61	1.28	2.09	1.00	4.20	1.74	1.00	21.24	13112066	30279985
4	44	6	3.58	21.5	1.5	28	552	23	2070	28	552	22	1992	3	500	3	347	1.20	1.06	3.93	1.30	1.87	1.00	2.81	2.54	1.00	13.15	14059311	31598037
4	44	7	3.07	21.5	1.5	25	507	22	2024	25	507	21	1952	3	579	3	394	1.20	1.06	3.98	1.30	1.93	1.00	3.09	2.59	1.00	14.67	13800042	31200670
4	44	8	2.69	21.5	1.5	24	470	22	1987	24	470	21	1918	3	449	2	440	1.21	1.06	4.05	1.29	1.97	1.00	3.35	2.65	1.00	16.13	13605327	30919263
4	44	9	2.39	21.5	1.5	22	438	21	1955	22	438	21	1890	3	500	2	486	1.21	1.06	4.06	1.29	2.01	1.00	3.61	2.66	1.00	17.57	13440059	30688932
4	44	10	2.15	21.5	1.5	21	410	21	1928	21	410	21	1867	3	550	2	531	1.21	1.06	3.68	1.29	2.04	1.00	3.87	2.43	1.00	19.01	13309736	30525856
4	44	7	3.14	22	0	26	511	22	2031	26	511	22	1958	3	564	3	386	1.20	1.06	2.46	1.29	1.93	1.00	3.05	1.59	1.00	14.44	13755674	31142115
4	44	8	2.75	22	0	24	474	22	1991	24	474	21	1923	3	431	2	431	1.20	1.06	2.49	1.29	1.97	1.00	3.30	1.62	1.00	15.84	13523706	30774274
4	44	9	2.44	22	0	22	442	22	1960	22	442	21	1895	3	489	2	477	1.21	1.06	2.50	1.29	2.01	1.00	3.56	1.65	1.00	17.30	13403119	30628422
4	44	10	2.2	22	0	21	414	21	1933	21	414	21	1871	3	537	2	519	1.21	1.06	2.56	1.28	2.04	1.00	3.81	1.68	1.00	18.66	13245888	30418925
4	44	11	2	22	0	20	390	21	1907	20	390	20	1849	3	595	2	563	1.21	1.05	2.57	1.28	2.07	1.00	4.04	1.71	1.00	19.99	13115222	30225621
4	44	12	1.83	22	0	18	368	21	1888	18	368	20	1831	3	328	1	594	1.22	1.05	2.59	1.28	2.09	1.00	4.22	1.73	1.00	21.40	13082176	30235551
4	44	7	3.57	25	1.5	28	550	23	2067	28	550	22	1989	3	500	3	347	1.20	1.06	3.91	1.30	1.87	1.00	2.81	2.53	1.00	13.15	13976003	31448994
4	44	8	3.125	25	1.5	26	510	22	2030	26	510	22	1957	3	564	3	388	1.20	1.06	3.98	1.29	1.92	1.00	3.06	2.58	1.00	14.49	13768355	31165219

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
4	44	9	2.78	25	1.5	24	477	22	1997	24	477	21	1927	3	431	2	427	1.21	1.06	4.00	1.29	1.96	1.00	3.30	2.63	1.00	15.76	13595378	30916670
4	44	10	2.5	25	1.5	22	449	22	1966	22	449	21	1899	3	478	2	467	1.21	1.06	4.07	1.29	2.00	1.00	3.51	2.67	1.00	16.99	13443827	30677584
4	44	11	2.27	25	1.5	21	423	21	1943	21	423	21	1879	3	524	2	507	1.21	1.06	3.85	1.29	2.03	1.00	3.75	2.54	1.00	18.28	13352247	30591374
4	44	12	1.83	25	1.5	23	455	22	1973	23	455	21	1878	2	328	1	450	1.26	1.08	2.69	1.69	1.80	1.00	4.49	2.11	1.00	23.38	18848188	39281515
4	48	3	1.5	4.5	0	18	363	22	2041	18	363	22	1978	2	436	1	490	1.22	1.06	2.72	1.41	2.06	1.00	4.78	1.77	1.00	30.52	19906089	42654130
4	48	3	2	6	0.75	21	412	23	2090	21	412	22	2025	3	329	1	592	1.21	1.06	2.58	1.31	2.10	1.00	4.47	1.62	1.00	24.00	18188539	40029191
4	48	4	1.5	6	0.75	18	356	22	2036	18	356	22	1970	2	436	1	485	1.22	1.06	2.71	1.39	2.07	1.00	4.84	1.80	1.00	30.37	19400488	41915113
4	48	3	2.33	7	1.25	23	458	23	2137	23	458	23	2062	3	558	2	538	1.21	1.06	4.06	1.34	2.04	1.00	4.06	2.58	1.00	21.54	18696934	40823679
4	48	4	1.75	7	1.25	19	379	23	2059	19	379	22	1994	2	375	1	442	1.21	1.06	3.55	1.32	2.10	1.00	4.70	2.30	1.00	26.62	18265717	40184566
4	48	3	2.67	8	0	24	483	24	2163	24	483	23	2088	3	490	2	471	1.20	1.06	2.81	1.29	2.05	1.00	3.71	1.74	1.00	19.26	17957000	39632517
4	48	4	2	8	0	20	402	23	2082	20	402	22	2018	2	329	1	401	1.21	1.06	2.88	1.28	2.12	1.00	4.45	1.82	1.00	23.82	17529921	39014514
4	48	5	1.6	8	0	18	359	22	2039	18	359	22	1974	2	407	1	470	1.22	1.06	2.99	1.33	2.10	1.00	4.80	1.98	1.00	28.55	18413507	40415184
4	48	3	3.17	9.5	0.75	26	523	24	2202	26	523	23	2125	3	414	2	402	1.19	1.06	3.39	1.25	2.03	1.00	3.32	2.07	1.00	16.81	17501923	38838947
4	48	4	2.375	9.5	0.75	22	439	23	2118	22	439	23	2051	3	545	2	512	1.20	1.06	3.48	1.24	2.11	1.00	3.98	2.16	1.00	20.76	17049472	38191305
4	48	5	1.9	9.5	0.75	19	379	23	2059	19	379	22	1999	2	343	1	408	1.20	1.05	3.56	1.24	2.16	1.00	4.57	2.25	1.00	24.52	16823687	37908229
4	48	6	1.583	9.5	0.75	18	355	22	2035	18	355	22	1969	2	414	1	472	1.22	1.06	3.18	1.33	2.10	1.00	4.84	2.13	1.00	28.75	18307817	40252620
4	48	3	3.67	11	1.5	29	584	25	2261	29	584	24	2168	3	533	3	361	1.20	1.07	4.29	1.31	1.93	1.00	3.08	2.67	1.00	15.31	18707238	40767810
4	48	4	2.75	11	1.5	25	495	24	2172	25	495	23	2091	3	471	2	460	1.21	1.06	4.39	1.30	2.01	1.00	3.69	2.79	1.00	18.86	18164259	39930445
4	48	5	2.2	11	1.5	22	431	23	2109	22	431	22	2036	3	585	2	556	1.21	1.06	4.48	1.29	2.07	1.00	4.25	2.89	1.00	22.23	17821164	39435753
4	48	6	1.833	11	1.5	19	382	23	2059	19	382	22	1992	2	358	1	424	1.21	1.06	4.58	1.28	2.11	1.00	4.72	2.98	1.00	25.42	17574324	39066954
4	48	7	1.57	11	1.5	17	341	22	2021	17	341	22	1960	2	414	1	466	1.22	1.06	4.64	1.28	2.14	1.00	5.12	3.06	1.00	28.59	17421783	38883691
4	48	4	2.875	11.5	1.75	25	504	24	2181	25	504	23	2099	3	453	2	441	1.20	1.06	4.60	1.29	2.01	1.00	3.58	2.89	1.00	18.18	17958697	39588076
4	48	5	2.3	11.5	1.75	22	439	23	2118	22	439	22	2045	3	558	2	533	1.21	1.06	4.69	1.28	2.07	1.00	4.13	2.99	1.00	21.44	17609216	39099578
4	48	6	1.917	11.5	1.75	19	389	23	2069	19	389	22	2003	2	343	1	410	1.21	1.06	4.75	1.27	2.12	1.00	4.61	3.09	1.00	24.54	17361328	38757153
4	48	7	1.643	11.5	1.75	17	349	22	2028	17	349	22	1967	2	400	1	450	1.21	1.06	4.86	1.26	2.15	1.00	4.99	3.17	1.00	27.51	17182109	38493080
4	48	4	3.25	13	2.5	27	530	24	2210	27	530	23	2128	3	407	2	393	1.20	1.06	4.47	1.25	2.01	1.00	3.30	2.77	1.00	16.51	17529979	38887875
4	48	5	2.6	13	2.5	23	464	24	2144	23	464	23	2070	3	500	2	474	1.20	1.06	4.55	1.25	2.07	1.00	3.80	2.86	1.00	19.43	17165609	38360740
4	48	6	2.167	13	2.5	21	413	23	2093	21	413	22	2026	3	304	1	553	1.21	1.06	4.65	1.24	2.12	1.00	4.27	2.95	1.00	22.21	16900987	37992426
4	48	7	1.857	13	2.5	19	372	23	2051	19	372	22	1989	2	353	1	413	1.21	1.06	4.71	1.23	2.16	1.00	4.66	3.03	1.00	24.89	16706178	37716950
4	48	4	3.625	14.5	3.25	29	575	25	2254	29	575	24	2161	3	533	3	363	1.20	1.07	4.49	1.29	1.94	1.00	3.12	2.84	1.00	15.40	18403049	40289365
4	48	5	2.9	14.5	3.25	25	506	24	2185	25	506	23	2101	3	453	2	438	1.21	1.06	4.57	1.29	2.00	1.00	3.59	2.93	1.00	18.09	17981174	39643173
4	48	6	2.417	14.5	3.25	23	453	23	2132	23	453	23	2055	3	533	2	511	1.21	1.06	4.67	1.28	2.05	1.00	4.03	3.02	1.00	20.68	17686026	39210708
4	48	7	2.07	14.5	3.25	21	410	23	2090	21	410	22	2018	3	316	1	583	1.21	1.06	4.74	1.27	2.09	1.00	4.44	3.09	1.00	23.19	17484158	38934579
4	48	4	2.875	11.5	0	25	504	24	2181	25	504	23	2099	3	453	2	441	1.20	1.06	2.79	1.29	2.01	1.00	3.58	1.76	1.00	18.18	17958697	39588076
4	48	5	2.3	11.5	0	22	439	23	2118	22	439	22	2045	3	558	2	533	1.21	1.06	2.85	1.28	2.07	1.00	4.13	1.82	1.00	21.44	17609216	39099578
4	48	6	1.917	11.5	0	19	389	23	2069	19	389	22	2003	2	343	1	410	1.21	1.06	2.88	1.27	2.12	1.00	4.61	1.88	1.00	24.54	17361328	38757153
4	48	7	1.643	11.5	0	17	349	22	2028	17	349	22	1967	2	400	1	450	1.21	1.06	2.95	1.26	2.15	1.00	4.99	1.93	1.00	27.51	17182109	38493080
4	48	4	3.25	13	0.75	27	530	24	2210	27	530	23	2128	3	407	2	393	1.20	1.06	3.33	1.25	2.01	1.00	3.30	2.06	1.00	16.51	17529979	38887875
4	48	5	2.6	13	0.75	23	464	24	2144	23	464	23	2070	3	500	2	474	1.20	1.06	3.39	1.25	2.07	1.00	3.80	2.13	1.00	19.43	17165609	38360740
4	48	6	2.167	13	0.75	21	413	23	2093	21	413	22	2026	3	304	1	553	1.21	1.06	3.46	1.24	2.12	1.00	4.27	2.20	1.00	22.21	16900987	37992426
4	48	7	1.857	13	0.75	19	372	23	2051	19	372	22	1989	2	353	1	413	1.21	1.06	3.51	1.23	2.16	1.00	4.66	2.26	1.00	24.89	16706178	37716950
4	48	4	3.625	14.5	1.5	29	575	25	2254	29	575	24	2161	3	533	3	363	1.20	1.07	4.25	1.29	1.94	1.00	3.12	2.68	1.00	15.40	18403049	40289365
4	48	5	2.9	14.5	1.5	25	506	24	2185	25	506	23	2101	3	453	2	438	1.21	1.06	4.33	1.29	2.00	1.00	3.59	2.77	1.00	18.09	17981174	39643173
4	48	6	2.417	14.5	1.5	23	453	23	2132	23	453	23	2055	3	533	2	511	1.21	1.06	4.42	1.28	2.05	1.00	4.03	2.85	1.00	20.68	17686026	39210708
4	48	7	2.07	14.5	1.5	21	410	23	2090	21	410	22	2018	3	316	1	583	1.21	1.06	3.90	1.27	2.09	1.00	4.44	2.54	1.00	23.19	17484158	38934579
4	48	5	3	15	0	26	513	24	2192	26	513	23	2108	3	436	2	424	1.20	1.06	2.72	1.28	2.00	1.00	3.50	1.73	1.00	17.60	17833189	39394988
4	48	6	2.5	15	0	23	460	23	2138	23	460	23	2060	3	522	2	495	1.21	1.06	2.78	1.27	2.05	1.00	3.93	1.78	1.00	20.09	17535568	38948690
4	48	7	2.14	15	0	21	417	23	2095	21	417	22	2023	3	308	1	564	1.21	1.06	2.81	1.27	2.09	1.00	4.34	1.83	1.00	22.54	17337843	38672149
4	48	8	1.875	15	0	19	381	23	2059	19	381	22	1992	2	348	1	414	1.21	1.06	2.86	1.26	2.12	1.00	4.68	1.87	1.00	24.85	17136321	38384391
4	48	9	1.67	15	0	18	357	22	2035	18	357	22	1969	2	393	1	448	1.22	1.06	2.92	1.28	2.12	1.00	4.81	1.94	1.00	27.25	17444671	38889244
4	48	5	3.3	16.5	0.75	27	533	24	2211	27	533	23	2127	3	585	3	387	1.20	1.06	3.29	1.25	2.00	1.00	3.28	2.05	1.00	16.28	17408290	38663410
4	48	6	2.75	16.5	0.75	24	478	24	2158	24	478	23	2081	3	471	2	451	1.20	1.06	3.36	1.24	2.06	1.00	3.69	2.11	1.00	18.61	17110832	38253377
4	48	7	2.357	16.5	0.75	22	435	23	2112	22	435	22	2041	3	558	2	514	1.20	1.06	3.40	1.24	2.10	1.00	4.05	2.16	1.00	20.80	16868456	37880612
4	48	8	2.06	16.5	0.75	20	398	23	2077	20	398	22	2010	3	320	1	576	1.21	1.06	3.45	1.23	2.13	1.00	4.42	2.21	1.00	23.01	16725801	37717123
4	48	9	1.83	16.5	0.75	18	368	22	2046	18	368	22	1983	2	358	1	416	1.21	1.06	3.44	1.23	2.15	1.00	4.70	2.24	1.00	25.15	16657934	37634624
4	48	5	3.6	18	1.5	29	570	25	2249	29	570	24	2155	3	545	3	364	1.20	1.07	4.22	1.28	1.94	1.00	3.14	2.67	1.00	15.44	18211571	39975553
4	48	6	3	18	1.5	26	514	24	2191	26	514	23	2105	3	436	2	424	1.21	1.07	4.25	1.28	2.00	1.00	3.52	2.74	1.00	17.59	17856367	39413891
4	48	7	2.57	18	1.5	23	468	24	2148	23	468	23	2068	3	511	2	484	1.21	1.06	4.31	1.27	2.04	1.00	3.89	2.81	1.00	19.73	17631494	39117158
4	48	8	2.25	18	1.5	22	431	23	2108	22	431	22	2033	3	585	2	541	1.21	1.06	4.17	1.27	2.07	1.00	4.22	2.71	1.00	21.71	17401079	38750864
4	48	9	2	18	1.5	20	399	23	2076	20	399	22	2005	3	329	1	598	1.21	1.06	3.73	1.26	2.10	1.00	4.54	2.45	1.00	23.68	17247058	38533460
4	48	6	3.08	18.5	0	26	519	24	2199	26	519	23	2113	3	421	2	414	1.20	1.07	2.68	1.27	2.00	1.00	3.46	1.72	1.00	17.25	17776196	39305722
4	48	7	2.64	18.5	0	24	474	24	2152	24	474	23	2072	3	490	2	471	1.21	1.06	2.71	1.27	2.04	1.00	3.81	1.76	1.00	19.28	17511299	38895096

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	48	8	2.32	18.5	0	22	437	23	2114	22	437	22	2039	3	558	2	525	1.21	1.06	2.75	1.26	2.07	1.00	4.13	1.79	1.00	21.18	17275019	38540940
4	48	9	2.06	18.5	0	20	404	23	2083	20	404	22	2012	3	320	1	581	1.21	1.06	2.80	1.25	2.10	1.00	4.46	1.83	1.00	23.15	17131014	38363689
4	48	10	1.85	18.5	0	19	376	23	2053	19	376	22	1986	2	353	1	416	1.21	1.06	2.84	1.25	2.13	1.00	4.72	1.86	1.00	25.04	16994205	38151794
4	48	6	3.58	21.5	1.5	28	567	25	2244	28	567	24	2150	3	545	3	365	1.20	1.07	4.19	1.28	1.94	1.00	3.15	2.65	1.00	15.46	18079138	39739157
4	48	7	3.07	21.5	1.5	26	519	24	2197	26	519	23	2110	3	421	2	415	1.21	1.07	4.24	1.27	1.99	1.00	3.48	2.72	1.00	17.29	17792409	39314313
4	48	8	2.69	21.5	1.5	24	480	24	2157	24	480	23	2075	3	490	2	464	1.21	1.07	4.30	1.27	2.03	1.00	3.77	2.77	1.00	19.01	17555182	38950656
4	48	9	2.39	21.5	1.5	22	446	23	2124	22	446	22	2046	3	545	2	513	1.21	1.06	4.32	1.26	2.06	1.00	4.07	2.83	1.00	20.74	17383614	38716373
4	48	10	2.15	21.5	1.5	21	417	23	2094	21	417	22	2020	3	304	1	561	1.21	1.06	3.96	1.26	2.09	1.00	4.35	2.60	1.00	22.41	17232993	38492938
4	48	7	3.14	22	0	26	524	24	2202	26	524	23	2114	3	421	2	407	1.20	1.07	2.67	1.27	1.99	1.00	3.42	1.70	1.00	16.97	17711016	39174242
4	48	8	2.75	22	0	24	484	24	2163	24	484	23	2080	3	471	2	455	1.21	1.07	2.71	1.26	2.03	1.00	3.72	1.74	1.00	18.70	17477136	38838871
4	48	9	2.44	22	0	23	450	23	2130	23	450	23	2052	3	533	2	503	1.21	1.06	2.72	1.26	2.06	1.00	4.02	1.77	1.00	20.43	17338540	38659409
4	48	10	2.2	22	0	21	421	23	2099	21	421	22	2025	3	585	2	549	1.21	1.06	2.77	1.25	2.09	1.00	4.28	1.80	1.00	22.01	17132777	38337407
4	48	11	2	22	0	20	395	23	2074	20	395	22	2003	3	329	1	595	1.21	1.06	2.78	1.25	2.11	1.00	4.55	1.83	1.00	23.63	17021942	38198123
4	48	12	1.83	22	0	19	372	23	2052	19	372	22	1984	2	358	1	419	1.22	1.06	2.80	1.25	2.13	1.00	4.75	1.86	1.00	25.28	16977772	38161969
4	48	7	3.57	25	1.5	28	564	25	2243	28	564	24	2150	3	545	3	365	1.20	1.07	4.13	1.27	1.95	1.00	3.17	2.65	1.00	15.49	17986747	39608289
4	48	8	3.125	25	1.5	26	523	24	2201	26	523	23	2113	3	421	2	409	1.21	1.07	4.18	1.27	1.99	1.00	3.44	2.70	1.00	17.04	17731695	39209280
4	48	9	2.78	25	1.5	24	488	24	2166	24	488	23	2082	3	471	2	451	1.21	1.07	4.25	1.26	2.02	1.00	3.71	2.75	1.00	18.55	17529243	38911576
4	48	10	2.5	25	1.5	23	457	23	2137	23	457	23	2057	3	522	2	493	1.21	1.06	4.27	1.26	2.05	1.00	3.97	2.80	1.00	20.07	17382402	38723132
4	48	11	2.27	25	1.5	22	431	23	2109	22	431	22	2032	3	571	2	535	1.21	1.06	4.14	1.26	2.07	1.00	4.21	2.71	1.00	21.53	17267828	38544796
4	48	12	1.83	25	1.5	23	462	24	2142	23	462	22	2030	2	358	1	478	1.26	1.09	2.86	1.63	1.83	1.00	5.03	2.20	1.00	27.55	24203531	49159855

Appendix B: CL-800 truck loading optimization program results

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
1	12	3	1.5	4.5	0	26	520	12	760	26	520	12	760	3	316	3	494	5.02	0.00	1.17	9.90	3.94	0.00	2.98	2.78	1.17	6.08	3083582	6812430
1	12	3	2	6	0.75	27	548	12	787	27	548	12	787	3	240	3	399	4.78	0.00	1.11	8.73	3.85	0.00	1.66	2.45	1.11	4.72	2734359	6251734
1	12	4	1.5	6	0.75	26	510	12	751	26	510	12	751	3	316	3	484	4.89	0.00	1.15	9.48	3.84	0.00	2.98	2.75	1.15	6.01	2902582	6499494
1	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	263	2.06	0.00	1.01	3.57	1.90	0.00	2.00	1.98	1.01	3.27	835299	2481138
1	12	4	1.75	7	1.25	26	524	12	765	26	524	12	765	3	273	3	444	4.84	0.00	1.26	8.86	3.87	0.00	2.95	3.60	1.26	5.25	2717210	6200770
1	12	3	2.67	8	0	29	580	12	821	29	580	12	821	3	182	3	313	4.36	0.00	1.20	7.80	3.57	0.00	1.28	2.48	1.20	3.69	2488080	5837118
1	12	4	2	8	0	27	539	12	780	27	539	12	780	3	240	3	405	4.79	0.00	1.24	8.43	3.88	0.00	2.82	2.76	1.24	4.68	2607567	6023253
1	12	5	1.6	8	0	26	511	12	750	26	511	12	750	3	300	3	469	4.86	0.00	1.02	8.98	3.86	0.00	2.96	3.01	1.02	5.63	2718599	6185316
1	12	3	3.17	9.5	0.75	30	604	12	843	30	604	12	843	3	154	3	269	4.23	0.00	1.25	7.35	3.50	0.00	1.12	3.09	1.12	3.19	2383582	5652282
1	12	4	2.375	9.5	0.75	28	558	12	799	28	558	12	799	3	200	3	344	4.59	0.00	1.28	7.87	3.78	0.00	1.41	3.41	1.28	4.04	2456668	5766144
1	12	5	1.9	9.5	0.75	26	528	12	768	26	528	12	768	3	250	3	415	4.95	0.00	1.31	8.39	4.03	0.00	2.90	3.68	1.31	4.85	2558849	5925805
1	12	6	1.583	9.5	0.75	25	506	12	745	25	506	12	745	3	300	3	469	4.80	0.00	1.12	8.86	3.80	0.00	2.96	3.30	1.12	5.65	2661346	6081494
1	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	183	1.91	0.00	1.03	3.35	1.72	0.00	1.42	2.19	1.03	2.29	853966	2482392
1	12	4	2.75	11	1.5	21	422	12	663	21	422	12	663	3	176	3	232	2.08	0.00	1.07	3.56	1.90	0.00	1.79	2.40	1.07	2.89	865779	2536469
1	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	274	2.12	0.00	1.25	3.56	1.96	0.00	2.11	2.47	1.25	3.41	820529	2453482
1	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	307	2.10	0.00	1.19	3.47	1.97	0.00	2.36	2.47	1.19	3.89	761511	2335902
1	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	330	2.08	0.00	1.33	3.38	1.98	0.00	2.56	2.47	1.33	4.35	711954	2238259
1	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	224	2.09	0.00	1.17	3.55	1.91	0.00	1.73	2.62	1.17	2.79	868304	2536946
1	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	266	2.14	0.00	1.15	3.57	1.98	0.00	2.05	2.71	1.15	3.31	832062	2476056
1	12	6	1.917	11.5	1.75	18	362	12	603	18	362	12	603	3	250	3	300	2.13	0.00	1.33	3.49	2.00	0.00	2.31	2.72	1.33	3.77	775753	2365667
1	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	323	2.12	0.00	1.48	3.41	2.01	0.00	2.50	2.72	1.48	4.21	726503	2267767
1	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	203	2.09	0.00	1.16	3.47	1.91	0.00	1.57	2.52	1.16	2.53	868179	2525722
1	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	242	2.19	0.00	1.17	3.57	2.03	0.00	1.87	2.67	1.17	3.02	858043	2523686
1	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	278	2.21	0.00	1.14	3.55	2.07	0.00	2.14	2.72	1.14	3.46	816110	2445415
1	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	305	2.20	0.00	1.31	3.47	2.08	0.00	2.35	2.72	1.31	3.85	764454	2341371
1	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	185	1.94	0.00	1.15	3.37	1.75	0.00	1.45	2.45	1.15	2.32	857702	2492785
1	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	222	2.08	0.00	1.19	3.54	1.89	0.00	1.73	2.64	1.19	2.77	869809	2540035
1	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	256	2.13	0.00	1.18	3.58	1.96	0.00	1.98	2.73	1.18	3.18	843495	2496363
1	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	287	2.13	0.00	1.37	3.53	1.98	0.00	2.21	2.75	1.37	3.57	801170	2415795
1	12	4	2.875	11.5	0	29	584	12	825	29	584	12	825	3	167	3	290	4.12	0.00	1.17	7.41	3.37	0.00	1.21	2.38	1.17	3.44	2360102	5601401
1	12	5	2.3	11.5	0	28	551	12	791	28	551	12	791	3	207	3	352	4.41	0.00	1.20	7.86	3.59	0.00	1.44	2.58	1.20	4.13	2431390	5713973
1	12	6	1.917	11.5	0	26	526	12	767	26	526	12	767	3	250	3	410	4.68	0.00	1.23	8.26	3.78	0.00	2.88	2.76	1.23	4.80	2511541	5841764
1	12	7	1.643	11.5	0	25	506	12	747	25	506	12	747	3	286	3	454	4.92	0.00	1.00	8.61	3.95	0.00	3.17	2.93	1.00	5.46	2578209	5941341
1	12	4	3.25	13	0.75	30	601	12	842	30	601	12	842	3	150	3	261	4.07	0.00	1.21	7.13	3.36	0.00	1.09	2.99	1.09	3.11	2301221	5496710
1	12	5	2.6	13	0.75	28	566	12	806	28	566	12	806	3	188	3	315	4.34	0.00	1.24	7.51	3.57	0.00	1.31	3.22	1.24	3.72	2346304	5565818
1	12	6	2.167	13	0.75	27	540	12	780	27	540	12	780	3	222	3	369	4.60	0.00	1.26	7.89	3.75	0.00	2.63	3.44	1.26	4.32	2415007	5676963
1	12	7	1.857	13	0.75	26	520	12	760	26	520	12	760	3	261	3	417	4.84	0.00	1.29	8.24	3.93	0.00	2.94	3.66	1.29	4.91	2486161	5790296
1	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	185	1.94	0.00	1.04	3.37	1.75	0.00	1.45	2.22	1.04	2.32	857702	2492785
1	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	222	2.08	0.00	1.08	3.54	1.89	0.00	1.73	2.40	1.08	2.77	869809	2540035
1	12	6	2.417	14.5	1.5	28	552	12	793	28	552	12	793	3	200	3	334	4.23	0.00	1.20	7.56	3.44	0.00	1.39	4.25	1.20	3.94	2333518	5535891
1	12	7	2.07	14.5	1.5	27	532	12	771	27	532	12	771	3	231	3	383	4.45	0.00	1.05	7.90	3.60	0.00	2.72	3.86	1.05	4.47	2396733	5637196
1	12	5	3	15	0	29	587	12	827	29	587	12	827	3	162	3	278	4.03	0.00	1.15	7.23	3.30	0.00	1.17	2.31	1.15	3.31	2298904	5486017
1	12	6	2.5	15	0	28	559	12	799	28	559	12	799	3	194	3	325	4.25	0.00	1.17	7.54	3.47	0.00	1.35	2.46	1.17	3.84	2341736	5553747
1	12	7	2.14	15	0	27	538	12	777	27	538	12	777	3	222	3	373	4.47	0.00	1.19	7.88	3.62	0.00	2.66	2.60	1.19	4.36	2405238	5656661
1	12	8	1.875	15	0	26	520	12	760	26	520	12	760	3	250	3	413	4.67	0.00	1.21	8.18	3.77	0.00	2.92	2.74	1.21	4.86	2462293	5747786
1	12	9	1.67	15	0	25	505	12	746	25	505	12	746	3	286	3	446	4.70	0.00	1.23	8.45	3.75	0.00	2.95	2.87	1.23	5.36	2520304	5839216
1	12	5	3.3	16.5	0.75	30	600	12	841	30	600	12	841	3	146	3	256	4.01	0.00	1.19	7.01	3.31	0.00	1.08	2.94	1.08	3.06	2253779	5405609
1	12	6	2.75	16.5	0.75	29	571	12	811	29	571	12	811	3	176	3	298	4.22	0.00	1.21	7.31	3.48	0.00	1.25	3.12	1.21	3.54	2287850	5458536
1	12	7	2.357	16.5	0.75	27	549	12	788	27	549	12	788	3	207	3	341	4.43	0.00	1.23	7.60	3.63	0.00	1.41	3.29	1.23	4.01	2334186	5533162
1	12	8	2.06	16.5	0.75	27	530	12	770	27	530	12	770	3	231	3	384	4.62	0.00	1.25	7.89	3.77	0.00	2.74	3.46	1.25	4.49	2389472	5623920
1	12	9	1.83	16.5	0.75	26	515	12	755	26	515	12	755	3	261	3	418	4.78	0.00	1.25	8.16	3.87	0.00	2.94	3.57	1.25	4.95	2444627	5712314
1	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	186	1.96	0.00	1.05	3.37	1.76	0.00	1.46	2.23	1.05	2.33	857692	2493394
1	12	6	3	18	1.5	29	582	12	823	29	582	12	823	3	162	3	276	3.94	0.00	1.36	7.09	3.23	0.00	1.16	4.58	1.16	3.29	2239867	5373003
1	12	7	2.57	18	1.5	28	559	12	799	28	559	12	799	3	188	3	315	4.13	0.00	1.25	7.36	3.37	0.00	1.32	4.38	1.25	3.73	2277954	5434817
1	12	8	2.25	18	1.5	27	540	12	780	27	540	12	780	3	214	3	354	4.30	0.00	1.11	7.62	3.50	0.00	2.55	4.02	1.11	4.16	2321746	5506501
1	12	9	2	18	1.5	26	525	12	764	26	525	12	764	3	240	3	393	4.48	0.00	1.01	7.90	3.62	0.00	2.80	3.74	1.01	4.58	2375344	5593688
1	12	6	3.08	18.5	0	29	588	12	829	29	588	12	829	3	158	3	271	3.97	0.00	1.13	7.10	3.25	0.00	1.14	2.26	1.13	3.23	2257416	5408564
1	12	7	2.64	18.5	0	28	565	12	804	28	565	12	804	3	182	3	308	4.15	0.00	1.15	7.37	3.40	0.00	1.29	2.38	1.15	3.65	2291493	5461762
1	12	8	2.32	18.5	0	27	545	12	786	27	545	12	786	3	207	3	345	4.32	0.00	1.16	7.61	3.52	0.00	1.43	2.50	1.16	4.07	2331112	5527658
1	12	9	2.06	18.5	0	27	529	12	770	27	529	12	770	3	231	3	384	4.50	0.00	1.18	7.87	3.64	0.00	2.74	2.61	1.18	4.49	2381033	5609370
1	12	10	1.85	18.5	0	26	516	12	756	26	516	12	756	3	261	3	415	4.67	0.00	1.20	8.12	3.76	0.00	2.94	2.73	1.20	4.90	2433527	5693288
1	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	187	1.97	0.00	1.04	3.38	1.77	0.00	1.46	2.23	1.04	2.34	857425	2492538
1	12	7	3.07	21.5	1.5	29	583	12	825	29	583	12	825	3	158	3	270	3.90	0.00	1.34	6.99	3.20	0.00	1.14	4.51	1.14	3.22	2210427	5317903
1	12	8	2.69	21.5	1.5	28	563	12	804	28	563	12	804	3	182	3	302	4.06	0.00	1.29	7.21	3.32	0.00	1.27	4.47	1.27	3.59	2237750	5361863
1	12	9	2.39	21.5	1.5	27	547	12	786	27	547	12	786	3	200	3	334	4.21	0.00	1.16	7.44	3.43	0.00	1.40	4.15	1.16	3.95	2274438	5421356
1	12	10	2.15	21.5	1.5	27	532	12	772	27	532	12	772	3	222	3	367	4.35	0.00	1.06	7.66	3.53	0.00	2.64	3.88	1.06	4.31	2313636	5487010
1	12	7	3.14	22	0	30	590	12	830	30	590	12	830	3	154	3	266	3.93	0.00	1.12	7.02	3.22	0.00	1.12	2.23	1.12	3.17	2230318	5356626
1	12	8	2.75	22	0	28	568	12	809	28	568	12	809	3	176	3	297	4.08	0.00	1.13	7.22	3.35	0.00	1.25	2.33	1.13	3.53	2253891	5394358
1	12	9	2.44	22	0	28	551	12	791	28	551	12	791	3	200	3	329	4.23	0.00	1.14	7.46	3.45	0.00	1.38	2.43	1.14	3.89	2291884	5456834
1	12	10	2.2	22	0	27	536	12	777	27	536	12	777	3	222	3	361	4.38	0.00	1.16	7.66	3.56	0.00	2.60	2.53	1.16	4.24	2327532	5515988
1	12	11	2	22	0	26	524	12	764	26	524	12	764	3	240	3	393	4.53	0.00	1.18	7.88	3.66	0.00	2.80	2.63	1.18	4.58	2371244	5586835
1	12	12	1.83	22	0	26	512	12	753	26	512	12	753	3	261	3	417	4.64	0.00	1.18	8.08	3.74	0.00	2.94	2.70	1.18	4.94	2409606	5648798
1	12	7	3.57	25	1.5	30	609	12	849	30	609	12	849	3	136	3	238	3.75	0.00	1.32	6.75	3.07	0.00	1.01	4.29	1.01	2.85	2180983	5266726
1	12	8	3.125	25	1.5	29	585	12	826	29	585	12	826	3	154	3	265	3.88	0.00	1.33	6.93	3.18	0.00	1.13	4.46	1.13	3.17	2191015	5280297

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	12	9	2.78	25	1.5	28	568	12	807	28	568	12	807	3	176	3	293	4.01	0.00	1.32	7.13	3.29	0.00	1.23	4.55	1.23	3.48	2214624	5318029
1	12	10	2.5	25	1.5	28	551	12	792	28	551	12	792	3	194	3	321	4.13	0.00	1.20	7.30	3.38	0.00	1.35	4.23	1.20	3.80	2238659	5358748
1	12	11	2.27	25	1.5	27	538	12	778	27	538	12	778	3	214	3	349	4.26	0.00	1.11	7.50	3.47	0.00	2.53	3.99	1.11	4.11	2273421	5416153
1	12	12	1.83	25	1.5	26	512	12	751	26	512	12	751	3	261	3	416	3.22	0.00	1.15	8.04	2.44	0.00	2.91	3.19	1.15	4.92	2392089	5614535
1	16	3	1.5	4.5	0	22	434	12	832	22	434	12	832	3	421	3	420	2.58	0.00	1.00	4.63	2.19	0.00	1.56	1.55	1.00	6.66	2672355	6348366
1	16	3	2	6	0.75	40	801	13	1202	40	801	13	1202	2	320	3	411	8.18	0.00	1.12	13.75	6.30	0.00	3.22	4.78	1.12	7.94	13332463	23225752
1	16	4	1.5	6	0.75	22	448	12	848	22	448	12	848	3	421	3	433	2.79	0.00	1.00	4.97	2.34	0.00	1.60	1.72	1.00	6.78	2941303	6839469
1	16	3	2.33	7	1.25	17	341	12	739	17	341	12	739	3	276	3	242	1.21	0.00	1.52	1.88	1.19	0.00	1.92	1.27	1.19	3.81	886504	2704742
1	16	4	1.75	7	1.25	15	295	12	693	15	295	12	693	3	364	3	291	1.22	0.00	1.12	1.83	1.24	0.00	2.26	1.00	1.00	4.75	813007	2585617
1	16	3	2.67	8	0	21	420	12	820	21	420	12	820	3	242	3	239	1.66	0.00	1.00	2.58	1.56	0.00	1.07	1.01	1.00	3.69	1374953	3763981
1	16	4	2	8	0	18	364	12	764	18	364	12	764	3	320	3	296	1.64	0.00	1.00	2.49	1.58	0.00	2.31	1.01	1.00	4.58	1236479	3506859
1	16	5	1.6	8	0	17	333	12	733	17	333	12	733	3	400	3	336	1.59	0.00	1.00	2.54	1.52	0.00	2.43	1.07	1.00	5.50	1220007	3504594
1	16	3	3.17	9.5	0.75	17	343	12	913	17	343	12	913	3	205	3	208	1.26	0.00	1.22	1.83	1.27	0.00	1.01	1.00	1.00	3.46	1045337	3159928
1	16	4	2.375	9.5	0.75	17	343	12	744	17	343	12	744	3	267	3	239	1.31	0.00	1.19	1.88	1.31	0.00	1.91	1.04	1.04	3.76	893184	2718998
1	16	5	1.9	9.5	0.75	15	303	12	703	15	303	12	703	3	333	3	277	1.27	0.00	1.18	1.79	1.31	0.00	2.24	1.04	1.04	4.44	805970	2556273
1	16	6	1.583	9.5	0.75	15	296	12	693	15	296	12	693	3	400	3	315	1.30	0.00	1.04	2.02	1.29	0.00	2.32	1.00	1.00	5.25	903551	2809516
1	16	3	3.67	11	1.5	17	331	12	1004	17	331	12	1004	3	178	3	191	1.12	0.00	1.76	1.70	1.12	0.00	1.49	1.41	1.12	3.28	1055574	3247087
1	16	4	2.75	11	1.5	19	371	12	772	19	371	12	772	3	235	3	215	1.26	0.00	1.75	1.93	1.21	0.00	1.72	1.58	1.21	3.37	951673	2828533
1	16	5	2.2	11	1.5	17	330	12	729	17	330	12	729	3	296	3	252	1.24	0.00	1.76	1.86	1.23	0.00	2.03	1.57	1.23	3.98	863978	2663579
1	16	6	1.833	11	1.5	15	297	12	696	15	297	12	696	3	348	3	281	1.22	0.00	1.77	1.78	1.24	0.00	2.28	1.56	1.22	4.56	791944	2529274
1	16	7	1.57	11	1.5	14	269	12	670	14	269	12	670	3	400	3	303	1.19	0.00	1.78	1.71	1.24	0.00	2.49	1.55	1.19	5.12	731937	2419590
1	16	4	2.875	11.5	1.75	19	381	12	779	19	381	12	779	3	222	3	208	1.28	0.00	1.95	1.95	1.23	0.00	1.66	1.74	1.23	3.25	968499	2857811
1	16	5	2.3	11.5	1.75	17	337	12	738	17	337	12	738	3	276	3	244	1.26	0.00	1.96	1.87	1.25	0.00	1.97	1.73	1.25	3.85	880444	2695198
1	16	6	1.917	11.5	1.75	15	305	12	704	15	305	12	704	3	333	3	276	1.24	0.00	1.97	1.80	1.26	0.00	2.23	1.73	1.24	4.41	809696	2562392
1	16	7	1.643	11.5	1.75	14	278	12	677	14	278	12	677	3	381	3	296	1.22	0.00	1.89	1.73	1.26	0.00	2.43	1.72	1.22	4.94	750266	2452307
1	16	4	3.25	13	2.5	17	336	12	931	17	336	12	931	3	200	3	205	1.23	0.00	2.02	1.78	1.23	0.00	1.01	1.62	1.01	3.44	1030913	3145055
1	16	5	2.6	13	2.5	18	361	12	761	18	361	12	761	3	250	3	224	1.31	0.00	1.90	1.92	1.29	0.00	1.80	1.74	1.29	3.51	930162	2788077
1	16	6	2.167	13	2.5	16	327	12	726	16	327	12	726	3	296	3	255	1.29	0.00	1.92	1.85	1.30	0.00	2.06	1.73	1.29	4.02	856514	2648998
1	16	7	1.857	13	2.5	15	299	12	699	15	299	12	699	3	348	3	280	1.27	0.00	1.95	1.79	1.31	0.00	2.28	1.72	1.27	4.52	797494	2540744
1	16	4	3.625	14.5	3.25	16	328	12	1004	16	328	12	1004	3	178	3	193	1.13	0.00	1.97	1.70	1.13	0.00	1.52	1.58	1.13	3.32	1051791	3245881
1	16	5	2.9	14.5	3.25	19	382	12	782	19	382	12	782	3	222	3	206	1.28	0.00	1.98	1.95	1.22	0.00	1.66	1.76	1.22	3.24	972367	2866690
1	16	6	2.417	14.5	3.25	17	347	12	747	17	347	12	747	3	267	3	236	1.26	0.00	2.01	1.89	1.23	0.00	1.90	1.76	1.23	3.71	900207	2731639
1	16	7	2.07	14.5	3.25	16	319	12	717	16	319	12	717	3	308	3	263	1.24	0.00	1.92	1.83	1.24	0.00	2.13	1.75	1.24	4.16	838410	2614333
1	16	4	2.875	11.5	0	23	459	12	858	23	459	12	858	3	222	3	235	1.85	0.00	1.00	2.93	1.68	0.00	1.04	1.14	1.00	3.58	1641791	4316689
1	16	5	2.3	11.5	0	20	408	12	807	20	408	12	807	3	276	3	275	1.79	0.00	1.00	2.78	1.67	0.00	1.23	1.12	1.00	4.21	1467447	3977455
1	16	6	1.917	11.5	0	18	367	12	767	18	367	12	767	3	333	3	309	1.73	0.00	1.00	2.63	1.64	0.00	2.41	1.09	1.00	4.80	1318943	3688911
1	16	7	1.643	11.5	0	17	345	12	745	17	345	12	745	3	381	3	337	1.77	0.00	1.00	2.67	1.70	0.00	2.65	1.13	1.00	5.44	1307330	3685384
1	16	4	3.25	13	0.75	17	343	12	931	17	343	12	931	3	200	3	206	1.26	0.00	1.16	1.83	1.25	0.00	1.01	1.00	1.00	3.44	1064419	3215107
1	16	5	2.6	13	0.75	18	361	12	761	18	361	12	761	3	250	3	224	1.31	0.00	1.14	1.92	1.29	0.00	1.80	1.04	1.04	3.51	930162	2788077
1	16	6	2.167	13	0.75	16	327	12	726	16	327	12	726	3	296	3	255	1.29	0.00	1.16	1.85	1.30	0.00	2.06	1.04	1.04	4.02	856514	2648998
1	16	7	1.857	13	0.75	15	299	12	699	15	299	12	699	3	348	3	280	1.27	0.00	1.18	1.79	1.31	0.00	2.28	1.04	1.04	4.52	797494	2540744
1	16	4	3.625	14.5	1.5	16	328	12	1004	16	328	12	1004	3	178	3	193	1.13	0.00	1.78	1.70	1.13	0.00	1.52	1.43	1.13	3.32	1051791	3245881
1	16	5	2.9	14.5	1.5	19	382	12	782	19	382	12	782	3	222	3	206	1.28	0.00	1.80	1.95	1.22	0.00	1.66	1.60	1.22	3.24	972367	2866690
1	16	6	2.417	14.5	1.5	17	347	12	747	17	347	12	747	3	267	3	236	1.26	0.00	1.55	1.89	1.23	0.00	1.90	1.36	1.23	3.71	900207	2731639
1	16	7	2.07	14.5	1.5	16	319	12	717	16	319	12	717	3	308	3	263	1.24	0.00	1.27	1.83	1.24	0.00	2.13	1.16	1.16	4.16	838410	2614333
1	16	5	3	15	0	25	504	12	903	25	504	12	903	3	216	3	241	2.17	0.00	1.00	3.47	1.92	0.00	1.05	1.33	1.00	3.61	2069626	5186425
1	16	6	2.5	15	0	22	436	12	836	22	436	12	836	3	258	3	264	1.91	0.00	1.00	2.98	1.74	0.00	1.17	1.18	1.00	4.01	1632778	4313405
1	16	7	2.14	15	0	21	413	12	811	21	413	12	811	3	296	3	300	1.96	0.00	1.00	3.04	1.80	0.00	1.33	1.23	1.00	4.55	1627726	4316959
1	16	8	1.875	15	0	19	377	12	777	19	377	12	777	3	333	3	320	1.87	0.00	1.00	2.84	1.75	0.00	2.50	1.18	1.00	4.97	1454030	3975040
1	16	9	1.67	15	0	17	348	12	747	17	348	12	747	3	381	3	334	1.73	0.00	1.00	2.67	1.64	0.00	2.48	1.13	1.00	5.37	1309094	3686070
1	16	5	3.3	16.5	0.75	17	343	12	942	17	343	12	942	3	195	3	204	1.26	0.00	1.17	1.83	1.26	0.00	1.01	1.00	1.00	3.43	1075817	3248251
1	16	6	2.75	16.5	0.75	19	371	12	772	19	371	12	772	3	235	3	215	1.32	0.00	1.16	1.93	1.29	0.00	1.73	1.04	1.04	3.37	951673	2828533
1	16	7	2.357	16.5	0.75	17	343	12	741	17	343	12	741	3	276	3	240	1.31	0.00	1.18	1.88	1.30	0.00	1.94	1.04	1.04	3.77	890008	2710847
1	16	8	2.06	16.5	0.75	16	318	12	717	16	318	12	717	3	308	3	265	1.29	0.00	1.14	1.83	1.30	0.00	2.14	1.04	1.04	4.18	838235	2615657
1	16	9	1.83	16.5	0.75	15	297	12	695	15	297	12	695	3	348	3	281	1.27	0.00	1.15	1.78	1.30	0.00	2.28	1.02	1.02	4.56	790737	2525826
1	16	5	3.6	18	1.5	16	326	12	1004	16	326	12	1004	3	182	3	195	1.14	0.00	1.79	1.70	1.14	0.00	1.53	1.43	1.14	3.35	1051919	3250150
1	16	6	3	18	1.5	18	355	12	852	18	355	12	852	3	216	3	210	1.24	0.00	1.77	1.86	1.21	0.00	1.01	1.55	1.01	3.41	1000713	3002830
1	16	7	2.57	18	1.5	18	359	12	759	18	359	12	759	3	250	3	226	1.28	0.00	1.58	1.91	1.24	0.00	1.82	1.45	1.24	3.54	927070	2782914
1	16	8	2.25	18	1.5	17	334	12	733	17	334	12	733	3	286	3	248	1.26	0.00	1.42	1.86	1.24	0.00	2.01	1.26	1.24	3.91	871819	2677766
1	16	9	2	18	1.5	16	313	12	711	16	313	12	711	3	320	3	270	1.25	0.00	1.22	1.82	1.25	0.00	2.19	1.12	1.12	4.27	826433	2592698
1	16	6	3.08	18.5	0	27	532	12	931	27	532	12	931	3	211	3	244	2.38	0.00	1.00	3.83	2.07	0.00	1.06	1.46	1.00	3.63	2369134	5779649
1	16	7	2.64	18.5	0	24	483	12	881	24	483	12	881	3	242	3	268	2.23	0.00	1.00	3.54	1.98	0.00	1.17	1.38	1.00	4.00	2069414	5192158
1	16	8	2.32	18.5	0	22	442	12	841	22	442	12	841	3	276	3	289	2.10	0.00	1.00	3.28	1.90	0.00	1.27	1.30	1.00	4.35	1824995	4712119
1	16	9	2.06	18.5	0	20	407	12	805	20	407	12	805	3	308	3	309	1.99	0.00	1.00	3.05	1.82	0.00	1.37	1.24	1.00	4.69	1622935	4311067
1	16	10	1.85	18.5	0	20	390	12	790	20	390	12	790	3	348	3	332	2.02	0.00	1.00	3.08	1.86	0.00	1.47	1.27	1.00	5.12	1613655	4305723
1	16	6	3.58	21.5	1.5	16	325	12	1004	16	325	12	1004	3	182	3	195	1.14	0.00	1.78	1.69	1.15	0.00	1.54	1.43	1.14	3.37	1050540	3250277
1	16	7	3.07	21.5	1.5	18	350	12	872	18	350	12	872	3	211	3	208	1.23	0.00	1.79	1.84	1.21	0.00	1.01	1.53	1.01	3.41	1010048	3040861
1	16	8	2.69	21.5	1.5	18	368	12	767	18	368	12	767	3	242	3	218	1.29	0.00	1.67	1.93	1.24	0.00	1.77	1.52	1.24	3.42	944245	2813915
1	16	9	2.39	21.5	1.5	17	345	12	745	17	345	12	745	3	267	3	238	1.27	0.00	1.44	1.89	1.25	0.00	1.93	1.34	1.25	3.74	896528	2725089
1	16	10	2.15	21.5	1.5	16	326	12	724	16	326	12	724	3	296	3	256	1.26	0.00	1.34	1.85	1.25	0.00	2.08	1.21	1.21	4.04	853878	2643427
1	16	7	3.14	22	0	42	846	14	1247	42	846	14	1247	3	205	3	380	6.61	0.00	1.09	10.90	5.05	0.00	2.31	4.20	1.09	5.44	10180979	19140734
1	16	8	2.75	22	0	26	512	12	910	26	512	12	910	3	235	3	268	2.44	0.00	1.00	3.88	2.12	0.00	1.16	1.50	1.00	3.97	2360611	5764433
1	16	9	2.44	22	0	24	470	12	869	24	470	12	869	3	267	3	286	2.27	0.00	1.00	3.58	2.01	0.00	1.25	1.40	1.00	4.27	2072227	5203172
1	16	10	2.2	22	0	22	433	12	833	22	433	12	833	3	296	3	302	2.13	0.00	1.00	3.29	1.92	0.00	1.33	1.32	1.00	4.54	1819280	4706117

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	16	11	2	22	0	21	418	12	818	21	418	12	818	3	320	3	327	2.16	0.00	1.00	3.33	1.96	0.00	1.43	1.35	1.00	4.91	1814885	4704702
1	16	12	1.83	22	0	20	390	12	789	20	390	12	789	3	348	3	334	2.04	0.00	1.00	3.11	1.87	0.00	1.48	1.27	1.00	5.17	1626907	4332610
1	16	7	3.57	25	1.5	16	324	12	1004	16	324	12	1004	3	182	3	196	1.15	0.00	1.78	1.69	1.15	0.00	1.55	1.43	1.15	3.37	1048676	3247951
1	16	8	3.125	25	1.5	17	348	12	887	17	348	12	887	3	205	3	207	1.23	0.00	1.81	1.83	1.20	0.00	1.01	1.53	1.01	3.41	1018226	3071517
1	16	9	2.78	25	1.5	19	374	12	774	19	374	12	774	3	235	3	213	1.29	0.00	1.74	1.94	1.24	0.00	1.73	1.57	1.24	3.34	957356	2839251
1	16	10	2.5	25	1.5	18	354	12	753	18	354	12	753	3	258	3	230	1.28	0.00	1.53	1.91	1.25	0.00	1.87	1.41	1.25	3.61	915264	2759692
1	16	11	2.27	25	1.5	17	336	12	734	17	336	12	734	3	286	3	246	1.27	0.00	1.43	1.87	1.25	0.00	2.00	1.27	1.25	3.88	875199	2683192
1	16	12	1.83	25	1.5	17	338	12	738	17	338	12	738	3	348	3	304	1.12	0.00	1.15	2.31	1.00	0.00	2.40	1.16	1.00	4.84	1109200	3244617
1	20	3	1.5	4.5	0	21	425	12	985	21	425	12	985	3	526	3	433	2.05	0.00	1.00	3.47	1.79	0.00	1.61	1.31	1.00	7.88	3685732	8514523
1	20	3	2	6	0.75	24	480	12	1040	24	480	12	1040	3	400	3	368	2.21	0.00	1.00	3.45	1.94	0.00	2.32	1.29	1.00	6.24	3823421	8764530
1	20	4	1.5	6	0.75	21	418	12	978	21	418	12	978	3	526	3	427	2.02	0.00	1.00	3.36	1.77	0.00	1.61	1.31	1.00	7.82	3529715	8237050
1	20	3	2.33	7	1.25	17	337	12	894	17	337	12	894	3	345	3	251	1.00	0.00	1.36	1.48	1.01	0.00	1.15	1.12	1.00	4.60	1317743	3835731
1	20	4	1.75	7	1.25	16	311	12	868	16	311	12	868	3	455	3	315	1.14	0.00	1.11	1.66	1.15	0.00	1.40	1.00	1.00	5.95	1452471	4201478
1	20	3	2.67	8	0	24	472	12	1030	24	472	12	1030	3	303	3	269	1.70	0.00	1.00	2.57	1.55	0.00	1.74	1.10	1.00	4.63	2725252	6693745
1	20	4	2	8	0	21	410	12	970	21	410	12	970	3	400	3	336	1.70	0.00	1.00	2.51	1.59	0.00	1.45	1.12	1.00	5.82	2518147	6332770
1	20	5	1.6	8	0	18	364	12	924	18	364	12	924	3	500	3	375	1.57	0.00	1.00	2.43	1.47	0.00	1.52	1.12	1.00	6.93	2331130	6006141
1	20	3	3.17	9.5	0.75	20	409	12	1004	20	409	12	1004	3	256	3	209	1.20	0.00	1.15	1.71	1.17	0.00	1.48	1.00	1.00	3.80	1703993	4639462
1	20	4	2.375	9.5	0.75	18	357	12	917	18	357	12	917	3	333	3	255	1.18	0.00	1.14	1.63	1.18	0.00	1.17	1.00	1.00	4.63	1497271	4223615
1	20	5	1.9	9.5	0.75	16	313	12	873	16	313	12	873	3	417	3	296	1.15	0.00	1.13	1.56	1.19	0.00	1.37	1.00	1.00	5.51	1368257	4003554
1	20	6	1.583	9.5	0.75	16	312	12	869	16	312	12	869	3	500	3	343	1.22	0.00	1.00	1.83	1.21	0.00	1.45	1.00	1.00	6.59	1617667	4574699
1	20	3	3.67	11	1.5	21	425	12	1004	21	425	12	1004	3	222	3	181	1.05	0.00	1.68	1.58	1.00	0.00	1.29	1.38	1.00	3.28	1572455	4304977
1	20	4	2.75	11	1.5	18	364	12	924	18	364	12	924	3	294	3	220	1.01	0.00	1.65	1.48	1.00	0.00	1.02	1.36	1.00	4.03	1356294	3882230
1	20	5	2.2	11	1.5	16	320	12	880	16	320	12	880	3	370	3	260	1.00	0.00	1.63	1.42	1.02	0.00	1.22	1.36	1.00	4.80	1244045	3692716
1	20	6	1.833	11	1.5	14	289	12	846	14	289	12	846	3	435	3	291	1.00	0.00	1.65	1.39	1.04	0.00	1.38	1.38	1.00	5.54	1173792	3583628
1	20	7	1.57	11	1.5	13	263	12	822	13	263	12	822	2	345	2	210	1.00	0.00	1.67	1.37	1.07	0.00	1.52	1.40	1.00	6.28	1122041	3517144
1	20	4	2.875	11.5	1.75	18	364	12	942	18	364	12	942	3	278	3	214	1.01	0.00	1.82	1.45	1.00	0.00	1.00	1.46	1.00	3.93	1353128	3885055
1	20	5	2.3	11.5	1.75	16	326	12	883	16	326	12	883	3	345	3	250	1.00	0.00	1.78	1.41	1.02	0.00	1.17	1.47	1.00	4.61	1233671	3654060
1	20	6	1.917	11.5	1.75	15	294	12	851	15	294	12	851	3	417	3	283	1.00	0.00	1.80	1.38	1.04	0.00	1.34	1.49	1.00	5.33	1166358	3554414
1	20	7	1.643	11.5	1.75	13	268	12	827	13	268	12	827	3	476	3	307	1.00	0.00	1.83	1.35	1.07	0.00	1.48	1.52	1.00	6.04	1116189	3490427
1	20	4	3.25	13	2.5	18	363	12	1004	18	363	12	1004	3	250	3	198	1.00	0.00	1.78	1.40	1.00	0.00	1.46	1.40	1.00	3.71	1373541	3969707
1	20	5	2.6	13	2.5	17	341	12	901	17	341	12	901	3	312	3	226	1.00	0.00	1.75	1.37	1.02	0.00	1.06	1.41	1.00	4.16	1223770	3603817
1	20	6	2.167	13	2.5	15	309	12	867	15	309	12	867	3	370	3	259	1.00	0.00	1.77	1.35	1.04	0.00	1.22	1.43	1.00	4.80	1158617	3504442
1	20	7	1.857	13	2.5	14	283	12	840	14	283	12	840	3	435	3	285	1.00	0.00	1.80	1.33	1.07	0.00	1.36	1.45	1.00	5.43	1105873	3428385
1	20	4	3.625	14.5	3.25	21	417	12	1004	21	417	12	1004	3	222	3	183	1.05	0.00	1.85	1.55	1.00	0.00	1.31	1.53	1.00	3.32	1542081	4250306
1	20	5	2.9	14.5	3.25	18	368	12	946	18	368	12	946	3	278	3	213	1.02	0.00	1.79	1.47	1.00	0.00	1.00	1.50	1.00	3.91	1377865	3937165
1	20	6	2.417	14.5	3.25	17	335	12	894	17	335	12	894	3	333	3	241	1.00	0.00	1.83	1.42	1.01	0.00	1.13	1.49	1.00	4.44	1258564	3698633
1	20	7	2.07	14.5	3.25	15	308	12	865	15	308	12	865	3	385	3	271	1.00	0.00	1.78	1.40	1.03	0.00	1.28	1.51	1.00	5.01	1200792	3609532
1	20	4	2.875	11.5	0	24	479	12	1040	24	479	12	1040	3	278	3	251	1.64	0.00	1.00	2.49	1.49	0.00	1.64	1.08	1.00	4.34	2655045	6551700
1	20	5	2.3	11.5	0	22	441	12	1000	22	441	12	1000	3	345	3	302	1.71	0.00	1.00	2.56	1.57	0.00	1.32	1.14	1.00	5.22	2643301	6554393
1	20	6	1.917	11.5	0	20	398	12	959	20	398	12	959	3	417	3	342	1.67	0.00	1.00	2.46	1.56	0.00	1.49	1.13	1.00	6.00	2445055	6198443
1	20	7	1.643	11.5	0	19	375	12	933	19	375	12	933	3	476	3	373	1.72	0.00	1.00	2.50	1.61	0.00	1.64	1.17	1.00	6.81	2432824	6194210
1	20	4	3.25	13	0.75	21	416	12	1004	21	416	12	1004	3	250	3	205	1.20	0.00	1.15	1.72	1.15	0.00	1.46	1.00	1.00	3.71	1713136	4644281
1	20	5	2.6	13	0.75	19	376	12	935	19	376	12	935	3	312	3	238	1.18	0.00	1.12	1.66	1.16	0.00	1.10	1.00	1.00	4.32	1551224	4316127
1	20	6	2.167	13	0.75	17	339	12	898	17	339	12	898	3	370	3	272	1.17	0.00	1.11	1.61	1.18	0.00	1.26	1.00	1.00	4.97	1444177	4131175
1	20	7	1.857	13	0.75	15	309	12	868	15	309	12	868	3	435	3	299	1.15	0.00	1.12	1.56	1.19	0.00	1.40	1.00	1.00	5.61	1355518	3980733
1	20	4	3.625	14.5	1.5	21	417	12	1004	21	417	12	1004	3	222	3	183	1.05	0.00	1.68	1.55	1.00	0.00	1.31	1.38	1.00	3.32	1542081	4250306
1	20	5	2.9	14.5	1.5	18	368	12	946	18	368	12	946	3	278	3	213	1.02	0.00	1.63	1.47	1.00	0.00	1.00	1.36	1.00	3.91	1377865	3937165
1	20	6	2.417	14.5	1.5	17	335	12	894	17	335	12	894	3	333	3	241	1.00	0.00	1.41	1.42	1.01	0.00	1.13	1.15	1.00	4.44	1258564	3698633
1	20	7	2.07	14.5	1.5	15	308	12	866	15	308	12	866	3	385	3	271	1.00	0.00	1.18	1.40	1.03	0.00	1.28	1.00	1.00	5.02	1203896	3617768
1	20	5	3	15	0	25	501	12	1060	25	501	12	1060	3	270	3	247	1.73	0.00	1.00	2.63	1.55	0.00	1.58	1.13	1.00	4.24	2860042	6944786
1	20	6	2.5	15	0	23	468	12	1027	23	468	12	1027	3	323	3	288	1.79	0.00	1.00	2.68	1.61	0.00	1.88	1.18	1.00	4.93	2850262	6944279
1	20	7	2.14	15	0	21	429	12	988	21	429	12	988	3	370	3	321	1.74	0.00	1.00	2.58	1.60	0.00	1.40	1.16	1.00	5.54	2641837	6560857
1	20	8	1.875	15	0	20	406	12	966	20	406	12	966	3	417	3	353	1.78	0.00	1.00	2.61	1.64	0.00	1.54	1.19	1.00	6.18	2624555	6546212
1	20	9	1.67	15	0	19	387	12	948	19	387	12	948	3	476	3	378	1.76	0.00	1.00	2.64	1.62	0.00	1.56	1.22	1.00	6.81	2614118	6544080
1	20	5	3.3	16.5	0.75	21	420	12	1004	21	420	12	1004	3	244	3	202	1.20	0.00	1.10	1.72	1.15	0.00	1.44	1.00	1.00	3.65	1714376	4638772
1	20	6	2.75	16.5	0.75	19	387	12	947	19	387	12	947	3	294	3	229	1.19	0.00	1.08	1.67	1.16	0.00	1.06	1.00	1.00	4.13	1580445	4366816
1	20	7	2.357	16.5	0.75	18	355	12	915	18	355	12	915	3	345	3	256	1.18	0.00	1.09	1.63	1.17	0.00	1.19	1.00	1.00	4.66	1488123	4205869
1	20	8	2.06	16.5	0.75	16	329	12	888	16	329	12	888	3	385	3	283	1.17	0.00	1.10	1.59	1.18	0.00	1.32	1.00	1.00	5.17	1414602	4080580
1	20	9	1.83	16.5	0.75	15	309	12	867	15	309	12	867	3	435	3	303	1.16	0.00	1.07	1.58	1.20	0.00	1.41	1.00	1.00	5.69	1371980	4018710
1	20	5	3.6	18	1.5	21	413	12	1004	21	413	12	1004	3	227	3	183	1.05	0.00	1.67	1.54	1.00	0.00	1.33	1.37	1.00	3.35	1524916	4219240
1	20	6	3	18	1.5	18	363	12	976	18	363	12	976	3	270	3	210	1.01	0.00	1.66	1.45	1.00	0.00	1.00	1.35	1.00	3.90	1398391	4014152
1	20	7	2.57	18	1.5	17	346	12	904	17	346	12	904	3	312	3	230	1.00	0.00	1.45	1.43	1.00	0.00	1.08	1.22	1.00	4.22	1276038	3720262
1	20	8	2.25	18	1.5	16	321	12	879	16	321	12	879	3	357	3	254	1.00	0.00	1.29	1.40	1.02	0.00	1.20	1.07	1.00	4.69	1219139	3628980
1	20	9	2	18	1.5	15	308	12	867	15	308	12	867	3	400	3	281	1.04	0.00	1.13	1.45	1.07	0.00	1.33	1.00	1.00	5.20	1249250	3728744
1	20	6	3.08	18.5	0	26	520	12	1080	26	520	12	1080	3	263	3	247	1.83	0.00	1.00	2.78	1.62	0.00	1.55	1.19	1.00	4.21	3094257	7396439
1	20	7	2.64	18.5	0	24	478	12	1037	24	478	12	1037	3	303	3	275	1.78	0.00	1.00	2.67	1.60	0.00	1.79	1.16	1.00	4.71	2858055	6953740
1	20	8	2.32	18.5	0	23	455	12	1014	23	455	12	1014	3	345	3	306	1.82	0.00	1.00	2.71	1.64	0.00	2.02	1.20	1.00	5.24	2847632	6946939
1	20	9	2.06	18.5	0	21	422	12	982	21	422	12	982	3	385	3	332	1.76	0.00	1.00	2.59	1.62	0.00	1.45	1.17	1.00	5.72	2634647	6553767
1	20	10	1.85	18.5	0	20	405	12	963	20	405	12	963	3	435	3	355	1.79	0.00	1.00	2.62	1.65	0.00	1.55	1.20	1.00	6.25	2625958	6547618
1	20	6	3.58	21.5	1.5	21	410	12	1004	21	410	12	1004	3	227	3	184	1.05	0.00	1.66	1.53	1.00	0.00	1.34	1.37	1.00	3.37	1514967	4202102
1	20	7	3.07	21.5	1.5	18	361	12	996	18	361	12	996	3	263	3	208	1.01	0.00	1.61	1.44	1.00	0.00	1.01	1.34	1.00	3.89	1413231	4067488
1	20	8	2.69	21.5	1.5	18	354	12	914	18	354	12	914	3	303	3	222	1.01	0.00	1.53	1.43	1.00	0.00	1.05	1.27	1.00	4.08	1294959	3752882
1	20	9	2.39	21.5	1.5	17	331	12	889	17	331	12	889	3	333	3	242	1.00	0.00	1.32	1.40	1.01	0.00	1.14	1.13	1.00	4.46	1233851	3645636
1	20	10	2.15	21.5	1.5	16	312	12	870	16	312	12	870	3	370	3	262	1.00	0.00	1.22	1.38	1.02	0.00	1.24	1.02	1.00	4.86	1194113	3585690

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	20	7	3.14	22	0	26	524	12	1083	26	524	12	1083	3	256	3	243	1.83	0.00	1.00	2.77	1.62	0.00	1.53	1.18	1.00	4.14	3094666	7394308
1	20	8	2.75	22	0	25	498	12	1058	25	498	12	1058	3	294	3	271	1.87	0.00	1.00	2.81	1.66	0.00	1.73	1.22	1.00	4.62	3080558	7378029
1	20	9	2.44	22	0	23	464	12	1024	23	464	12	1024	3	333	3	294	1.81	0.00	1.00	2.70	1.63	0.00	1.93	1.18	1.00	5.04	2859507	6966207
1	20	10	2.2	22	0	22	446	12	1004	22	446	12	1004	3	370	3	320	1.84	0.00	1.00	2.72	1.66	0.00	2.13	1.21	1.00	5.48	2841267	6938524
1	20	11	2	22	0	21	429	12	989	21	429	12	989	3	400	3	347	1.87	0.00	1.00	2.75	1.69	0.00	1.50	1.24	1.00	5.93	2832878	6936352
1	20	12	1.83	22	0	21	415	12	975	21	415	12	975	3	435	3	366	1.90	0.00	1.00	2.79	1.72	0.00	1.57	1.26	1.00	6.39	2845521	6969064
1	20	7	3.57	25	1.5	20	407	12	1004	20	407	12	1004	3	227	3	184	1.04	0.00	1.65	1.52	1.00	0.00	1.34	1.36	1.00	3.37	1503945	4181557
1	20	8	3.125	25	1.5	18	362	12	1004	18	362	12	1004	3	256	3	206	1.01	0.00	1.62	1.44	1.00	0.00	1.53	1.33	1.00	3.86	1419171	4083927
1	20	9	2.78	25	1.5	18	361	12	920	18	361	12	920	3	294	3	217	1.01	0.00	1.53	1.44	1.00	0.00	1.02	1.31	1.00	3.97	1311475	3779970
1	20	10	2.5	25	1.5	17	338	12	898	17	338	12	898	3	323	3	234	1.00	0.00	1.39	1.40	1.00	0.00	1.11	1.17	1.00	4.31	1246039	3663386
1	20	11	2.27	25	1.5	16	321	12	881	16	321	12	881	3	357	3	252	1.00	0.00	1.25	1.39	1.02	0.00	1.19	1.07	1.00	4.66	1214512	3618917
1	20	12	1.83	25	1.5	19	375	12	935	19	375	12	935	3	435	3	341	1.14	0.00	1.12	2.28	1.00	0.00	1.50	1.25	1.00	6.13	2194406	5714105
1	24	3	1.5	4.5	0	23	460	13	1178	23	460	13	1178	3	429	2	488	2.05	0.00	1.00	3.33	1.81	0.00	2.71	1.38	1.00	10.17	6263110	13447443
1	24	3	2	6	0.75	26	516	14	1235	26	516	14	1235	3	480	3	409	2.18	0.00	1.00	3.27	1.94	0.00	2.77	1.36	1.00	8.38	6356461	13688892
1	24	4	1.5	6	0.75	23	452	13	1171	23	452	13	1171	3	429	2	481	2.02	0.00	1.00	3.22	1.79	0.00	2.71	1.38	1.00	10.05	5999639	13010218
1	24	3	2.33	7	1.25	18	366	12	1085	18	366	12	1085	3	414	3	279	1.01	0.00	1.39	1.47	1.00	0.00	1.81	1.13	1.00	5.59	2302873	6165345
1	24	4	1.75	7	1.25	16	325	12	1042	16	325	12	1042	3	545	3	344	1.08	0.00	1.16	1.53	1.09	0.00	2.25	1.00	1.00	7.15	2336466	6331711
1	24	3	2.67	8	0	26	511	14	1231	26	511	14	1231	3	364	3	298	1.72	0.00	1.00	2.50	1.56	0.00	2.07	1.18	1.00	6.24	4648499	10712576
1	24	4	2	8	0	22	447	13	1167	22	447	13	1167	3	480	3	377	1.73	0.00	1.00	2.47	1.59	0.00	2.43	1.20	1.00	7.48	4390867	10229266
1	24	5	1.6	8	0	20	400	12	1120	20	400	12	1120	3	400	2	426	1.61	0.00	1.00	2.42	1.49	0.00	2.45	1.21	1.00	8.62	4149928	9793845
1	24	3	3.17	9.5	0.75	22	445	13	1165	22	445	13	1165	3	308	3	224	1.17	0.00	1.13	1.62	1.14	0.00	1.57	1.00	1.00	4.70	2733723	6989815
1	24	4	2.375	9.5	0.75	19	383	12	1100	19	383	12	1100	3	400	3	280	1.15	0.00	1.13	1.56	1.15	0.00	1.83	1.00	1.00	5.60	2498689	6556491
1	24	5	1.9	9.5	0.75	17	335	12	1052	17	335	12	1052	3	500	3	327	1.13	0.00	1.15	1.50	1.16	0.00	2.20	1.00	1.00	6.64	2299565	6227652
1	24	6	1.583	9.5	0.75	16	326	12	1043	16	326	12	1043	3	414	2	376	1.16	0.00	1.04	1.69	1.15	0.00	2.33	1.00	1.00	7.91	2600261	6887507
1	24	3	3.67	11	1.5	23	464	13	1183	23	464	13	1183	3	267	3	196	1.06	0.00	1.53	1.54	1.00	0.00	1.41	1.32	1.00	4.19	2622747	6733843
1	24	4	2.75	11	1.5	20	396	12	1115	20	396	12	1115	3	353	3	244	1.03	0.00	1.57	1.46	1.00	0.00	1.64	1.30	1.00	4.97	2350721	6223814
1	24	5	2.2	11	1.5	17	346	12	1066	17	346	12	1066	3	444	3	288	1.00	0.00	1.57	1.39	1.01	0.00	1.94	1.29	1.00	5.81	2147245	5870931
1	24	6	1.833	11	1.5	16	312	12	1028	16	312	12	1028	3	522	3	323	1.00	0.00	1.57	1.37	1.03	0.00	2.27	1.31	1.00	6.73	2038738	5709361
1	24	7	1.57	11	1.5	14	283	12	1003	14	283	12	1003	3	414	2	351	1.00	0.00	1.59	1.34	1.06	0.00	1.67	1.33	1.00	7.67	1962198	5624386
1	24	4	2.875	11.5	1.75	20	402	12	1120	20	402	12	1120	3	333	3	234	1.02	0.00	1.68	1.44	1.00	0.00	1.59	1.39	1.00	4.79	2327976	6164474
1	24	5	2.3	11.5	1.75	18	352	12	1071	18	352	12	1071	3	414	3	277	1.00	0.00	1.69	1.38	1.01	0.00	1.86	1.38	1.00	5.59	2130266	5817891
1	24	6	1.917	11.5	1.75	16	317	12	1036	16	317	12	1036	3	500	3	315	1.00	0.00	1.70	1.35	1.03	0.00	2.19	1.40	1.00	6.49	2030069	5680399
1	24	7	1.643	11.5	1.75	14	289	12	1006	14	289	12	1006	3	571	3	341	1.00	0.00	1.71	1.33	1.06	0.00	2.47	1.42	1.00	7.35	1943124	5559161
1	24	4	3.25	13	2.5	21	418	13	1139	21	418	13	1139	3	300	3	211	1.02	0.00	1.65	1.40	1.00	0.00	1.47	1.33	1.00	4.39	2287125	6057824
1	24	5	2.6	13	2.5	19	370	12	1088	19	370	12	1088	3	375	3	249	1.00	0.00	1.66	1.35	1.00	0.00	1.66	1.32	1.00	5.02	2107160	5724735
1	24	6	2.167	13	2.5	17	334	12	1052	17	334	12	1052	3	444	3	287	1.00	0.00	1.67	1.32	1.03	0.00	1.97	1.34	1.00	5.83	2007277	5584005
1	24	7	1.857	13	2.5	15	305	12	1022	15	305	12	1022	3	522	3	316	1.00	0.00	1.68	1.30	1.06	0.00	2.25	1.36	1.00	6.60	1922323	5466073
1	24	4	3.625	14.5	3.25	23	458	13	1177	23	458	13	1177	3	267	3	197	1.05	0.00	1.66	1.52	1.00	0.00	1.42	1.44	1.00	4.20	2567893	6621985
1	24	5	2.9	14.5	3.25	20	405	12	1125	20	405	12	1125	3	333	3	234	1.03	0.00	1.67	1.46	1.00	0.00	1.60	1.42	1.00	4.80	2360616	6235267
1	24	6	2.417	14.5	3.25	18	364	12	1083	18	364	12	1083	3	400	3	268	1.01	0.00	1.69	1.40	1.00	0.00	1.78	1.40	1.00	5.38	2187571	5917941
1	24	7	2.07	14.5	3.25	17	332	12	1052	17	332	12	1052	3	462	3	301	1.00	0.00	1.69	1.37	1.02	0.00	2.06	1.41	1.00	6.10	2082677	5761078
1	24	4	2.875	11.5	0	26	519	14	1240	26	519	14	1240	3	333	3	278	1.66	0.00	1.00	2.42	1.50	0.00	1.98	1.16	1.00	5.88	4514903	10469457
1	24	5	2.3	11.5	0	24	478	13	1197	24	478	13	1197	3	414	3	337	1.72	0.00	1.00	2.49	1.57	0.00	2.27	1.22	1.00	6.85	4519786	10466459
1	24	6	1.917	11.5	0	22	435	13	1155	22	435	13	1155	3	500	3	384	1.70	0.00	1.00	2.43	1.57	0.00	2.48	1.21	1.00	7.65	4267671	10005261
1	24	7	1.643	11.5	0	20	400	12	1119	20	400	12	1119	3	571	3	415	1.67	0.00	1.00	2.37	1.56	0.00	2.62	1.20	1.00	8.37	4032641	9575614
1	24	4	3.25	13	0.75	23	451	13	1170	23	451	13	1170	3	300	3	220	1.17	0.00	1.10	1.62	1.12	0.00	1.56	1.00	1.00	4.63	2753889	7025343
1	24	5	2.6	13	0.75	20	402	12	1120	20	402	12	1120	3	375	3	262	1.16	0.00	1.12	1.58	1.13	0.00	1.75	1.00	1.00	5.30	2574204	6695111
1	24	6	2.167	13	0.75	18	363	12	1082	18	363	12	1082	3	444	3	301	1.14	0.00	1.11	1.54	1.14	0.00	1.98	1.00	1.00	5.99	2424635	6436749
1	24	7	1.857	13	0.75	17	330	12	1048	17	330	12	1048	3	522	3	331	1.13	0.00	1.11	1.49	1.16	0.00	2.25	1.00	1.00	6.77	2281259	6201451
1	24	4	3.625	14.5	1.5	23	458	13	1177	23	458	13	1177	3	267	3	197	1.05	0.00	1.53	1.52	1.00	0.00	1.42	1.32	1.00	4.20	2567893	6621985
1	24	5	2.9	14.5	1.5	20	405	12	1125	20	405	12	1125	3	333	3	234	1.03	0.00	1.54	1.46	1.00	0.00	1.60	1.31	1.00	4.80	2360616	6235267
1	24	6	2.417	14.5	1.5	18	364	12	1083	18	364	12	1083	3	400	3	268	1.01	0.00	1.42	1.40	1.00	0.00	1.78	1.18	1.00	5.38	2187571	5917941
1	24	7	2.07	14.5	1.5	17	332	12	1052	17	332	12	1052	3	462	3	301	1.00	0.00	1.22	1.37	1.02	0.00	2.06	1.02	1.00	6.10	2082677	5761078
1	24	5	3	15	0	27	540	14	1259	27	540	14	1259	3	324	3	272	1.74	0.00	1.00	2.52	1.55	0.00	1.97	1.20	1.00	5.81	4786251	10971346
1	24	6	2.5	15	0	25	505	13	1223	25	505	13	1223	3	387	3	319	1.79	0.00	1.00	2.58	1.61	0.00	2.21	1.25	1.00	6.57	4793647	10969053
1	24	7	2.14	15	0	23	465	13	1185	23	465	13	1185	3	444	3	359	1.76	0.00	1.00	2.52	1.60	0.00	2.39	1.24	1.00	7.21	4531867	10489486
1	24	8	1.875	15	0	22	441	13	1161	22	441	13	1161	3	500	3	396	1.79	0.00	1.00	2.54	1.64	0.00	2.57	1.27	1.00	7.90	4517084	10458882
1	24	9	1.67	15	0	21	412	12	1131	21	412	12	1131	3	571	3	418	1.71	0.00	1.00	2.47	1.57	0.00	2.51	1.25	1.00	8.42	4267538	10002838
1	24	5	3.3	16.5	0.75	23	454	13	1173	23	454	13	1173	3	293	3	217	1.17	0.00	1.10	1.62	1.12	0.00	1.55	1.00	1.00	4.58	2758079	7030758
1	24	6	2.75	16.5	0.75	21	413	12	1132	21	413	12	1132	3	353	3	250	1.16	0.00	1.09	1.59	1.13	0.00	1.71	1.00	1.00	5.12	2607189	6754116
1	24	7	2.357	16.5	0.75	19	380	12	1100	19	380	12	1100	3	414	3	282	1.15	0.00	1.10	1.56	1.14	0.00	1.86	1.00	1.00	5.64	2486842	6541183
1	24	8	2.06	16.5	0.75	18	352	12	1070	18	352	12	1070	3	462	3	312	1.14	0.00	1.10	1.52	1.15	0.00	2.08	1.00	1.00	6.23	2373511	6349538
1	24	9	1.83	16.5	0.75	16	329	12	1049	16	329	12	1049	3	522	3	335	1.14	0.00	1.11	1.51	1.16	0.00	2.27	1.00	1.00	6.88	2309508	6268127
1	24	5	3.6	18	1.5	23	455	13	1173	23	455	13	1173	3	273	3	198	1.05	0.00	1.51	1.50	1.00	0.00	1.42	1.31	1.00	4.20	2537438	6557775
1	24	6	3	18	1.5	21	412	12	1130	21	412	12	1130	3	324	3	227	1.03	0.00	1.54	1.46	1.00	0.00	1.57	1.30	1.00	4.68	2370576	6244649
1	24	7	2.57	18	1.5	19	377	12	1096	19	377	12	1096	3	375	3	255	1.02	0.00	1.48	1.41	1.00	0.00	1.70	1.25	1.00	5.14	2232703	5992047
1	24	8	2.25	18	1.5	17	347	12	1065	17	347	12	1065	3	429	3	281	1.00	0.00	1.29	1.37	1.01	0.00	1.91	1.09	1.00	5.68	2104300	5770513
1	24	9	2	18	1.5	16	329	12	1046	16	329	12	1046	3	480	3	310	1.02	0.00	1.16	1.39	1.04	0.00	2.14	1.00	1.00	6.28	2099625	5802741
1	24	6	3.08	18.5	0	28	558	14	1277	28	558	14	1277	3	316	3	271	1.82	0.00	1.00	2.64	1.61	0.00	1.99	1.25	1.00	5.82	5094721	11542185
1	24	7	2.64	18.5	0	26	515	14	1235	26	515	14	1235	3	364	3	304	1.78	0.00	1.00	2.57	1.59	0.00	2.15	1.23	1.00	6.35	4799660	10990028
1	24	8	2.32	18.5	0	25	490	13	1210	25	490	13	1210	3	414	3	340	1.82	0.00	1.00	2.61	1.64	0.00	2.32	1.27	1.00	6.93	4798002	10976764
1	24	9	2.06	18.5	0	23	457	13	1178	23	457	13	1178	3	462	3	371	1.78	0.00	1.00	2.52	1.61	0.00	2.46	1.25	1.00	7.40	4519742	10468173
1	24	10	1.85	18.5	0	22	438	13	1159	22	438	13	1159	3	522	3	399	1.80	0.00	1.00	2.55	1.65	0.00	2.59	1.27	1.00	7.98	4517446	10461189
1	24	6	3.58	21.5	1.5	23	452	13	1172	23	452	13	1172	3	273	3	198	1.05	0.00	1.50	1.49	1.00	0.00	1.43	1.31	1.00	4.22	2518867	6524058

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	24	7	3.07	21.5	1.5	21	416	12	1135	21	416	12	1135	3	316	3	223	1.04	0.00	1.49	1.46	1.00	0.00	1.55	1.30	1.00	4.61	2377804	6257129
1	24	8	2.69	21.5	1.5	19	386	12	1104	19	386	12	1104	3	364	3	246	1.02	0.00	1.49	1.42	1.00	0.00	1.66	1.29	1.00	4.98	2253127	6022191
1	24	9	2.39	21.5	1.5	18	358	12	1078	18	358	12	1078	3	400	3	268	1.00	0.00	1.38	1.37	1.00	0.00	1.81	1.15	1.00	5.41	2134386	5814431
1	24	10	2.15	21.5	1.5	17	337	12	1056	17	337	12	1056	3	444	3	291	1.00	0.00	1.22	1.36	1.01	0.00	2.00	1.04	1.00	5.89	2067823	5714152
1	24	7	3.14	22	0	28	562	14	1281	28	562	14	1281	3	308	3	266	1.82	0.00	1.00	2.63	1.61	0.00	1.97	1.24	1.00	5.74	5095495	11545744
1	24	8	2.75	22	0	27	535	14	1254	27	535	14	1254	3	353	3	298	1.86	0.00	1.00	2.67	1.65	0.00	2.14	1.28	1.00	6.28	5092255	11525149
1	24	9	2.44	22	0	25	501	13	1220	25	501	13	1220	3	400	3	326	1.81	0.00	1.00	2.60	1.62	0.00	2.26	1.26	1.00	6.70	4818539	11015832
1	24	10	2.2	22	0	24	480	13	1200	24	480	13	1200	3	444	3	356	1.84	0.00	1.00	2.62	1.66	0.00	2.40	1.28	1.00	7.19	4794633	10967043
1	24	11	2	22	0	23	463	13	1183	23	463	13	1183	3	480	3	387	1.87	0.00	1.00	2.65	1.69	0.00	2.55	1.31	1.00	7.69	4795554	10963764
1	24	12	1.83	22	0	22	438	13	1158	22	438	13	1158	3	522	3	402	1.82	0.00	1.00	2.57	1.66	0.00	2.59	1.28	1.00	8.05	4548860	10515580
1	24	7	3.57	25	1.5	23	450	13	1170	23	450	13	1170	3	273	3	199	1.05	0.00	1.50	1.49	1.00	0.00	1.43	1.30	1.00	4.21	2502139	6488814
1	24	8	3.125	25	1.5	21	419	13	1138	21	419	13	1138	3	308	3	220	1.04	0.00	1.49	1.45	1.00	0.00	1.53	1.29	1.00	4.55	2378134	6254169
1	24	9	2.78	25	1.5	20	392	12	1112	20	392	12	1112	3	353	3	240	1.02	0.00	1.50	1.42	1.00	0.00	1.63	1.28	1.00	4.89	2273364	6061679
1	24	10	2.5	25	1.5	18	368	12	1088	18	368	12	1088	3	387	3	260	1.01	0.00	1.42	1.39	1.00	0.00	1.74	1.21	1.00	5.22	2173072	5878146
1	24	11	2.27	25	1.5	17	347	12	1067	17	347	12	1067	3	429	3	279	1.00	0.00	1.30	1.36	1.01	0.00	1.90	1.09	1.00	5.64	2094510	5750946
1	24	12	1.83	25	1.5	20	407	12	1126	20	407	12	1126	3	522	3	382	1.16	0.00	1.04	2.22	1.00	0.00	2.42	1.20	1.00	7.61	3778530	9099666
1	28	3	1.5	4.5	0	22	442	15	1323	22	442	15	1323	3	500	2	506	1.74	0.00	1.00	2.69	1.63	0.00	3.25	1.25	1.00	12.82	7775844	16729611
1	28	3	2	6	0.75	26	529	15	1408	26	529	15	1408	3	560	3	442	2.04	0.00	1.00	2.93	1.87	0.00	3.40	1.35	1.00	10.89	8998015	18812594
1	28	4	1.5	6	0.75	22	444	15	1323	22	444	15	1323	3	500	2	506	1.78	0.00	1.00	2.70	1.66	0.00	3.29	1.29	1.00	12.82	7816401	16787550
1	28	3	2.33	7	1.25	19	380	14	1258	19	380	14	1258	3	483	3	303	1.00	0.00	1.47	1.40	1.01	0.00	2.30	1.13	1.00	7.46	3511104	9072528
1	28	4	1.75	7	1.25	17	332	13	1212	17	332	13	1212	3	424	2	374	1.05	0.00	1.23	1.43	1.08	0.00	2.65	1.00	1.00	9.22	3506125	9167594
1	28	3	2.67	8	0	24	484	15	1364	24	484	15	1364	3	424	3	303	1.40	0.00	1.00	1.94	1.33	0.00	2.41	1.01	1.00	7.66	5414543	12668050
1	28	4	2	8	0	21	413	14	1294	21	413	14	1294	3	560	3	379	1.38	0.00	1.00	1.87	1.35	0.00	2.83	1.01	1.00	9.20	4978210	11904004
1	28	5	1.6	8	0	18	360	14	1240	18	360	14	1240	3	467	2	424	1.26	0.00	1.02	1.78	1.25	0.00	2.86	1.00	1.00	10.56	4558055	11175424
1	28	3	3.17	9.5	0.75	23	458	15	1338	23	458	15	1338	3	359	3	241	1.13	0.00	1.20	1.50	1.12	0.00	1.97	1.00	1.00	6.21	3989970	9935470
1	28	4	2.375	9.5	0.75	19	389	14	1269	19	389	14	1269	3	467	3	301	1.11	0.00	1.22	1.44	1.13	0.00	2.32	1.00	1.00	7.45	3644409	9336000
1	28	5	1.9	9.5	0.75	17	340	13	1219	17	340	13	1219	3	583	3	352	1.08	0.00	1.25	1.38	1.14	0.00	2.61	1.00	1.00	8.59	3388090	8903644
1	28	6	1.583	9.5	0.75	17	334	13	1212	17	334	13	1212	3	483	2	409	1.13	0.00	1.10	1.58	1.15	0.00	2.74	1.00	1.00	10.20	3908197	9962352
1	28	3	3.67	11	1.5	24	483	15	1362	24	483	15	1362	3	311	3	211	1.04	0.00	1.58	1.45	1.00	0.00	1.79	1.28	1.00	5.55	3912401	9744465
1	28	4	2.75	11	1.5	20	407	14	1287	20	407	14	1287	3	412	3	262	1.00	0.00	1.62	1.37	1.00	0.00	2.09	1.26	1.00	6.62	3494167	8991834
1	28	5	2.2	11	1.5	18	361	14	1239	18	361	14	1239	3	519	3	313	1.00	0.00	1.60	1.34	1.02	0.00	2.38	1.28	1.00	7.67	3321208	8715558
1	28	6	1.833	11	1.5	16	325	13	1203	16	325	13	1203	3	412	2	354	1.00	0.00	1.64	1.32	1.05	0.00	2.62	1.30	1.00	8.68	3188036	8518367
1	28	7	1.57	11	1.5	15	296	13	1175	15	296	13	1175	3	483	2	386	1.00	0.00	1.65	1.31	1.07	0.00	2.82	1.32	1.00	9.66	3086929	8384211
1	28	4	2.875	11.5	1.75	21	414	14	1293	21	414	14	1293	3	389	3	252	1.00	0.00	1.72	1.35	1.00	0.00	2.03	1.33	1.00	6.40	3463340	8915478
1	28	5	2.3	11.5	1.75	18	367	14	1245	18	367	14	1245	3	483	3	301	1.00	0.00	1.70	1.33	1.03	0.00	2.31	1.35	1.00	7.41	3293396	8644563
1	28	6	1.917	11.5	1.75	17	331	13	1208	17	331	13	1208	3	583	3	344	1.00	0.00	1.74	1.31	1.05	0.00	2.56	1.37	1.00	8.37	3159899	8441440
1	28	7	1.643	11.5	1.75	15	301	13	1181	15	301	13	1181	3	452	2	374	1.00	0.00	1.75	1.29	1.07	0.00	2.75	1.39	1.00	9.33	3056502	8308833
1	28	4	3.25	13	2.5	22	434	14	1312	22	434	14	1312	3	350	3	226	1.00	0.00	1.69	1.32	1.00	0.00	1.86	1.28	1.00	5.82	3412343	8771935
1	28	5	2.6	13	2.5	19	385	14	1264	19	385	14	1264	3	438	3	270	1.00	0.00	1.68	1.30	1.03	0.00	2.13	1.30	1.00	6.75	3246230	8510911
1	28	6	2.167	13	2.5	17	348	13	1226	17	348	13	1226	3	519	3	312	1.00	0.00	1.72	1.28	1.05	0.00	2.37	1.32	1.00	7.62	3114908	8308388
1	28	7	1.857	13	2.5	16	318	13	1197	16	318	13	1197	3	400	2	347	1.00	0.00	1.73	1.26	1.07	0.00	2.58	1.34	1.00	8.48	3015267	8172137
1	28	4	3.625	14.5	3.25	24	476	15	1356	24	476	15	1356	3	311	3	212	1.03	0.00	1.69	1.43	1.00	0.00	1.80	1.38	1.00	5.57	3829334	9585059
1	28	5	2.9	14.5	3.25	21	418	14	1297	21	418	14	1297	3	389	3	251	1.01	0.00	1.67	1.37	1.00	0.00	2.03	1.36	1.00	6.37	3509942	9005301
1	28	6	2.417	14.5	3.25	19	378	14	1255	19	378	14	1255	3	467	3	289	1.00	0.00	1.70	1.34	1.01	0.00	2.25	1.37	1.00	7.16	3338441	8714098
1	28	7	2.07	14.5	3.25	17	346	13	1225	17	346	13	1225	3	538	3	328	1.00	0.00	1.71	1.32	1.03	0.00	2.48	1.38	1.00	7.97	3227742	8554977
1	28	4	2.875	11.5	0	26	509	15	1389	26	509	15	1389	3	389	3	288	1.44	0.00	1.00	2.00	1.35	0.00	2.36	1.06	1.00	7.37	5702555	13190562
1	28	5	2.3	11.5	0	22	449	15	1328	22	449	15	1328	3	483	3	341	1.40	0.00	1.00	1.92	1.34	0.00	2.65	1.04	1.00	8.43	5235049	12348899
1	28	6	1.917	11.5	0	20	395	14	1274	20	395	14	1274	3	583	3	382	1.32	0.00	1.00	1.78	1.30	0.00	2.86	1.00	1.00	9.30	4664456	11328290
1	28	7	1.643	11.5	0	18	360	14	1240	18	360	14	1240	3	452	2	414	1.31	0.00	1.00	1.74	1.32	0.00	3.05	1.00	1.00	10.28	4447683	10964587
1	28	4	3.25	13	0.75	23	465	15	1343	23	465	15	1343	3	350	3	236	1.13	0.00	1.17	1.50	1.11	0.00	1.96	1.00	1.00	6.10	4021661	9985504
1	28	5	2.6	13	0.75	21	410	14	1290	21	410	14	1290	3	438	3	280	1.11	0.00	1.18	1.46	1.12	0.00	2.22	1.00	1.00	7.03	3751511	9519363
1	28	6	2.167	13	0.75	18	369	14	1247	18	369	14	1247	3	519	3	322	1.10	0.00	1.19	1.42	1.13	0.00	2.46	1.00	1.00	7.89	3537518	9148132
1	28	7	1.857	13	0.75	17	335	13	1214	17	335	13	1214	3	400	2	356	1.08	0.00	1.21	1.38	1.14	0.00	2.66	1.00	1.00	8.72	3359801	8856390
1	28	4	3.625	14.5	1.5	24	476	15	1356	24	476	15	1356	3	311	3	212	1.03	0.00	1.58	1.43	1.00	0.00	1.80	1.28	1.00	5.57	3829334	9585059
1	28	5	2.9	14.5	1.5	21	418	14	1297	21	418	14	1297	3	389	3	251	1.01	0.00	1.56	1.37	1.00	0.00	2.03	1.27	1.00	6.37	3509942	9005301
1	28	6	2.417	14.5	1.5	19	378	14	1255	19	378	14	1255	3	467	3	289	1.00	0.00	1.52	1.34	1.01	0.00	2.25	1.22	1.00	7.16	3338441	8714098
1	28	7	2.07	14.5	1.5	17	346	13	1225	17	346	13	1225	3	538	3	328	1.00	0.00	1.31	1.32	1.03	0.00	2.48	1.06	1.00	7.97	3227742	8554977
1	28	5	3	15	0	27	546	16	1426	27	546	16	1426	3	378	3	289	1.59	0.00	1.00	2.21	1.46	0.00	2.41	1.16	1.00	7.45	6519852	14671470
1	28	6	2.5	15	0	25	489	15	1370	25	489	15	1370	3	452	3	329	1.53	0.00	1.00	2.10	1.43	0.00	2.63	1.13	1.00	8.25	5950394	13647580
1	28	7	2.14	15	0	23	451	15	1331	23	451	15	1331	3	519	3	372	1.51	0.00	1.00	2.06	1.44	0.00	2.86	1.13	1.00	9.10	5706773	13211118
1	28	8	1.875	15	0	21	411	14	1290	21	411	14	1290	3	583	3	400	1.45	0.00	1.00	1.95	1.41	0.00	3.00	1.09	1.00	9.75	5221194	12347663
1	28	9	1.67	15	0	19	376	14	1256	19	376	14	1256	3	452	2	419	1.36	0.00	1.00	1.85	1.34	0.00	2.94	1.05	1.00	10.38	4804299	11615641
1	28	5	3.3	16.5	0.75	23	468	15	1346	23	468	15	1346	3	341	3	233	1.13	0.00	1.15	1.50	1.11	0.00	1.95	1.00	1.00	6.03	4022708	9984040
1	28	6	2.75	16.5	0.75	21	423	14	1301	21	423	14	1301	3	412	3	268	1.12	0.00	1.16	1.46	1.11	0.00	2.16	1.00	1.00	6.77	3798463	9589992
1	28	7	2.357	16.5	0.75	19	387	14	1265	19	387	14	1265	3	483	3	302	1.11	0.00	1.18	1.43	1.12	0.00	2.35	1.00	1.00	7.47	3616295	9276953
1	28	8	2.06	16.5	0.75	18	357	14	1237	18	357	14	1237	3	538	3	335	1.09	0.00	1.18	1.40	1.13	0.00	2.55	1.00	1.00	8.16	3476543	9052680
1	28	9	1.83	16.5	0.75	17	335	13	1212	17	335	13	1212	3	412	2	360	1.09	0.00	1.18	1.39	1.14	0.00	2.67	1.00	1.00	8.83	3395576	8925149
1	28	5	3.6	18	1.5	24	473	15	1351	24	473	15	1351	3	318	3	213	1.03	0.00	1.56	1.42	1.00	0.00	1.81	1.27	1.00	5.57	3783624	9489705
1	28	6	3	18	1.5	21	424	14	1304	21	424	14	1304	3	378	3	244	1.01	0.00	1.56	1.36	1.00	0.00	1.99	1.26	1.00	6.23	3520190	9017494
1	28	7	2.57	18	1.5	19	389	14	1267	19	389	14	1267	3	438	3	275	1.00	0.00	1.55	1.33	1.01	0.00	2.17	1.26	1.00	6.86	3354496	8729091
1	28	8	2.25	18	1.5	18	361	14	1240	18	361	14	1240	3	500	3	306	1.00	0.00	1.43	1.32	1.02	0.00	2.36	1.14	1.00	7.51	3254146	8577350
1	28	9	2	18	1.5	17	338	13	1216	17	338	13	1216	3	560	3	336	1.00	0.00	1.25	1.31	1.04	0.00	2.53	1.02	1.00	8.12	3171942	8452951
1	28	6	3.08	18.5	0	28	562	16	1443	28	562	16	1443	3	368	3	286	1.65	0.00	1.00	2.29	1.50	0.00	2.42	1.19	1.00	7.43	6848170	15264460
1	28	7	2.64	18.5	0	26	520	15	1400	26	520	15	1400	3	424	3	323	1.63	0.00	1.00	2.24	1.50	0.00	2.62	1.19	1.00	8.16	6540064	14699973

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	28	8	2.32	18.5	0	24	475	15	1355	24	475	15	1355	3	483	3	351	1.55	0.00	1.00	2.11	1.46	0.00	2.76	1.15	1.00	8.70	5952845	13650567
1	28	9	2.06	18.5	0	22	444	15	1323	22	444	15	1323	3	538	3	384	1.53	0.00	1.00	2.07	1.46	0.00	2.94	1.14	1.00	9.34	5691554	13183430
1	28	10	1.85	18.5	0	21	415	14	1296	21	415	14	1296	3	400	2	408	1.50	0.00	1.00	2.01	1.45	0.00	3.07	1.13	1.00	9.98	5442074	12752724
1	28	6	3.58	21.5	1.5	24	470	15	1349	24	470	15	1349	3	318	3	214	1.03	0.00	1.55	1.41	1.00	0.00	1.81	1.27	1.00	5.59	3753277	9433426
1	28	7	3.07	21.5	1.5	22	430	14	1308	22	430	14	1308	3	368	3	240	1.01	0.00	1.53	1.37	1.00	0.00	1.97	1.26	1.00	6.12	3534775	9035027
1	28	8	2.69	21.5	1.5	20	397	14	1277	20	397	14	1277	3	424	3	265	1.00	0.00	1.55	1.33	1.00	0.00	2.12	1.25	1.00	6.66	3368960	8749665
1	28	9	2.39	21.5	1.5	19	372	14	1252	19	372	14	1252	3	467	3	291	1.00	0.00	1.49	1.32	1.02	0.00	2.28	1.20	1.00	7.21	3278546	8608287
1	28	10	2.15	21.5	1.5	18	351	14	1230	18	351	14	1230	3	519	3	317	1.00	0.00	1.35	1.31	1.03	0.00	2.42	1.09	1.00	7.73	3204670	8494899
1	28	7	3.14	22	0	28	567	16	1447	28	567	16	1447	3	359	3	282	1.65	0.00	1.00	2.28	1.50	0.00	2.39	1.19	1.00	7.33	6850677	15268885
1	28	8	2.75	22	0	26	528	15	1408	26	528	15	1408	3	412	3	311	1.62	0.00	1.00	2.23	1.49	0.00	2.56	1.18	1.00	7.92	6523871	14674064
1	28	9	2.44	22	0	25	504	15	1384	25	504	15	1384	3	467	3	346	1.65	0.00	1.00	2.27	1.53	0.00	2.76	1.21	1.00	8.63	6556575	14721842
1	28	10	2.2	22	0	24	473	15	1353	24	473	15	1353	3	519	3	373	1.62	0.00	1.00	2.20	1.52	0.00	2.90	1.20	1.00	9.14	6224144	14130646
1	28	11	2	22	0	22	446	15	1326	22	446	15	1326	3	560	3	399	1.59	0.00	1.00	2.14	1.51	0.00	3.04	1.18	1.00	9.66	5946573	13640331
1	28	12	1.83	22	0	21	422	14	1303	21	422	14	1303	3	412	2	417	1.56	0.00	1.00	2.10	1.50	0.00	3.12	1.16	1.00	10.20	5718612	13245362
1	28	7	3.57	25	1.5	23	467	15	1348	23	467	15	1348	3	318	3	214	1.03	0.00	1.50	1.40	1.00	0.00	1.82	1.26	1.00	5.59	3725728	9383697
1	28	8	3.125	25	1.5	22	433	14	1312	22	433	14	1312	3	359	3	236	1.01	0.00	1.53	1.36	1.00	0.00	1.95	1.25	1.00	6.05	3536297	9036003
1	28	9	2.78	25	1.5	20	404	14	1281	20	404	14	1281	3	412	3	258	1.00	0.00	1.55	1.33	1.00	0.00	2.07	1.24	1.00	6.49	3373016	8738419
1	28	10	2.5	25	1.5	19	381	14	1260	19	381	14	1260	3	452	3	280	1.00	0.00	1.52	1.32	1.01	0.00	2.21	1.24	1.00	6.98	3298215	8628844
1	28	11	2.27	25	1.5	18	362	14	1239	18	362	14	1239	3	500	3	303	1.00	0.00	1.40	1.31	1.02	0.00	2.34	1.14	1.00	7.43	3231557	8522075
1	28	12	1.83	25	1.5	21	417	14	1296	21	417	14	1296	3	412	2	413	1.13	0.00	1.01	2.04	1.00	0.00	3.05	1.14	1.00	10.09	5531454	12906094
1	32	3	1.5	4.5	0	19	387	16	1425	19	387	16	1425	3	571	2	492	1.32	0.00	1.04	1.92	1.34	0.00	3.62	1.00	1.00	14.88	7725009	17566723
1	32	3	2	6	0.75	23	451	16	1489	23	451	16	1489	3	432	2	417	1.44	0.00	1.01	1.95	1.43	0.00	2.66	1.00	1.00	12.18	8060266	18117695
1	32	4	1.5	6	0.75	19	378	16	1418	19	378	16	1418	3	571	2	485	1.31	0.00	1.04	1.86	1.33	0.00	3.63	1.00	1.00	14.73	7385377	17006470
1	32	3	2.33	7	1.25	20	392	16	1430	20	392	16	1430	3	552	3	329	1.00	0.00	1.56	1.35	1.04	0.00	2.86	1.16	1.00	9.64	5108291	12807299
1	32	4	1.75	7	1.25	17	330	15	1367	17	330	15	1367	3	485	2	399	1.00	0.00	1.34	1.31	1.08	0.00	3.24	1.00	1.00	11.73	4805206	12360220
1	32	3	2.67	8	0	24	487	17	1524	24	487	17	1524	3	485	3	322	1.31	0.00	1.09	1.74	1.29	0.00	2.12	1.00	1.00	9.56	7174424	16545795
1	32	4	2	8	0	21	411	16	1448	21	411	16	1448	3	432	2	403	1.28	0.00	1.12	1.66	1.31	0.00	3.41	1.00	1.00	11.53	6568355	15520008
1	32	5	1.6	8	0	18	356	15	1395	18	356	15	1395	3	533	2	453	1.19	0.00	1.14	1.60	1.24	0.00	3.48	1.00	1.00	13.37	6120271	14796882
1	32	3	3.17	9.5	0.75	23	465	17	1503	23	465	17	1503	3	410	3	257	1.08	0.00	1.33	1.38	1.10	0.00	1.76	1.00	1.00	7.84	5447743	13336843
1	32	4	2.375	9.5	0.75	20	390	16	1429	20	390	16	1429	3	533	3	321	1.05	0.00	1.35	1.32	1.12	0.00	2.83	1.00	1.00	9.45	4967295	12537406
1	32	5	1.9	9.5	0.75	17	336	15	1376	17	336	15	1376	3	457	2	376	1.03	0.00	1.36	1.26	1.13	0.00	3.21	1.00	1.00	10.95	4609614	11966798
1	32	6	1.583	9.5	0.75	17	331	15	1370	17	331	15	1370	3	552	2	438	1.08	0.00	1.20	1.44	1.15	0.00	3.38	1.00	1.00	13.03	5364528	13446608
1	32	3	3.67	11	1.5	25	496	17	1536	25	496	17	1536	3	356	3	227	1.01	0.00	1.66	1.36	1.00	0.00	1.61	1.27	1.00	7.06	5480308	13357742
1	32	4	2.75	11	1.5	21	422	16	1460	21	422	16	1460	3	471	3	285	1.00	0.00	1.71	1.32	1.02	0.00	2.59	1.28	1.00	8.52	5064711	12658120
1	32	5	2.2	11	1.5	19	371	15	1409	19	371	15	1409	3	593	3	340	1.00	0.00	1.73	1.29	1.05	0.00	2.97	1.30	1.00	9.92	4829411	12305620
1	32	6	1.833	11	1.5	17	332	15	1370	17	332	15	1370	3	471	2	385	1.00	0.00	1.76	1.28	1.08	0.00	3.28	1.32	1.00	11.26	4651748	12055407
1	32	7	1.57	11	1.5	15	301	15	1338	15	301	15	1338	3	552	2	419	1.00	0.00	1.79	1.26	1.10	0.00	3.52	1.34	1.00	12.53	4510707	11861997
1	32	4	2.875	11.5	1.75	21	429	16	1467	21	429	16	1467	3	444	3	273	1.00	0.00	1.80	1.30	1.02	0.00	2.51	1.33	1.00	8.23	5021040	12557127
1	32	5	2.3	11.5	1.75	19	377	16	1417	19	377	16	1417	3	552	3	327	1.00	0.00	1.82	1.28	1.05	0.00	2.88	1.36	1.00	9.59	4790408	12219723
1	32	6	1.917	11.5	1.75	17	338	15	1377	17	338	15	1377	3	457	2	374	1.00	0.00	1.85	1.26	1.08	0.00	3.20	1.38	1.00	10.87	4612392	11962658
1	32	7	1.643	11.5	1.75	15	307	15	1344	15	307	15	1344	3	516	2	407	1.00	0.00	1.89	1.25	1.10	0.00	3.43	1.40	1.00	12.08	4468686	11758899
1	32	4	3.25	13	2.5	23	450	16	1489	23	450	16	1489	3	400	3	245	1.00	0.00	1.77	1.27	1.02	0.00	1.69	1.28	1.00	7.50	4944090	12365255
1	32	5	2.6	13	2.5	20	397	16	1437	20	397	16	1437	3	500	3	293	1.00	0.00	1.79	1.25	1.05	0.00	2.65	1.31	1.00	8.73	4718519	12026671
1	32	6	2.167	13	2.5	18	357	15	1396	18	357	15	1396	3	593	3	339	1.00	0.00	1.82	1.23	1.08	0.00	2.96	1.33	1.00	9.88	4544268	11772183
1	32	7	1.857	13	2.5	16	325	15	1362	16	325	15	1362	3	457	2	376	1.00	0.00	1.82	1.22	1.10	0.00	3.22	1.35	1.00	10.98	4398257	11560826
1	32	4	3.625	14.5	3.25	24	489	17	1529	24	489	17	1529	3	356	3	228	1.01	0.00	1.76	1.34	1.00	0.00	1.62	1.35	1.00	7.09	5360673	13133865
1	32	5	2.9	14.5	3.25	22	431	16	1470	22	431	16	1470	3	444	3	272	1.00	0.00	1.80	1.31	1.02	0.00	2.52	1.35	1.00	8.19	5038406	12592327
1	32	6	2.417	14.5	3.25	19	389	16	1427	19	389	16	1427	3	533	3	314	1.00	0.00	1.83	1.29	1.04	0.00	2.81	1.38	1.00	9.26	4847056	12297433
1	32	7	2.07	14.5	3.25	18	355	15	1393	18	355	15	1393	3	410	2	355	1.00	0.00	1.83	1.27	1.06	0.00	3.09	1.39	1.00	10.31	4696302	12080961
1	32	4	2.875	11.5	0	25	500	17	1537	25	500	17	1537	3	444	3	301	1.28	0.00	1.08	1.71	1.25	0.00	2.03	1.00	1.00	9.03	7082065	16371103
1	32	5	2.3	11.5	0	22	439	16	1479	22	439	16	1479	3	552	3	358	1.26	0.00	1.08	1.65	1.27	0.00	2.30	1.00	1.00	10.45	6624713	15604180
1	32	6	1.917	11.5	0	20	393	16	1432	20	393	16	1432	3	457	2	408	1.24	0.00	1.11	1.61	1.28	0.00	3.47	1.00	1.00	11.75	6253519	14980246
1	32	7	1.643	11.5	0	18	356	15	1394	18	356	15	1394	3	516	2	441	1.22	0.00	1.12	1.56	1.29	0.00	3.70	1.00	1.00	13.00	5948601	14477803
1	32	4	3.25	13	0.75	24	472	17	1510	24	472	17	1510	3	400	3	252	1.08	0.00	1.28	1.38	1.09	0.00	1.74	1.00	1.00	7.71	5495752	13418965
1	32	5	2.6	13	0.75	21	413	16	1451	21	413	16	1451	3	500	3	299	1.06	0.00	1.30	1.34	1.10	0.00	2.71	1.00	1.00	8.90	5114587	12776145
1	32	6	2.167	13	0.75	18	368	15	1406	18	368	15	1406	3	593	3	344	1.04	0.00	1.33	1.29	1.11	0.00	3.01	1.00	1.00	10.02	4821469	12296347
1	32	7	1.857	13	0.75	17	331	15	1370	17	331	15	1370	3	457	2	380	1.03	0.00	1.33	1.26	1.13	0.00	3.26	1.00	1.00	11.11	4572993	11903753
1	32	4	3.625	14.5	1.5	24	489	17	1529	24	489	17	1529	3	356	3	228	1.01	0.00	1.66	1.34	1.00	0.00	1.62	1.27	1.00	7.09	5360673	13133865
1	32	5	2.9	14.5	1.5	22	431	16	1470	22	431	16	1470	3	444	3	272	1.00	0.00	1.69	1.31	1.02	0.00	2.52	1.27	1.00	8.19	5038406	12592327
1	32	6	2.417	14.5	1.5	19	389	16	1427	19	389	16	1427	3	533	3	314	1.00	0.00	1.70	1.29	1.04	0.00	2.81	1.28	1.00	9.26	4847056	12297433
1	32	7	2.07	14.5	1.5	18	355	15	1393	18	355	15	1393	3	410	2	355	1.00	0.00	1.46	1.27	1.06	0.00	3.09	1.11	1.00	10.31	4696302	12080961
1	32	5	3	15	0	26	511	17	1551	26	511	17	1551	3	432	3	291	1.30	0.00	1.07	1.72	1.26	0.00	2.00	1.00	1.00	8.81	7175422	16548170
1	32	6	2.5	15	0	23	461	16	1501	23	461	16	1501	3	516	3	336	1.28	0.00	1.07	1.68	1.27	0.00	2.21	1.00	1.00	9.90	6796008	15894402
1	32	7	2.14	15	0	21	421	16	1461	21	421	16	1461	3	593	3	379	1.27	0.00	1.06	1.64	1.28	0.00	3.31	1.00	1.00	10.96	6497946	15393780
1	32	8	1.875	15	0	19	388	16	1426	19	388	16	1426	3	457	2	412	1.25	0.00	1.08	1.60	1.29	0.00	3.52	1.00	1.00	11.92	6213316	14909265
1	32	9	1.67	15	0	18	360	15	1398	18	360	15	1398	3	516	2	438	1.21	0.00	1.10	1.57	1.26	0.00	3.51	1.00	1.00	12.86	5984803	14536990
1	32	5	3.3	16.5	0.75	24	474	17	1514	24	474	17	1514	3	390	3	249	1.08	0.00	1.26	1.38	1.09	0.00	1.74	1.00	1.00	7.63	5482980	13398207
1	32	6	2.75	16.5	0.75	21	426	16	1465	21	426	16	1465	3	471	3	286	1.07	0.00	1.29	1.34	1.10	0.00	2.63	1.00	1.00	8.58	5178656	12879520
1	32	7	2.357	16.5	0.75	19	387	16	1426	19	387	16	1426	3	552	3	322	1.05	0.00	1.30	1.31	1.11	0.00	2.88	1.00	1.00	9.48	4925305	12460954
1	32	8	2.06	16.5	0.75	18	355	15	1393	18	355	15	1393	3	421	2	357	1.04	0.00	1.31	1.28	1.12	0.00	3.11	1.00	1.00	10.36	4719099	12126567
1	32	9	1.83	16.5	0.75	17	330	15	1369	17	330	15	1369	3	471	2	384	1.04	0.00	1.30	1.27	1.13	0.00	3.28	1.00	1.00	11.25	4613630	11988137
1	32	5	3.6	18	1.5	24	484	17	1525	24	484	17	1525	3	364	3	229	1.01	0.00	1.64	1.33	1.00	0.00	1.63	1.25	1.00	7.10	5288736	13000100
1	32	6	3	18	1.5	22	437	16	1477	22	437	16	1477	3	432	3	264	1.00	0.00	1.65	1.30	1.01	0.00	1.80	1.26	1.00	7.99	5028141	12562673
1	32	7	2.57	18	1.5	20	401	16	1440	20	401	16	1440	3	500	3	298	1.00	0.00	1.69	1.28	1.03	0.00	2.71	1.28	1.00	8.87	4867901	12315265

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	32	8	2.25	18	1.5	19	371	15	1410	19	371	15	1410	3	571	3	332	1.00	0.00	1.56	1.27	1.05	0.00	2.94	1.19	1.00	9.71	4729879	12109598
1	32	9	2	18	1.5	17	346	15	1384	17	346	15	1384	3	432	2	364	1.00	0.00	1.39	1.26	1.07	0.00	3.16	1.07	1.00	10.52	4618573	11948623
1	32	6	3.08	18.5	0	26	519	17	1559	26	519	17	1559	3	421	3	286	1.31	0.00	1.04	1.73	1.26	0.00	1.98	1.00	1.00	8.67	7249152	16677866
1	32	7	2.64	18.5	0	24	477	17	1514	24	477	17	1514	3	485	3	322	1.29	0.00	1.06	1.69	1.27	0.00	2.15	1.00	1.00	9.55	6919816	16093046
1	32	8	2.32	18.5	0	22	442	16	1480	22	442	16	1480	3	552	3	356	1.28	0.00	1.06	1.66	1.28	0.00	2.31	1.00	1.00	10.38	6644159	15626821
1	32	9	2.06	18.5	0	21	411	16	1450	21	411	16	1450	3	421	2	390	1.27	0.00	1.08	1.63	1.29	0.00	3.39	1.00	1.00	11.22	6398564	15220202
1	32	10	1.85	18.5	0	19	384	16	1424	19	384	16	1424	3	457	2	415	1.26	0.00	1.08	1.60	1.30	0.00	3.56	1.00	1.00	12.05	6185966	14875304
1	32	6	3.58	21.5	1.5	24	482	17	1522	24	482	17	1522	3	364	3	229	1.01	0.00	1.63	1.32	1.00	0.00	1.63	1.25	1.00	7.11	5251107	12927197
1	32	7	3.07	21.5	1.5	22	442	16	1480	22	442	16	1480	3	421	3	258	1.00	0.00	1.65	1.30	1.01	0.00	1.78	1.25	1.00	7.84	5020993	12531539
1	32	8	2.69	21.5	1.5	21	410	16	1450	21	410	16	1450	3	485	3	287	1.00	0.00	1.66	1.28	1.03	0.00	2.64	1.27	1.00	8.59	4883283	12328791
1	32	9	2.39	21.5	1.5	19	383	16	1423	19	383	16	1423	3	533	3	315	1.00	0.00	1.63	1.27	1.04	0.00	2.84	1.25	1.00	9.31	4762518	12149039
1	32	10	2.15	21.5	1.5	18	360	15	1399	18	360	15	1399	3	593	3	343	1.00	0.00	1.48	1.26	1.06	0.00	3.03	1.14	1.00	10.00	4657590	11992933
1	32	7	3.14	22	0	26	525	17	1563	26	525	17	1563	3	410	3	281	1.32	0.00	1.02	1.73	1.26	0.00	1.96	1.00	1.00	8.56	7284754	16731458
1	32	8	2.75	22	0	24	487	17	1526	24	487	17	1526	3	471	3	312	1.30	0.00	1.04	1.70	1.27	0.00	2.11	1.00	1.00	9.31	6989707	16222105
1	32	9	2.44	22	0	23	456	16	1495	23	456	16	1495	3	533	3	342	1.29	0.00	1.04	1.68	1.28	0.00	2.26	1.00	1.00	10.07	6783208	15870918
1	32	10	2.2	22	0	21	428	16	1466	21	428	16	1466	3	593	3	370	1.28	0.00	1.04	1.64	1.28	0.00	3.27	1.00	1.00	10.74	6529563	15434357
1	32	11	2	22	0	20	404	16	1442	20	404	16	1442	3	432	2	399	1.27	0.00	1.07	1.62	1.29	0.00	3.45	1.00	1.00	11.43	6342025	15121438
1	32	12	1.83	22	0	19	383	16	1422	19	383	16	1422	3	471	2	418	1.26	0.00	1.08	1.60	1.30	0.00	3.57	1.00	1.00	12.15	6209800	14916530
1	32	7	3.57	25	1.5	24	479	17	1520	24	479	17	1520	3	364	3	229	1.01	0.00	1.62	1.31	1.00	0.00	1.64	1.24	1.00	7.11	5207899	12847139
1	32	8	3.125	25	1.5	22	445	16	1484	22	445	16	1484	3	410	3	254	1.00	0.00	1.65	1.29	1.01	0.00	1.76	1.25	1.00	7.74	5015702	12518720
1	32	9	2.78	25	1.5	21	417	16	1456	21	417	16	1456	3	471	3	279	1.00	0.00	1.65	1.28	1.02	0.00	2.58	1.26	1.00	8.38	4891296	12326024
1	32	10	2.5	25	1.5	20	393	16	1430	20	393	16	1430	3	516	3	304	1.00	0.00	1.66	1.27	1.04	0.00	2.75	1.27	1.00	8.99	4778720	12147370
1	32	11	2.27	25	1.5	19	372	15	1409	19	372	15	1409	3	571	3	328	1.00	0.00	1.56	1.26	1.05	0.00	2.92	1.19	1.00	9.61	4696253	12031894
1	32	12	1.83	25	1.5	21	420	16	1458	21	420	16	1458	3	471	2	444	1.08	0.00	1.06	1.86	1.00	0.00	3.70	1.10	1.00	12.77	7533019	17221824
1	36	3	1.5	4.5	0	19	380	17	1578	19	380	17	1578	3	327	1	524	1.24	0.00	1.17	1.73	1.31	0.00	3.15	1.00	1.00	18.24	9923694	22324546
1	36	3	2	6	0.75	22	448	18	1647	22	448	18	1647	3	486	2	444	1.35	0.00	1.14	1.76	1.41	0.00	3.15	1.00	1.00	14.90	10361346	23027942
1	36	4	1.5	6	0.75	19	371	17	1568	19	371	17	1568	3	327	1	516	1.23	0.00	1.15	1.67	1.30	0.00	3.15	1.00	1.00	18.02	9467353	21569868
1	36	3	2.33	7	1.25	20	401	18	1600	20	401	18	1600	3	419	2	356	1.00	0.00	1.71	1.30	1.07	0.00	2.55	1.20	1.00	12.08	7105820	17363027
1	36	4	1.75	7	1.25	17	334	17	1534	17	334	17	1534	3	545	2	434	1.00	0.00	1.50	1.27	1.12	0.00	2.90	1.05	1.00	14.78	6729984	16841242
1	36	3	2.67	8	0	24	486	19	1685	24	486	19	1685	3	545	3	343	1.23	0.00	1.21	1.58	1.27	0.00	2.52	1.00	1.00	11.69	9228456	21072625
1	36	4	2	8	0	20	405	18	1604	20	405	18	1604	3	486	2	428	1.20	0.00	1.24	1.50	1.29	0.00	2.97	1.00	1.00	14.14	8440243	19779757
1	36	5	1.6	8	0	17	346	17	1546	17	346	17	1546	3	305	1	480	1.11	0.00	1.26	1.44	1.22	0.00	3.04	1.00	1.00	16.42	7841273	18835012
1	36	3	3.17	9.5	0.75	23	465	18	1664	23	465	18	1664	3	462	3	273	1.03	0.00	1.45	1.26	1.08	0.00	2.10	1.00	1.00	9.60	7069603	17151785
1	36	4	2.375	9.5	0.75	19	385	17	1585	19	385	17	1585	3	409	2	341	1.00	0.00	1.47	1.20	1.11	0.00	2.48	1.00	1.00	11.62	6449211	16158545
1	36	5	1.9	9.5	0.75	17	335	17	1533	17	335	17	1533	3	514	2	403	1.00	0.00	1.51	1.19	1.15	0.00	2.82	1.03	1.00	13.60	6210273	15840447
1	36	6	1.583	9.5	0.75	16	322	17	1521	16	322	17	1521	3	310	1	466	1.03	0.00	1.34	1.31	1.15	0.00	2.96	1.00	1.00	16.06	6965019	17306246
1	36	3	3.67	11	1.5	26	510	19	1707	26	510	19	1707	3	400	3	244	1.00	0.00	1.82	1.30	1.01	0.00	1.94	1.28	1.00	8.72	7437119	17760334
1	36	4	2.75	11	1.5	22	433	18	1632	22	433	18	1632	3	529	3	308	1.00	0.00	1.84	1.27	1.05	0.00	2.31	1.31	1.00	10.64	7023419	17132390
1	36	5	2.2	11	1.5	19	379	17	1576	19	379	17	1576	3	439	2	368	1.00	0.00	1.88	1.25	1.09	0.00	2.64	1.34	1.00	12.41	6722044	16684007
1	36	6	1.833	11	1.5	17	337	17	1534	17	337	17	1534	3	529	2	417	1.00	0.00	1.90	1.23	1.12	0.00	2.92	1.36	1.00	14.12	6493793	16371514
1	36	7	1.57	11	1.5	15	303	16	1501	15	303	16	1501	3	310	1	455	1.00	0.00	1.93	1.22	1.15	0.00	3.14	1.39	1.00	15.77	6321400	16157508
1	36	4	2.875	11.5	1.75	22	441	18	1639	22	441	18	1639	3	500	3	296	1.00	0.00	1.93	1.26	1.05	0.00	2.24	1.36	1.00	10.27	6964832	16997996
1	36	5	2.3	11.5	1.75	19	386	17	1584	19	386	17	1584	3	419	2	354	1.00	0.00	1.97	1.24	1.09	0.00	2.56	1.39	1.00	11.99	6669811	16569725
1	36	6	1.917	11.5	1.75	17	343	17	1543	17	343	17	1543	3	514	2	405	1.00	0.00	1.99	1.22	1.12	0.00	2.86	1.42	1.00	13.65	6442520	16270378
1	36	7	1.643	11.5	1.75	15	309	17	1509	15	309	17	1509	3	581	2	441	1.00	0.00	2.02	1.20	1.15	0.00	3.07	1.44	1.00	15.23	6266445	16043910
1	36	4	3.25	13	2.5	23	464	18	1662	23	464	18	1662	3	450	3	265	1.00	0.00	1.90	1.23	1.05	0.00	2.06	1.31	1.00	9.34	6853419	16733747
1	36	5	2.6	13	2.5	20	407	18	1606	20	407	18	1606	3	562	3	317	1.00	0.00	1.94	1.21	1.08	0.00	2.36	1.33	1.00	10.90	6556218	16300309
1	36	6	2.167	13	2.5	18	364	17	1562	18	364	17	1562	3	450	2	367	1.00	0.00	1.96	1.19	1.11	0.00	2.64	1.36	1.00	12.37	6332650	15984792
1	36	7	1.857	13	2.5	16	329	17	1527	16	329	17	1527	3	514	2	407	1.00	0.00	1.99	1.18	1.14	0.00	2.87	1.38	1.00	13.80	6152687	15747956
1	36	4	3.625	14.5	3.25	25	502	19	1702	25	502	19	1702	3	400	3	246	1.00	0.00	1.89	1.28	1.01	0.00	1.96	1.36	1.00	8.78	7304339	17534772
1	36	5	2.9	14.5	3.25	22	443	18	1642	22	443	18	1642	3	500	3	294	1.00	0.00	1.93	1.26	1.04	0.00	2.24	1.38	1.00	10.22	6982414	17033030
1	36	6	2.417	14.5	3.25	20	398	18	1596	20	398	18	1596	3	400	2	340	1.00	0.00	1.95	1.24	1.07	0.00	2.50	1.40	1.00	11.58	6736676	16665689
1	36	7	2.07	14.5	3.25	18	361	17	1561	18	361	17	1561	3	462	2	385	1.00	0.00	1.98	1.23	1.10	0.00	2.76	1.43	1.00	12.94	6551343	16424068
1	36	4	2.875	11.5	0	25	500	19	1697	25	500	19	1697	3	500	3	320	1.21	0.00	1.20	1.55	1.23	0.00	2.41	1.00	1.00	11.01	9089878	20804733
1	36	5	2.3	11.5	0	22	435	18	1635	22	435	18	1635	3	419	2	380	1.19	0.00	1.21	1.50	1.25	0.00	2.74	1.00	1.00	12.77	8491104	19831456
1	36	6	1.917	11.5	0	19	386	17	1584	19	386	17	1584	3	514	2	432	1.17	0.00	1.23	1.45	1.26	0.00	3.02	1.00	1.00	14.38	8002382	19029035
1	36	7	1.643	11.5	0	17	346	17	1544	17	346	17	1544	3	581	2	468	1.15	0.00	1.25	1.40	1.28	0.00	3.22	1.00	1.00	15.94	7608226	18406843
1	36	4	3.25	13	0.75	24	472	18	1672	24	472	18	1672	3	450	3	268	1.03	0.00	1.41	1.27	1.07	0.00	2.09	1.00	1.00	9.45	7129484	17256852
1	36	5	2.6	13	0.75	20	409	18	1609	20	409	18	1609	3	562	3	318	1.01	0.00	1.43	1.22	1.09	0.00	2.37	1.00	1.00	10.94	6631519	16445274
1	36	6	2.167	13	0.75	18	364	17	1562	18	364	17	1562	3	450	2	367	1.00	0.00	1.46	1.19	1.11	0.00	2.64	1.01	1.00	12.37	6332650	15984792
1	36	7	1.857	13	0.75	16	329	17	1527	16	329	17	1527	3	514	2	407	1.00	0.00	1.48	1.18	1.14	0.00	2.87	1.03	1.00	13.80	6152687	15747956
1	36	4	3.625	14.5	1.5	25	502	19	1702	25	502	19	1702	3	400	3	246	1.00	0.00	1.79	1.28	1.01	0.00	1.96	1.28	1.00	8.78	7304339	17534772
1	36	5	2.9	14.5	1.5	22	443	18	1642	22	443	18	1642	3	500	3	294	1.00	0.00	1.83	1.26	1.04	0.00	2.24	1.31	1.00	10.22	6982414	17033030
1	36	6	2.417	14.5	1.5	20	398	18	1596	20	398	18	1596	3	400	2	340	1.00	0.00	1.85	1.24	1.07	0.00	2.50	1.33	1.00	11.58	6736676	16665689
1	36	7	2.07	14.5	1.5	18	361	17	1561	18	361	17	1561	3	462	2	385	1.00	0.00	1.63	1.23	1.10	0.00	2.76	1.17	1.00	12.94	6551343	16424068
1	36	5	3	15	0	26	512	19	1711	26	512	19	1711	3	486	3	309	1.23	0.00	1.17	1.56	1.23	0.00	2.37	1.00	1.00	10.73	9206188	21012712
1	36	6	2.5	15	0	23	459	18	1657	23	459	18	1657	3	581	3	356	1.21	0.00	1.19	1.52	1.24	0.00	2.63	1.00	1.00	12.08	8709331	20177231
1	36	7	2.14	15	0	21	416	18	1615	21	416	18	1615	3	462	2	402	1.19	0.00	1.20	1.48	1.26	0.00	2.87	1.00	1.00	13.39	8321070	19551383
1	36	8	1.875	15	0	19	380	17	1579	19	380	17	1579	3	514	2	437	1.17	0.00	1.22	1.44	1.27	0.00	3.07	1.00	1.00	14.61	7952790	18958018
1	36	9	1.67	15	0	18	350	17	1548	18	350	17	1548	3	581	2	464	1.14	0.00	1.23	1.41	1.25	0.00	3.06	1.00	1.00	15.77	7643323	18460740
1	36	5	3.3	16.5	0.75	24	475	18	1674	24	475	18	1674	3	439	3	264	1.03	0.00	1.39	1.26	1.07	0.00	2.07	1.00	1.00	9.33	7106215	17201716
1	36	6	2.75	16.5	0.75	21	423	18	1622	21	423	18	1622	3	529	3	304	1.01	0.00	1.43	1.23	1.08	0.00	2.30	1.00	1.00	10.51	6696920	16531048
1	36	7	2.357	16.5	0.75	19	382	17	1581	19	382	17	1581	3	419	2	342	1.00	0.00	1.43	1.19	1.10	0.00	2.51	1.00	1.00	11.65	6390403	16048390
1	36	8	2.06	16.5	0.75	18	351	17	1550	18	351	17	1550	3	474	2	381	1.00	0.00	1.45	1.18	1.12	0.00	2.73	1.02	1.00	12.82	6239958	15850578

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	36	9	1.83	16.5	0.75	16	326	17	1523	16	326	17	1523	3	529	2	411	1.00	0.00	1.44	1.18	1.14	0.00	2.88	1.02	1.00	13.93	6132540	15713863
1	36	5	3.6	18	1.5	25	498	19	1698	25	498	19	1698	3	409	3	246	1.00	0.00	1.77	1.27	1.02	0.00	1.97	1.27	1.00	8.80	7227243	17394482
1	36	6	3	18	1.5	23	450	18	1648	23	450	18	1648	3	486	3	285	1.00	0.00	1.79	1.25	1.04	0.00	2.19	1.29	1.00	9.95	6960939	16970766
1	36	7	2.57	18	1.5	21	411	18	1610	21	411	18	1610	3	562	3	323	1.00	0.00	1.82	1.24	1.06	0.00	2.41	1.31	1.00	11.08	6763127	16688110
1	36	8	2.25	18	1.5	19	379	17	1577	19	379	17	1577	3	439	2	359	1.00	0.00	1.74	1.23	1.08	0.00	2.62	1.26	1.00	12.15	6582544	16422043
1	36	9	2	18	1.5	18	351	17	1551	18	351	17	1551	3	486	2	395	1.00	0.00	1.56	1.22	1.11	0.00	2.82	1.13	1.00	13.22	6438813	16238739
1	36	6	3.08	18.5	0	26	521	19	1719	26	521	19	1719	3	474	3	303	1.24	0.00	1.16	1.57	1.23	0.00	2.34	1.00	1.00	10.54	9306001	21176090
1	36	7	2.64	18.5	0	24	475	18	1674	24	475	18	1674	3	545	3	342	1.22	0.00	1.18	1.54	1.25	0.00	2.56	1.00	1.00	11.66	8882768	20471845
1	36	8	2.32	18.5	0	22	438	18	1636	22	438	18	1636	3	419	2	377	1.21	0.00	1.19	1.50	1.26	0.00	2.75	1.00	1.00	12.68	8510166	19849219
1	36	9	2.06	18.5	0	20	405	18	1604	20	405	18	1604	3	474	2	413	1.19	0.00	1.21	1.47	1.27	0.00	2.94	1.00	1.00	13.72	8194411	19343780
1	36	10	1.85	18.5	0	19	376	17	1576	19	376	17	1576	3	514	2	440	1.18	0.00	1.20	1.44	1.28	0.00	3.09	1.00	1.00	14.75	7913061	18900984
1	36	6	3.58	21.5	1.5	25	495	19	1695	25	495	19	1695	3	409	3	247	1.00	0.00	1.76	1.26	1.02	0.00	1.98	1.27	1.00	8.82	7172316	17294714
1	36	7	3.07	21.5	1.5	23	454	18	1654	23	454	18	1654	3	474	3	279	1.00	0.00	1.79	1.25	1.04	0.00	2.17	1.28	1.00	9.79	6951453	16953366
1	36	8	2.69	21.5	1.5	21	421	18	1619	21	421	18	1619	3	545	3	310	1.00	0.00	1.79	1.24	1.06	0.00	2.35	1.30	1.00	10.71	6769784	16671249
1	36	9	2.39	21.5	1.5	20	392	17	1590	20	392	17	1590	3	409	2	341	1.00	0.00	1.82	1.23	1.07	0.00	2.52	1.31	1.00	11.62	6613467	16445697
1	36	10	2.15	21.5	1.5	18	367	17	1565	18	367	17	1565	3	450	2	372	1.00	0.00	1.65	1.22	1.09	0.00	2.69	1.20	1.00	12.52	6481544	16262663
1	36	7	3.14	22	0	26	527	19	1724	26	527	19	1724	3	462	3	299	1.24	0.00	1.16	1.58	1.23	0.00	2.32	1.00	1.00	10.41	9352873	21250465
1	36	8	2.75	22	0	24	486	19	1686	24	486	19	1686	3	529	3	331	1.23	0.00	1.17	1.54	1.25	0.00	2.51	1.00	1.00	11.36	8972120	20625029
1	36	9	2.44	22	0	23	453	18	1652	23	453	18	1652	3	400	2	364	1.22	0.00	1.16	1.52	1.26	0.00	2.68	1.00	1.00	12.30	8693852	20162956
1	36	10	2.2	22	0	21	423	18	1622	21	423	18	1622	3	439	2	393	1.20	0.00	1.18	1.49	1.26	0.00	2.84	1.00	1.00	13.14	8371150	19629657
1	36	11	2	22	0	20	397	18	1596	20	397	18	1596	3	486	2	423	1.19	0.00	1.20	1.46	1.27	0.00	3.00	1.00	1.00	14.00	8115003	19216047
1	36	12	1.83	22	0	19	375	17	1574	19	375	17	1574	3	529	2	444	1.18	0.00	1.20	1.44	1.28	0.00	3.10	1.00	1.00	14.88	7945251	18954327
1	36	7	3.57	25	1.5	25	494	19	1691	25	494	19	1691	3	409	3	247	1.00	0.00	1.75	1.26	1.02	0.00	1.98	1.26	1.00	8.80	7128227	17198342
1	36	8	3.125	25	1.5	23	458	18	1656	23	458	18	1656	3	462	3	275	1.00	0.00	1.78	1.25	1.03	0.00	2.14	1.28	1.00	9.65	6935509	16905780
1	36	9	2.78	25	1.5	21	428	18	1626	21	428	18	1626	3	529	3	302	1.00	0.00	1.79	1.24	1.05	0.00	2.30	1.29	1.00	10.46	6775003	16665411
1	36	10	2.5	25	1.5	20	402	18	1600	20	402	18	1600	3	581	3	329	1.00	0.00	1.80	1.23	1.07	0.00	2.45	1.30	1.00	11.25	6642463	16474821
1	36	11	2.27	25	1.5	19	379	17	1578	19	379	17	1578	3	429	2	356	1.00	0.00	1.72	1.22	1.08	0.00	2.61	1.26	1.00	12.05	6535934	16337708
1	36	12	1.83	25	1.5	21	416	18	1616	21	416	18	1616	3	529	2	474	1.04	0.00	1.17	1.69	1.00	0.00	3.23	1.07	1.00	15.68	9746827	22022331
1	40	3	1.5	4.5	0	18	367	19	1727	18	367	19	1727	3	364	1	554	1.17	0.00	1.31	1.56	1.28	0.00	3.68	1.00	1.00	21.85	12269213	27472378
1	40	3	2	6	0.75	22	440	20	1799	22	440	20	1799	3	541	2	469	1.27	0.00	1.26	1.60	1.38	0.00	3.64	1.00	1.00	17.78	12821131	28318381
1	40	4	1.5	6	0.75	18	357	19	1717	18	357	19	1717	3	364	1	545	1.15	0.00	1.29	1.50	1.26	0.00	3.69	1.00	1.00	21.60	11699290	26558006
1	40	3	2.33	7	1.25	20	409	19	1766	20	409	19	1766	3	465	2	384	1.00	0.00	1.88	1.26	1.11	0.00	3.02	1.25	1.00	14.71	9551198	22769841
1	40	4	1.75	7	1.25	17	337	19	1696	17	337	19	1696	3	312	1	469	1.00	0.00	1.65	1.23	1.16	0.00	3.46	1.12	1.00	18.06	9089631	22145365
1	40	3	2.67	8	0	24	480	20	1840	24	480	20	1840	3	408	2	361	1.16	0.00	1.36	1.44	1.25	0.00	2.92	1.00	1.00	13.93	11427267	25962205
1	40	4	2	8	0	20	394	19	1752	20	394	19	1752	3	541	2	451	1.12	0.00	1.38	1.36	1.27	0.00	3.44	1.00	1.00	16.88	10407668	24319021
1	40	5	1.6	8	0	17	331	19	1690	17	331	19	1690	3	339	1	505	1.04	0.00	1.39	1.29	1.19	0.00	3.54	1.00	1.00	19.62	9654506	23156098
1	40	3	3.17	9.5	0.75	23	468	20	1828	23	468	20	1828	3	513	3	291	1.00	0.00	1.60	1.19	1.09	0.00	2.47	1.03	1.00	11.58	9146706	21909801
1	40	4	2.375	9.5	0.75	20	392	19	1750	20	392	19	1750	3	455	2	367	1.00	0.00	1.63	1.17	1.15	0.00	2.95	1.06	1.00	14.18	8683811	21242213
1	40	5	1.9	9.5	0.75	17	338	19	1697	17	338	19	1697	3	571	2	435	1.00	0.00	1.65	1.15	1.19	0.00	3.37	1.09	1.00	16.66	8412910	20915958
1	40	6	1.583	9.5	0.75	16	316	18	1673	16	316	18	1673	3	345	1	498	1.00	0.00	1.46	1.23	1.15	0.00	3.50	1.03	1.00	19.43	9029722	22084068
1	40	3	3.67	11	1.5	26	523	21	1883	26	523	21	1883	3	444	3	263	1.00	0.00	1.95	1.26	1.04	0.00	2.30	1.32	1.00	10.62	9928781	23239274
1	40	4	2.75	11	1.5	22	442	20	1802	22	442	20	1802	3	588	3	332	1.00	0.00	2.00	1.23	1.09	0.00	2.74	1.36	1.00	12.98	9421034	22475952
1	40	5	2.2	11	1.5	19	384	19	1743	19	384	19	1743	3	488	2	397	1.00	0.00	2.03	1.21	1.13	0.00	3.15	1.39	1.00	15.18	9047729	21938979
1	40	6	1.833	11	1.5	17	339	19	1699	17	339	19	1699	3	588	2	451	1.00	0.00	2.07	1.19	1.16	0.00	3.49	1.42	1.00	17.31	8778132	21586319
1	40	7	1.57	11	1.5	15	303	18	1662	15	303	18	1662	3	345	1	492	1.00	0.00	2.10	1.18	1.18	0.00	3.76	1.45	1.00	19.35	8565372	21308103
1	40	4	2.875	11.5	1.75	23	450	20	1810	23	450	20	1810	3	556	3	318	1.00	0.00	2.08	1.22	1.08	0.00	2.66	1.40	1.00	12.52	9332040	22294351
1	40	5	2.3	11.5	1.75	20	392	19	1750	20	392	19	1750	3	465	2	381	1.00	0.00	2.12	1.20	1.13	0.00	3.05	1.44	1.00	14.63	8964845	21758017
1	40	6	1.917	11.5	1.75	17	347	19	1705	17	347	19	1705	3	571	2	437	1.00	0.00	2.16	1.18	1.16	0.00	3.40	1.47	1.00	16.66	8695319	21397921
1	40	7	1.643	11.5	1.75	16	310	18	1669	16	310	18	1669	3	333	1	477	1.00	0.00	2.19	1.17	1.18	0.00	3.67	1.50	1.00	18.64	8476733	21125258
1	40	4	3.25	13	2.5	24	475	20	1834	24	475	20	1834	3	500	3	285	1.00	0.00	2.05	1.19	1.08	0.00	2.45	1.35	1.00	11.37	9178012	21945770
1	40	5	2.6	13	2.5	21	415	19	1773	21	415	19	1773	3	417	2	341	1.00	0.00	2.08	1.17	1.12	0.00	2.81	1.38	1.00	13.29	8808992	21407192
1	40	6	2.167	13	2.5	18	369	19	1727	18	369	19	1727	3	500	2	395	1.00	0.00	2.10	1.16	1.16	0.00	3.15	1.41	1.00	15.12	8545047	21054064
1	40	7	1.857	13	2.5	17	331	19	1691	17	331	19	1691	3	571	2	440	1.00	0.00	2.13	1.14	1.19	0.00	3.44	1.44	1.00	16.92	8332933	20798388
1	40	4	3.625	14.5	3.25	26	516	21	1874	26	516	21	1874	3	444	3	264	1.00	0.00	2.06	1.24	1.04	0.00	2.32	1.39	1.00	10.65	9743511	22900107
1	40	5	2.9	14.5	3.25	23	453	20	1811	23	453	20	1811	3	556	3	316	1.00	0.00	2.09	1.22	1.08	0.00	2.66	1.42	1.00	12.43	9346851	22303396
1	40	6	2.417	14.5	3.25	20	405	19	1762	20	405	19	1762	3	444	2	366	1.00	0.00	2.13	1.20	1.11	0.00	2.97	1.45	1.00	14.12	9043281	21860767
1	40	7	2.07	14.5	3.25	18	366	19	1724	18	366	19	1724	3	513	2	415	1.00	0.00	2.13	1.19	1.14	0.00	3.28	1.48	1.00	15.78	8819282	21566686
1	40	4	2.875	11.5	0	25	494	20	1852	25	494	20	1852	3	556	3	337	1.14	0.00	1.34	1.41	1.20	0.00	2.79	1.00	1.00	13.12	11223499	25580533
1	40	5	2.3	11.5	0	21	426	20	1784	21	426	20	1784	3	465	2	400	1.12	0.00	1.35	1.35	1.23	0.00	3.17	1.00	1.00	15.21	10462108	24353428
1	40	6	1.917	11.5	0	19	372	19	1732	19	372	19	1732	3	571	2	455	1.09	0.00	1.37	1.30	1.24	0.00	3.51	1.00	1.00	17.20	9844858	23394331
1	40	7	1.643	11.5	0	17	330	19	1688	17	330	19	1688	3	333	1	492	1.07	0.00	1.39	1.26	1.24	0.00	3.75	1.00	1.00	19.06	9339467	22600150
1	40	4	3.25	13	0.75	24	475	20	1834	24	475	20	1834	3	500	3	285	1.00	0.00	1.56	1.19	1.08	0.00	2.45	1.03	1.00	11.37	9178012	21945770
1	40	5	2.6	13	0.75	21	415	19	1773	21	415	19	1773	3	417	2	341	1.00	0.00	1.58	1.17	1.12	0.00	2.81	1.05	1.00	13.29	8808992	21407192
1	40	6	2.167	13	0.75	18	369	19	1727	18	369	19	1727	3	500	2	395	1.00	0.00	1.60	1.16	1.16	0.00	3.15	1.07	1.00	15.12	8545047	21054064
1	40	7	1.857	13	0.75	17	331	19	1691	17	331	19	1691	3	571	2	440	1.00	0.00	1.62	1.14	1.19	0.00	3.44	1.09	1.00	16.92	8332933	20798388
1	40	4	3.625	14.5	1.5	26	516	21	1874	26	516	21	1874	3	444	3	264	1.00	0.00	1.95	1.24	1.04	0.00	2.32	1.32	1.00	10.65	9743511	22900107
1	40	5	2.9	14.5	1.5	23	453	20	1811	23	453	20	1811	3	556	3	316	1.00	0.00	1.99	1.22	1.08	0.00	2.66	1.35	1.00	12.43	9346851	22303396
1	40	6	2.417	14.5	1.5	20	405	19	1762	20	405	19	1762	3	444	2	366	1.00	0.00	2.03	1.20	1.11	0.00	2.97	1.38	1.00	14.12	9043281	21860767
1	40	7	2.07	14.5	1.5	18	366	19	1724	18	366	19	1724	3	513	2	415	1.00	0.00	1.79	1.19	1.14	0.00	3.28	1.24	1.00	15.78	8819282	21566686
1	40	5	3	15	0	25	507	21	1867	25	507	21	1867	3	541	3	326	1.16	0.00	1.31	1.42	1.21	0.00	2.74	1.00	1.00	12.77	11380005	25850712
1	40	6	2.5	15	0	23	451	20	1809	23	451	20	1809	3	435	2	375	1.14	0.00	1.33	1.37	1.23	0.00	3.04	1.00	1.00	14.38	10746344	24807327
1	40	7	2.14	15	0	20	405	19	1765	20	405	19	1765	3	513	2	423	1.12	0.00	1.33	1.34	1.24	0.00	3.34	1.00	1.00	16.00	10260166	24054722
1	40	8	1.875	15	0	18	367	19	1725	18	367	19	1725	3	571	2	460	1.10	0.00	1.34	1.30	1.25	0.00	3.56	1.00	1.00	17.44	9782749	23286725
1	40	9	1.67	15	0	17	333	19	1694	17	333	19	1694	3	328	1	488	1.06	0.00	1.36	1.26	1.22	0.00	3.57	1.00	1.00	18.88	9388358	22695802

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
1	40	5	3.3	16.5	0.75	24	477	20	1837	24	477	20	1837	3	488	3	281	1.00	0.00	1.54	1.19	1.08	0.00	2.43	1.02	1.00	11.24	9129201	21856169
1	40	6	2.75	16.5	0.75	21	428	20	1786	21	428	20	1786	3	588	3	325	1.00	0.00	1.55	1.17	1.11	0.00	2.72	1.04	1.00	12.75	8828522	21407878
1	40	7	2.357	16.5	0.75	19	388	19	1747	19	388	19	1747	3	465	2	369	1.00	0.00	1.57	1.16	1.14	0.00	3.00	1.06	1.00	14.23	8601417	21106540
1	40	8	2.06	16.5	0.75	18	355	19	1714	18	355	19	1714	3	526	2	411	1.00	0.00	1.59	1.15	1.17	0.00	3.26	1.08	1.00	15.67	8423517	20880108
1	40	9	1.83	16.5	0.75	16	328	19	1685	16	328	19	1685	3	588	2	443	1.00	0.00	1.58	1.14	1.18	0.00	3.44	1.09	1.00	17.06	8290942	20712507
1	40	5	3.6	18	1.5	26	511	21	1871	26	511	21	1871	3	455	3	265	1.00	0.00	1.94	1.23	1.04	0.00	2.33	1.32	1.00	10.69	9640040	22730689
1	40	6	3	18	1.5	23	460	20	1818	23	460	20	1818	3	541	3	307	1.00	0.00	1.95	1.21	1.07	0.00	2.60	1.34	1.00	12.11	9311250	22220673
1	40	7	2.57	18	1.5	21	419	20	1776	21	419	20	1776	3	426	2	347	1.00	0.00	1.97	1.20	1.10	0.00	2.86	1.36	1.00	13.49	9059758	21852827
1	40	8	2.25	18	1.5	19	384	19	1743	19	384	19	1743	3	488	2	387	1.00	0.00	1.92	1.19	1.13	0.00	3.12	1.33	1.00	14.85	8846669	21571859
1	40	9	2	18	1.5	18	355	19	1714	18	355	19	1714	3	541	2	426	1.00	0.00	1.73	1.18	1.15	0.00	3.36	1.20	1.00	16.14	8676222	21345071
1	40	6	3.08	18.5	0	26	516	21	1876	26	516	21	1876	3	526	3	320	1.17	0.00	1.30	1.43	1.21	0.00	2.71	1.00	1.00	12.56	11499718	26049467
1	40	7	2.64	18.5	0	23	468	20	1827	23	468	20	1827	3	408	2	360	1.15	0.00	1.31	1.39	1.23	0.00	2.96	1.00	1.00	13.89	10966830	25173230
1	40	8	2.32	18.5	0	21	428	20	1788	21	428	20	1788	3	465	2	397	1.13	0.00	1.31	1.36	1.24	0.00	3.20	1.00	1.00	15.14	10497142	24425269
1	40	9	2.06	18.5	0	20	393	19	1753	20	393	19	1753	3	526	2	435	1.12	0.00	1.33	1.32	1.25	0.00	3.42	1.00	1.00	16.39	10088042	23778269
1	40	10	1.85	18.5	0	18	363	19	1721	18	363	19	1721	3	571	2	463	1.10	0.00	1.34	1.29	1.25	0.00	3.59	1.00	1.00	17.59	9728455	23200898
1	40	6	3.58	21.5	1.5	25	508	21	1868	25	508	21	1868	3	455	3	266	1.00	0.00	1.90	1.22	1.04	0.00	2.34	1.31	1.00	10.71	9575529	22617477
1	40	7	3.07	21.5	1.5	23	465	20	1823	23	465	20	1823	3	526	3	301	1.00	0.00	1.95	1.21	1.07	0.00	2.57	1.33	1.00	11.90	9296685	22182392
1	40	8	2.69	21.5	1.5	21	429	20	1787	21	429	20	1787	3	408	2	334	1.00	0.00	1.94	1.20	1.09	0.00	2.79	1.35	1.00	13.05	9065719	21844118
1	40	9	2.39	21.5	1.5	20	398	19	1757	20	398	19	1757	3	455	2	368	1.00	0.00	1.98	1.19	1.12	0.00	3.01	1.37	1.00	14.19	8883275	21598043
1	40	10	2.15	21.5	1.5	19	371	19	1731	19	371	19	1731	3	500	2	401	1.00	0.00	1.82	1.18	1.14	0.00	3.21	1.27	1.00	15.31	8723205	21388961
1	40	7	3.14	22	0	26	522	21	1882	26	522	21	1882	3	513	3	315	1.17	0.00	1.28	1.43	1.21	0.00	2.69	1.00	1.00	12.40	11557851	26144651
1	40	8	2.75	22	0	24	480	20	1839	24	480	20	1839	3	588	3	349	1.16	0.00	1.28	1.40	1.23	0.00	2.90	1.00	1.00	13.51	11078740	25351781
1	40	9	2.44	22	0	22	445	20	1803	22	445	20	1803	3	444	2	383	1.15	0.00	1.31	1.37	1.24	0.00	3.11	1.00	1.00	14.64	10726002	24781340
1	40	10	2.2	22	0	21	413	19	1771	21	413	19	1771	3	488	2	414	1.13	0.00	1.32	1.34	1.25	0.00	3.30	1.00	1.00	15.67	10316951	24123997
1	40	11	2	22	0	19	385	19	1744	19	385	19	1744	3	541	2	445	1.12	0.00	1.33	1.32	1.25	0.00	3.49	1.00	1.00	16.71	9996496	23627926
1	40	12	1.83	22	0	18	361	19	1721	18	361	19	1721	3	588	2	467	1.11	0.00	1.32	1.30	1.26	0.00	3.61	1.00	1.00	17.79	9774322	23300590
1	40	7	3.57	25	1.5	25	506	21	1865	25	506	21	1865	3	455	3	266	1.00	0.00	1.89	1.22	1.04	0.00	2.35	1.31	1.00	10.71	9512050	22499500
1	40	8	3.125	25	1.5	23	468	20	1828	23	468	20	1828	3	513	3	296	1.00	0.00	1.92	1.21	1.07	0.00	2.55	1.32	1.00	11.75	9278418	22153786
1	40	9	2.78	25	1.5	22	437	20	1794	22	437	20	1794	3	588	3	325	1.00	0.00	1.94	1.20	1.09	0.00	2.73	1.34	1.00	12.72	9075006	21834740
1	40	10	2.5	25	1.5	20	409	19	1766	20	409	19	1766	3	435	2	354	1.00	0.00	1.95	1.19	1.11	0.00	2.92	1.35	1.00	13.72	8903734	21593760
1	40	11	2.27	25	1.5	19	384	19	1744	19	384	19	1744	3	476	2	383	1.00	0.00	1.90	1.18	1.13	0.00	3.11	1.33	1.00	14.72	8780866	21456271
1	40	12	1.83	25	1.5	21	412	19	1772	21	412	19	1772	3	588	2	504	1.00	0.00	1.27	1.56	1.00	0.00	3.78	1.07	1.00	18.86	12385734	27631276
1	44	3	1.5	4.5	0	17	349	21	1868	17	349	21	1868	3	400	1	578	1.09	0.00	1.42	1.40	1.23	0.00	4.18	1.00	1.00	25.56	14650261	32794176
1	44	3	2	6	0.75	21	426	21	1946	21	426	21	1946	3	595	2	490	1.19	0.00	1.38	1.44	1.34	0.00	4.12	1.00	1.00	20.81	15346125	33864404
1	44	4	1.5	6	0.75	17	338	20	1858	17	338	20	1858	3	400	1	568	1.07	0.00	1.40	1.35	1.22	0.00	4.20	1.00	1.00	25.29	13969054	31728651
1	44	3	2.33	7	1.25	21	414	21	1932	21	414	21	1932	3	512	2	412	1.00	0.00	2.02	1.22	1.14	0.00	3.51	1.32	1.00	17.61	12491151	29125241
1	44	4	1.75	7	1.25	17	338	20	1858	17	338	20	1858	3	344	1	504	1.00	0.00	1.81	1.19	1.18	0.00	4.03	1.19	1.00	21.68	11973475	28430406
1	44	3	2.67	8	0	23	469	22	1987	23	469	22	1987	3	449	2	377	1.09	0.00	1.48	1.30	1.22	0.00	3.29	1.00	1.00	16.25	13671284	31041083
1	44	4	2	8	0	19	377	21	1896	19	377	21	1896	3	595	2	469	1.05	0.00	1.50	1.22	1.23	0.00	3.90	1.00	1.00	19.75	12431416	29111868
1	44	5	1.6	8	0	16	319	20	1836	16	319	20	1836	3	373	1	532	1.00	0.00	1.53	1.20	1.17	0.00	4.07	1.03	1.00	23.15	11956955	28420978
1	44	3	3.17	9.5	0.75	24	478	22	1995	24	478	22	1995	3	564	3	311	1.00	0.00	1.74	1.16	1.13	0.00	2.85	1.09	1.00	13.80	11920948	27968727
1	44	4	2.375	9.5	0.75	20	397	21	1915	20	397	21	1915	3	500	2	393	1.00	0.00	1.77	1.13	1.18	0.00	3.43	1.13	1.00	16.97	11396561	27252860
1	44	5	1.9	9.5	0.75	17	339	20	1859	17	339	20	1859	3	314	1	467	1.00	0.00	1.80	1.12	1.21	0.00	3.93	1.17	1.00	19.99	11077847	26876371
1	44	6	1.583	9.5	0.75	16	315	20	1833	16	315	20	1833	3	379	1	535	1.00	0.00	1.61	1.19	1.17	0.00	4.09	1.09	1.00	23.32	11886578	28319935
1	44	3	3.67	11	1.5	27	535	23	2054	27	535	23	2054	3	489	3	281	1.00	0.00	2.11	1.22	1.07	0.00	2.66	1.37	1.00	12.63	12883328	29578682
1	44	4	2.75	11	1.5	22	449	22	1969	22	449	22	1969	3	431	2	355	1.00	0.00	2.17	1.19	1.12	0.00	3.18	1.42	1.00	15.49	12273978	28683793
1	44	5	2.2	11	1.5	19	388	21	1907	19	388	21	1907	3	537	2	425	1.00	0.00	2.20	1.17	1.16	0.00	3.66	1.46	1.00	18.17	11853754	28089448
1	44	6	1.833	11	1.5	17	341	20	1858	17	341	20	1858	3	328	1	483	1.00	0.00	2.24	1.16	1.18	0.00	4.05	1.49	1.00	20.70	11529863	27635078
1	44	7	1.57	11	1.5	15	302	20	1821	15	302	20	1821	3	379	1	529	1.00	0.00	2.26	1.15	1.20	0.00	4.38	1.53	1.00	23.21	11310003	27377429
1	44	4	2.875	11.5	1.75	23	458	22	1977	23	458	22	1977	3	415	2	340	1.00	0.00	2.26	1.18	1.12	0.00	3.08	1.46	1.00	14.94	12161662	28457765
1	44	5	2.3	11.5	1.75	20	396	21	1915	20	396	21	1915	3	512	2	408	1.00	0.00	2.29	1.16	1.16	0.00	3.55	1.50	1.00	17.52	11735587	27861762
1	44	6	1.917	11.5	1.75	17	348	21	1868	17	348	21	1868	3	314	1	469	1.00	0.00	2.33	1.15	1.19	0.00	3.96	1.54	1.00	20.00	11430815	27468431
1	44	7	1.643	11.5	1.75	16	310	20	1827	16	310	20	1827	3	367	1	512	1.00	0.00	2.35	1.13	1.21	0.00	4.26	1.57	1.00	22.33	11174255	27104559
1	44	4	3.25	13	2.5	24	484	22	2004	24	484	22	2004	3	550	3	304	1.00	0.00	2.20	1.16	1.12	0.00	2.84	1.40	1.00	13.58	11957411	28041705
1	44	5	2.6	13	2.5	21	421	21	1939	21	421	21	1939	3	458	2	365	1.00	0.00	2.23	1.14	1.16	0.00	3.26	1.44	1.00	15.89	11526287	27416595
1	44	6	2.167	13	2.5	19	372	21	1890	19	372	21	1890	3	550	2	423	1.00	0.00	2.26	1.12	1.19	0.00	3.66	1.47	1.00	18.11	11208011	26991264
1	44	7	1.857	13	2.5	17	332	20	1851	17	332	20	1851	3	324	1	472	1.00	0.00	2.29	1.11	1.21	0.00	4.00	1.51	1.00	20.27	10964705	26690421
1	44	4	3.625	14.5	3.25	26	527	22	2046	26	527	22	2046	3	489	3	282	1.00	0.00	2.22	1.20	1.07	0.00	2.68	1.45	1.00	12.69	12653088	29185068
1	44	5	2.9	14.5	3.25	23	461	22	1978	23	461	22	1978	3	415	2	338	1.00	0.00	2.24	1.18	1.12	0.00	3.08	1.48	1.00	14.83	12172529	28456212
1	44	6	2.417	14.5	3.25	21	410	21	1927	21	410	21	1927	3	489	2	392	1.00	0.00	2.28	1.17	1.15	0.00	3.45	1.51	1.00	16.88	11819100	27956041
1	44	7	2.07	14.5	3.25	18	368	21	1888	18	368	21	1888	3	564	2	445	1.00	0.00	2.31	1.15	1.17	0.00	3.82	1.55	1.00	18.92	11565402	27647609
1	44	4	2.875	11.5	0	24	483	22	2000	24	483	22	2000	3	415	2	351	1.07	0.00	1.46	1.28	1.19	0.00	3.16	1.00	1.00	15.30	13410841	30568615
1	44	5	2.3	11.5	0	21	410	21	1930	21	410	21	1930	3	512	2	416	1.04	0.00	1.48	1.22	1.20	0.00	3.60	1.00	1.00	17.80	12475967	29123110
1	44	6	1.917	11.5	0	18	354	21	1873	18	354	21	1873	3	314	1	473	1.02	0.00	1.48	1.17	1.20	0.00	3.98	1.00	1.00	20.11	11721319	27948389
1	44	7	1.643	11.5	0	16	310	20	1827	16	310	20	1827	3	367	1	512	1.00	0.00	1.50	1.13	1.21	0.00	4.26	1.01	1.00	22.33	11174255	27104559
1	44	4	3.25	13	0.75	24	484	22	2004	24	484	22	2004	3	550	3	304	1.00	0.00	1.70	1.16	1.12	0.00	2.84	1.08	1.00	13.58	11957411	28041705
1	44	5	2.6	13	0.75	21	421	21	1939	21	421	21	1939	3	458	2	365	1.00	0.00	1.72	1.14	1.16	0.00	3.26	1.11	1.00	15.89	11526287	27416595
1	44	6	2.167	13	0.75	19	372	21	1890	19	372	21	1890	3	550	2	423	1.00	0.00	1.75	1.12	1.19	0.00	3.66	1.14	1.00	18.11	11208011	26991264
1	44	7	1.857	13	0.75	17	332	20	1851	17	332	20	1851	3	324	1	472	1.00	0.00	1.77	1.11	1.21	0.00	4.00	1.17	1.00	20.27	10964705	26690421
1	44	4	3.625	14.5	1.5	26	527	22	2046	26	527	22	2046	3	489	3	282	1.00	0.00	2.12	1.20	1.07	0.00	2.68	1.38	1.00	12.69	12653088	29185068
1	44	5	2.9	14.5	1.5	23	461	22	1978	23	461	22	1978	3	415	2	338	1.00	0.00	2.14	1.18	1.12	0.00	3.08	1.41	1.00	14.83	12172529	28456212
1	44	6	2.417	14.5	1.5	21	410	21	1927	21	410	21	1927	3	489	2	392	1.00	0.00	2.18	1.17	1.15	0.00	3.45	1.44	1.00	16.88	11819100	27956041
1	44	7	2.07	14.5	1.5	18	368	21	1888	18	368	21	1888	3	564	2	445	1.00	0.00	1.97	1.15	1.17	0.00	3.82	1.32	1.00	18.92	11565402	27647609
1	44	5	3	15	0	25	497	22	2014	25	497	22	2014	3	595	3	340	1.09	0.00	1.44	1.29	1.19	0.00	3.10	1.00	1.00	14.87	13581734	30840631

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	44	6	2.5	15	0	22	437	21	1955	22	437	21	1955	3	478	2	390	1.06	0.00	1.45	1.24	1.20	0.00	3.45	1.00	1.00	16.80	12814120	29632083
1	44	7	2.14	15	0	19	388	21	1908	19	388	21	1908	3	564	2	440	1.04	0.00	1.46	1.20	1.21	0.00	3.78	1.00	1.00	18.69	12204760	28706271
1	44	8	1.875	15	0	17	346	21	1867	17	346	21	1867	3	319	1	478	1.02	0.00	1.48	1.16	1.21	0.00	4.05	1.00	1.00	20.43	11618415	27803366
1	44	9	1.67	15	0	16	316	20	1836	16	316	20	1836	3	361	1	509	1.00	0.00	1.49	1.15	1.19	0.00	4.08	1.01	1.00	22.18	11357122	27429471
1	44	5	3.3	16.5	0.75	24	487	22	2005	24	487	22	2005	3	537	3	300	1.00	0.00	1.69	1.15	1.11	0.00	2.82	1.09	1.00	13.39	11884350	27889335
1	44	6	2.75	16.5	0.75	22	434	21	1954	22	434	21	1954	3	431	2	348	1.00	0.00	1.72	1.14	1.15	0.00	3.16	1.11	1.00	15.26	11538633	27418287
1	44	7	2.357	16.5	0.75	20	392	21	1911	20	392	21	1911	3	512	2	394	1.00	0.00	1.73	1.12	1.18	0.00	3.48	1.13	1.00	17.04	11259353	27032272
1	44	8	2.06	16.5	0.75	18	357	21	1876	18	357	21	1876	3	579	2	440	1.00	0.00	1.75	1.11	1.20	0.00	3.80	1.15	1.00	18.77	11053770	26771082
1	44	9	1.83	16.5	0.75	16	328	20	1847	16	328	20	1847	3	328	1	475	1.00	0.00	1.74	1.11	1.21	0.00	4.02	1.16	1.00	20.49	10927036	26636336
1	44	5	3.6	18	1.5	26	522	22	2041	26	522	22	2041	3	500	3	283	1.00	0.00	2.10	1.19	1.08	0.00	2.70	1.37	1.00	12.72	12502140	28927485
1	44	6	3	18	1.5	23	468	22	1986	23	468	22	1986	3	595	3	328	1.00	0.00	2.11	1.18	1.11	0.00	3.02	1.40	1.00	14.45	12120995	28356642
1	44	7	2.57	18	1.5	21	424	21	1943	21	424	21	1943	3	468	2	372	1.00	0.00	2.15	1.16	1.14	0.00	3.33	1.42	1.00	16.15	11828365	27953201
1	44	8	2.25	18	1.5	19	388	21	1906	19	388	21	1906	3	537	2	414	1.00	0.00	2.12	1.15	1.16	0.00	3.62	1.41	1.00	17.75	11575431	27595272
1	44	9	2	18	1.5	18	357	21	1876	18	357	21	1876	3	595	2	456	1.00	0.00	1.89	1.14	1.18	0.00	3.91	1.27	1.00	19.34	11385383	27355380
1	44	6	3.08	18.5	0	25	506	22	2025	25	506	22	2025	3	579	3	333	1.10	0.00	1.42	1.29	1.19	0.00	3.07	1.00	1.00	14.63	13736197	31107508
1	44	7	2.64	18.5	0	23	455	22	1974	23	455	22	1974	3	449	2	375	1.08	0.00	1.42	1.26	1.20	0.00	3.36	1.00	1.00	16.22	13083713	30069428
1	44	8	2.32	18.5	0	21	413	21	1932	21	413	21	1932	3	512	2	413	1.06	0.00	1.45	1.22	1.21	0.00	3.62	1.00	1.00	17.68	12507804	29163105
1	44	9	2.06	18.5	0	19	376	21	1895	19	376	21	1895	3	579	2	452	1.04	0.00	1.44	1.19	1.21	0.00	3.88	1.00	1.00	19.16	12016819	28402840
1	44	10	1.85	18.5	0	17	343	20	1862	17	343	20	1862	3	324	1	481	1.03	0.00	1.46	1.16	1.21	0.00	4.08	1.00	1.00	20.59	11564347	27706035
1	44	6	3.58	21.5	1.5	26	519	22	2038	26	519	22	2038	3	500	3	283	1.00	0.00	2.06	1.18	1.08	0.00	2.71	1.37	1.00	12.75	12426096	28796571
1	44	7	3.07	21.5	1.5	24	473	22	1992	24	473	22	1992	3	579	3	321	1.00	0.00	2.10	1.17	1.11	0.00	2.98	1.39	1.00	14.20	12099164	28312634
1	44	8	2.69	21.5	1.5	22	435	21	1954	22	435	21	1954	3	449	2	357	1.00	0.00	2.12	1.16	1.13	0.00	3.24	1.41	1.00	15.60	11827875	27923014
1	44	9	2.39	21.5	1.5	20	403	21	1920	20	403	21	1920	3	500	2	393	1.00	0.00	2.15	1.15	1.15	0.00	3.49	1.43	1.00	16.95	11601930	27592011
1	44	10	2.15	21.5	1.5	19	374	21	1894	19	374	21	1894	3	550	2	429	1.00	0.00	2.01	1.14	1.17	0.00	3.74	1.35	1.00	18.33	11431472	27395781
1	44	7	3.14	22	0	26	513	22	2030	26	513	22	2030	3	564	3	328	1.10	0.00	1.40	1.30	1.19	0.00	3.04	1.00	1.00	14.43	13809563	31209136
1	44	8	2.75	22	0	23	468	22	1986	23	468	22	1986	3	431	2	363	1.09	0.00	1.42	1.26	1.20	0.00	3.28	1.00	1.00	15.76	13220295	30272928
1	44	9	2.44	22	0	22	430	21	1950	22	430	21	1950	3	489	2	399	1.07	0.00	1.43	1.24	1.21	0.00	3.53	1.00	1.00	17.13	12790307	29621581
1	44	10	2.2	22	0	20	396	21	1916	20	396	21	1916	3	537	2	430	1.06	0.00	1.43	1.21	1.22	0.00	3.75	1.00	1.00	18.34	12287622	28830302
1	44	11	2	22	0	18	366	21	1886	18	366	21	1886	3	595	2	462	1.04	0.00	1.45	1.18	1.22	0.00	3.96	1.00	1.00	19.54	11882396	28199302
1	44	12	1.83	22	0	17	342	20	1860	17	342	20	1860	3	328	1	485	1.03	0.00	1.44	1.16	1.22	0.00	4.09	1.00	1.00	20.77	11619581	27795896
1	44	7	3.57	25	1.5	26	517	22	2035	26	517	22	2035	3	500	3	284	1.00	0.00	2.05	1.18	1.08	0.00	2.72	1.36	1.00	12.75	12349154	28656139
1	44	8	3.125	25	1.5	24	477	22	1995	24	477	22	1995	3	564	3	316	1.00	0.00	2.07	1.17	1.10	0.00	2.95	1.38	1.00	14.00	12061099	28228398
1	44	9	2.78	25	1.5	22	443	22	1962	22	443	22	1962	3	431	2	347	1.00	0.00	2.10	1.16	1.13	0.00	3.18	1.40	1.00	15.22	11829381	27905456
1	44	10	2.5	25	1.5	21	414	21	1932	21	414	21	1932	3	478	2	379	1.00	0.00	2.13	1.15	1.14	0.00	3.39	1.42	1.00	16.41	11639111	27635849
1	44	11	2.27	25	1.5	19	388	21	1907	19	388	21	1907	3	524	2	410	1.00	0.00	2.10	1.14	1.16	0.00	3.61	1.41	1.00	17.60	11488220	27448283
1	44	12	1.83	25	1.5	21	414	21	1934	21	414	21	1934	3	328	1	540	1.00	0.00	1.40	1.49	1.02	0.00	4.36	1.10	1.00	22.46	15947638	34823299
1	48	3	1.5	4.5	0	16	324	22	2004	16	324	22	2004	3	436	1	594	1.01	0.00	1.52	1.25	1.18	0.00	4.66	1.00	1.00	29.42	16987023	38212617
1	48	3	2	6	0.75	20	406	23	2086	20	406	23	2086	3	329	1	504	1.10	0.00	1.49	1.29	1.29	0.00	4.57	1.00	1.00	23.91	17811179	39458372
1	48	4	1.5	6	0.75	16	313	22	1992	16	313	22	1992	3	436	1	584	1.00	0.00	1.50	1.21	1.18	0.00	4.67	1.00	1.00	29.07	16194117	36960805
1	48	3	2.33	7	1.25	21	418	23	2096	21	418	23	2096	3	558	2	437	1.00	0.00	2.18	1.18	1.16	0.00	3.99	1.39	1.00	20.72	15986937	36465986
1	48	4	1.75	7	1.25	17	338	22	2017	17	338	22	2017	3	375	1	536	1.00	0.00	1.95	1.16	1.20	0.00	4.58	1.27	1.00	25.55	15412464	35671305
1	48	3	2.67	8	0	23	451	23	2130	23	451	23	2130	3	490	2	387	1.02	0.00	1.58	1.17	1.19	0.00	3.66	1.00	1.00	18.67	15884458	36244206
1	48	4	2	8	0	18	362	22	2041	18	362	22	2041	3	329	1	487	1.00	0.00	1.60	1.13	1.21	0.00	4.37	1.02	1.00	22.89	14890802	34762700
1	48	5	1.6	8	0	16	317	22	1995	16	317	22	1995	3	407	1	567	1.00	0.00	1.66	1.16	1.19	0.00	4.64	1.10	1.00	27.34	15415300	35698062
1	48	3	3.17	9.5	0.75	24	485	24	2164	24	485	24	2164	3	414	2	329	1.00	0.00	1.89	1.12	1.16	0.00	3.25	1.16	1.00	16.23	15218339	35039908
1	48	4	2.375	9.5	0.75	20	400	23	2079	20	400	23	2079	3	545	2	417	1.00	0.00	1.92	1.10	1.21	0.00	3.90	1.21	1.00	20.00	14623824	34221800
1	48	5	1.9	9.5	0.75	17	339	22	2019	17	339	22	2019	3	343	1	496	1.00	0.00	1.95	1.09	1.23	0.00	4.48	1.25	1.00	23.58	14276845	33795114
1	48	6	1.583	9.5	0.75	16	312	22	1992	16	312	22	1992	3	414	1	569	1.00	0.00	1.74	1.16	1.19	0.00	4.67	1.17	1.00	27.55	15304930	35547471
1	48	3	3.67	11	1.5	27	545	24	2223	27	545	24	2223	3	533	3	296	1.00	0.00	2.29	1.18	1.11	0.00	3.01	1.44	1.00	14.80	16342165	36850483
1	48	4	2.75	11	1.5	23	455	23	2133	23	455	23	2133	3	471	2	375	1.00	0.00	2.32	1.16	1.15	0.00	3.61	1.49	1.00	18.19	15642904	35820997
1	48	5	2.2	11	1.5	20	390	23	2069	20	390	23	2069	3	585	2	451	1.00	0.00	2.37	1.14	1.18	0.00	4.16	1.54	1.00	21.39	15170690	35171321
1	48	6	1.833	11	1.5	17	340	22	2019	17	340	22	2019	3	358	1	514	1.00	0.00	2.40	1.13	1.20	0.00	4.62	1.58	1.00	24.44	14837403	34720691
1	48	7	1.57	11	1.5	15	299	22	1979	15	299	22	1979	3	414	1	563	1.00	0.00	2.43	1.12	1.22	0.00	4.99	1.62	1.00	27.41	14606698	34428673
1	48	4	2.875	11.5	1.75	23	464	24	2143	23	464	24	2143	3	453	2	360	1.00	0.00	2.40	1.15	1.15	0.00	3.50	1.53	1.00	17.55	15503021	35573008
1	48	5	2.3	11.5	1.75	20	399	23	2077	20	399	23	2077	3	558	2	433	1.00	0.00	2.45	1.13	1.19	0.00	4.03	1.58	1.00	20.62	15022524	34892596
1	48	6	1.917	11.5	1.75	17	348	22	2028	17	348	22	2028	3	343	1	498	1.00	0.00	2.49	1.12	1.21	0.00	4.51	1.62	1.00	23.58	14687886	34464260
1	48	7	1.643	11.5	1.75	15	307	22	1987	15	307	22	1987	3	400	1	545	1.00	0.00	2.51	1.10	1.22	0.00	4.87	1.66	1.00	26.41	14438227	34135786
1	48	4	3.25	13	2.5	25	492	24	2170	25	492	24	2170	3	407	2	322	1.00	0.00	2.34	1.12	1.15	0.00	3.22	1.47	1.00	15.92	15216301	35012311
1	48	5	2.6	13	2.5	21	425	23	2104	21	425	23	2104	3	500	2	387	1.00	0.00	2.39	1.11	1.19	0.00	3.71	1.51	1.00	18.71	14746940	34369888
1	48	6	2.167	13	2.5	19	373	23	2053	19	373	23	2053	3	304	1	449	1.00	0.00	2.43	1.09	1.21	0.00	4.17	1.55	1.00	21.37	14395930	33911527
1	48	7	1.857	13	2.5	17	331	22	2011	17	331	22	2011	3	353	1	501	1.00	0.00	2.45	1.08	1.23	0.00	4.56	1.59	1.00	23.93	14128862	33565057
1	48	4	3.625	14.5	3.25	27	536	24	2216	27	536	24	2216	3	533	3	298	1.00	0.00	2.38	1.16	1.11	0.00	3.05	1.52	1.00	14.89	16058813	36395741
1	48	5	2.9	14.5	3.25	23	467	24	2144	23	467	24	2144	3	453	2	357	1.00	0.00	2.42	1.15	1.15	0.00	3.50	1.56	1.00	17.42	15504174	35550526
1	48	6	2.417	14.5	3.25	21	413	23	2091	21	413	23	2091	3	533	2	415	1.00	0.00	2.46	1.13	1.17	0.00	3.93	1.59	1.00	19.88	15110190	35007766
1	48	7	2.07	14.5	3.25	18	369	23	2049	18	369	23	2049	3	316	1	472	1.00	0.00	2.48	1.12	1.19	0.00	4.34	1.63	1.00	22.29	14827018	34649893
1	48	4	2.875	11.5	0	23	466	24	2143	23	466	24	2143	3	453	2	361	1.00	0.00	1.57	1.15	1.16	0.00	3.50	1.00	1.00	17.56	15582875	35687866
1	48	5	2.3	11.5	0	20	399	23	2077	20	399	23	2077	3	558	2	433	1.00	0.00	1.60	1.13	1.19	0.00	4.03	1.03	1.00	20.62	15022524	34892596
1	48	6	1.917	11.5	0	17	348	22	2028	17	348	22	2028	3	343	1	498	1.00	0.00	1.62	1.12	1.21	0.00	4.51	1.05	1.00	23.58	14687886	34464260
1	48	7	1.643	11.5	0	15	307	22	1987	15	307	22	1987	3	400	1	545	1.00	0.00	1.64	1.10	1.22	0.00	4.87	1.08	1.00	26.41	14438227	34135786
1	48	4	3.25	13	0.75	25	492	24	2170	25	492	24	2170	3	407	2	322	1.00	0.00	1.84	1.12	1.15	0.00	3.22	1.15	1.00	15.92	15216301	35012311
1	48	5	2.6	13	0.75	21	425	23	2104	21	425	23	2104	3	500	2	387	1.00	0.00	1.88	1.11	1.19	0.00	3.71	1.19	1.00	18.71	14746940	34369888
1	48	6	2.167	13	0.75	19	373	23	2053	19	373	23	2053	3	304	1	449	1.00	0.00	1.90	1.09	1.21	0.00	4.17	1.22	1.00	21.37	14395930	33911527
1	48	7	1.857	13	0.75	17	331	22	2011	17	331	22	2011	3	353	1	501	1.00	0.00	1.92	1.08	1.23	0.00	4.56	1.25	1.00	23.93	14128862	33565057
1	48	4	3.625	14.5	1.5	27	536	24	2216	27	536	24	2216	3	533	3	298	1.00	0.00	2.27	1.16	1.11	0.00	3.05	1.45	1.00	14.89	16058813	36395741

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
1	48	5	2.9	14.5	1.5	23	467	24	2144	23	467	24	2144	3	453	2	357	1.00	0.00	2.32	1.15	1.15	0.00	3.50	1.49	1.00	17.42	15504174	35550526
1	48	6	2.417	14.5	1.5	21	413	23	2091	21	413	23	2091	3	533	2	415	1.00	0.00	2.35	1.13	1.17	0.00	3.93	1.52	1.00	19.88	15110190	35007766
1	48	7	2.07	14.5	1.5	18	369	23	2049	18	369	23	2049	3	316	1	472	1.00	0.00	2.15	1.12	1.19	0.00	4.34	1.41	1.00	22.29	14827018	34649893
1	48	5	3	15	0	24	480	24	2158	24	480	24	2158	3	436	2	349	1.02	0.00	1.54	1.16	1.16	0.00	3.44	1.00	1.00	17.06	15761786	35972246
1	48	6	2.5	15	0	21	420	23	2098	21	420	23	2098	3	522	2	402	1.00	0.00	1.57	1.13	1.18	0.00	3.84	1.01	1.00	19.35	15017650	34834852
1	48	7	2.14	15	0	19	376	23	2055	19	376	23	2055	3	308	1	458	1.00	0.00	1.58	1.12	1.19	0.00	4.24	1.03	1.00	21.69	14734611	34468452
1	48	8	1.875	15	0	17	340	22	2017	17	340	22	2017	3	348	1	502	1.00	0.00	1.59	1.10	1.21	0.00	4.56	1.05	1.00	23.84	14460389	34072162
1	48	9	1.67	15	0	16	314	22	1994	16	314	22	1994	3	393	1	542	1.00	0.00	1.62	1.12	1.21	0.00	4.66	1.09	1.00	26.16	14630331	34439940
1	48	5	3.3	16.5	0.75	25	494	24	2174	25	494	24	2174	3	585	3	317	1.00	0.00	1.83	1.12	1.15	0.00	3.21	1.16	1.00	15.74	15136505	34887089
1	48	6	2.75	16.5	0.75	22	439	23	2118	22	439	23	2118	3	471	2	368	1.00	0.00	1.85	1.10	1.18	0.00	3.60	1.18	1.00	17.93	14727708	34303296
1	48	7	2.357	16.5	0.75	20	395	23	2073	20	395	23	2073	3	558	2	418	1.00	0.00	1.88	1.09	1.20	0.00	3.96	1.21	1.00	20.04	14422953	33882044
1	48	8	2.06	16.5	0.75	18	358	22	2036	18	358	22	2036	3	320	1	467	1.00	0.00	1.90	1.09	1.22	0.00	4.32	1.23	1.00	22.11	14200311	33598702
1	48	9	1.83	16.5	0.75	16	327	22	2005	16	327	22	2005	3	358	1	505	1.00	0.00	1.90	1.08	1.23	0.00	4.58	1.24	1.00	24.15	14059626	33439874
1	48	5	3.6	18	1.5	27	531	24	2210	27	531	24	2210	3	545	3	299	1.00	0.00	2.25	1.15	1.11	0.00	3.06	1.44	1.00	14.91	15862971	36059070
1	48	6	3	18	1.5	24	474	24	2153	24	474	24	2153	3	436	2	347	1.00	0.00	2.28	1.14	1.14	0.00	3.44	1.47	1.00	16.98	15430269	35427848
1	48	7	2.57	18	1.5	21	428	23	2107	21	428	23	2107	3	511	2	393	1.00	0.00	2.30	1.13	1.17	0.00	3.79	1.50	1.00	18.98	15095311	34957753
1	48	8	2.25	18	1.5	20	390	23	2069	20	390	23	2069	3	585	2	439	1.00	0.00	2.29	1.12	1.18	0.00	4.12	1.51	1.00	20.91	14829958	34596377
1	48	9	2	18	1.5	18	357	22	2037	18	357	22	2037	3	329	1	484	1.00	0.00	2.06	1.11	1.20	0.00	4.45	1.36	1.00	22.80	14610303	34313519
1	48	6	3.08	18.5	0	25	490	24	2168	25	490	24	2168	3	421	2	342	1.03	0.00	1.53	1.17	1.17	0.00	3.40	1.00	1.00	16.77	15937150	36251534
1	48	7	2.64	18.5	0	22	436	23	2115	22	436	23	2115	3	490	2	385	1.01	0.00	1.54	1.13	1.17	0.00	3.73	1.00	1.00	18.62	15160509	35050502
1	48	8	2.32	18.5	0	20	396	23	2075	20	396	23	2075	3	558	2	427	1.00	0.00	1.55	1.11	1.19	0.00	4.04	1.01	1.00	20.40	14736511	34424829
1	48	9	2.06	18.5	0	18	363	22	2042	18	363	22	2042	3	320	1	471	1.00	0.00	1.56	1.10	1.20	0.00	4.35	1.03	1.00	22.24	14516442	34131364
1	48	10	1.85	18.5	0	17	334	22	2013	17	334	22	2013	3	353	1	505	1.00	0.00	1.58	1.10	1.21	0.00	4.61	1.05	1.00	24.07	14338561	33901164
1	48	6	3.58	21.5	1.5	26	528	24	2206	26	528	24	2206	3	545	3	299	1.00	0.00	2.24	1.15	1.11	0.00	3.08	1.43	1.00	14.94	15760442	35879225
1	48	7	3.07	21.5	1.5	24	479	24	2159	24	479	24	2159	3	421	2	339	1.00	0.00	2.25	1.14	1.14	0.00	3.39	1.46	1.00	16.68	15384959	35348539
1	48	8	2.69	21.5	1.5	22	440	23	2117	22	440	23	2117	3	490	2	378	1.00	0.00	2.27	1.13	1.16	0.00	3.68	1.48	1.00	18.32	15073372	34875780
1	48	9	2.39	21.5	1.5	20	405	23	2085	20	405	23	2085	3	545	2	417	1.00	0.00	2.30	1.12	1.18	0.00	3.98	1.51	1.00	19.99	14845625	34596542
1	48	10	2.15	21.5	1.5	19	376	23	2053	19	376	23	2053	3	304	1	455	1.00	0.00	2.19	1.11	1.19	0.00	4.24	1.44	1.00	21.55	14626606	34268187
1	48	7	3.14	22	0	25	497	24	2174	25	497	24	2174	3	421	2	337	1.03	0.00	1.52	1.17	1.17	0.00	3.37	1.00	1.00	16.55	16026524	36383050
1	48	8	2.75	22	0	22	449	23	2129	22	449	23	2129	3	471	2	373	1.01	0.00	1.52	1.14	1.17	0.00	3.65	1.00	1.00	18.11	15324999	35310927
1	48	9	2.44	22	0	21	410	23	2089	21	410	23	2089	3	533	2	409	1.00	0.00	1.53	1.11	1.18	0.00	3.92	1.00	1.00	19.65	14811908	34517770
1	48	10	2.2	22	0	19	380	23	2059	19	380	23	2059	3	585	2	445	1.00	0.00	1.55	1.10	1.19	0.00	4.18	1.02	1.00	21.18	14567132	34175355
1	48	11	2	22	0	18	354	22	2032	18	354	22	2032	3	329	1	482	1.00	0.00	1.56	1.10	1.20	0.00	4.44	1.03	1.00	22.70	14391330	33933633
1	48	12	1.83	22	0	17	331	22	2009	17	331	22	2009	3	358	1	508	1.00	0.00	1.57	1.09	1.21	0.00	4.61	1.04	1.00	24.24	14292679	33821403
1	48	7	3.57	25	1.5	26	525	24	2205	26	525	24	2205	3	545	3	300	1.00	0.00	2.21	1.14	1.12	0.00	3.09	1.43	1.00	14.97	15673416	35751995
1	48	8	3.125	25	1.5	24	483	24	2163	24	483	24	2163	3	421	2	334	1.00	0.00	2.25	1.13	1.14	0.00	3.36	1.45	1.00	16.45	15342461	35266942
1	48	9	2.78	25	1.5	22	448	23	2127	22	448	23	2127	3	471	2	367	1.00	0.00	2.25	1.12	1.16	0.00	3.61	1.47	1.00	17.88	15080973	34887252
1	48	10	2.5	25	1.5	21	417	23	2096	21	417	23	2096	3	522	2	401	1.00	0.00	2.28	1.12	1.17	0.00	3.86	1.50	1.00	19.31	14862036	34586283
1	48	11	2.27	25	1.5	20	390	23	2069	20	390	23	2069	3	571	2	434	1.00	0.00	2.29	1.11	1.18	0.00	4.11	1.51	1.00	20.72	14699298	34375020
1	48	12	1.83	25	1.5	21	415	23	2095	21	415	23	2095	3	358	1	573	1.00	0.00	1.51	1.42	1.03	0.00	4.93	1.15	1.00	26.36	20172084	43118522
2	12	3	1.5	4.5	0	26	520	12	759	26	520	12	759	3	316	3	457	5.03	4.33	1.31	9.87	5.33	3.01	2.66	3.10	1.31	6.07	3069633	6787296
2	12	3	2	6	0.75	27	546	12	787	27	546	12	787	3	240	3	369	4.73	4.09	1.24	8.68	5.16	2.85	1.47	2.73	1.24	4.72	2715599	6220299
2	12	4	1.5	6	0.75	26	510	12	750	26	510	12	750	3	316	3	448	4.90	4.20	1.29	9.45	5.18	2.91	2.66	3.07	1.29	6.00	2889260	6475219
2	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	243	2.06	1.69	1.44	3.57	2.56	1.18	1.79	2.24	1.18	3.27	835299	2481138
2	12	4	1.75	7	1.25	17	347	12	587	17	348	12	588	3	273	3	290	2.05	1.64	1.17	3.44	2.59	1.15	2.07	1.69	1.15	4.03	745925	2305811
2	12	3	2.67	8	0	29	578	12	819	29	579	12	820	3	182	3	289	4.32	3.75	1.00	7.73	4.78	2.62	1.14	2.76	1.00	3.68	2459701	5783606
2	12	4	2	8	0	27	537	12	778	27	538	12	779	3	240	3	373	4.74	4.09	1.04	8.36	5.20	2.85	2.50	3.07	1.04	4.67	2575974	5965487
2	12	5	1.6	8	0	26	510	12	749	26	510	12	749	3	300	3	433	4.86	4.18	1.07	8.94	5.21	2.89	2.64	3.36	1.07	5.62	2701328	6154588
2	12	3	3.17	9.5	0.75	22	445	12	686	22	446	12	686	3	154	3	193	2.14	1.79	1.00	3.54	2.65	1.26	1.44	1.74	1.00	2.60	887352	2572543
2	12	4	2.375	9.5	0.75	20	402	12	643	20	403	12	643	3	200	3	242	2.25	1.86	1.00	3.64	2.84	1.31	1.79	1.85	1.00	3.25	862114	2541343
2	12	5	1.9	9.5	0.75	18	362	12	600	18	362	12	600	3	250	3	279	2.21	1.79	1.12	3.49	2.83	1.27	2.06	1.84	1.12	3.79	772623	2357808
2	12	6	1.583	9.5	0.75	17	331	12	571	17	331	12	571	3	300	3	305	2.01	1.60	1.03	3.38	2.54	1.12	2.08	1.53	1.03	4.33	715080	2245269
2	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	170	1.91	1.60	1.44	3.35	2.30	1.12	1.27	2.46	1.12	2.29	853966	2482392
2	12	4	2.75	11	1.5	21	422	12	663	21	423	12	663	3	176	3	215	2.07	1.71	1.50	3.56	2.53	1.20	1.60	2.69	1.20	2.89	865779	2536469
2	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	254	2.11	1.72	1.75	3.56	2.62	1.21	1.89	2.77	1.21	3.41	820529	2453482
2	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	284	2.10	1.69	1.67	3.47	2.64	1.18	2.11	2.78	1.18	3.89	761511	2335902
2	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	306	2.08	1.65	1.87	3.38	2.64	1.16	2.29	2.77	1.16	4.35	711954	2238259
2	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	207	2.08	1.73	1.65	3.55	2.55	1.21	1.55	2.94	1.21	2.79	868304	2536946
2	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	246	2.14	1.75	1.62	3.57	2.65	1.22	1.83	3.04	1.22	3.31	832062	2476056
2	12	6	1.917	11.5	1.75	18	362	12	603	18	363	12	603	3	250	3	278	2.13	1.72	1.86	3.49	2.68	1.21	2.07	3.05	1.21	3.77	775753	2365667
2	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	299	2.11	1.69	2.08	3.41	2.69	1.18	2.24	3.05	1.18	4.21	726503	2267767
2	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	188	2.08	1.74	1.63	3.47	2.55	1.22	1.41	2.83	1.22	2.53	868179	2525722
2	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	224	2.18	1.80	1.65	3.57	2.71	1.27	1.68	2.99	1.27	3.02	858043	2523686
2	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	257	2.20	1.80	1.60	3.55	2.77	1.27	1.91	3.05	1.27	3.46	816110	2445415
2	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	282	2.19	1.77	1.84	3.47	2.78	1.24	2.10	3.05	1.24	3.85	764454	2341371
2	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	172	1.94	1.62	1.62	3.37	2.33	1.13	1.29	2.75	1.13	2.32	857702	2492785
2	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	206	2.07	1.72	1.67	3.54	2.52	1.20	1.54	2.96	1.20	2.77	869809	2540035
2	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	237	2.13	1.74	1.65	3.58	2.61	1.22	1.77	3.06	1.22	3.18	843495	2496363
2	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	266	2.13	1.73	1.92	3.53	2.64	1.21	1.98	3.08	1.21	3.57	801170	2415795
2	12	4	2.875	11.5	0	29	583	12	824	29	584	12	824	3	167	3	268	4.10	3.55	1.31	7.39	4.51	2.47	1.08	2.66	1.08	3.44	2350630	5582996
2	12	5	2.3	11.5	0	28	550	12	789	28	550	12	789	3	207	3	325	4.37	3.78	1.00	7.80	4.79	2.62	1.29	2.87	1.00	4.12	2406428	5666548
2	12	6	1.917	11.5	0	26	525	12	765	26	525	12	765	3	250	3	379	4.64	3.99	1.03	8.20	5.05	2.77	2.57	3.07	1.03	4.79	2484788	5791895
2	12	7	1.643	11.5	0	25	505	12	746	25	505	12	746	3	286	3	420	4.88	4.19	1.05	8.57	5.30	2.91	2.82	3.26	1.05	5.45	2561721	5911637
2	12	4	3.25	13	0.75	23	450	12	690	23	450	12	690	3	150	3	189	2.12	1.77	1.00	3.54	2.59	1.24	1.42	1.73	1.00	2.55	892115	2580797

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	12	5	2.6	13	0.75	21	416	12	656	21	416	12	656	3	188	3	225	2.20	1.82	1.00	3.61	2.73	1.28	1.68	1.81	1.00	3.03	871026	2552990
2	12	6	2.167	13	0.75	20	390	12	631	20	391	12	631	3	222	3	260	2.28	1.87	1.00	3.69	2.85	1.31	1.93	1.90	1.00	3.49	860696	2546320
2	12	7	1.857	13	0.75	18	358	12	596	18	358	12	596	3	261	3	282	2.19	1.77	1.11	3.47	2.78	1.24	2.10	1.83	1.11	3.85	764454	2341371
2	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	172	1.94	1.62	1.47	3.37	2.33	1.13	1.29	2.49	1.13	2.32	857702	2492785
2	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	206	2.07	1.72	1.51	3.54	2.52	1.20	1.54	2.69	1.20	2.77	869809	2540035
2	12	6	2.417	14.5	1.5	20	403	12	641	20	403	12	641	3	200	3	237	2.13	1.74	1.28	3.58	2.61	1.22	1.77	2.36	1.22	3.18	843495	2496363
2	12	7	2.07	14.5	1.5	19	376	12	616	19	376	12	616	3	231	3	266	2.13	1.73	1.27	3.53	2.64	1.21	1.98	2.04	1.21	3.57	801170	2415795
2	12	5	3	15	0	29	586	12	826	29	587	12	826	3	162	3	257	4.01	3.48	1.28	7.20	4.41	2.41	1.04	2.58	1.04	3.30	2285888	5460951
2	12	6	2.5	15	0	28	557	12	798	28	558	12	799	3	194	3	300	4.23	3.65	1.30	7.51	4.64	2.53	1.20	2.74	1.20	3.83	2328176	5528392
2	12	7	2.14	15	0	27	537	12	776	27	537	12	776	3	222	3	345	4.44	3.82	1.33	7.85	4.84	2.65	2.37	2.90	1.33	4.35	2390588	5629360
2	12	8	1.875	15	0	26	518	12	758	26	519	12	758	3	250	3	381	4.63	3.98	1.01	8.12	5.03	2.75	2.60	3.05	1.01	4.85	2436072	5699185
2	12	9	1.67	15	0	25	503	12	744	25	504	12	744	3	286	3	412	4.64	3.97	1.03	8.39	4.97	2.74	2.63	3.19	1.03	5.35	2492844	5788981
2	12	5	3.3	16.5	0.75	28	563	12	876	28	563	12	876	3	146	3	241	3.75	3.26	1.23	6.57	4.24	2.26	1.01	3.09	1.01	3.19	2167354	5297355
2	12	6	2.75	16.5	0.75	29	570	12	810	29	571	12	810	3	176	3	276	4.19	3.63	1.27	7.28	4.64	2.52	1.11	3.48	1.11	3.53	2274596	5433147
2	12	7	2.357	16.5	0.75	20	403	12	641	20	403	12	641	3	207	3	243	2.26	1.86	1.00	3.66	2.80	1.30	1.81	1.86	1.00	3.26	864967	2547002
2	12	8	2.06	16.5	0.75	19	384	12	624	19	385	12	624	3	231	3	271	2.31	1.89	1.00	3.73	2.89	1.33	2.02	1.92	1.00	3.63	860545	2549878
2	12	9	1.83	16.5	0.75	18	355	12	595	18	355	12	595	3	261	3	285	2.18	1.76	1.09	3.47	2.76	1.24	2.11	1.81	1.09	3.90	761704	2337708
2	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	173	1.96	1.63	1.47	3.37	2.35	1.14	1.30	2.50	1.14	2.33	857692	2493394
2	12	6	3	18	1.5	22	436	12	675	22	436	12	675	3	162	3	200	2.07	1.72	1.21	3.53	2.51	1.20	1.51	2.67	1.20	2.70	871911	2541766
2	12	7	2.57	18	1.5	21	413	12	651	21	413	12	651	3	188	3	226	2.13	1.75	1.37	3.58	2.60	1.22	1.69	2.49	1.22	3.04	856090	2519326
2	12	8	2.25	18	1.5	20	391	12	629	20	391	12	629	3	214	3	250	2.14	1.75	1.17	3.56	2.64	1.22	1.87	2.21	1.17	3.35	825313	2461716
2	12	9	2	18	1.5	19	370	12	610	19	370	12	610	3	240	3	273	2.14	1.73	1.22	3.51	2.66	1.21	2.03	1.97	1.21	3.66	789650	2392863
2	12	6	3.08	18.5	0	29	587	12	828	29	588	12	828	3	158	3	250	3.95	3.42	1.26	7.07	4.34	2.37	1.02	2.53	1.02	3.23	2244660	5383876
2	12	7	2.64	18.5	0	28	564	12	803	28	564	12	803	3	182	3	285	4.13	3.57	1.28	7.33	4.53	2.47	1.15	2.66	1.15	3.65	2278087	5436167
2	12	8	2.32	18.5	0	27	544	12	785	27	545	12	786	3	207	3	319	4.30	3.70	1.30	7.57	4.70	2.56	2.22	2.79	1.30	4.06	2317086	5501206
2	12	9	2.06	18.5	0	26	528	12	769	26	529	12	770	3	231	3	355	4.47	3.84	1.32	7.83	4.87	2.66	2.44	2.92	1.32	4.48	2366353	5582039
2	12	10	1.85	18.5	0	26	514	12	754	26	515	12	754	3	261	3	383	4.62	3.97	1.00	8.06	5.02	2.75	2.62	3.04	1.00	4.89	2407450	5644902
2	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	173	1.97	1.64	1.47	3.38	2.36	1.14	1.31	2.50	1.14	2.34	857425	2492538
2	12	7	3.07	21.5	1.5	22	439	12	678	22	439	12	678	3	158	3	197	2.07	1.72	1.21	3.51	2.50	1.20	1.48	2.64	1.20	2.65	870663	2536877
2	12	8	2.69	21.5	1.5	21	419	12	659	21	420	12	659	3	182	3	218	2.12	1.75	1.15	3.57	2.59	1.22	1.64	2.59	1.15	2.94	862887	2531433
2	12	9	2.39	21.5	1.5	20	401	12	640	20	401	12	640	3	200	3	239	2.15	1.76	1.26	3.58	2.64	1.23	1.79	2.34	1.23	3.21	842707	2496114
2	12	10	2.15	21.5	1.5	19	383	12	622	19	383	12	622	3	222	3	258	2.15	1.75	1.11	3.55	2.66	1.22	1.93	2.12	1.11	3.47	813297	2439214
2	12	7	3.14	22	0	30	588	12	829	29	589	12	830	3	154	3	246	3.91	3.39	1.25	6.99	4.29	2.34	1.00	2.49	1.00	3.17	2217972	5332968
2	12	8	2.75	22	0	28	568	12	808	28	568	12	808	3	176	3	275	4.06	3.51	1.27	7.20	4.46	2.43	1.11	2.61	1.11	3.53	2244398	5375504
2	12	9	2.44	22	0	28	550	12	790	28	551	12	790	3	200	3	304	4.20	3.62	1.28	7.43	4.60	2.51	1.23	2.71	1.23	3.89	2278209	5430875
2	12	10	2.2	22	0	27	535	12	776	27	536	12	777	3	222	3	333	4.35	3.74	1.30	7.63	4.75	2.59	2.32	2.82	1.30	4.23	2313336	5489314
2	12	11	2	22	0	26	523	12	763	26	524	12	763	3	240	3	363	4.50	3.86	1.31	7.85	4.89	2.67	2.50	2.93	1.31	4.58	2356502	5559437
2	12	12	1.83	22	0	26	512	12	752	26	512	12	752	3	261	3	385	4.62	3.96	1.32	8.05	5.00	2.74	2.62	3.02	1.32	4.93	2398580	5627713
2	12	7	3.57	25	1.5	23	458	12	698	23	458	12	698	3	136	3	174	1.97	1.65	1.18	3.38	2.37	1.15	1.32	2.50	1.15	2.35	858915	2496946
2	12	8	3.125	25	1.5	22	441	12	681	22	441	12	681	3	154	3	194	2.06	1.71	1.20	3.50	2.49	1.19	1.47	2.63	1.19	2.62	870338	2534980
2	12	9	2.78	25	1.5	21	424	12	664	21	425	12	664	3	176	3	213	2.12	1.75	1.19	3.56	2.57	1.22	1.60	2.66	1.19	2.87	866487	2536625
2	12	10	2.5	25	1.5	20	408	12	648	20	408	12	648	3	194	3	231	2.15	1.77	1.06	3.58	2.63	1.23	1.74	2.43	1.06	3.11	852762	2515287
2	12	11	2.27	25	1.5	20	392	12	632	20	392	12	632	3	214	3	248	2.15	1.76	1.19	3.57	2.65	1.23	1.87	2.23	1.19	3.34	829958	2472496
2	12	12	1.83	25	1.5	26	511	12	750	26	511	12	750	3	261	3	384	3.20	2.68	1.21	8.01	3.16	1.80	2.59	3.56	1.21	4.92	2376917	5586587
2	16	3	1.5	4.5	0	16	324	12	721	16	324	12	664	3	421	3	313	1.49	1.20	1.23	2.53	1.92	1.00	2.13	1.10	1.00	5.77	1200868	3469842
2	16	3	2	6	0.75	18	352	12	750	18	352	12	750	3	320	3	261	1.48	1.22	1.20	2.31	1.96	1.02	2.04	1.00	1.00	4.50	1123665	3260258
2	16	4	1.5	6	0.75	16	321	12	720	16	321	12	652	3	421	3	312	1.49	1.21	1.18	2.50	1.92	1.00	2.15	1.12	1.00	5.76	1179387	3426456
2	16	3	2.33	7	1.25	19	375	12	774	19	375	12	677	3	276	3	238	1.44	1.20	2.17	2.30	1.87	1.00	1.79	1.86	1.00	3.99	1147425	3290007
2	16	4	1.75	7	1.25	16	329	12	727	16	329	12	619	3	364	3	287	1.47	1.20	1.71	2.28	1.95	1.00	2.11	1.48	1.00	4.99	1074373	3173412
2	16	3	2.67	8	0	18	359	12	869	18	360	12	819	3	242	3	224	1.43	1.19	1.31	2.17	1.91	1.00	1.01	1.07	1.00	3.91	1197990	3484556
2	16	4	2	8	0	17	341	12	741	17	341	12	680	3	320	3	264	1.45	1.20	1.31	2.17	1.95	1.00	2.00	1.10	1.00	4.45	1038821	3075359
2	16	5	1.6	8	0	16	322	12	720	16	322	12	612	3	400	3	305	1.49	1.20	1.40	2.37	1.94	1.00	2.14	1.23	1.00	5.40	1111240	3268255
2	16	3	3.17	9.5	0.75	17	345	12	1004	17	346	12	901	3	205	3	208	1.42	1.19	1.80	2.07	1.94	1.00	1.53	1.39	1.00	3.80	1301287	3838020
2	16	4	2.375	9.5	0.75	18	362	12	762	18	362	12	710	3	267	3	228	1.44	1.20	1.74	2.10	1.92	1.00	1.75	1.40	1.00	3.85	1025894	3018877
2	16	5	1.9	9.5	0.75	16	328	12	728	16	328	12	659	3	333	3	269	1.46	1.20	1.71	2.10	1.99	1.00	2.06	1.45	1.00	4.60	987611	2969804
2	16	6	1.583	9.5	0.75	16	320	12	720	16	320	12	612	3	400	3	307	1.49	1.20	1.50	2.37	1.93	1.00	2.15	1.40	1.00	5.46	1111945	3273832
2	16	3	3.67	11	1.5	20	398	12	1004	20	399	12	872	3	178	3	185	1.41	1.20	2.58	2.23	1.81	1.00	1.33	2.16	1.00	3.28	1410100	3978348
2	16	4	2.75	11	1.5	18	365	12	888	18	366	12	784	3	235	3	222	1.43	1.20	2.56	2.22	1.87	1.00	1.01	2.22	1.00	3.87	1252292	3611957
2	16	5	2.2	11	1.5	18	360	12	760	18	359	12	675	3	296	3	247	1.45	1.20	2.59	2.23	1.89	1.00	1.88	2.26	1.00	4.15	1091112	3175863
2	16	6	1.833	11	1.5	17	331	12	731	17	331	12	637	3	348	3	278	1.47	1.20	2.70	2.21	1.94	1.00	2.13	2.31	1.00	4.79	1048292	3110587
2	16	7	1.57	11	1.5	15	308	12	707	15	308	12	606	3	400	3	302	1.48	1.20	2.66	2.21	1.99	1.00	2.34	2.36	1.00	5.40	1013521	3058644
2	16	4	2.875	11.5	1.75	18	358	12	929	18	358	12	823	3	222	3	218	1.43	1.19	2.89	2.18	1.89	1.00	1.01	2.40	1.00	3.88	1278249	3711704
2	16	5	2.3	11.5	1.75	18	365	12	764	18	365	12	688	3	276	3	237	1.45	1.20	2.82	2.19	1.89	1.00	1.81	2.44	1.00	3.99	1080162	3143819
2	16	6	1.917	11.5	1.75	17	336	12	734	17	336	12	649	3	333	3	270	1.46	1.20	2.94	2.18	1.94	1.00	2.07	2.49	1.00	4.59	1036359	3074828
2	16	7	1.643	11.5	1.75	16	312	12	711	16	311	12	620	3	381	3	293	1.48	1.20	2.89	2.17	1.99	1.00	2.27	2.54	1.00	5.19	1000874	3022916
2	16	4	3.25	13	2.5	18	354	12	1004	18	354	12	897	3	200	3	204	1.42	1.19	2.77	2.10	1.90	1.00	1.50	2.31	1.00	3.71	1317759	3856711
2	16	5	2.6	13	2.5	19	379	12	778	19	378	12	728	3	250	3	213	1.43	1.20	2.76	2.12	1.88	1.00	1.64	2.32	1.00	3.59	1058502	3076720
2	16	6	2.167	13	2.5	17	349	12	748	17	349	12	687	3	296	3	246	1.45	1.20	2.88	2.11	1.93	1.00	1.89	2.38	1.00	4.14	1016585	3011893
2	16	7	1.857	13	2.5	16	325	12	723	16	324	12	654	3	348	3	272	1.46	1.20	2.83	2.10	1.98	1.00	2.10	2.42	1.00	4.67	980744	2956312
2	16	4	3.625	14.5	3.25	20	392	12	1004	20	393	12	878	3	178	3	187	1.41	1.20	2.86	2.21	1.82	1.00	1.35	2.39	1.00	3.32	1392626	3949199
2	16	5	2.9	14.5	3.25	18	360	12	933	18	360	12	824	3	222	3	217	1.43	1.20	2.95	2.19	1.88	1.00	1.01	2.44	1.00	3.86	1290612	3739149
2	16	6	2.417	14.5	3.25	19	374	12	774	19	373	12	698	3	267	3	229	1.44	1.20	2.89	2.21	1.87	1.00	1.76	2.47	1.00	3.84	1101138	3183455
2	16	7	2.07	14.5	3.25	17	349	12	747	17	349	12	664	3	308	3	258	1.46	1.20	2.83	2.20	1.91	1.00	1.97	2.51	1.00	4.33	1061162	3117394
2	16	4	2.875	11.5	0	18	358	12	929	18	358	12	862	3	222	3	218	1.43	1.19	1.32	2.18	1.89	1.00	1.01	1.09	1.00	3.88	1278249	3711704

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	16	5	2.3	11.5	0	18	365	12	764	18	365	12	696	3	276	3	237	1.45	1.20	1.28	2.19	1.89	1.00	1.81	1.11	1.00	3.99	1080162	3143819
2	16	6	1.917	11.5	0	17	336	12	734	17	336	12	656	3	333	3	270	1.46	1.20	1.34	2.18	1.94	1.00	2.07	1.13	1.00	4.59	1036359	3074828
2	16	7	1.643	11.5	0	16	312	12	711	16	312	12	626	3	381	3	293	1.48	1.20	1.32	2.17	1.99	1.00	2.27	1.16	1.00	5.19	1000874	3022916
2	16	4	3.25	13	0.75	18	354	12	1004	18	354	12	897	3	200	3	204	1.42	1.19	1.67	2.10	1.90	1.00	1.50	1.39	1.00	3.71	1317759	3856711
2	16	5	2.6	13	0.75	19	379	12	778	19	378	12	728	3	250	3	213	1.43	1.20	1.66	2.12	1.88	1.00	1.64	1.40	1.00	3.59	1058502	3076720
2	16	6	2.167	13	0.75	17	349	12	748	17	349	12	687	3	296	3	246	1.45	1.20	1.73	2.11	1.93	1.00	1.89	1.43	1.00	4.14	1016585	3011893
2	16	7	1.857	13	0.75	16	325	12	723	16	324	12	654	3	348	3	272	1.46	1.20	1.70	2.10	1.98	1.00	2.10	1.46	1.00	4.67	980744	2956312
2	16	4	3.625	14.5	1.5	20	392	12	1004	20	393	12	878	3	178	3	187	1.41	1.20	2.59	2.21	1.82	1.00	1.35	2.17	1.00	3.32	1392626	3949199
2	16	5	2.9	14.5	1.5	18	360	12	933	18	360	12	824	3	222	3	217	1.43	1.20	2.68	2.19	1.88	1.00	1.01	2.22	1.00	3.86	1290612	3739149
2	16	6	2.417	14.5	1.5	19	374	12	774	19	373	12	698	3	267	3	229	1.44	1.20	2.23	2.21	1.87	1.00	1.76	1.90	1.00	3.84	1101138	3183455
2	16	7	2.07	14.5	1.5	17	349	12	747	17	349	12	664	3	308	3	258	1.46	1.20	1.87	2.20	1.91	1.00	1.97	1.66	1.00	4.33	1061162	3117394
2	16	5	3	15	0	18	354	12	965	18	355	12	902	3	216	3	215	1.43	1.19	1.25	2.16	1.89	1.00	1.02	1.08	1.00	3.86	1311086	3818808
2	16	6	2.5	15	0	19	378	12	776	19	378	12	718	3	258	3	222	1.44	1.20	1.28	2.18	1.86	1.00	1.70	1.09	1.00	3.72	1089921	3151755
2	16	7	2.14	15	0	18	352	12	752	18	352	12	685	3	296	3	250	1.45	1.20	1.26	2.18	1.91	1.00	1.92	1.11	1.00	4.22	1056186	3102966
2	16	8	1.875	15	0	17	331	12	730	17	331	12	655	3	333	3	273	1.46	1.20	1.33	2.17	1.95	1.00	2.10	1.13	1.00	4.67	1021774	3047119
2	16	9	1.67	15	0	16	320	12	717	16	320	12	616	3	381	3	293	1.48	1.20	1.27	2.24	1.95	1.00	2.14	1.19	1.00	5.15	1044479	3114296
2	16	5	3.3	16.5	0.75	18	356	12	1004	18	357	12	901	3	195	3	201	1.42	1.19	1.66	2.09	1.89	1.00	1.49	1.38	1.00	3.65	1312136	3836670
2	16	6	2.75	16.5	0.75	18	353	12	882	18	354	12	807	3	235	3	219	1.43	1.19	1.73	2.10	1.91	1.00	1.01	1.40	1.00	3.85	1169181	3433589
2	16	7	2.357	16.5	0.75	18	362	12	761	18	362	12	706	3	276	3	230	1.44	1.20	1.63	2.11	1.90	1.00	1.77	1.41	1.00	3.87	1030824	3030244
2	16	8	2.06	16.5	0.75	17	341	12	738	17	341	12	676	3	308	3	255	1.45	1.20	1.71	2.10	1.94	1.00	1.96	1.43	1.00	4.30	999770	2980697
2	16	9	1.83	16.5	0.75	16	323	12	722	16	323	12	650	3	348	3	274	1.46	1.20	1.68	2.11	1.97	1.00	2.11	1.44	1.00	4.73	982364	2963408
2	16	5	3.6	18	1.5	19	389	12	1004	19	389	12	881	3	182	3	188	1.42	1.20	2.58	2.19	1.82	1.00	1.36	2.16	1.00	3.35	1381960	3930988
2	16	6	3	18	1.5	18	356	12	963	18	357	12	849	3	216	3	215	1.43	1.20	2.53	2.17	1.88	1.00	1.02	2.20	1.00	3.85	1316723	3826626
2	16	7	2.57	18	1.5	19	384	12	781	19	384	12	712	3	250	3	217	1.44	1.20	2.37	2.20	1.85	1.00	1.67	2.00	1.00	3.65	1104011	3177964
2	16	8	2.25	18	1.5	18	361	12	760	18	361	12	684	3	286	3	241	1.45	1.20	2.04	2.19	1.89	1.00	1.86	1.78	1.00	4.05	1071828	3128789
2	16	9	2	18	1.5	17	342	12	741	17	342	12	659	3	320	3	264	1.46	1.20	1.79	2.18	1.92	1.00	2.03	1.60	1.00	4.45	1043840	3085514
2	16	6	3.08	18.5	0	18	352	12	988	18	353	12	928	3	211	3	213	1.43	1.19	1.27	2.15	1.89	1.00	1.02	1.08	1.00	3.85	1333232	3890232
2	16	7	2.64	18.5	0	18	365	12	843	18	366	12	785	3	242	3	222	1.44	1.20	1.29	2.17	1.87	1.00	1.01	1.08	1.00	3.83	1165531	3382540
2	16	8	2.32	18.5	0	18	365	12	762	18	365	12	702	3	276	3	235	1.45	1.20	1.27	2.17	1.88	1.00	1.81	1.10	1.00	3.94	1064859	3106773
2	16	9	2.06	18.5	0	17	345	12	744	17	345	12	677	3	308	3	257	1.46	1.20	1.25	2.16	1.92	1.00	1.98	1.11	1.00	4.33	1037138	3065864
2	16	10	1.85	18.5	0	16	328	12	728	16	328	12	655	3	348	3	274	1.47	1.20	1.24	2.16	1.95	1.00	2.12	1.13	1.00	4.72	1014303	3033769
2	16	6	3.58	21.5	1.5	19	386	12	1004	19	387	12	883	3	182	3	188	1.42	1.20	2.57	2.18	1.82	1.00	1.37	2.15	1.00	3.37	1375280	3920462
2	16	7	3.07	21.5	1.5	18	354	12	983	18	355	12	866	3	211	3	213	1.43	1.19	2.57	2.16	1.88	1.00	1.02	2.19	1.00	3.84	1334416	3885392
2	16	8	2.69	21.5	1.5	18	365	12	857	18	366	12	772	3	242	3	220	1.44	1.20	2.51	2.17	1.87	1.00	1.01	2.08	1.00	3.82	1185333	3436546
2	16	9	2.39	21.5	1.5	19	370	12	770	19	370	12	699	3	267	3	230	1.45	1.20	2.18	2.18	1.87	1.00	1.78	1.87	1.00	3.87	1081507	3141726
2	16	10	2.15	21.5	1.5	18	353	12	751	18	352	12	676	3	296	3	249	1.45	1.20	1.93	2.18	1.90	1.00	1.92	1.70	1.00	4.19	1053225	3093793
2	16	7	3.14	22	0	18	351	12	1004	18	352	12	946	3	205	3	211	1.43	1.19	1.29	2.14	1.89	1.00	1.57	1.08	1.00	3.84	1349059	3940292
2	16	8	2.75	22	0	18	361	12	878	18	362	12	822	3	235	3	219	1.43	1.20	1.24	2.16	1.88	1.00	1.01	1.08	1.00	3.83	1200225	3490311
2	16	9	2.44	22	0	19	373	12	772	19	373	12	717	3	267	3	226	1.44	1.20	1.27	2.18	1.87	1.00	1.74	1.09	1.00	3.80	1079851	3133990
2	16	10	2.2	22	0	18	355	12	755	18	355	12	693	3	296	3	245	1.45	1.20	1.26	2.16	1.90	1.00	1.89	1.10	1.00	4.12	1050942	3086912
2	16	11	2	22	0	17	340	12	739	17	340	12	672	3	320	3	263	1.46	1.20	1.24	2.16	1.93	1.00	2.03	1.11	1.00	4.43	1027800	3049910
2	16	12	1.83	22	0	16	327	12	725	16	327	12	654	3	348	3	276	1.47	1.20	1.23	2.16	1.95	1.00	2.12	1.12	1.00	4.75	1011213	3026671
2	16	7	3.57	25	1.5	19	385	12	1004	19	385	12	885	3	182	3	189	1.42	1.20	2.57	2.18	1.82	1.00	1.38	2.15	1.00	3.37	1370433	3911944
2	16	8	3.125	25	1.5	18	352	12	1000	18	353	12	879	3	205	3	212	1.43	1.20	2.60	2.15	1.88	1.00	1.02	2.18	1.00	3.84	1349551	3936728
2	16	9	2.78	25	1.5	18	362	12	887	18	362	12	797	3	235	3	218	1.43	1.20	2.47	2.16	1.87	1.00	1.01	2.14	1.00	3.83	1216555	3532885
2	16	10	2.5	25	1.5	19	377	12	777	19	377	12	710	3	258	3	222	1.44	1.20	2.28	2.18	1.86	1.00	1.72	1.94	1.00	3.73	1088020	3149232
2	16	11	2.27	25	1.5	18	362	12	759	18	362	12	687	3	286	3	239	1.45	1.20	2.05	2.18	1.88	1.00	1.84	1.78	1.00	4.01	1064312	3108946
2	16	12	1.83	25	1.5	20	397	12	797	20	397	12	664	3	348	3	314	1.50	1.22	1.63	3.23	1.66	1.00	1.32	1.91	1.00	5.23	1713590	4509383
2	20	3	1.5	4.5	0	17	335	12	893	17	335	12	854	3	526	3	338	1.35	1.11	1.16	2.19	1.76	1.00	1.31	1.06	1.00	7.14	2022964	5410731
2	20	3	2	6	0.75	19	374	12	934	19	374	12	934	3	400	3	285	1.39	1.17	1.12	2.09	1.85	1.06	1.25	1.00	1.00	5.60	1994552	5297071
2	20	4	1.5	6	0.75	17	332	12	889	17	332	12	838	3	526	3	336	1.35	1.11	1.18	2.15	1.76	1.00	1.32	1.07	1.00	7.11	1975165	5313798
2	20	3	2.33	7	1.25	20	393	12	952	20	393	12	870	3	345	3	256	1.31	1.11	2.07	2.01	1.71	1.00	1.09	1.80	1.00	4.90	1935062	5142965
2	20	4	1.75	7	1.25	17	342	12	902	17	342	12	826	3	455	3	310	1.33	1.11	1.62	1.99	1.79	1.00	1.29	1.43	1.00	6.19	1831014	4994311
2	20	3	2.67	8	0	20	399	12	996	20	400	12	968	3	303	3	230	1.30	1.11	1.26	1.91	1.73	1.00	1.00	1.03	1.00	4.48	1912839	5121459
2	20	4	2	8	0	18	356	12	916	18	356	12	866	3	400	3	284	1.32	1.11	1.24	1.90	1.79	1.00	1.22	1.07	1.00	5.50	1765850	4829747
2	20	5	1.6	8	0	17	333	12	891	17	333	12	815	3	500	3	328	1.34	1.11	1.31	2.05	1.78	1.00	1.31	1.18	1.00	6.68	1869651	5089696
2	20	3	3.17	9.5	0.75	22	431	12	1004	22	431	12	916	3	256	3	197	1.29	1.11	1.63	1.85	1.70	1.00	1.32	1.32	1.00	3.80	1860294	4942889
2	20	4	2.375	9.5	0.75	19	380	12	938	19	380	12	857	3	333	3	245	1.31	1.11	1.64	1.84	1.77	1.00	1.06	1.36	1.00	4.74	1739765	4733677
2	20	5	1.9	9.5	0.75	17	342	12	900	17	342	12	824	3	417	3	289	1.32	1.11	1.69	1.84	1.83	1.00	1.26	1.41	1.00	5.68	1678245	4657051
2	20	6	1.583	9.5	0.75	17	331	12	889	17	331	12	814	3	500	3	330	1.34	1.11	1.49	2.04	1.77	1.00	1.32	1.35	1.00	6.74	1862857	5078410
2	20	3	3.67	11	1.5	24	477	12	1036	24	477	12	943	3	222	3	178	1.28	1.11	2.50	1.97	1.61	1.00	1.15	2.06	1.00	3.39	2044276	5281618
2	20	4	2.75	11	1.5	21	409	12	1004	20	410	12	917	3	294	3	226	1.30	1.11	2.49	1.95	1.69	1.00	1.52	2.13	1.00	4.38	1968299	5226692
2	20	5	2.2	11	1.5	19	377	12	934	19	377	12	854	3	370	3	265	1.31	1.11	2.47	1.94	1.73	1.00	1.14	2.18	1.00	5.09	1836935	4950530
2	20	6	1.833	11	1.5	17	345	12	903	17	345	12	826	3	435	3	299	1.33	1.11	2.55	1.93	1.78	1.00	1.30	2.24	1.00	5.91	1776622	4868876
2	20	7	1.57	11	1.5	16	319	12	878	16	319	12	805	3	500	3	325	1.34	1.11	2.51	1.92	1.83	1.00	1.43	2.28	1.00	6.71	1726179	4804105
2	20	4	2.875	11.5	1.75	21	417	12	1004	21	417	12	916	3	278	3	217	1.30	1.11	2.69	1.92	1.68	1.00	1.46	2.30	1.00	4.19	1940398	5148548
2	20	5	2.3	11.5	1.75	19	382	12	940	19	382	12	859	3	345	3	254	1.31	1.11	2.70	1.92	1.73	1.00	1.10	2.36	1.00	4.90	1820355	4908171
2	20	6	1.917	11.5	1.75	18	350	12	907	18	350	12	830	3	417	3	290	1.33	1.11	2.77	1.91	1.78	1.00	1.26	2.41	1.00	5.68	1754812	4811964
2	20	7	1.643	11.5	1.75	16	324	12	882	16	324	12	808	3	476	3	315	1.34	1.11	2.74	1.90	1.83	1.00	1.39	2.47	1.00	6.44	1706408	4750565
2	20	4	3.25	13	2.5	22	439	12	1004	22	440	12	915	3	250	3	193	1.29	1.11	2.72	1.87	1.67	1.00	1.29	2.20	1.00	3.71	1875754	4960182
2	20	5	2.6	13	2.5	20	396	12	959	20	397	12	876	3	312	3	229	1.30	1.11	2.65	1.85	1.73	1.00	1.00	2.25	1.00	4.43	1787806	4820398
2	20	6	2.167	13	2.5	18	364	12	924	18	364	12	845	3	370	3	264	1.31	1.11	2.72	1.85	1.78	1.00	1.15	2.30	1.00	5.12	1721185	4718559
2	20	7	1.857	13	2.5	17	338	12	896	17	338	12	821	3	435	3	292	1.33	1.11	2.68	1.84	1.82	1.00	1.28	2.35	1.00	5.79	1669268	4643903
2	20	4	3.625	14.5	3.25	24	472	12	1030	24	472	12	938	3	222	3	179	1.28	1.11	2.76	1.94	1.61	1.00	1.17	2.28	1.00	3.41	2007289	5206001

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	20	5	2.9	14.5	3.25	21	420	12	1004	21	420	12	917	3	278	3	215	1.30	1.11	2.73	1.93	1.67	1.00	1.45	2.34	1.00	4.15	1946880	5156109
2	20	6	2.417	14.5	3.25	20	392	12	949	20	392	12	867	3	333	3	245	1.31	1.11	2.76	1.92	1.71	1.00	1.06	2.38	1.00	4.71	1844972	4947064
2	20	7	2.07	14.5	3.25	18	364	12	921	18	364	12	843	3	385	3	276	1.32	1.11	2.71	1.92	1.75	1.00	1.20	2.43	1.00	5.34	1789108	4865288
2	20	4	2.875	11.5	0	21	417	12	1004	21	417	12	965	3	278	3	217	1.30	1.11	1.23	1.92	1.68	1.00	1.46	1.05	1.00	4.19	1940398	5148548
2	20	5	2.3	11.5	0	19	382	12	940	19	382	12	885	3	345	3	254	1.31	1.11	1.23	1.92	1.73	1.00	1.10	1.07	1.00	4.90	1820355	4908171
2	20	6	1.917	11.5	0	18	350	12	907	18	350	12	838	3	417	3	290	1.33	1.11	1.26	1.91	1.78	1.00	1.26	1.10	1.00	5.68	1754812	4811964
2	20	7	1.643	11.5	0	16	324	12	882	16	324	12	808	3	476	3	315	1.34	1.11	1.25	1.90	1.83	1.00	1.39	1.12	1.00	6.44	1706408	4750565
2	20	4	3.25	13	0.75	22	439	12	1004	22	440	12	915	3	250	3	193	1.29	1.11	1.64	1.87	1.67	1.00	1.29	1.32	1.00	3.71	1875754	4960182
2	20	5	2.6	13	0.75	20	396	12	959	20	397	12	876	3	312	3	229	1.30	1.11	1.59	1.85	1.73	1.00	1.00	1.35	1.00	4.43	1787806	4820398
2	20	6	2.167	13	0.75	18	364	12	924	18	364	12	845	3	370	3	264	1.31	1.11	1.63	1.85	1.78	1.00	1.15	1.38	1.00	5.12	1721185	4718559
2	20	7	1.857	13	0.75	17	338	12	896	17	338	12	821	3	435	3	292	1.33	1.11	1.61	1.84	1.82	1.00	1.28	1.41	1.00	5.79	1669268	4643903
2	20	4	3.625	14.5	1.5	24	472	12	1030	24	472	12	938	3	222	3	179	1.28	1.11	2.50	1.94	1.61	1.00	1.17	2.07	1.00	3.41	2007289	5206001
2	20	5	2.9	14.5	1.5	21	420	12	1004	21	420	12	917	3	278	3	215	1.30	1.11	2.48	1.93	1.67	1.00	1.45	2.12	1.00	4.15	1946880	5156109
2	20	6	2.417	14.5	1.5	20	392	12	949	20	392	12	867	3	333	3	245	1.31	1.11	2.13	1.92	1.71	1.00	1.06	1.84	1.00	4.71	1844972	4947064
2	20	7	2.07	14.5	1.5	18	364	12	921	18	364	12	843	3	385	3	276	1.32	1.11	1.79	1.92	1.75	1.00	1.20	1.61	1.00	5.34	1789108	4865288
2	20	5	3	15	0	21	426	12	1004	21	426	12	975	3	270	3	208	1.29	1.11	1.21	1.91	1.67	1.00	1.40	1.03	1.00	4.02	1927368	5100563
2	20	6	2.5	15	0	20	396	12	953	20	396	12	911	3	323	3	238	1.30	1.11	1.23	1.90	1.71	1.00	1.04	1.05	1.00	4.57	1830426	4909839
2	20	7	2.14	15	0	18	368	12	925	18	368	12	871	3	370	3	269	1.32	1.11	1.21	1.90	1.75	1.00	1.17	1.07	1.00	5.19	1778052	4835010
2	20	8	1.875	15	0	17	344	12	904	17	344	12	838	3	417	3	293	1.33	1.11	1.25	1.89	1.79	1.00	1.29	1.09	1.00	5.79	1733110	4777191
2	20	9	1.67	15	0	17	331	12	889	17	331	12	814	3	476	3	315	1.34	1.11	1.22	1.95	1.79	1.00	1.31	1.14	1.00	6.39	1765810	4868566
2	20	5	3.3	16.5	0.75	22	442	12	1004	22	442	12	916	3	244	3	190	1.28	1.11	1.63	1.86	1.66	1.00	1.28	1.31	1.00	3.65	1865218	4932056
2	20	6	2.75	16.5	0.75	20	394	12	1004	20	395	12	919	3	294	3	224	1.30	1.11	1.58	1.84	1.73	1.00	1.53	1.34	1.00	4.38	1851022	5003733
2	20	7	2.357	16.5	0.75	19	379	12	936	19	379	12	855	3	345	3	246	1.31	1.11	1.56	1.84	1.75	1.00	1.08	1.36	1.00	4.77	1737470	4729176
2	20	8	2.06	16.5	0.75	18	355	12	914	18	355	12	836	3	385	3	274	1.32	1.11	1.62	1.84	1.79	1.00	1.20	1.39	1.00	5.32	1698604	4681793
2	20	9	1.83	16.5	0.75	17	336	12	894	17	336	12	819	3	435	3	295	1.33	1.11	1.59	1.84	1.82	1.00	1.29	1.40	1.00	5.86	1670013	4649004
2	20	5	3.6	18	1.5	23	469	12	1027	23	469	12	935	3	227	3	179	1.28	1.11	2.48	1.93	1.61	1.00	1.18	2.05	1.00	3.42	1986691	5164456
2	20	6	3	18	1.5	21	427	12	1004	21	427	12	916	3	270	3	208	1.29	1.11	2.46	1.92	1.66	1.00	1.41	2.10	1.00	4.02	1934999	5115135
2	20	7	2.57	18	1.5	20	402	12	960	20	402	12	876	3	312	3	233	1.30	1.11	2.27	1.92	1.69	1.00	1.02	1.93	1.00	4.48	1854546	4955438
2	20	8	2.25	18	1.5	19	377	12	936	19	377	12	855	3	357	3	259	1.31	1.11	1.95	1.91	1.73	1.00	1.13	1.72	1.00	4.99	1804471	4881560
2	20	9	2	18	1.5	18	356	12	915	18	356	12	838	3	400	3	284	1.32	1.11	1.72	1.90	1.76	1.00	1.24	1.55	1.00	5.49	1761635	4819464
2	20	6	3.08	18.5	0	22	431	12	1004	22	432	12	983	3	263	3	203	1.29	1.11	1.21	1.90	1.66	1.00	1.37	1.03	1.00	3.91	1918490	5069847
2	20	7	2.64	18.5	0	20	404	12	968	20	404	12	933	3	303	3	228	1.30	1.11	1.24	1.90	1.69	1.00	1.00	1.04	1.00	4.40	1853131	4954979
2	20	8	2.32	18.5	0	19	381	12	939	19	381	12	894	3	345	3	252	1.31	1.11	1.21	1.89	1.72	1.00	1.10	1.06	1.00	4.86	1792807	4849224
2	20	9	2.06	18.5	0	18	360	12	917	18	360	12	863	3	385	3	276	1.32	1.11	1.20	1.88	1.76	1.00	1.21	1.08	1.00	5.34	1749483	4784441
2	20	10	1.85	18.5	0	17	341	12	900	17	341	12	837	3	435	3	295	1.33	1.11	1.24	1.88	1.79	1.00	1.30	1.09	1.00	5.84	1715694	4742737
2	20	6	3.58	21.5	1.5	23	467	12	1025	23	467	12	933	3	227	3	180	1.28	1.11	2.46	1.92	1.61	1.00	1.19	2.05	1.00	3.44	1974883	5140912
2	20	7	3.07	21.5	1.5	22	432	12	1004	22	432	12	915	3	263	3	204	1.29	1.11	2.45	1.91	1.65	1.00	1.38	2.08	1.00	3.92	1928440	5090426
2	20	8	2.69	21.5	1.5	20	404	12	983	20	404	12	899	3	303	3	227	1.30	1.11	2.29	1.90	1.69	1.00	1.00	2.00	1.00	4.39	1879916	5026877
2	20	9	2.39	21.5	1.5	19	387	12	946	19	387	12	864	3	333	3	246	1.31	1.11	2.08	1.90	1.71	1.00	1.08	1.80	1.00	4.75	1814353	4888882
2	20	10	2.15	21.5	1.5	18	368	12	927	18	368	12	847	3	370	3	268	1.32	1.11	1.85	1.90	1.74	1.00	1.17	1.64	1.00	5.17	1778124	4837126
2	20	7	3.14	22	0	22	436	12	1004	22	436	12	987	3	256	3	200	1.29	1.11	1.20	1.90	1.65	1.00	1.35	1.02	1.00	3.84	1915155	5053299
2	20	8	2.75	22	0	20	401	12	1003	20	401	12	972	3	294	3	225	1.30	1.11	1.21	1.89	1.69	1.00	1.00	1.04	1.00	4.38	1897109	5089303
2	20	9	2.44	22	0	20	390	12	949	20	390	12	911	3	333	3	242	1.31	1.11	1.22	1.89	1.71	1.00	1.06	1.05	1.00	4.67	1812241	4880041
2	20	10	2.2	22	0	19	371	12	928	19	371	12	881	3	370	3	262	1.31	1.11	1.20	1.88	1.74	1.00	1.15	1.06	1.00	5.06	1764811	4801405
2	20	11	2	22	0	18	354	12	912	18	354	12	857	3	400	3	282	1.32	1.11	1.19	1.88	1.76	1.00	1.24	1.08	1.00	5.47	1733388	4759431
2	20	12	1.83	22	0	17	339	12	899	17	339	12	838	3	435	3	297	1.33	1.11	1.18	1.88	1.79	1.00	1.30	1.09	1.00	5.90	1714324	4744152
2	20	7	3.57	25	1.5	23	465	12	1025	23	465	12	933	3	227	3	180	1.28	1.11	2.46	1.91	1.61	1.00	1.19	2.04	1.00	3.45	1965747	5124635
2	20	8	3.125	25	1.5	22	435	12	1004	22	436	12	915	3	256	3	201	1.29	1.11	2.44	1.91	1.65	1.00	1.36	2.07	1.00	3.86	1920677	5066515
2	20	9	2.78	25	1.5	20	404	12	1004	20	405	12	918	3	294	3	223	1.30	1.11	2.41	1.90	1.68	1.00	1.52	2.06	1.00	4.33	1907878	5105819
2	20	10	2.5	25	1.5	20	395	12	953	20	395	12	870	3	323	3	237	1.31	1.11	2.18	1.90	1.70	1.00	1.04	1.87	1.00	4.57	1822787	4895363
2	20	11	2.27	25	1.5	19	377	12	937	19	377	12	857	3	357	3	256	1.31	1.11	1.96	1.89	1.72	1.00	1.13	1.72	1.00	4.95	1792722	4856736
2	20	12	1.83	25	1.5	21	410	12	970	21	410	12	884	3	435	3	337	1.33	1.11	1.67	2.71	1.50	1.00	1.38	1.79	1.00	6.36	2752073	6793143
2	24	3	1.5	4.5	0	18	351	12	1071	18	351	12	1023	3	429	2	373	1.28	1.07	1.18	2.02	1.69	1.00	2.05	1.06	1.00	8.57	3252297	8151775
2	24	3	2	6	0.75	20	393	12	1110	20	393	12	1110	3	480	3	311	1.31	1.12	1.14	1.92	1.76	1.04	1.95	1.00	1.00	6.77	3159008	7904233
2	24	4	1.5	6	0.75	17	348	12	1065	17	348	12	1005	3	429	2	370	1.28	1.07	1.19	1.98	1.69	1.00	2.07	1.07	1.00	8.52	3170240	7990422
2	24	3	2.33	7	1.25	21	415	12	1132	21	415	12	1071	3	414	3	279	1.25	1.07	2.12	1.86	1.65	1.00	1.74	1.81	1.00	6.04	3101193	7769024
2	24	4	1.75	7	1.25	18	361	12	1078	18	361	12	1016	3	545	3	340	1.27	1.07	1.65	1.84	1.71	1.00	2.00	1.44	1.00	7.39	2952588	7534409
2	24	3	2.67	8	0	22	431	13	1151	22	431	12	1117	3	364	3	246	1.24	1.07	1.26	1.78	1.66	1.00	1.59	1.05	1.00	5.45	2993595	7543162
2	24	4	2	8	0	19	376	12	1096	19	376	12	1031	3	480	3	312	1.26	1.08	1.27	1.77	1.72	1.00	1.88	1.08	1.00	6.60	2857125	7320614
2	24	5	1.6	8	0	17	349	12	1068	17	349	12	1007	3	400	2	361	1.28	1.07	1.28	1.88	1.70	1.00	2.06	1.18	1.00	8.01	3003843	7664002
2	24	3	3.17	9.5	0.75	23	459	13	1176	23	459	12	1113	3	308	3	212	1.24	1.08	1.67	1.72	1.65	1.00	1.42	1.34	1.00	4.80	2941687	7406746
2	24	4	2.375	9.5	0.75	20	401	12	1119	20	401	12	1056	3	400	3	268	1.25	1.08	1.67	1.71	1.71	1.00	1.68	1.38	1.00	5.79	2800872	7171724
2	24	5	1.9	9.5	0.75	18	360	12	1080	18	360	12	1017	3	500	3	317	1.26	1.08	1.70	1.71	1.76	1.00	1.95	1.42	1.00	6.82	2719063	7065081
2	24	6	1.583	9.5	0.75	17	347	12	1065	17	347	12	1005	3	414	2	362	1.28	1.07	1.46	1.88	1.70	1.00	2.07	1.35	1.00	8.07	2990950	7640127
2	24	3	3.67	11	1.5	25	503	13	1220	25	503	13	1156	3	267	3	191	1.23	1.07	2.51	1.81	1.57	1.00	1.34	2.10	1.00	4.46	3225245	7958144
2	24	4	2.75	11	1.5	22	441	13	1158	22	441	12	1099	3	353	3	241	1.24	1.07	2.51	1.80	1.62	1.00	1.58	2.15	1.00	5.36	3061067	7665979
2	24	5	2.2	11	1.5	20	397	12	1115	20	397	12	1054	3	444	3	289	1.26	1.07	2.54	1.80	1.67	1.00	1.80	2.20	1.00	6.21	2950211	7482655
2	24	6	1.833	11	1.5	18	363	12	1082	18	363	12	1019	3	522	3	328	1.27	1.07	2.50	1.79	1.71	1.00	2.02	2.25	1.00	7.08	2866440	7359892
2	24	7	1.57	11	1.5	17	335	12	1054	17	335	12	994	3	414	2	358	1.28	1.07	2.56	1.78	1.75	1.00	2.27	2.30	1.00	8.06	2794798	7271324
2	24	4	2.875	11.5	1.75	22	447	13	1164	22	447	12	1104	3	333	3	232	1.24	1.07	2.74	1.78	1.62	1.00	1.53	2.33	1.00	5.18	3030374	7598457
2	24	5	2.3	11.5	1.75	20	402	12	1122	20	402	12	1061	3	414	3	278	1.25	1.07	2.78	1.77	1.67	1.00	1.75	2.38	1.00	6.01	2922475	7425479
2	24	6	1.917	11.5	1.75	18	368	12	1088	18	368	12	1025	3	500	3	319	1.26	1.07	2.73	1.77	1.71	1.00	1.95	2.43	1.00	6.81	2833949	7285652
2	24	7	1.643	11.5	1.75	17	340	12	1060	17	340	12	999	3	571	3	347	1.28	1.07	2.79	1.76	1.75	1.00	2.20	2.48	1.00	7.74	2765362	7202339
2	24	4	3.25	13	2.5	23	465	13	1183	23	465	12	1120	3	300	3	208	1.24	1.08	2.69	1.73	1.63	1.00	1.41	2.23	1.00	4.73	2972287	7466588

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	24	5	2.6	13	2.5	21	419	13	1138	21	419	12	1077	3	375	3	249	1.25	1.08	2.72	1.72	1.67	1.00	1.61	2.28	1.00	5.47	2858334	7273943
2	24	6	2.167	13	2.5	19	384	12	1104	19	384	12	1040	3	444	3	289	1.26	1.08	2.67	1.71	1.71	1.00	1.79	2.32	1.00	6.18	2774109	7140226
2	24	7	1.857	13	2.5	18	356	12	1074	18	356	12	1011	3	522	3	321	1.27	1.08	2.73	1.71	1.75	1.00	2.00	2.37	1.00	6.94	2701124	7032805
2	24	4	3.625	14.5	3.25	25	497	13	1215	25	497	13	1151	3	267	3	193	1.23	1.07	2.76	1.79	1.57	1.00	1.35	2.32	1.00	4.48	3169556	7849928
2	24	5	2.9	14.5	3.25	22	449	13	1167	22	449	12	1107	3	333	3	230	1.24	1.07	2.69	1.78	1.61	1.00	1.53	2.37	1.00	5.16	3044797	7628475
2	24	6	2.417	14.5	3.25	21	412	12	1132	21	412	12	1072	3	400	3	267	1.25	1.07	2.74	1.78	1.65	1.00	1.71	2.41	1.00	5.83	2954850	7481642
2	24	7	2.07	14.5	3.25	19	383	12	1102	19	383	12	1040	3	462	3	303	1.26	1.07	2.79	1.77	1.68	1.00	1.87	2.45	1.00	6.45	2879515	7355908
2	24	4	2.875	11.5	0	22	447	13	1164	22	447	12	1119	3	333	3	232	1.24	1.07	1.25	1.78	1.62	1.00	1.53	1.06	1.00	5.18	3030374	7598457
2	24	5	2.3	11.5	0	20	402	12	1122	20	402	12	1061	3	414	3	278	1.25	1.07	1.27	1.77	1.67	1.00	1.75	1.08	1.00	6.01	2922475	7425479
2	24	6	1.917	11.5	0	18	368	12	1088	18	368	12	1025	3	500	3	319	1.26	1.07	1.24	1.77	1.71	1.00	1.95	1.11	1.00	6.81	2833949	7285652
2	24	7	1.643	11.5	0	17	340	12	1060	17	340	12	999	3	571	3	347	1.28	1.07	1.27	1.76	1.75	1.00	2.20	1.13	1.00	7.74	2765362	7202339
2	24	4	3.25	13	0.75	23	465	13	1183	23	465	12	1120	3	300	3	208	1.24	1.08	1.62	1.73	1.63	1.00	1.41	1.34	1.00	4.73	2972287	7466588
2	24	5	2.6	13	0.75	21	419	13	1138	21	419	12	1077	3	375	3	249	1.25	1.08	1.64	1.72	1.67	1.00	1.61	1.37	1.00	5.47	2858334	7273943
2	24	6	2.167	13	0.75	19	384	12	1104	19	384	12	1040	3	444	3	289	1.26	1.08	1.61	1.71	1.71	1.00	1.79	1.40	1.00	6.18	2774109	7140226
2	24	7	1.857	13	0.75	18	356	12	1074	18	356	12	1011	3	522	3	321	1.27	1.08	1.64	1.71	1.75	1.00	2.00	1.42	1.00	6.94	2701124	7032805
2	24	4	3.625	14.5	1.5	25	497	13	1215	25	497	13	1151	3	267	3	193	1.23	1.07	2.51	1.79	1.57	1.00	1.35	2.10	1.00	4.48	3169556	7849928
2	24	5	2.9	14.5	1.5	22	449	13	1167	22	449	12	1107	3	333	3	230	1.24	1.07	2.44	1.78	1.61	1.00	1.53	2.14	1.00	5.16	3044797	7628475
2	24	6	2.417	14.5	1.5	21	412	12	1132	21	412	12	1072	3	400	3	267	1.25	1.07	2.12	1.78	1.65	1.00	1.71	1.86	1.00	5.83	2954850	7481642
2	24	7	2.07	14.5	1.5	19	383	12	1102	19	383	12	1040	3	462	3	303	1.26	1.07	1.85	1.77	1.68	1.00	1.87	1.62	1.00	6.45	2879515	7355908
2	24	5	3	15	0	23	454	13	1171	23	454	12	1135	3	324	3	223	1.24	1.07	1.20	1.77	1.61	1.00	1.50	1.05	1.00	5.02	3021747	7575181
2	24	6	2.5	15	0	21	417	12	1134	21	417	12	1086	3	387	3	259	1.25	1.07	1.22	1.76	1.65	1.00	1.66	1.07	1.00	5.65	2925117	7409217
2	24	7	2.14	15	0	19	387	12	1107	19	387	12	1045	3	444	3	294	1.26	1.07	1.25	1.76	1.68	1.00	1.83	1.08	1.00	6.29	2862541	7318946
2	24	8	1.875	15	0	18	363	12	1080	18	363	12	1017	3	500	3	322	1.27	1.07	1.23	1.75	1.71	1.00	1.99	1.10	1.00	6.91	2790768	7201743
2	24	9	1.67	15	0	17	347	12	1066	17	347	12	1006	3	571	3	346	1.27	1.07	1.25	1.80	1.71	1.00	2.06	1.15	1.00	7.66	2841078	7340219
2	24	5	3.3	16.5	0.75	23	467	13	1185	23	467	12	1122	3	293	3	205	1.23	1.07	1.62	1.72	1.62	1.00	1.40	1.34	1.00	4.68	2959866	7439296
2	24	6	2.75	16.5	0.75	21	429	13	1148	21	429	12	1088	3	353	3	238	1.24	1.07	1.58	1.71	1.66	1.00	1.56	1.36	1.00	5.27	2866789	7281638
2	24	7	2.357	16.5	0.75	20	399	12	1118	20	399	12	1056	3	414	3	269	1.25	1.07	1.61	1.71	1.69	1.00	1.71	1.38	1.00	5.83	2793835	7161525
2	24	8	2.06	16.5	0.75	19	374	12	1094	19	374	12	1030	3	462	3	301	1.26	1.08	1.59	1.71	1.72	1.00	1.86	1.40	1.00	6.38	2738670	7079154
2	24	9	1.83	16.5	0.75	18	353	12	1073	18	353	12	1011	3	522	3	324	1.27	1.07	1.62	1.71	1.74	1.00	2.02	1.41	1.00	7.04	2700172	7040461
2	24	5	3.6	18	1.5	25	494	13	1211	25	494	13	1147	3	273	3	193	1.23	1.07	2.48	1.78	1.57	1.00	1.35	2.09	1.00	4.48	3135147	7779352
2	24	6	3	18	1.5	23	454	13	1173	23	454	12	1113	3	324	3	224	1.24	1.07	2.43	1.77	1.60	1.00	1.51	2.12	1.00	5.04	3034379	7605872
2	24	7	2.57	18	1.5	21	423	13	1141	21	423	12	1082	3	375	3	254	1.25	1.07	2.24	1.77	1.63	1.00	1.65	1.95	1.00	5.57	2954970	7466958
2	24	8	2.25	18	1.5	20	397	12	1116	20	397	12	1055	3	429	3	283	1.25	1.07	1.94	1.76	1.66	1.00	1.78	1.73	1.00	6.08	2890887	7363763
2	24	9	2	18	1.5	19	375	12	1094	19	375	12	1032	3	480	3	311	1.26	1.07	1.77	1.76	1.69	1.00	1.91	1.56	1.00	6.58	2833219	7271161
2	24	6	3.08	18.5	0	23	458	13	1177	23	458	13	1146	3	316	3	219	1.24	1.07	1.20	1.76	1.61	1.00	1.48	1.04	1.00	4.94	3022277	7577212
2	24	7	2.64	18.5	0	21	427	13	1144	21	427	12	1104	3	364	3	247	1.24	1.07	1.22	1.76	1.63	1.00	1.61	1.05	1.00	5.45	2939180	7428696
2	24	8	2.32	18.5	0	20	401	12	1120	20	401	12	1067	3	414	3	275	1.25	1.07	1.20	1.75	1.66	1.00	1.75	1.07	1.00	5.94	2873437	7323672
2	24	9	2.06	18.5	0	19	379	12	1097	19	379	12	1035	3	462	3	303	1.26	1.07	1.23	1.74	1.69	1.00	1.87	1.08	1.00	6.42	2814892	7225744
2	24	10	1.85	18.5	0	18	359	12	1078	18	359	12	1016	3	522	3	324	1.27	1.07	1.22	1.74	1.72	1.00	2.02	1.10	1.00	6.99	2769226	7168910
2	24	6	3.58	21.5	1.5	25	491	13	1211	25	491	13	1148	3	273	3	194	1.23	1.07	2.38	1.77	1.57	1.00	1.36	2.08	1.00	4.50	3120520	7757143
2	24	7	3.07	21.5	1.5	23	458	13	1177	23	458	12	1116	3	316	3	219	1.24	1.07	2.43	1.77	1.60	1.00	1.49	2.11	1.00	4.96	3032122	7597441
2	24	8	2.69	21.5	1.5	22	431	13	1149	22	431	12	1090	3	364	3	244	1.24	1.07	2.35	1.76	1.62	1.00	1.60	2.02	1.00	5.39	2959105	7468125
2	24	9	2.39	21.5	1.5	20	408	12	1125	20	408	12	1064	3	400	3	268	1.25	1.07	2.06	1.76	1.65	1.00	1.71	1.82	1.00	5.82	2898413	7363277
2	24	10	2.15	21.5	1.5	19	388	12	1105	19	388	12	1043	3	444	3	293	1.26	1.07	1.83	1.75	1.67	1.00	1.83	1.65	1.00	6.24	2848369	7281827
2	24	7	3.14	22	0	23	461	13	1181	23	461	13	1154	3	308	3	215	1.24	1.07	1.20	1.75	1.60	1.00	1.47	1.04	1.00	4.88	3020666	7573561
2	24	8	2.75	22	0	22	434	13	1152	22	434	12	1116	3	353	3	239	1.24	1.07	1.22	1.75	1.63	1.00	1.58	1.05	1.00	5.30	2945604	7437674
2	24	9	2.44	22	0	21	411	12	1128	21	411	12	1086	3	400	3	264	1.25	1.07	1.20	1.75	1.65	1.00	1.69	1.06	1.00	5.73	2890998	7345027
2	24	10	2.2	22	0	20	390	12	1110	20	390	12	1053	3	444	3	287	1.26	1.07	1.19	1.74	1.67	1.00	1.80	1.07	1.00	6.15	2837169	7263398
2	24	11	2	22	0	19	373	12	1091	19	373	12	1028	3	480	3	310	1.26	1.07	1.23	1.74	1.69	1.00	1.91	1.08	1.00	6.55	2790909	7184344
2	24	12	1.83	22	0	18	357	12	1076	18	357	12	1014	3	522	3	326	1.27	1.07	1.22	1.74	1.71	1.00	2.03	1.09	1.00	7.06	2764180	7162580
2	24	7	3.57	25	1.5	25	490	13	1208	25	490	13	1145	3	273	3	194	1.23	1.07	2.37	1.76	1.57	1.00	1.36	2.07	1.00	4.49	3100668	7713110
2	24	8	3.125	25	1.5	23	461	13	1179	23	461	12	1118	3	308	3	216	1.24	1.07	2.42	1.76	1.60	1.00	1.47	2.10	1.00	4.89	3023132	7574582
2	24	9	2.78	25	1.5	22	437	13	1154	22	437	12	1095	3	353	3	237	1.24	1.07	2.33	1.75	1.62	1.00	1.57	2.08	1.00	5.26	2958910	7460275
2	24	10	2.5	25	1.5	21	416	12	1133	21	416	12	1073	3	387	3	259	1.25	1.07	2.16	1.75	1.64	1.00	1.67	1.89	1.00	5.64	2907676	7374369
2	24	11	2.27	25	1.5	20	397	12	1117	20	397	12	1056	3	429	3	280	1.25	1.07	1.95	1.75	1.66	1.00	1.78	1.73	1.00	6.04	2871608	7326459
2	24	12	1.83	25	1.5	21	428	13	1145	21	428	12	1093	3	522	3	366	1.26	1.06	1.62	2.44	1.44	1.00	2.22	1.78	1.00	7.87	4265123	9990909
2	28	3	1.5	4.5	0	18	363	14	1242	18	363	13	1195	3	500	2	407	1.26	1.06	1.30	1.90	1.73	1.00	2.53	1.11	1.00	11.31	4941537	11879463
2	28	3	2	6	0.75	20	398	14	1276	20	398	14	1269	3	560	3	333	1.24	1.06	1.25	1.74	1.74	1.00	2.44	1.01	1.00	8.95	4539280	11083452
2	28	4	1.5	6	0.75	18	359	14	1237	18	359	13	1191	3	500	2	404	1.26	1.06	1.28	1.87	1.72	1.00	2.54	1.12	1.00	11.22	4813733	11645156
2	28	3	2.33	7	1.25	22	432	14	1309	22	432	14	1256	3	483	3	303	1.23	1.06	2.30	1.76	1.67	1.00	2.20	1.89	1.00	8.08	4699491	11348909
2	28	4	1.75	7	1.25	19	374	14	1251	19	374	13	1201	3	424	2	371	1.25	1.06	1.79	1.75	1.74	1.00	2.50	1.52	1.00	9.84	4504325	11044273
2	28	3	2.67	8	0	23	450	15	1329	23	450	14	1273	3	424	3	267	1.23	1.06	1.37	1.69	1.68	1.00	2.01	1.10	1.00	7.27	4533542	11018877
2	28	4	2	8	0	20	390	14	1269	20	390	13	1217	3	560	3	339	1.24	1.06	1.37	1.68	1.75	1.00	2.40	1.14	1.00	8.85	4344149	10722677
2	28	5	1.6	8	0	18	361	14	1239	18	361	13	1191	3	467	2	394	1.26	1.06	1.43	1.78	1.74	1.00	2.52	1.24	1.00	10.54	4566661	11182264
2	28	3	3.17	9.5	0.75	24	480	15	1358	24	480	14	1298	3	359	3	230	1.22	1.06	1.75	1.63	1.67	1.00	1.80	1.39	1.00	6.39	4453212	10829817
2	28	4	2.375	9.5	0.75	21	417	14	1296	21	417	14	1241	3	467	3	291	1.24	1.06	1.80	1.63	1.74	1.00	2.14	1.44	1.00	7.77	4262131	10527152
2	28	5	1.9	9.5	0.75	19	374	14	1251	19	374	13	1199	3	583	3	345	1.25	1.07	1.82	1.63	1.79	1.00	2.43	1.48	1.00	9.05	4147777	10357791
2	28	6	1.583	9.5	0.75	18	358	14	1238	18	358	13	1191	3	483	2	396	1.26	1.06	1.59	1.78	1.73	1.00	2.54	1.42	1.00	10.64	4551622	11166086
2	28	3	3.67	11	1.5	26	527	15	1405	26	527	15	1346	3	311	3	207	1.21	1.06	2.60	1.72	1.59	1.00	1.69	2.13	1.00	5.91	4848802	11566666
2	28	4	2.75	11	1.5	23	460	15	1337	23	460	14	1283	3	412	3	262	1.23	1.06	2.59	1.71	1.64	1.00	2.00	2.19	1.00	7.14	4622367	11174900
2	28	5	2.2	11	1.5	21	412	14	1291	21	412	14	1239	3	519	3	314	1.24	1.06	2.62	1.70	1.69	1.00	2.29	2.24	1.00	8.33	4474836	10946786
2	28	6	1.833	11	1.5	19	376	14	1254	19	376	13	1204	3	412	2	357	1.25	1.06	2.65	1.70	1.74	1.00	2.53	2.29	1.00	9.43	4359350	10767838
2	28	7	1.57	11	1.5	17	347	13	1225	17	347	13	1177	3	483	2	391	1.26	1.06	2.69	1.69	1.78	1.00	2.71	2.34	1.00	10.50	4272956	10646338
2	28	4	2.875	11.5	1.75	23	466	15	1345	23	466	14	1289	3	389	3	252	1.22	1.06	2.82	1.69	1.65	1.00	1.94	2.35	1.00	6.91	4578112	11090087

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
2	28	5	2.3	11.5	1.75	21	418	14	1297	21	418	14	1244	3	483	3	302	1.24	1.06	2.84	1.68	1.69	1.00	2.22	2.41	1.00	8.04	4425579	10844494
2	28	6	1.917	11.5	1.75	19	382	14	1259	19	382	13	1208	3	583	3	347	1.25	1.06	2.87	1.68	1.74	1.00	2.46	2.47	1.00	9.09	4309112	10659007
2	28	7	1.643	11.5	1.75	18	352	14	1231	18	352	13	1182	3	452	2	379	1.26	1.06	2.92	1.67	1.78	1.00	2.65	2.52	1.00	10.14	4219319	10538963
2	28	4	3.25	13	2.5	24	486	15	1364	24	486	14	1306	3	350	3	225	1.22	1.06	2.76	1.64	1.65	1.00	1.79	2.26	1.00	6.30	4478239	10874324
2	28	5	2.6	13	2.5	22	436	14	1316	22	436	14	1261	3	438	3	270	1.23	1.06	2.78	1.63	1.70	1.00	2.05	2.31	1.00	7.32	4328000	10636179
2	28	6	2.167	13	2.5	20	399	14	1277	20	399	13	1224	3	519	3	313	1.24	1.06	2.82	1.63	1.74	1.00	2.28	2.36	1.00	8.27	4213420	10452586
2	28	7	1.857	13	2.5	18	369	14	1246	18	369	13	1195	3	400	2	349	1.25	1.06	2.86	1.62	1.78	1.00	2.48	2.41	1.00	9.19	4119600	10310701
2	28	4	3.625	14.5	3.25	26	521	15	1398	26	521	15	1340	3	311	3	208	1.21	1.06	2.77	1.70	1.59	1.00	1.70	2.34	1.00	5.92	4761636	11398014
2	28	5	2.9	14.5	3.25	23	469	15	1346	23	469	14	1291	3	389	3	250	1.22	1.06	2.87	1.69	1.63	1.00	1.94	2.39	1.00	6.87	4592974	11109904
2	28	6	2.417	14.5	3.25	21	429	14	1307	21	429	14	1254	3	467	3	290	1.23	1.06	2.90	1.68	1.67	1.00	2.16	2.44	1.00	7.77	4465356	10905531
2	28	7	2.07	14.5	3.25	20	397	14	1276	20	397	13	1225	3	538	3	329	1.24	1.06	2.86	1.68	1.71	1.00	2.38	2.48	1.00	8.64	4369404	10762091
2	28	4	2.875	11.5	0	23	466	15	1345	23	466	14	1289	3	389	3	252	1.22	1.06	1.33	1.69	1.65	1.00	1.94	1.11	1.00	6.91	4578112	11090087
2	28	5	2.3	11.5	0	21	418	14	1297	21	418	14	1244	3	483	3	302	1.24	1.06	1.34	1.68	1.69	1.00	2.22	1.14	1.00	8.04	4425579	10844494
2	28	6	1.917	11.5	0	19	382	14	1259	19	382	13	1208	3	583	3	347	1.25	1.06	1.35	1.68	1.74	1.00	2.46	1.16	1.00	9.09	4309112	10659007
2	28	7	1.643	11.5	0	18	352	14	1231	18	352	13	1182	3	452	2	379	1.26	1.06	1.38	1.67	1.78	1.00	2.65	1.19	1.00	10.14	4219319	10538963
2	28	4	3.25	13	0.75	24	486	15	1364	24	486	14	1306	3	350	3	225	1.22	1.06	1.70	1.64	1.65	1.00	1.79	1.39	1.00	6.30	4478239	10874324
2	28	5	2.6	13	0.75	22	436	14	1316	22	436	14	1261	3	438	3	270	1.23	1.06	1.72	1.63	1.70	1.00	2.05	1.42	1.00	7.32	4328000	10636179
2	28	6	2.167	13	0.75	20	399	14	1277	20	399	13	1224	3	519	3	313	1.24	1.06	1.74	1.63	1.74	1.00	2.28	1.46	1.00	8.27	4213420	10452586
2	28	7	1.857	13	0.75	18	369	14	1246	18	369	13	1195	3	400	2	349	1.25	1.06	1.76	1.62	1.78	1.00	2.48	1.48	1.00	9.19	4119600	10310701
2	28	4	3.625	14.5	1.5	26	521	15	1398	26	521	15	1340	3	311	3	208	1.21	1.06	2.52	1.70	1.59	1.00	1.70	2.13	1.00	5.92	4761636	11398014
2	28	5	2.9	14.5	1.5	23	469	15	1346	23	469	14	1291	3	389	3	250	1.22	1.06	2.61	1.69	1.63	1.00	1.94	2.18	1.00	6.87	4592974	11109904
2	28	6	2.417	14.5	1.5	21	429	14	1307	21	429	14	1254	3	467	3	290	1.23	1.06	2.29	1.68	1.67	1.00	2.16	1.93	1.00	7.77	4465356	10905531
2	28	7	2.07	14.5	1.5	20	397	14	1276	20	397	13	1225	3	538	3	329	1.24	1.06	1.94	1.68	1.71	1.00	2.38	1.69	1.00	8.64	4369404	10762091
2	28	5	3	15	0	24	474	15	1351	24	474	14	1295	3	378	3	242	1.22	1.06	1.32	1.67	1.63	1.00	1.89	1.10	1.00	6.69	4555522	11032588
2	28	6	2.5	15	0	22	434	14	1311	22	434	14	1258	3	452	3	281	1.23	1.06	1.34	1.67	1.67	1.00	2.11	1.12	1.00	7.55	4427718	10823610
2	28	7	2.14	15	0	20	402	14	1280	20	402	13	1228	3	519	3	319	1.24	1.06	1.32	1.67	1.71	1.00	2.33	1.14	1.00	8.41	4339983	10695097
2	28	8	1.875	15	0	19	375	14	1255	19	375	13	1205	3	583	3	350	1.25	1.06	1.34	1.66	1.74	1.00	2.50	1.16	1.00	9.23	4253870	10573115
2	28	9	1.67	15	0	18	359	14	1237	18	359	13	1189	3	452	2	377	1.26	1.06	1.36	1.70	1.74	1.00	2.52	1.20	1.00	10.07	4322675	10722556
2	28	5	3.3	16.5	0.75	24	488	15	1367	24	488	14	1309	3	341	3	222	1.22	1.06	1.70	1.63	1.64	1.00	1.78	1.38	1.00	6.22	4462156	10843025
2	28	6	2.75	16.5	0.75	22	447	15	1326	22	447	14	1271	3	412	3	257	1.23	1.06	1.72	1.62	1.68	1.00	1.98	1.41	1.00	7.03	4332945	10630916
2	28	7	2.357	16.5	0.75	21	415	14	1292	21	415	14	1239	3	483	3	292	1.23	1.06	1.74	1.62	1.71	1.00	2.17	1.44	1.00	7.78	4230905	10461977
2	28	8	2.06	16.5	0.75	19	388	14	1266	19	388	13	1214	3	538	3	326	1.24	1.06	1.72	1.62	1.75	1.00	2.36	1.46	1.00	8.55	4160824	10365452
2	28	9	1.83	16.5	0.75	18	366	14	1244	18	366	13	1194	3	412	2	352	1.25	1.06	1.74	1.62	1.77	1.00	2.49	1.47	1.00	9.29	4114545	10309198
2	28	5	3.6	18	1.5	26	517	15	1395	26	517	15	1337	3	318	3	209	1.21	1.06	2.50	1.68	1.59	1.00	1.71	2.12	1.00	5.94	4711007	11304950
2	28	6	3	18	1.5	24	474	15	1354	24	474	14	1298	3	378	3	243	1.22	1.06	2.53	1.68	1.63	1.00	1.91	2.16	1.00	6.72	4580044	11089718
2	28	7	2.57	18	1.5	22	440	15	1320	22	440	14	1266	3	438	3	275	1.23	1.06	2.37	1.68	1.66	1.00	2.09	2.03	1.00	7.45	4473785	10916452
2	28	8	2.25	18	1.5	21	412	14	1291	21	412	14	1240	3	500	3	307	1.24	1.06	2.11	1.67	1.69	1.00	2.27	1.80	1.00	8.15	4376271	10757006
2	28	9	2	18	1.5	19	389	14	1266	19	389	13	1216	3	560	3	338	1.24	1.06	1.85	1.67	1.71	1.00	2.43	1.62	1.00	8.81	4301942	10635365
2	28	6	3.08	18.5	0	24	478	15	1358	24	478	14	1303	3	368	3	237	1.22	1.06	1.28	1.67	1.63	1.00	1.87	1.09	1.00	6.58	4553117	11033576
2	28	7	2.64	18.5	0	22	444	15	1324	22	444	14	1270	3	424	3	269	1.23	1.06	1.30	1.66	1.66	1.00	2.06	1.11	1.00	7.30	4449378	10864617
2	28	8	2.32	18.5	0	21	417	14	1294	21	417	14	1242	3	483	3	298	1.24	1.06	1.32	1.66	1.69	1.00	2.21	1.12	1.00	7.93	4346452	10685307
2	28	9	2.06	18.5	0	20	393	14	1270	20	393	13	1219	3	538	3	329	1.24	1.06	1.31	1.65	1.71	1.00	2.38	1.14	1.00	8.60	4274152	10575937
2	28	10	1.85	18.5	0	19	372	14	1249	19	372	13	1200	3	400	2	352	1.25	1.06	1.33	1.65	1.74	1.00	2.51	1.15	1.00	9.27	4209672	10481278
2	28	6	3.58	21.5	1.5	26	514	15	1394	26	514	15	1337	3	318	3	210	1.21	1.06	2.49	1.68	1.59	1.00	1.72	2.11	1.00	5.96	4684909	11261986
2	28	7	3.07	21.5	1.5	24	478	15	1358	24	478	14	1303	3	368	3	238	1.22	1.06	2.52	1.67	1.62	1.00	1.88	2.14	1.00	6.60	4567948	11062543
2	28	8	2.69	21.5	1.5	22	449	15	1327	22	449	14	1273	3	424	3	264	1.23	1.06	2.48	1.67	1.65	1.00	2.03	2.10	1.00	7.19	4467820	10888862
2	28	9	2.39	21.5	1.5	21	424	14	1301	21	424	14	1249	3	467	3	291	1.23	1.06	2.17	1.66	1.67	1.00	2.18	1.89	1.00	7.78	4385512	10752920
2	28	10	2.15	21.5	1.5	20	402	14	1280	20	402	14	1229	3	519	3	318	1.24	1.06	2.00	1.66	1.70	1.00	2.33	1.72	1.00	8.37	4319797	10655916
2	28	7	3.14	22	0	24	482	15	1360	24	482	14	1304	3	359	3	233	1.22	1.06	1.28	1.66	1.62	1.00	1.85	1.08	1.00	6.47	4541622	11001428
2	28	8	2.75	22	0	23	452	15	1331	23	452	14	1277	3	412	3	259	1.23	1.06	1.30	1.66	1.65	1.00	2.00	1.10	1.00	7.08	4448437	10851118
2	28	9	2.44	22	0	21	427	14	1305	21	427	14	1253	3	467	3	286	1.23	1.06	1.28	1.66	1.67	1.00	2.16	1.11	1.00	7.68	4376034	10735067
2	28	10	2.2	22	0	20	405	14	1284	20	405	14	1232	3	519	3	311	1.24	1.06	1.31	1.65	1.70	1.00	2.29	1.13	1.00	8.24	4302307	10621340
2	28	11	2	22	0	19	386	14	1264	19	386	13	1214	3	560	3	336	1.24	1.06	1.30	1.65	1.72	1.00	2.43	1.14	1.00	8.79	4237136	10518171
2	28	12	1.83	22	0	18	369	14	1249	18	369	13	1200	3	412	2	354	1.25	1.06	1.33	1.65	1.74	1.00	2.52	1.15	1.00	9.37	4206168	10489846
2	28	7	3.57	25	1.5	26	513	15	1390	26	513	15	1333	3	318	3	210	1.21	1.06	2.47	1.67	1.59	1.00	1.72	2.10	1.00	5.95	4651301	11188154
2	28	8	3.125	25	1.5	24	481	15	1361	24	481	14	1305	3	359	3	234	1.22	1.06	2.52	1.66	1.62	1.00	1.86	2.13	1.00	6.51	4556481	11037468
2	28	9	2.78	25	1.5	23	455	15	1334	23	455	14	1280	3	412	3	257	1.23	1.06	2.48	1.66	1.64	1.00	2.00	2.16	1.00	7.03	4470521	10891161
2	28	10	2.5	25	1.5	22	432	14	1311	22	432	14	1259	3	452	3	280	1.23	1.06	2.28	1.66	1.66	1.00	2.13	1.96	1.00	7.55	4396454	10771525
2	28	11	2.27	25	1.5	21	413	14	1290	21	413	14	1238	3	500	3	304	1.24	1.06	2.05	1.66	1.68	1.00	2.25	1.80	1.00	8.06	4344331	10686120
2	28	12	1.83	25	1.5	22	442	15	1322	22	442	14	1280	3	412	2	399	1.24	1.05	1.67	2.27	1.46	1.00	2.80	1.78	1.00	10.49	6350548	14349203
2	32	3	1.5	4.5	0	19	374	16	1412	19	374	15	1360	3	571	2	446	1.25	1.06	1.46	1.82	1.81	1.00	3.13	1.17	1.00	14.61	7198896	16677341
2	32	3	2	6	0.75	21	412	16	1450	21	412	15	1394	3	432	2	364	1.24	1.06	1.38	1.67	1.80	1.00	3.01	1.07	1.00	11.55	6613083	15603708
2	32	4	1.5	6	0.75	18	369	15	1408	18	369	15	1357	3	571	2	443	1.26	1.06	1.42	1.79	1.80	1.00	3.15	1.19	1.00	14.52	7017206	16373333
2	32	3	2.33	7	1.25	22	449	16	1486	22	449	16	1426	3	552	3	331	1.23	1.06	2.44	1.70	1.73	1.00	1.99	1.91	1.00	10.41	6838776	15968336
2	32	4	1.75	7	1.25	19	386	16	1424	19	386	15	1369	3	485	2	406	1.25	1.06	2.01	1.68	1.82	1.00	3.10	1.60	1.00	12.73	6585892	15586791
2	32	3	2.67	8	0	23	469	17	1506	23	469	16	1444	3	485	3	291	1.23	1.06	1.52	1.63	1.73	1.00	1.81	1.16	1.00	9.34	6583581	15484827
2	32	4	2	8	0	20	404	16	1442	20	404	15	1384	3	432	2	370	1.24	1.06	1.55	1.62	1.82	1.00	2.96	1.21	1.00	11.43	6342025	15121438
2	32	5	1.6	8	0	19	371	16	1410	19	371	15	1358	3	533	2	430	1.25	1.06	1.58	1.71	1.82	1.00	3.14	1.31	1.00	13.66	6652997	15732242
2	32	3	3.17	9.5	0.75	25	501	17	1539	25	501	16	1472	3	410	3	250	1.22	1.06	1.91	1.58	1.72	1.00	1.62	1.44	1.00	8.21	6463366	15234200
2	32	4	2.375	9.5	0.75	22	433	16	1472	22	433	15	1410	3	533	3	317	1.23	1.07	1.95	1.57	1.79	1.00	2.65	1.49	1.00	10.03	6213597	14849764
2	32	5	1.9	9.5	0.75	19	386	16	1424	19	386	15	1366	3	457	2	377	1.25	1.07	2.01	1.57	1.86	1.00	3.02	1.55	1.00	11.73	6065953	14641551
2	32	6	1.583	9.5	0.75	18	368	15	1408	18	368	15	1357	3	552	2	433	1.25	1.06	1.79	1.70	1.81	1.00	3.15	1.49	1.00	13.76	6625289	15691479
2	32	3	3.67	11	1.5	28	551	17	1589	28	551	17	1524	3	356	3	225	1.21	1.06	2.67	1.65	1.62	1.00	1.52	2.09	1.00	7.56	6995790	16188556
2	32	4	2.75	11	1.5	24	479	17	1516	24	479	16	1455	3	471	3	285	1.22	1.06	2.72	1.65	1.69	1.00	1.80	2.16	1.00	9.18	6705727	15699338

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
2	32	5	2.2	11	1.5	21	427	16	1466	21	427	15	1409	3	593	3	343	1.24	1.06	2.73	1.64	1.75	1.00	2.83	2.22	1.00	10.74	6507757	15400560
2	32	6	1.833	11	1.5	19	388	16	1426	19	388	15	1371	3	471	2	390	1.25	1.06	2.81	1.63	1.81	1.00	3.13	2.27	1.00	12.20	6357132	15172486
2	32	7	1.57	11	1.5	18	357	15	1394	18	357	15	1341	3	552	2	427	1.26	1.06	2.84	1.63	1.86	1.00	3.37	2.32	1.00	13.60	6248110	15016438
2	32	4	2.875	11.5	1.75	24	486	17	1523	24	486	16	1461	3	444	3	274	1.22	1.06	2.92	1.63	1.69	1.00	1.75	2.29	1.00	8.87	6631388	15556184
2	32	5	2.3	11.5	1.75	22	434	16	1472	22	434	16	1413	3	552	3	329	1.23	1.06	2.93	1.62	1.75	1.00	2.74	2.36	1.00	10.35	6437548	15257815
2	32	6	1.917	11.5	1.75	20	394	16	1433	20	394	15	1377	3	457	2	378	1.24	1.06	3.02	1.61	1.81	1.00	3.05	2.42	1.00	11.77	6286940	15039906
2	32	7	1.643	11.5	1.75	18	362	15	1402	18	362	15	1348	3	516	2	414	1.25	1.06	3.05	1.61	1.86	1.00	3.29	2.47	1.00	13.15	6174870	14891079
2	32	4	3.25	13	2.5	25	507	17	1546	25	507	16	1481	3	400	3	245	1.22	1.06	2.86	1.58	1.69	1.00	1.62	2.20	1.00	8.08	6492308	15287012
2	32	5	2.6	13	2.5	23	454	16	1491	23	454	16	1430	3	500	3	294	1.23	1.06	2.87	1.57	1.75	1.00	1.84	2.26	1.00	9.40	6283238	14944646
2	32	6	2.167	13	2.5	21	413	16	1451	21	413	15	1392	3	593	3	342	1.24	1.06	2.96	1.57	1.80	1.00	2.82	2.31	1.00	10.68	6135269	14727837
2	32	7	1.857	13	2.5	19	380	16	1419	19	380	15	1363	3	457	2	381	1.25	1.06	2.99	1.56	1.85	1.00	3.08	2.36	1.00	11.92	6020901	14574229
2	32	4	3.625	14.5	3.25	27	544	17	1583	27	544	17	1519	3	356	3	227	1.21	1.06	2.83	1.63	1.62	1.00	1.54	2.27	1.00	7.60	6878461	15979179
2	32	5	2.9	14.5	3.25	24	488	17	1527	24	488	16	1466	3	444	3	272	1.22	1.06	2.90	1.63	1.68	1.00	1.75	2.33	1.00	8.84	6658433	15613235
2	32	6	2.417	14.5	3.25	22	445	16	1485	22	445	16	1426	3	533	3	316	1.23	1.06	2.92	1.62	1.72	1.00	1.96	2.38	1.00	10.03	6496058	15361878
2	32	7	2.07	14.5	3.25	21	411	16	1450	21	411	15	1393	3	410	2	359	1.24	1.06	2.95	1.62	1.77	1.00	2.95	2.43	1.00	11.16	6367653	15163664
2	32	4	2.875	11.5	0	24	486	17	1523	24	486	16	1461	3	444	3	274	1.22	1.06	1.49	1.63	1.69	1.00	1.75	1.17	1.00	8.87	6631388	15556184
2	32	5	2.3	11.5	0	22	434	16	1472	22	434	16	1413	3	552	3	329	1.23	1.06	1.50	1.62	1.75	1.00	2.74	1.21	1.00	10.35	6437548	15257815
2	32	6	1.917	11.5	0	20	394	16	1433	20	394	15	1377	3	457	2	378	1.24	1.06	1.55	1.61	1.81	1.00	3.05	1.24	1.00	11.77	6286940	15039906
2	32	7	1.643	11.5	0	18	362	15	1402	18	362	15	1348	3	516	2	414	1.25	1.06	1.56	1.61	1.86	1.00	3.29	1.26	1.00	13.15	6174870	14891079
2	32	4	3.25	13	0.75	25	507	17	1546	25	507	16	1481	3	400	3	245	1.22	1.06	1.88	1.58	1.69	1.00	1.62	1.44	1.00	8.08	6492308	15287012
2	32	5	2.6	13	0.75	23	454	16	1491	23	454	16	1430	3	500	3	294	1.23	1.06	1.88	1.57	1.75	1.00	1.84	1.48	1.00	9.40	6283238	14944646
2	32	6	2.167	13	0.75	21	413	16	1451	21	413	15	1392	3	593	3	342	1.24	1.06	1.94	1.57	1.80	1.00	2.82	1.51	1.00	10.68	6135269	14727837
2	32	7	1.857	13	0.75	19	380	16	1419	19	380	15	1363	3	457	2	381	1.25	1.06	1.96	1.56	1.85	1.00	3.08	1.54	1.00	11.92	6020901	14574229
2	32	4	3.625	14.5	1.5	27	544	17	1583	27	544	17	1519	3	356	3	227	1.21	1.06	2.60	1.63	1.62	1.00	1.54	2.09	1.00	7.60	6878461	15979179
2	32	5	2.9	14.5	1.5	24	488	17	1527	24	488	16	1466	3	444	3	272	1.22	1.06	2.67	1.63	1.68	1.00	1.75	2.15	1.00	8.84	6658433	15613235
2	32	6	2.417	14.5	1.5	22	445	16	1485	22	445	16	1426	3	533	3	316	1.23	1.06	2.46	1.62	1.72	1.00	1.96	2.01	1.00	10.03	6496058	15361878
2	32	7	2.07	14.5	1.5	21	411	16	1450	21	411	15	1393	3	410	2	359	1.24	1.06	2.13	1.62	1.77	1.00	2.95	1.75	1.00	11.16	6367653	15163664
2	32	5	3	15	0	25	494	17	1531	25	494	16	1469	3	432	3	264	1.22	1.06	1.45	1.61	1.68	1.00	1.71	1.16	1.00	8.59	6599310	15489681
2	32	6	2.5	15	0	23	450	16	1490	23	450	16	1431	3	516	3	306	1.23	1.06	1.46	1.61	1.72	1.00	1.91	1.19	1.00	9.76	6438283	15249619
2	32	7	2.14	15	0	21	416	16	1455	21	416	15	1397	3	593	3	348	1.24	1.06	1.48	1.61	1.77	1.00	2.88	1.21	1.00	10.87	6321341	15071958
2	32	8	1.875	15	0	19	387	16	1427	19	387	15	1372	3	457	2	382	1.25	1.06	1.50	1.60	1.81	1.00	3.10	1.23	1.00	11.93	6202882	14901586
2	32	9	1.67	15	0	18	369	15	1408	18	369	15	1356	3	516	2	412	1.25	1.06	1.52	1.63	1.82	1.00	3.14	1.28	1.00	13.05	6302880	15106749
2	32	5	3.3	16.5	0.75	25	509	17	1549	25	509	16	1484	3	390	3	241	1.22	1.06	1.83	1.57	1.68	1.00	1.61	1.43	1.00	7.99	6463437	15235166
2	32	6	2.75	16.5	0.75	23	465	17	1505	23	465	16	1443	3	471	3	280	1.23	1.06	1.84	1.57	1.73	1.00	1.79	1.46	1.00	9.05	6299703	14974503
2	32	7	2.357	16.5	0.75	22	430	16	1469	22	430	15	1409	3	552	3	318	1.23	1.06	1.86	1.56	1.77	1.00	2.69	1.49	1.00	10.06	6166516	14766225
2	32	8	2.06	16.5	0.75	20	401	16	1439	20	401	15	1382	3	421	2	356	1.24	1.06	1.88	1.56	1.81	1.00	2.93	1.52	1.00	11.05	6062058	14611240
2	32	9	1.83	16.5	0.75	19	377	16	1416	19	377	15	1361	3	471	2	384	1.25	1.06	1.89	1.56	1.84	1.00	3.09	1.53	1.00	12.04	6009469	14557280
2	32	5	3.6	18	1.5	27	540	17	1579	27	540	17	1515	3	364	3	227	1.21	1.06	2.58	1.62	1.63	1.00	1.55	2.08	1.00	7.61	6804705	15844546
2	32	6	3	18	1.5	25	494	17	1533	25	494	16	1472	3	432	3	264	1.22	1.06	2.60	1.62	1.67	1.00	1.72	2.12	1.00	8.61	6620754	15538152
2	32	7	2.57	18	1.5	23	458	16	1495	23	458	16	1436	3	500	3	300	1.23	1.06	2.61	1.61	1.70	1.00	1.88	2.10	1.00	9.56	6481679	15307183
2	32	8	2.25	18	1.5	21	427	16	1466	21	427	15	1409	3	571	3	334	1.24	1.06	2.26	1.61	1.74	1.00	2.80	1.87	1.00	10.50	6363140	15135353
2	32	9	2	18	1.5	20	402	16	1439	20	402	15	1384	3	432	2	368	1.24	1.06	2.03	1.60	1.78	1.00	3.01	1.69	1.00	11.38	6264221	14976911
2	32	6	3.08	18.5	0	25	499	17	1537	25	499	16	1475	3	421	3	258	1.22	1.06	1.41	1.61	1.67	1.00	1.69	1.15	1.00	8.43	6590591	15473392
2	32	7	2.64	18.5	0	23	462	16	1500	23	462	16	1440	3	485	3	292	1.23	1.06	1.46	1.60	1.71	1.00	1.85	1.17	1.00	9.37	6445380	15240236
2	32	8	2.32	18.5	0	22	432	16	1471	22	432	16	1413	3	552	3	325	1.23	1.06	1.45	1.60	1.74	1.00	2.74	1.19	1.00	10.25	6328768	15064569
2	32	9	2.06	18.5	0	20	406	16	1444	20	406	15	1388	3	421	2	358	1.24	1.06	1.46	1.59	1.78	1.00	2.95	1.21	1.00	11.13	6223663	14902429
2	32	10	1.85	18.5	0	19	383	16	1423	19	383	15	1368	3	457	2	384	1.25	1.06	1.49	1.59	1.82	1.00	3.12	1.23	1.00	12.03	6152659	14815807
2	32	6	3.58	21.5	1.5	27	537	17	1577	27	537	17	1513	3	364	3	228	1.21	1.06	2.57	1.61	1.63	1.00	1.55	2.07	1.00	7.63	6762576	15772207
2	32	7	3.07	21.5	1.5	25	499	17	1536	25	499	16	1474	3	421	3	258	1.22	1.06	2.59	1.61	1.66	1.00	1.70	2.11	1.00	8.45	6601398	15489177
2	32	8	2.69	21.5	1.5	23	467	17	1504	23	467	16	1445	3	485	3	288	1.22	1.06	2.61	1.60	1.69	1.00	1.83	2.14	1.00	9.24	6470471	15276906
2	32	9	2.39	21.5	1.5	22	439	16	1479	22	439	16	1421	3	533	3	318	1.23	1.06	2.40	1.60	1.73	1.00	1.98	1.96	1.00	10.06	6375247	15146272
2	32	10	2.15	21.5	1.5	21	416	16	1454	21	416	15	1398	3	593	3	346	1.24	1.06	2.19	1.60	1.76	1.00	2.88	1.79	1.00	10.81	6282068	14995910
2	32	7	3.14	22	0	25	503	17	1540	25	503	16	1477	3	410	3	253	1.22	1.06	1.41	1.60	1.66	1.00	1.67	1.14	1.00	8.30	6575424	15437395
2	32	8	2.75	22	0	24	470	17	1509	24	470	16	1449	3	471	3	282	1.22	1.06	1.43	1.59	1.70	1.00	1.81	1.16	1.00	9.11	6444481	15235357
2	32	9	2.44	22	0	22	443	16	1482	22	443	16	1424	3	533	3	312	1.23	1.06	1.45	1.60	1.72	1.00	1.95	1.18	1.00	9.89	6360004	15108578
2	32	10	2.2	22	0	21	419	16	1459	21	419	15	1402	3	593	3	339	1.24	1.06	1.47	1.59	1.76	1.00	2.84	1.20	1.00	10.63	6256018	14952181
2	32	11	2	22	0	20	399	16	1437	20	399	15	1381	3	432	2	367	1.24	1.06	1.46	1.59	1.79	1.00	3.01	1.21	1.00	11.35	6176895	14825654
2	32	12	1.83	22	0	19	381	16	1419	19	381	15	1365	3	471	2	387	1.25	1.06	1.48	1.59	1.81	1.00	3.12	1.22	1.00	12.09	6130090	14767732
2	32	7	3.57	25	1.5	27	536	17	1573	27	536	17	1509	3	364	3	228	1.21	1.06	2.55	1.61	1.63	1.00	1.55	2.06	1.00	7.62	6720048	15681204
2	32	8	3.125	25	1.5	25	502	17	1540	25	502	16	1478	3	410	3	254	1.22	1.06	2.58	1.60	1.66	1.00	1.68	2.10	1.00	8.34	6586972	15464027
2	32	9	2.78	25	1.5	24	473	17	1513	24	473	16	1454	3	471	3	280	1.22	1.06	2.62	1.60	1.69	1.00	1.81	2.12	1.00	9.05	6477371	15296735
2	32	10	2.5	25	1.5	22	449	16	1487	22	449	16	1428	3	516	3	305	1.23	1.06	2.45	1.60	1.71	1.00	1.92	2.03	1.00	9.72	6384636	15142437
2	32	11	2.27	25	1.5	21	427	16	1467	21	427	16	1410	3	571	3	331	1.23	1.06	2.27	1.60	1.74	1.00	2.79	1.87	1.00	10.42	6316871	15053757
2	32	12	1.83	25	1.5	23	457	16	1497	23	457	16	1451	3	471	2	437	1.23	1.05	1.71	2.15	1.52	1.00	2.51	1.74	1.00	13.46	9104185	19878630
2	36	3	1.5	4.5	0	19	384	17	1582	19	384	17	1519	3	327	1	489	1.26	1.07	1.62	1.76	1.88	1.00	2.78	1.25	1.00	18.33	10125147	22652635
2	36	3	2	6	0.75	21	425	18	1624	21	425	17	1553	3	486	2	398	1.25	1.07	1.54	1.62	1.89	1.00	2.67	1.14	1.00	14.49	9296762	21244176
2	36	4	1.5	6	0.75	19	379	17	1576	19	379	17	1514	3	327	1	485	1.26	1.07	1.61	1.73	1.88	1.00	2.80	1.27	1.00	18.20	9856609	22207296
2	36	3	2.33	7	1.25	23	465	18	1662	23	465	17	1590	3	419	2	362	1.24	1.07	2.59	1.65	1.80	1.00	2.41	1.96	1.00	13.03	9588192	21699653
2	36	4	1.75	7	1.25	20	397	18	1596	20	397	17	1530	3	545	2	444	1.25	1.07	2.20	1.63	1.90	1.00	2.76	1.68	1.00	16.00	9274290	21233304
2	36	3	2.67	8	0	24	486	19	1686	24	486	18	1610	3	545	3	318	1.23	1.07	1.68	1.58	1.80	1.00	2.20	1.24	1.00	11.70	9240947	21099448
2	36	4	2	8	0	21	417	18	1615	21	417	17	1544	3	486	2	404	1.25	1.07	1.73	1.57	1.90	1.00	2.63	1.29	1.00	14.33	8931766	20616678
2	36	5	1.6	8	0	19	381	17	1580	19	381	17	1516	3	305	1	471	1.26	1.07	1.80	1.65	1.90	1.00	2.79	1.40	1.00	17.15	9366679	21405372
2	36	3	3.17	9.5	0.75	26	521	19	1719	26	521	18	1639	3	462	3	272	1.22	1.07	2.08	1.53	1.78	1.00	1.97	1.51	1.00	10.24	9041793	20706358
2	36	4	2.375	9.5	0.75	22	448	18	1647	22	448	17	1573	3	409	2	346	1.24	1.07	2.15	1.53	1.87	1.00	2.35	1.57	1.00	12.55	8725344	20223788

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
2	36	5	1.9	9.5	0.75	20	397	18	1597	20	397	17	1527	3	514	2	411	1.25	1.07	2.21	1.53	1.95	1.00	2.69	1.63	1.00	14.75	8556658	20002824
2	36	6	1.583	9.5	0.75	19	378	17	1576	19	378	17	1513	3	310	1	473	1.26	1.07	1.96	1.65	1.89	1.00	2.80	1.55	1.00	17.24	9309031	21304300
2	36	3	3.67	11	1.5	29	574	19	1773	29	574	19	1694	3	400	3	245	1.21	1.07	2.77	1.61	1.68	1.00	1.84	2.10	1.00	9.41	9751906	21944155
2	36	4	2.75	11	1.5	25	497	19	1694	25	497	18	1620	3	529	3	311	1.23	1.07	2.86	1.60	1.76	1.00	2.19	2.18	1.00	11.47	9378590	21315531
2	36	5	2.2	11	1.5	22	442	18	1639	22	442	17	1569	3	439	2	374	1.24	1.07	2.92	1.59	1.83	1.00	2.51	2.24	1.00	13.42	9129825	20926772
2	36	6	1.833	11	1.5	20	399	18	1599	20	399	17	1532	3	529	2	427	1.25	1.07	2.99	1.58	1.90	1.00	2.78	2.30	1.00	15.33	8957253	20695636
2	36	7	1.57	11	1.5	18	365	17	1565	18	365	17	1502	3	310	1	468	1.26	1.07	3.02	1.58	1.95	1.00	3.00	2.36	1.00	17.14	8816879	20499563
2	36	4	2.875	11.5	1.75	25	504	19	1704	25	504	18	1628	3	500	3	299	1.23	1.07	3.05	1.58	1.76	1.00	2.13	2.30	1.00	11.10	9290632	21172683
2	36	5	2.3	11.5	1.75	22	449	18	1646	22	449	17	1575	3	419	2	359	1.24	1.07	3.10	1.57	1.83	1.00	2.43	2.37	1.00	12.94	9022984	20733668
2	36	6	1.917	11.5	1.75	20	406	18	1605	20	406	17	1537	3	514	2	414	1.25	1.07	3.18	1.57	1.90	1.00	2.71	2.43	1.00	14.77	8848812	20492852
2	36	7	1.643	11.5	1.75	19	372	17	1570	19	372	17	1505	3	581	2	453	1.26	1.07	3.21	1.56	1.95	1.00	2.92	2.48	1.00	16.49	8700594	20276507
2	36	4	3.25	13	2.5	26	528	19	1725	26	528	18	1645	3	450	3	266	1.22	1.07	2.99	1.54	1.75	1.00	1.95	2.20	1.00	10.06	9073402	20751740
2	36	5	2.6	13	2.5	24	470	18	1669	24	470	18	1595	3	562	3	320	1.23	1.07	3.05	1.53	1.82	1.00	2.24	2.26	1.00	11.77	8817754	20361886
2	36	6	2.167	13	2.5	21	426	18	1626	21	426	17	1555	3	450	2	373	1.24	1.07	3.12	1.52	1.89	1.00	2.51	2.32	1.00	13.41	8635523	20099777
2	36	7	1.857	13	2.5	20	391	17	1590	20	391	17	1522	3	514	2	416	1.25	1.07	3.14	1.52	1.94	1.00	2.73	2.37	1.00	14.96	8484033	19878454
2	36	4	3.625	14.5	3.25	28	567	19	1765	28	567	19	1686	3	400	3	247	1.22	1.07	2.98	1.59	1.68	1.00	1.86	2.27	1.00	9.44	9582821	21641570
2	36	5	2.9	14.5	3.25	25	507	19	1705	25	507	18	1630	3	500	3	296	1.23	1.07	3.04	1.58	1.74	1.00	2.12	2.33	1.00	11.02	9303804	21181953
2	36	6	2.417	14.5	3.25	23	461	18	1659	23	461	17	1588	3	400	2	345	1.24	1.07	3.11	1.57	1.80	1.00	2.37	2.39	1.00	12.51	9089740	20844605
2	36	7	2.07	14.5	3.25	21	424	18	1623	21	424	17	1554	3	462	2	392	1.24	1.07	3.13	1.57	1.85	1.00	2.62	2.44	1.00	13.98	8939550	20628367
2	36	4	2.875	11.5	0	25	504	19	1704	25	504	18	1628	3	500	3	299	1.23	1.07	1.66	1.58	1.76	1.00	2.13	1.25	1.00	11.10	9290632	21172683
2	36	5	2.3	11.5	0	22	449	18	1646	22	449	17	1575	3	419	2	359	1.24	1.07	1.69	1.57	1.83	1.00	2.43	1.29	1.00	12.94	9022984	20733668
2	36	6	1.917	11.5	0	20	406	18	1605	20	406	17	1537	3	514	2	414	1.25	1.07	1.73	1.57	1.90	1.00	2.71	1.32	1.00	14.77	8848812	20492852
2	36	7	1.643	11.5	0	19	372	17	1570	19	372	17	1505	3	581	2	453	1.26	1.07	1.75	1.56	1.95	1.00	2.92	1.35	1.00	16.49	8700594	20276507
2	36	4	3.25	13	0.75	26	528	19	1725	26	528	18	1645	3	450	3	266	1.22	1.07	2.05	1.54	1.75	1.00	1.95	1.51	1.00	10.06	9073402	20751740
2	36	5	2.6	13	0.75	24	470	18	1669	24	470	18	1595	3	562	3	320	1.23	1.07	2.09	1.53	1.82	1.00	2.24	1.55	1.00	11.77	8817754	20361886
2	36	6	2.167	13	0.75	21	426	18	1626	21	426	17	1555	3	450	2	373	1.24	1.07	2.14	1.52	1.89	1.00	2.51	1.59	1.00	13.41	8635523	20099777
2	36	7	1.857	13	0.75	20	391	17	1590	20	391	17	1522	3	514	2	416	1.25	1.07	2.15	1.52	1.94	1.00	2.73	1.63	1.00	14.96	8484033	19878454
2	36	4	3.625	14.5	1.5	28	567	19	1765	28	567	19	1686	3	400	3	247	1.22	1.07	2.77	1.59	1.68	1.00	1.86	2.11	1.00	9.44	9582821	21641570
2	36	5	2.9	14.5	1.5	25	507	19	1705	25	507	18	1630	3	500	3	296	1.23	1.07	2.82	1.58	1.74	1.00	2.12	2.17	1.00	11.02	9303804	21181953
2	36	6	2.417	14.5	1.5	23	461	18	1659	23	461	17	1588	3	400	2	345	1.24	1.07	2.74	1.57	1.80	1.00	2.37	2.10	1.00	12.51	9089740	20844605
2	36	7	2.07	14.5	1.5	21	424	18	1623	21	424	17	1554	3	462	2	392	1.24	1.07	2.37	1.57	1.85	1.00	2.62	1.84	1.00	13.98	8939550	20628367
2	36	5	3	15	0	26	513	19	1711	26	513	18	1635	3	486	3	287	1.23	1.07	1.62	1.57	1.74	1.00	2.07	1.23	1.00	10.72	9230803	21048679
2	36	6	2.5	15	0	23	467	18	1664	23	467	17	1591	3	581	3	334	1.24	1.07	1.66	1.56	1.80	1.00	2.32	1.26	1.00	12.17	9018064	20706942
2	36	7	2.14	15	0	22	430	18	1627	22	430	17	1557	3	462	2	380	1.24	1.07	1.67	1.56	1.85	1.00	2.55	1.29	1.00	13.59	8868940	20485578
2	36	8	1.875	15	0	20	399	18	1597	20	399	17	1530	3	514	2	417	1.25	1.07	1.68	1.55	1.90	1.00	2.75	1.32	1.00	14.95	8726929	20284042
2	36	9	1.67	15	0	19	379	17	1577	19	379	17	1513	3	581	2	451	1.26	1.07	1.74	1.58	1.91	1.00	2.79	1.37	1.00	16.36	8868697	20555562
2	36	5	3.3	16.5	0.75	27	530	19	1728	27	530	18	1649	3	439	3	263	1.22	1.07	2.01	1.53	1.74	1.00	1.94	1.50	1.00	9.94	9025371	20669718
2	36	6	2.75	16.5	0.75	24	483	18	1680	24	483	18	1604	3	529	3	305	1.23	1.07	2.05	1.52	1.80	1.00	2.17	1.54	1.00	11.28	8812173	20326348
2	36	7	2.357	16.5	0.75	22	445	18	1642	22	445	17	1570	3	419	2	347	1.24	1.07	2.07	1.52	1.85	1.00	2.39	1.57	1.00	12.58	8643880	20072412
2	36	8	2.06	16.5	0.75	21	413	18	1613	21	413	17	1544	3	474	2	388	1.25	1.07	2.09	1.51	1.90	1.00	2.60	1.60	1.00	13.88	8533944	19939137
2	36	9	1.83	16.5	0.75	19	388	17	1586	19	388	17	1519	3	529	2	420	1.25	1.07	2.09	1.52	1.94	1.00	2.75	1.61	1.00	15.10	8466988	19846896
2	36	5	3.6	18	1.5	28	563	19	1760	28	563	18	1681	3	409	3	247	1.22	1.07	2.75	1.58	1.68	1.00	1.86	2.10	1.00	9.46	9479554	21454311
2	36	6	3	18	1.5	26	513	19	1713	26	513	18	1638	3	486	3	287	1.23	1.07	2.81	1.57	1.73	1.00	2.09	2.14	1.00	10.75	9258300	21108887
2	36	7	2.57	18	1.5	24	474	18	1673	24	474	18	1601	3	562	3	327	1.23	1.07	2.83	1.57	1.78	1.00	2.29	2.18	1.00	11.97	9083630	20827574
2	36	8	2.25	18	1.5	22	442	18	1639	22	442	17	1569	3	439	2	365	1.24	1.07	2.52	1.56	1.82	1.00	2.48	1.96	1.00	13.12	8926940	20573235
2	36	9	2	18	1.5	21	414	18	1612	21	414	17	1545	3	486	2	402	1.25	1.07	2.26	1.56	1.87	1.00	2.68	1.77	1.00	14.29	8805145	20401407
2	36	6	3.08	18.5	0	26	518	19	1718	26	518	18	1642	3	474	3	281	1.22	1.07	1.62	1.56	1.73	1.00	2.05	1.22	1.00	10.53	9214171	21026956
2	36	7	2.64	18.5	0	24	479	18	1677	24	479	18	1604	3	545	3	319	1.23	1.07	1.62	1.56	1.78	1.00	2.25	1.25	1.00	11.71	9030149	20722656
2	36	8	2.32	18.5	0	22	447	18	1644	22	447	17	1574	3	419	2	354	1.24	1.07	1.64	1.55	1.82	1.00	2.43	1.27	1.00	12.80	8862304	20454297
2	36	9	2.06	18.5	0	21	419	18	1616	21	419	17	1548	3	474	2	391	1.24	1.07	1.65	1.54	1.86	1.00	2.62	1.29	1.00	13.94	8742966	20280127
2	36	10	1.85	18.5	0	20	394	18	1594	20	394	17	1528	3	514	2	420	1.25	1.07	1.68	1.54	1.91	1.00	2.77	1.31	1.00	15.09	8658606	20185218
2	36	6	3.58	21.5	1.5	28	560	19	1757	28	560	18	1679	3	409	3	248	1.22	1.07	2.73	1.57	1.68	1.00	1.87	2.09	1.00	9.48	9415933	21342523
2	36	7	3.07	21.5	1.5	26	518	19	1717	26	518	18	1641	3	474	3	281	1.22	1.07	2.75	1.56	1.72	1.00	2.06	2.13	1.00	10.55	9230521	21050245
2	36	8	2.69	21.5	1.5	24	484	18	1682	24	484	18	1609	3	545	3	314	1.23	1.07	2.77	1.56	1.76	1.00	2.23	2.16	1.00	11.56	9062987	20775965
2	36	9	2.39	21.5	1.5	23	455	18	1652	23	455	17	1581	3	409	2	346	1.24	1.07	2.62	1.55	1.80	1.00	2.39	2.06	1.00	12.55	8928009	20560952
2	36	10	2.15	21.5	1.5	21	429	18	1629	21	429	17	1560	3	450	2	378	1.24	1.07	2.39	1.55	1.84	1.00	2.56	1.88	1.00	13.56	8829011	20435800
2	36	7	3.14	22	0	26	522	19	1721	26	522	18	1645	3	462	3	276	1.22	1.07	1.58	1.55	1.72	1.00	2.03	1.22	1.00	10.37	9182361	20962863
2	36	8	2.75	22	0	24	488	19	1685	24	488	18	1612	3	529	3	307	1.23	1.07	1.59	1.55	1.76	1.00	2.19	1.24	1.00	11.35	9010887	20674312
2	36	9	2.44	22	0	23	459	18	1656	23	459	17	1585	3	400	2	340	1.24	1.07	1.60	1.55	1.80	1.00	2.36	1.25	1.00	12.35	8907713	20520971
2	36	10	2.2	22	0	22	433	18	1632	22	433	17	1563	3	439	2	370	1.24	1.07	1.63	1.54	1.84	1.00	2.52	1.27	1.00	13.30	8779273	20337398
2	36	11	2	22	0	21	411	18	1610	21	411	17	1542	3	486	2	401	1.25	1.07	1.65	1.54	1.88	1.00	2.68	1.29	1.00	14.24	8690619	20210758
2	36	12	1.83	22	0	20	392	17	1589	20	392	17	1523	3	529	2	422	1.25	1.07	1.66	1.54	1.90	1.00	2.77	1.31	1.00	15.17	8624473	20110329
2	36	7	3.57	25	1.5	28	558	19	1755	28	558	18	1677	3	409	3	248	1.22	1.07	2.72	1.56	1.68	1.00	1.88	2.08	1.00	9.48	9364961	21252709
2	36	8	3.125	25	1.5	26	521	19	1721	26	521	18	1646	3	462	3	277	1.22	1.07	2.74	1.56	1.72	1.00	2.04	2.11	1.00	10.42	9199090	20997920
2	36	9	2.78	25	1.5	25	491	19	1690	25	491	18	1617	3	529	3	305	1.23	1.07	2.77	1.55	1.75	1.00	2.19	2.15	1.00	11.29	9060722	20771488
2	36	10	2.5	25	1.5	23	465	18	1662	23	465	17	1591	3	581	3	333	1.23	1.07	2.74	1.55	1.79	1.00	2.33	2.13	1.00	12.14	8936195	20564844
2	36	11	2.27	25	1.5	22	442	18	1639	22	442	17	1570	3	429	2	361	1.24	1.07	2.52	1.55	1.82	1.00	2.48	1.97	1.00	13.01	8850065	20439634
2	36	12	1.83	25	1.5	24	472	18	1669	24	472	18	1612	3	529	2	478	1.24	1.05	1.81	2.06	1.59	1.00	3.02	1.74	1.00	16.74	12605050	26639664
2	40	3	1.5	4.5	0	20	393	19	1751	20	393	18	1672	3	364	1	535	1.26	1.08	1.83	1.71	1.94	1.00	3.31	1.34	1.00	22.47	13813014	29890051
2	40	3	2	6	0.75	22	437	20	1797	22	437	19	1710	3	541	2	434	1.25	1.08	1.72	1.58	1.97	1.00	3.16	1.22	1.00	17.74	12672092	28084969
2	40	4	1.5	6	0.75	19	387	19	1746	19	387	18	1668	3	364	1	530	1.26	1.08	1.80	1.67	1.93	1.00	3.34	1.36	1.00	22.33	13453121	29335695
2	40	3	2.33	7	1.25	24	480	20	1837	24	480	19	1747	3	465	2	394	1.24	1.08	2.83	1.60	1.89	1.00	2.85	2.04	1.00	15.92	13037831	28644775
2	40	4	1.75	7	1.25	20	408	19	1765	20	408	18	1682	3	312	1	485	1.26	1.08	2.42	1.59	1.97	1.00	3.26	1.77	1.00	19.56	12659049	28051387
2	40	3	2.67	8	0	25	503	20	1862	25	503	19	1767	3	408	2	345	1.24	1.08	1.89	1.54	1.89	1.00	2.60	1.32	1.00	14.27	12560025	27860783

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	40	4	2	8	0	21	429	20	1786	21	429	19	1699	3	541	2	440	1.25	1.08	1.94	1.53	1.98	1.00	3.11	1.38	1.00	17.53	12174631	27247914
2	40	5	1.6	8	0	20	390	19	1748	20	390	18	1668	3	339	1	514	1.26	1.08	2.01	1.61	1.96	1.00	3.32	1.49	1.00	20.99	12768283	28242849
2	40	3	3.17	9.5	0.75	27	540	21	1898	27	540	20	1799	3	513	3	295	1.23	1.08	2.33	1.50	1.86	1.00	2.32	1.60	1.00	12.49	12271219	27346524
2	40	4	2.375	9.5	0.75	23	462	20	1822	23	462	19	1730	3	455	2	376	1.25	1.08	2.39	1.49	1.97	1.00	2.79	1.66	1.00	15.36	11898521	26783577
2	40	5	1.9	9.5	0.75	20	408	19	1766	20	408	18	1680	3	571	2	448	1.26	1.08	2.43	1.49	2.03	1.00	3.18	1.73	1.00	18.04	11678083	26451865
2	40	6	1.583	9.5	0.75	19	386	19	1746	19	386	18	1668	3	345	1	517	1.26	1.08	2.17	1.60	1.95	1.00	3.34	1.64	1.00	21.16	12709283	28167923
2	40	3	3.67	11	1.5	30	596	21	1956	30	596	20	1856	3	444	3	266	1.22	1.08	3.00	1.57	1.75	1.00	2.17	2.16	1.00	11.46	13195144	28919831
2	40	4	2.75	11	1.5	26	514	21	1872	26	514	20	1779	3	588	3	338	1.24	1.08	3.07	1.56	1.84	1.00	2.59	2.24	1.00	14.00	12739462	28149448
2	40	5	2.2	11	1.5	23	455	20	1813	23	455	19	1726	3	488	2	408	1.25	1.08	3.17	1.55	1.92	1.00	2.97	2.31	1.00	16.43	12428190	27659260
2	40	6	1.833	11	1.5	21	410	19	1768	21	410	19	1685	3	588	2	465	1.26	1.08	3.23	1.54	1.97	1.00	3.29	2.37	1.00	18.74	12215416	27337314
2	40	7	1.57	11	1.5	19	374	19	1731	19	374	18	1651	3	345	1	510	1.27	1.08	3.29	1.54	2.01	1.00	3.55	2.43	1.00	20.97	12055903	27096426
2	40	4	2.875	11.5	1.75	26	522	21	1880	26	522	20	1786	3	556	3	324	1.24	1.08	3.25	1.54	1.84	1.00	2.51	2.34	1.00	13.52	12590266	27897342
2	40	5	2.3	11.5	1.75	23	463	20	1820	23	463	19	1731	3	465	2	391	1.25	1.08	3.35	1.53	1.92	1.00	2.88	2.42	1.00	15.83	12284757	27406983
2	40	6	1.917	11.5	1.75	21	417	20	1776	21	417	19	1691	3	571	2	451	1.26	1.08	3.41	1.53	1.97	1.00	3.22	2.49	1.00	18.08	12074612	27108644
2	40	7	1.643	11.5	1.75	19	380	19	1740	19	380	18	1659	3	333	1	494	1.26	1.08	3.44	1.52	2.02	1.00	3.47	2.55	1.00	20.25	11907590	26875451
2	40	4	3.25	13	2.5	27	547	21	1905	27	547	20	1806	3	500	3	289	1.23	1.08	3.19	1.50	1.83	1.00	2.31	2.25	1.00	12.27	12305577	27401766
2	40	5	2.6	13	2.5	24	486	20	1843	24	486	19	1750	3	417	2	348	1.24	1.08	3.23	1.49	1.91	1.00	2.65	2.31	1.00	14.36	11982941	26883506
2	40	6	2.167	13	2.5	22	439	20	1797	22	439	19	1709	3	500	2	406	1.25	1.08	3.30	1.49	1.97	1.00	2.97	2.38	1.00	16.38	11763198	26562083
2	40	7	1.857	13	2.5	20	401	19	1760	20	401	18	1676	3	571	2	453	1.26	1.08	3.37	1.48	2.02	1.00	3.25	2.43	1.00	18.33	11591301	26323213
2	40	4	3.625	14.5	3.25	29	589	21	1946	29	589	20	1846	3	444	3	267	1.23	1.08	3.20	1.55	1.75	1.00	2.19	2.31	1.00	11.48	12960188	28499694
2	40	5	2.9	14.5	3.25	26	524	21	1884	26	524	20	1790	3	556	3	322	1.24	1.08	3.25	1.54	1.82	1.00	2.51	2.38	1.00	13.45	12615878	27953439
2	40	6	2.417	14.5	3.25	24	476	20	1833	24	476	19	1743	3	444	2	375	1.24	1.08	3.31	1.54	1.89	1.00	2.81	2.44	1.00	15.28	12357483	27520330
2	40	7	2.07	14.5	3.25	22	436	20	1795	22	436	19	1710	3	513	2	427	1.25	1.08	3.38	1.53	1.94	1.00	3.10	2.49	1.00	17.11	12173628	27258476
2	40	4	2.875	11.5	0	26	522	21	1880	26	522	20	1786	3	556	3	324	1.24	1.08	1.85	1.54	1.84	1.00	2.51	1.34	1.00	13.52	12590266	27897342
2	40	5	2.3	11.5	0	23	463	20	1820	23	463	19	1731	3	465	2	391	1.25	1.08	1.91	1.53	1.92	1.00	2.88	1.38	1.00	15.83	12284757	27406983
2	40	6	1.917	11.5	0	21	417	20	1776	21	417	19	1691	3	571	2	451	1.26	1.08	1.95	1.53	1.97	1.00	3.22	1.42	1.00	18.08	12074612	27108644
2	40	7	1.643	11.5	0	19	380	19	1740	19	380	18	1659	3	333	1	494	1.26	1.08	1.96	1.52	2.02	1.00	3.47	1.45	1.00	20.25	11907590	26875451
2	40	4	3.25	13	0.75	27	547	21	1905	27	547	20	1806	3	500	3	289	1.23	1.08	2.26	1.50	1.83	1.00	2.31	1.59	1.00	12.27	12305577	27401766
2	40	5	2.6	13	0.75	24	486	20	1843	24	486	19	1750	3	417	2	348	1.24	1.08	2.29	1.49	1.91	1.00	2.65	1.64	1.00	14.36	11982941	26883506
2	40	6	2.167	13	0.75	22	439	20	1797	22	439	19	1709	3	500	2	406	1.25	1.08	2.34	1.49	1.97	1.00	2.97	1.69	1.00	16.38	11763198	26562083
2	40	7	1.857	13	0.75	20	401	19	1760	20	401	18	1676	3	571	2	453	1.26	1.08	2.39	1.48	2.02	1.00	3.25	1.73	1.00	18.33	11591301	26323213
2	40	4	3.625	14.5	1.5	29	589	21	1946	29	589	20	1846	3	444	3	267	1.23	1.08	3.00	1.55	1.75	1.00	2.19	2.16	1.00	11.48	12960188	28499694
2	40	5	2.9	14.5	1.5	26	524	21	1884	26	524	20	1790	3	556	3	322	1.24	1.08	3.04	1.54	1.82	1.00	2.51	2.23	1.00	13.45	12615878	27953439
2	40	6	2.417	14.5	1.5	24	476	20	1833	24	476	19	1743	3	444	2	375	1.24	1.08	3.02	1.54	1.89	1.00	2.81	2.23	1.00	15.28	12357483	27520330
2	40	7	2.07	14.5	1.5	22	436	20	1795	22	436	19	1710	3	513	2	427	1.25	1.08	2.64	1.53	1.94	1.00	3.10	1.95	1.00	17.11	12173628	27258476
2	40	5	3	15	0	27	531	21	1889	27	531	20	1794	3	541	3	312	1.23	1.08	1.81	1.53	1.82	1.00	2.45	1.32	1.00	13.07	12509015	27755256
2	40	6	2.5	15	0	24	482	20	1839	24	482	19	1748	3	435	2	363	1.24	1.08	1.85	1.52	1.89	1.00	2.74	1.35	1.00	14.87	12254265	27343870
2	40	7	2.14	15	0	22	442	20	1801	22	442	19	1714	3	513	2	414	1.25	1.08	1.88	1.52	1.94	1.00	3.03	1.38	1.00	16.66	12088138	27110578
2	40	8	1.875	15	0	20	409	19	1768	20	409	19	1685	3	571	2	455	1.26	1.08	1.90	1.51	1.98	1.00	3.26	1.41	1.00	18.32	11906459	26837932
2	40	9	1.67	15	0	19	388	19	1745	19	388	18	1665	3	328	1	492	1.26	1.08	1.95	1.54	1.97	1.00	3.32	1.46	1.00	20.04	12100580	27157971
2	40	5	3.3	16.5	0.75	27	549	21	1908	27	549	20	1810	3	488	3	285	1.23	1.08	2.23	1.49	1.82	1.00	2.30	1.59	1.00	12.12	12231598	27281040
2	40	6	2.75	16.5	0.75	25	499	20	1857	25	499	19	1763	3	588	3	332	1.24	1.08	2.27	1.49	1.88	1.00	2.57	1.63	1.00	13.78	11977677	26872000
2	40	7	2.357	16.5	0.75	23	458	20	1818	23	458	19	1728	3	465	2	377	1.25	1.08	2.31	1.48	1.94	1.00	2.84	1.66	1.00	15.41	11784572	26594890
2	40	8	2.06	16.5	0.75	21	425	20	1784	21	425	19	1697	3	526	2	423	1.25	1.08	2.33	1.48	1.99	1.00	3.08	1.69	1.00	16.98	11646937	26389383
2	40	9	1.83	16.5	0.75	20	398	19	1755	20	398	18	1671	3	588	2	457	1.26	1.08	2.32	1.48	2.01	1.00	3.26	1.71	1.00	18.50	11564605	26265984
2	40	5	3.6	18	1.5	29	584	21	1942	29	584	20	1843	3	455	3	268	1.23	1.08	2.97	1.54	1.75	1.00	2.20	2.15	1.00	11.51	12821597	28271307
2	40	6	3	18	1.5	27	531	21	1891	27	531	20	1797	3	541	3	312	1.23	1.08	2.98	1.53	1.81	1.00	2.47	2.20	1.00	13.10	12543515	27828386
2	40	7	2.57	18	1.5	25	490	20	1847	25	490	19	1756	3	426	2	355	1.24	1.08	3.04	1.53	1.86	1.00	2.71	2.25	1.00	14.59	12327734	27462385
2	40	8	2.25	18	1.5	23	455	20	1813	23	455	19	1725	3	488	2	397	1.25	1.08	2.82	1.52	1.91	1.00	2.94	2.08	1.00	16.05	12149582	27195006
2	40	9	2	18	1.5	21	425	20	1785	21	425	19	1701	3	541	2	438	1.25	1.08	2.53	1.52	1.95	1.00	3.18	1.88	1.00	17.51	12014907	27011202
2	40	6	3.08	18.5	0	27	537	21	1895	27	537	20	1799	3	526	3	304	1.23	1.08	1.78	1.52	1.81	1.00	2.42	1.31	1.00	12.81	12479899	27703394
2	40	7	2.64	18.5	0	25	495	20	1852	25	495	19	1760	3	408	2	346	1.24	1.08	1.81	1.52	1.86	1.00	2.66	1.33	1.00	14.28	12253782	27334993
2	40	8	2.32	18.5	0	23	460	20	1820	23	460	19	1732	3	465	2	385	1.25	1.08	1.86	1.51	1.91	1.00	2.89	1.36	1.00	15.69	12076215	27084106
2	40	9	2.06	18.5	0	22	430	20	1790	22	430	19	1705	3	526	2	426	1.25	1.08	1.87	1.51	1.95	1.00	3.11	1.38	1.00	17.09	11927636	26861604
2	40	10	1.85	18.5	0	20	404	19	1764	20	404	18	1681	3	571	2	457	1.26	1.08	1.89	1.50	1.98	1.00	3.29	1.41	1.00	18.48	11814526	26698863
2	40	6	3.58	21.5	1.5	29	581	21	1938	29	581	20	1840	3	455	3	269	1.23	1.08	2.90	1.53	1.75	1.00	2.21	2.14	1.00	11.53	12731831	28112883
2	40	7	3.07	21.5	1.5	27	536	21	1896	27	536	20	1801	3	526	3	305	1.23	1.08	2.97	1.52	1.80	1.00	2.43	2.18	1.00	12.87	12504944	27760909
2	40	8	2.69	21.5	1.5	25	500	20	1858	25	500	19	1767	3	408	2	341	1.24	1.08	2.98	1.52	1.85	1.00	2.64	2.22	1.00	14.10	12295636	27410125
2	40	9	2.39	21.5	1.5	23	469	20	1827	23	469	19	1738	3	455	2	376	1.25	1.08	2.95	1.52	1.89	1.00	2.84	2.18	1.00	15.35	12147977	27182059
2	40	10	2.15	21.5	1.5	22	442	20	1800	22	442	19	1714	3	500	2	411	1.25	1.08	2.68	1.51	1.93	1.00	3.03	1.99	1.00	16.56	12013689	26978555
2	40	7	3.14	22	0	27	541	21	1899	27	541	20	1803	3	513	3	299	1.23	1.08	1.77	1.52	1.80	1.00	2.39	1.30	1.00	12.62	12437763	27630077
2	40	8	2.75	22	0	25	504	20	1863	25	504	19	1770	3	588	3	334	1.24	1.08	1.79	1.51	1.85	1.00	2.60	1.32	1.00	13.87	12245009	27329673
2	40	9	2.44	22	0	24	473	20	1832	24	473	19	1742	3	444	2	369	1.25	1.08	1.83	1.51	1.89	1.00	2.80	1.34	1.00	15.12	12121393	27142210
2	40	10	2.2	22	0	22	446	20	1804	22	446	19	1717	3	488	2	402	1.25	1.08	1.84	1.50	1.93	1.00	2.99	1.36	1.00	16.26	11948280	26865841
2	40	11	2	22	0	21	422	20	1781	21	422	19	1697	3	541	2	436	1.25	1.08	1.86	1.50	1.96	1.00	3.17	1.38	1.00	17.43	11836410	26709204
2	40	12	1.83	22	0	20	402	19	1759	20	402	18	1676	3	588	2	460	1.26	1.08	1.87	1.50	1.98	1.00	3.29	1.40	1.00	18.58	11778715	26616973
2	40	7	3.57	25	1.5	29	579	21	1936	29	579	20	1837	3	455	3	269	1.23	1.08	2.90	1.52	1.75	1.00	2.22	2.13	1.00	11.54	12668457	28003816
2	40	8	3.125	25	1.5	27	540	21	1899	27	540	20	1803	3	513	3	300	1.23	1.08	2.96	1.52	1.80	1.00	2.41	2.17	1.00	12.68	12464929	27683952
2	40	9	2.78	25	1.5	25	508	20	1865	25	508	19	1773	3	588	3	331	1.24	1.08	2.98	1.51	1.84	1.00	2.58	2.20	1.00	13.75	12279030	27369959
2	40	10	2.5	25	1.5	24	479	20	1839	24	479	19	1749	3	435	2	362	1.24	1.08	3.01	1.51	1.88	1.00	2.77	2.24	1.00	14.87	12152898	27198490
2	40	11	2.27	25	1.5	23	455	20	1813	23	455	19	1726	3	476	2	392	1.25	1.08	2.79	1.51	1.91	1.00	2.94	2.08	1.00	15.92	12044941	27021327
2	40	12	1.83	25	1.5	24	485	20	1844	24	485	19	1768	3	588	2	523	1.25	1.07	1.96	1.98	1.64	1.00	3.55	1.77	1.00	20.42	17002630	34867212
2	44	3	1.5	4.5	0	20	401	21	1920	20	401	20	1821	3	400	1	582	1.27	1.09	2.04	1.66	1.99	1.00	3.84	1.44	1.00	27.01	18383815	38523639
2	44	3	2	6	0.75	22	449	22	1967	22	449	20	1859	3	595	2	470	1.26	1.10	1.93	1.55	2.03	1.00	3.64	1.31	1.00	21.26	16828736	36186016

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
2	44	4	1.5	6	0.75	20	395	21	1913	20	395	20	1816	3	400	1	577	1.27	1.09	2.01	1.63	1.99	1.00	3.87	1.46	1.00	26.81	17890349	37769625
2	44	3	2.33	7	1.25	25	494	22	2011	25	494	21	1899	3	512	2	426	1.25	1.09	3.07	1.57	1.96	1.00	3.29	2.13	1.00	19.07	17279336	36899598
2	44	4	1.75	7	1.25	21	417	21	1936	21	417	20	1833	3	344	1	526	1.27	1.09	2.68	1.55	2.03	1.00	3.79	1.88	1.00	23.54	16863981	36239784
2	44	3	2.67	8	0	26	519	22	2036	26	519	21	1919	3	449	2	373	1.25	1.09	2.10	1.51	1.97	1.00	3.00	1.42	1.00	17.06	16617204	35856292
2	44	4	2	8	0	22	440	22	1957	22	440	20	1849	3	595	2	477	1.26	1.10	2.14	1.50	2.05	1.00	3.60	1.48	1.00	21.04	16194177	35178982
2	44	5	1.6	8	0	20	398	21	1916	20	398	20	1817	3	373	1	558	1.27	1.09	2.24	1.57	2.01	1.00	3.85	1.60	1.00	25.21	16989426	36412054
2	44	3	3.17	9.5	0.75	28	558	23	2076	28	558	21	1953	3	564	3	319	1.24	1.10	2.54	1.47	1.95	1.00	2.69	1.70	1.00	14.94	16235595	35248458
2	44	4	2.375	9.5	0.75	24	475	22	1995	24	475	21	1882	3	500	2	406	1.25	1.10	2.63	1.46	2.04	1.00	3.23	1.77	1.00	18.42	15787214	34552522
2	44	5	1.9	9.5	0.75	21	417	21	1937	21	417	20	1832	3	314	1	485	1.26	1.10	2.67	1.46	2.10	1.00	3.70	1.84	1.00	21.70	15555571	34202766
2	44	6	1.583	9.5	0.75	20	394	21	1913	20	394	20	1815	3	379	1	561	1.27	1.09	2.40	1.56	2.01	1.00	3.87	1.74	1.00	25.40	16905297	36292382
2	44	3	3.67	11	1.5	31	617	23	2136	31	617	22	2011	3	489	3	287	1.24	1.09	3.23	1.53	1.83	1.00	2.50	2.24	1.00	13.67	17373351	37133620
2	44	4	2.75	11	1.5	27	530	23	2047	27	530	21	1931	3	431	2	365	1.25	1.09	3.33	1.52	1.92	1.00	2.99	2.33	1.00	16.75	16829334	36200364
2	44	5	2.2	11	1.5	23	467	22	1987	23	467	21	1878	3	537	2	441	1.26	1.09	3.42	1.52	1.99	1.00	3.44	2.41	1.00	19.72	16504981	35700695
2	44	6	1.833	11	1.5	21	419	21	1938	21	419	20	1835	3	328	1	504	1.26	1.09	3.47	1.51	2.03	1.00	3.82	2.47	1.00	22.53	16240066	35272686
2	44	7	1.57	11	1.5	19	381	21	1898	19	381	20	1800	3	379	1	554	1.27	1.09	3.52	1.50	2.06	1.00	4.12	2.54	1.00	25.21	16064577	34975460
2	44	4	2.875	11.5	1.75	27	538	23	2058	27	538	21	1940	3	415	2	350	1.25	1.09	3.51	1.51	1.93	1.00	2.90	2.42	1.00	16.19	16654854	35947746
2	44	5	2.3	11.5	1.75	24	475	22	1995	24	475	21	1884	3	512	2	423	1.26	1.09	3.60	1.50	1.99	1.00	3.34	2.51	1.00	19.02	16302015	35378324
2	44	6	1.917	11.5	1.75	21	427	21	1945	21	427	20	1841	3	314	1	488	1.26	1.09	3.64	1.49	2.04	1.00	3.72	2.58	1.00	21.70	16034179	34938925
2	44	7	1.643	11.5	1.75	19	388	21	1906	19	388	20	1807	3	367	1	536	1.27	1.09	3.71	1.48	2.07	1.00	4.02	2.64	1.00	24.30	15848070	34649854
2	44	4	3.25	13	2.5	28	565	23	2083	28	565	22	1960	3	550	3	312	1.24	1.10	3.39	1.47	1.92	1.00	2.67	2.32	1.00	14.67	16250665	35273035
2	44	5	2.6	13	2.5	25	500	22	2019	25	500	21	1903	3	458	2	376	1.25	1.10	3.48	1.46	1.99	1.00	3.07	2.40	1.00	17.23	15896222	34712292
2	44	6	2.167	13	2.5	23	450	22	1970	23	450	20	1861	3	550	2	439	1.26	1.10	3.53	1.46	2.04	1.00	3.45	2.47	1.00	19.68	15639936	34324502
2	44	7	1.857	13	2.5	21	410	21	1929	21	410	20	1826	3	324	1	491	1.26	1.10	3.59	1.45	2.08	1.00	3.77	2.53	1.00	22.03	15432738	34001769
2	44	4	3.625	14.5	3.25	30	609	23	2127	30	609	22	2002	3	489	3	288	1.24	1.09	3.43	1.52	1.83	1.00	2.53	2.39	1.00	13.71	17076883	36635706
2	44	5	2.9	14.5	3.25	27	541	23	2060	27	541	21	1942	3	415	2	347	1.25	1.09	3.51	1.51	1.91	1.00	2.90	2.46	1.00	16.08	16677273	35975193
2	44	6	2.417	14.5	3.25	24	489	22	2008	24	489	21	1896	3	489	2	405	1.25	1.09	3.56	1.50	1.96	1.00	3.25	2.52	1.00	18.33	16377075	35488258
2	44	7	2.07	14.5	3.25	22	447	22	1967	22	447	20	1860	3	564	2	462	1.26	1.09	3.62	1.50	2.00	1.00	3.59	2.58	1.00	20.54	16173022	35175129
2	44	4	2.875	11.5	0	27	538	23	2058	27	538	21	1940	3	415	2	350	1.25	1.09	2.07	1.51	1.93	1.00	2.90	1.43	1.00	16.19	16654854	35947746
2	44	5	2.3	11.5	0	24	475	22	1995	24	475	21	1884	3	512	2	423	1.26	1.09	2.12	1.50	1.99	1.00	3.34	1.48	1.00	19.02	16302015	35378324
2	44	6	1.917	11.5	0	21	427	21	1945	21	427	20	1841	3	314	1	488	1.26	1.09	2.15	1.49	2.04	1.00	3.72	1.52	1.00	21.70	16034179	34938925
2	44	7	1.643	11.5	0	19	388	21	1906	19	388	20	1807	3	367	1	536	1.27	1.09	2.19	1.48	2.07	1.00	4.02	1.56	1.00	24.30	15848070	34649854
2	44	4	3.25	13	0.75	28	565	23	2083	28	565	22	1960	3	550	3	312	1.24	1.10	2.47	1.47	1.92	1.00	2.67	1.69	1.00	14.67	16250665	35273035
2	44	5	2.6	13	0.75	25	500	22	2019	25	500	21	1903	3	458	2	376	1.25	1.10	2.54	1.46	1.99	1.00	3.07	1.75	1.00	17.23	15896222	34712292
2	44	6	2.167	13	0.75	23	450	22	1970	23	450	20	1861	3	550	2	439	1.26	1.10	2.58	1.46	2.04	1.00	3.45	1.80	1.00	19.68	15639936	34324502
2	44	7	1.857	13	0.75	21	410	21	1929	21	410	20	1826	3	324	1	491	1.26	1.10	2.62	1.45	2.08	1.00	3.77	1.84	1.00	22.03	15432738	34001769
2	44	4	3.625	14.5	1.5	30	609	23	2127	30	609	22	2002	3	489	3	288	1.24	1.09	3.23	1.52	1.83	1.00	2.53	2.25	1.00	13.71	17076883	36635706
2	44	5	2.9	14.5	1.5	27	541	23	2060	27	541	21	1942	3	415	2	347	1.25	1.09	3.31	1.51	1.91	1.00	2.90	2.31	1.00	16.08	16677273	35975193
2	44	6	2.417	14.5	1.5	24	489	22	2008	24	489	21	1896	3	489	2	405	1.25	1.09	3.35	1.50	1.96	1.00	3.25	2.37	1.00	18.33	16377075	35488258
2	44	7	2.07	14.5	1.5	22	447	22	1967	22	447	20	1860	3	564	2	462	1.26	1.09	2.92	1.50	2.00	1.00	3.59	2.08	1.00	20.54	16173022	35175129
2	44	5	3	15	0	27	548	23	2066	27	548	21	1947	3	595	3	336	1.25	1.09	2.03	1.50	1.91	1.00	2.83	1.41	1.00	15.64	16528851	35726552
2	44	6	2.5	15	0	25	496	22	2013	25	496	21	1900	3	478	2	392	1.25	1.09	2.06	1.49	1.96	1.00	3.17	1.45	1.00	17.81	16231315	35235301
2	44	7	2.14	15	0	23	454	22	1971	23	454	20	1863	3	564	2	448	1.26	1.09	2.09	1.49	2.00	1.00	3.50	1.48	1.00	19.95	16029598	34917018
2	44	8	1.875	15	0	21	419	21	1936	21	419	20	1833	3	319	1	492	1.26	1.09	2.13	1.48	2.04	1.00	3.77	1.52	1.00	21.97	15826005	34600453
2	44	9	1.67	15	0	20	395	21	1915	20	395	20	1816	3	361	1	533	1.27	1.09	2.16	1.50	2.03	1.00	3.86	1.57	1.00	24.13	16118002	35090785
2	44	5	3.3	16.5	0.75	28	567	23	2087	28	567	22	1964	3	537	3	307	1.24	1.09	2.44	1.46	1.91	1.00	2.66	1.69	1.00	14.50	16163352	35146861
2	44	6	2.75	16.5	0.75	26	514	22	2032	26	514	21	1916	3	431	2	358	1.25	1.10	2.51	1.45	1.97	1.00	2.97	1.73	1.00	16.50	15847253	34619835
2	44	7	2.357	16.5	0.75	24	471	22	1990	24	471	21	1878	3	512	2	408	1.26	1.10	2.55	1.45	2.02	1.00	3.28	1.77	1.00	18.46	15633391	34296095
2	44	8	2.06	16.5	0.75	22	436	21	1953	22	436	20	1846	3	579	2	457	1.26	1.10	2.56	1.45	2.05	1.00	3.57	1.81	1.00	20.35	15464489	34020036
2	44	9	1.83	16.5	0.75	20	406	21	1925	20	406	20	1822	3	328	1	495	1.27	1.10	2.59	1.45	2.08	1.00	3.79	1.82	1.00	22.25	15393235	33939521
2	44	5	3.6	18	1.5	30	604	23	2122	30	604	22	1998	3	500	3	289	1.24	1.09	3.20	1.50	1.84	1.00	2.54	2.23	1.00	13.75	16893299	36333371
2	44	6	3	18	1.5	27	548	23	2068	27	548	21	1950	3	595	3	337	1.25	1.09	3.25	1.50	1.90	1.00	2.85	2.29	1.00	15.67	16571382	35813820
2	44	7	2.57	18	1.5	25	504	22	2022	25	504	21	1909	3	468	2	383	1.25	1.09	3.30	1.49	1.94	1.00	3.13	2.34	1.00	17.48	16312633	35375207
2	44	8	2.25	18	1.5	23	467	22	1986	23	467	21	1877	3	537	2	429	1.26	1.09	3.12	1.49	1.98	1.00	3.41	2.21	1.00	19.26	16115701	35071996
2	44	9	2	18	1.5	22	436	21	1954	22	436	20	1848	3	595	2	474	1.26	1.09	2.79	1.48	2.01	1.00	3.67	2.00	1.00	20.98	15951465	34805695
2	44	6	3.08	18.5	0	28	554	23	2073	28	554	21	1953	3	579	3	328	1.24	1.09	2.00	1.49	1.90	1.00	2.80	1.40	1.00	15.33	16484811	35664537
2	44	7	2.64	18.5	0	25	509	22	2029	25	509	21	1914	3	449	2	374	1.25	1.09	2.03	1.48	1.95	1.00	3.08	1.43	1.00	17.14	16234808	35268231
2	44	8	2.32	18.5	0	24	473	22	1991	24	473	21	1881	3	512	2	417	1.26	1.09	2.06	1.48	1.98	1.00	3.34	1.46	1.00	18.78	15988345	34857580
2	44	9	2.06	18.5	0	22	441	22	1960	22	441	20	1854	3	579	2	461	1.26	1.09	2.08	1.47	2.01	1.00	3.60	1.49	1.00	20.49	15832967	34626301
2	44	10	1.85	18.5	0	21	413	21	1933	21	413	20	1831	3	324	1	495	1.27	1.09	2.10	1.47	2.04	1.00	3.81	1.51	1.00	22.19	15708756	34446890
2	44	6	3.58	21.5	1.5	30	601	23	2118	30	601	22	1994	3	500	3	290	1.24	1.09	3.13	1.50	1.84	1.00	2.55	2.22	1.00	13.77	16786719	36148999
2	44	7	3.07	21.5	1.5	28	554	23	2071	28	554	21	1952	3	579	3	329	1.24	1.09	3.19	1.49	1.89	1.00	2.81	2.27	1.00	15.35	16496289	35665195
2	44	8	2.69	21.5	1.5	26	515	22	2033	26	515	21	1919	3	449	2	368	1.25	1.09	3.25	1.49	1.93	1.00	3.05	2.31	1.00	16.89	16266167	35301248
2	44	9	2.39	21.5	1.5	24	482	22	2000	24	482	21	1889	3	500	2	407	1.26	1.09	3.26	1.48	1.97	1.00	3.29	2.32	1.00	18.39	16087370	35014977
2	44	10	2.15	21.5	1.5	23	453	22	1972	23	453	20	1865	3	550	2	445	1.26	1.09	2.96	1.48	1.99	1.00	3.52	2.12	1.00	19.89	15938480	34792898
2	44	7	3.14	22	0	28	558	23	2078	28	558	22	1958	3	564	3	323	1.24	1.09	1.96	1.48	1.89	1.00	2.77	1.39	1.00	15.11	16432489	35588425
2	44	8	2.75	22	0	26	519	22	2039	26	519	21	1923	3	431	2	360	1.25	1.09	2.00	1.48	1.93	1.00	3.01	1.42	1.00	16.61	16197911	35207599
2	44	9	2.44	22	0	24	486	22	2006	24	486	21	1894	3	489	2	399	1.25	1.09	2.01	1.48	1.97	1.00	3.24	1.44	1.00	18.12	16053479	34978867
2	44	10	2.2	22	0	23	458	22	1975	23	458	21	1867	3	537	2	435	1.26	1.09	2.05	1.47	2.00	1.00	3.45	1.47	1.00	19.48	15848330	34626964
2	44	11	2	22	0	22	432	21	1952	22	432	20	1847	3	595	2	472	1.26	1.09	2.07	1.47	2.02	1.00	3.68	1.49	1.00	20.94	15734472	34481967
2	44	12	1.83	22	0	21	410	21	1930	21	410	20	1828	3	328	1	498	1.27	1.09	2.08	1.47	2.04	1.00	3.83	1.51	1.00	22.37	15680178	34402591
2	44	7	3.57	25	1.5	30	598	23	2117	30	598	22	1993	3	500	3	290	1.24	1.09	3.12	1.49	1.84	1.00	2.57	2.22	1.00	13.80	16697823	36021080
2	44	8	3.125	25	1.5	28	557	23	2077	28	557	22	1958	3	564	3	324	1.24	1.09	3.18	1.49	1.89	1.00	2.79	2.26	1.00	15.17	16450318	35617484
2	44	9	2.78	25	1.5	26	523	22	2042	26	523	21	1926	3	431	2	357	1.25	1.09	3.20	1.48	1.92	1.00	2.99	2.29	1.00	16.48	16249071	35281049
2	44	10	2.5	25	1.5	25	493	22	2012	25	493	21	1900	3	478	2	391	1.25	1.09	3.27	1.48	1.95	1.00	3.20	2.33	1.00	17.79	16084763	35018631

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
2	44	11	2.27	25	1.5	23	467	22	1986	23	467	21	1877	3	524	2	424	1.26	1.09	3.09	1.48	1.98	1.00	3.40	2.22	1.00	19.09	15973712	34844937
2	44	12	1.83	25	1.5	25	498	22	2015	25	498	21	1914	3	328	1	568	1.26	1.08	2.17	1.92	1.69	1.00	4.08	1.83	1.00	24.38	22348433	44505971
2	48	3	1.5	4.5	0	20	408	23	2087	20	408	22	1967	2	436	1	419	1.27	1.11	2.24	1.62	2.04	1.00	4.37	1.54	1.00	31.91	23903665	48573740
2	48	3	2	6	0.75	23	459	23	2137	23	459	22	2006	3	329	1	504	1.27	1.11	2.12	1.51	2.08	1.00	4.13	1.41	1.00	25.10	21840444	45653374
2	48	4	1.5	6	0.75	20	401	23	2081	20	401	22	1962	2	436	1	414	1.28	1.11	2.22	1.59	2.03	1.00	4.41	1.57	1.00	31.73	23280236	47678419
2	48	3	2.33	7	1.25	25	507	24	2184	25	507	22	2046	3	558	2	457	1.26	1.11	3.32	1.53	2.02	1.00	3.73	2.25	1.00	22.50	22405139	46554961
2	48	4	1.75	7	1.25	21	425	23	2105	21	425	22	1980	3	375	1	566	1.27	1.11	2.94	1.52	2.08	1.00	4.30	2.01	1.00	27.82	21940219	45776709
2	48	3	2.67	8	0	27	533	24	2212	27	533	23	2069	3	490	2	400	1.26	1.11	2.30	1.48	2.04	1.00	3.41	1.52	1.00	20.14	21542609	45293595
2	48	4	2	8	0	22	449	23	2129	22	449	22	1999	3	329	1	512	1.27	1.11	2.37	1.47	2.10	1.00	4.09	1.59	1.00	24.90	21071874	44508372
2	48	5	1.6	8	0	20	405	23	2082	20	405	22	1961	2	407	1	401	1.28	1.11	2.47	1.53	2.06	1.00	4.37	1.72	1.00	29.77	22081184	45911821
2	48	3	3.17	9.5	0.75	29	575	25	2252	29	575	23	2102	3	414	2	341	1.25	1.11	2.78	1.44	2.02	1.00	3.05	1.81	1.00	17.58	20994268	44449837
2	48	4	2.375	9.5	0.75	24	488	24	2165	24	488	22	2027	3	545	2	435	1.26	1.11	2.85	1.43	2.10	1.00	3.65	1.90	1.00	21.69	20487881	43607972
2	48	5	1.9	9.5	0.75	21	426	23	2105	21	426	22	1977	3	343	1	521	1.27	1.11	2.93	1.43	2.15	1.00	4.19	1.97	1.00	25.63	20259230	43245835
2	48	6	1.583	9.5	0.75	20	401	23	2078	20	401	22	1958	2	414	1	403	1.28	1.11	2.63	1.52	2.06	1.00	4.40	1.86	1.00	29.98	21965189	45735063
2	48	3	3.67	11	1.5	32	637	25	2315	32	637	24	2159	3	533	3	306	1.25	1.11	3.49	1.50	1.91	1.00	2.83	2.35	1.00	16.05	22391384	46718298
2	48	4	2.75	11	1.5	27	545	24	2222	27	545	23	2079	3	471	2	391	1.26	1.11	3.59	1.49	1.99	1.00	3.39	2.44	1.00	19.73	21778931	45647503
2	48	5	2.2	11	1.5	24	479	24	2156	24	479	22	2022	3	585	2	473	1.27	1.11	3.66	1.48	2.04	1.00	3.90	2.53	1.00	23.22	21384721	44975991
2	48	6	1.833	11	1.5	21	428	23	2105	21	428	22	1979	3	358	1	542	1.27	1.11	3.75	1.48	2.08	1.00	4.33	2.60	1.00	26.58	21110798	44510367
2	48	7	1.57	11	1.5	19	387	23	2064	19	387	21	1945	3	414	1	596	1.28	1.11	3.80	1.47	2.11	1.00	4.68	2.67	1.00	29.82	20937028	44201121
2	48	4	2.875	11.5	1.75	28	554	25	2232	28	554	23	2087	3	453	2	374	1.26	1.11	3.76	1.48	1.99	1.00	3.29	2.53	1.00	19.04	21533667	45288125
2	48	5	2.3	11.5	1.75	24	487	24	2166	24	487	22	2031	3	558	2	453	1.26	1.11	3.84	1.47	2.05	1.00	3.79	2.62	1.00	22.42	21132059	44621693
2	48	6	1.917	11.5	1.75	22	436	23	2114	22	436	22	1987	3	343	1	524	1.27	1.11	3.93	1.46	2.09	1.00	4.22	2.70	1.00	25.62	20849665	44136407
2	48	7	1.643	11.5	1.75	20	394	23	2074	20	394	21	1953	3	400	1	576	1.28	1.11	3.99	1.45	2.12	1.00	4.57	2.77	1.00	28.77	20667436	43846437
2	48	4	3.25	13	2.5	29	582	25	2260	29	582	23	2109	3	407	2	333	1.25	1.11	3.65	1.44	2.00	1.00	3.03	2.43	1.00	17.27	21004547	44481359
2	48	5	2.6	13	2.5	26	513	24	2193	26	513	23	2052	3	500	2	403	1.26	1.11	3.72	1.43	2.06	1.00	3.49	2.51	1.00	20.33	20602831	43833068
2	48	6	2.167	13	2.5	23	461	24	2139	23	461	22	2006	3	304	1	471	1.27	1.11	3.81	1.43	2.10	1.00	3.91	2.58	1.00	23.20	20307519	43327357
2	48	7	1.857	13	2.5	21	418	23	2098	21	418	22	1972	3	353	1	528	1.27	1.11	3.87	1.42	2.14	1.00	4.28	2.65	1.00	26.05	20115306	43034044
2	48	4	3.625	14.5	3.25	31	628	25	2306	31	628	24	2152	3	533	3	308	1.25	1.11	3.65	1.48	1.92	1.00	2.86	2.49	1.00	16.13	22007368	46105327
2	48	5	2.9	14.5	3.25	28	556	25	2236	28	556	23	2091	3	453	2	372	1.26	1.11	3.73	1.48	1.98	1.00	3.29	2.57	1.00	18.95	21551521	45339976
2	48	6	2.417	14.5	3.25	25	502	24	2179	25	502	22	2042	3	533	2	434	1.26	1.11	3.81	1.47	2.02	1.00	3.69	2.64	1.00	21.59	21204865	44722833
2	48	7	2.07	14.5	3.25	23	457	23	2137	23	457	22	2006	3	316	1	496	1.27	1.11	3.87	1.46	2.06	1.00	4.07	2.70	1.00	24.24	20993239	44396385
2	48	4	2.875	11.5	0	28	554	25	2232	28	554	23	2087	3	453	2	374	1.26	1.11	2.28	1.48	1.99	1.00	3.29	1.54	1.00	19.04	21533667	45288125
2	48	5	2.3	11.5	0	24	487	24	2166	24	487	22	2031	3	558	2	453	1.26	1.11	2.33	1.47	2.05	1.00	3.79	1.59	1.00	22.42	21132059	44621693
2	48	6	1.917	11.5	0	22	436	23	2114	22	436	22	1987	3	343	1	524	1.27	1.11	2.39	1.46	2.09	1.00	4.22	1.64	1.00	25.62	20849665	44136407
2	48	7	1.643	11.5	0	20	394	23	2074	20	394	21	1953	3	400	1	576	1.28	1.11	2.42	1.45	2.12	1.00	4.57	1.68	1.00	28.77	20667436	43846437
2	48	4	3.25	13	0.75	29	582	25	2260	29	582	23	2109	3	407	2	333	1.25	1.11	2.71	1.44	2.00	1.00	3.03	1.81	1.00	17.27	21004547	44481359
2	48	5	2.6	13	0.75	26	513	24	2193	26	513	23	2052	3	500	2	403	1.26	1.11	2.77	1.43	2.06	1.00	3.49	1.87	1.00	20.33	20602831	43833068
2	48	6	2.167	13	0.75	23	461	24	2139	23	461	22	2006	3	304	1	471	1.27	1.11	2.84	1.43	2.10	1.00	3.91	1.92	1.00	23.20	20307519	43327357
2	48	7	1.857	13	0.75	21	418	23	2098	21	418	22	1972	3	353	1	528	1.27	1.11	2.88	1.42	2.14	1.00	4.28	1.97	1.00	26.05	20115306	43034044
2	48	4	3.625	14.5	1.5	31	628	25	2306	31	628	24	2152	3	533	3	308	1.25	1.11	3.45	1.48	1.92	1.00	2.86	2.35	1.00	16.13	22007368	46105327
2	48	5	2.9	14.5	1.5	28	556	25	2236	28	556	23	2091	3	453	2	372	1.26	1.11	3.53	1.48	1.98	1.00	3.29	2.43	1.00	18.95	21551521	45339976
2	48	6	2.417	14.5	1.5	25	502	24	2179	25	502	22	2042	3	533	2	434	1.26	1.11	3.61	1.47	2.02	1.00	3.69	2.50	1.00	21.59	21204865	44722833
2	48	7	2.07	14.5	1.5	23	457	23	2137	23	457	22	2006	3	316	1	496	1.27	1.11	3.19	1.46	2.06	1.00	4.07	2.22	1.00	24.24	20993239	44396385
2	48	5	3	15	0	28	564	25	2241	28	564	23	2095	3	436	2	360	1.26	1.11	2.22	1.46	1.98	1.00	3.21	1.52	1.00	18.40	21352628	45005384
2	48	6	2.5	15	0	25	508	24	2188	25	508	23	2049	3	522	2	420	1.26	1.11	2.27	1.46	2.03	1.00	3.61	1.56	1.00	21.04	21038585	44505974
2	48	7	2.14	15	0	23	464	24	2142	23	464	22	2010	3	308	1	480	1.27	1.11	2.30	1.45	2.06	1.00	3.98	1.60	1.00	23.57	20804134	44091744
2	48	8	1.875	15	0	21	427	23	2105	21	427	22	1979	3	348	1	529	1.27	1.11	2.34	1.45	2.09	1.00	4.29	1.63	1.00	25.98	20585849	43731290
2	48	9	1.67	15	0	20	402	23	2081	20	402	22	1960	3	393	1	573	1.28	1.11	2.39	1.47	2.08	1.00	4.39	1.69	1.00	28.50	20963968	44284925
2	48	5	3.3	16.5	0.75	29	584	25	2264	29	584	23	2113	3	585	3	328	1.25	1.11	2.69	1.43	1.99	1.00	3.01	1.80	1.00	17.07	20878809	44304791
2	48	6	2.75	16.5	0.75	26	528	24	2207	26	528	23	2064	3	471	2	383	1.26	1.11	2.75	1.43	2.04	1.00	3.38	1.85	1.00	19.46	20542857	43735506
2	48	7	2.357	16.5	0.75	24	483	24	2160	24	483	22	2024	3	558	2	437	1.26	1.11	2.78	1.42	2.08	1.00	3.72	1.89	1.00	21.75	20262084	43255792
2	48	8	2.06	16.5	0.75	22	445	23	2124	22	445	22	1993	3	320	1	490	1.27	1.11	2.83	1.42	2.11	1.00	4.06	1.94	1.00	24.07	20118036	43040127
2	48	9	1.83	16.5	0.75	21	414	23	2092	21	414	22	1967	3	358	1	532	1.27	1.11	2.85	1.42	2.13	1.00	4.30	1.96	1.00	26.28	20036091	42887407
2	48	5	3.6	18	1.5	31	623	25	2301	31	623	24	2146	3	545	3	309	1.25	1.11	3.43	1.47	1.92	1.00	2.88	2.34	1.00	16.16	21791472	45758168
2	48	6	3	18	1.5	28	564	25	2243	28	564	23	2097	3	436	2	360	1.26	1.11	3.51	1.47	1.97	1.00	3.23	2.40	1.00	18.43	21400784	45101077
2	48	7	2.57	18	1.5	26	517	24	2196	26	517	23	2057	3	511	2	411	1.26	1.11	3.55	1.46	2.01	1.00	3.56	2.45	1.00	20.63	21126537	44638665
2	48	8	2.25	18	1.5	24	478	24	2157	24	478	22	2024	3	585	2	460	1.27	1.11	3.41	1.46	2.04	1.00	3.87	2.37	1.00	22.73	20889898	44245109
2	48	9	2	18	1.5	22	445	23	2124	22	445	22	1995	3	329	1	509	1.27	1.11	3.08	1.45	2.07	1.00	4.17	2.15	1.00	24.79	20721577	43961960
2	48	6	3.08	18.5	0	29	570	25	2249	29	570	23	2102	3	421	2	351	1.26	1.11	2.21	1.46	1.97	1.00	3.17	1.50	1.00	18.05	21286252	44926766
2	48	7	2.64	18.5	0	26	523	24	2201	26	523	23	2061	3	490	2	400	1.26	1.11	2.24	1.45	2.01	1.00	3.49	1.54	1.00	20.17	20992921	44424817
2	48	8	2.32	18.5	0	24	485	24	2162	24	485	22	2027	3	558	2	446	1.27	1.11	2.27	1.45	2.04	1.00	3.79	1.57	1.00	22.14	20739891	43995102
2	48	9	2.06	18.5	0	23	451	23	2129	23	451	22	1999	3	320	1	494	1.27	1.11	2.31	1.44	2.07	1.00	4.08	1.60	1.00	24.18	20560313	43708894
2	48	10	1.85	18.5	0	21	422	23	2099	21	422	22	1973	3	353	1	532	1.27	1.11	2.32	1.44	2.10	1.00	4.32	1.63	1.00	26.17	20425829	43471912
2	48	6	3.58	21.5	1.5	31	619	25	2298	31	619	24	2145	3	545	3	309	1.25	1.11	3.41	1.47	1.92	1.00	2.90	2.33	1.00	16.21	21647266	45537077
2	48	7	3.07	21.5	1.5	29	570	25	2247	29	570	23	2100	3	421	2	352	1.26	1.11	3.45	1.46	1.96	1.00	3.18	2.38	1.00	18.07	21304387	44933427
2	48	8	2.69	21.5	1.5	26	529	24	2207	26	529	23	2066	3	490	2	394	1.26	1.11	3.50	1.46	2.00	1.00	3.46	2.43	1.00	19.90	21050647	44517286
2	48	9	2.39	21.5	1.5	25	494	24	2172	25	494	22	2036	3	545	2	436	1.26	1.11	3.56	1.45	2.03	1.00	3.73	2.47	1.00	21.69	20845884	44175908
2	48	10	2.15	21.5	1.5	23	464	24	2141	23	464	22	2009	3	304	1	477	1.27	1.11	3.23	1.45	2.05	1.00	3.98	2.27	1.00	23.43	20675614	43882229
2	48	7	3.14	22	0	29	575	25	2253	29	575	23	2105	3	421	2	345	1.26	1.11	2.18	1.45	1.97	1.00	3.14	1.49	1.00	17.76	21220192	44816137
2	48	8	2.75	22	0	27	534	24	2211	27	534	23	2068	3	471	2	386	1.26	1.11	2.21	1.45	2.00	1.00	3.41	1.52	1.00	19.53	20939101	44336064
2	48	9	2.44	22	0	25	499	24	2176	25	499	22	2039	3	533	2	427	1.26	1.11	2.24	1.45	2.03	1.00	3.67	1.55	1.00	21.32	20773595	44056244
2	48	10	2.2	22	0	23	468	24	2147	23	468	22	2015	3	585	2	467	1.27	1.11	2.26	1.44	2.06	1.00	3.93	1.58	1.00	23.03	20569494	43745505
2	48	11	2	22	0	22	442	23	2119	22	442	22	1990	3	329	1	506	1.27	1.11	2.30	1.44	2.08	1.00	4.17	1.60	1.00	24.67	20426987	43487731
2	48	12	1.83	22	0	21	418	23	2097	21	418	22	1972	3	358	1	535	1.27	1.11	2.31	1.44	2.09	1.00	4.34	1.62	1.00	26.41	20383505	43428971

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
2	48	7	3.57	25	1.5	31	617	25	2294	31	617	24	2141	3	545	3	309	1.25	1.11	3.39	1.46	1.92	1.00	2.90	2.32	1.00	16.21	21516551	45309002
2	48	8	3.125	25	1.5	29	574	25	2252	29	574	23	2104	3	421	2	346	1.26	1.11	3.45	1.46	1.96	1.00	3.15	2.37	1.00	17.83	21248164	44859296
2	48	9	2.78	25	1.5	27	538	24	2215	27	538	23	2072	3	471	2	382	1.26	1.11	3.46	1.45	1.99	1.00	3.39	2.41	1.00	19.39	21012338	44452945
2	48	10	2.5	25	1.5	25	506	24	2184	25	506	22	2046	3	522	2	419	1.26	1.11	3.52	1.45	2.02	1.00	3.63	2.45	1.00	20.97	20831572	44161810
2	48	11	2.27	25	1.5	24	478	24	2158	24	478	22	2024	3	571	2	455	1.27	1.11	3.38	1.45	2.04	1.00	3.86	2.37	1.00	22.54	20728982	44008382
2	48	12	1.83	25	1.5	25	509	24	2187	25	509	23	2057	2	358	1	407	1.27	1.10	2.34	1.86	1.74	1.00	4.60	1.91	1.00	28.72	28773475	55761788
3	12	3	1.5	4.5	0	26	520	12	759	26	520	12	759	3	316	3	455	5.00	4.31	1.33	9.87	5.27	3.21	2.69	3.13	1.33	6.07	3069633	6787296
3	12	3	2	6	0.75	27	546	12	787	27	546	12	787	3	240	3	368	4.73	4.09	1.26	8.68	5.12	3.07	1.49	2.76	1.26	4.72	2715599	6220299
3	12	4	1.5	6	0.75	26	510	12	750	26	510	12	750	3	316	3	447	4.87	4.18	1.31	9.45	5.12	3.09	2.68	3.10	1.31	6.00	2889260	6475219
3	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	243	2.06	1.69	1.45	3.57	2.55	1.26	1.80	2.25	1.26	3.27	835299	2481138
3	12	4	1.75	7	1.25	17	347	12	587	17	348	12	588	3	273	3	290	2.05	1.64	1.19	3.44	2.58	1.23	2.09	1.70	1.19	4.03	745925	2305811
3	12	3	2.67	8	0	29	578	12	819	29	579	12	820	3	182	3	288	4.32	3.75	1.02	7.73	4.75	2.81	1.15	2.78	1.02	3.68	2459701	5783606
3	12	4	2	8	0	27	537	12	778	27	538	12	779	3	240	3	372	4.74	4.09	1.06	8.36	5.16	3.06	2.53	3.10	1.06	4.67	2575974	5965487
3	12	5	1.6	8	0	26	510	12	749	26	510	12	749	3	300	3	432	4.84	4.15	1.09	8.94	5.15	3.08	2.66	3.39	1.09	5.62	2701328	6154588
3	12	3	3.17	9.5	0.75	22	443	12	683	22	443	12	683	3	154	3	191	2.11	1.77	1.00	3.49	2.61	1.33	1.44	1.73	1.00	2.59	870337	2533691
3	12	4	2.375	9.5	0.75	20	400	12	638	20	401	12	638	3	200	3	239	2.22	1.83	1.19	3.58	2.78	1.38	1.79	1.84	1.19	3.22	840708	2491480
3	12	5	1.9	9.5	0.75	18	362	12	600	18	362	12	600	3	250	3	278	2.21	1.79	1.13	3.49	2.82	1.36	2.08	1.84	1.13	3.79	772623	2357808
3	12	6	1.583	9.5	0.75	17	331	12	571	17	331	12	571	3	300	3	304	2.00	1.59	1.04	3.38	2.51	1.18	2.09	1.54	1.04	4.33	715080	2245269
3	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	169	1.91	1.60	1.47	3.35	2.29	1.19	1.28	2.48	1.19	2.29	853966	2482392
3	12	4	2.75	11	1.5	21	422	12	663	21	423	12	663	3	176	3	214	2.07	1.71	1.53	3.56	2.53	1.28	1.62	2.72	1.28	2.89	865779	2536469
3	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	253	2.11	1.72	1.78	3.56	2.61	1.29	1.90	2.79	1.29	3.41	820529	2453482
3	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	283	2.10	1.69	1.70	3.47	2.63	1.26	2.13	2.80	1.26	3.89	761511	2335902
3	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	305	2.08	1.65	1.90	3.38	2.64	1.24	2.31	2.80	1.24	4.35	711954	2238259
3	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	206	2.08	1.73	1.68	3.55	2.54	1.29	1.56	2.96	1.29	2.79	868304	2536946
3	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	245	2.14	1.75	1.65	3.57	2.64	1.31	1.84	3.06	1.31	3.31	832062	2476056
3	12	6	1.917	11.5	1.75	18	362	12	603	18	363	12	603	3	250	3	278	2.13	1.72	1.89	3.49	2.67	1.29	2.08	3.08	1.29	3.77	775753	2365667
3	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	299	2.11	1.69	2.12	3.41	2.68	1.27	2.26	3.08	1.27	4.21	726503	2267767
3	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	187	2.08	1.74	1.66	3.47	2.54	1.30	1.42	2.86	1.30	2.53	868179	2525722
3	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	224	2.18	1.80	1.67	3.57	2.70	1.35	1.69	3.02	1.35	3.02	858043	2523686
3	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	256	2.20	1.80	1.63	3.55	2.76	1.35	1.93	3.08	1.35	3.46	816110	2445415
3	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	281	2.19	1.77	1.87	3.47	2.77	1.33	2.12	3.08	1.33	3.85	764454	2341371
3	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	171	1.94	1.62	1.64	3.37	2.33	1.21	1.30	2.77	1.21	2.32	857702	2492785
3	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	205	2.07	1.72	1.70	3.54	2.52	1.28	1.56	2.99	1.28	2.77	869809	2540035
3	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	236	2.13	1.74	1.68	3.58	2.61	1.30	1.78	3.09	1.30	3.18	843495	2496363
3	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	265	2.13	1.73	1.95	3.53	2.64	1.29	2.00	3.11	1.29	3.57	801170	2415795
3	12	4	2.875	11.5	0	29	583	12	824	29	584	12	824	3	167	3	268	4.10	3.55	1.33	7.39	4.49	2.64	1.09	2.69	1.09	3.44	2350630	5582996
3	12	5	2.3	11.5	0	28	550	12	789	28	550	12	789	3	207	3	324	4.37	3.78	1.02	7.80	4.76	2.81	1.30	2.90	1.02	4.12	2406428	5666548
3	12	6	1.917	11.5	0	26	525	12	765	26	525	12	765	3	250	3	378	4.64	3.99	1.04	8.20	5.02	2.97	2.59	3.10	1.04	4.79	2484788	5791895
3	12	7	1.643	11.5	0	25	505	12	746	25	505	12	746	3	286	3	418	4.88	4.19	1.06	8.57	5.26	3.12	2.85	3.29	1.06	5.45	2561721	5911637
3	12	4	3.25	13	0.75	22	447	12	687	22	448	12	687	3	150	3	188	2.09	1.75	1.00	3.49	2.55	1.31	1.42	1.72	1.00	2.54	875244	2542469
3	12	5	2.6	13	0.75	21	414	12	654	21	414	12	654	3	188	3	224	2.18	1.80	1.00	3.57	2.70	1.35	1.69	1.81	1.00	3.02	858043	2523686
3	12	6	2.167	13	0.75	19	388	12	628	19	388	12	628	3	222	3	258	2.25	1.84	1.00	3.64	2.81	1.38	1.94	1.89	1.00	3.48	842442	2504896
3	12	7	1.857	13	0.75	18	358	12	596	18	358	12	596	3	261	3	281	2.19	1.77	1.12	3.47	2.77	1.33	2.12	1.85	1.12	3.85	764454	2341371
3	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	171	1.94	1.62	1.49	3.37	2.33	1.21	1.30	2.52	1.21	2.32	857702	2492785
3	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	205	2.07	1.72	1.54	3.54	2.52	1.28	1.56	2.71	1.28	2.77	869809	2540035
3	12	6	2.417	14.5	1.5	20	403	12	641	20	403	12	641	3	200	3	236	2.13	1.74	1.30	3.58	2.61	1.30	1.78	2.38	1.30	3.18	843495	2496363
3	12	7	2.07	14.5	1.5	19	376	12	616	19	376	12	616	3	231	3	265	2.13	1.73	1.29	3.53	2.64	1.29	2.00	2.06	1.29	3.57	801170	2415795
3	12	5	3	15	0	29	586	12	826	29	587	12	826	3	162	3	256	4.01	3.48	1.30	7.20	4.39	2.58	1.05	2.61	1.05	3.30	2285888	5460951
3	12	6	2.5	15	0	28	557	12	798	28	558	12	799	3	194	3	299	4.23	3.65	1.32	7.51	4.62	2.71	1.21	2.77	1.21	3.83	2328176	5528392
3	12	7	2.14	15	0	27	536	12	775	27	536	12	775	3	222	3	343	4.42	3.81	1.01	7.82	4.80	2.82	2.39	2.92	1.01	4.35	2376004	5602155
3	12	8	1.875	15	0	26	518	12	758	26	519	12	758	3	250	3	380	4.63	3.98	1.03	8.12	5.01	2.95	2.62	3.08	1.03	4.85	2436072	5699185
3	12	9	1.67	15	0	25	503	12	744	25	504	12	744	3	286	3	411	4.64	3.97	1.04	8.39	4.95	2.93	2.66	3.22	1.04	5.35	2492844	5788981
3	12	5	3.3	16.5	0.75	29	571	12	868	29	571	12	868	3	146	3	239	3.80	3.30	1.25	6.66	4.26	2.45	1.01	3.16	1.01	3.16	2184241	5316807
3	12	6	2.75	16.5	0.75	21	422	12	663	21	423	12	663	3	176	3	214	2.17	1.80	1.01	3.56	2.67	1.35	1.63	1.79	1.01	2.89	865779	2536469
3	12	7	2.357	16.5	0.75	20	400	12	639	20	400	12	639	3	207	3	241	2.22	1.83	1.00	3.60	2.76	1.37	1.82	1.85	1.00	3.25	847931	2509163
3	12	8	2.06	16.5	0.75	19	381	12	622	19	382	12	622	3	231	3	269	2.28	1.86	1.00	3.67	2.84	1.40	2.03	1.91	1.00	3.62	842991	2511085
3	12	9	1.83	16.5	0.75	18	355	12	595	18	355	12	595	3	261	3	284	2.18	1.76	1.11	3.47	2.75	1.32	2.13	1.82	1.11	3.90	761704	2337708
3	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	172	1.96	1.63	1.49	3.37	2.34	1.21	1.32	2.52	1.21	2.33	857692	2493394
3	12	6	3	18	1.5	22	436	12	675	22	436	12	675	3	162	3	200	2.07	1.72	1.23	3.53	2.50	1.28	1.52	2.69	1.23	2.70	871911	2541766
3	12	7	2.57	18	1.5	21	413	12	651	21	413	12	651	3	188	3	225	2.13	1.75	1.39	3.58	2.59	1.30	1.71	2.52	1.30	3.04	856090	2519326
3	12	8	2.25	18	1.5	20	391	12	629	20	391	12	629	3	214	3	249	2.14	1.75	1.19	3.56	2.64	1.30	1.88	2.23	1.19	3.35	825313	2461716
3	12	9	2	18	1.5	19	370	12	610	19	370	12	610	3	240	3	272	2.14	1.73	1.24	3.51	2.65	1.29	2.05	1.99	1.24	3.66	789650	2392863
3	12	6	3.08	18.5	0	29	587	12	828	29	588	12	828	3	158	3	250	3.95	3.42	1.28	7.07	4.32	2.53	1.03	2.55	1.03	3.23	2244660	5383876
3	12	7	2.64	18.5	0	28	564	12	803	28	564	12	803	3	182	3	284	4.13	3.57	1.30	7.33	4.51	2.64	1.16	2.68	1.16	3.65	2278087	5436167
3	12	8	2.32	18.5	0	27	544	12	785	27	545	12	786	3	207	3	318	4.30	3.70	1.32	7.57	4.68	2.74	2.24	2.81	1.32	4.06	2317086	5501206
3	12	9	2.06	18.5	0	26	528	12	768	26	528	12	768	3	231	3	353	4.46	3.83	1.00	7.81	4.83	2.84	2.46	2.94	1.00	4.47	2355786	5561601
3	12	10	1.85	18.5	0	26	514	12	754	26	514	12	754	3	261	3	382	4.62	3.96	1.01	8.05	4.99	2.94	2.64	3.06	1.01	4.89	2402944	5637034
3	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	173	1.97	1.64	1.49	3.38	2.35	1.22	1.32	2.52	1.22	2.34	857425	2492538
3	12	7	3.07	21.5	1.5	22	439	12	678	22	439	12	678	3	158	3	196	2.07	1.72	1.22	3.51	2.49	1.27	1.50	2.67	1.22	2.65	870663	2536877
3	12	8	2.69	21.5	1.5	21	419	12	659	21	420	12	659	3	182	3	218	2.12	1.75	1.17	3.57	2.58	1.30	1.66	2.61	1.17	2.94	862887	2531433
3	12	9	2.39	21.5	1.5	20	401	12	640	20	401	12	640	3	200	3	238	2.15	1.76	1.28	3.58	2.63	1.31	1.81	2.36	1.28	3.21	842707	2496114
3	12	10	2.15	21.5	1.5	19	383	12	622	19	383	12	622	3	222	3	258	2.15	1.75	1.13	3.55	2.66	1.31	1.95	2.14	1.13	3.47	813297	2439214
3	12	7	3.14	22	0	30	588	12	829	29	589	12	830	3	154	3	245	3.91	3.39	1.27	6.99	4.28	2.50	1.01	2.52	1.01	3.17	2217972	5332968
3	12	8	2.75	22	0	28	568	12	808	28	568	12	808	3	176	3	274	4.06	3.51	1.29	7.20	4.45	2.60	1.12	2.63	1.12	3.53	2244398	5375504

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	12	9	2.44	22	0	28	550	12	790	28	551	12	790	3	200	3	304	4.20	3.62	1.30	7.43	4.58	2.68	1.24	2.73	1.24	3.89	2278209	5430875
3	12	10	2.2	22	0	27	535	12	776	27	536	12	777	3	222	3	333	4.35	3.74	1.32	7.63	4.73	2.77	2.34	2.85	1.32	4.23	2313336	5489314
3	12	11	2	22	0	26	523	12	763	26	524	12	763	3	240	3	362	4.50	3.86	1.33	7.85	4.87	2.86	2.52	2.96	1.33	4.58	2356502	5559437
3	12	12	1.83	22	0	26	511	12	751	26	511	12	751	3	261	3	383	4.60	3.94	1.00	8.02	4.96	2.92	2.64	3.03	1.00	4.92	2383377	5599716
3	12	7	3.57	25	1.5	23	458	12	698	23	458	12	698	3	136	3	173	1.97	1.65	1.19	3.38	2.36	1.22	1.33	2.53	1.19	2.35	858915	2496946
3	12	8	3.125	25	1.5	22	441	12	681	22	441	12	681	3	154	3	193	2.06	1.71	1.22	3.50	2.48	1.27	1.48	2.65	1.22	2.62	870338	2534980
3	12	9	2.78	25	1.5	21	424	12	664	21	425	12	664	3	176	3	212	2.12	1.75	1.21	3.56	2.57	1.30	1.62	2.68	1.21	2.87	866487	2536625
3	12	10	2.5	25	1.5	20	408	12	648	20	408	12	648	3	194	3	230	2.15	1.77	1.08	3.58	2.62	1.31	1.75	2.46	1.08	3.11	852762	2515287
3	12	11	2.27	25	1.5	20	392	12	632	20	392	12	632	3	214	3	248	2.15	1.76	1.21	3.57	2.65	1.31	1.88	2.25	1.21	3.34	829958	2472496
3	12	12	1.83	25	1.5	26	511	12	750	26	511	12	750	3	261	3	383	3.20	2.68	1.22	8.01	3.19	1.89	2.61	3.60	1.22	4.92	2376917	5586587
3	16	3	1.5	4.5	0	16	310	12	707	16	310	12	685	3	421	3	304	1.38	1.11	1.24	2.32	1.78	1.00	2.11	1.04	1.00	5.66	1071804	3191784
3	16	3	2	6	0.75	17	348	12	747	17	348	12	747	3	320	3	259	1.46	1.20	1.20	2.26	1.90	1.09	2.06	1.00	1.00	4.48	1093094	3194230
3	16	4	1.5	6	0.75	15	307	12	707	15	307	12	673	3	421	3	303	1.38	1.11	1.19	2.29	1.79	1.00	2.14	1.06	1.00	5.66	1055355	3159450
3	16	3	2.33	7	1.25	18	359	12	758	18	359	12	706	3	276	3	231	1.33	1.10	2.17	2.09	1.72	1.00	1.77	1.75	1.00	3.90	1019675	3007148
3	16	4	1.75	7	1.25	16	314	12	712	16	314	12	657	3	364	3	278	1.36	1.10	1.71	2.07	1.80	1.00	2.09	1.39	1.00	4.88	952244	2902581
3	16	3	2.67	8	0	19	373	12	771	19	373	12	771	3	242	3	205	1.32	1.10	1.27	2.00	1.71	1.00	1.58	1.00	1.00	3.47	984103	2904745
3	16	4	2	8	0	16	326	12	724	16	326	12	703	3	320	3	256	1.34	1.09	1.31	1.98	1.79	1.00	1.98	1.03	1.00	4.34	917919	2802237
3	16	5	1.6	8	0	15	308	12	706	15	308	12	647	3	400	3	296	1.38	1.11	1.32	2.16	1.80	1.00	2.12	1.16	1.00	5.30	991442	3005420
3	16	3	3.17	9.5	0.75	16	321	12	1004	16	322	12	947	3	205	3	204	1.30	1.08	1.72	1.87	1.78	1.00	1.55	1.30	1.00	3.80	1167585	3565021
3	16	4	2.375	9.5	0.75	17	346	12	745	17	346	12	740	3	267	3	222	1.32	1.09	1.72	1.91	1.76	1.00	1.73	1.31	1.00	3.76	906514	2748172
3	16	5	1.9	9.5	0.75	16	313	12	711	16	312	12	686	3	333	3	260	1.34	1.09	1.70	1.91	1.82	1.00	2.03	1.36	1.00	4.49	869929	2701789
3	16	6	1.583	9.5	0.75	15	307	12	704	15	307	12	644	3	400	3	298	1.38	1.11	1.50	2.17	1.79	1.00	2.13	1.33	1.00	5.34	990753	3004604
3	16	3	3.67	11	1.5	19	375	12	1004	19	376	12	925	3	178	3	182	1.31	1.10	2.68	2.04	1.68	1.00	1.34	2.05	1.00	3.28	1280664	3714337
3	16	4	2.75	11	1.5	19	382	12	782	19	382	12	753	3	235	3	202	1.32	1.10	2.67	2.05	1.69	1.00	1.57	2.07	1.00	3.41	1025405	2994749
3	16	5	2.2	11	1.5	17	345	12	744	17	344	12	702	3	296	3	240	1.34	1.10	2.59	2.03	1.74	1.00	1.86	2.13	1.00	4.06	971139	2907483
3	16	6	1.833	11	1.5	16	317	12	715	16	317	12	661	3	348	3	270	1.36	1.10	2.70	2.02	1.80	1.00	2.11	2.18	1.00	4.68	931599	2848148
3	16	7	1.57	11	1.5	15	294	12	693	15	294	12	638	3	400	3	293	1.37	1.10	2.66	2.01	1.84	1.00	2.31	2.22	1.00	5.30	901422	2808359
3	16	4	2.875	11.5	1.75	17	339	12	920	17	339	12	859	3	222	3	213	1.32	1.10	2.96	1.99	1.74	1.00	1.02	2.27	1.00	3.84	1148216	3431818
3	16	5	2.3	11.5	1.75	18	350	12	747	18	349	12	716	3	276	3	230	1.33	1.10	2.82	2.00	1.74	1.00	1.79	2.30	1.00	3.90	959589	2872407
3	16	6	1.917	11.5	1.75	16	321	12	719	16	321	12	676	3	333	3	262	1.35	1.10	2.94	1.99	1.79	1.00	2.05	2.35	1.00	4.50	920051	2814331
3	16	7	1.643	11.5	1.75	15	298	12	696	15	298	12	643	3	381	3	284	1.36	1.10	2.89	1.98	1.84	1.00	2.24	2.40	1.00	5.08	888198	2769192
3	16	4	3.25	13	2.5	17	330	12	1004	17	331	12	943	3	200	3	200	1.31	1.09	2.87	1.90	1.76	1.00	1.52	2.18	1.00	3.71	1186595	3589042
3	16	5	2.6	13	2.5	18	363	12	761	18	362	12	758	3	250	3	207	1.32	1.10	2.75	1.93	1.72	1.00	1.62	2.18	1.00	3.51	938813	2806243
3	16	6	2.167	13	2.5	17	333	12	733	17	332	12	716	3	296	3	239	1.33	1.10	2.87	1.92	1.78	1.00	1.87	2.23	1.00	4.06	900789	2751375
3	16	7	1.857	13	2.5	16	310	12	708	16	310	12	680	3	348	3	264	1.35	1.10	2.82	1.91	1.82	1.00	2.08	2.28	1.00	4.58	868434	2702398
3	16	4	3.625	14.5	3.25	19	369	12	1004	18	370	12	925	3	178	3	184	1.31	1.10	2.97	2.02	1.68	1.00	1.36	2.26	1.00	3.32	1263727	3686058
3	16	5	2.9	14.5	3.25	17	341	12	925	17	341	12	860	3	222	3	213	1.32	1.10	2.81	2.00	1.74	1.00	1.02	2.31	1.00	3.83	1162620	3465341
3	16	6	2.417	14.5	3.25	18	359	12	757	18	359	12	725	3	267	3	222	1.33	1.10	2.89	2.02	1.72	1.00	1.74	2.32	1.00	3.76	980192	2911737
3	16	7	2.07	14.5	3.25	17	334	12	733	17	333	12	691	3	308	3	250	1.35	1.10	2.85	2.01	1.76	1.00	1.96	2.37	1.00	4.25	947630	2864588
3	16	4	2.875	11.5	0	17	339	12	920	17	339	12	897	3	222	3	213	1.32	1.10	1.34	1.99	1.74	1.00	1.02	1.03	1.00	3.84	1148216	3431818
3	16	5	2.3	11.5	0	18	350	12	747	18	350	12	720	3	276	3	230	1.33	1.10	1.28	2.00	1.74	1.00	1.79	1.04	1.00	3.90	959589	2872407
3	16	6	1.917	11.5	0	16	321	12	719	16	321	12	679	3	333	3	262	1.35	1.10	1.34	1.99	1.79	1.00	2.05	1.07	1.00	4.50	920051	2814331
3	16	7	1.643	11.5	0	15	298	12	696	15	298	12	646	3	381	3	284	1.36	1.10	1.31	1.98	1.84	1.00	2.24	1.09	1.00	5.08	888198	2769192
3	16	4	3.25	13	0.75	17	330	12	1004	17	331	12	943	3	200	3	200	1.31	1.09	1.72	1.90	1.76	1.00	1.52	1.31	1.00	3.71	1186595	3589042
3	16	5	2.6	13	0.75	18	363	12	761	18	362	12	758	3	250	3	207	1.32	1.10	1.65	1.93	1.72	1.00	1.62	1.31	1.00	3.51	938813	2806243
3	16	6	2.167	13	0.75	17	333	12	733	17	332	12	716	3	296	3	239	1.33	1.10	1.72	1.92	1.78	1.00	1.87	1.34	1.00	4.06	900789	2751375
3	16	7	1.857	13	0.75	16	310	12	708	16	310	12	680	3	348	3	264	1.35	1.10	1.70	1.91	1.82	1.00	2.08	1.37	1.00	4.58	868434	2702398
3	16	4	3.625	14.5	1.5	19	369	12	1004	18	370	12	925	3	178	3	184	1.31	1.10	2.69	2.02	1.68	1.00	1.36	2.05	1.00	3.32	1263727	3686058
3	16	5	2.9	14.5	1.5	17	341	12	925	17	341	12	860	3	222	3	213	1.32	1.10	2.55	2.00	1.74	1.00	1.02	2.10	1.00	3.83	1162620	3465341
3	16	6	2.417	14.5	1.5	18	359	12	757	18	359	12	725	3	267	3	222	1.33	1.10	2.23	2.02	1.72	1.00	1.74	1.79	1.00	3.76	980192	2911737
3	16	7	2.07	14.5	1.5	17	334	12	733	17	333	12	691	3	308	3	250	1.35	1.10	1.88	2.01	1.76	1.00	1.96	1.57	1.00	4.25	947630	2864588
3	16	5	3	15	0	17	335	12	956	17	336	12	937	3	216	3	210	1.32	1.10	1.29	1.97	1.75	1.00	1.02	1.03	1.00	3.82	1178996	3534363
3	16	6	2.5	15	0	18	362	12	761	18	362	12	743	3	258	3	216	1.33	1.10	1.29	2.00	1.72	1.00	1.69	1.03	1.00	3.65	971860	2888319
3	16	7	2.14	15	0	17	337	12	737	17	337	12	708	3	296	3	243	1.34	1.10	1.27	1.99	1.76	1.00	1.91	1.05	1.00	4.13	941162	2845277
3	16	8	1.875	15	0	16	317	12	714	16	317	12	676	3	333	3	265	1.35	1.10	1.32	1.98	1.80	1.00	2.08	1.07	1.00	4.57	907957	2789773
3	16	9	1.67	15	0	15	306	12	704	15	306	12	645	3	381	3	285	1.37	1.11	1.28	2.05	1.81	1.00	2.12	1.12	1.00	5.06	934288	2870376
3	16	5	3.3	16.5	0.75	17	333	12	1004	17	334	12	945	3	195	3	198	1.31	1.09	1.72	1.90	1.75	1.00	1.50	1.30	1.00	3.65	1184595	3575888
3	16	6	2.75	16.5	0.75	19	371	12	772	19	372	12	773	3	235	3	199	1.32	1.10	1.67	1.93	1.71	1.00	1.56	1.30	1.00	3.37	951673	2828533
3	16	7	2.357	16.5	0.75	17	346	12	746	17	346	12	736	3	276	3	224	1.33	1.10	1.64	1.92	1.75	1.00	1.76	1.32	1.00	3.80	916081	2772106
3	16	8	2.06	16.5	0.75	16	325	12	725	16	325	12	704	3	308	3	248	1.34	1.10	1.71	1.92	1.79	1.00	1.95	1.35	1.00	4.22	889420	2734105
3	16	9	1.83	16.5	0.75	15	309	12	706	15	309	12	674	3	348	3	266	1.35	1.10	1.68	1.92	1.82	1.00	2.08	1.36	1.00	4.63	871316	2710607
3	16	5	3.6	18	1.5	18	366	12	1004	18	366	12	926	3	182	3	185	1.31	1.10	2.68	2.00	1.69	1.00	1.38	2.04	1.00	3.35	1253430	3668457
3	16	6	3	18	1.5	17	338	12	953	17	338	12	885	3	216	3	210	1.32	1.10	2.60	1.98	1.74	1.00	1.02	2.08	1.00	3.81	1184182	3539604
3	16	7	2.57	18	1.5	18	368	12	767	18	368	12	742	3	250	3	212	1.33	1.11	2.38	2.01	1.71	1.00	1.66	1.89	1.00	3.58	988334	2921117
3	16	8	2.25	18	1.5	17	346	12	745	17	346	12	711	3	286	3	234	1.34	1.10	2.05	2.00	1.74	1.00	1.84	1.68	1.00	3.97	956876	2871594
3	16	9	2	18	1.5	16	327	12	727	16	327	12	686	3	320	3	257	1.35	1.10	1.80	1.99	1.77	1.00	2.02	1.51	1.00	4.36	930810	2833318
3	16	6	3.08	18.5	0	17	333	12	979	17	334	12	963	3	211	3	208	1.32	1.10	1.31	1.96	1.75	1.00	1.02	1.02	1.00	3.81	1199760	3602782
3	16	7	2.64	18.5	0	19	371	12	769	19	371	12	758	3	242	3	207	1.33	1.10	1.29	2.00	1.70	1.00	1.62	1.02	1.00	3.50	980832	2899132
3	16	8	2.32	18.5	0	17	349	12	748	17	349	12	727	3	276	3	228	1.34	1.10	1.27	1.98	1.74	1.00	1.79	1.03	1.00	3.87	949543	2849955
3	16	9	2.06	18.5	0	17	330	12	730	17	330	12	700	3	308	3	250	1.35	1.10	1.26	1.98	1.77	1.00	1.97	1.05	1.00	4.25	925442	2816105
3	16	10	1.85	18.5	0	16	314	12	712	16	314	12	675	3	348	3	266	1.35	1.10	1.24	1.97	1.80	1.00	2.10	1.06	1.00	4.62	900772	2776762
3	16	6	3.58	21.5	1.5	18	364	12	1004	18	364	12	928	3	182	3	185	1.31	1.10	2.47	1.99	1.69	1.00	1.39	2.04	1.00	3.37	1249586	3663546
3	16	7	3.07	21.5	1.5	17	336	12	973	17	335	12	902	3	211	3	208	1.32	1.10	2.64	1.98	1.74	1.00	1.02	2.07	1.00	3.80	1200830	3595996
3	16	8	2.69	21.5	1.5	19	375	12	773	19	375	12	754	3	242	3	204	1.33	1.11	2.49	2.01	1.69	1.00	1.60	1.95	1.00	3.45	991128	2919444

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear					
3	16	9	2.39	21.5	1.5	18	355	12	754	18	355	12	727	3	267	3	223	1.34	1.11	2.18	2.00	1.73	1.00	1.76	1.76	1.00	3.79	964644	2879272
3	16	10	2.15	21.5	1.5	17	338	12	737	17	337	12	703	3	296	3	242	1.35	1.10	1.94	1.99	1.75	1.00	1.91	1.60	1.00	4.11	941347	2844019
3	16	7	3.14	22	0	17	332	12	996	17	332	12	982	3	205	3	207	1.32	1.10	1.22	1.96	1.75	1.00	1.02	1.02	1.00	3.81	1214580	3652351
3	16	8	2.75	22	0	19	377	12	776	19	377	12	769	3	235	3	200	1.32	1.10	1.30	1.99	1.69	1.00	1.57	1.01	1.00	3.39	986396	2906057
3	16	9	2.44	22	0	18	358	12	755	18	358	12	740	3	267	3	219	1.33	1.10	1.27	1.99	1.72	1.00	1.72	1.02	1.00	3.71	960967	2865958
3	16	10	2.2	22	0	17	340	12	740	17	340	12	716	3	296	3	238	1.34	1.10	1.26	1.98	1.75	1.00	1.87	1.04	1.00	4.04	937097	2831424
3	16	11	2	22	0	16	325	12	725	16	325	12	695	3	320	3	256	1.35	1.10	1.25	1.97	1.78	1.00	2.02	1.05	1.00	4.35	916103	2799975
3	16	12	1.83	22	0	16	313	12	710	16	313	12	675	3	348	3	268	1.36	1.10	1.23	1.97	1.80	1.00	2.10	1.06	1.00	4.66	900434	2776914
3	16	7	3.57	25	1.5	18	362	12	1004	18	363	12	929	3	182	3	186	1.31	1.10	2.47	1.99	1.69	1.00	1.39	2.03	1.00	3.37	1245015	3655790
3	16	8	3.125	25	1.5	17	334	12	990	17	334	12	915	3	205	3	207	1.32	1.10	2.47	1.97	1.74	1.00	1.02	2.07	1.00	3.80	1215026	3645215
3	16	9	2.78	25	1.5	19	380	12	778	19	380	12	762	3	235	3	199	1.32	1.11	2.41	2.00	1.69	1.00	1.56	2.01	1.00	3.36	994406	2921711
3	16	10	2.5	25	1.5	18	362	12	761	18	362	12	738	3	258	3	216	1.33	1.11	2.29	2.00	1.71	1.00	1.70	1.83	1.00	3.65	971860	2888319
3	16	11	2.27	25	1.5	17	347	12	744	17	347	12	714	3	286	3	232	1.34	1.11	2.06	1.99	1.74	1.00	1.83	1.68	1.00	3.93	950230	2853384
3	16	12	1.83	25	1.5	19	385	12	785	19	385	12	693	3	348	3	307	1.41	1.15	1.71	3.03	1.58	1.00	2.28	1.84	1.00	5.15	1574349	4226591
3	20	3	1.5	4.5	0	16	321	12	879	16	321	12	879	3	526	3	329	1.25	1.03	1.15	2.03	1.63	1.02	1.30	1.00	1.00	7.03	1828709	5021901
3	20	3	2	6	0.75	19	371	12	931	19	371	12	931	3	400	3	283	1.37	1.16	1.18	2.06	1.78	1.15	1.26	1.00	1.00	5.59	1954966	5216904
3	20	4	1.5	6	0.75	16	314	12	874	16	314	12	874	3	526	3	325	1.24	1.01	1.15	1.95	1.61	1.00	1.31	1.00	1.00	6.99	1745974	4857664
3	20	3	2.33	7	1.25	19	373	12	933	19	373	12	929	3	345	3	247	1.19	1.01	2.11	1.81	1.55	1.00	1.08	1.66	1.00	4.81	1700679	4659056
3	20	4	1.75	7	1.25	16	324	12	881	16	324	12	879	3	455	3	298	1.21	1.00	1.64	1.79	1.63	1.00	1.28	1.33	1.00	6.04	1598049	4508445
3	20	3	2.67	8	0	19	388	12	986	19	389	12	986	3	303	3	226	1.24	1.05	1.28	1.81	1.62	1.05	1.00	1.00	1.00	4.43	1787866	4862006
3	20	4	2	8	0	17	340	12	897	17	340	12	897	3	400	3	275	1.22	1.02	1.27	1.74	1.64	1.01	1.21	1.00	1.00	5.38	1568154	4412387
3	20	5	1.6	8	0	16	315	12	874	16	315	12	869	3	500	3	317	1.23	1.01	1.28	1.85	1.62	1.00	1.30	1.10	1.00	6.56	1644770	4631692
3	20	3	3.17	9.5	0.75	20	402	12	1004	20	402	12	1003	3	256	3	193	1.17	1.00	1.61	1.66	1.54	1.00	1.33	1.22	1.00	3.80	1656079	4545622
3	20	4	2.375	9.5	0.75	18	359	12	919	18	359	12	919	3	333	3	237	1.19	1.00	1.65	1.65	1.60	1.00	1.05	1.26	1.00	4.64	1517909	4267795
3	20	5	1.9	9.5	0.75	16	323	12	881	16	323	12	881	3	417	3	278	1.20	1.00	1.63	1.65	1.65	1.00	1.24	1.30	1.00	5.56	1464909	4207924
3	20	6	1.583	9.5	0.75	16	314	12	871	16	314	12	865	3	500	3	318	1.23	1.01	1.46	1.85	1.62	1.00	1.30	1.26	1.00	6.60	1641803	4624714
3	20	3	3.67	11	1.5	23	455	12	1014	23	455	12	1007	3	222	3	172	1.17	1.01	2.43	1.78	1.45	1.00	1.16	1.91	1.00	3.32	1800138	4771061
3	20	4	2.75	11	1.5	19	382	12	1003	19	383	12	999	3	294	3	221	1.19	1.01	2.47	1.76	1.54	1.00	1.00	1.98	1.00	4.38	1756710	4820722
3	20	5	2.2	11	1.5	18	357	12	917	18	357	12	913	3	370	3	256	1.20	1.01	2.52	1.75	1.57	1.00	1.13	2.02	1.00	5.00	1616372	4495331
3	20	6	1.833	11	1.5	16	326	12	886	16	326	12	882	3	435	3	289	1.21	1.01	2.48	1.74	1.62	1.00	1.29	2.07	1.00	5.80	1559653	4421026
3	20	7	1.57	11	1.5	15	301	12	861	15	301	12	858	3	500	3	314	1.23	1.00	2.55	1.73	1.67	1.00	1.42	2.12	1.00	6.58	1513868	4365358
3	20	4	2.875	11.5	1.75	19	389	12	1004	19	389	12	1001	3	278	3	212	1.18	1.00	2.67	1.73	1.53	1.00	1.48	2.13	1.00	4.19	1730454	4745615
3	20	5	2.3	11.5	1.75	18	362	12	921	18	362	12	918	3	345	3	246	1.20	1.00	2.74	1.73	1.57	1.00	1.09	2.18	1.00	4.81	1596004	4440285
3	20	6	1.917	11.5	1.75	17	331	12	889	17	331	12	886	3	417	3	280	1.21	1.00	2.69	1.72	1.62	1.00	1.25	2.24	1.00	5.56	1538291	4361427
3	20	7	1.643	11.5	1.75	15	306	12	863	15	306	12	861	3	476	3	304	1.22	1.00	2.77	1.71	1.66	1.00	1.38	2.28	1.00	6.30	1490392	4298614
3	20	4	3.25	13	2.5	21	410	12	1004	21	411	12	1001	3	250	3	189	1.17	1.00	2.69	1.68	1.51	1.00	1.31	2.03	1.00	3.71	1672239	4564132
3	20	5	2.6	13	2.5	19	372	12	949	19	373	12	947	3	312	3	223	1.18	1.00	2.71	1.67	1.56	1.00	1.00	2.08	1.00	4.38	1578140	4396279
3	20	6	2.167	13	2.5	17	345	12	903	17	345	12	902	3	370	3	254	1.20	1.00	2.63	1.66	1.61	1.00	1.14	2.13	1.00	5.00	1502791	4255287
3	20	7	1.857	13	2.5	16	319	12	877	16	319	12	877	3	435	3	282	1.21	1.00	2.70	1.65	1.65	1.00	1.27	2.17	1.00	5.67	1455705	4194279
3	20	4	3.625	14.5	3.25	23	450	12	1009	23	450	12	1002	3	222	3	173	1.17	1.01	2.68	1.76	1.46	1.00	1.18	2.11	1.00	3.34	1769533	4708759
3	20	5	2.9	14.5	3.25	20	392	12	1004	20	393	12	999	3	278	3	211	1.18	1.01	2.72	1.74	1.52	1.00	1.47	2.17	1.00	4.15	1740782	4760756
3	20	6	2.417	14.5	3.25	19	372	12	931	19	372	12	926	3	333	3	237	1.20	1.01	2.68	1.74	1.55	1.00	1.06	2.21	1.00	4.62	1624747	4489431
3	20	7	2.07	14.5	3.25	17	345	12	903	17	345	12	899	3	385	3	267	1.21	1.01	2.76	1.73	1.59	1.00	1.19	2.25	1.00	5.23	1573211	4416096
3	20	4	2.875	11.5	0	20	398	12	1004	20	399	12	1003	3	278	3	214	1.22	1.04	1.25	1.80	1.57	1.03	1.47	1.00	1.00	4.19	1800023	4880097
3	20	5	2.3	11.5	0	18	364	12	922	18	364	12	922	3	345	3	246	1.20	1.01	1.26	1.74	1.58	1.01	1.09	1.00	1.00	4.81	1614011	4476971
3	20	6	1.917	11.5	0	17	331	12	889	17	331	12	886	3	417	3	280	1.21	1.00	1.23	1.72	1.62	1.00	1.25	1.02	1.00	5.56	1538291	4361427
3	20	7	1.643	11.5	0	15	306	12	863	15	306	12	861	3	476	3	304	1.22	1.00	1.26	1.71	1.66	1.00	1.38	1.04	1.00	6.30	1490392	4298614
3	20	4	3.25	13	0.75	21	410	12	1004	21	411	12	1001	3	250	3	189	1.17	1.00	1.62	1.68	1.51	1.00	1.31	1.22	1.00	3.71	1672239	4564132
3	20	5	2.6	13	0.75	19	372	12	949	19	373	12	947	3	312	3	223	1.18	1.00	1.63	1.67	1.56	1.00	1.00	1.25	1.00	4.38	1578140	4396279
3	20	6	2.167	13	0.75	17	345	12	903	17	345	12	902	3	370	3	254	1.20	1.00	1.58	1.66	1.61	1.00	1.14	1.28	1.00	5.00	1502791	4255287
3	20	7	1.857	13	0.75	16	319	12	877	16	319	12	877	3	435	3	282	1.21	1.00	1.63	1.65	1.65	1.00	1.27	1.31	1.00	5.67	1455705	4194279
3	20	4	3.625	14.5	1.5	23	450	12	1009	23	450	12	1002	3	222	3	173	1.17	1.01	2.43	1.76	1.46	1.00	1.18	1.91	1.00	3.34	1769533	4708759
3	20	5	2.9	14.5	1.5	20	392	12	1004	20	393	12	999	3	278	3	211	1.18	1.01	2.47	1.74	1.52	1.00	1.47	1.97	1.00	4.15	1740782	4760756
3	20	6	2.417	14.5	1.5	19	372	12	931	19	372	12	926	3	333	3	237	1.20	1.01	2.07	1.74	1.55	1.00	1.06	1.71	1.00	4.62	1624747	4489431
3	20	7	2.07	14.5	1.5	17	345	12	903	17	345	12	899	3	385	3	267	1.21	1.01	1.83	1.73	1.59	1.00	1.19	1.49	1.00	5.23	1573211	4416096
3	20	5	3	15	0	21	411	12	1004	21	411	12	1004	3	270	3	206	1.23	1.05	1.25	1.81	1.57	1.05	1.42	1.00	1.00	4.02	1815188	4885261
3	20	6	2.5	15	0	19	381	12	939	19	381	12	939	3	323	3	232	1.22	1.03	1.22	1.77	1.58	1.03	1.03	1.00	1.00	4.51	1663724	4562648
3	20	7	2.14	15	0	18	350	12	907	18	350	12	907	3	370	3	260	1.21	1.01	1.23	1.72	1.59	1.01	1.16	1.00	1.00	5.09	1571951	4403866
3	20	8	1.875	15	0	16	326	12	884	16	326	12	881	3	417	3	283	1.21	1.00	1.21	1.70	1.62	1.00	1.27	1.01	1.00	5.66	1517102	4322239
3	20	9	1.67	15	0	16	313	12	872	16	313	12	867	3	476	3	305	1.22	1.01	1.24	1.76	1.63	1.00	1.30	1.06	1.00	6.27	1552727	4428875
3	20	5	3.3	16.5	0.75	21	413	12	1004	21	414	12	1000	3	244	3	186	1.17	1.00	1.61	1.67	1.51	1.00	1.30	1.22	1.00	3.65	1666963	4545741
3	20	6	2.75	16.5	0.75	18	369	12	998	18	369	12	997	3	294	3	218	1.18	1.00	1.63	1.66	1.57	1.00	1.01	1.25	1.00	4.35	1640486	4585124
3	20	7	2.357	16.5	0.75	18	359	12	917	18	359	12	914	3	345	3	238	1.19	1.00	1.59	1.66	1.58	1.00	1.07	1.26	1.00	4.67	1522238	4276214
3	20	8	2.06	16.5	0.75	17	336	12	894	17	336	12	892	3	385	3	265	1.20	1.00	1.57	1.65	1.62	1.00	1.19	1.28	1.00	5.21	1483555	4226942
3	20	9	1.83	16.5	0.75	16	317	12	876	16	317	12	875	3	435	3	284	1.21	1.00	1.54	1.66	1.65	1.00	1.28	1.29	1.00	5.74	1459370	4207499
3	20	5	3.6	18	1.5	22	447	12	1006	22	447	12	999	3	227	3	173	1.17	1.01	2.41	1.75	1.46	1.00	1.19	1.90	1.00	3.35	1750391	4669578
3	20	6	3	18	1.5	20	399	12	1004	20	400	12	998	3	270	3	204	1.18	1.01	2.45	1.73	1.51	1.00	1.43	1.95	1.00	4.02	1732133	4724697
3	20	7	2.57	18	1.5	19	382	12	941	19	382	12	935	3	312	3	225	1.19	1.01	2.21	1.73	1.54	1.00	1.01	1.79	1.00	4.39	1632868	4492492
3	20	8	2.25	18	1.5	18	358	12	917	18	358	12	912	3	357	3	250	1.20	1.01	1.90	1.72	1.57	1.00	1.12	1.59	1.00	4.89	1587530	4427596
3	20	9	2	18	1.5	17	338	12	895	17	338	12	891	3	400	3	274	1.21	1.01	1.74	1.72	1.60	1.00	1.23	1.44	1.00	5.37	1546106	4365803
3	20	6	3.08	18.5	0	21	419	12	1004	21	420	12	1004	3	263	3	201	1.24	1.06	1.25	1.82	1.57	1.06	1.39	1.00	1.00	3.91	1829519	4898812
3	20	7	2.64	18.5	0	20	390	12	958	20	391	12	958	3	303	3	224	1.23	1.04	1.19	1.78	1.58	1.04	1.00	1.00	1.00	4.35	1713146	4667124
3	20	8	2.32	18.5	0	18	365	12	925	18	365	12	925	3	345	3	245	1.22	1.03	1.20	1.74	1.59	1.02	1.10	1.00	1.00	4.78	1618598	4487398
3	20	9	2.06	18.5	0	17	342	12	899	17	342	12	899	3	385	3	267	1.21	1.01	1.22	1.71	1.60	1.00	1.20	1.00	1.00	5.24	1544115	4354260

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	20	10	1.85	18.5	0	16	323	12	881	16	323	12	878	3	435	3	285	1.21	1.00	1.21	1.69	1.63	1.00	1.28	1.01	1.00	5.71	1504502	4299000
3	20	6	3.58	21.5	1.5	22	445	12	1005	22	445	12	997	3	227	3	174	1.17	1.01	2.40	1.74	1.46	1.00	1.20	1.90	1.00	3.37	1743017	4656109
3	20	7	3.07	21.5	1.5	20	404	12	1004	20	405	12	997	3	263	3	200	1.18	1.01	2.43	1.73	1.51	1.00	1.40	1.93	1.00	3.92	1727655	4703184
3	20	8	2.69	21.5	1.5	19	380	12	974	19	381	12	969	3	303	3	221	1.19	1.01	2.26	1.72	1.54	1.00	1.00	1.86	1.00	4.34	1670562	4607058
3	20	9	2.39	21.5	1.5	18	368	12	926	18	368	12	920	3	333	3	238	1.20	1.01	2.02	1.72	1.55	1.00	1.07	1.67	1.00	4.65	1595813	4429449
3	20	10	2.15	21.5	1.5	17	349	12	908	17	349	12	903	3	370	3	259	1.20	1.01	1.80	1.71	1.58	1.00	1.16	1.52	1.00	5.07	1561329	4383124
3	20	7	3.14	22	0	21	425	12	1004	21	426	12	1003	3	256	3	198	1.25	1.07	1.19	1.83	1.57	1.06	1.36	1.00	1.00	3.84	1837869	4904723
3	20	8	2.75	22	0	19	388	12	994	19	389	12	994	3	294	3	221	1.23	1.05	1.24	1.78	1.59	1.04	1.00	1.00	1.00	4.34	1766570	4820804
3	20	9	2.44	22	0	19	377	12	935	19	377	12	935	3	333	3	236	1.23	1.04	1.22	1.77	1.59	1.03	1.06	1.00	1.00	4.60	1660103	4560527
3	20	10	2.2	22	0	18	355	12	912	18	355	12	912	3	370	3	254	1.22	1.02	1.19	1.73	1.60	1.02	1.14	1.00	1.00	4.97	1582906	4420375
3	20	11	2	22	0	17	336	12	893	17	336	12	893	3	400	3	273	1.21	1.01	1.21	1.70	1.61	1.00	1.23	1.00	1.00	5.36	1524295	4319600
3	20	12	1.83	22	0	16	321	12	881	16	321	12	877	3	435	3	287	1.22	1.01	1.20	1.70	1.63	1.00	1.29	1.01	1.00	5.78	1506526	4309258
3	20	7	3.57	25	1.5	22	443	12	1004	22	444	12	996	3	227	3	174	1.17	1.01	2.39	1.73	1.46	1.00	1.20	1.89	1.00	3.37	1734229	4638690
3	20	8	3.125	25	1.5	20	408	12	1004	20	408	12	997	3	256	3	197	1.18	1.01	2.42	1.72	1.50	1.00	1.37	1.92	1.00	3.86	1721533	4681409
3	20	9	2.78	25	1.5	19	378	12	1004	19	378	12	999	3	294	3	218	1.19	1.01	2.40	1.71	1.54	1.00	1.54	1.91	1.00	4.33	1708651	4723346
3	20	10	2.5	25	1.5	19	375	12	935	19	375	12	929	3	323	3	230	1.19	1.01	2.12	1.72	1.54	1.00	1.03	1.73	1.00	4.49	1606305	4443853
3	20	11	2.27	25	1.5	18	359	12	916	18	359	12	910	3	357	3	248	1.20	1.01	1.91	1.71	1.57	1.00	1.11	1.60	1.00	4.84	1576816	4399996
3	20	12	1.83	25	1.5	20	395	12	955	20	395	12	928	3	435	3	327	1.25	1.03	1.68	2.52	1.40	1.00	1.37	1.70	1.00	6.26	2501432	6313662
3	24	3	1.5	4.5	0	17	337	12	1057	17	337	12	1057	3	429	2	362	1.20	1.00	1.20	1.88	1.57	1.04	2.07	1.01	1.00	8.46	2970176	7622719
3	24	3	2	6	0.75	20	390	12	1109	20	390	12	1109	3	480	3	309	1.30	1.11	1.15	1.89	1.70	1.15	1.97	1.00	1.00	6.76	3114092	7822600
3	24	4	1.5	6	0.75	17	334	12	1051	17	334	12	1051	3	429	2	360	1.20	1.00	1.18	1.84	1.56	1.03	2.09	1.02	1.00	8.41	2893663	7469464
3	24	3	2.33	7	1.25	20	400	12	1117	20	400	12	1117	3	414	3	272	1.17	1.00	2.16	1.73	1.52	1.04	1.71	1.71	1.00	5.88	2831410	7233749
3	24	4	1.75	7	1.25	17	346	12	1066	17	346	12	1066	3	545	3	331	1.19	1.00	1.69	1.72	1.59	1.04	2.02	1.37	1.00	7.31	2699393	7053710
3	24	3	2.67	8	0	21	418	13	1138	21	418	13	1138	3	364	3	241	1.18	1.01	1.26	1.67	1.54	1.05	1.57	1.00	1.00	5.33	2772678	7098991
3	24	4	2	8	0	18	361	12	1081	18	361	12	1081	3	480	3	303	1.18	1.00	1.29	1.64	1.58	1.04	1.89	1.02	1.00	6.49	2599486	6813678
3	24	5	1.6	8	0	17	335	12	1054	17	335	12	1054	3	400	2	351	1.20	1.00	1.31	1.75	1.58	1.04	2.08	1.12	1.00	7.91	2742395	7164274
3	24	3	3.17	9.5	0.75	22	442	13	1161	22	442	13	1161	3	308	3	207	1.15	1.00	1.64	1.60	1.51	1.04	1.39	1.26	1.00	4.67	2681708	6880966
3	24	4	2.375	9.5	0.75	19	386	12	1103	19	386	12	1102	3	400	3	261	1.17	1.00	1.70	1.59	1.56	1.04	1.65	1.30	1.00	5.63	2546886	6655761
3	24	5	1.9	9.5	0.75	17	346	12	1063	17	346	12	1063	3	500	3	308	1.18	1.00	1.67	1.59	1.62	1.04	1.97	1.35	1.00	6.71	2470692	6569490
3	24	6	1.583	9.5	0.75	17	333	12	1052	17	333	12	1052	3	414	2	353	1.20	1.00	1.50	1.75	1.58	1.04	2.09	1.29	1.00	7.97	2735581	7154703
3	24	3	3.67	11	1.5	24	486	13	1203	24	486	13	1203	3	267	3	187	1.15	1.00	2.47	1.69	1.44	1.04	1.31	1.98	1.00	4.33	2946449	7394956
3	24	4	2.75	11	1.5	21	425	13	1144	21	425	13	1144	3	353	3	236	1.16	1.00	2.48	1.68	1.49	1.04	1.55	2.04	1.00	5.23	2800189	7147134
3	24	5	2.2	11	1.5	19	382	12	1101	19	382	12	1100	3	444	3	282	1.17	1.00	2.51	1.67	1.53	1.04	1.78	2.08	1.00	6.06	2692860	6972267
3	24	6	1.833	11	1.5	17	349	12	1066	17	349	12	1066	3	522	3	319	1.19	1.00	2.55	1.67	1.58	1.04	2.04	2.13	1.00	6.98	2611080	6858646
3	24	7	1.57	11	1.5	16	321	12	1041	16	321	12	1041	3	414	2	348	1.20	1.00	2.62	1.66	1.62	1.04	2.30	2.18	1.00	7.96	2552017	6804046
3	24	4	2.875	11.5	1.75	22	431	13	1149	22	431	13	1149	3	333	3	226	1.16	1.00	2.70	1.66	1.49	1.04	1.50	2.20	1.00	5.05	2768693	7073310
3	24	5	2.3	11.5	1.75	19	388	12	1105	19	388	12	1105	3	414	3	271	1.17	1.00	2.73	1.65	1.53	1.04	1.71	2.25	1.00	5.83	2662606	6896637
3	24	6	1.917	11.5	1.75	18	354	12	1071	18	354	12	1071	3	500	3	310	1.18	1.00	2.78	1.64	1.58	1.04	1.97	2.30	1.00	6.70	2578056	6778771
3	24	7	1.643	11.5	1.75	16	326	12	1045	16	326	12	1045	3	571	3	337	1.20	1.00	2.85	1.63	1.62	1.04	2.22	2.36	1.00	7.63	2516142	6715046
3	24	4	3.25	13	2.5	22	448	13	1167	22	448	13	1167	3	300	3	203	1.15	1.00	2.74	1.60	1.49	1.04	1.39	2.10	1.00	4.60	2706948	6928482
3	24	5	2.6	13	2.5	20	404	12	1121	20	404	12	1121	3	375	3	243	1.16	1.00	2.67	1.60	1.53	1.04	1.58	2.15	1.00	5.31	2600276	6746080
3	24	6	2.167	13	2.5	19	370	12	1087	19	370	12	1087	3	444	3	281	1.17	1.00	2.72	1.59	1.57	1.04	1.77	2.19	1.00	6.02	2523072	6629288
3	24	7	1.857	13	2.5	17	341	12	1061	17	341	12	1061	3	522	3	312	1.19	1.00	2.78	1.59	1.62	1.04	2.02	2.25	1.00	6.86	2462678	6568412
3	24	4	3.625	14.5	3.25	24	480	13	1199	24	480	13	1199	3	267	3	188	1.15	1.00	2.73	1.67	1.45	1.03	1.33	2.19	1.00	4.36	2899058	7304343
3	24	5	2.9	14.5	3.25	22	433	13	1152	22	433	13	1152	3	333	3	225	1.16	1.00	2.76	1.66	1.48	1.03	1.51	2.24	1.00	5.03	2782757	7102728
3	24	6	2.417	14.5	3.25	20	397	12	1117	20	397	12	1117	3	400	3	261	1.17	1.00	2.80	1.66	1.52	1.04	1.68	2.28	1.00	5.67	2696959	6964091
3	24	7	2.07	14.5	3.25	18	369	12	1086	18	369	12	1086	3	462	3	295	1.18	1.00	2.75	1.65	1.55	1.04	1.86	2.31	1.00	6.30	2624866	6845890
3	24	4	2.875	11.5	0	22	431	13	1149	22	431	13	1149	3	333	3	226	1.16	1.00	1.23	1.66	1.49	1.04	1.50	1.00	1.00	5.05	2768693	7073310
3	24	5	2.3	11.5	0	19	388	12	1105	19	388	12	1105	3	414	3	271	1.17	1.00	1.25	1.65	1.53	1.04	1.71	1.03	1.00	5.83	2662606	6896637
3	24	6	1.917	11.5	0	18	354	12	1071	18	354	12	1071	3	500	3	310	1.18	1.00	1.27	1.64	1.58	1.04	1.97	1.05	1.00	6.70	2578056	6778771
3	24	7	1.643	11.5	0	16	326	12	1045	16	326	12	1045	3	571	3	337	1.20	1.00	1.30	1.63	1.62	1.04	2.22	1.07	1.00	7.63	2516142	6715046
3	24	4	3.25	13	0.75	22	448	13	1167	22	448	13	1167	3	300	3	203	1.15	1.00	1.65	1.60	1.49	1.04	1.39	1.27	1.00	4.60	2706948	6928482
3	24	5	2.6	13	0.75	20	404	12	1121	20	404	12	1121	3	375	3	243	1.16	1.00	1.61	1.60	1.53	1.04	1.58	1.29	1.00	5.31	2600276	6746080
3	24	6	2.167	13	0.75	19	370	12	1087	19	370	12	1087	3	444	3	281	1.17	1.00	1.63	1.59	1.57	1.04	1.77	1.32	1.00	6.02	2523072	6629288
3	24	7	1.857	13	0.75	17	341	12	1061	17	341	12	1061	3	522	3	312	1.19	1.00	1.67	1.59	1.62	1.04	2.02	1.35	1.00	6.86	2462678	6568412
3	24	4	3.625	14.5	1.5	24	480	13	1199	24	480	13	1199	3	267	3	188	1.15	1.00	2.48	1.67	1.45	1.03	1.33	1.99	1.00	4.36	2899058	7304343
3	24	5	2.9	14.5	1.5	22	433	13	1152	22	433	13	1152	3	333	3	225	1.16	1.00	2.50	1.66	1.48	1.03	1.51	2.03	1.00	5.03	2782757	7102728
3	24	6	2.417	14.5	1.5	20	397	12	1117	20	397	12	1117	3	400	3	261	1.17	1.00	2.16	1.66	1.52	1.04	1.68	1.76	1.00	5.67	2696959	6964091
3	24	7	2.07	14.5	1.5	18	369	12	1086	18	369	12	1086	3	462	3	295	1.18	1.00	1.82	1.65	1.55	1.04	1.86	1.53	1.00	6.30	2624866	6845890
3	24	5	3	15	0	22	440	13	1158	22	440	13	1158	3	324	3	219	1.17	1.01	1.24	1.66	1.49	1.05	1.48	1.00	1.00	4.91	2795562	7120770
3	24	6	2.5	15	0	20	402	12	1119	20	402	12	1119	3	387	3	253	1.17	1.00	1.25	1.64	1.52	1.04	1.63	1.01	1.00	5.50	2671433	6898514
3	24	7	2.14	15	0	19	373	12	1091	19	373	12	1091	3	444	3	287	1.18	1.00	1.23	1.64	1.55	1.04	1.80	1.02	1.00	6.12	2608326	6804681
3	24	8	1.875	15	0	17	348	12	1067	17	348	12	1067	3	500	3	313	1.19	1.00	1.26	1.63	1.58	1.04	2.01	1.05	1.00	6.83	2546826	6729254
3	24	9	1.67	15	0	17	333	12	1052	17	333	12	1052	3	571	3	337	1.20	1.00	1.28	1.67	1.59	1.04	2.08	1.09	1.00	7.56	2593069	6859928
3	24	5	3.3	16.5	0.75	23	450	13	1170	23	450	13	1170	3	293	3	200	1.15	1.00	1.59	1.60	1.49	1.04	1.38	1.26	1.00	4.56	2701827	6917506
3	24	6	2.75	16.5	0.75	21	414	12	1131	21	414	12	1131	3	353	3	232	1.16	1.00	1.61	1.59	1.52	1.04	1.53	1.28	1.00	5.11	2611840	6759013
3	24	7	2.357	16.5	0.75	19	384	12	1103	19	384	12	1103	3	414	3	263	1.17	1.00	1.64	1.59	1.55	1.04	1.68	1.30	1.00	5.67	2544885	6657502
3	24	8	2.06	16.5	0.75	18	360	12	1076	18	360	12	1076	3	462	3	292	1.18	1.00	1.62	1.58	1.58	1.04	1.87	1.32	1.00	6.27	2487313	6572775
3	24	9	1.83	16.5	0.75	17	339	12	1057	17	339	12	1057	3	522	3	315	1.19	1.00	1.60	1.59	1.61	1.04	2.04	1.34	1.00	6.93	2456210	6556155
3	24	5	3.6	18	1.5	24	477	13	1195	24	477	13	1195	3	273	3	189	1.15	1.00	2.45	1.66	1.45	1.03	1.33	1.98	1.00	4.36	2866369	7236512
3	24	6	3	18	1.5	22	438	13	1158	22	438	13	1158	3	324	3	218	1.16	1.00	2.49	1.65	1.48	1.03	1.48	2.01	1.00	4.91	2774805	7083088
3	24	7	2.57	18	1.5	20	408	12	1126	20	408	12	1126	3	375	3	247	1.17	1.00	2.22	1.65	1.50	1.03	1.62	1.85	1.00	5.42	2701155	6956107
3	24	8	2.25	18	1.5	19	383	12	1100	19	383	12	1100	3	429	3	275	1.17	1.00	1.98	1.64	1.53	1.04	1.75	1.64	1.00	5.91	2637505	6850207
3	24	9	2	18	1.5	18	361	12	1078	18	361	12	1078	3	480	3	303	1.18	1.00	1.74	1.64	1.56	1.04	1.92	1.48	1.00	6.47	2583515	6775487

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	24	6	3.08	18.5	0	22	446	13	1165	22	446	13	1165	3	316	3	214	1.18	1.02	1.20	1.67	1.50	1.05	1.46	1.00	1.00	4.84	2823992	7176526
3	24	7	2.64	18.5	0	21	412	12	1130	21	412	12	1130	3	364	3	242	1.17	1.00	1.21	1.64	1.51	1.04	1.59	1.00	1.00	5.32	2693836	6936285
3	24	8	2.32	18.5	0	19	386	12	1106	19	386	12	1106	3	414	3	268	1.17	1.00	1.23	1.63	1.53	1.04	1.72	1.01	1.00	5.79	2623943	6824196
3	24	9	2.06	18.5	0	18	364	12	1084	18	364	12	1084	3	462	3	295	1.18	1.00	1.22	1.62	1.56	1.04	1.87	1.03	1.00	6.31	2571931	6749417
3	24	10	1.85	18.5	0	17	345	12	1062	17	345	12	1062	3	522	3	315	1.19	1.00	1.25	1.62	1.59	1.04	2.04	1.04	1.00	6.89	2521090	6678450
3	24	6	3.58	21.5	1.5	24	475	13	1192	24	475	13	1192	3	273	3	189	1.15	1.00	2.43	1.65	1.44	1.03	1.33	1.97	1.00	4.36	2845515	7192614
3	24	7	3.07	21.5	1.5	22	442	13	1161	22	442	13	1161	3	316	3	214	1.16	1.00	2.39	1.64	1.47	1.03	1.46	1.99	1.00	4.82	2769060	7065223
3	24	8	2.69	21.5	1.5	21	416	12	1133	21	416	12	1133	3	364	3	238	1.16	1.00	2.32	1.64	1.50	1.03	1.57	1.91	1.00	5.24	2702301	6947696
3	24	9	2.39	21.5	1.5	20	393	12	1111	20	393	12	1111	3	400	3	262	1.17	1.00	2.03	1.64	1.52	1.04	1.69	1.72	1.00	5.68	2649272	6864653
3	24	10	2.15	21.5	1.5	19	373	12	1092	19	373	12	1092	3	444	3	285	1.18	1.00	1.88	1.63	1.54	1.03	1.80	1.57	1.00	6.09	2601449	6791700
3	24	7	3.14	22	0	23	451	13	1168	23	451	13	1168	3	308	3	211	1.18	1.02	1.21	1.67	1.50	1.06	1.45	1.00	1.00	4.77	2838450	7198331
3	24	8	2.75	22	0	21	420	13	1140	21	420	13	1140	3	353	3	234	1.17	1.01	1.22	1.64	1.51	1.04	1.56	1.00	1.00	5.19	2724235	6995411
3	24	9	2.44	22	0	20	396	12	1114	20	396	12	1114	3	400	3	257	1.17	1.00	1.19	1.63	1.52	1.04	1.67	1.00	1.00	5.59	2643655	6849216
3	24	10	2.2	22	0	19	376	12	1094	19	376	12	1093	3	444	3	279	1.17	1.00	1.22	1.62	1.54	1.04	1.77	1.01	1.00	5.98	2586402	6754532
3	24	11	2	22	0	18	358	12	1078	18	358	12	1078	3	480	3	302	1.18	1.00	1.21	1.62	1.57	1.04	1.93	1.03	1.00	6.47	2550591	6717051
3	24	12	1.83	22	0	17	343	12	1060	17	343	12	1060	3	522	3	317	1.19	1.00	1.24	1.62	1.59	1.04	2.05	1.04	1.00	6.95	2515774	6671696
3	24	7	3.57	25	1.5	24	473	13	1192	24	473	13	1192	3	273	3	189	1.15	1.00	2.43	1.64	1.45	1.03	1.34	1.96	1.00	4.37	2833475	7172614
3	24	8	3.125	25	1.5	22	445	13	1163	22	445	13	1163	3	308	3	211	1.16	1.00	2.39	1.64	1.47	1.03	1.44	1.98	1.00	4.76	2761874	7045355
3	24	9	2.78	25	1.5	21	421	13	1140	21	421	13	1139	3	353	3	232	1.16	1.00	2.40	1.63	1.49	1.03	1.55	1.96	1.00	5.14	2705707	6954050
3	24	10	2.5	25	1.5	20	401	12	1118	20	401	12	1118	3	387	3	252	1.17	1.00	2.13	1.63	1.51	1.03	1.64	1.79	1.00	5.49	2655117	6865376
3	24	11	2.27	25	1.5	19	383	12	1101	19	383	12	1101	3	429	3	273	1.17	1.00	1.99	1.63	1.53	1.03	1.74	1.64	1.00	5.87	2620036	6815606
3	24	12	1.83	25	1.5	21	414	12	1133	21	414	12	1133	3	522	3	358	1.19	1.00	1.63	2.30	1.35	1.02	2.19	1.70	1.00	7.71	3941499	9402739
3	28	3	1.5	4.5	0	18	351	14	1229	18	351	14	1229	3	500	2	398	1.19	1.00	1.32	1.80	1.60	1.05	2.50	1.06	1.00	11.07	4583700	11227793
3	28	3	2	6	0.75	20	394	14	1271	20	394	14	1271	3	560	3	330	1.22	1.04	1.25	1.71	1.65	1.10	2.45	1.00	1.00	8.88	4427754	10871316
3	28	4	1.5	6	0.75	17	347	13	1225	17	347	13	1225	3	500	2	395	1.19	1.00	1.31	1.76	1.60	1.05	2.51	1.07	1.00	10.99	4472361	11024724
3	28	3	2.33	7	1.25	21	418	14	1296	21	418	14	1296	3	483	3	296	1.17	1.00	2.27	1.66	1.55	1.06	2.19	1.81	1.00	7.92	4360232	10714240
3	28	4	1.75	7	1.25	18	361	14	1239	18	361	14	1239	3	424	2	362	1.18	1.00	1.82	1.65	1.61	1.06	2.48	1.45	1.00	9.64	4175233	10435388
3	28	3	2.67	8	0	22	436	14	1313	22	436	14	1313	3	424	3	261	1.16	1.00	1.39	1.59	1.55	1.06	1.98	1.05	1.00	7.10	4190912	10356539
3	28	4	2	8	0	19	377	14	1254	19	377	14	1254	3	560	3	330	1.18	1.00	1.39	1.58	1.61	1.06	2.37	1.08	1.00	8.64	4010821	10084169
3	28	5	1.6	8	0	17	348	13	1228	17	348	13	1228	3	467	2	384	1.19	1.00	1.42	1.68	1.61	1.05	2.51	1.18	1.00	10.36	4236631	10582661
3	28	3	3.17	9.5	0.75	23	464	15	1344	23	464	15	1344	3	359	3	224	1.15	1.00	1.77	1.53	1.54	1.06	1.78	1.32	1.00	6.26	4116687	10183689
3	28	4	2.375	9.5	0.75	20	403	14	1281	20	403	14	1281	3	467	3	284	1.17	1.00	1.81	1.53	1.60	1.06	2.12	1.37	1.00	7.59	3932786	9890979
3	28	5	1.9	9.5	0.75	18	360	14	1239	18	360	14	1239	3	583	3	337	1.18	1.00	1.84	1.53	1.65	1.06	2.42	1.41	1.00	8.88	3830402	9761994
3	28	6	1.583	9.5	0.75	17	346	13	1225	17	346	13	1225	3	483	2	387	1.19	1.00	1.62	1.68	1.61	1.05	2.51	1.35	1.00	10.42	4220737	10551666
3	28	3	3.67	11	1.5	26	512	15	1389	26	512	15	1389	3	311	3	203	1.15	1.00	2.58	1.62	1.47	1.06	1.67	2.03	1.00	5.78	4502582	10896506
3	28	4	2.75	11	1.5	22	446	15	1323	22	446	15	1323	3	412	3	256	1.16	1.00	2.64	1.61	1.52	1.06	1.98	2.09	1.00	6.99	4293265	10546926
3	28	5	2.2	11	1.5	20	399	14	1276	20	399	14	1275	3	519	3	307	1.17	1.00	2.66	1.60	1.57	1.05	2.27	2.14	1.00	8.14	4142929	10311790
3	28	6	1.833	11	1.5	18	363	14	1242	18	363	14	1242	3	412	2	349	1.18	1.00	2.69	1.60	1.61	1.06	2.51	2.19	1.00	9.25	4042854	10177363
3	28	7	1.57	11	1.5	17	334	13	1214	17	334	13	1214	3	483	2	382	1.19	1.00	2.73	1.59	1.65	1.05	2.70	2.24	1.00	10.32	3957624	10066589
3	28	4	2.875	11.5	1.75	23	452	15	1330	23	452	15	1330	3	389	3	246	1.16	1.00	2.87	1.59	1.52	1.06	1.92	2.25	1.00	6.76	4247218	10452146
3	28	5	2.3	11.5	1.75	20	405	14	1282	20	405	14	1282	3	483	3	295	1.17	1.00	2.88	1.58	1.57	1.06	2.19	2.30	1.00	7.85	4099229	10216209
3	28	6	1.917	11.5	1.75	18	368	14	1248	18	368	14	1248	3	583	3	339	1.18	1.00	2.92	1.58	1.61	1.06	2.45	2.36	1.00	8.93	3991418	10070957
3	28	7	1.643	11.5	1.75	17	340	13	1217	17	340	13	1217	3	452	2	370	1.19	1.00	2.96	1.57	1.65	1.06	2.62	2.40	1.00	9.91	3901313	9933601
3	28	4	3.25	13	2.5	24	471	15	1349	24	471	15	1349	3	350	3	220	1.15	1.00	2.81	1.54	1.52	1.06	1.77	2.15	1.00	6.15	4148251	10233417
3	28	5	2.6	13	2.5	21	422	14	1301	21	422	14	1301	3	438	3	264	1.16	1.00	2.82	1.53	1.57	1.06	2.02	2.20	1.00	7.15	4002398	10005547
3	28	6	2.167	13	2.5	19	385	14	1264	19	385	14	1264	3	519	3	306	1.17	1.00	2.86	1.53	1.61	1.06	2.26	2.25	1.00	8.10	3894877	9846975
3	28	7	1.857	13	2.5	18	355	14	1235	18	355	14	1235	3	400	2	341	1.18	1.00	2.90	1.52	1.64	1.06	2.46	2.30	1.00	9.03	3810010	9733944
3	28	4	3.625	14.5	3.25	25	505	15	1385	25	505	15	1385	3	311	3	204	1.15	1.00	2.83	1.60	1.47	1.05	1.69	2.24	1.00	5.82	4427811	10762798
3	28	5	2.9	14.5	3.25	23	454	15	1334	23	454	15	1334	3	389	3	245	1.16	1.00	2.85	1.59	1.51	1.05	1.93	2.29	1.00	6.74	4270866	10502725
3	28	6	2.417	14.5	3.25	21	415	14	1295	21	415	14	1295	3	467	3	284	1.17	1.00	2.88	1.59	1.55	1.06	2.15	2.33	1.00	7.62	4149763	10311738
3	28	7	2.07	14.5	3.25	19	384	14	1263	19	384	14	1263	3	538	3	322	1.18	1.00	2.91	1.58	1.58	1.05	2.36	2.37	1.00	8.47	4053728	10164345
3	28	4	2.875	11.5	0	23	452	15	1330	23	452	15	1330	3	389	3	246	1.16	1.00	1.35	1.59	1.52	1.06	1.92	1.06	1.00	6.76	4247218	10452146
3	28	5	2.3	11.5	0	20	405	14	1282	20	405	14	1282	3	483	3	295	1.17	1.00	1.36	1.58	1.57	1.06	2.19	1.09	1.00	7.85	4099229	10216209
3	28	6	1.917	11.5	0	18	368	14	1248	18	368	14	1248	3	583	3	339	1.18	1.00	1.38	1.58	1.61	1.06	2.45	1.11	1.00	8.93	3991418	10070957
3	28	7	1.643	11.5	0	17	340	13	1217	17	340	13	1217	3	452	2	370	1.19	1.00	1.40	1.57	1.65	1.06	2.62	1.13	1.00	9.91	3901313	9933601
3	28	4	3.25	13	0.75	24	471	15	1349	24	471	15	1349	3	350	3	220	1.15	1.00	1.73	1.54	1.52	1.06	1.77	1.33	1.00	6.15	4148251	10233417
3	28	5	2.6	13	0.75	21	422	14	1301	21	422	14	1301	3	438	3	264	1.16	1.00	1.74	1.53	1.57	1.06	2.02	1.36	1.00	7.15	4002398	10005547
3	28	6	2.167	13	0.75	19	385	14	1264	19	385	14	1264	3	519	3	306	1.17	1.00	1.76	1.53	1.61	1.06	2.26	1.39	1.00	8.10	3894877	9846975
3	28	7	1.857	13	0.75	18	355	14	1235	18	355	14	1235	3	400	2	341	1.18	1.00	1.79	1.52	1.64	1.06	2.46	1.41	1.00	9.03	3810010	9733944
3	28	4	3.625	14.5	1.5	25	505	15	1385	25	505	15	1385	3	311	3	204	1.15	1.00	2.58	1.60	1.47	1.05	1.69	2.04	1.00	5.82	4427811	10762798
3	28	5	2.9	14.5	1.5	23	454	15	1334	23	454	15	1334	3	389	3	245	1.16	1.00	2.59	1.59	1.51	1.05	1.93	2.08	1.00	6.74	4270866	10502725
3	28	6	2.417	14.5	1.5	21	415	14	1295	21	415	14	1295	3	467	3	284	1.17	1.00	2.28	1.59	1.55	1.06	2.15	1.85	1.00	7.62	4149763	10311738
3	28	7	2.07	14.5	1.5	19	384	14	1263	19	384	14	1263	3	538	3	322	1.18	1.00	1.98	1.58	1.58	1.05	2.36	1.61	1.00	8.47	4053728	10164345
3	28	5	3	15	0	23	459	15	1338	23	459	15	1338	3	378	3	237	1.16	1.00	1.31	1.58	1.51	1.05	1.88	1.05	1.00	6.56	4230462	10413915
3	28	6	2.5	15	0	21	420	14	1298	21	420	14	1298	3	452	3	275	1.17	1.00	1.32	1.57	1.55	1.05	2.09	1.07	1.00	7.41	4108965	10217807
3	28	7	2.14	15	0	19	389	14	1266	19	389	14	1266	3	519	3	312	1.17	1.00	1.34	1.57	1.58	1.06	2.30	1.09	1.00	8.23	4020506	10084242
3	28	8	1.875	15	0	18	363	14	1240	18	363	14	1240	3	583	3	342	1.18	1.00	1.36	1.56	1.61	1.06	2.47	1.11	1.00	9.01	3935978	9959843
3	28	9	1.67	15	0	17	347	13	1224	17	347	13	1224	3	452	2	369	1.19	1.00	1.39	1.60	1.62	1.05	2.50	1.15	1.00	9.86	4008586	10131189
3	28	5	3.3	16.5	0.75	24	473	15	1352	24	473	15	1352	3	341	3	217	1.15	1.00	1.73	1.53	1.52	1.06	1.76	1.32	1.00	6.09	4134991	10207350
3	28	6	2.75	16.5	0.75	22	433	14	1311	22	433	14	1311	3	412	3	252	1.16	1.00	1.74	1.53	1.55	1.06	1.96	1.35	1.00	6.87	4010970	10004631
3	28	7	2.357	16.5	0.75	20	401	14	1279	20	401	14	1279	3	483	3	285	1.17	1.00	1.77	1.52	1.58	1.06	2.15	1.37	1.00	7.63	3918109	9864647
3	28	8	2.06	16.5	0.75	19	374	14	1254	19	374	14	1254	3	538	3	319	1.17	1.00	1.75	1.52	1.61	1.06	2.34	1.39	1.00	8.39	3849048	9777238
3	28	9	1.83	16.5	0.75	18	353	14	1231	18	353	14	1231	3	412	2	344	1.18	1.00	1.76	1.52	1.64	1.06	2.47	1.40	1.00	9.10	3803394	9717888
3	28	5	3.6	18	1.5	25	502	15	1380	25	502	15	1380	3	318	3	205	1.15	1.00	2.55	1.59	1.47	1.05	1.69	2.02	1.00	5.81	4378011	10660958

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	28	6	3	18	1.5	23	460	15	1338	23	460	15	1337	3	378	3	237	1.16	1.00	2.58	1.58	1.51	1.05	1.89	2.06	1.00	6.56	4245621	10440759
3	28	7	2.57	18	1.5	21	427	14	1304	21	427	14	1304	3	438	3	269	1.16	1.00	2.41	1.58	1.53	1.05	2.07	1.94	1.00	7.27	4146020	10278948
3	28	8	2.25	18	1.5	20	399	14	1277	20	399	14	1277	3	500	3	300	1.17	1.00	2.14	1.57	1.56	1.05	2.24	1.72	1.00	7.96	4057992	10146531
3	28	9	2	18	1.5	19	376	14	1253	19	376	14	1253	3	560	3	330	1.18	1.00	1.89	1.57	1.59	1.05	2.41	1.55	1.00	8.63	3987241	10039189
3	28	6	3.08	18.5	0	23	464	15	1343	23	464	15	1343	3	368	3	232	1.16	1.00	1.31	1.57	1.51	1.05	1.85	1.04	1.00	6.44	4229319	10406046
3	28	7	2.64	18.5	0	22	430	14	1310	22	430	14	1310	3	424	3	263	1.16	1.00	1.32	1.57	1.54	1.05	2.03	1.06	1.00	7.14	4126058	10244593
3	28	8	2.32	18.5	0	20	403	14	1282	20	403	14	1282	3	483	3	291	1.17	1.00	1.34	1.56	1.56	1.05	2.20	1.07	1.00	7.78	4033899	10095942
3	28	9	2.06	18.5	0	19	380	14	1257	19	380	14	1257	3	538	3	321	1.18	1.00	1.33	1.56	1.59	1.06	2.36	1.09	1.00	8.43	3963287	9985149
3	28	10	1.85	18.5	0	18	359	14	1237	18	359	14	1237	3	400	2	344	1.18	1.00	1.36	1.55	1.62	1.05	2.49	1.10	1.00	9.09	3902090	9903198
3	28	6	3.58	21.5	1.5	25	499	15	1379	25	499	15	1379	3	318	3	205	1.15	1.00	2.54	1.58	1.47	1.05	1.70	2.01	1.00	5.84	4352754	10619024
3	28	7	3.07	21.5	1.5	23	464	15	1343	23	464	15	1343	3	368	3	232	1.16	1.00	2.57	1.58	1.50	1.05	1.86	2.05	1.00	6.46	4243096	10433461
3	28	8	2.69	21.5	1.5	22	435	14	1313	22	435	14	1313	3	424	3	259	1.16	1.00	2.45	1.57	1.53	1.05	2.01	2.01	1.00	7.04	4145094	10269925
3	28	9	2.39	21.5	1.5	21	410	14	1289	21	410	14	1289	3	467	3	285	1.17	1.00	2.22	1.57	1.55	1.05	2.17	1.81	1.00	7.64	4073249	10163931
3	28	10	2.15	21.5	1.5	19	389	14	1266	20	389	14	1265	3	519	3	310	1.17	1.00	2.03	1.56	1.57	1.05	2.31	1.64	1.00	8.20	4002671	10049709
3	28	7	3.14	22	0	23	467	15	1347	23	467	15	1347	3	359	3	228	1.15	1.00	1.31	1.57	1.50	1.05	1.83	1.03	1.00	6.35	4221091	10389216
3	28	8	2.75	22	0	22	438	14	1317	22	438	14	1317	3	412	3	254	1.16	1.00	1.29	1.56	1.53	1.05	1.98	1.05	1.00	6.93	4128547	10236205
3	28	9	2.44	22	0	21	413	14	1293	21	413	14	1293	3	467	3	280	1.17	1.00	1.31	1.56	1.55	1.05	2.14	1.06	1.00	7.53	4065112	10146600
3	28	10	2.2	22	0	20	392	14	1270	20	392	14	1270	3	519	3	304	1.17	1.00	1.33	1.56	1.57	1.05	2.27	1.08	1.00	8.06	3987096	10016473
3	28	11	2	22	0	19	373	14	1252	19	373	14	1252	3	560	3	329	1.18	1.00	1.32	1.55	1.60	1.05	2.41	1.09	1.00	8.61	3933120	9943515
3	28	12	1.83	22	0	18	357	14	1235	18	357	14	1235	3	412	2	346	1.18	1.00	1.35	1.55	1.62	1.05	2.49	1.10	1.00	9.16	3897194	9897117
3	28	7	3.57	25	1.5	25	498	15	1376	25	498	15	1376	3	318	3	205	1.15	1.00	2.53	1.58	1.47	1.05	1.70	2.01	1.00	5.83	4328279	10565641
3	28	8	3.125	25	1.5	23	467	15	1345	23	467	15	1344	3	359	3	229	1.15	1.00	2.49	1.57	1.50	1.05	1.84	2.03	1.00	6.37	4226792	10395593
3	28	9	2.78	25	1.5	22	441	15	1320	22	441	15	1320	3	412	3	252	1.16	1.00	2.54	1.57	1.52	1.05	1.98	2.06	1.00	6.89	4150343	10275849
3	28	10	2.5	25	1.5	21	419	14	1296	21	419	14	1296	3	452	3	274	1.17	1.00	2.32	1.56	1.54	1.05	2.10	1.87	1.00	7.38	4078485	10155516
3	28	11	2.27	25	1.5	20	399	14	1279	20	399	14	1279	3	500	3	297	1.17	1.00	2.10	1.56	1.56	1.05	2.24	1.73	1.00	7.92	4038078	10113427
3	28	12	1.83	25	1.5	22	432	14	1308	22	432	14	1307	3	412	2	391	1.19	1.00	1.68	2.17	1.38	1.04	2.78	1.72	1.00	10.28	5973358	13673924
3	32	3	1.5	4.5	0	18	360	15	1400	18	360	15	1400	3	571	2	435	1.19	1.00	1.47	1.72	1.67	1.06	3.12	1.12	1.00	14.36	6688696	15814384
3	32	3	2	6	0.75	20	397	16	1434	20	397	16	1433	3	432	2	354	1.17	1.00	1.41	1.57	1.65	1.06	2.99	1.02	1.00	11.31	6101968	14686664
3	32	4	1.5	6	0.75	18	356	15	1394	18	356	15	1394	3	571	2	432	1.19	1.00	1.46	1.69	1.67	1.06	3.13	1.14	1.00	14.24	6515701	15502543
3	32	3	2.33	7	1.25	22	433	16	1473	22	433	16	1473	3	552	3	323	1.17	1.00	2.46	1.60	1.59	1.06	2.71	1.83	1.00	10.23	6344633	15097245
3	32	4	1.75	7	1.25	19	372	15	1409	19	372	15	1409	3	485	2	396	1.18	1.00	2.01	1.58	1.67	1.06	3.08	1.53	1.00	12.47	6091711	14707204
3	32	3	2.67	8	0	23	453	16	1490	23	453	16	1490	3	485	3	284	1.16	1.00	1.52	1.53	1.59	1.06	1.79	1.11	1.00	9.14	6087262	14577862
3	32	4	2	8	0	19	389	16	1427	19	389	16	1427	3	432	2	360	1.17	1.00	1.55	1.52	1.67	1.06	2.94	1.15	1.00	11.19	5856337	14246950
3	32	5	1.6	8	0	18	358	15	1395	18	358	15	1395	3	533	2	419	1.19	1.00	1.59	1.61	1.68	1.06	3.11	1.25	1.00	13.37	6165378	14865061
3	32	3	3.17	9.5	0.75	24	484	17	1522	24	484	17	1522	3	410	3	244	1.15	1.00	1.91	1.48	1.57	1.06	1.61	1.37	1.00	8.03	5967271	14314339
3	32	4	2.375	9.5	0.75	21	417	16	1456	21	417	16	1456	3	533	3	309	1.16	1.00	1.99	1.47	1.64	1.06	2.62	1.42	1.00	9.81	5725391	13955734
3	32	5	1.9	9.5	0.75	19	371	15	1409	19	371	15	1409	3	457	2	367	1.18	1.00	2.01	1.47	1.71	1.06	3.00	1.47	1.00	11.48	5590601	13781212
3	32	6	1.583	9.5	0.75	18	355	15	1394	18	355	15	1394	3	552	2	422	1.19	1.00	1.80	1.61	1.67	1.06	3.13	1.42	1.00	13.49	6151405	14855208
3	32	3	3.67	11	1.5	27	534	17	1573	27	534	17	1573	3	356	3	220	1.15	1.00	2.69	1.56	1.50	1.06	1.51	1.99	1.00	7.41	6499003	15276116
3	32	4	2.75	11	1.5	23	463	17	1501	23	463	16	1500	3	471	3	279	1.16	1.00	2.73	1.55	1.56	1.06	1.79	2.06	1.00	9.01	6218937	14817924
3	32	5	2.2	11	1.5	21	412	16	1452	21	412	16	1452	3	593	3	335	1.17	1.00	2.80	1.54	1.61	1.06	2.81	2.11	1.00	10.53	6033421	14549035
3	32	6	1.833	11	1.5	19	374	16	1412	19	374	16	1412	3	471	2	381	1.18	1.00	2.82	1.54	1.67	1.06	3.11	2.17	1.00	11.95	5891077	14338492
3	32	7	1.57	11	1.5	17	343	15	1381	17	343	15	1381	3	552	2	416	1.19	1.00	2.85	1.53	1.72	1.06	3.35	2.21	1.00	13.35	5783880	14199468
3	32	4	2.875	11.5	1.75	24	470	17	1507	24	470	17	1506	3	444	3	267	1.16	1.00	2.93	1.53	1.56	1.06	1.73	2.19	1.00	8.69	6143776	14663792
3	32	5	2.3	11.5	1.75	21	419	16	1456	21	419	16	1456	3	552	3	321	1.17	1.00	3.00	1.52	1.61	1.06	2.72	2.25	1.00	10.13	5952296	14372702
3	32	6	1.917	11.5	1.75	19	380	16	1417	19	380	16	1417	3	457	2	369	1.18	1.00	3.02	1.52	1.66	1.06	3.03	2.30	1.00	11.51	5809368	14170571
3	32	7	1.643	11.5	1.75	17	348	15	1388	17	348	15	1388	3	516	2	403	1.19	1.00	3.06	1.51	1.72	1.06	3.27	2.35	1.00	12.89	5708547	14059291
3	32	4	3.25	13	2.5	25	490	17	1530	25	490	17	1530	3	400	3	239	1.15	1.00	2.88	1.48	1.55	1.06	1.60	2.09	1.00	7.92	6007448	14391618
3	32	5	2.6	13	2.5	22	438	16	1476	22	438	16	1476	3	500	3	287	1.16	1.00	2.94	1.48	1.61	1.06	1.83	2.15	1.00	9.21	5810819	14080049
3	32	6	2.167	13	2.5	20	398	16	1436	20	398	16	1436	3	593	3	333	1.17	1.00	2.96	1.47	1.65	1.06	2.80	2.20	1.00	10.46	5670753	13881083
3	32	7	1.857	13	2.5	18	366	15	1403	18	366	15	1403	3	457	2	371	1.18	1.00	2.99	1.47	1.70	1.06	3.05	2.25	1.00	11.65	5553939	13717515
3	32	4	3.625	14.5	3.25	26	528	17	1565	26	528	17	1565	3	356	3	221	1.15	1.00	2.92	1.54	1.50	1.06	1.52	2.17	1.00	7.42	6385055	15058056
3	32	5	2.9	14.5	3.25	24	472	17	1512	24	472	17	1512	3	444	3	266	1.16	1.00	2.92	1.53	1.55	1.06	1.74	2.22	1.00	8.66	6179537	14740463
3	32	6	2.417	14.5	3.25	22	430	16	1469	22	430	16	1468	3	533	3	308	1.17	1.00	2.94	1.53	1.59	1.06	2.66	2.27	1.00	9.82	6014638	14483030
3	32	7	2.07	14.5	3.25	20	397	16	1434	20	397	16	1434	3	410	2	350	1.17	1.00	3.03	1.52	1.63	1.06	2.92	2.32	1.00	10.92	5894317	14299593
3	32	4	2.875	11.5	0	24	470	17	1507	24	470	17	1506	3	444	3	267	1.16	1.00	1.50	1.53	1.56	1.06	1.73	1.12	1.00	8.69	6143776	14663792
3	32	5	2.3	11.5	0	21	419	16	1456	21	419	16	1456	3	552	3	321	1.17	1.00	1.54	1.52	1.61	1.06	2.72	1.15	1.00	10.13	5952296	14372702
3	32	6	1.917	11.5	0	19	380	16	1417	19	380	16	1417	3	457	2	369	1.18	1.00	1.55	1.52	1.66	1.06	3.03	1.18	1.00	11.51	5809368	14170571
3	32	7	1.643	11.5	0	17	348	15	1388	17	348	15	1388	3	516	2	403	1.19	1.00	1.57	1.51	1.72	1.06	3.27	1.21	1.00	12.89	5708547	14059291
3	32	4	3.25	13	0.75	25	490	17	1530	25	490	17	1530	3	400	3	239	1.15	1.00	1.88	1.48	1.55	1.06	1.60	1.37	1.00	7.92	6007448	14391618
3	32	5	2.6	13	0.75	22	438	16	1476	22	438	16	1476	3	500	3	287	1.16	1.00	1.93	1.48	1.61	1.06	1.83	1.41	1.00	9.21	5810819	14080049
3	32	6	2.167	13	0.75	20	398	16	1436	20	398	16	1436	3	593	3	333	1.17	1.00	1.94	1.47	1.65	1.06	2.80	1.44	1.00	10.46	5670753	13881083
3	32	7	1.857	13	0.75	18	366	15	1403	18	366	15	1403	3	457	2	371	1.18	1.00	1.96	1.47	1.70	1.06	3.05	1.47	1.00	11.65	5553939	13717515
3	32	4	3.625	14.5	1.5	26	528	17	1565	26	528	17	1565	3	356	3	221	1.15	1.00	2.69	1.54	1.50	1.06	1.52	2.00	1.00	7.42	6385055	15058056
3	32	5	2.9	14.5	1.5	24	472	17	1512	24	472	17	1512	3	444	3	266	1.16	1.00	2.69	1.53	1.55	1.06	1.74	2.05	1.00	8.66	6179537	14740463
3	32	6	2.417	14.5	1.5	22	430	16	1469	22	430	16	1468	3	533	3	308	1.17	1.00	2.47	1.53	1.59	1.06	2.66	1.91	1.00	9.82	6014638	14483030
3	32	7	2.07	14.5	1.5	20	397	16	1434	20	397	16	1434	3	410	2	350	1.17	1.00	2.19	1.52	1.63	1.06	2.92	1.67	1.00	10.92	5894317	14299593
3	32	5	3	15	0	24	478	17	1515	24	478	17	1515	3	432	3	257	1.15	1.00	1.46	1.52	1.55	1.06	1.69	1.11	1.00	8.41	6117596	14603709
3	32	6	2.5	15	0	22	435	16	1474	22	435	16	1474	3	516	3	299	1.16	1.00	1.50	1.51	1.59	1.06	2.59	1.13	1.00	9.55	5962897	14377225
3	32	7	2.14	15	0	20	401	16	1441	20	401	16	1441	3	593	3	340	1.17	1.00	1.52	1.51	1.63	1.06	2.86	1.15	1.00	10.66	5855357	14233425
3	32	8	1.875	15	0	19	373	16	1412	19	373	16	1412	3	457	2	373	1.18	1.00	1.54	1.50	1.67	1.06	3.08	1.17	1.00	11.68	5738462	14060307
3	32	9	1.67	15	0	18	356	15	1393	18	356	15	1393	3	516	2	402	1.19	1.00	1.56	1.54	1.68	1.06	3.11	1.22	1.00	12.77	5841135	14274650
3	32	5	3.3	16.5	0.75	25	493	17	1530	25	493	17	1529	3	390	3	236	1.15	1.00	1.84	1.48	1.55	1.06	1.59	1.36	1.00	7.80	5972274	14309794
3	32	6	2.75	16.5	0.75	22	449	16	1489	22	449	16	1489	3	471	3	274	1.16	1.00	1.89	1.47	1.59	1.06	1.77	1.39	1.00	8.86	5824064	14096872

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	32	7	2.357	16.5	0.75	21	415	16	1452	21	415	16	1451	3	552	3	310	1.17	1.00	1.90	1.47	1.63	1.06	2.66	1.42	1.00	9.84	5690604	13885291
3	32	8	2.06	16.5	0.75	19	386	16	1425	19	386	16	1425	3	421	2	347	1.17	1.00	1.93	1.46	1.67	1.06	2.90	1.44	1.00	10.83	5605172	13783618
3	32	9	1.83	16.5	0.75	18	363	15	1401	18	363	15	1401	3	471	2	375	1.18	1.00	1.94	1.47	1.70	1.06	3.07	1.46	1.00	11.79	5553496	13727520
3	32	5	3.6	18	1.5	26	524	17	1561	26	524	17	1561	3	364	3	222	1.15	1.00	2.60	1.53	1.50	1.06	1.53	1.98	1.00	7.44	6314379	14927780
3	32	6	3	18	1.5	24	478	17	1518	24	478	17	1518	3	432	3	258	1.16	1.00	2.68	1.52	1.54	1.06	1.71	2.02	1.00	8.44	6147969	14673573
3	32	7	2.57	18	1.5	22	442	16	1482	22	442	16	1482	3	500	3	293	1.16	1.00	2.63	1.52	1.58	1.06	1.87	2.01	1.00	9.39	6018526	14476331
3	32	8	2.25	18	1.5	21	413	16	1450	21	413	16	1450	3	571	3	326	1.17	1.00	2.32	1.52	1.61	1.06	2.78	1.78	1.00	10.27	5898401	14280897
3	32	9	2	18	1.5	19	387	16	1427	19	387	16	1427	3	432	2	360	1.18	1.00	2.09	1.51	1.64	1.06	3.00	1.61	1.00	11.19	5815202	14182726
3	32	6	3.08	18.5	0	24	483	17	1521	24	483	17	1521	3	421	3	252	1.15	1.00	1.46	1.51	1.54	1.06	1.67	1.10	1.00	8.25	6112536	14592248
3	32	7	2.64	18.5	0	22	447	16	1484	22	447	16	1484	3	485	3	285	1.16	1.00	1.47	1.51	1.57	1.06	1.83	1.12	1.00	9.17	5976052	14376171
3	32	8	2.32	18.5	0	21	417	16	1456	21	417	16	1456	3	552	3	317	1.17	1.00	1.49	1.50	1.61	1.06	2.72	1.14	1.00	10.04	5861122	14213063
3	32	9	2.06	18.5	0	20	392	16	1429	20	392	16	1429	3	421	2	350	1.17	1.00	1.50	1.50	1.64	1.06	2.93	1.15	1.00	10.89	5767226	14069805
3	32	10	1.85	18.5	0	18	369	15	1408	18	369	15	1408	3	457	2	375	1.18	1.00	1.50	1.49	1.67	1.06	3.10	1.17	1.00	11.78	5689627	13976463
3	32	6	3.58	21.5	1.5	26	521	17	1560	26	521	17	1560	3	364	3	223	1.15	1.00	2.59	1.52	1.50	1.06	1.54	1.98	1.00	7.47	6283688	14880205
3	32	7	3.07	21.5	1.5	24	483	17	1521	24	483	17	1521	3	421	3	252	1.15	1.00	2.61	1.52	1.53	1.06	1.68	2.01	1.00	8.28	6132447	14629999
3	32	8	2.69	21.5	1.5	23	451	16	1491	23	451	16	1491	3	485	3	281	1.16	1.00	2.64	1.51	1.57	1.06	1.82	2.04	1.00	9.08	6013208	14453605
3	32	9	2.39	21.5	1.5	21	425	16	1462	21	425	16	1462	3	533	3	310	1.17	1.00	2.41	1.51	1.59	1.06	2.68	1.87	1.00	9.83	5907512	14279144
3	32	10	2.15	21.5	1.5	20	402	16	1438	20	402	16	1437	3	593	3	338	1.17	1.00	2.20	1.51	1.62	1.06	2.86	1.71	1.00	10.58	5817896	14144147
3	32	7	3.14	22	0	24	487	17	1524	24	487	17	1524	3	410	3	247	1.15	1.00	1.42	1.51	1.53	1.06	1.65	1.09	1.00	8.13	6100545	14560711
3	32	8	2.75	22	0	23	455	16	1493	23	455	16	1493	3	471	3	276	1.16	1.00	1.44	1.50	1.56	1.06	1.79	1.11	1.00	8.91	5978886	14374635
3	32	9	2.44	22	0	21	428	16	1467	21	428	16	1467	3	533	3	304	1.17	1.00	1.46	1.50	1.59	1.06	2.64	1.12	1.00	9.69	5896448	14262322
3	32	10	2.2	22	0	20	405	16	1443	20	405	16	1443	3	593	3	331	1.17	1.00	1.48	1.50	1.62	1.06	2.82	1.14	1.00	10.40	5795858	14105475
3	32	11	2	22	0	19	385	16	1422	19	385	16	1422	3	432	2	358	1.18	1.00	1.50	1.49	1.65	1.06	2.99	1.15	1.00	11.11	5721066	13995667
3	32	12	1.83	22	0	18	367	15	1405	18	367	15	1405	3	471	2	377	1.18	1.00	1.49	1.49	1.67	1.06	3.10	1.17	1.00	11.85	5677923	13953762
3	32	7	3.57	25	1.5	26	519	17	1558	26	519	17	1558	3	364	3	223	1.15	1.00	2.58	1.52	1.50	1.06	1.54	1.97	1.00	7.47	6244309	14807301
3	32	8	3.125	25	1.5	24	486	17	1524	24	486	17	1523	3	410	3	248	1.15	1.00	2.60	1.51	1.53	1.06	1.67	2.00	1.00	8.17	6111908	14588446
3	32	9	2.78	25	1.5	23	458	16	1497	23	458	16	1497	3	471	3	273	1.16	1.00	2.64	1.51	1.56	1.06	1.79	2.03	1.00	8.86	6012339	14438143
3	32	10	2.5	25	1.5	22	434	16	1472	22	434	16	1472	3	516	3	298	1.16	1.00	2.53	1.51	1.58	1.06	2.61	1.94	1.00	9.52	5922544	14298166
3	32	11	2.27	25	1.5	21	413	16	1451	21	413	16	1451	3	571	3	323	1.17	1.00	2.28	1.51	1.61	1.06	2.77	1.79	1.00	10.19	5856885	14207181
3	32	12	1.83	25	1.5	22	446	16	1483	22	446	16	1483	3	471	2	428	1.18	1.00	1.71	2.06	1.43	1.05	2.49	1.68	1.00	13.21	8578376	18985772
3	36	3	1.5	4.5	0	18	367	17	1567	18	367	17	1567	3	327	1	475	1.19	1.00	1.63	1.65	1.73	1.06	2.77	1.19	1.00	17.99	9323196	21353667
3	36	3	2	6	0.75	20	407	18	1605	20	407	18	1605	3	486	2	386	1.17	1.00	1.57	1.52	1.72	1.06	2.65	1.08	1.00	14.15	8508770	19891199
3	36	4	1.5	6	0.75	18	362	17	1562	18	362	17	1562	3	327	1	471	1.19	1.00	1.63	1.62	1.73	1.06	2.79	1.21	1.00	17.87	9087444	20962958
3	36	3	2.33	7	1.25	22	446	18	1645	22	446	18	1645	3	419	2	351	1.16	1.00	2.66	1.54	1.65	1.06	2.40	1.86	1.00	12.76	8811411	20378132
3	36	4	1.75	7	1.25	19	380	17	1578	19	380	17	1578	3	545	2	431	1.18	1.00	2.21	1.53	1.74	1.06	2.73	1.59	1.00	15.64	8506024	19927573
3	36	3	2.67	8	0	23	467	18	1665	23	467	18	1664	3	545	3	308	1.16	1.00	1.72	1.48	1.64	1.06	2.18	1.17	1.00	11.42	8458683	19719258
3	36	4	2	8	0	20	399	18	1596	20	399	18	1596	3	486	2	392	1.17	1.00	1.74	1.47	1.73	1.06	2.60	1.22	1.00	14.00	8167610	19294148
3	36	5	1.6	8	0	18	364	17	1564	18	364	17	1564	3	305	1	457	1.18	1.00	1.81	1.55	1.74	1.06	2.77	1.33	1.00	16.80	8607360	20141360
3	36	3	3.17	9.5	0.75	25	500	19	1700	25	500	19	1700	3	462	3	264	1.15	1.00	2.13	1.43	1.62	1.06	1.95	1.43	1.00	10.02	8279937	19361714
3	36	4	2.375	9.5	0.75	21	429	18	1628	21	429	18	1628	3	409	2	335	1.16	1.00	2.16	1.42	1.70	1.06	2.33	1.48	1.00	12.26	7979525	18915871
3	36	5	1.9	9.5	0.75	19	379	17	1578	19	379	17	1578	3	514	2	399	1.17	1.00	2.21	1.42	1.78	1.06	2.66	1.54	1.00	14.40	7808721	18701738
3	36	6	1.583	9.5	0.75	18	362	17	1559	18	362	17	1559	3	310	1	460	1.19	1.00	1.98	1.54	1.74	1.06	2.77	1.48	1.00	16.87	8564989	20051148
3	36	3	3.67	11	1.5	28	554	19	1752	28	554	19	1752	3	400	3	239	1.14	1.00	2.81	1.51	1.53	1.06	1.82	1.99	1.00	9.19	8973476	20557698
3	36	4	2.75	11	1.5	24	478	18	1675	24	478	18	1674	3	529	3	302	1.16	1.00	2.89	1.50	1.61	1.06	2.17	2.06	1.00	11.22	8618315	19986596
3	36	5	2.2	11	1.5	21	424	18	1621	21	424	18	1621	3	439	2	364	1.17	1.00	2.94	1.49	1.67	1.06	2.49	2.12	1.00	13.13	8383666	19638403
3	36	6	1.833	11	1.5	19	382	17	1581	19	382	17	1581	3	529	2	414	1.18	1.00	3.01	1.48	1.74	1.06	2.76	2.18	1.00	14.99	8217229	19424117
3	36	7	1.57	11	1.5	17	349	17	1546	18	349	17	1545	3	310	1	453	1.18	1.00	3.03	1.48	1.78	1.06	2.97	2.23	1.00	16.74	8075317	19223474
3	36	4	2.875	11.5	1.75	24	485	19	1683	24	485	18	1682	3	500	3	290	1.15	1.00	3.07	1.48	1.60	1.06	2.10	2.17	1.00	10.83	8519254	19805743
3	36	5	2.3	11.5	1.75	22	430	18	1630	22	430	18	1630	3	419	2	349	1.17	1.00	3.14	1.47	1.67	1.06	2.42	2.24	1.00	12.69	8292502	19484341
3	36	6	1.917	11.5	1.75	19	388	17	1588	19	388	17	1588	3	514	2	401	1.17	1.00	3.20	1.46	1.73	1.06	2.69	2.30	1.00	14.46	8110617	19230546
3	36	7	1.643	11.5	1.75	18	355	17	1553	18	355	17	1553	3	581	2	439	1.18	1.00	3.23	1.46	1.78	1.06	2.90	2.35	1.00	16.13	7973517	19037873
3	36	4	3.25	13	2.5	25	507	19	1706	25	507	19	1705	3	450	3	259	1.15	1.00	3.01	1.43	1.60	1.06	1.94	2.08	1.00	9.85	8315691	19414144
3	36	5	2.6	13	2.5	23	451	18	1650	23	451	18	1650	3	562	3	311	1.16	1.00	3.07	1.43	1.66	1.06	2.22	2.14	1.00	11.51	8082070	19065658
3	36	6	2.167	13	2.5	20	408	18	1606	20	408	18	1605	3	450	2	362	1.17	1.00	3.13	1.42	1.72	1.06	2.49	2.19	1.00	13.09	7893186	18792604
3	36	7	1.857	13	2.5	19	373	17	1573	19	373	17	1573	3	514	2	404	1.18	1.00	3.16	1.42	1.77	1.06	2.72	2.25	1.00	14.64	7764388	18640445
3	36	4	3.625	14.5	3.25	27	547	19	1744	27	547	19	1744	3	400	3	240	1.14	1.00	3.01	1.49	1.54	1.06	1.84	2.15	1.00	9.22	8812133	20265839
3	36	5	2.9	14.5	3.25	24	488	19	1685	24	488	19	1685	3	500	3	288	1.15	1.00	3.07	1.48	1.59	1.06	2.10	2.21	1.00	10.76	8544806	19841615
3	36	6	2.417	14.5	3.25	22	443	18	1640	22	443	18	1640	3	400	2	335	1.16	1.00	3.13	1.47	1.64	1.06	2.35	2.26	1.00	12.23	8349166	19548812
3	36	7	2.07	14.5	3.25	20	406	18	1606	20	406	18	1606	3	462	2	381	1.17	1.00	3.16	1.47	1.70	1.06	2.60	2.31	1.00	13.69	8208565	19373373
3	36	4	2.875	11.5	0	24	485	19	1683	24	485	18	1682	3	500	3	290	1.15	1.00	1.67	1.48	1.60	1.06	2.10	1.18	1.00	10.83	8519254	19805743
3	36	5	2.3	11.5	0	22	430	18	1630	22	430	18	1630	3	419	2	349	1.17	1.00	1.71	1.47	1.67	1.06	2.42	1.22	1.00	12.69	8292502	19484341
3	36	6	1.917	11.5	0	19	388	17	1588	19	388	17	1588	3	514	2	401	1.17	1.00	1.74	1.46	1.73	1.06	2.69	1.25	1.00	14.46	8110617	19230546
3	36	7	1.643	11.5	0	18	355	17	1553	18	355	17	1553	3	581	2	439	1.18	1.00	1.76	1.46	1.78	1.06	2.90	1.28	1.00	16.13	7973517	19037873
3	36	4	3.25	13	0.75	25	507	19	1706	25	507	19	1705	3	450	3	259	1.15	1.00	2.06	1.43	1.60	1.06	1.94	1.42	1.00	9.85	8315691	19414144
3	36	5	2.6	13	0.75	23	451	18	1650	23	451	18	1650	3	562	3	311	1.16	1.00	2.10	1.43	1.66	1.06	2.22	1.47	1.00	11.51	8082070	19065658
3	36	6	2.167	13	0.75	20	408	18	1606	20	408	18	1605	3	450	2	362	1.17	1.00	2.14	1.42	1.72	1.06	2.49	1.50	1.00	13.09	7893186	18792604
3	36	7	1.857	13	0.75	19	373	17	1573	19	373	17	1573	3	514	2	404	1.18	1.00	2.16	1.42	1.77	1.06	2.72	1.54	1.00	14.64	7764388	18640445
3	36	4	3.625	14.5	1.5	27	547	19	1744	27	547	19	1744	3	400	3	240	1.14	1.00	2.80	1.49	1.54	1.06	1.84	2.00	1.00	9.22	8812133	20265839
3	36	5	2.9	14.5	1.5	24	488	19	1685	24	488	19	1685	3	500	3	288	1.15	1.00	2.85	1.48	1.59	1.06	2.10	2.05	1.00	10.76	8544806	19841615
3	36	6	2.417	14.5	1.5	22	443	18	1640	22	443	18	1640	3	400	2	335	1.16	1.00	2.76	1.47	1.64	1.06	2.35	1.99	1.00	12.23	8349166	19548812
3	36	7	2.07	14.5	1.5	20	406	18	1606	20	406	18	1606	3	462	2	381	1.17	1.00	2.39	1.47	1.70	1.06	2.60	1.75	1.00	13.69	8208565	19373373
3	36	5	3	15	0	25	493	19	1693	25	493	19	1693	3	486	3	279	1.15	1.00	1.64	1.47	1.59	1.06	2.06	1.17	1.00	10.50	8483764	19741781
3	36	6	2.5	15	0	22	448	18	1646	22	448	18	1646	3	581	3	324	1.16	1.00	1.67	1.46	1.64	1.06	2.30	1.20	1.00	11.91	8275838	19415460
3	36	7	2.14	15	0	21	412	18	1609	21	412	18	1609	3	462	2	369	1.17	1.00	1.68	1.46	1.69	1.06	2.53	1.22	1.00	13.29	8134360	19212597

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	36	8	1.875	15	0	19	381	17	1581	19	381	17	1581	3	514	2	405	1.18	1.00	1.73	1.45	1.74	1.06	2.73	1.25	1.00	14.65	8006804	19058650
3	36	9	1.67	15	0	18	362	17	1561	18	362	17	1561	3	581	2	438	1.18	1.00	1.75	1.48	1.75	1.06	2.77	1.30	1.00	16.03	8147827	19338068
3	36	5	3.3	16.5	0.75	26	510	19	1707	26	510	19	1707	3	439	3	255	1.15	1.00	2.06	1.43	1.59	1.06	1.92	1.42	1.00	9.70	8270978	19316991
3	36	6	2.75	16.5	0.75	23	463	18	1662	23	463	18	1661	3	529	3	297	1.16	1.00	2.07	1.42	1.64	1.06	2.15	1.45	1.00	11.04	8076759	19038301
3	36	7	2.357	16.5	0.75	21	426	18	1625	21	426	18	1625	3	419	2	337	1.16	1.00	2.08	1.42	1.69	1.06	2.37	1.48	1.00	12.31	7926391	18824638
3	36	8	2.06	16.5	0.75	20	395	18	1595	20	395	18	1595	3	474	2	377	1.17	1.00	2.14	1.41	1.73	1.06	2.58	1.51	1.00	13.57	7814497	18685875
3	36	9	1.83	16.5	0.75	19	370	17	1570	19	370	17	1570	3	529	2	408	1.18	1.00	2.10	1.42	1.77	1.06	2.73	1.53	1.00	14.80	7759755	18638438
3	36	5	3.6	18	1.5	27	542	19	1742	27	542	19	1742	3	409	3	241	1.14	1.00	2.78	1.48	1.54	1.05	1.85	1.99	1.00	9.26	8727639	20132370
3	36	6	3	18	1.5	25	494	19	1693	25	494	19	1693	3	486	3	279	1.15	1.00	2.84	1.47	1.58	1.06	2.07	2.03	1.00	10.50	8508383	19779713
3	36	7	2.57	18	1.5	23	456	18	1653	23	456	18	1653	3	562	3	317	1.16	1.00	2.85	1.47	1.63	1.06	2.27	2.07	1.00	11.68	8341108	19515792
3	36	8	2.25	18	1.5	21	424	18	1621	21	424	18	1621	3	439	2	354	1.17	1.00	2.54	1.46	1.67	1.06	2.46	1.86	1.00	12.83	8197362	19305686
3	36	9	2	18	1.5	20	396	18	1596	20	396	18	1596	3	486	2	391	1.17	1.00	2.28	1.46	1.71	1.06	2.66	1.68	1.00	14.00	8088803	19177120
3	36	6	3.08	18.5	0	25	499	19	1697	25	499	19	1697	3	474	3	273	1.15	1.00	1.63	1.46	1.58	1.06	2.03	1.16	1.00	10.27	8459021	19678842
3	36	7	2.64	18.5	0	23	460	18	1659	23	460	18	1659	3	545	3	310	1.16	1.00	1.64	1.46	1.63	1.06	2.23	1.18	1.00	11.46	8296916	19441689
3	36	8	2.32	18.5	0	21	429	18	1626	21	429	18	1626	3	419	2	344	1.17	1.00	1.65	1.45	1.67	1.06	2.41	1.20	1.00	12.52	8142018	19198157
3	36	9	2.06	18.5	0	20	401	18	1600	20	401	18	1600	3	474	2	380	1.17	1.00	1.67	1.45	1.71	1.06	2.60	1.22	1.00	13.66	8035344	19066347
3	36	10	1.85	18.5	0	19	377	17	1576	19	377	17	1576	3	514	2	408	1.18	1.00	1.69	1.44	1.74	1.06	2.75	1.24	1.00	14.75	7939250	18939686
3	36	6	3.58	21.5	1.5	27	540	19	1737	27	540	19	1737	3	409	3	241	1.15	1.00	2.76	1.47	1.54	1.05	1.85	1.98	1.00	9.26	8665474	20005479
3	36	7	3.07	21.5	1.5	25	499	19	1697	25	499	19	1697	3	474	3	274	1.15	1.00	2.78	1.46	1.58	1.06	2.04	2.01	1.00	10.31	8486575	19728848
3	36	8	2.69	21.5	1.5	23	465	18	1664	23	465	18	1664	3	545	3	305	1.16	1.00	2.80	1.46	1.62	1.06	2.21	2.05	1.00	11.31	8331093	19496411
3	36	9	2.39	21.5	1.5	22	436	18	1636	22	436	18	1636	3	409	2	336	1.16	1.00	2.65	1.45	1.65	1.06	2.38	1.95	1.00	12.31	8209991	19326693
3	36	10	2.15	21.5	1.5	21	412	18	1609	21	412	18	1609	3	450	2	367	1.17	1.00	2.41	1.45	1.68	1.06	2.54	1.78	1.00	13.23	8096526	19144782
3	36	7	3.14	22	0	25	503	19	1701	25	503	19	1701	3	462	3	268	1.15	1.00	1.60	1.46	1.58	1.06	2.01	1.15	1.00	10.13	8444073	19646932
3	36	8	2.75	22	0	23	469	18	1667	23	469	18	1667	3	529	3	299	1.16	1.00	1.61	1.45	1.61	1.06	2.18	1.17	1.00	11.10	8286099	19403822
3	36	9	2.44	22	0	22	440	18	1639	22	440	18	1638	3	400	2	330	1.16	1.00	1.62	1.45	1.65	1.06	2.35	1.19	1.00	12.11	8182927	19266927
3	36	10	2.2	22	0	21	415	18	1614	21	415	18	1613	3	439	2	359	1.17	1.00	1.64	1.44	1.68	1.06	2.50	1.21	1.00	13.02	8056883	19081208
3	36	11	2	22	0	20	394	17	1591	20	394	17	1591	3	486	2	389	1.17	1.00	1.66	1.44	1.71	1.06	2.65	1.22	1.00	13.91	7968250	18946931
3	36	12	1.83	22	0	19	375	17	1572	19	375	17	1572	3	529	2	410	1.18	1.00	1.68	1.44	1.74	1.06	2.75	1.24	1.00	14.84	7917439	18892394
3	36	7	3.57	25	1.5	27	538	19	1735	27	538	19	1735	3	409	3	241	1.15	1.00	2.75	1.46	1.54	1.05	1.86	1.97	1.00	9.27	8617015	19919075
3	36	8	3.125	25	1.5	25	502	19	1701	25	502	19	1701	3	462	3	269	1.15	1.00	2.78	1.46	1.57	1.05	2.02	2.00	1.00	10.17	8460298	19682973
3	36	9	2.78	25	1.5	24	472	18	1672	24	472	18	1672	3	529	3	297	1.16	1.00	2.80	1.45	1.61	1.06	2.17	2.03	1.00	11.05	8334829	19499053
3	36	10	2.5	25	1.5	22	446	18	1646	22	446	18	1646	3	581	3	324	1.16	1.00	2.78	1.45	1.64	1.06	2.32	2.02	1.00	11.91	8225398	19338887
3	36	11	2.27	25	1.5	21	424	18	1622	21	424	18	1622	3	429	2	351	1.17	1.00	2.55	1.45	1.67	1.06	2.46	1.86	1.00	12.74	8138523	19205873
3	36	12	1.83	25	1.5	23	457	18	1655	23	457	18	1654	3	529	2	466	1.18	1.00	1.83	1.96	1.48	1.04	3.01	1.67	1.00	16.46	11789044	25346015
3	40	3	1.5	4.5	0	19	372	19	1731	19	372	19	1731	3	364	1	516	1.18	1.00	1.84	1.59	1.76	1.05	3.28	1.26	1.00	21.95	12541571	27897116
3	40	3	2	6	0.75	21	415	19	1772	21	415	19	1771	3	541	2	418	1.17	1.00	1.75	1.46	1.78	1.05	3.13	1.15	1.00	17.26	11436317	26032597
3	40	4	1.5	6	0.75	18	367	19	1724	18	367	19	1724	3	364	1	511	1.18	1.00	1.81	1.56	1.76	1.05	3.30	1.28	1.00	21.77	12208088	27347462
3	40	3	2.33	7	1.25	23	457	20	1814	23	457	20	1814	3	465	2	380	1.16	1.00	2.84	1.49	1.71	1.05	2.82	1.91	1.00	15.52	11816818	26627327
3	40	4	1.75	7	1.25	19	386	19	1744	19	386	19	1744	3	312	1	467	1.17	1.00	2.43	1.47	1.79	1.05	3.24	1.66	1.00	19.10	11459188	26112959
3	40	3	2.67	8	0	24	479	20	1837	24	479	20	1837	3	408	2	333	1.15	1.00	1.89	1.43	1.70	1.05	2.57	1.24	1.00	13.89	11346081	25809072
3	40	4	2	8	0	20	406	19	1764	20	406	19	1763	3	541	2	424	1.17	1.00	1.94	1.42	1.79	1.05	3.09	1.29	1.00	17.11	10996154	25308081
3	40	5	1.6	8	0	18	369	19	1727	18	369	19	1727	3	339	1	496	1.18	1.00	2.02	1.49	1.78	1.05	3.29	1.40	1.00	20.48	11573198	26321443
3	40	3	3.17	9.5	0.75	26	514	21	1874	26	514	21	1874	3	513	3	285	1.15	1.00	2.33	1.38	1.67	1.05	2.30	1.49	1.00	12.17	11082593	25322642
3	40	4	2.375	9.5	0.75	22	439	20	1796	22	439	20	1796	3	455	2	362	1.16	1.00	2.38	1.38	1.77	1.05	2.75	1.55	1.00	14.92	10716669	24767533
3	40	5	1.9	9.5	0.75	19	385	19	1745	19	385	19	1745	3	571	2	432	1.17	1.00	2.43	1.37	1.84	1.05	3.16	1.62	1.00	17.61	10539742	24577229
3	40	6	1.583	9.5	0.75	18	366	19	1723	18	366	19	1723	3	345	1	498	1.18	1.00	2.17	1.48	1.78	1.05	3.30	1.54	1.00	20.61	11513263	26217851
3	40	3	3.67	11	1.5	29	571	21	1928	29	571	21	1927	3	444	3	257	1.14	1.00	3.02	1.45	1.58	1.05	2.14	2.02	1.00	11.14	11952307	26773611
3	40	4	2.75	11	1.5	25	490	20	1848	25	490	20	1848	3	588	3	327	1.15	1.00	3.09	1.44	1.66	1.05	2.56	2.10	1.00	13.65	11537399	26126648
3	40	5	2.2	11	1.5	22	432	20	1792	22	432	20	1792	3	488	2	394	1.16	1.00	3.19	1.44	1.74	1.05	2.95	2.17	1.00	16.04	11268174	25748465
3	40	6	1.833	11	1.5	19	388	19	1747	19	388	19	1747	3	588	2	449	1.17	1.00	3.24	1.43	1.79	1.05	3.27	2.23	1.00	18.30	11060305	25450342
3	40	7	1.57	11	1.5	18	352	19	1712	18	352	19	1712	3	345	1	492	1.18	1.00	3.26	1.42	1.83	1.05	3.53	2.28	1.00	20.51	10913081	25266531
3	40	4	2.875	11.5	1.75	25	498	20	1855	25	498	20	1854	3	556	3	313	1.15	1.00	3.26	1.43	1.66	1.05	2.48	2.19	1.00	13.16	11395311	25867218
3	40	5	2.3	11.5	1.75	22	440	20	1797	22	440	20	1797	3	465	2	377	1.16	1.00	3.36	1.42	1.73	1.05	2.85	2.27	1.00	15.43	11114975	25453452
3	40	6	1.917	11.5	1.75	20	395	19	1753	20	395	19	1753	3	571	2	435	1.17	1.00	3.42	1.41	1.79	1.05	3.19	2.33	1.00	17.62	10905876	25170306
3	40	7	1.643	11.5	1.75	18	359	19	1717	18	359	19	1716	3	333	1	476	1.18	1.00	3.49	1.41	1.83	1.05	3.44	2.39	1.00	19.73	10750118	24966553
3	40	4	3.25	13	2.5	26	522	21	1879	26	522	21	1879	3	500	3	279	1.15	1.00	3.20	1.39	1.65	1.05	2.28	2.10	1.00	11.94	11120200	25359418
3	40	5	2.6	13	2.5	23	462	20	1819	23	462	20	1818	3	417	2	336	1.15	1.00	3.29	1.38	1.72	1.05	2.62	2.16	1.00	13.99	10822758	24918026
3	40	6	2.167	13	2.5	21	416	19	1774	21	416	19	1774	3	500	2	391	1.16	1.00	3.35	1.37	1.78	1.05	2.95	2.22	1.00	15.96	10616965	24640137
3	40	7	1.857	13	2.5	19	379	19	1738	19	379	19	1738	3	571	2	437	1.17	1.00	3.37	1.37	1.83	1.05	3.22	2.28	1.00	17.88	10469061	24459454
3	40	4	3.625	14.5	3.25	28	563	21	1922	28	563	21	1922	3	444	3	259	1.14	1.00	3.23	1.44	1.58	1.05	2.17	2.17	1.00	11.20	11761425	26458308
3	40	5	2.9	14.5	3.25	25	500	20	1860	25	500	20	1860	3	556	3	311	1.15	1.00	3.27	1.43	1.65	1.05	2.49	2.23	1.00	13.11	11437734	25958391
3	40	6	2.417	14.5	3.25	23	453	20	1809	23	453	20	1808	3	444	2	362	1.16	1.00	3.32	1.42	1.71	1.05	2.78	2.28	1.00	14.89	11181134	25543602
3	40	7	2.07	14.5	3.25	21	414	19	1772	21	414	19	1771	3	513	2	412	1.17	1.00	3.39	1.42	1.76	1.05	3.07	2.34	1.00	16.68	11017029	25331695
3	40	4	2.875	11.5	0	25	498	20	1855	25	498	20	1854	3	556	3	313	1.15	1.00	1.86	1.43	1.66	1.05	2.48	1.25	1.00	13.16	11395311	25867218
3	40	5	2.3	11.5	0	22	440	20	1797	22	440	20	1797	3	465	2	377	1.16	1.00	1.91	1.42	1.73	1.05	2.85	1.29	1.00	15.43	11114975	25453452
3	40	6	1.917	11.5	0	20	395	19	1753	20	395	19	1753	3	571	2	435	1.17	1.00	1.95	1.41	1.79	1.05	3.19	1.33	1.00	17.62	10905876	25170306
3	40	7	1.643	11.5	0	18	359	19	1717	18	359	19	1716	3	333	1	476	1.18	1.00	1.99	1.41	1.83	1.05	3.44	1.36	1.00	19.73	10750118	24966553
3	40	4	3.25	13	0.75	26	522	21	1879	26	522	21	1879	3	500	3	279	1.15	1.00	2.27	1.39	1.65	1.05	2.28	1.49	1.00	11.94	11120200	25359418
3	40	5	2.6	13	0.75	23	462	20	1819	23	462	20	1818	3	417	2	336	1.15	1.00	2.33	1.38	1.72	1.05	2.62	1.53	1.00	13.99	10822758	24918026
3	40	6	2.167	13	0.75	21	416	19	1774	21	416	19	1774	3	500	2	391	1.16	1.00	2.37	1.37	1.78	1.05	2.95	1.58	1.00	15.96	10616965	24640137
3	40	7	1.857	13	0.75	19	379	19	1738	19	379	19	1738	3	571	2	437	1.17	1.00	2.39	1.37	1.83	1.05	3.22	1.62	1.00	17.88	10469061	24459454
3	40	4	3.625	14.5	1.5	28	563	21	1922	28	563	21	1922	3	444	3	259	1.14	1.00	3.02	1.44	1.58	1.05	2.17	2.03	1.00	11.20	11761425	26458308
3	40	5	2.9	14.5	1.5	25	500	20	1860	25	500	20	1860	3	556	3	311	1.15	1.00	3.06	1.43	1.65	1.05	2.49	2.09	1.00	13.11	11437734	25958391
3	40	6	2.417	14.5	1.5	23	453	20	1809	23	453	20	1808	3	444	2	362	1.16	1.00	3.03	1.42	1.71	1.05	2.78	2.09	1.00	14.89	11181134	25543602

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	40	7	2.07	14.5	1.5	21	414	19	1772	21	414	19	1771	3	513	2	412	1.17	1.00	2.65	1.42	1.76	1.05	3.07	1.83	1.00	16.68	11017029	25331695
3	40	5	3	15	0	25	507	20	1864	25	507	20	1864	3	541	3	301	1.15	1.00	1.82	1.42	1.65	1.05	2.42	1.23	1.00	12.73	11331922	25746354
3	40	6	2.5	15	0	23	458	20	1817	23	458	20	1816	3	435	2	351	1.16	1.00	1.86	1.41	1.71	1.05	2.72	1.27	1.00	14.52	11096174	25412459
3	40	7	2.14	15	0	21	420	20	1777	21	420	20	1777	3	513	2	399	1.17	1.00	1.89	1.41	1.75	1.05	3.00	1.29	1.00	16.22	10929204	25163846
3	40	8	1.875	15	0	19	387	19	1747	19	387	19	1747	3	571	2	439	1.17	1.00	1.91	1.40	1.80	1.05	3.24	1.32	1.00	17.89	10779957	24984508
3	40	9	1.67	15	0	18	366	19	1726	18	366	19	1726	3	328	1	474	1.18	1.00	1.93	1.43	1.80	1.05	3.30	1.37	1.00	19.60	10968186	25336871
3	40	5	3.3	16.5	0.75	26	524	21	1882	26	524	21	1882	3	488	3	275	1.14	1.00	2.23	1.38	1.64	1.05	2.27	1.48	1.00	11.79	11055974	25250593
3	40	6	2.75	16.5	0.75	24	475	20	1832	24	475	20	1832	3	588	3	320	1.15	1.00	2.27	1.37	1.70	1.05	2.54	1.52	1.00	13.41	10815101	24884463
3	40	7	2.357	16.5	0.75	22	435	20	1794	22	435	20	1794	3	465	2	364	1.16	1.00	2.32	1.37	1.75	1.05	2.80	1.56	1.00	15.01	10641927	24658428
3	40	8	2.06	16.5	0.75	20	402	19	1762	20	402	19	1762	3	526	2	408	1.17	1.00	2.33	1.37	1.80	1.05	3.06	1.59	1.00	16.56	10513676	24501081
3	40	9	1.83	16.5	0.75	19	376	19	1733	19	376	19	1733	3	588	2	441	1.17	1.00	2.36	1.37	1.82	1.05	3.23	1.60	1.00	18.03	10440784	24401364
3	40	5	3.6	18	1.5	28	559	21	1916	28	559	21	1916	3	455	3	259	1.14	1.00	3.00	1.43	1.59	1.05	2.18	2.01	1.00	11.21	11629021	26216615
3	40	6	3	18	1.5	25	507	21	1867	25	507	21	1867	3	541	3	302	1.15	1.00	3.00	1.42	1.64	1.05	2.44	2.06	1.00	12.77	11380005	25850712
3	40	7	2.57	18	1.5	23	466	20	1825	23	466	20	1824	3	426	2	343	1.16	1.00	3.06	1.41	1.69	1.05	2.69	2.10	1.00	14.25	11171716	25532380
3	40	8	2.25	18	1.5	22	432	20	1791	22	432	20	1791	3	488	2	383	1.16	1.00	2.84	1.41	1.73	1.05	2.92	1.95	1.00	15.67	11000890	25283818
3	40	9	2	18	1.5	20	403	19	1763	20	403	19	1763	3	541	2	423	1.17	1.00	2.54	1.40	1.77	1.05	3.15	1.77	1.00	17.08	10878673	25126589
3	40	6	3.08	18.5	0	26	512	21	1872	26	512	21	1872	3	526	3	294	1.15	1.00	1.79	1.41	1.64	1.05	2.40	1.22	1.00	12.50	11313723	25729826
3	40	7	2.64	18.5	0	24	471	20	1830	24	471	20	1830	3	408	2	335	1.16	1.00	1.82	1.41	1.69	1.05	2.64	1.25	1.00	13.94	11108136	25414618
3	40	8	2.32	18.5	0	22	438	20	1795	22	438	20	1795	3	465	2	372	1.16	1.00	1.86	1.40	1.73	1.05	2.85	1.27	1.00	15.26	10922463	25125266
3	40	9	2.06	18.5	0	20	408	19	1767	20	408	19	1766	3	526	2	411	1.17	1.00	1.88	1.39	1.77	1.05	3.08	1.30	1.00	16.67	10790522	24961213
3	40	10	1.85	18.5	0	19	383	19	1740	19	383	19	1740	3	571	2	441	1.17	1.00	1.89	1.39	1.80	1.05	3.25	1.32	1.00	17.98	10671989	24784174
3	40	6	3.58	21.5	1.5	28	556	21	1912	28	556	21	1911	3	455	3	260	1.14	1.00	2.93	1.42	1.59	1.05	2.18	2.00	1.00	11.23	11544000	26064762
3	40	7	3.07	21.5	1.5	26	512	21	1871	26	512	21	1871	3	526	3	295	1.15	1.00	2.99	1.41	1.63	1.05	2.41	2.05	1.00	12.53	11334654	25759488
3	40	8	2.69	21.5	1.5	24	476	20	1836	24	476	20	1836	3	408	2	330	1.16	1.00	3.01	1.41	1.68	1.05	2.62	2.08	1.00	13.77	11152058	25491389
3	40	9	2.39	21.5	1.5	22	446	20	1804	22	446	20	1804	3	455	2	364	1.16	1.00	2.96	1.40	1.71	1.05	2.81	2.04	1.00	14.96	10998417	25251929
3	40	10	2.15	21.5	1.5	21	420	20	1777	21	420	20	1777	3	500	2	397	1.17	1.00	2.69	1.40	1.75	1.05	3.00	1.87	1.00	16.14	10878371	25076673
3	40	7	3.14	22	0	26	516	21	1876	26	516	21	1876	3	513	3	289	1.15	1.00	1.79	1.40	1.63	1.05	2.37	1.22	1.00	12.32	11279978	25666482
3	40	8	2.75	22	0	24	480	20	1840	24	480	20	1840	3	588	3	323	1.16	1.00	1.80	1.40	1.67	1.05	2.58	1.24	1.00	13.53	11094837	25386795
3	40	9	2.44	22	0	23	450	20	1808	23	450	20	1808	3	444	2	357	1.16	1.00	1.83	1.40	1.71	1.05	2.77	1.26	1.00	14.72	10962769	25184608
3	40	10	2.2	22	0	21	423	20	1783	21	423	20	1783	3	488	2	389	1.17	1.00	1.85	1.39	1.75	1.05	2.96	1.28	1.00	15.88	10825435	25003178
3	40	11	2	22	0	20	400	19	1759	20	400	19	1759	3	541	2	421	1.17	1.00	1.87	1.39	1.78	1.05	3.15	1.30	1.00	17.00	10713345	24841012
3	40	12	1.83	22	0	19	380	19	1738	19	380	19	1738	3	588	2	444	1.17	1.00	1.88	1.39	1.80	1.05	3.26	1.31	1.00	18.14	10655879	24769614
3	40	7	3.57	25	1.5	28	553	21	1913	28	553	21	1913	3	455	3	260	1.14	1.00	2.93	1.41	1.59	1.05	2.20	2.00	1.00	11.26	11501105	26017198
3	40	8	3.125	25	1.5	26	516	21	1873	26	516	21	1873	3	513	3	290	1.15	1.00	2.98	1.41	1.63	1.05	2.38	2.03	1.00	12.34	11286674	25657828
3	40	9	2.78	25	1.5	24	484	20	1843	24	484	20	1843	3	588	3	320	1.16	1.00	3.00	1.40	1.66	1.05	2.56	2.07	1.00	13.43	11145442	25462701
3	40	10	2.5	25	1.5	23	456	20	1816	23	456	20	1816	3	435	2	350	1.16	1.00	3.03	1.40	1.70	1.05	2.74	2.10	1.00	14.50	11014891	25280646
3	40	11	2.27	25	1.5	22	432	20	1792	22	432	20	1792	3	476	2	379	1.16	1.00	2.81	1.40	1.73	1.05	2.92	1.95	1.00	15.55	10920697	25153245
3	40	12	1.83	25	1.5	23	466	20	1823	23	466	20	1823	3	588	2	506	1.18	1.00	1.98	1.86	1.52	1.04	3.53	1.68	1.00	19.96	15639984	32754590
3	44	3	1.5	4.5	0	19	375	21	1893	19	375	21	1893	3	400	1	557	1.17	1.00	2.02	1.53	1.79	1.04	3.80	1.34	1.00	26.25	16405688	35509649
3	44	3	2	6	0.75	21	420	21	1940	21	420	21	1940	3	595	2	450	1.16	1.00	1.91	1.41	1.82	1.04	3.61	1.22	1.00	20.68	14965360	33255884
3	44	4	1.5	6	0.75	18	369	21	1886	19	369	21	1885	3	400	1	551	1.17	1.00	2.00	1.50	1.79	1.04	3.83	1.35	1.00	26.07	15959315	34812912
3	44	3	2.33	7	1.25	23	465	22	1982	23	465	22	1982	3	512	2	409	1.16	1.00	3.06	1.44	1.75	1.04	3.26	1.98	1.00	18.53	15394318	33892989
3	44	4	1.75	7	1.25	20	390	21	1908	20	390	21	1908	3	344	1	504	1.17	1.00	2.67	1.42	1.82	1.04	3.75	1.75	1.00	22.86	15008098	33325583
3	44	3	2.67	8	0	24	489	22	2006	24	489	22	2006	3	449	2	358	1.15	1.00	2.08	1.38	1.76	1.04	2.97	1.31	1.00	16.56	14784865	32877304
3	44	4	2	8	0	21	411	21	1931	21	411	21	1931	3	595	2	457	1.16	1.00	2.15	1.37	1.83	1.04	3.57	1.37	1.00	20.49	14408237	32359908
3	44	5	1.6	8	0	19	371	21	1890	19	371	21	1889	3	373	1	534	1.17	1.00	2.23	1.43	1.81	1.04	3.82	1.49	1.00	24.55	15141010	33557772
3	44	3	3.17	9.5	0.75	26	526	22	2046	26	526	22	2046	3	564	3	306	1.14	1.00	2.56	1.34	1.73	1.04	2.66	1.57	1.00	14.51	14433105	32279349
3	44	4	2.375	9.5	0.75	22	446	22	1964	22	446	22	1963	3	500	2	389	1.15	1.00	2.60	1.33	1.82	1.04	3.19	1.64	1.00	17.86	14001260	31629568
3	44	5	1.9	9.5	0.75	19	389	21	1909	19	389	21	1909	3	314	1	465	1.16	1.00	2.68	1.33	1.87	1.05	3.66	1.70	1.00	21.08	13805859	31400068
3	44	6	1.583	9.5	0.75	18	368	21	1886	18	368	21	1886	3	379	1	537	1.17	1.00	2.39	1.43	1.81	1.04	3.83	1.62	1.00	24.69	15076029	33445385
3	44	3	3.67	11	1.5	29	585	23	2104	29	585	23	2104	3	489	3	275	1.14	1.00	3.22	1.40	1.63	1.04	2.47	2.07	1.00	13.26	15499372	34030148
3	44	4	2.75	11	1.5	25	500	22	2018	25	500	22	2018	3	431	2	350	1.15	1.00	3.32	1.40	1.72	1.04	2.95	2.15	1.00	16.27	15008912	33248929
3	44	5	2.2	11	1.5	22	439	22	1957	22	439	22	1957	3	537	2	423	1.16	1.00	3.40	1.39	1.78	1.04	3.40	2.23	1.00	19.13	14682423	32761491
3	44	6	1.833	11	1.5	20	392	21	1910	20	392	21	1910	3	328	1	483	1.17	1.00	3.45	1.38	1.82	1.04	3.78	2.29	1.00	21.87	14452553	32432395
3	44	7	1.57	11	1.5	18	354	21	1873	18	354	21	1873	3	379	1	530	1.17	1.00	3.51	1.37	1.86	1.04	4.09	2.36	1.00	24.55	14311955	32252253
3	44	4	2.875	11.5	1.75	25	508	22	2027	25	508	22	2027	3	415	2	336	1.15	1.00	3.49	1.38	1.72	1.04	2.87	2.24	1.00	15.70	14830312	32954735
3	44	5	2.3	11.5	1.75	22	447	22	1964	22	447	22	1964	3	512	2	405	1.16	1.00	3.57	1.37	1.78	1.04	3.30	2.32	1.00	18.43	14493537	32434534
3	44	6	1.917	11.5	1.75	20	399	21	1919	20	399	21	1919	3	314	1	468	1.17	1.00	3.63	1.36	1.83	1.04	3.69	2.39	1.00	21.11	14283919	32170284
3	44	7	1.643	11.5	1.75	18	361	21	1880	18	361	21	1880	3	367	1	513	1.17	1.00	3.69	1.36	1.86	1.04	3.99	2.45	1.00	23.64	14106658	31915532
3	44	4	3.25	13	2.5	27	533	23	2053	27	533	23	2053	3	550	3	299	1.14	1.00	3.43	1.34	1.71	1.04	2.64	2.15	1.00	14.25	14457345	32313632
3	44	5	2.6	13	2.5	24	470	22	1990	24	470	22	1990	3	458	2	361	1.15	1.00	3.46	1.34	1.78	1.04	3.04	2.22	1.00	16.74	14135155	31839268
3	44	6	2.167	13	2.5	21	422	21	1940	21	422	21	1940	3	550	2	420	1.16	1.00	3.55	1.33	1.83	1.04	3.41	2.28	1.00	19.09	13887575	31471152
3	44	7	1.857	13	2.5	19	383	21	1900	19	383	21	1900	3	324	1	470	1.16	1.00	3.61	1.32	1.86	1.04	3.72	2.34	1.00	21.36	13700321	31207158
3	44	4	3.625	14.5	3.25	29	577	23	2095	29	577	23	2095	3	489	3	277	1.14	1.00	3.42	1.39	1.64	1.04	2.49	2.21	1.00	13.31	15223947	33561876
3	44	5	2.9	14.5	3.25	26	511	22	2029	26	511	22	2029	3	415	2	333	1.15	1.00	3.50	1.38	1.71	1.04	2.87	2.28	1.00	15.60	14854433	32983983
3	44	6	2.417	14.5	3.25	23	460	22	1979	23	460	22	1979	3	489	2	389	1.16	1.00	3.55	1.37	1.76	1.04	3.22	2.34	1.00	17.81	14584000	32588832
3	44	7	2.07	14.5	3.25	21	419	21	1939	21	419	21	1939	3	564	2	443	1.16	1.00	3.61	1.37	1.80	1.04	3.56	2.39	1.00	19.96	14398676	32335672
3	44	4	2.875	11.5	0	25	508	22	2027	25	508	22	2027	3	415	2	336	1.15	1.00	2.06	1.38	1.72	1.04	2.87	1.33	1.00	15.70	14830312	32954735
3	44	5	2.3	11.5	0	22	447	22	1964	22	447	22	1964	3	512	2	405	1.16	1.00	2.11	1.37	1.78	1.04	3.30	1.37	1.00	18.43	14493537	32434534
3	44	6	1.917	11.5	0	20	399	21	1919	20	399	21	1919	3	314	1	468	1.17	1.00	2.15	1.36	1.83	1.04	3.69	1.41	1.00	21.11	14283919	32170284
3	44	7	1.643	11.5	0	18	361	21	1880	18	361	21	1880	3	367	1	513	1.17	1.00	2.18	1.36	1.86	1.04	3.99	1.45	1.00	23.64	14106658	31915532
3	44	4	3.25	13	0.75	27	533	23	2053	27	533	23	2053	3	550	3	299	1.14	1.00	2.50	1.34	1.71	1.04	2.64	1.56	1.00	14.25	14457345	32313632
3	44	5	2.6	13	0.75	24	470	22	1990	24	470	22	1990	3	458	2	361	1.15	1.00	2.52	1.34	1.78	1.04	3.04	1.62	1.00	16.74	14135155	31839268
3	44	6	2.167	13	0.75	21	422	21	1940	21	422	21	1940	3	550	2	420	1.16	1.00	2.59	1.33	1.83	1.04	3.41	1.66	1.00	19.09	13887575	31471152

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	44	7	1.857	13	0.75	19	383	21	1900	19	383	21	1900	3	324	1	470	1.16	1.00	2.63	1.32	1.86	1.04	3.72	1.70	1.00	21.36	13700321	31207158
3	44	4	3.625	14.5	1.5	29	577	23	2095	29	577	23	2095	3	489	3	277	1.14	1.00	3.22	1.39	1.64	1.04	2.49	2.08	1.00	13.31	15223947	33561876
3	44	5	2.9	14.5	1.5	26	511	22	2029	26	511	22	2029	3	415	2	333	1.15	1.00	3.30	1.38	1.71	1.04	2.87	2.14	1.00	15.60	14854433	32983983
3	44	6	2.417	14.5	1.5	23	460	22	1979	23	460	22	1979	3	489	2	389	1.16	1.00	3.33	1.37	1.76	1.04	3.22	2.19	1.00	17.81	14584000	32588832
3	44	7	2.07	14.5	1.5	21	419	21	1939	21	419	21	1939	3	564	2	443	1.16	1.00	2.91	1.37	1.80	1.04	3.56	1.93	1.00	19.96	14398676	32335672
3	44	5	3	15	0	26	517	22	2037	26	517	22	2037	3	595	3	323	1.15	1.00	2.03	1.37	1.71	1.04	2.80	1.31	1.00	15.20	14734473	32795544
3	44	6	2.5	15	0	23	466	22	1986	23	466	22	1986	3	478	2	376	1.15	1.00	2.06	1.36	1.76	1.04	3.15	1.34	1.00	17.34	14466021	32396162
3	44	7	2.14	15	0	21	425	21	1945	21	425	21	1945	3	564	2	429	1.16	1.00	2.09	1.36	1.80	1.04	3.47	1.37	1.00	19.43	14282374	32138042
3	44	8	1.875	15	0	20	391	21	1910	20	391	21	1910	3	319	1	472	1.17	1.00	2.12	1.35	1.83	1.04	3.74	1.41	1.00	21.38	14089548	31853099
3	44	9	1.67	15	0	18	369	21	1887	18	369	21	1887	3	361	1	511	1.17	1.00	2.15	1.38	1.83	1.04	3.82	1.46	1.00	23.43	14353527	32295029
3	44	5	3.3	16.5	0.75	27	536	23	2054	27	536	23	2054	3	537	3	295	1.14	1.00	2.46	1.33	1.70	1.04	2.62	1.56	1.00	14.05	14363407	32134899
3	44	6	2.75	16.5	0.75	24	484	22	2002	24	484	22	2002	3	431	2	343	1.15	1.00	2.50	1.33	1.76	1.04	2.94	1.60	1.00	16.02	14092809	31733854
3	44	7	2.357	16.5	0.75	22	442	22	1961	22	442	22	1961	3	512	2	391	1.16	1.00	2.54	1.32	1.80	1.04	3.24	1.64	1.00	17.93	13895027	31464941
3	44	8	2.06	16.5	0.75	20	407	21	1927	20	407	21	1927	3	579	2	438	1.16	1.00	2.58	1.32	1.84	1.04	3.54	1.67	1.00	19.81	13753362	31287650
3	44	9	1.83	16.5	0.75	19	379	21	1897	19	379	21	1897	3	328	1	474	1.17	1.00	2.57	1.32	1.86	1.04	3.75	1.69	1.00	21.61	13683911	31195129
3	44	5	3.6	18	1.5	29	572	23	2091	29	572	23	2091	3	500	3	278	1.14	1.00	3.20	1.38	1.64	1.04	2.51	2.07	1.00	13.35	15071394	33315199
3	44	6	3	18	1.5	26	518	22	2037	26	518	22	2037	3	595	3	323	1.15	1.00	3.24	1.37	1.70	1.04	2.81	2.12	1.00	15.20	14771641	32848528
3	44	7	2.57	18	1.5	24	475	22	1992	24	475	22	1992	3	468	2	368	1.15	1.00	3.29	1.37	1.74	1.04	3.10	2.16	1.00	16.97	14528912	32465060
3	44	8	2.25	18	1.5	22	439	21	1956	22	439	21	1956	3	537	2	411	1.16	1.00	3.10	1.36	1.78	1.04	3.37	2.05	1.00	18.69	14335481	32182409
3	44	9	2	18	1.5	20	408	21	1927	20	408	21	1927	3	595	2	454	1.16	1.00	2.78	1.36	1.81	1.04	3.64	1.86	1.00	20.40	14205004	32021641
3	44	6	3.08	18.5	0	26	523	22	2043	26	523	22	2043	3	579	3	315	1.15	1.00	1.99	1.36	1.70	1.04	2.77	1.29	1.00	14.89	14685689	32708466
3	44	7	2.64	18.5	0	24	480	22	1998	24	480	22	1998	3	449	2	359	1.15	1.00	2.02	1.36	1.74	1.04	3.04	1.32	1.00	16.62	14448586	32335012
3	44	8	2.32	18.5	0	22	444	22	1964	22	444	22	1964	3	512	2	400	1.16	1.00	2.06	1.35	1.78	1.04	3.31	1.35	1.00	18.27	14253670	32068360
3	44	9	2.06	18.5	0	21	413	21	1933	21	413	21	1933	3	579	2	442	1.16	1.00	2.07	1.35	1.81	1.04	3.57	1.38	1.00	19.93	14107378	31864475
3	44	10	1.85	18.5	0	19	386	21	1905	19	386	21	1905	3	324	1	474	1.17	1.00	2.09	1.34	1.83	1.04	3.77	1.40	1.00	21.56	13975019	31672168
3	44	6	3.58	21.5	1.5	28	569	23	2087	28	569	23	2087	3	500	3	278	1.14	1.00	3.18	1.37	1.64	1.04	2.52	2.06	1.00	13.37	14971140	33139366
3	44	7	3.07	21.5	1.5	26	523	22	2042	26	523	22	2042	3	579	3	316	1.15	1.00	3.19	1.36	1.69	1.04	2.78	2.10	1.00	14.93	14714142	32747901
3	44	8	2.69	21.5	1.5	24	485	22	2005	24	485	22	2005	3	449	2	353	1.15	1.00	3.24	1.36	1.73	1.04	3.02	2.14	1.00	16.42	14504016	32439768
3	44	9	2.39	21.5	1.5	23	453	22	1972	23	453	22	1972	3	500	2	390	1.16	1.00	3.26	1.36	1.76	1.04	3.25	2.15	1.00	17.88	14335025	32183991
3	44	10	2.15	21.5	1.5	21	425	21	1944	21	425	21	1944	3	550	2	426	1.16	1.00	2.95	1.35	1.79	1.04	3.48	1.97	1.00	19.32	14195161	31985248
3	44	7	3.14	22	0	26	528	22	2045	26	528	22	2044	3	564	3	310	1.15	1.00	1.99	1.36	1.69	1.04	2.73	1.29	1.00	14.64	14627316	32582169
3	44	8	2.75	22	0	25	490	22	2007	25	490	22	2007	3	431	2	346	1.15	1.00	1.99	1.35	1.73	1.04	2.97	1.31	1.00	16.10	14411525	32254132
3	44	9	2.44	22	0	23	457	22	1977	23	457	22	1977	3	489	2	383	1.16	1.00	2.01	1.35	1.76	1.04	3.21	1.33	1.00	17.60	14291900	32116651
3	44	10	2.2	22	0	21	429	21	1949	21	429	21	1949	3	537	2	417	1.16	1.00	2.05	1.35	1.79	1.04	3.43	1.36	1.00	18.97	14126678	31876278
3	44	11	2	22	0	20	405	21	1922	20	405	21	1921	3	595	2	452	1.16	1.00	2.06	1.34	1.81	1.04	3.63	1.38	1.00	20.31	13986283	31649028
3	44	12	1.83	22	0	19	383	21	1902	19	383	21	1902	3	328	1	477	1.17	1.00	2.07	1.34	1.83	1.04	3.78	1.40	1.00	21.72	13945351	31627495
3	44	7	3.57	25	1.5	28	567	23	2084	28	567	23	2084	3	500	3	278	1.14	1.00	3.12	1.36	1.64	1.04	2.53	2.05	1.00	13.37	14884440	32985783
3	44	8	3.125	25	1.5	26	527	22	2045	26	527	22	2045	3	564	3	311	1.15	1.00	3.18	1.36	1.69	1.04	2.75	2.09	1.00	14.71	14658343	32642280
3	44	9	2.78	25	1.5	25	493	22	2013	25	493	22	2013	3	431	2	343	1.15	1.00	3.20	1.36	1.72	1.04	2.96	2.12	1.00	16.02	14484360	32398770
3	44	10	2.5	25	1.5	23	464	22	1983	23	464	22	1983	3	478	2	375	1.16	1.00	3.26	1.35	1.75	1.04	3.16	2.16	1.00	17.28	14329767	32162907
3	44	11	2.27	25	1.5	22	439	22	1957	22	439	22	1957	3	524	2	407	1.16	1.00	3.08	1.35	1.78	1.04	3.36	2.05	1.00	18.54	14229661	32016561
3	44	12	1.83	25	1.5	24	472	22	1989	24	472	22	1989	3	328	1	544	1.17	1.00	2.14	1.78	1.55	1.02	4.05	1.71	1.00	23.76	20160298	41252652
3	48	3	1.5	4.5	0	19	376	23	2053	19	376	23	2053	3	436	1	595	1.16	1.00	2.22	1.47	1.81	1.03	4.31	1.42	1.00	30.88	20959519	44219240
3	48	3	2	6	0.75	21	424	23	2103	21	424	23	2102	3	329	1	479	1.15	1.00	2.09	1.36	1.85	1.04	4.09	1.29	1.00	24.31	19100270	41464954
3	48	4	1.5	6	0.75	18	369	22	2047	18	369	22	2047	3	436	1	589	1.17	1.00	2.21	1.44	1.81	1.03	4.35	1.44	1.00	30.70	20400574	43396575
3	48	3	2.33	7	1.25	24	471	24	2149	24	471	24	2149	3	558	2	435	1.15	1.00	3.31	1.39	1.79	1.03	3.69	2.06	1.00	21.78	19617618	42260276
3	48	4	1.75	7	1.25	20	392	23	2070	20	392	23	2070	3	375	1	537	1.16	1.00	2.89	1.37	1.84	1.03	4.25	1.84	1.00	26.91	19193192	41592262
3	48	3	2.67	8	0	25	496	24	2175	25	496	24	2175	3	490	2	380	1.15	1.00	2.27	1.34	1.80	1.03	3.36	1.39	1.00	19.47	18822923	41010194
3	48	4	2	8	0	21	415	23	2093	21	415	23	2093	3	329	1	486	1.16	1.00	2.33	1.33	1.86	1.04	4.04	1.46	1.00	24.07	18405613	40369276
3	48	5	1.6	8	0	19	372	23	2050	19	372	23	2050	3	407	1	570	1.17	1.00	2.44	1.38	1.84	1.03	4.33	1.58	1.00	28.86	19360923	41840460
3	48	3	3.17	9.5	0.75	27	536	24	2215	27	536	24	2215	3	414	2	324	1.14	1.00	2.76	1.30	1.78	1.03	3.01	1.66	1.00	17.01	18341058	40210246
3	48	4	2.375	9.5	0.75	23	452	23	2129	23	452	23	2129	3	545	2	414	1.15	1.00	2.83	1.29	1.85	1.04	3.61	1.73	1.00	20.97	17877834	39498412
3	48	5	1.9	9.5	0.75	20	392	23	2069	20	392	23	2068	3	343	1	495	1.16	1.00	2.90	1.29	1.90	1.04	4.14	1.80	1.00	24.77	17656673	39191643
3	48	6	1.583	9.5	0.75	18	368	22	2046	18	368	22	2046	3	414	1	573	1.17	1.00	2.59	1.38	1.83	1.03	4.35	1.71	1.00	29.06	19252165	41673690
3	48	3	3.67	11	1.5	30	597	25	2276	30	597	25	2275	3	533	3	292	1.14	1.00	3.45	1.36	1.69	1.03	2.79	2.14	1.00	15.52	19608195	42260237
3	48	4	2.75	11	1.5	25	508	24	2185	25	508	24	2185	3	471	2	372	1.15	1.00	3.54	1.35	1.76	1.03	3.34	2.23	1.00	19.08	19053080	41353833
3	48	5	2.2	11	1.5	22	443	23	2123	22	443	23	2123	3	585	2	450	1.15	1.00	3.62	1.34	1.81	1.03	3.86	2.31	1.00	22.51	18718355	40873692
3	48	6	1.833	11	1.5	20	394	23	2072	20	394	23	2072	3	358	1	514	1.16	1.00	3.70	1.33	1.85	1.03	4.28	2.38	1.00	25.74	18471821	40478807
3	48	7	1.57	11	1.5	18	354	22	2031	18	354	22	2030	3	414	1	566	1.16	1.00	3.78	1.33	1.88	1.03	4.63	2.45	1.00	28.89	18305158	40214525
3	48	4	2.875	11.5	1.75	26	516	24	2196	26	516	24	2196	3	453	2	357	1.14	1.00	3.71	1.33	1.76	1.03	3.25	2.31	1.00	18.43	18837052	41035739
3	48	5	2.3	11.5	1.75	23	452	23	2129	23	452	23	2128	3	558	2	431	1.15	1.00	3.78	1.33	1.81	1.03	3.74	2.40	1.00	21.67	18464649	40437357
3	48	6	1.917	11.5	1.75	20	402	23	2080	20	402	23	2080	3	343	1	498	1.16	1.00	3.87	1.32	1.85	1.03	4.18	2.47	1.00	24.80	18236759	40109328
3	48	7	1.643	11.5	1.75	18	361	22	2041	18	361	22	2041	3	400	1	547	1.16	1.00	3.93	1.31	1.89	1.04	4.52	2.54	1.00	27.86	18079301	39899317
3	48	4	3.25	13	2.5	27	543	24	2222	27	543	24	2221	3	407	2	317	1.14	1.00	3.63	1.30	1.76	1.03	2.99	2.21	1.00	16.70	18345707	40215020
3	48	5	2.6	13	2.5	24	477	24	2155	24	477	24	2155	3	500	2	383	1.15	1.00	3.70	1.29	1.82	1.03	3.44	2.29	1.00	19.63	17982791	39658577
3	48	6	2.167	13	2.5	21	426	23	2103	21	426	23	2103	3	304	1	447	1.15	1.00	3.75	1.29	1.86	1.03	3.86	2.36	1.00	22.43	17713767	39255990
3	48	7	1.857	13	2.5	19	384	23	2063	19	384	23	2062	3	353	1	501	1.16	1.00	3.84	1.28	1.89	1.04	4.23	2.43	1.00	25.20	17543530	39040289
3	48	4	3.625	14.5	3.25	29	589	25	2266	29	589	25	2266	3	533	3	293	1.14	1.00	3.65	1.34	1.69	1.03	2.82	2.27	1.00	15.57	19267833	41685223
3	48	5	2.9	14.5	3.25	26	519	24	2198	26	519	24	2198	3	453	2	354	1.14	1.00	3.72	1.33	1.75	1.03	3.25	2.35	1.00	18.31	18855793	41054526
3	48	6	2.417	14.5	3.25	23	466	24	2144	23	466	24	2144	3	533	2	413	1.15	1.00	3.77	1.33	1.79	1.03	3.64	2.41	1.00	20.90	18556621	40586638
3	48	7	2.07	14.5	3.25	21	423	23	2101	21	423	23	2101	3	316	1	471	1.16	1.00	3.86	1.32	1.83	1.03	4.02	2.48	1.00	23.43	18352411	40282389
3	48	4	2.875	11.5	0	26	516	24	2196	26	516	24	2196	3	453	2	357	1.14	1.00	2.25	1.33	1.76	1.03	3.25	1.41	1.00	18.43	18837052	41035739
3	48	5	2.3	11.5	0	23	452	23	2129	23	452	23	2128	3	558	2	431	1.15	1.00	2.30	1.33	1.81	1.03	3.74	1.46	1.00	21.67	18464649	40437357
3	48	6	1.917	11.5	0	20	402	23	2080	20	402	23	2080	3	343	1	498	1.16	1.00	2.35	1.32	1.85	1.03	4.18	1.50	1.00	24.80	18236759	40109328

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
3	48	7	1.643	11.5	0	18	361	22	2041	18	361	22	2041	3	400	1	547	1.16	1.00	2.39	1.31	1.89	1.04	4.52	1.55	1.00	27.86	18079301	39899317
3	48	4	3.25	13	0.75	27	543	24	2222	27	543	24	2221	3	407	2	317	1.14	1.00	2.70	1.30	1.76	1.03	2.99	1.65	1.00	16.70	18345707	40215020
3	48	5	2.6	13	0.75	24	477	24	2155	24	477	24	2155	3	500	2	383	1.15	1.00	2.76	1.29	1.82	1.03	3.44	1.70	1.00	19.63	17982791	39658577
3	48	6	2.167	13	0.75	21	426	23	2103	21	426	23	2103	3	304	1	447	1.15	1.00	2.79	1.29	1.86	1.03	3.86	1.76	1.00	22.43	17713767	39255990
3	48	7	1.857	13	0.75	19	384	23	2063	19	384	23	2062	3	353	1	501	1.16	1.00	2.86	1.28	1.89	1.04	4.23	1.80	1.00	25.20	17543530	39040289
3	48	4	3.625	14.5	1.5	29	589	25	2266	29	589	25	2266	3	533	3	293	1.14	1.00	3.45	1.34	1.69	1.03	2.82	2.15	1.00	15.57	19267833	41685223
3	48	5	2.9	14.5	1.5	26	519	24	2198	26	519	24	2198	3	453	2	354	1.14	1.00	3.52	1.33	1.75	1.03	3.25	2.22	1.00	18.31	18855793	41054526
3	48	6	2.417	14.5	1.5	23	466	24	2144	23	466	24	2144	3	533	2	413	1.15	1.00	3.56	1.33	1.79	1.03	3.64	2.28	1.00	20.90	18556621	40586638
3	48	7	2.07	14.5	1.5	21	423	23	2101	21	423	23	2101	3	316	1	471	1.16	1.00	3.17	1.32	1.83	1.03	4.02	2.04	1.00	23.43	18352411	40282389
3	48	5	3	15	0	26	526	24	2205	26	526	24	2205	3	436	2	343	1.14	1.00	2.22	1.32	1.75	1.03	3.17	1.39	1.00	17.81	18695487	40792640
3	48	6	2.5	15	0	24	472	24	2152	24	472	24	2152	3	522	2	400	1.15	1.00	2.24	1.32	1.80	1.03	3.56	1.43	1.00	20.36	18401394	40356762
3	48	7	2.14	15	0	21	429	23	2108	21	429	23	2108	3	308	1	456	1.16	1.00	2.29	1.31	1.83	1.03	3.93	1.46	1.00	22.82	18199473	40048651
3	48	8	1.875	15	0	20	393	23	2072	20	393	23	2072	3	348	1	503	1.16	1.00	2.33	1.31	1.86	1.03	4.24	1.50	1.00	25.16	18011708	39771344
3	48	9	1.67	15	0	18	369	23	2048	18	369	23	2048	3	393	1	544	1.17	1.00	2.36	1.33	1.86	1.03	4.34	1.56	1.00	27.60	18351118	40307061
3	48	5	3.3	16.5	0.75	27	546	24	2224	27	546	24	2224	3	585	3	313	1.14	1.00	2.68	1.29	1.75	1.03	2.96	1.64	1.00	16.47	18236152	40022076
3	48	6	2.75	16.5	0.75	25	491	24	2170	25	491	24	2170	3	471	2	365	1.15	1.00	2.71	1.29	1.80	1.03	3.33	1.69	1.00	18.82	17939376	39587184
3	48	7	2.357	16.5	0.75	22	447	23	2125	22	447	23	2125	3	558	2	415	1.15	1.00	2.77	1.28	1.84	1.03	3.67	1.73	1.00	21.05	17695092	39218921
3	48	8	2.06	16.5	0.75	21	410	23	2090	21	410	23	2090	3	320	1	466	1.16	1.00	2.79	1.28	1.87	1.03	4.01	1.77	1.00	23.30	17569033	39070155
3	48	9	1.83	16.5	0.75	19	380	23	2059	19	380	23	2059	3	358	1	505	1.16	1.00	2.80	1.28	1.89	1.03	4.25	1.79	1.00	25.46	17512400	38992661
3	48	5	3.6	18	1.5	29	583	25	2263	29	583	25	2263	3	545	3	294	1.14	1.00	3.39	1.33	1.70	1.03	2.84	2.14	1.00	15.63	19073122	41397522
3	48	6	3	18	1.5	26	527	24	2204	26	527	24	2204	3	436	2	343	1.14	1.00	3.46	1.32	1.74	1.03	3.18	2.19	1.00	17.79	18716288	40805630
3	48	7	2.57	18	1.5	24	481	24	2160	24	481	24	2160	3	511	2	391	1.15	1.00	3.51	1.32	1.78	1.03	3.51	2.25	1.00	19.95	18492315	40487094
3	48	8	2.25	18	1.5	22	443	23	2122	22	443	23	2122	3	585	2	437	1.15	1.00	3.37	1.31	1.81	1.03	3.82	2.17	1.00	21.99	18277472	40164684
3	48	9	2	18	1.5	21	411	23	2089	21	411	23	2089	3	329	1	484	1.16	1.00	3.04	1.31	1.84	1.03	4.12	1.97	1.00	23.98	18116644	39916375
3	48	6	3.08	18.5	0	27	532	24	2212	27	532	24	2212	3	421	2	334	1.14	1.00	2.18	1.32	1.75	1.03	3.13	1.37	1.00	17.46	18631083	40695411
3	48	7	2.64	18.5	0	24	486	24	2166	24	486	24	2166	3	490	2	381	1.15	1.00	2.21	1.31	1.78	1.03	3.45	1.41	1.00	19.53	18365807	40291367
3	48	8	2.32	18.5	0	22	449	23	2128	22	449	23	2128	3	558	2	425	1.15	1.00	2.24	1.31	1.81	1.03	3.74	1.44	1.00	21.45	18140838	39943236
3	48	9	2.06	18.5	0	21	416	23	2096	21	416	23	2096	3	320	1	470	1.16	1.00	2.28	1.30	1.84	1.03	4.04	1.47	1.00	23.44	17990704	39736360
3	48	10	1.85	18.5	0	19	388	23	2065	19	388	23	2064	3	353	1	505	1.16	1.00	2.29	1.30	1.86	1.03	4.27	1.49	1.00	25.34	17844324	39489830
3	48	6	3.58	21.5	1.5	29	580	25	2258	29	580	25	2257	3	545	3	295	1.14	1.00	3.37	1.32	1.70	1.03	2.85	2.13	1.00	15.66	18940104	41162613
3	48	7	3.07	21.5	1.5	27	532	24	2210	27	532	24	2210	3	421	2	335	1.14	1.00	3.41	1.32	1.74	1.03	3.14	2.17	1.00	17.48	18645350	40698501
3	48	8	2.69	21.5	1.5	25	492	24	2172	25	492	24	2172	3	490	2	375	1.15	1.00	3.47	1.31	1.77	1.03	3.42	2.22	1.00	19.27	18431631	40393898
3	48	9	2.39	21.5	1.5	23	458	23	2138	23	458	23	2138	3	545	2	415	1.15	1.00	3.52	1.31	1.80	1.03	3.69	2.26	1.00	21.02	18252004	40125894
3	48	10	2.15	21.5	1.5	21	429	23	2107	21	429	23	2107	3	304	1	454	1.16	1.00	3.23	1.31	1.82	1.03	3.94	2.08	1.00	22.69	18089764	39863727
3	48	7	3.14	22	0	27	537	24	2215	27	537	24	2215	3	421	2	328	1.14	1.00	2.15	1.31	1.74	1.03	3.09	1.36	1.00	17.17	18559744	40556845
3	48	8	2.75	22	0	25	497	24	2174	25	497	24	2173	3	471	2	367	1.15	1.00	2.18	1.31	1.77	1.03	3.36	1.39	1.00	18.89	18299377	40147899
3	48	9	2.44	22	0	23	463	24	2141	23	463	24	2141	3	533	2	407	1.15	1.00	2.21	1.31	1.80	1.03	3.63	1.42	1.00	20.64	18173302	39975492
3	48	10	2.2	22	0	22	433	23	2112	22	433	23	2112	3	585	2	444	1.15	1.00	2.23	1.30	1.83	1.03	3.88	1.44	1.00	22.28	17981519	39699666
3	48	11	2	22	0	20	407	23	2086	20	407	23	2085	3	329	1	481	1.16	1.00	2.27	1.30	1.85	1.03	4.13	1.47	1.00	23.92	17860860	39526768
3	48	12	1.83	22	0	19	384	23	2064	19	384	23	2064	3	358	1	508	1.16	1.00	2.28	1.30	1.86	1.03	4.29	1.49	1.00	25.58	17823954	39492171
3	48	7	3.57	25	1.5	29	578	25	2255	29	578	25	2255	3	545	3	295	1.14	1.00	3.36	1.32	1.70	1.03	2.86	2.12	1.00	15.65	18836850	40982881
3	48	8	3.125	25	1.5	27	536	24	2214	27	536	24	2214	3	421	2	330	1.14	1.00	3.40	1.31	1.74	1.03	3.11	2.16	1.00	17.24	18582136	40593810
3	48	9	2.78	25	1.5	25	501	24	2178	25	501	24	2178	3	471	2	364	1.15	1.00	3.45	1.31	1.76	1.03	3.34	2.20	1.00	18.75	18368138	40255291
3	48	10	2.5	25	1.5	24	470	24	2148	24	470	24	2148	3	522	2	398	1.15	1.00	3.48	1.31	1.79	1.03	3.58	2.24	1.00	20.28	18214595	40037243
3	48	11	2.27	25	1.5	22	443	23	2122	22	443	23	2122	3	571	2	433	1.15	1.00	3.34	1.31	1.81	1.03	3.81	2.17	1.00	21.80	18116437	39908166
3	48	12	1.83	25	1.5	24	475	24	2154	24	475	24	2154	3	358	1	580	1.17	1.00	2.32	1.69	1.57	1.01	4.57	1.76	1.00	27.86	25391037	50889705
4	12	3	1.5	4.5	0	26	519	12	758	26	519	12	758	3	316	3	453	4.98	4.29	1.00	9.82	5.25	3.29	2.67	3.34	1.00	6.06	3050408	6754032
4	12	3	2	6	0.75	27	546	12	787	27	546	12	787	3	240	3	367	4.73	4.09	1.27	8.68	5.13	3.15	1.48	2.95	1.27	4.72	2715599	6220299
4	12	4	1.5	6	0.75	26	510	12	750	26	510	12	750	3	316	3	445	4.87	4.18	1.32	9.45	5.13	3.19	2.67	3.32	1.32	6.00	2889260	6475219
4	12	3	2.33	7	1.25	20	397	12	635	20	397	12	635	3	207	3	242	2.06	1.69	1.46	3.57	2.55	1.30	1.79	2.40	1.30	3.27	835299	2481138
4	12	4	1.75	7	1.25	17	347	12	587	17	348	12	588	3	273	3	289	2.05	1.64	1.19	3.44	2.58	1.27	2.08	1.81	1.19	4.03	745925	2305811
4	12	3	2.67	8	0	29	578	12	819	29	579	12	820	3	182	3	287	4.32	3.75	1.03	7.73	4.75	2.89	1.15	2.97	1.03	3.68	2459701	5783606
4	12	4	2	8	0	27	537	12	778	27	538	12	779	3	240	3	371	4.74	4.09	1.06	8.36	5.17	3.15	2.51	3.31	1.06	4.67	2575974	5965487
4	12	5	1.6	8	0	17	342	12	581	17	342	12	581	3	300	3	307	2.11	1.68	1.00	3.60	2.63	1.30	2.10	1.55	1.00	4.36	776517	2383449
4	12	3	3.17	9.5	0.75	22	443	12	683	22	443	12	683	3	154	3	191	2.11	1.77	1.01	3.49	2.61	1.37	1.44	1.85	1.01	2.59	870337	2533691
4	12	4	2.375	9.5	0.75	20	399	12	639	20	400	12	640	3	200	3	239	2.21	1.82	1.20	3.57	2.78	1.42	1.79	1.96	1.20	3.23	839676	2490190
4	12	5	1.9	9.5	0.75	18	362	12	600	18	362	12	600	3	250	3	278	2.21	1.79	1.13	3.49	2.82	1.40	2.07	1.97	1.13	3.79	772623	2357808
4	12	6	1.583	9.5	0.75	17	331	12	571	17	331	12	571	3	300	3	303	2.00	1.59	1.05	3.38	2.51	1.22	2.08	1.64	1.05	4.33	715080	2245269
4	12	3	3.67	11	1.5	23	462	12	700	23	462	12	700	3	133	3	169	1.91	1.60	1.48	3.35	2.29	1.23	1.28	2.65	1.23	2.29	853966	2482392
4	12	4	2.75	11	1.5	21	422	12	663	21	423	12	663	3	176	3	214	2.07	1.71	1.54	3.56	2.53	1.32	1.61	2.90	1.32	2.89	865779	2536469
4	12	5	2.2	11	1.5	19	387	12	626	19	387	12	626	3	222	3	253	2.11	1.72	1.79	3.56	2.61	1.33	1.89	2.99	1.33	3.41	820529	2453482
4	12	6	1.833	11	1.5	18	356	12	594	18	356	12	594	3	261	3	282	2.10	1.69	1.71	3.47	2.63	1.31	2.12	3.00	1.31	3.89	761511	2335902
4	12	7	1.57	11	1.5	17	330	12	569	17	330	12	569	3	300	3	304	2.08	1.65	1.91	3.38	2.64	1.28	2.29	2.99	1.28	4.35	711954	2238259
4	12	4	2.875	11.5	1.75	22	430	12	668	22	430	12	668	3	167	3	206	2.08	1.73	1.69	3.55	2.54	1.33	1.55	3.17	1.33	2.79	868304	2536946
4	12	5	2.3	11.5	1.75	20	394	12	634	20	394	12	634	3	207	3	245	2.14	1.75	1.66	3.57	2.64	1.35	1.84	3.28	1.35	3.31	832062	2476056
4	12	6	1.917	11.5	1.75	18	362	12	603	18	363	12	603	3	250	3	277	2.13	1.72	1.90	3.49	2.67	1.33	2.07	3.29	1.33	3.77	775753	2365667
4	12	7	1.643	11.5	1.75	17	337	12	577	17	337	12	577	3	286	3	298	2.11	1.69	2.13	3.41	2.68	1.31	2.24	3.29	1.31	4.21	726503	2267767
4	12	4	3.25	13	2.5	22	447	12	685	22	447	12	685	3	150	3	187	2.08	1.74	1.67	3.47	2.54	1.35	1.41	3.06	1.35	2.53	868179	2525722
4	12	5	2.6	13	2.5	21	414	12	654	21	414	12	654	3	188	3	223	2.18	1.80	1.68	3.57	2.70	1.40	1.68	3.23	1.40	3.02	858043	2523686
4	12	6	2.167	13	2.5	19	384	12	624	19	384	12	624	3	222	3	256	2.20	1.80	1.64	3.55	2.76	1.40	1.92	3.29	1.40	3.46	816110	2445415
4	12	7	1.857	13	2.5	18	358	12	596	18	358	12	596	3	261	3	281	2.19	1.77	1.88	3.47	2.77	1.37	2.11	3.29	1.37	3.85	764454	2341371
4	12	4	3.625	14.5	3.25	23	460	12	700	23	460	12	700	3	133	3	171	1.94	1.62	1.65	3.37	2.33	1.25	1.30	2.97	1.25	2.32	857702	2492785
4	12	5	2.9	14.5	3.25	22	431	12	670	22	431	12	670	3	167	3	205	2.07	1.72	1.71	3.54	2.51	1.32	1.55	3.20	1.32	2.77	869809	2540035
4	12	6	2.417	14.5	3.25	20	403	12	641	20	403	12	641	3	200	3	235	2.13	1.74	1.69	3.58	2.61	1.34	1.77	3.30	1.34	3.18	843495	2496363

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
4	12	7	2.07	14.5	3.25	19	376	12	616	19	376	12	616	3	231	3	264	2.13	1.73	1.96	3.53	2.64	1.33	1.99	3.32	1.33	3.57	801170	2415795
4	12	4	2.875	11.5	0	29	582	12	823	29	583	12	823	3	167	3	266	4.08	3.54	1.00	7.36	4.47	2.71	1.08	2.86	1.00	3.44	2337253	5557403
4	12	5	2.3	11.5	0	28	550	12	789	28	550	12	789	3	207	3	323	4.37	3.78	1.03	7.80	4.77	2.89	1.29	3.10	1.03	4.12	2406428	5666548
4	12	6	1.917	11.5	0	26	525	12	765	26	525	12	765	3	250	3	377	4.64	3.99	1.05	8.20	5.03	3.06	2.58	3.32	1.05	4.79	2484788	5791895
4	12	7	1.643	11.5	0	25	505	12	746	25	505	12	746	3	286	3	417	4.88	4.19	1.07	8.57	5.27	3.21	2.83	3.52	1.07	5.45	2561721	5911637
4	12	4	3.25	13	0.75	22	447	12	685	22	447	12	685	3	150	3	187	2.08	1.74	1.00	3.47	2.54	1.35	1.41	1.83	1.00	2.53	868179	2525722
4	12	5	2.6	13	0.75	21	414	12	654	21	414	12	654	3	188	3	223	2.18	1.80	1.01	3.57	2.70	1.40	1.68	1.94	1.01	3.02	858043	2523686
4	12	6	2.167	13	0.75	19	387	12	627	19	387	12	627	3	222	3	257	2.24	1.83	1.00	3.61	2.80	1.42	1.93	2.01	1.00	3.47	835800	2489924
4	12	7	1.857	13	0.75	18	358	12	596	18	358	12	596	3	261	3	281	2.19	1.77	1.13	3.47	2.77	1.37	2.11	1.98	1.13	3.85	764454	2341371
4	12	4	3.625	14.5	1.5	23	460	12	700	23	460	12	700	3	133	3	171	1.94	1.62	1.50	3.37	2.33	1.25	1.30	2.69	1.25	2.32	857702	2492785
4	12	5	2.9	14.5	1.5	22	431	12	670	22	431	12	670	3	167	3	205	2.07	1.72	1.55	3.54	2.51	1.32	1.55	2.90	1.32	2.77	869809	2540035
4	12	6	2.417	14.5	1.5	20	403	12	641	20	403	12	641	3	200	3	235	2.13	1.74	1.30	3.58	2.61	1.34	1.77	2.55	1.30	3.18	843495	2496363
4	12	7	2.07	14.5	1.5	19	376	12	616	19	376	12	616	3	231	3	264	2.13	1.73	1.30	3.53	2.64	1.33	1.99	2.20	1.30	3.57	801170	2415795
4	12	5	3	15	0	29	586	12	826	29	587	12	826	3	162	3	256	4.01	3.48	1.31	7.20	4.39	2.66	1.04	2.79	1.04	3.30	2285888	5460951
4	12	6	2.5	15	0	28	558	12	798	28	558	12	798	3	194	3	298	4.22	3.65	1.00	7.51	4.62	2.79	1.21	2.96	1.00	3.83	2327923	5527573
4	12	7	2.14	15	0	27	536	12	775	27	536	12	775	3	222	3	342	4.42	3.81	1.01	7.82	4.81	2.91	2.37	3.12	1.01	4.35	2376004	5602155
4	12	8	1.875	15	0	26	518	12	758	26	519	12	758	3	250	3	379	4.63	3.98	1.03	8.12	5.01	3.04	2.61	3.29	1.03	4.85	2436072	5699185
4	12	9	1.67	15	0	25	503	12	744	25	504	12	744	3	286	3	410	4.64	3.97	1.05	8.39	4.95	3.02	2.64	3.44	1.05	5.35	2492844	5788981
4	12	5	3.3	16.5	0.75	22	449	12	688	22	449	12	688	3	146	3	184	2.08	1.74	1.00	3.46	2.53	1.34	1.40	1.83	1.00	2.50	869820	2528490
4	12	6	2.75	16.5	0.75	21	422	12	663	21	423	12	663	3	176	3	214	2.17	1.80	1.01	3.56	2.67	1.39	1.62	1.92	1.01	2.89	865779	2536469
4	12	7	2.357	16.5	0.75	20	398	12	638	20	399	12	638	3	207	3	240	2.21	1.82	1.00	3.58	2.74	1.40	1.81	1.96	1.00	3.25	839562	2490623
4	12	8	2.06	16.5	0.75	19	381	12	620	19	381	12	620	3	231	3	268	2.27	1.85	1.00	3.65	2.83	1.43	2.01	2.03	1.00	3.61	835343	2492900
4	12	9	1.83	16.5	0.75	18	355	12	595	18	355	12	595	3	261	3	283	2.18	1.76	1.11	3.47	2.75	1.36	2.12	1.95	1.11	3.90	761704	2337708
4	12	5	3.6	18	1.5	23	459	12	699	23	459	12	699	3	136	3	172	1.96	1.63	1.50	3.37	2.34	1.25	1.31	2.70	1.25	2.33	857692	2493394
4	12	6	3	18	1.5	22	436	12	675	22	436	12	675	3	162	3	199	2.07	1.72	1.24	3.53	2.50	1.32	1.51	2.88	1.24	2.70	871911	2541766
4	12	7	2.57	18	1.5	21	413	12	651	21	413	12	651	3	188	3	225	2.13	1.75	1.40	3.58	2.59	1.35	1.70	2.69	1.35	3.04	856090	2519326
4	12	8	2.25	18	1.5	20	391	12	629	20	391	12	629	3	214	3	248	2.14	1.75	1.20	3.56	2.64	1.35	1.87	2.39	1.20	3.35	825313	2461716
4	12	9	2	18	1.5	19	370	12	610	19	370	12	610	3	240	3	271	2.14	1.73	1.24	3.51	2.65	1.33	2.04	2.13	1.24	3.66	789650	2392863
4	12	6	3.08	18.5	0	29	587	12	828	29	588	12	828	3	158	3	249	3.95	3.42	1.29	7.07	4.32	2.61	1.02	2.73	1.02	3.23	2244660	5383876
4	12	7	2.64	18.5	0	28	564	12	803	28	564	12	803	3	182	3	283	4.13	3.57	1.31	7.33	4.51	2.72	1.16	2.87	1.16	3.65	2278087	5436167
4	12	8	2.32	18.5	0	27	544	12	785	27	545	12	786	3	207	3	317	4.30	3.70	1.33	7.57	4.68	2.83	2.23	3.01	1.33	4.06	2317086	5501206
4	12	9	2.06	18.5	0	26	528	12	768	26	528	12	768	3	231	3	352	4.46	3.83	1.01	7.81	4.84	2.93	2.45	3.14	1.01	4.47	2355786	5561601
4	12	10	1.85	18.5	0	26	514	12	754	26	514	12	754	3	261	3	381	4.62	3.96	1.02	8.05	4.99	3.03	2.62	3.27	1.02	4.89	2402944	5637034
4	12	6	3.58	21.5	1.5	23	459	12	697	23	459	12	697	3	136	3	172	1.97	1.64	1.50	3.38	2.35	1.26	1.31	2.70	1.26	2.34	857425	2492538
4	12	7	3.07	21.5	1.5	22	439	12	678	22	439	12	678	3	158	3	195	2.07	1.72	1.23	3.51	2.49	1.32	1.49	2.85	1.23	2.65	870663	2536877
4	12	8	2.69	21.5	1.5	21	419	12	659	21	420	12	659	3	182	3	217	2.12	1.75	1.17	3.57	2.58	1.35	1.65	2.79	1.17	2.94	862887	2531433
4	12	9	2.39	21.5	1.5	20	401	12	640	20	401	12	640	3	200	3	238	2.15	1.76	1.29	3.58	2.63	1.36	1.80	2.53	1.29	3.21	842707	2496114
4	12	10	2.15	21.5	1.5	19	383	12	622	19	383	12	622	3	222	3	257	2.15	1.75	1.14	3.55	2.66	1.35	1.94	2.29	1.14	3.47	813297	2439214
4	12	7	3.14	22	0	30	588	12	829	29	589	12	830	3	154	3	244	3.91	3.39	1.27	6.99	4.28	2.58	1.01	2.69	1.01	3.17	2217972	5332968
4	12	8	2.75	22	0	28	568	12	808	28	568	12	808	3	176	3	273	4.06	3.51	1.29	7.20	4.45	2.68	1.12	2.81	1.12	3.53	2244398	5375504
4	12	9	2.44	22	0	28	550	12	790	28	551	12	790	3	200	3	303	4.20	3.62	1.31	7.43	4.59	2.76	1.23	2.92	1.23	3.89	2278209	5430875
4	12	10	2.2	22	0	27	535	12	776	27	536	12	777	3	222	3	332	4.35	3.74	1.33	7.63	4.73	2.86	2.33	3.05	1.33	4.23	2313336	5489314
4	12	11	2	22	0	26	522	12	762	26	523	12	763	3	240	3	361	4.48	3.84	1.00	7.81	4.86	2.93	2.51	3.15	1.00	4.57	2341828	5532137
4	12	12	1.83	22	0	26	511	12	751	26	511	12	751	3	261	3	382	4.60	3.94	1.01	8.02	4.97	3.01	2.63	3.24	1.01	4.92	2383377	5599716
4	12	7	3.57	25	1.5	23	458	12	698	23	458	12	698	3	136	3	173	1.97	1.65	1.20	3.38	2.36	1.26	1.32	2.70	1.20	2.35	858915	2496946
4	12	8	3.125	25	1.5	22	441	12	681	22	441	12	681	3	154	3	193	2.06	1.71	1.23	3.50	2.48	1.32	1.47	2.84	1.23	2.62	870338	2534980
4	12	9	2.78	25	1.5	21	424	12	664	21	425	12	664	3	176	3	212	2.12	1.75	1.21	3.56	2.57	1.34	1.61	2.87	1.21	2.87	866487	2536625
4	12	10	2.5	25	1.5	20	408	12	648	20	408	12	648	3	194	3	230	2.15	1.77	1.09	3.58	2.62	1.36	1.74	2.63	1.09	3.11	852762	2515287
4	12	11	2.27	25	1.5	20	392	12	632	20	392	12	632	3	214	3	247	2.15	1.76	1.21	3.57	2.65	1.35	1.87	2.41	1.21	3.34	829958	2472496
4	12	12	1.83	25	1.5	26	511	12	750	26	511	12	750	3	261	3	382	3.20	2.68	1.23	8.01	3.18	1.97	2.60	3.85	1.23	4.92	2376917	5586587
4	16	3	1.5	4.5	0	16	312	12	709	16	312	12	681	3	421	3	305	1.39	1.12	1.26	2.35	1.81	1.00	2.11	1.05	1.00	5.67	1089565	3230422
4	16	3	2	6	0.75	17	348	12	747	17	348	12	747	3	320	3	258	1.46	1.20	1.21	2.26	1.92	1.08	2.05	1.00	1.00	4.48	1093094	3194230
4	16	4	1.5	6	0.75	15	309	12	709	15	309	12	669	3	421	3	304	1.40	1.12	1.21	2.32	1.81	1.00	2.13	1.07	1.00	5.67	1072912	3197780
4	16	3	2.33	7	1.25	18	362	12	759	18	362	12	700	3	276	3	231	1.35	1.12	2.20	2.12	1.75	1.00	1.77	1.77	1.00	3.91	1036905	3043905
4	16	4	1.75	7	1.25	16	316	12	715	16	316	12	651	3	364	3	279	1.37	1.11	1.74	2.10	1.83	1.00	2.09	1.40	1.00	4.90	970847	2945278
4	16	3	2.67	8	0	19	375	12	774	19	375	12	767	3	242	3	205	1.33	1.11	1.29	2.02	1.74	1.00	1.58	1.01	1.00	3.48	1001311	2944358
4	16	4	2	8	0	16	328	12	727	16	328	12	699	3	320	3	257	1.35	1.11	1.33	2.00	1.82	1.00	1.98	1.05	1.00	4.36	935436	2842848
4	16	5	1.6	8	0	16	310	12	708	16	310	12	642	3	400	3	297	1.39	1.12	1.34	2.19	1.83	1.00	2.12	1.17	1.00	5.31	1007926	3041934
4	16	3	3.17	9.5	0.75	16	325	12	1003	16	326	12	939	3	205	3	204	1.32	1.10	1.74	1.90	1.81	1.00	1.00	1.32	1.00	3.80	1186511	3602056
4	16	4	2.375	9.5	0.75	17	349	12	746	17	349	12	734	3	267	3	222	1.34	1.11	1.75	1.93	1.79	1.00	1.72	1.33	1.00	3.77	922223	2782379
4	16	5	1.9	9.5	0.75	16	315	12	715	16	315	12	682	3	333	3	261	1.36	1.11	1.73	1.94	1.86	1.00	2.04	1.38	1.00	4.52	889670	2748766
4	16	6	1.583	9.5	0.75	15	308	12	708	15	308	12	642	3	400	3	299	1.39	1.12	1.53	2.19	1.82	1.00	2.13	1.34	1.00	5.37	1008312	3046860
4	16	3	3.67	11	1.5	19	378	12	1004	19	379	12	916	3	178	3	182	1.32	1.11	2.72	2.07	1.70	1.00	1.34	2.06	1.00	3.28	1297086	3748017
4	16	4	2.75	11	1.5	19	385	12	783	19	385	12	747	3	235	3	202	1.34	1.12	2.71	2.08	1.72	1.00	1.56	2.10	1.00	3.42	1041987	3030409
4	16	5	2.2	11	1.5	17	347	12	747	17	347	12	698	3	296	3	240	1.36	1.12	2.64	2.06	1.78	1.00	1.86	2.15	1.00	4.07	989001	2948552
4	16	6	1.833	11	1.5	16	319	12	717	16	319	12	658	3	348	3	270	1.37	1.11	2.58	2.05	1.83	1.00	2.11	2.20	1.00	4.69	946813	2882424
4	16	7	1.57	11	1.5	15	296	12	695	15	296	12	633	3	400	3	294	1.39	1.11	2.70	2.04	1.87	1.00	2.31	2.25	1.00	5.31	916829	2843102
4	16	4	2.875	11.5	1.75	17	340	12	925	17	341	12	857	3	222	3	214	1.34	1.11	3.01	2.01	1.78	1.00	1.02	2.29	1.00	3.86	1170098	3485236
4	16	5	2.3	11.5	1.75	18	352	12	750	18	352	12	712	3	276	3	231	1.35	1.12	2.87	2.03	1.77	1.00	1.79	2.32	1.00	3.91	977100	2912778
4	16	6	1.917	11.5	1.75	16	323	12	722	16	323	12	672	3	333	3	263	1.37	1.11	2.81	2.02	1.82	1.00	2.05	2.37	1.00	4.52	937781	2855379
4	16	7	1.643	11.5	1.75	15	300	12	699	15	300	12	640	3	381	3	285	1.38	1.11	2.94	2.01	1.87	1.00	2.24	2.43	1.00	5.11	906112	2810809
4	16	4	3.25	13	2.5	17	334	12	1004	17	334	12	936	3	200	3	201	1.32	1.10	2.91	1.93	1.79	1.00	1.51	2.20	1.00	3.71	1205496	3627714
4	16	5	2.6	13	2.5	18	365	12	765	18	365	12	754	3	250	3	208	1.34	1.11	2.81	1.96	1.76	1.00	1.62	2.21	1.00	3.53	958208	2851883
4	16	6	2.167	13	2.5	17	336	12	734	17	336	12	710	3	296	3	239	1.35	1.11	2.92	1.95	1.81	1.00	1.86	2.26	1.00	4.06	916798	2786105

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
4	16	7	1.857	13	2.5	16	312	12	711	16	312	12	676	3	348	3	264	1.36	1.11	2.87	1.94	1.86	1.00	2.07	2.31	1.00	4.59	885534	2742402
4	16	4	3.625	14.5	3.25	19	373	12	1004	19	373	12	916	3	178	3	184	1.32	1.12	3.01	2.04	1.71	1.00	1.36	2.29	1.00	3.32	1282765	3724999
4	16	5	2.9	14.5	3.25	17	343	12	928	17	342	12	857	3	222	3	213	1.34	1.11	2.85	2.03	1.77	1.00	1.02	2.33	1.00	3.84	1181686	3509425
4	16	6	2.417	14.5	3.25	18	361	12	759	18	360	12	722	3	267	3	222	1.35	1.12	2.93	2.05	1.75	1.00	1.73	2.35	1.00	3.77	994959	2944999
4	16	7	2.07	14.5	3.25	17	336	12	735	17	336	12	687	3	308	3	251	1.36	1.12	2.89	2.04	1.79	1.00	1.95	2.39	1.00	4.26	962590	2898328
4	16	4	2.875	11.5	0	17	340	12	925	17	341	12	894	3	222	3	214	1.34	1.11	1.37	2.01	1.78	1.00	1.02	1.04	1.00	3.86	1170098	3485236
4	16	5	2.3	11.5	0	18	352	12	750	18	352	12	715	3	276	3	231	1.35	1.12	1.30	2.03	1.77	1.00	1.79	1.05	1.00	3.91	977100	2912778
4	16	6	1.917	11.5	0	16	323	12	722	16	323	12	675	3	333	3	263	1.37	1.11	1.28	2.02	1.82	1.00	2.05	1.08	1.00	4.52	937781	2855379
4	16	7	1.643	11.5	0	15	300	12	699	15	300	12	642	3	381	3	285	1.38	1.11	1.34	2.01	1.87	1.00	2.24	1.10	1.00	5.11	906112	2810809
4	16	4	3.25	13	0.75	17	334	12	1004	17	334	12	936	3	200	3	201	1.32	1.10	1.75	1.93	1.79	1.00	1.51	1.32	1.00	3.71	1205496	3627714
4	16	5	2.6	13	0.75	18	365	12	765	18	365	12	754	3	250	3	208	1.34	1.11	1.69	1.96	1.76	1.00	1.62	1.33	1.00	3.53	958208	2851883
4	16	6	2.167	13	0.75	17	336	12	734	17	336	12	710	3	296	3	239	1.35	1.11	1.75	1.95	1.81	1.00	1.86	1.36	1.00	4.06	916798	2786105
4	16	7	1.857	13	0.75	16	312	12	711	16	312	12	676	3	348	3	264	1.36	1.11	1.73	1.94	1.86	1.00	2.07	1.38	1.00	4.59	885534	2742402
4	16	4	3.625	14.5	1.5	19	373	12	1004	19	373	12	916	3	178	3	184	1.32	1.12	2.73	2.04	1.71	1.00	1.36	2.07	1.00	3.32	1282765	3724999
4	16	5	2.9	14.5	1.5	17	343	12	928	17	342	12	857	3	222	3	213	1.34	1.11	2.59	2.03	1.77	1.00	1.02	2.12	1.00	3.84	1181686	3509425
4	16	6	2.417	14.5	1.5	18	361	12	759	18	360	12	722	3	267	3	222	1.35	1.12	2.27	2.05	1.75	1.00	1.73	1.81	1.00	3.77	994959	2944999
4	16	7	2.07	14.5	1.5	17	336	12	735	17	336	12	687	3	308	3	251	1.36	1.12	1.91	2.04	1.79	1.00	1.95	1.58	1.00	4.26	962590	2898328
4	16	5	3	15	0	17	337	12	961	17	337	12	934	3	216	3	211	1.33	1.11	1.31	2.00	1.78	1.00	1.02	1.04	1.00	3.84	1200871	3587764
4	16	6	2.5	15	0	18	364	12	764	18	364	12	739	3	258	3	216	1.34	1.12	1.31	2.02	1.75	1.00	1.69	1.04	1.00	3.67	989183	2928243
4	16	7	2.14	15	0	17	339	12	739	17	339	12	704	3	296	3	244	1.36	1.12	1.29	2.02	1.79	1.00	1.90	1.06	1.00	4.14	955925	2878652
4	16	8	1.875	15	0	16	319	12	716	16	319	12	672	3	333	3	265	1.37	1.11	1.26	2.00	1.83	1.00	2.08	1.08	1.00	4.58	922795	2823383
4	16	9	1.67	15	0	15	308	12	705	15	308	12	640	3	381	3	285	1.39	1.12	1.30	2.08	1.84	1.00	2.11	1.13	1.00	5.07	946942	2897724
4	16	5	3.3	16.5	0.75	17	337	12	1004	17	336	12	939	3	195	3	198	1.32	1.11	1.74	1.93	1.78	1.00	1.50	1.32	1.00	3.65	1203385	3614382
4	16	6	2.75	16.5	0.75	19	374	12	774	19	374	12	768	3	235	3	199	1.33	1.11	1.69	1.96	1.74	1.00	1.56	1.32	1.00	3.38	967800	2864692
4	16	7	2.357	16.5	0.75	17	349	12	747	17	349	12	730	3	276	3	224	1.35	1.11	1.66	1.95	1.78	1.00	1.75	1.34	1.00	3.80	931950	2806587
4	16	8	2.06	16.5	0.75	16	328	12	726	16	328	12	699	3	308	3	248	1.36	1.11	1.64	1.95	1.82	1.00	1.95	1.36	1.00	4.23	905482	2768929
4	16	9	1.83	16.5	0.75	16	311	12	709	16	311	12	671	3	348	3	267	1.37	1.11	1.71	1.95	1.85	1.00	2.08	1.37	1.00	4.65	888521	2750809
4	16	5	3.6	18	1.5	19	369	12	1004	18	370	12	920	3	182	3	185	1.33	1.12	2.51	2.03	1.71	1.00	1.37	2.06	1.00	3.35	1272503	3707755
4	16	6	3	18	1.5	17	339	12	959	17	339	12	883	3	216	3	211	1.34	1.11	2.65	2.01	1.77	1.00	1.02	2.10	1.00	3.84	1206248	3595210
4	16	7	2.57	18	1.5	19	370	12	769	19	370	12	738	3	250	3	212	1.34	1.12	2.42	2.04	1.73	1.00	1.66	1.90	1.00	3.59	1002970	2954099
4	16	8	2.25	18	1.5	17	348	12	747	17	348	12	708	3	286	3	235	1.36	1.12	2.08	2.03	1.77	1.00	1.84	1.69	1.00	3.98	971639	2904918
4	16	9	2	18	1.5	16	329	12	729	16	329	12	682	3	320	3	257	1.36	1.12	1.83	2.02	1.80	1.00	2.01	1.53	1.00	4.37	945696	2866967
4	16	6	3.08	18.5	0	17	335	12	983	17	336	12	959	3	211	3	209	1.34	1.11	1.33	1.99	1.78	1.00	1.02	1.03	1.00	3.83	1221754	3654919
4	16	7	2.64	18.5	0	19	373	12	772	19	373	12	754	3	242	3	207	1.34	1.12	1.31	2.02	1.73	1.00	1.62	1.03	1.00	3.51	998044	2938769
4	16	8	2.32	18.5	0	18	351	12	751	18	351	12	723	3	276	3	229	1.35	1.12	1.29	2.01	1.77	1.00	1.79	1.04	1.00	3.88	966878	2890017
4	16	9	2.06	18.5	0	17	332	12	732	17	332	12	696	3	308	3	251	1.36	1.12	1.28	2.00	1.80	1.00	1.96	1.06	1.00	4.26	940155	2849431
4	16	10	1.85	18.5	0	16	316	12	715	16	316	12	671	3	348	3	267	1.37	1.12	1.26	2.00	1.83	1.00	2.10	1.08	1.00	4.64	918369	2817639
4	16	6	3.58	21.5	1.5	18	367	12	1004	18	367	12	922	3	182	3	185	1.33	1.11	2.50	2.02	1.72	1.00	1.38	2.05	1.00	3.37	1265879	3697010
4	16	7	3.07	21.5	1.5	17	337	12	979	17	337	12	900	3	211	3	209	1.34	1.11	2.69	2.00	1.77	1.00	1.02	2.09	1.00	3.83	1222896	3651785
4	16	8	2.69	21.5	1.5	19	377	12	776	19	377	12	750	3	242	3	204	1.34	1.12	2.37	2.03	1.72	1.00	1.60	1.97	1.00	3.46	1008397	2959153
4	16	9	2.39	21.5	1.5	18	357	12	756	18	357	12	723	3	267	3	224	1.35	1.12	2.22	2.02	1.75	1.00	1.75	1.78	1.00	3.80	979276	2912316
4	16	10	2.15	21.5	1.5	17	340	12	739	17	340	12	699	3	296	3	243	1.36	1.12	1.97	2.02	1.78	1.00	1.90	1.62	1.00	4.12	956093	2877357
4	16	7	3.14	22	0	17	334	12	999	17	334	12	978	3	205	3	207	1.33	1.11	1.24	1.98	1.78	1.00	1.02	1.03	1.00	3.82	1233892	3697277
4	16	8	2.75	22	0	19	379	12	779	19	379	12	765	3	235	3	201	1.34	1.12	1.24	2.02	1.72	1.00	1.57	1.02	1.00	3.40	1003510	2945463
4	16	9	2.44	22	0	18	360	12	758	18	360	12	736	3	267	3	220	1.35	1.12	1.30	2.02	1.75	1.00	1.72	1.03	1.00	3.73	978246	2905827
4	16	10	2.2	22	0	17	342	12	742	17	342	12	712	3	296	3	238	1.36	1.12	1.28	2.00	1.78	1.00	1.87	1.05	1.00	4.05	951712	2864518
4	16	11	2	22	0	16	327	12	727	16	327	12	691	3	320	3	256	1.36	1.12	1.27	1.99	1.81	1.00	2.01	1.06	1.00	4.36	930810	2833318
4	16	12	1.83	22	0	16	315	12	712	16	315	12	671	3	348	3	268	1.37	1.12	1.25	2.00	1.83	1.00	2.10	1.07	1.00	4.67	915267	2810536
4	16	7	3.57	25	1.5	18	365	12	1004	18	366	12	923	3	182	3	186	1.33	1.12	2.50	2.01	1.72	1.00	1.39	2.05	1.00	3.37	1261284	3689214
4	16	8	3.125	25	1.5	17	335	12	994	17	336	12	912	3	205	3	207	1.34	1.11	2.51	1.99	1.77	1.00	1.02	2.09	1.00	3.82	1234395	3692161
4	16	9	2.78	25	1.5	19	382	12	781	19	381	12	759	3	235	3	199	1.34	1.12	2.46	2.03	1.71	1.00	1.56	2.03	1.00	3.37	1011579	2961199
4	16	10	2.5	25	1.5	18	364	12	763	18	364	12	734	3	258	3	216	1.35	1.12	2.18	2.02	1.74	1.00	1.70	1.84	1.00	3.66	986412	2921180
4	16	11	2.27	25	1.5	17	349	12	747	17	348	12	711	3	286	3	233	1.36	1.12	2.09	2.02	1.77	1.00	1.83	1.70	1.00	3.95	967667	2893646
4	16	12	1.83	25	1.5	19	386	12	785	19	386	12	691	3	348	3	307	1.42	1.15	1.72	3.04	1.59	1.00	2.27	1.84	1.00	5.15	1581329	4239642
4	20	3	1.5	4.5	0	16	323	12	883	16	323	12	871	3	526	3	330	1.27	1.04	1.17	2.05	1.67	1.00	1.30	1.02	1.00	7.06	1864910	5098770
4	20	3	2	6	0.75	19	370	12	930	19	370	12	930	3	400	3	282	1.36	1.15	1.18	2.05	1.80	1.10	1.26	1.00	1.00	5.58	1941904	5190387
4	20	4	1.5	6	0.75	16	320	12	880	16	320	12	856	3	526	3	328	1.27	1.04	1.19	2.02	1.67	1.00	1.31	1.03	1.00	7.04	1824600	5017393
4	20	3	2.33	7	1.25	19	380	12	940	19	380	12	908	3	345	3	250	1.23	1.04	2.09	1.88	1.62	1.00	1.08	1.73	1.00	4.84	1781574	4827823
4	20	4	1.75	7	1.25	17	330	12	889	17	330	12	861	3	455	3	302	1.25	1.04	1.63	1.86	1.69	1.00	1.28	1.38	1.00	6.10	1677201	4676496
4	20	3	2.67	8	0	19	386	12	990	19	386	12	990	3	303	3	226	1.23	1.05	1.28	1.80	1.64	1.01	1.01	1.00	1.00	4.45	1784744	4864334
4	20	4	2	8	0	17	344	12	901	17	344	12	884	3	400	3	276	1.24	1.04	1.24	1.77	1.68	1.00	1.21	1.02	1.00	5.41	1612963	4506701
4	20	5	1.6	8	0	16	321	12	881	16	321	12	851	3	500	3	320	1.27	1.04	1.32	1.92	1.69	1.00	1.30	1.14	1.00	6.61	1723089	4794917
4	20	3	3.17	9.5	0.75	21	412	12	1004	21	412	12	972	3	256	3	194	1.21	1.04	1.66	1.73	1.60	1.00	1.33	1.26	1.00	3.80	1724795	4680082
4	20	4	2.375	9.5	0.75	18	366	12	926	18	366	12	898	3	333	3	239	1.23	1.04	1.64	1.71	1.66	1.00	1.06	1.30	1.00	4.68	1591840	4425217
4	20	5	1.9	9.5	0.75	16	329	12	888	16	329	12	863	3	417	3	281	1.24	1.04	1.69	1.71	1.72	1.00	1.25	1.35	1.00	5.61	1533726	4355584
4	20	6	1.583	9.5	0.75	16	320	12	877	16	320	12	847	3	500	3	322	1.27	1.04	1.44	1.92	1.68	1.00	1.31	1.30	1.00	6.65	1715865	4777321
4	20	3	3.67	11	1.5	23	463	12	1021	23	463	12	984	3	222	3	174	1.21	1.04	2.52	1.84	1.51	1.00	1.15	1.98	1.00	3.34	1882338	4943030
4	20	4	2.75	11	1.5	20	392	12	1004	20	392	12	970	3	294	3	223	1.23	1.04	2.55	1.83	1.60	1.00	1.53	2.05	1.00	4.38	1831856	4966917
4	20	5	2.2	11	1.5	18	364	12	923	18	364	12	892	3	370	3	259	1.24	1.04	2.50	1.82	1.63	1.00	1.14	2.10	1.00	5.03	1691368	4651354
4	20	6	1.833	11	1.5	17	333	12	891	17	333	12	861	3	435	3	292	1.25	1.04	2.56	1.81	1.68	1.00	1.29	2.15	1.00	5.83	1631992	4569430
4	20	7	1.57	11	1.5	15	308	12	865	15	308	12	837	3	500	3	317	1.27	1.04	2.53	1.80	1.73	1.00	1.42	2.19	1.00	6.61	1583210	4505182
4	20	4	2.875	11.5	1.75	20	399	12	1004	20	399	12	970	3	278	3	213	1.22	1.04	2.76	1.80	1.59	1.00	1.47	2.21	1.00	4.19	1803662	4886932
4	20	5	2.3	11.5	1.75	18	369	12	928	18	369	12	897	3	345	3	249	1.24	1.04	2.72	1.79	1.63	1.00	1.10	2.26	1.00	4.84	1673383	4603387
4	20	6	1.917	11.5	1.75	17	337	12	897	17	337	12	868	3	417	3	284	1.25	1.04	2.79	1.78	1.68	1.00	1.26	2.32	1.00	5.62	1613512	4522882

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	20	7	1.643	11.5	1.75	16	312	12	870	16	312	12	843	3	476	3	308	1.26	1.04	2.75	1.77	1.73	1.00	1.38	2.37	1.00	6.35	1562594	4452090
4	20	4	3.25	13	2.5	21	420	12	1004	21	421	12	971	3	250	3	190	1.21	1.04	2.65	1.74	1.57	1.00	1.30	2.11	1.00	3.71	1740751	4698238
4	20	5	2.6	13	2.5	19	381	12	952	19	381	12	922	3	312	3	225	1.22	1.04	2.68	1.73	1.63	1.00	1.00	2.16	1.00	4.39	1648149	4537842
4	20	6	2.167	13	2.5	18	352	12	909	18	352	12	881	3	370	3	257	1.24	1.04	2.72	1.72	1.67	1.00	1.14	2.21	1.00	5.03	1574052	4405279
4	20	7	1.857	13	2.5	16	325	12	885	16	325	12	859	3	435	3	285	1.25	1.04	2.69	1.71	1.72	1.00	1.28	2.25	1.00	5.72	1528400	4351752
4	20	4	3.625	14.5	3.25	23	458	12	1016	23	458	12	978	3	222	3	175	1.21	1.04	2.78	1.82	1.52	1.00	1.17	2.19	1.00	3.36	1850956	4879466
4	20	5	2.9	14.5	3.25	20	402	12	1004	20	403	12	969	3	278	3	212	1.22	1.04	2.80	1.81	1.58	1.00	1.46	2.25	1.00	4.15	1814045	4902145
4	20	6	2.417	14.5	3.25	19	379	12	937	19	379	12	905	3	333	3	239	1.23	1.04	2.78	1.80	1.61	1.00	1.06	2.29	1.00	4.65	1698267	4642910
4	20	7	2.07	14.5	3.25	18	352	12	909	18	352	12	878	3	385	3	270	1.25	1.04	2.73	1.80	1.65	1.00	1.20	2.33	1.00	5.27	1647812	4571526
4	20	4	2.875	11.5	0	20	399	12	1004	20	399	12	998	3	278	3	213	1.22	1.04	1.25	1.80	1.59	1.00	1.47	1.01	1.00	4.19	1803662	4886932
4	20	5	2.3	11.5	0	18	369	12	928	18	369	12	905	3	345	3	249	1.24	1.04	1.24	1.79	1.63	1.00	1.10	1.03	1.00	4.84	1673383	4603387
4	20	6	1.917	11.5	0	17	337	12	897	17	337	12	868	3	417	3	284	1.25	1.04	1.27	1.78	1.68	1.00	1.26	1.05	1.00	5.62	1613512	4522882
4	20	7	1.643	11.5	0	16	312	12	870	16	312	12	843	3	476	3	308	1.26	1.04	1.25	1.77	1.73	1.00	1.38	1.08	1.00	6.35	1562594	4452090
4	20	4	3.25	13	0.75	21	420	12	1004	21	421	12	971	3	250	3	190	1.21	1.04	1.59	1.74	1.57	1.00	1.30	1.27	1.00	3.71	1740751	4698238
4	20	5	2.6	13	0.75	19	381	12	952	19	381	12	922	3	312	3	225	1.22	1.04	1.61	1.73	1.63	1.00	1.00	1.30	1.00	4.39	1648149	4537842
4	20	6	2.167	13	0.75	18	352	12	909	18	352	12	881	3	370	3	257	1.24	1.04	1.64	1.72	1.67	1.00	1.14	1.33	1.00	5.03	1574052	4405279
4	20	7	1.857	13	0.75	16	325	12	885	16	325	12	859	3	435	3	285	1.25	1.04	1.62	1.71	1.72	1.00	1.28	1.35	1.00	5.72	1528400	4351752
4	20	4	3.625	14.5	1.5	23	458	12	1016	23	458	12	978	3	222	3	175	1.21	1.04	2.52	1.82	1.52	1.00	1.17	1.99	1.00	3.36	1850956	4879466
4	20	5	2.9	14.5	1.5	20	402	12	1004	20	403	12	969	3	278	3	212	1.22	1.04	2.54	1.81	1.58	1.00	1.46	2.04	1.00	4.15	1814045	4902145
4	20	6	2.417	14.5	1.5	19	379	12	937	19	379	12	905	3	333	3	239	1.23	1.04	2.15	1.80	1.61	1.00	1.06	1.77	1.00	4.65	1698267	4642910
4	20	7	2.07	14.5	1.5	18	352	12	909	18	352	12	878	3	385	3	270	1.25	1.04	1.81	1.80	1.65	1.00	1.20	1.55	1.00	5.27	1647812	4571526
4	20	5	3	15	0	21	410	12	1004	21	410	12	1003	3	270	3	205	1.23	1.05	1.25	1.80	1.59	1.01	1.41	1.00	1.00	4.02	1807861	4871128
4	20	6	2.5	15	0	19	383	12	941	19	383	12	931	3	323	3	232	1.23	1.04	1.24	1.78	1.61	1.00	1.03	1.01	1.00	4.52	1685783	4609102
4	20	7	2.14	15	0	18	355	12	915	18	355	12	891	3	370	3	263	1.24	1.04	1.22	1.78	1.65	1.00	1.17	1.03	1.00	5.13	1639022	4549616
4	20	8	1.875	15	0	17	332	12	892	17	332	12	863	3	417	3	286	1.25	1.04	1.26	1.77	1.69	1.00	1.28	1.05	1.00	5.71	1591937	4483152
4	20	9	1.67	15	0	16	319	12	879	16	319	12	849	3	476	3	308	1.26	1.04	1.23	1.82	1.70	1.00	1.31	1.10	1.00	6.32	1626926	4585535
4	20	5	3.3	16.5	0.75	21	423	12	1004	21	424	12	970	3	244	3	187	1.21	1.04	1.59	1.74	1.57	1.00	1.29	1.26	1.00	3.65	1734955	4679030
4	20	6	2.75	16.5	0.75	19	377	12	1003	19	377	12	972	3	294	3	220	1.22	1.04	1.61	1.72	1.63	1.00	1.01	1.29	1.00	4.38	1716235	4742476
4	20	7	2.357	16.5	0.75	18	366	12	923	18	366	12	893	3	345	3	240	1.23	1.04	1.57	1.72	1.64	1.00	1.07	1.31	1.00	4.70	1592695	4424750
4	20	8	2.06	16.5	0.75	17	343	12	900	17	343	12	871	3	385	3	267	1.24	1.04	1.62	1.72	1.68	1.00	1.19	1.33	1.00	5.24	1555020	4377350
4	20	9	1.83	16.5	0.75	16	324	12	881	16	324	12	854	3	435	3	287	1.25	1.04	1.59	1.72	1.71	1.00	1.28	1.34	1.00	5.78	1528189	4350333
4	20	5	3.6	18	1.5	23	455	12	1013	23	455	12	975	3	227	3	175	1.21	1.04	2.50	1.81	1.52	1.00	1.19	1.97	1.00	3.38	1831305	4839455
4	20	6	3	18	1.5	20	409	12	1004	20	409	12	969	3	270	3	205	1.22	1.04	2.52	1.80	1.57	1.00	1.42	2.02	1.00	4.02	1800552	4857022
4	20	7	2.57	18	1.5	19	389	12	947	19	389	12	914	3	312	3	228	1.23	1.04	2.28	1.79	1.59	1.00	1.01	1.85	1.00	4.42	1705524	4644469
4	20	8	2.25	18	1.5	18	365	12	922	18	365	12	891	3	357	3	252	1.24	1.04	1.97	1.79	1.63	1.00	1.12	1.65	1.00	4.92	1657179	4571617
4	20	9	2	18	1.5	17	344	12	903	17	344	12	873	3	400	3	277	1.25	1.04	1.73	1.78	1.66	1.00	1.23	1.49	1.00	5.42	1620842	4526287
4	20	6	3.08	18.5	0	21	418	12	1004	21	418	12	1004	3	263	3	201	1.24	1.06	1.25	1.81	1.58	1.02	1.38	1.00	1.00	3.91	1818514	4877404
4	20	7	2.64	18.5	0	19	388	12	962	19	389	12	960	3	303	3	224	1.23	1.04	1.20	1.78	1.60	1.00	1.00	1.00	1.00	4.37	1714152	4677161
4	20	8	2.32	18.5	0	18	368	12	928	18	368	12	914	3	345	3	246	1.24	1.04	1.22	1.77	1.63	1.00	1.10	1.02	1.00	4.80	1651703	4557207
4	20	9	2.06	18.5	0	17	348	12	905	17	348	12	880	3	385	3	270	1.25	1.04	1.21	1.77	1.66	1.00	1.20	1.03	1.00	5.27	1610423	4494216
4	20	10	1.85	18.5	0	16	329	12	889	16	329	12	860	3	435	3	288	1.25	1.04	1.20	1.76	1.69	1.00	1.29	1.05	1.00	5.77	1579106	4459589
4	20	6	3.58	21.5	1.5	23	453	12	1011	23	453	12	973	3	227	3	176	1.21	1.04	2.49	1.80	1.52	1.00	1.19	1.96	1.00	3.39	1819983	4816688
4	20	7	3.07	21.5	1.5	21	414	12	1004	21	414	12	968	3	263	3	201	1.22	1.04	2.50	1.79	1.56	1.00	1.39	2.00	1.00	3.92	1795390	4834455
4	20	8	2.69	21.5	1.5	19	388	12	978	19	389	12	944	3	303	3	223	1.23	1.04	2.34	1.78	1.60	1.00	1.00	1.93	1.00	4.36	1743494	4755918
4	20	9	2.39	21.5	1.5	19	375	12	932	19	375	12	899	3	333	3	240	1.24	1.04	2.09	1.78	1.61	1.00	1.07	1.73	1.00	4.68	1668549	4581659
4	20	10	2.15	21.5	1.5	18	356	12	914	18	356	12	882	3	370	3	261	1.24	1.04	1.87	1.78	1.64	1.00	1.16	1.58	1.00	5.10	1634816	4536739
4	20	7	3.14	22	0	21	424	12	1004	21	424	12	1004	3	256	3	197	1.24	1.07	1.25	1.82	1.58	1.02	1.36	1.00	1.00	3.84	1826909	4883389
4	20	8	2.75	22	0	19	385	12	999	19	386	12	999	3	294	3	221	1.23	1.04	1.24	1.77	1.60	1.00	1.01	1.00	1.00	4.36	1763613	4825575
4	20	9	2.44	22	0	19	377	12	937	19	377	12	932	3	333	3	237	1.23	1.04	1.23	1.77	1.61	1.00	1.06	1.01	1.00	4.61	1667819	4579487
4	20	10	2.2	22	0	18	358	12	918	18	358	12	902	3	370	3	256	1.24	1.04	1.22	1.76	1.64	1.00	1.14	1.02	1.00	5.01	1627483	4518743
4	20	11	2	22	0	17	342	12	900	17	342	12	875	3	400	3	276	1.25	1.04	1.20	1.76	1.67	1.00	1.23	1.03	1.00	5.40	1594332	4469062
4	20	12	1.83	22	0	16	328	12	885	16	328	12	856	3	435	3	289	1.25	1.04	1.19	1.76	1.69	1.00	1.29	1.05	1.00	5.80	1573090	4444906
4	20	7	3.57	25	1.5	23	451	12	1011	23	451	12	974	3	227	3	176	1.21	1.04	2.48	1.79	1.52	1.00	1.20	1.96	1.00	3.40	1811255	4800985
4	20	8	3.125	25	1.5	21	417	12	1004	21	418	12	968	3	256	3	198	1.22	1.04	2.49	1.79	1.56	1.00	1.37	1.99	1.00	3.86	1788814	4812355
4	20	9	2.78	25	1.5	19	387	12	1004	19	388	12	970	3	294	3	220	1.23	1.04	2.47	1.78	1.60	1.00	1.54	1.98	1.00	4.33	1778474	4858237
4	20	10	2.5	25	1.5	19	382	12	941	19	382	12	908	3	323	3	232	1.23	1.04	2.10	1.78	1.60	1.00	1.04	1.80	1.00	4.52	1678588	4595296
4	20	11	2.27	25	1.5	18	365	12	924	18	365	12	892	3	357	3	250	1.24	1.04	1.98	1.78	1.63	1.00	1.12	1.65	1.00	4.88	1650354	4558051
4	20	12	1.83	25	1.5	20	401	12	960	20	401	12	911	3	435	3	330	1.28	1.06	1.73	2.59	1.45	1.00	1.37	1.75	1.00	6.30	2593716	6489256
4	24	3	1.5	4.5	0	17	339	12	1057	17	339	12	1050	3	429	2	363	1.21	1.01	1.21	1.89	1.60	1.00	2.06	1.02	1.00	8.46	2996576	7667113
4	24	3	2	6	0.75	19	389	12	1106	20	389	12	1105	3	480	3	308	1.29	1.10	1.18	1.88	1.71	1.09	1.96	1.00	1.00	6.73	3081841	7754690
4	24	4	1.5	6	0.75	17	336	12	1053	17	336	12	1045	3	429	2	361	1.21	1.01	1.19	1.86	1.60	1.00	2.09	1.04	1.00	8.42	2932000	7542219
4	24	3	2.33	7	1.25	20	401	12	1120	20	401	12	1114	3	414	3	273	1.18	1.01	2.11	1.74	1.55	1.00	1.71	1.74	1.00	5.92	2861104	7298299
4	24	4	1.75	7	1.25	17	348	12	1065	17	348	12	1059	3	545	3	332	1.20	1.01	1.69	1.73	1.62	1.00	2.02	1.39	1.00	7.30	2717349	7081273
4	24	3	2.67	8	0	21	417	12	1136	21	417	12	1135	3	364	3	241	1.17	1.01	1.25	1.66	1.55	1.00	1.56	1.00	1.00	5.32	2750916	7053172
4	24	4	2	8	0	18	363	12	1080	18	363	12	1074	3	480	3	304	1.19	1.01	1.30	1.65	1.61	1.00	1.88	1.03	1.00	6.48	2616345	6840228
4	24	5	1.6	8	0	17	337	12	1055	17	337	12	1047	3	400	2	352	1.21	1.01	1.32	1.77	1.61	1.00	2.07	1.14	1.00	7.91	2772743	7220135
4	24	3	3.17	9.5	0.75	22	444	13	1161	22	444	13	1155	3	308	3	207	1.16	1.01	1.65	1.61	1.54	1.00	1.39	1.28	1.00	4.67	2701641	6917502
4	24	4	2.375	9.5	0.75	19	387	12	1105	19	387	12	1101	3	400	3	261	1.17	1.01	1.65	1.60	1.60	1.00	1.65	1.32	1.00	5.65	2568031	6700687
4	24	5	1.9	9.5	0.75	17	347	12	1064	17	347	12	1060	3	500	3	309	1.19	1.01	1.68	1.60	1.65	1.00	1.97	1.36	1.00	6.72	2486717	6601277
4	24	6	1.583	9.5	0.75	17	335	12	1053	17	335	12	1045	3	414	2	354	1.21	1.01	1.46	1.77	1.61	1.00	2.09	1.30	1.00	7.98	2765949	7210578
4	24	3	3.67	11	1.5	24	488	13	1205	24	488	13	1197	3	267	3	187	1.16	1.01	2.50	1.70	1.48	1.00	1.32	2.01	1.00	4.35	2978732	7461225
4	24	4	2.75	11	1.5	21	427	13	1145	21	427	13	1138	3	353	3	236	1.17	1.01	2.50	1.69	1.52	1.00	1.55	2.07	1.00	5.24	2827475	7199919
4	24	5	2.2	11	1.5	19	384	12	1102	19	384	12	1096	3	444	3	283	1.18	1.01	2.53	1.69	1.57	1.00	1.77	2.11	1.00	6.07	2720507	7024558
4	24	6	1.833	11	1.5	18	350	12	1069	18	350	12	1062	3	522	3	321	1.20	1.01	2.58	1.68	1.61	1.00	2.03	2.16	1.00	7.00	2638926	6917903

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
4	24	7	1.57	11	1.5	16	323	12	1040	16	323	12	1034	3	414	2	349	1.21	1.01	2.54	1.67	1.65	1.00	2.29	2.21	1.00	7.95	2569709	6830897
4	24	4	2.875	11.5	1.75	22	433	13	1150	22	433	13	1143	3	333	3	227	1.17	1.01	2.72	1.67	1.52	1.00	1.50	2.23	1.00	5.05	2795422	7125258
4	24	5	2.3	11.5	1.75	19	389	12	1108	19	389	12	1102	3	414	3	272	1.18	1.01	2.76	1.66	1.57	1.00	1.72	2.28	1.00	5.87	2691055	6959212
4	24	6	1.917	11.5	1.75	18	355	12	1074	18	355	12	1068	3	500	3	311	1.19	1.01	2.80	1.65	1.61	1.00	1.96	2.33	1.00	6.72	2605347	6837061
4	24	7	1.643	11.5	1.75	16	328	12	1044	16	328	12	1039	3	571	3	338	1.20	1.01	2.86	1.65	1.65	1.00	2.21	2.38	1.00	7.63	2533445	6741553
4	24	4	3.25	13	2.5	23	450	13	1169	23	450	13	1162	3	300	3	203	1.16	1.01	2.67	1.62	1.52	1.00	1.39	2.14	1.00	4.62	2737877	6991915
4	24	5	2.6	13	2.5	20	405	12	1124	20	405	12	1118	3	375	3	243	1.17	1.01	2.70	1.61	1.57	1.00	1.58	2.18	1.00	5.34	2627881	6807889
4	24	6	2.167	13	2.5	19	371	12	1089	19	371	12	1083	3	444	3	282	1.18	1.01	2.74	1.60	1.60	1.00	1.77	2.22	1.00	6.03	2544003	6673035
4	24	7	1.857	13	2.5	17	342	12	1062	17	342	12	1057	3	522	3	313	1.19	1.01	2.80	1.59	1.65	1.00	2.02	2.27	1.00	6.86	2478753	6600290
4	24	4	3.625	14.5	3.25	24	482	13	1202	24	482	13	1193	3	267	3	189	1.16	1.01	2.76	1.68	1.48	1.00	1.33	2.23	1.00	4.38	2936319	7382410
4	24	5	2.9	14.5	3.25	22	435	13	1154	22	435	13	1146	3	333	3	226	1.17	1.01	2.78	1.68	1.52	1.00	1.51	2.27	1.00	5.05	2815297	7168767
4	24	6	2.417	14.5	3.25	20	399	12	1118	20	399	12	1111	3	400	3	261	1.18	1.01	2.73	1.67	1.55	1.00	1.68	2.31	1.00	5.69	2725010	7018984
4	24	7	2.07	14.5	3.25	19	370	12	1090	19	370	12	1083	3	462	3	296	1.19	1.01	2.78	1.66	1.58	1.00	1.85	2.35	1.00	6.32	2657436	6916644
4	24	4	2.875	11.5	0	22	433	13	1150	22	433	13	1143	3	333	3	227	1.17	1.01	1.24	1.67	1.52	1.00	1.50	1.02	1.00	5.05	2795422	7125258
4	24	5	2.3	11.5	0	19	389	12	1108	19	389	12	1102	3	414	3	272	1.18	1.01	1.26	1.66	1.57	1.00	1.72	1.04	1.00	5.87	2691055	6959212
4	24	6	1.917	11.5	0	18	355	12	1074	18	355	12	1068	3	500	3	311	1.19	1.01	1.28	1.65	1.61	1.00	1.96	1.06	1.00	6.72	2605347	6837061
4	24	7	1.643	11.5	0	16	328	12	1044	16	328	12	1039	3	571	3	338	1.20	1.01	1.30	1.65	1.65	1.00	2.21	1.09	1.00	7.63	2533445	6741553
4	24	4	3.25	13	0.75	23	450	13	1169	23	450	13	1162	3	300	3	203	1.16	1.01	1.61	1.62	1.52	1.00	1.39	1.29	1.00	4.62	2737877	6991915
4	24	5	2.6	13	0.75	20	405	12	1124	20	405	12	1118	3	375	3	243	1.17	1.01	1.62	1.61	1.57	1.00	1.58	1.31	1.00	5.34	2627881	6807889
4	24	6	2.167	13	0.75	19	371	12	1089	19	371	12	1083	3	444	3	282	1.18	1.01	1.65	1.60	1.60	1.00	1.77	1.34	1.00	6.03	2544003	6673035
4	24	7	1.857	13	0.75	17	342	12	1062	17	342	12	1057	3	522	3	313	1.19	1.01	1.68	1.59	1.65	1.00	2.02	1.37	1.00	6.86	2478753	6600290
4	24	4	3.625	14.5	1.5	24	482	13	1202	24	482	13	1193	3	267	3	189	1.16	1.01	2.50	1.68	1.48	1.00	1.33	2.02	1.00	4.38	2936319	7382410
4	24	5	2.9	14.5	1.5	22	435	13	1154	22	435	13	1146	3	333	3	226	1.17	1.01	2.52	1.68	1.52	1.00	1.51	2.06	1.00	5.05	2815297	7168767
4	24	6	2.417	14.5	1.5	20	399	12	1118	20	399	12	1111	3	400	3	261	1.18	1.01	2.10	1.67	1.55	1.00	1.68	1.78	1.00	5.69	2725010	7018984
4	24	7	2.07	14.5	1.5	19	370	12	1090	19	370	12	1083	3	462	3	296	1.19	1.01	1.84	1.66	1.58	1.00	1.85	1.55	1.00	6.32	2657436	6916644
4	24	5	3	15	0	22	440	13	1157	22	440	13	1153	3	324	3	219	1.17	1.01	1.24	1.66	1.52	1.00	1.47	1.01	1.00	4.90	2789863	7106905
4	24	6	2.5	15	0	20	403	12	1123	20	403	12	1116	3	387	3	254	1.18	1.01	1.26	1.65	1.55	1.00	1.64	1.02	1.00	5.54	2705149	6974253
4	24	7	2.14	15	0	19	375	12	1092	19	375	12	1084	3	444	3	287	1.19	1.01	1.24	1.65	1.58	1.00	1.79	1.04	1.00	6.12	2635533	6856312
4	24	8	1.875	15	0	18	350	12	1067	18	350	12	1060	3	500	3	314	1.19	1.01	1.27	1.64	1.62	1.00	2.01	1.06	1.00	6.83	2569072	6768501
4	24	9	1.67	15	0	17	335	12	1053	17	335	12	1045	3	571	3	338	1.20	1.01	1.25	1.69	1.62	1.00	2.08	1.11	1.00	7.57	2621855	6913617
4	24	5	3.3	16.5	0.75	23	452	13	1171	23	452	13	1164	3	293	3	201	1.16	1.01	1.60	1.61	1.52	1.00	1.38	1.28	1.00	4.57	2727554	6968819
4	24	6	2.75	16.5	0.75	21	415	12	1134	21	415	12	1128	3	353	3	232	1.17	1.01	1.63	1.60	1.55	1.00	1.53	1.30	1.00	5.14	2639142	6820191
4	24	7	2.357	16.5	0.75	19	386	12	1103	19	386	12	1097	3	414	3	263	1.18	1.01	1.60	1.60	1.58	1.00	1.68	1.32	1.00	5.68	2566336	6697000
4	24	8	2.06	16.5	0.75	18	361	12	1079	18	361	12	1073	3	462	3	293	1.19	1.01	1.63	1.60	1.61	1.00	1.86	1.34	1.00	6.29	2513429	6629029
4	24	9	1.83	16.5	0.75	17	340	12	1060	17	340	12	1054	3	522	3	316	1.19	1.01	1.61	1.60	1.64	1.00	2.03	1.35	1.00	6.95	2482781	6613426
4	24	5	3.6	18	1.5	24	479	13	1198	24	479	13	1189	3	273	3	189	1.16	1.01	2.48	1.67	1.48	1.00	1.33	2.01	1.00	4.38	2903384	7314176
4	24	6	3	18	1.5	22	441	13	1158	22	441	13	1150	3	324	3	219	1.17	1.01	2.42	1.67	1.51	1.00	1.48	2.04	1.00	4.91	2805978	7139661
4	24	7	2.57	18	1.5	21	410	12	1128	21	410	12	1120	3	375	3	248	1.18	1.01	2.24	1.66	1.54	1.00	1.62	1.88	1.00	5.44	2734035	7022753
4	24	8	2.25	18	1.5	19	384	12	1104	19	384	12	1097	3	429	3	277	1.18	1.01	2.00	1.66	1.57	1.00	1.76	1.66	1.00	5.95	2671775	6927183
4	24	9	2	18	1.5	18	362	12	1082	18	362	12	1075	3	480	3	304	1.19	1.01	1.76	1.65	1.59	1.00	1.92	1.50	1.00	6.49	2615941	6846124
4	24	6	3.08	18.5	0	22	445	13	1162	22	445	13	1162	3	316	3	214	1.17	1.01	1.19	1.66	1.51	1.00	1.45	1.00	1.00	4.82	2796549	7116197
4	24	7	2.64	18.5	0	21	413	12	1133	21	413	12	1125	3	364	3	242	1.18	1.01	1.22	1.65	1.54	1.00	1.59	1.01	1.00	5.34	2721563	6997407
4	24	8	2.32	18.5	0	19	388	12	1107	19	388	12	1100	3	414	3	269	1.18	1.01	1.24	1.64	1.56	1.00	1.72	1.03	1.00	5.80	2651227	6876980
4	24	9	2.06	18.5	0	18	366	12	1085	18	366	12	1077	3	462	3	296	1.19	1.01	1.23	1.64	1.59	1.00	1.87	1.04	1.00	6.32	2599117	6801001
4	24	10	1.85	18.5	0	17	346	12	1066	17	346	12	1059	3	522	3	316	1.20	1.01	1.22	1.63	1.62	1.00	2.03	1.06	1.00	6.91	2553480	6749288
4	24	6	3.58	21.5	1.5	24	477	13	1196	24	477	13	1187	3	273	3	190	1.16	1.01	2.47	1.67	1.48	1.00	1.34	2.00	1.00	4.39	2888005	7283623
4	24	7	3.07	21.5	1.5	22	444	13	1164	22	444	13	1155	3	316	3	215	1.17	1.01	2.42	1.66	1.51	1.00	1.46	2.03	1.00	4.85	2806677	7144106
4	24	8	2.69	21.5	1.5	21	418	12	1135	21	418	12	1127	3	364	3	239	1.17	1.01	2.34	1.66	1.53	1.00	1.57	1.94	1.00	5.26	2734790	7013692
4	24	9	2.39	21.5	1.5	20	395	12	1112	20	395	12	1105	3	400	3	263	1.18	1.01	2.05	1.65	1.55	1.00	1.69	1.75	1.00	5.69	2677044	6919120
4	24	10	2.15	21.5	1.5	19	375	12	1093	19	375	12	1086	3	444	3	286	1.19	1.01	1.89	1.65	1.57	1.00	1.80	1.59	1.00	6.11	2629686	6846883
4	24	7	3.14	22	0	22	449	13	1167	23	449	13	1166	3	308	3	211	1.17	1.02	1.20	1.66	1.51	1.01	1.44	1.00	1.00	4.77	2812537	7148500
4	24	8	2.75	22	0	21	420	13	1140	21	420	12	1135	3	353	3	234	1.17	1.01	1.22	1.64	1.53	1.00	1.56	1.01	1.00	5.19	2724235	6995411
4	24	9	2.44	22	0	20	398	12	1115	20	398	12	1108	3	400	3	258	1.18	1.01	1.20	1.64	1.55	1.00	1.67	1.02	1.00	5.60	2671224	6903377
4	24	10	2.2	22	0	19	378	12	1096	19	378	12	1088	3	444	3	280	1.18	1.01	1.23	1.64	1.57	1.00	1.77	1.03	1.00	6.00	2619049	6819971
4	24	11	2	22	0	18	360	12	1078	18	360	12	1071	3	480	3	302	1.19	1.01	1.22	1.63	1.60	1.00	1.92	1.04	1.00	6.47	2572508	6755965
4	24	12	1.83	22	0	17	344	12	1064	17	344	12	1057	3	522	3	318	1.20	1.01	1.21	1.63	1.62	1.00	2.04	1.05	1.00	6.98	2548192	6742613
4	24	7	3.57	25	1.5	24	476	13	1193	24	476	13	1183	3	273	3	190	1.16	1.01	2.45	1.66	1.48	1.00	1.34	1.99	1.00	4.38	2869124	7241268
4	24	8	3.125	25	1.5	22	447	13	1166	22	447	13	1157	3	308	3	211	1.17	1.01	2.42	1.65	1.50	1.00	1.45	2.02	1.00	4.78	2799243	7123797
4	24	9	2.78	25	1.5	21	423	13	1143	21	423	12	1135	3	353	3	232	1.17	1.01	2.42	1.65	1.53	1.00	1.55	2.00	1.00	5.16	2743164	7031954
4	24	10	2.5	25	1.5	20	403	12	1120	20	403	12	1112	3	387	3	253	1.18	1.01	2.15	1.65	1.54	1.00	1.64	1.81	1.00	5.51	2687823	6931765
4	24	11	2.27	25	1.5	19	385	12	1103	19	385	12	1095	3	429	3	274	1.18	1.01	1.94	1.65	1.56	1.00	1.74	1.67	1.00	5.89	2653271	6882893
4	24	12	1.83	25	1.5	21	419	12	1136	21	419	12	1119	3	522	3	360	1.21	1.02	1.66	2.35	1.39	1.00	2.20	1.74	1.00	7.75	4044028	9585602
4	28	3	1.5	4.5	0	18	351	14	1229	18	351	14	1229	3	500	2	398	1.19	1.00	1.32	1.80	1.63	1.01	2.49	1.07	1.00	11.07	4583700	11227793
4	28	3	2	6	0.75	20	391	14	1271	20	391	14	1271	3	560	3	330	1.21	1.03	1.24	1.69	1.67	1.04	2.44	1.00	1.00	8.88	4377966	10790152
4	28	4	1.5	6	0.75	17	347	13	1225	17	347	13	1225	3	500	2	395	1.19	1.00	1.31	1.76	1.63	1.01	2.50	1.08	1.00	10.99	4472361	11024724
4	28	3	2.33	7	1.25	21	418	14	1296	21	418	14	1296	3	483	3	297	1.17	1.00	2.27	1.66	1.57	1.01	2.18	1.82	1.00	7.92	4360232	10714240
4	28	4	1.75	7	1.25	18	361	14	1239	18	361	14	1239	3	424	2	363	1.18	1.00	1.82	1.65	1.64	1.01	2.47	1.47	1.00	9.64	4175233	10435388
4	28	3	2.67	8	0	22	436	14	1313	22	436	14	1313	3	424	3	261	1.16	1.00	1.39	1.59	1.58	1.01	1.98	1.06	1.00	7.10	4190912	10356539
4	28	4	2	8	0	19	377	14	1254	19	377	14	1254	3	560	3	331	1.18	1.00	1.39	1.58	1.64	1.01	2.36	1.09	1.00	8.64	4010821	10084169
4	28	5	1.6	8	0	17	348	13	1228	17	348	13	1228	3	467	2	385	1.19	1.00	1.42	1.68	1.64	1.01	2.50	1.19	1.00	10.36	4236631	10582661
4	28	3	3.17	9.5	0.75	23	464	15	1344	23	464	15	1344	3	359	3	225	1.15	1.00	1.77	1.53	1.57	1.01	1.77	1.34	1.00	6.26	4116687	10183689
4	28	4	2.375	9.5	0.75	20	403	14	1281	20	403	14	1281	3	467	3	284	1.17	1.00	1.81	1.53	1.63	1.01	2.11	1.38	1.00	7.59	3932786	9890979
4	28	5	1.9	9.5	0.75	18	360	14	1239	18	360	14	1239	3	583	3	337	1.18	1.00	1.84	1.53	1.68	1.01	2.41	1.43	1.00	8.88	3830402	9761994
4	28	6	1.583	9.5	0.75	17	346	13	1225	17	346	13	1225	3	483	2	387	1.19	1.00	1.62	1.68	1.64	1.01	2.50	1.37	1.00	10.42	4220737	10551666

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios								
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear	FLS CTD	Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
4	28	3	3.67	11	1.5	26	512	15	1389	26	512	15	1389	3	311	3	203	1.15	1.00	2.58	1.62	1.49	1.01	1.66	2.05	1.00	5.78	4502582	10896506
4	28	4	2.75	11	1.5	22	446	15	1323	22	446	15	1323	3	412	3	256	1.16	1.00	2.64	1.61	1.55	1.01	1.97	2.11	1.00	6.99	4293265	10546926
4	28	5	2.2	11	1.5	20	399	14	1276	20	399	14	1275	3	519	3	307	1.17	1.00	2.66	1.60	1.59	1.01	2.26	2.16	1.00	8.14	4142929	10311790
4	28	6	1.833	11	1.5	18	363	14	1242	18	363	14	1242	3	412	2	350	1.18	1.00	2.69	1.60	1.64	1.01	2.50	2.21	1.00	9.25	4042854	10177363
4	28	7	1.57	11	1.5	17	334	13	1214	17	334	13	1214	3	483	2	382	1.19	1.00	2.73	1.59	1.68	1.01	2.69	2.26	1.00	10.32	3957624	10066589
4	28	4	2.875	11.5	1.75	23	452	15	1330	23	452	15	1330	3	389	3	246	1.16	1.00	2.87	1.59	1.55	1.01	1.91	2.27	1.00	6.76	4247218	10452146
4	28	5	2.3	11.5	1.75	20	405	14	1282	20	405	14	1282	3	483	3	295	1.17	1.00	2.88	1.58	1.59	1.01	2.19	2.32	1.00	7.85	4099229	10216209
4	28	6	1.917	11.5	1.75	18	368	14	1248	18	368	14	1248	3	583	3	339	1.18	1.00	2.92	1.58	1.64	1.01	2.44	2.38	1.00	8.93	3991418	10070957
4	28	7	1.643	11.5	1.75	17	340	13	1217	17	340	13	1217	3	452	2	370	1.19	1.00	2.96	1.57	1.68	1.01	2.61	2.42	1.00	9.91	3901313	9933601
4	28	4	3.25	13	2.5	24	471	15	1349	24	471	15	1349	3	350	3	220	1.15	1.00	2.81	1.54	1.55	1.01	1.76	2.17	1.00	6.15	4148251	10233417
4	28	5	2.6	13	2.5	21	422	14	1301	21	422	14	1301	3	438	3	264	1.16	1.00	2.83	1.53	1.59	1.01	2.02	2.22	1.00	7.15	4002398	10005547
4	28	6	2.167	13	2.5	19	385	14	1264	19	385	14	1264	3	519	3	306	1.17	1.00	2.86	1.53	1.63	1.01	2.25	2.27	1.00	8.10	3894877	9846975
4	28	7	1.857	13	2.5	18	355	14	1235	18	355	14	1235	3	400	2	341	1.18	1.00	2.90	1.52	1.67	1.01	2.45	2.32	1.00	9.03	3810010	9733944
4	28	4	3.625	14.5	3.25	25	505	15	1385	25	505	15	1385	3	311	3	204	1.15	1.00	2.83	1.60	1.50	1.01	1.68	2.26	1.00	5.82	4427811	10762798
4	28	5	2.9	14.5	3.25	23	454	15	1334	23	454	15	1334	3	389	3	245	1.16	1.00	2.85	1.59	1.54	1.01	1.92	2.31	1.00	6.74	4270866	10502725
4	28	6	2.417	14.5	3.25	21	415	14	1295	21	415	14	1295	3	467	3	284	1.17	1.00	2.88	1.59	1.58	1.01	2.14	2.35	1.00	7.62	4149763	10311738
4	28	7	2.07	14.5	3.25	19	384	14	1263	19	384	14	1263	3	538	3	322	1.18	1.00	2.91	1.58	1.61	1.01	2.35	2.40	1.00	8.47	4053728	10164345
4	28	4	2.875	11.5	0	23	452	15	1330	23	452	15	1330	3	389	3	246	1.16	1.00	1.35	1.59	1.55	1.01	1.91	1.07	1.00	6.76	4247218	10452146
4	28	5	2.3	11.5	0	20	405	14	1282	20	405	14	1282	3	483	3	295	1.17	1.00	1.36	1.58	1.59	1.01	2.19	1.10	1.00	7.85	4099229	10216209
4	28	6	1.917	11.5	0	18	368	14	1248	18	368	14	1248	3	583	3	339	1.18	1.00	1.38	1.58	1.64	1.01	2.44	1.12	1.00	8.93	3991418	10070957
4	28	7	1.643	11.5	0	17	340	13	1217	17	340	13	1217	3	452	2	370	1.19	1.00	1.40	1.57	1.68	1.01	2.61	1.14	1.00	9.91	3901313	9933601
4	28	4	3.25	13	0.75	24	471	15	1349	24	471	15	1349	3	350	3	220	1.15	1.00	1.73	1.54	1.55	1.01	1.76	1.34	1.00	6.15	4148251	10233417
4	28	5	2.6	13	0.75	21	422	14	1301	21	422	14	1301	3	438	3	264	1.16	1.00	1.74	1.53	1.59	1.01	2.02	1.37	1.00	7.15	4002398	10005547
4	28	6	2.167	13	0.75	19	385	14	1264	19	385	14	1264	3	519	3	306	1.17	1.00	1.76	1.53	1.63	1.01	2.25	1.40	1.00	8.10	3894877	9846975
4	28	7	1.857	13	0.75	18	355	14	1235	18	355	14	1235	3	400	2	341	1.18	1.00	1.79	1.52	1.67	1.01	2.45	1.43	1.00	9.03	3810010	9733944
4	28	4	3.625	14.5	1.5	25	505	15	1385	25	505	15	1385	3	311	3	204	1.15	1.00	2.58	1.60	1.50	1.01	1.68	2.05	1.00	5.82	4427811	10762798
4	28	5	2.9	14.5	1.5	23	454	15	1334	23	454	15	1334	3	389	3	245	1.16	1.00	2.59	1.59	1.54	1.01	1.92	2.10	1.00	6.74	4270866	10502725
4	28	6	2.417	14.5	1.5	21	415	14	1295	21	415	14	1295	3	467	3	284	1.17	1.00	2.28	1.59	1.58	1.01	2.14	1.86	1.00	7.62	4149763	10311738
4	28	7	2.07	14.5	1.5	19	384	14	1263	19	384	14	1263	3	538	3	322	1.18	1.00	1.98	1.58	1.61	1.01	2.35	1.63	1.00	8.47	4053728	10164345
4	28	5	3	15	0	23	459	15	1338	23	459	15	1338	3	378	3	237	1.16	1.00	1.31	1.58	1.54	1.01	1.87	1.06	1.00	6.56	4230462	10413915
4	28	6	2.5	15	0	21	420	14	1298	21	420	14	1298	3	452	3	275	1.17	1.00	1.32	1.57	1.58	1.01	2.09	1.08	1.00	7.41	4108965	10217807
4	28	7	2.14	15	0	19	389	14	1266	19	389	14	1266	3	519	3	312	1.17	1.00	1.34	1.57	1.61	1.01	2.29	1.10	1.00	8.23	4020506	10084242
4	28	8	1.875	15	0	18	363	14	1240	18	363	14	1240	3	583	3	342	1.18	1.00	1.36	1.56	1.64	1.01	2.46	1.12	1.00	9.01	3935978	9959843
4	28	9	1.67	15	0	17	347	13	1224	17	347	13	1224	3	452	2	369	1.19	1.00	1.39	1.60	1.65	1.01	2.49	1.16	1.00	9.86	4008586	10131189
4	28	5	3.3	16.5	0.75	24	473	15	1352	24	473	15	1352	3	341	3	217	1.15	1.00	1.73	1.53	1.54	1.01	1.75	1.33	1.00	6.09	4134991	10207350
4	28	6	2.75	16.5	0.75	22	433	14	1311	22	433	14	1311	3	412	3	252	1.16	1.00	1.74	1.53	1.58	1.01	1.95	1.36	1.00	6.87	4010970	10004631
4	28	7	2.357	16.5	0.75	20	401	14	1279	20	401	14	1279	3	483	3	286	1.17	1.00	1.77	1.52	1.61	1.01	2.14	1.38	1.00	7.63	3918109	9864647
4	28	8	2.06	16.5	0.75	19	374	14	1254	19	374	14	1254	3	538	3	319	1.17	1.00	1.75	1.52	1.64	1.01	2.34	1.40	1.00	8.39	3849048	9777238
4	28	9	1.83	16.5	0.75	18	353	14	1231	18	353	14	1231	3	412	2	344	1.18	1.00	1.76	1.52	1.67	1.01	2.46	1.41	1.00	9.10	3803394	9717888
4	28	5	3.6	18	1.5	25	502	15	1380	25	502	15	1380	3	318	3	205	1.15	1.00	2.56	1.59	1.50	1.01	1.69	2.04	1.00	5.81	4378011	10660958
4	28	6	3	18	1.5	23	460	15	1338	23	460	15	1337	3	378	3	237	1.16	1.00	2.58	1.58	1.53	1.01	1.88	2.08	1.00	6.56	4245621	10440759
4	28	7	2.57	18	1.5	21	427	14	1304	21	427	14	1304	3	438	3	269	1.16	1.00	2.41	1.58	1.56	1.01	2.06	1.95	1.00	7.27	4146020	10278948
4	28	8	2.25	18	1.5	20	399	14	1277	20	399	14	1277	3	500	3	300	1.17	1.00	2.14	1.57	1.59	1.01	2.24	1.74	1.00	7.96	4057992	10146531
4	28	9	2	18	1.5	19	376	14	1253	19	376	14	1253	3	560	3	330	1.18	1.00	1.89	1.57	1.62	1.01	2.40	1.57	1.00	8.63	3987241	10039189
4	28	6	3.08	18.5	0	23	464	15	1343	23	464	15	1343	3	368	3	232	1.16	1.00	1.31	1.57	1.53	1.01	1.85	1.05	1.00	6.44	4229319	10406046
4	28	7	2.64	18.5	0	22	430	14	1310	22	430	14	1310	3	424	3	263	1.16	1.00	1.33	1.57	1.56	1.01	2.03	1.07	1.00	7.14	4126058	10244593
4	28	8	2.32	18.5	0	20	403	14	1282	20	403	14	1282	3	483	3	292	1.17	1.00	1.34	1.56	1.59	1.01	2.19	1.08	1.00	7.78	4033899	10095942
4	28	9	2.06	18.5	0	19	380	14	1257	19	380	14	1257	3	538	3	321	1.18	1.00	1.33	1.56	1.62	1.01	2.35	1.10	1.00	8.43	3963287	9985149
4	28	10	1.85	18.5	0	18	359	14	1237	18	359	14	1237	3	400	2	344	1.18	1.00	1.36	1.55	1.64	1.01	2.48	1.11	1.00	9.09	3902090	9903198
4	28	6	3.58	21.5	1.5	25	499	15	1379	25	499	15	1379	3	318	3	206	1.15	1.00	2.54	1.58	1.50	1.01	1.70	2.03	1.00	5.84	4352754	10619024
4	28	7	3.07	21.5	1.5	23	464	15	1343	23	464	15	1343	3	368	3	233	1.16	1.00	2.57	1.58	1.53	1.01	1.86	2.06	1.00	6.46	4243096	10433461
4	28	8	2.69	21.5	1.5	22	435	14	1313	22	435	14	1313	3	424	3	259	1.16	1.00	2.45	1.57	1.55	1.01	2.01	2.02	1.00	7.04	4145094	10269925
4	28	9	2.39	21.5	1.5	21	410	14	1289	21	410	14	1289	3	467	3	285	1.17	1.00	2.22	1.57	1.58	1.01	2.16	1.82	1.00	7.64	4073249	10163931
4	28	10	2.15	21.5	1.5	19	389	14	1266	20	389	14	1265	3	519	3	311	1.17	1.00	2.03	1.56	1.60	1.01	2.30	1.66	1.00	8.20	4002671	10049709
4	28	7	3.14	22	0	23	467	15	1347	23	467	15	1347	3	359	3	228	1.15	1.00	1.31	1.57	1.53	1.01	1.83	1.04	1.00	6.35	4221091	10389216
4	28	8	2.75	22	0	22	438	14	1317	22	438	14	1317	3	412	3	254	1.16	1.00	1.29	1.56	1.55	1.01	1.98	1.06	1.00	6.93	4128547	10236205
4	28	9	2.44	22	0	21	413	14	1293	21	413	14	1293	3	467	3	280	1.17	1.00	1.31	1.56	1.58	1.01	2.13	1.07	1.00	7.53	4065112	10146600
4	28	10	2.2	22	0	20	392	14	1270	20	392	14	1270	3	519	3	304	1.17	1.00	1.33	1.56	1.60	1.01	2.26	1.09	1.00	8.06	3987096	10016473
4	28	11	2	22	0	19	373	14	1252	19	373	14	1252	3	560	3	329	1.18	1.00	1.33	1.55	1.62	1.01	2.40	1.10	1.00	8.61	3933120	9943515
4	28	12	1.83	22	0	18	357	14	1235	18	357	14	1235	3	412	2	346	1.18	1.00	1.35	1.55	1.64	1.01	2.49	1.11	1.00	9.16	3897194	9897117
4	28	7	3.57	25	1.5	25	498	15	1376	25	498	15	1376	3	318	3	206	1.15	1.00	2.53	1.58	1.50	1.01	1.70	2.03	1.00	5.83	4328279	10565641
4	28	8	3.125	25	1.5	23	467	15	1345	23	467	15	1344	3	359	3	229	1.15	1.00	2.49	1.57	1.52	1.01	1.84	2.05	1.00	6.37	4226792	10395593
4	28	9	2.78	25	1.5	22	441	15	1320	22	441	15	1320	3	412	3	252	1.16	1.00	2.54	1.57	1.55	1.01	1.97	2.08	1.00	6.89	4150343	10275849
4	28	10	2.5	25	1.5	21	419	14	1296	21	419	14	1296	3	452	3	274	1.17	1.00	2.32	1.56	1.57	1.01	2.10	1.89	1.00	7.38	4078485	10155516
4	28	11	2.27	25	1.5	20	399	14	1279	20	399	14	1279	3	500	3	297	1.17	1.00	2.10	1.56	1.59	1.01	2.23	1.74	1.00	7.92	4038078	10113427
4	28	12	1.83	25	1.5	22	432	14	1310	22	432	14	1308	3	412	2	392	1.19	1.00	1.69	2.18	1.41	1.00	2.77	1.74	1.00	10.31	5994787	13719810
4	32	3	1.5	4.5	0	18	360	15	1400	18	360	15	1400	3	571	2	436	1.19	1.00	1.47	1.72	1.71	1.01	3.11	1.13	1.00	14.36	6688696	15814384
4	32	3	2	6	0.75	20	397	16	1434	20	397	16	1433	3	432	2	355	1.17	1.00	1.41	1.57	1.69	1.01	2.98	1.03	1.00	11.31	6101968	14686664
4	32	4	1.5	6	0.75	18	356	15	1394	18	356	15	1394	3	571	2	433	1.19	1.00	1.46	1.69	1.70	1.01	3.12	1.15	1.00	14.24	6515701	15502543
4	32	3	2.33	7	1.25	22	433	16	1473	22	433	16	1473	3	552	3	324	1.17	1.00	2.46	1.60	1.62	1.01	2.70	1.84	1.00	10.23	6344633	15097245
4	32	4	1.75	7	1.25	19	372	15	1409	19	372	15	1409	3	485	2	396	1.18	1.00	2.02	1.58	1.70	1.01	3.07	1.54	1.00	12.47	6091711	14707204
4	32	3	2.67	8	0	23	453	16	1490	23	453	16	1490	3	485	3	285	1.16	1.00	1.52	1.53	1.62	1.01	1.79	1.12	1.00	9.14	6087262	14577862
4	32	4	2	8	0	19	389	16	1427	19	389	16	1427	3	432	2	361	1.17	1.00	1.55	1.52	1.70	1.01	2.93	1.16	1.00	11.19	5856337	14246950
4	32	5	1.6	8	0	18	358	15	1395	18	358	15	1395	3	533	2	420	1.19	1.00	1.59	1.61	1.71	1.01	3.10	1.26	1.00	13.37	6165378	14865061

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	32	3	3.17	9.5	0.75	24	484	17	1522	24	484	17	1522	3	410	3	244	1.15	1.00	1.91	1.48	1.60	1.01	1.60	1.38	1.00	8.03	5967271	14314339
4	32	4	2.375	9.5	0.75	21	417	16	1456	21	417	16	1456	3	533	3	309	1.16	1.00	1.99	1.47	1.68	1.01	2.62	1.43	1.00	9.81	5725391	13955734
4	32	5	1.9	9.5	0.75	19	371	15	1409	19	371	15	1409	3	457	2	368	1.18	1.00	2.01	1.47	1.74	1.01	2.99	1.48	1.00	11.48	5590601	13781212
4	32	6	1.583	9.5	0.75	18	355	15	1394	18	355	15	1394	3	552	2	423	1.19	1.00	1.80	1.61	1.71	1.01	3.12	1.44	1.00	13.49	6151405	14855208
4	32	3	3.67	11	1.5	27	534	17	1573	27	534	17	1573	3	356	3	221	1.15	1.00	2.69	1.56	1.52	1.01	1.51	2.01	1.00	7.41	6499003	15276116
4	32	4	2.75	11	1.5	23	463	17	1501	23	463	16	1500	3	471	3	279	1.16	1.00	2.73	1.55	1.59	1.01	1.79	2.08	1.00	9.01	6218937	14817924
4	32	5	2.2	11	1.5	21	412	16	1452	21	412	16	1452	3	593	3	336	1.17	1.00	2.81	1.54	1.64	1.01	2.81	2.14	1.00	10.53	6033421	14549035
4	32	6	1.833	11	1.5	19	374	16	1412	19	374	16	1412	3	471	2	382	1.18	1.00	2.82	1.54	1.70	1.01	3.10	2.19	1.00	11.95	5891077	14338492
4	32	7	1.57	11	1.5	17	343	15	1381	17	343	15	1381	3	552	2	417	1.19	1.00	2.85	1.53	1.75	1.01	3.34	2.24	1.00	13.35	5783880	14199468
4	32	4	2.875	11.5	1.75	24	470	17	1507	24	470	17	1506	3	444	3	268	1.16	1.00	2.93	1.53	1.59	1.01	1.73	2.21	1.00	8.69	6143776	14663792
4	32	5	2.3	11.5	1.75	21	419	16	1456	21	419	16	1456	3	552	3	322	1.17	1.00	3.00	1.52	1.64	1.01	2.71	2.27	1.00	10.13	5952296	14372702
4	32	6	1.917	11.5	1.75	19	380	16	1417	19	380	16	1417	3	457	2	370	1.18	1.00	3.02	1.52	1.69	1.01	3.02	2.32	1.00	11.51	5809368	14170571
4	32	7	1.643	11.5	1.75	17	348	15	1388	17	348	15	1388	3	516	2	404	1.19	1.00	3.06	1.51	1.75	1.01	3.26	2.38	1.00	12.89	5708547	14059291
4	32	4	3.25	13	2.5	25	490	17	1530	25	490	17	1530	3	400	3	240	1.15	1.00	2.88	1.48	1.58	1.01	1.60	2.11	1.00	7.92	6007448	14391618
4	32	5	2.6	13	2.5	22	438	16	1476	22	438	16	1476	3	500	3	288	1.16	1.00	2.94	1.48	1.64	1.01	1.82	2.17	1.00	9.21	5810819	14080049
4	32	6	2.167	13	2.5	20	398	16	1436	20	398	16	1436	3	593	3	334	1.17	1.00	2.96	1.47	1.69	1.01	2.79	2.22	1.00	10.46	5670753	13881083
4	32	7	1.857	13	2.5	18	366	15	1403	18	366	15	1403	3	457	2	372	1.18	1.00	2.99	1.47	1.73	1.01	3.04	2.27	1.00	11.65	5553939	13717515
4	32	4	3.625	14.5	3.25	26	528	17	1565	26	528	17	1565	3	356	3	222	1.15	1.00	2.92	1.54	1.53	1.01	1.52	2.19	1.00	7.42	6385055	15058056
4	32	5	2.9	14.5	3.25	24	472	17	1512	24	472	17	1512	3	444	3	266	1.16	1.00	2.92	1.53	1.58	1.01	1.74	2.25	1.00	8.66	6179537	14740463
4	32	6	2.417	14.5	3.25	22	430	16	1469	22	430	16	1468	3	533	3	309	1.17	1.00	2.94	1.53	1.62	1.01	2.65	2.29	1.00	9.82	6014638	14483030
4	32	7	2.07	14.5	3.25	20	397	16	1434	20	397	16	1434	3	410	2	351	1.17	1.00	3.03	1.52	1.66	1.01	2.91	2.34	1.00	10.92	5894317	14299593
4	32	4	2.875	11.5	0	24	470	17	1507	24	470	17	1506	3	444	3	268	1.16	1.00	1.50	1.53	1.59	1.01	1.73	1.13	1.00	8.69	6143776	14663792
4	32	5	2.3	11.5	0	21	419	16	1456	21	419	16	1456	3	552	3	322	1.17	1.00	1.54	1.52	1.64	1.01	2.71	1.16	1.00	10.13	5952296	14372702
4	32	6	1.917	11.5	0	19	380	16	1417	19	380	16	1417	3	457	2	370	1.18	1.00	1.55	1.52	1.69	1.01	3.02	1.19	1.00	11.51	5809368	14170571
4	32	7	1.643	11.5	0	17	348	15	1388	17	348	15	1388	3	516	2	404	1.19	1.00	1.57	1.51	1.75	1.01	3.26	1.22	1.00	12.89	5708547	14059291
4	32	4	3.25	13	0.75	25	490	17	1530	25	490	17	1530	3	400	3	240	1.15	1.00	1.88	1.48	1.58	1.01	1.60	1.38	1.00	7.92	6007448	14391618
4	32	5	2.6	13	0.75	22	438	16	1476	22	438	16	1476	3	500	3	288	1.16	1.00	1.93	1.48	1.64	1.01	1.82	1.42	1.00	9.21	5810819	14080049
4	32	6	2.167	13	0.75	20	398	16	1436	20	398	16	1436	3	593	3	334	1.17	1.00	1.94	1.47	1.69	1.01	2.79	1.45	1.00	10.46	5670753	13881083
4	32	7	1.857	13	0.75	18	366	15	1403	18	366	15	1403	3	457	2	372	1.18	1.00	1.96	1.47	1.73	1.01	3.04	1.49	1.00	11.65	5553939	13717515
4	32	4	3.625	14.5	1.5	26	528	17	1565	26	528	17	1565	3	356	3	222	1.15	1.00	2.69	1.54	1.53	1.01	1.52	2.02	1.00	7.42	6385055	15058056
4	32	5	2.9	14.5	1.5	24	472	17	1512	24	472	17	1512	3	444	3	266	1.16	1.00	2.69	1.53	1.58	1.01	1.74	2.07	1.00	8.66	6179537	14740463
4	32	6	2.417	14.5	1.5	22	430	16	1469	22	430	16	1468	3	533	3	309	1.17	1.00	2.47	1.53	1.62	1.01	2.65	1.93	1.00	9.82	6014638	14483030
4	32	7	2.07	14.5	1.5	20	397	16	1434	20	397	16	1434	3	410	2	351	1.17	1.00	2.19	1.52	1.66	1.01	2.91	1.69	1.00	10.92	5894317	14299593
4	32	5	3	15	0	24	478	17	1515	24	478	17	1515	3	432	3	258	1.15	1.00	1.46	1.52	1.57	1.01	1.69	1.12	1.00	8.41	6117596	14603709
4	32	6	2.5	15	0	22	435	16	1474	22	435	16	1474	3	516	3	300	1.16	1.00	1.51	1.51	1.62	1.01	2.59	1.14	1.00	9.55	5962897	14377225
4	32	7	2.14	15	0	20	401	16	1441	20	401	16	1441	3	593	3	341	1.17	1.00	1.52	1.51	1.66	1.01	2.86	1.16	1.00	10.66	5855357	14233425
4	32	8	1.875	15	0	19	373	16	1412	19	373	16	1412	3	457	2	374	1.18	1.00	1.54	1.50	1.70	1.01	3.07	1.19	1.00	11.68	5738462	14060307
4	32	9	1.67	15	0	18	356	15	1393	18	356	15	1393	3	516	2	403	1.19	1.00	1.56	1.54	1.71	1.01	3.10	1.23	1.00	12.77	5841135	14274650
4	32	5	3.3	16.5	0.75	25	493	17	1530	25	493	17	1529	3	390	3	236	1.15	1.00	1.84	1.48	1.58	1.01	1.58	1.38	1.00	7.80	5972274	14309794
4	32	6	2.75	16.5	0.75	22	449	16	1489	22	449	16	1489	3	471	3	274	1.16	1.00	1.89	1.47	1.62	1.01	1.77	1.41	1.00	8.86	5824064	14096872
4	32	7	2.357	16.5	0.75	21	415	16	1452	21	415	16	1451	3	552	3	311	1.17	1.00	1.90	1.47	1.66	1.01	2.66	1.43	1.00	9.84	5690604	13885291
4	32	8	2.06	16.5	0.75	19	386	16	1425	19	386	16	1425	3	421	2	348	1.17	1.00	1.93	1.46	1.70	1.01	2.90	1.46	1.00	10.83	5605172	13783618
4	32	9	1.83	16.5	0.75	18	363	15	1401	18	363	15	1401	3	471	2	375	1.18	1.00	1.94	1.47	1.73	1.01	3.06	1.47	1.00	11.79	5553496	13727520
4	32	5	3.6	18	1.5	26	524	17	1561	26	524	17	1561	3	364	3	223	1.15	1.00	2.60	1.53	1.53	1.01	1.52	2.00	1.00	7.44	6314379	14927780
4	32	6	3	18	1.5	24	478	17	1518	24	478	17	1518	3	432	3	258	1.16	1.00	2.68	1.52	1.57	1.01	1.70	2.05	1.00	8.44	6147969	14673573
4	32	7	2.57	18	1.5	22	442	16	1482	22	442	16	1482	3	500	3	293	1.16	1.00	2.63	1.52	1.61	1.01	1.87	2.03	1.00	9.39	6018526	14476331
4	32	8	2.25	18	1.5	21	413	16	1450	21	413	16	1450	3	571	3	327	1.17	1.00	2.32	1.52	1.64	1.01	2.77	1.80	1.00	10.27	5898401	14280897
4	32	9	2	18	1.5	19	387	16	1427	19	387	16	1427	3	432	2	360	1.18	1.00	2.10	1.51	1.68	1.01	2.99	1.63	1.00	11.19	5815202	14182726
4	32	6	3.08	18.5	0	24	483	17	1521	24	483	17	1521	3	421	3	252	1.15	1.00	1.46	1.51	1.57	1.01	1.67	1.11	1.00	8.25	6112536	14592248
4	32	7	2.64	18.5	0	22	447	16	1484	22	447	16	1484	3	485	3	286	1.16	1.00	1.47	1.51	1.60	1.01	1.83	1.13	1.00	9.17	5976052	14376171
4	32	8	2.32	18.5	0	21	417	16	1456	21	417	16	1456	3	552	3	318	1.17	1.00	1.49	1.50	1.64	1.01	2.72	1.15	1.00	10.04	5861122	14213063
4	32	9	2.06	18.5	0	20	392	16	1429	20	392	16	1429	3	421	2	350	1.17	1.00	1.51	1.50	1.67	1.01	2.92	1.17	1.00	10.89	5767226	14069805
4	32	10	1.85	18.5	0	18	369	15	1408	18	369	15	1408	3	457	2	376	1.18	1.00	1.50	1.49	1.70	1.01	3.09	1.18	1.00	11.78	5689627	13976463
4	32	6	3.58	21.5	1.5	26	521	17	1560	26	521	17	1560	3	364	3	223	1.15	1.00	2.59	1.52	1.53	1.01	1.53	2.00	1.00	7.47	6283688	14880205
4	32	7	3.07	21.5	1.5	24	483	17	1521	24	483	17	1521	3	421	3	253	1.15	1.00	2.61	1.52	1.56	1.01	1.68	2.03	1.00	8.28	6132447	14629999
4	32	8	2.69	21.5	1.5	23	451	16	1491	23	451	16	1491	3	485	3	282	1.16	1.00	2.64	1.51	1.59	1.01	1.82	2.06	1.00	9.08	6013208	14453605
4	32	9	2.39	21.5	1.5	21	425	16	1462	21	425	16	1462	3	533	3	311	1.17	1.00	2.41	1.51	1.62	1.01	2.67	1.89	1.00	9.83	5907512	14279144
4	32	10	2.15	21.5	1.5	20	402	16	1438	20	402	16	1437	3	593	3	339	1.17	1.00	2.20	1.51	1.65	1.01	2.85	1.72	1.00	10.58	5817896	14144147
4	32	7	3.14	22	0	24	487	17	1524	24	487	17	1524	3	410	3	248	1.15	1.00	1.42	1.51	1.56	1.01	1.65	1.10	1.00	8.13	6100545	14560711
4	32	8	2.75	22	0	23	455	16	1493	23	455	16	1493	3	471	3	276	1.16	1.00	1.44	1.50	1.59	1.01	1.79	1.12	1.00	8.91	5978886	14374635
4	32	9	2.44	22	0	21	428	16	1467	21	428	16	1467	3	533	3	305	1.17	1.00	1.46	1.50	1.62	1.01	2.64	1.13	1.00	9.69	5896448	14262322
4	32	10	2.2	22	0	20	405	16	1443	20	405	16	1443	3	593	3	332	1.17	1.00	1.48	1.50	1.65	1.01	2.81	1.15	1.00	10.40	5795858	14105475
4	32	11	2	22	0	19	385	16	1422	19	385	16	1422	3	432	2	359	1.18	1.00	1.50	1.49	1.68	1.01	2.98	1.17	1.00	11.11	5721066	13995667
4	32	12	1.83	22	0	18	367	15	1405	18	367	15	1405	3	471	2	378	1.18	1.00	1.49	1.49	1.70	1.01	3.09	1.18	1.00	11.85	5677923	13953762
4	32	7	3.57	25	1.5	26	519	17	1558	26	519	17	1558	3	364	3	224	1.15	1.00	2.58	1.52	1.53	1.01	1.54	1.99	1.00	7.47	6244309	14807301
4	32	8	3.125	25	1.5	24	486	17	1524	24	486	17	1523	3	410	3	249	1.15	1.00	2.60	1.51	1.56	1.01	1.66	2.02	1.00	8.17	6111908	14588446
4	32	9	2.78	25	1.5	23	458	16	1497	23	458	16	1497	3	471	3	274	1.16	1.00	2.64	1.51	1.59	1.01	1.78	2.05	1.00	8.86	6012339	14438143
4	32	10	2.5	25	1.5	22	434	16	1472	22	434	16	1472	3	516	3	299	1.16	1.00	2.53	1.51	1.61	1.01	2.60	1.96	1.00	9.52	5922544	14298166
4	32	11	2.27	25	1.5	21	413	16	1451	21	413	16	1451	3	571	3	324	1.17	1.00	2.28	1.51	1.64	1.01	2.76	1.80	1.00	10.19	5856885	14207181
4	32	12	1.83	25	1.5	22	446	16	1483	22	446	16	1483	3	471	2	429	1.18	1.00	1.71	2.06	1.46	1.00	2.49	1.69	1.00	13.21	8578376	18985772
4	36	3	1.5	4.5	0	18	367	17	1567	18	367	17	1567	3	327	1	477	1.19	1.00	1.63	1.65	1.76	1.01	2.76	1.20	1.00	17.99	9323196	21353667
4	36	3	2	6	0.75	20	407	18	1605	20	407	18	1605	3	486	2	387	1.17	1.00	1.57	1.52	1.76	1.01	2.64	1.09	1.00	14.15	8508770	19891199
4	36	4	1.5	6	0.75	18	362	17	1562	18	362	17	1562	3	327	1	473	1.19	1.00	1.63	1.62	1.76	1.01	2.78	1.22	1.00	17.87	9087444	20962958
4	36	3	2.33	7	1.25	22	446	18	1645	22	446	18	1645	3	419	2	353	1.16	1.00	2.66	1.54	1.68	1.01	2.39	1.88	1.00	12.76	8811411	20378132

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	36	4	1.75	7	1.25	19	380	17	1578	19	380	17	1578	3	545	2	433	1.18	1.00	2.21	1.53	1.78	1.01	2.73	1.60	1.00	15.64	8506024	19927573
4	36	3	2.67	8	0	23	467	18	1665	23	467	18	1664	3	545	3	310	1.16	1.00	1.72	1.48	1.67	1.01	2.17	1.18	1.00	11.42	8458683	19719258
4	36	4	2	8	0	20	399	18	1596	20	399	18	1596	3	486	2	393	1.17	1.00	1.74	1.47	1.77	1.01	2.60	1.23	1.00	14.00	8167610	19294148
4	36	5	1.6	8	0	18	364	17	1564	18	364	17	1564	3	305	1	459	1.18	1.00	1.81	1.55	1.78	1.01	2.77	1.34	1.00	16.80	8607360	20141360
4	36	3	3.17	9.5	0.75	25	500	19	1700	25	500	19	1700	3	462	3	265	1.15	1.00	2.13	1.43	1.65	1.01	1.95	1.44	1.00	10.02	8279937	19361714
4	36	4	2.375	9.5	0.75	21	429	18	1628	21	429	18	1628	3	409	2	337	1.16	1.00	2.16	1.42	1.74	1.01	2.32	1.50	1.00	12.26	7979525	18915871
4	36	5	1.9	9.5	0.75	19	379	17	1578	19	379	17	1578	3	514	2	400	1.17	1.00	2.21	1.42	1.81	1.01	2.66	1.55	1.00	14.40	7808721	18701738
4	36	6	1.583	9.5	0.75	18	362	17	1559	18	362	17	1559	3	310	1	461	1.19	1.00	1.98	1.54	1.77	1.01	2.77	1.49	1.00	16.87	8564989	20051148
4	36	3	3.67	11	1.5	28	554	19	1752	28	554	19	1752	3	400	3	240	1.14	1.00	2.81	1.51	1.56	1.01	1.82	2.01	1.00	9.19	8973476	20557698
4	36	4	2.75	11	1.5	24	478	18	1675	24	478	18	1674	3	529	3	304	1.16	1.00	2.89	1.50	1.64	1.01	2.16	2.08	1.00	11.22	8618315	19986596
4	36	5	2.2	11	1.5	21	424	18	1621	21	424	18	1621	3	439	2	365	1.17	1.00	2.94	1.49	1.71	1.01	2.48	2.15	1.00	13.13	8383666	19638403
4	36	6	1.833	11	1.5	19	382	17	1581	19	382	17	1581	3	529	2	416	1.18	1.00	3.01	1.48	1.77	1.01	2.75	2.21	1.00	14.99	8217229	19424117
4	36	7	1.57	11	1.5	17	349	17	1546	18	349	17	1545	3	310	1	455	1.18	1.00	3.03	1.48	1.82	1.01	2.96	2.26	1.00	16.74	8075317	19223474
4	36	4	2.875	11.5	1.75	24	485	19	1683	24	485	18	1682	3	500	3	291	1.15	1.00	3.07	1.48	1.64	1.01	2.10	2.20	1.00	10.83	8519254	19805743
4	36	5	2.3	11.5	1.75	22	430	18	1630	22	430	18	1630	3	419	2	350	1.17	1.00	3.14	1.47	1.71	1.01	2.41	2.27	1.00	12.69	8292502	19484341
4	36	6	1.917	11.5	1.75	19	388	17	1588	19	388	17	1588	3	514	2	403	1.17	1.00	3.20	1.46	1.77	1.01	2.69	2.32	1.00	14.46	8110617	19230546
4	36	7	1.643	11.5	1.75	18	355	17	1553	18	355	17	1553	3	581	2	441	1.18	1.00	3.23	1.46	1.82	1.01	2.89	2.38	1.00	16.13	7973517	19037873
4	36	4	3.25	13	2.5	25	507	19	1706	25	507	19	1705	3	450	3	260	1.15	1.00	3.01	1.43	1.63	1.01	1.93	2.10	1.00	9.85	8315691	19414144
4	36	5	2.6	13	2.5	23	451	18	1650	23	451	18	1650	3	562	3	313	1.16	1.00	3.07	1.43	1.69	1.01	2.22	2.16	1.00	11.51	8082070	19065658
4	36	6	2.167	13	2.5	20	408	18	1606	20	408	18	1605	3	450	2	363	1.17	1.00	3.13	1.42	1.75	1.01	2.48	2.22	1.00	13.09	7893186	18792604
4	36	7	1.857	13	2.5	19	373	17	1573	19	373	17	1573	3	514	2	405	1.18	1.00	3.16	1.42	1.81	1.01	2.71	2.27	1.00	14.64	7764388	18640445
4	36	4	3.625	14.5	3.25	27	547	19	1744	27	547	19	1744	3	400	3	241	1.14	1.00	3.02	1.49	1.57	1.01	1.83	2.17	1.00	9.22	8812133	20265839
4	36	5	2.9	14.5	3.25	24	488	19	1685	24	488	19	1685	3	500	3	289	1.15	1.00	3.07	1.48	1.62	1.01	2.10	2.23	1.00	10.76	8544806	19841615
4	36	6	2.417	14.5	3.25	22	443	18	1640	22	443	18	1640	3	400	2	336	1.16	1.00	3.14	1.47	1.68	1.01	2.35	2.28	1.00	12.23	8349166	19548812
4	36	7	2.07	14.5	3.25	20	406	18	1606	20	406	18	1606	3	462	2	382	1.17	1.00	3.16	1.47	1.73	1.01	2.59	2.33	1.00	13.69	8208565	19373373
4	36	4	2.875	11.5	0	24	485	19	1683	24	485	18	1682	3	500	3	291	1.15	1.00	1.67	1.48	1.64	1.01	2.10	1.20	1.00	10.83	8519254	19805743
4	36	5	2.3	11.5	0	22	430	18	1630	22	430	18	1630	3	419	2	350	1.17	1.00	1.71	1.47	1.71	1.01	2.41	1.23	1.00	12.69	8292502	19484341
4	36	6	1.917	11.5	0	19	388	17	1588	19	388	17	1588	3	514	2	403	1.17	1.00	1.74	1.46	1.77	1.01	2.69	1.27	1.00	14.46	8110617	19230546
4	36	7	1.643	11.5	0	18	355	17	1553	18	355	17	1553	3	581	2	441	1.18	1.00	1.76	1.46	1.82	1.01	2.89	1.30	1.00	16.13	7973517	19037873
4	36	4	3.25	13	0.75	25	507	19	1706	25	507	19	1705	3	450	3	260	1.15	1.00	2.06	1.43	1.63	1.01	1.93	1.44	1.00	9.85	8315691	19414144
4	36	5	2.6	13	0.75	23	451	18	1650	23	451	18	1650	3	562	3	313	1.16	1.00	2.10	1.43	1.69	1.01	2.22	1.48	1.00	11.51	8082070	19065658
4	36	6	2.167	13	0.75	20	408	18	1606	20	408	18	1605	3	450	2	363	1.17	1.00	2.15	1.42	1.75	1.01	2.48	1.52	1.00	13.09	7893186	18792604
4	36	7	1.857	13	0.75	19	373	17	1573	19	373	17	1573	3	514	2	405	1.18	1.00	2.16	1.42	1.81	1.01	2.71	1.56	1.00	14.64	7764388	18640445
4	36	4	3.625	14.5	1.5	27	547	19	1744	27	547	19	1744	3	400	3	241	1.14	1.00	2.80	1.49	1.57	1.01	1.83	2.02	1.00	9.22	8812133	20265839
4	36	5	2.9	14.5	1.5	24	488	19	1685	24	488	19	1685	3	500	3	289	1.15	1.00	2.85	1.48	1.62	1.01	2.10	2.07	1.00	10.76	8544806	19841615
4	36	6	2.417	14.5	1.5	22	443	18	1640	22	443	18	1640	3	400	2	336	1.16	1.00	2.76	1.47	1.68	1.01	2.35	2.01	1.00	12.23	8349166	19548812
4	36	7	2.07	14.5	1.5	20	406	18	1606	20	406	18	1606	3	462	2	382	1.17	1.00	2.39	1.47	1.73	1.01	2.59	1.76	1.00	13.69	8208565	19373373
4	36	5	3	15	0	25	493	19	1693	25	493	19	1693	3	486	3	280	1.15	1.00	1.64	1.47	1.62	1.01	2.06	1.18	1.00	10.50	8483764	19741781
4	36	6	2.5	15	0	22	448	18	1646	22	448	18	1646	3	581	3	326	1.16	1.00	1.67	1.46	1.68	1.01	2.29	1.21	1.00	11.91	8275838	19415460
4	36	7	2.14	15	0	21	412	18	1609	21	412	18	1609	3	462	2	371	1.17	1.00	1.68	1.46	1.72	1.01	2.53	1.23	1.00	13.29	8134360	19212597
4	36	8	1.875	15	0	19	381	17	1581	19	381	17	1581	3	514	2	407	1.18	1.00	1.73	1.45	1.78	1.01	2.73	1.26	1.00	14.65	8006804	19058650
4	36	9	1.67	15	0	18	362	17	1561	18	362	17	1561	3	581	2	439	1.18	1.00	1.75	1.48	1.79	1.01	2.76	1.31	1.00	16.03	8147827	19338068
4	36	5	3.3	16.5	0.75	26	510	19	1707	26	510	19	1707	3	439	3	256	1.15	1.00	2.06	1.43	1.62	1.01	1.92	1.43	1.00	9.70	8270978	19316991
4	36	6	2.75	16.5	0.75	23	463	18	1662	23	463	18	1661	3	529	3	298	1.16	1.00	2.07	1.42	1.67	1.01	2.15	1.47	1.00	11.04	8076759	19038301
4	36	7	2.357	16.5	0.75	21	426	18	1625	21	426	18	1625	3	419	2	338	1.16	1.00	2.08	1.42	1.72	1.01	2.36	1.50	1.00	12.31	7926391	18824638
4	36	8	2.06	16.5	0.75	20	395	18	1595	20	395	18	1595	3	474	2	378	1.17	1.00	2.14	1.41	1.77	1.01	2.57	1.53	1.00	13.57	7814497	18685875
4	36	9	1.83	16.5	0.75	19	370	17	1570	19	370	17	1570	3	529	2	409	1.18	1.00	2.10	1.42	1.81	1.01	2.72	1.54	1.00	14.80	7759755	18638438
4	36	5	3.6	18	1.5	27	542	19	1742	27	542	19	1742	3	409	3	242	1.14	1.00	2.78	1.48	1.57	1.01	1.85	2.01	1.00	9.26	8727639	20132370
4	36	6	3	18	1.5	25	494	19	1693	25	494	19	1693	3	486	3	281	1.15	1.00	2.84	1.47	1.62	1.01	2.06	2.05	1.00	10.50	8508383	19779713
4	36	7	2.57	18	1.5	23	456	18	1653	23	456	18	1653	3	562	3	319	1.16	1.00	2.86	1.47	1.66	1.01	2.26	2.09	1.00	11.68	8341108	19515792
4	36	8	2.25	18	1.5	21	424	18	1621	21	424	18	1621	3	439	2	356	1.17	1.00	2.54	1.46	1.70	1.01	2.46	1.88	1.00	12.83	8197362	19305686
4	36	9	2	18	1.5	20	396	18	1596	20	396	18	1596	3	486	2	392	1.17	1.00	2.28	1.46	1.74	1.01	2.65	1.70	1.00	14.00	8088803	19177120
4	36	6	3.08	18.5	0	25	499	19	1697	25	499	19	1697	3	474	3	274	1.15	1.00	1.63	1.46	1.61	1.01	2.02	1.17	1.00	10.27	8459021	19678842
4	36	7	2.64	18.5	0	23	460	18	1659	23	460	18	1659	3	545	3	311	1.16	1.00	1.64	1.46	1.66	1.01	2.23	1.19	1.00	11.46	8296916	19441689
4	36	8	2.32	18.5	0	21	429	18	1626	21	429	18	1626	3	419	2	346	1.17	1.00	1.65	1.45	1.70	1.01	2.41	1.22	1.00	12.52	8142018	19198157
4	36	9	2.06	18.5	0	20	401	18	1600	20	401	18	1600	3	474	2	382	1.17	1.00	1.67	1.45	1.74	1.01	2.60	1.24	1.00	13.66	8035344	19066347
4	36	10	1.85	18.5	0	19	377	17	1576	19	377	17	1576	3	514	2	409	1.18	1.00	1.69	1.44	1.78	1.01	2.74	1.26	1.00	14.75	7939250	18939686
4	36	6	3.58	21.5	1.5	27	540	19	1737	27	540	19	1737	3	409	3	242	1.15	1.00	2.76	1.47	1.57	1.01	1.85	2.00	1.00	9.26	8665474	20005479
4	36	7	3.07	21.5	1.5	25	499	19	1697	25	499	19	1697	3	474	3	275	1.15	1.00	2.78	1.46	1.61	1.01	2.03	2.04	1.00	10.31	8486575	19728848
4	36	8	2.69	21.5	1.5	23	465	18	1664	23	465	18	1664	3	545	3	306	1.16	1.00	2.80	1.46	1.65	1.01	2.21	2.07	1.00	11.31	8331093	19496411
4	36	9	2.39	21.5	1.5	22	436	18	1636	22	436	18	1636	3	409	2	338	1.16	1.00	2.65	1.45	1.68	1.01	2.38	1.97	1.00	12.31	8209991	19326693
4	36	10	2.15	21.5	1.5	21	412	18	1609	21	412	18	1609	3	450	2	369	1.17	1.00	2.41	1.45	1.72	1.01	2.53	1.80	1.00	13.23	8096526	19144782
4	36	7	3.14	22	0	25	503	19	1701	25	503	19	1701	3	462	3	269	1.15	1.00	1.60	1.46	1.61	1.01	2.00	1.16	1.00	10.13	8444073	19646932
4	36	8	2.75	22	0	23	469	18	1667	23	469	18	1667	3	529	3	300	1.16	1.00	1.61	1.45	1.65	1.01	2.17	1.18	1.00	11.10	8286099	19403822
4	36	9	2.44	22	0	22	440	18	1639	22	440	18	1638	3	400	2	331	1.16	1.00	1.62	1.45	1.68	1.01	2.34	1.20	1.00	12.11	8182927	19266927
4	36	10	2.2	22	0	21	415	18	1614	21	415	18	1613	3	439	2	361	1.17	1.00	1.64	1.44	1.72	1.01	2.50	1.22	1.00	13.02	8056883	19081208
4	36	11	2	22	0	20	394	17	1591	20	394	17	1591	3	486	2	390	1.17	1.00	1.66	1.44	1.75	1.01	2.64	1.24	1.00	13.91	7968250	18946931
4	36	12	1.83	22	0	19	375	17	1572	19	375	17	1572	3	529	2	412	1.18	1.00	1.68	1.44	1.78	1.01	2.74	1.25	1.00	14.84	7917439	18892394
4	36	7	3.57	25	1.5	27	538	19	1735	27	538	19	1735	3	409	3	242	1.15	1.00	2.75	1.46	1.57	1.01	1.86	1.99	1.00	9.27	8617015	19919075
4	36	8	3.125	25	1.5	25	502	19	1701	25	502	19	1701	3	462	3	270	1.15	1.00	2.78	1.46	1.61	1.01	2.01	2.02	1.00	10.17	8460298	19682973
4	36	9	2.78	25	1.5	24	472	18	1672	24	472	18	1672	3	529	3	298	1.16	1.00	2.80	1.45	1.64	1.01	2.17	2.06	1.00	11.05	8334829	19499053
4	36	10	2.5	25	1.5	22	446	18	1646	22	446	18	1646	3	581	3	325	1.16	1.00	2.78	1.45	1.67	1.01	2.31	2.05	1.00	11.91	8225398	19338887
4	36	11	2.27	25	1.5	21	424	18	1622	21	424	18	1622	3	429	2	352	1.17	1.00	2.55	1.45	1.70	1.01	2.45	1.88	1.00	12.74	8138523	19205873
4	36	12	1.83	25	1.5	23	457	18	1655	23	457	18	1654	3	529	2	468	1.18	1.00	1.83	1.96	1.51	1.00	3.01	1.69	1.00	16.46	11789044	25346015

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	40	3	1.5	4.5	0	19	372	19	1731	19	372	19	1731	3	364	1	519	1.18	1.00	1.84	1.59	1.80	1.01	3.28	1.27	1.00	21.95	12541571	27897116
4	40	3	2	6	0.75	21	415	19	1772	21	415	19	1771	3	541	2	420	1.17	1.00	1.75	1.46	1.81	1.01	3.12	1.16	1.00	17.26	11436317	26032597
4	40	4	1.5	6	0.75	18	367	19	1724	18	367	19	1724	3	364	1	514	1.18	1.00	1.81	1.56	1.80	1.00	3.30	1.29	1.00	21.77	12208088	27347462
4	40	3	2.33	7	1.25	23	457	20	1814	23	457	20	1814	3	465	2	382	1.16	1.00	2.84	1.49	1.74	1.00	2.82	1.93	1.00	15.52	11816818	26627327
4	40	4	1.75	7	1.25	19	386	19	1744	19	386	19	1744	3	312	1	470	1.17	1.00	2.43	1.47	1.82	1.00	3.23	1.68	1.00	19.10	11459188	26112959
4	40	3	2.67	8	0	24	479	20	1837	24	479	20	1837	3	408	2	335	1.15	1.00	1.89	1.43	1.74	1.00	2.57	1.25	1.00	13.89	11346081	25809072
4	40	4	2	8	0	20	406	19	1764	20	406	19	1763	3	541	2	427	1.17	1.00	1.94	1.42	1.83	1.00	3.08	1.31	1.00	17.11	10996154	25308081
4	40	5	1.6	8	0	18	369	19	1727	18	369	19	1727	3	339	1	499	1.18	1.00	2.02	1.49	1.82	1.00	3.28	1.42	1.00	20.48	11573198	26321443
4	40	3	3.17	9.5	0.75	26	514	21	1874	26	514	21	1874	3	513	3	287	1.15	1.00	2.33	1.38	1.71	1.00	2.30	1.51	1.00	12.17	11082593	25322642
4	40	4	2.375	9.5	0.75	22	439	20	1796	22	439	20	1796	3	455	2	365	1.16	1.00	2.39	1.38	1.81	1.01	2.75	1.57	1.00	14.92	10716669	24767533
4	40	5	1.9	9.5	0.75	19	385	19	1745	19	385	19	1745	3	571	2	435	1.17	1.00	2.43	1.37	1.87	1.01	3.16	1.64	1.00	17.61	10539742	24577229
4	40	6	1.583	9.5	0.75	18	366	19	1723	18	366	19	1723	3	345	1	501	1.18	1.00	2.17	1.48	1.81	1.00	3.30	1.56	1.00	20.61	11513263	26217851
4	40	3	3.67	11	1.5	29	571	21	1928	29	571	21	1927	3	444	3	259	1.14	1.00	3.02	1.45	1.61	1.00	2.14	2.04	1.00	11.14	11952307	26773611
4	40	4	2.75	11	1.5	25	490	20	1848	25	490	20	1848	3	588	3	329	1.15	1.00	3.09	1.44	1.70	1.00	2.56	2.12	1.00	13.65	11537399	26126648
4	40	5	2.2	11	1.5	22	432	20	1792	22	432	20	1792	3	488	2	396	1.16	1.00	3.19	1.44	1.77	1.00	2.95	2.19	1.00	16.04	11268174	25748465
4	40	6	1.833	11	1.5	19	388	19	1747	19	388	19	1747	3	588	2	451	1.17	1.00	3.24	1.43	1.83	1.00	3.26	2.25	1.00	18.30	11060305	25450342
4	40	7	1.57	11	1.5	18	352	19	1712	18	352	19	1712	3	345	1	495	1.18	1.00	3.26	1.42	1.86	1.00	3.53	2.31	1.00	20.51	10913081	25266531
4	40	4	2.875	11.5	1.75	25	498	20	1855	25	498	20	1854	3	556	3	315	1.15	1.00	3.26	1.43	1.70	1.00	2.48	2.22	1.00	13.16	11395311	25867218
4	40	5	2.3	11.5	1.75	22	440	20	1797	22	440	20	1797	3	465	2	379	1.16	1.00	3.36	1.42	1.77	1.00	2.85	2.29	1.00	15.43	11114975	25453452
4	40	6	1.917	11.5	1.75	20	395	19	1753	20	395	19	1753	3	571	2	437	1.17	1.00	3.42	1.41	1.83	1.00	3.18	2.36	1.00	17.62	10905876	25170306
4	40	7	1.643	11.5	1.75	18	359	19	1717	18	359	19	1716	3	333	1	479	1.18	1.00	3.49	1.41	1.87	1.00	3.43	2.42	1.00	19.73	10750118	24966553
4	40	4	3.25	13	2.5	26	522	21	1879	26	522	21	1879	3	500	3	281	1.15	1.00	3.20	1.39	1.68	1.00	2.28	2.12	1.00	11.94	11120200	25359418
4	40	5	2.6	13	2.5	23	462	20	1819	23	462	20	1818	3	417	2	338	1.15	1.00	3.29	1.38	1.76	1.00	2.62	2.19	1.00	13.99	10822758	24918026
4	40	6	2.167	13	2.5	21	416	19	1774	21	416	19	1774	3	500	2	394	1.16	1.00	3.35	1.37	1.82	1.00	2.94	2.25	1.00	15.96	10616965	24640137
4	40	7	1.857	13	2.5	19	379	19	1738	19	379	19	1738	3	571	2	440	1.17	1.00	3.37	1.37	1.87	1.01	3.21	2.31	1.00	17.88	10469061	24459454
4	40	4	3.625	14.5	3.25	28	563	21	1922	28	563	21	1922	3	444	3	260	1.14	1.00	3.23	1.44	1.62	1.00	2.16	2.19	1.00	11.20	11761425	26458308
4	40	5	2.9	14.5	3.25	25	500	20	1860	25	500	20	1860	3	556	3	313	1.15	1.00	3.27	1.43	1.68	1.00	2.49	2.25	1.00	13.11	11437734	25958391
4	40	6	2.417	14.5	3.25	23	453	20	1809	23	453	20	1808	3	444	2	364	1.16	1.00	3.32	1.42	1.74	1.00	2.78	2.31	1.00	14.89	11181134	25543602
4	40	7	2.07	14.5	3.25	21	414	19	1772	21	414	19	1771	3	513	2	414	1.17	1.00	3.39	1.42	1.79	1.00	3.07	2.36	1.00	16.68	11017029	25331695
4	40	4	2.875	11.5	0	25	498	20	1855	25	498	20	1854	3	556	3	315	1.15	1.00	1.86	1.43	1.70	1.00	2.48	1.27	1.00	13.16	11395311	25867218
4	40	5	2.3	11.5	0	22	440	20	1797	22	440	20	1797	3	465	2	379	1.16	1.00	1.91	1.42	1.77	1.00	2.85	1.31	1.00	15.43	11114975	25453452
4	40	6	1.917	11.5	0	20	395	19	1753	20	395	19	1753	3	571	2	437	1.17	1.00	1.95	1.41	1.83	1.00	3.18	1.34	1.00	17.62	10905876	25170306
4	40	7	1.643	11.5	0	18	359	19	1717	18	359	19	1716	3	333	1	479	1.18	1.00	1.99	1.41	1.87	1.00	3.43	1.38	1.00	19.73	10750118	24966553
4	40	4	3.25	13	0.75	26	522	21	1879	26	522	21	1879	3	500	3	281	1.15	1.00	2.27	1.39	1.68	1.00	2.28	1.51	1.00	11.94	11120200	25359418
4	40	5	2.6	13	0.75	23	462	20	1819	23	462	20	1818	3	417	2	338	1.15	1.00	2.33	1.38	1.76	1.00	2.62	1.55	1.00	13.99	10822758	24918026
4	40	6	2.167	13	0.75	21	416	19	1774	21	416	19	1774	3	500	2	394	1.16	1.00	2.37	1.37	1.82	1.00	2.94	1.60	1.00	15.96	10616965	24640137
4	40	7	1.857	13	0.75	19	379	19	1738	19	379	19	1738	3	571	2	440	1.17	1.00	2.39	1.37	1.87	1.01	3.21	1.64	1.00	17.88	10469061	24459454
4	40	4	3.625	14.5	1.5	28	563	21	1922	28	563	21	1922	3	444	3	260	1.14	1.00	3.02	1.44	1.62	1.00	2.16	2.05	1.00	11.20	11761425	26458308
4	40	5	2.9	14.5	1.5	25	500	20	1860	25	500	20	1860	3	556	3	313	1.15	1.00	3.06	1.43	1.68	1.00	2.49	2.11	1.00	13.11	11437734	25958391
4	40	6	2.417	14.5	1.5	23	453	20	1809	23	453	20	1808	3	444	2	364	1.16	1.00	3.03	1.42	1.74	1.00	2.78	2.11	1.00	14.89	11181134	25543602
4	40	7	2.07	14.5	1.5	21	414	19	1772	21	414	19	1771	3	513	2	414	1.17	1.00	2.65	1.42	1.79	1.00	3.07	1.85	1.00	16.68	11017029	25331695
4	40	5	3	15	0	25	507	20	1864	25	507	20	1864	3	541	3	303	1.15	1.00	1.82	1.42	1.68	1.00	2.42	1.25	1.00	12.73	11331922	25746354
4	40	6	2.5	15	0	23	458	20	1817	23	458	20	1816	3	435	2	353	1.16	1.00	1.86	1.41	1.74	1.00	2.72	1.28	1.00	14.52	11096174	25412459
4	40	7	2.14	15	0	21	420	20	1777	21	420	20	1777	3	513	2	402	1.17	1.00	1.89	1.41	1.79	1.00	2.99	1.31	1.00	16.22	10929204	25163846
4	40	8	1.875	15	0	19	387	19	1747	19	387	19	1747	3	571	2	441	1.17	1.00	1.91	1.40	1.83	1.00	3.23	1.34	1.00	17.89	10779957	24984508
4	40	9	1.67	15	0	18	366	19	1726	18	366	19	1726	3	328	1	477	1.18	1.00	1.93	1.43	1.84	1.00	3.29	1.39	1.00	19.60	10968186	25336871
4	40	5	3.3	16.5	0.75	26	524	21	1882	26	524	21	1882	3	488	3	277	1.14	1.00	2.23	1.38	1.67	1.00	2.27	1.50	1.00	11.79	11055974	25250593
4	40	6	2.75	16.5	0.75	24	475	20	1832	24	475	20	1832	3	588	3	322	1.15	1.00	2.27	1.37	1.73	1.00	2.54	1.54	1.00	13.41	10815101	24884463
4	40	7	2.357	16.5	0.75	22	435	20	1794	22	435	20	1794	3	465	2	366	1.16	1.00	2.32	1.37	1.79	1.00	2.80	1.57	1.00	15.01	10641927	24658428
4	40	8	2.06	16.5	0.75	20	402	19	1762	20	402	19	1762	3	526	2	410	1.17	1.00	2.33	1.37	1.83	1.00	3.05	1.61	1.00	16.56	10513676	24501081
4	40	9	1.83	16.5	0.75	19	376	19	1733	19	376	19	1733	3	588	2	443	1.17	1.00	2.36	1.37	1.86	1.00	3.23	1.62	1.00	18.03	10440784	24401364
4	40	5	3.6	18	1.5	28	559	21	1916	28	559	21	1916	3	455	3	261	1.14	1.00	3.00	1.43	1.62	1.00	2.17	2.04	1.00	11.21	11629021	26216615
4	40	6	3	18	1.5	25	507	21	1867	25	507	21	1867	3	541	3	303	1.15	1.00	3.00	1.42	1.67	1.00	2.44	2.09	1.00	12.77	11380005	25850712
4	40	7	2.57	18	1.5	23	466	20	1825	23	466	20	1824	3	426	2	345	1.16	1.00	3.06	1.41	1.72	1.00	2.68	2.13	1.00	14.25	11171716	25532380
4	40	8	2.25	18	1.5	22	432	20	1791	22	432	20	1791	3	488	2	385	1.16	1.00	2.84	1.41	1.77	1.00	2.92	1.97	1.00	15.67	11000890	25283818
4	40	9	2	18	1.5	20	403	19	1763	20	403	19	1763	3	541	2	425	1.17	1.00	2.54	1.40	1.81	1.00	3.15	1.79	1.00	17.08	10878673	25126589
4	40	6	3.08	18.5	0	26	512	21	1872	26	512	21	1872	3	526	3	296	1.15	1.00	1.79	1.41	1.67	1.00	2.39	1.24	1.00	12.50	11313723	25729826
4	40	7	2.64	18.5	0	24	471	20	1830	24	471	20	1830	3	408	2	336	1.16	1.00	1.83	1.41	1.72	1.00	2.63	1.26	1.00	13.94	11108136	25414618
4	40	8	2.32	18.5	0	22	438	20	1795	22	438	20	1795	3	465	2	374	1.16	1.00	1.86	1.40	1.77	1.00	2.85	1.29	1.00	15.26	10922463	25125266
4	40	9	2.06	18.5	0	20	408	19	1767	20	408	19	1766	3	526	2	413	1.17	1.00	1.88	1.39	1.80	1.00	3.08	1.31	1.00	16.67	10790522	24961213
4	40	10	1.85	18.5	0	19	383	19	1740	19	383	19	1740	3	571	2	444	1.17	1.00	1.89	1.39	1.83	1.00	3.25	1.33	1.00	17.98	10671989	24784174
4	40	6	3.58	21.5	1.5	28	556	21	1912	28	556	21	1911	3	455	3	261	1.14	1.00	2.93	1.42	1.62	1.00	2.18	2.03	1.00	11.23	11544000	26064762
4	40	7	3.07	21.5	1.5	26	512	21	1871	26	512	21	1871	3	526	3	297	1.15	1.00	2.99	1.41	1.67	1.00	2.40	2.07	1.00	12.53	11334654	25759488
4	40	8	2.69	21.5	1.5	24	476	20	1836	24	476	20	1836	3	408	2	331	1.16	1.00	3.01	1.41	1.71	1.00	2.61	2.11	1.00	13.77	11152058	25491389
4	40	9	2.39	21.5	1.5	22	446	20	1804	22	446	20	1804	3	455	2	366	1.16	1.00	2.96	1.40	1.75	1.00	2.81	2.07	1.00	14.96	10998417	25251929
4	40	10	2.15	21.5	1.5	21	420	20	1777	21	420	20	1777	3	500	2	399	1.17	1.00	2.69	1.40	1.78	1.00	3.00	1.89	1.00	16.14	10878371	25076673
4	40	7	3.14	22	0	26	516	21	1876	26	516	21	1876	3	513	3	291	1.15	1.00	1.79	1.40	1.66	1.00	2.37	1.23	1.00	12.32	11279978	25666482
4	40	8	2.75	22	0	24	480	20	1840	24	480	20	1840	3	588	3	325	1.16	1.00	1.80	1.40	1.71	1.00	2.57	1.25	1.00	13.53	11094837	25386795
4	40	9	2.44	22	0	23	450	20	1808	23	450	20	1808	3	444	2	359	1.16	1.00	1.83	1.40	1.75	1.00	2.77	1.27	1.00	14.72	10962769	25184608
4	40	10	2.2	22	0	21	423	20	1783	21	423	20	1783	3	488	2	391	1.17	1.00	1.85	1.39	1.78	1.00	2.96	1.30	1.00	15.88	10825435	25003178
4	40	11	2	22	0	20	400	19	1759	20	400	19	1759	3	541	2	423	1.17	1.00	1.87	1.39	1.81	1.00	3.14	1.31	1.00	17.00	10713345	24841012
4	40	12	1.83	22	0	19	380	19	1738	19	380	19	1738	3	588	2	446	1.17	1.00	1.88	1.39	1.83	1.00	3.26	1.33	1.00	18.14	10655879	24769614
4	40	7	3.57	25	1.5	28	553	21	1913	28	553	21	1913	3	455	3	262	1.14	1.00	2.93	1.41	1.62	1.00	2.19	2.02	1.00	11.26	11501105	26017198
4	40	8	3.125	25	1.5	26	516	21	1873	26	516	21	1873	3	513	3	292	1.15	1.00	2.98	1.41	1.66	1.00	2.37	2.06	1.00	12.34	11286674	25657828

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD				
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear		Lowest CTD	Aw / S (mm^2/mm)	Is / S (mm^4/mm)	Ics / S (mm^4/mm)
4	40	9	2.78	25	1.5	24	484	20	1843	24	484	20	1843	3	588	3	322	1.16	1.00	3.00	1.40	1.70	1.00	2.56	2.09	1.00	13.43	11145442	25462701
4	40	10	2.5	25	1.5	23	456	20	1816	23	456	20	1816	3	435	2	352	1.16	1.00	3.03	1.40	1.74	1.00	2.74	2.12	1.00	14.50	11014891	25280646
4	40	11	2.27	25	1.5	22	432	20	1792	22	432	20	1792	3	476	2	381	1.16	1.00	2.81	1.40	1.77	1.00	2.91	1.98	1.00	15.55	10920697	25153245
4	40	12	1.83	25	1.5	23	467	20	1826	23	467	20	1820	3	588	2	510	1.18	1.01	1.99	1.87	1.55	1.00	3.54	1.71	1.00	20.02	15753490	32948808
4	44	3	1.5	4.5	0	19	375	21	1895	19	375	21	1893	3	400	1	562	1.18	1.00	2.03	1.53	1.83	1.00	3.81	1.35	1.00	26.31	16456803	35609584
4	44	3	2	6	0.75	21	421	21	1940	21	421	21	1937	3	595	2	454	1.16	1.00	1.92	1.42	1.86	1.00	3.61	1.23	1.00	20.68	15006223	33311486
4	44	4	1.5	6	0.75	19	370	21	1888	19	370	21	1884	3	400	1	557	1.18	1.00	2.01	1.50	1.83	1.00	3.84	1.38	1.00	26.11	16050535	34963136
4	44	3	2.33	7	1.25	23	466	22	1984	23	466	22	1979	3	512	2	413	1.16	1.00	3.07	1.44	1.80	1.00	3.26	2.01	1.00	18.57	15481242	34044024
4	44	4	1.75	7	1.25	20	391	21	1908	20	391	21	1905	3	344	1	508	1.17	1.00	2.67	1.43	1.86	1.00	3.75	1.77	1.00	22.86	15049973	33381711
4	44	3	2.67	8	0	25	490	22	2007	25	490	22	2003	3	449	2	361	1.15	1.00	2.09	1.39	1.80	1.00	2.97	1.33	1.00	16.58	14843331	32973414
4	44	4	2	8	0	21	412	21	1931	21	412	21	1928	3	595	2	461	1.16	1.00	2.16	1.37	1.88	1.00	3.57	1.39	1.00	20.49	14447834	32414069
4	44	5	1.6	8	0	19	372	21	1892	19	372	21	1888	3	373	1	540	1.18	1.00	2.22	1.44	1.86	1.00	3.82	1.51	1.00	24.59	15227327	33702291
4	44	3	3.17	9.5	0.75	26	528	22	2045	26	528	22	2040	3	564	3	308	1.15	1.00	2.56	1.35	1.77	1.00	2.65	1.59	1.00	14.50	14486417	32342967
4	44	4	2.375	9.5	0.75	22	447	22	1965	22	447	22	1962	3	500	2	393	1.16	1.00	2.61	1.34	1.86	1.00	3.18	1.66	1.00	17.87	14055898	31718129
4	44	5	1.9	9.5	0.75	20	390	21	1908	20	390	21	1906	3	314	1	469	1.16	1.00	2.68	1.33	1.91	1.00	3.65	1.73	1.00	21.06	13823248	31408782
4	44	6	1.583	9.5	0.75	18	369	21	1887	18	369	21	1883	3	379	1	542	1.18	1.00	2.40	1.44	1.85	1.00	3.84	1.64	1.00	24.73	15146269	33556737
4	44	3	3.67	11	1.5	29	587	23	2107	29	587	23	2098	3	489	3	278	1.15	1.01	3.25	1.41	1.68	1.00	2.48	2.11	1.00	13.29	15631060	34258687
4	44	4	2.75	11	1.5	25	502	22	2019	25	502	22	2012	3	431	2	354	1.16	1.01	3.34	1.40	1.76	1.00	2.95	2.19	1.00	16.29	15106214	33399732
4	44	5	2.2	11	1.5	22	440	22	1960	22	440	21	1954	3	537	2	427	1.16	1.01	3.42	1.39	1.82	1.00	3.41	2.27	1.00	19.19	14785646	32947819
4	44	6	1.833	11	1.5	20	393	21	1912	20	393	21	1907	3	328	1	488	1.17	1.00	3.47	1.39	1.87	1.00	3.78	2.33	1.00	21.92	14536987	32577492
4	44	7	1.57	11	1.5	18	355	21	1873	18	355	21	1870	3	379	1	535	1.18	1.00	3.52	1.38	1.90	1.00	4.09	2.39	1.00	24.55	14352695	32306559
4	44	4	2.875	11.5	1.75	26	510	22	2028	26	510	22	2021	3	415	2	339	1.15	1.01	3.51	1.39	1.76	1.00	2.87	2.28	1.00	15.72	14925731	33103544
4	44	5	2.3	11.5	1.75	22	448	22	1967	22	448	22	1961	3	512	2	409	1.16	1.01	3.59	1.38	1.83	1.00	3.30	2.36	1.00	18.49	14594657	32618162
4	44	6	1.917	11.5	1.75	20	400	21	1920	20	400	21	1916	3	314	1	472	1.17	1.00	3.64	1.37	1.87	1.00	3.69	2.43	1.00	21.13	14345108	32268853
4	44	7	1.643	11.5	1.75	18	362	21	1880	18	362	21	1877	3	367	1	517	1.17	1.00	3.70	1.36	1.90	1.00	3.98	2.49	1.00	23.64	14146672	31969242
4	44	4	3.25	13	2.5	27	535	23	2054	27	535	23	2047	3	550	3	302	1.15	1.01	3.40	1.35	1.75	1.00	2.64	2.18	1.00	14.27	14548250	32457641
4	44	5	2.6	13	2.5	24	472	22	1989	24	472	22	1984	3	458	2	364	1.16	1.00	3.47	1.34	1.82	1.00	3.03	2.25	1.00	16.72	14189748	31902510
4	44	6	2.167	13	2.5	21	423	21	1941	21	423	21	1937	3	550	2	424	1.16	1.00	3.56	1.33	1.87	1.00	3.41	2.32	1.00	19.11	13945924	31566616
4	44	7	1.857	13	2.5	19	383	21	1903	19	383	21	1900	3	324	1	475	1.17	1.00	3.62	1.33	1.91	1.00	3.73	2.38	1.00	21.43	13763764	31339255
4	44	4	3.625	14.5	3.25	29	579	23	2099	29	579	23	2090	3	489	3	280	1.15	1.01	3.45	1.40	1.68	1.00	2.50	2.25	1.00	13.36	15373455	33829081
4	44	5	2.9	14.5	3.25	26	513	22	2031	26	513	22	2023	3	415	2	337	1.16	1.01	3.48	1.39	1.75	1.00	2.87	2.32	1.00	15.63	14969686	33174515
4	44	6	2.417	14.5	3.25	23	462	22	1980	23	462	22	1973	3	489	2	392	1.16	1.01	3.57	1.38	1.80	1.00	3.22	2.38	1.00	17.82	14681934	32739599
4	44	7	2.07	14.5	3.25	21	421	21	1939	21	421	21	1933	3	564	2	447	1.17	1.01	3.62	1.38	1.84	1.00	3.55	2.43	1.00	19.96	14477463	32443836
4	44	4	2.875	11.5	0	26	510	22	2028	26	510	22	2021	3	415	2	339	1.15	1.01	2.07	1.39	1.76	1.00	2.87	1.35	1.00	15.72	14925731	33103544
4	44	5	2.3	11.5	0	22	448	22	1967	22	448	22	1961	3	512	2	409	1.16	1.01	2.12	1.38	1.83	1.00	3.30	1.39	1.00	18.49	14594657	32618162
4	44	6	1.917	11.5	0	20	400	21	1920	20	400	21	1916	3	314	1	472	1.17	1.00	2.15	1.37	1.87	1.00	3.69	1.43	1.00	21.13	14345108	32268853
4	44	7	1.643	11.5	0	18	362	21	1880	18	362	21	1877	3	367	1	517	1.17	1.00	2.18	1.36	1.90	1.00	3.98	1.47	1.00	23.64	14146672	31969242
4	44	4	3.25	13	0.75	27	535	23	2054	27	535	23	2047	3	550	3	302	1.15	1.01	2.47	1.35	1.75	1.00	2.64	1.59	1.00	14.27	14548250	32457641
4	44	5	2.6	13	0.75	24	472	22	1989	24	472	22	1984	3	458	2	364	1.16	1.00	2.53	1.34	1.82	1.00	3.03	1.64	1.00	16.72	14189748	31902510
4	44	6	2.167	13	0.75	21	423	21	1941	21	423	21	1937	3	550	2	424	1.16	1.00	2.60	1.33	1.87	1.00	3.41	1.69	1.00	19.11	13945924	31566616
4	44	7	1.857	13	0.75	19	383	21	1903	19	383	21	1900	3	324	1	475	1.17	1.00	2.64	1.33	1.91	1.00	3.73	1.73	1.00	21.43	13763764	31339255
4	44	4	3.625	14.5	1.5	29	579	23	2099	29	579	23	2090	3	489	3	280	1.15	1.01	3.25	1.40	1.68	1.00	2.50	2.12	1.00	13.36	15373455	33829081
4	44	5	2.9	14.5	1.5	26	513	22	2031	26	513	22	2023	3	415	2	337	1.16	1.01	3.27	1.39	1.75	1.00	2.87	2.18	1.00	15.63	14969686	33174515
4	44	6	2.417	14.5	1.5	23	462	22	1980	23	462	22	1973	3	489	2	392	1.16	1.01	3.35	1.38	1.80	1.00	3.22	2.23	1.00	17.82	14681934	32739599
4	44	7	2.07	14.5	1.5	21	421	21	1939	21	421	21	1933	3	564	2	447	1.17	1.01	2.92	1.38	1.84	1.00	3.55	1.96	1.00	19.96	14477463	32443836
4	44	5	3	15	0	26	519	22	2039	26	519	22	2031	3	595	3	326	1.15	1.01	2.01	1.38	1.75	1.00	2.81	1.33	1.00	15.23	14848085	32984219
4	44	6	2.5	15	0	23	468	22	1987	23	468	22	1980	3	478	2	380	1.16	1.01	2.07	1.37	1.80	1.00	3.15	1.37	1.00	17.35	14562615	32545553
4	44	7	2.14	15	0	21	427	21	1945	21	427	21	1939	3	564	2	433	1.17	1.01	2.09	1.36	1.84	1.00	3.47	1.40	1.00	19.43	14360179	32245373
4	44	8	1.875	15	0	20	392	21	1912	20	392	21	1907	3	319	1	477	1.17	1.00	2.11	1.36	1.88	1.00	3.75	1.43	1.00	21.43	14171906	31995703
4	44	9	1.67	15	0	19	370	21	1888	19	370	21	1884	3	361	1	515	1.18	1.00	2.16	1.38	1.87	1.00	3.82	1.48	1.00	23.47	14420339	32402559
4	44	5	3.3	16.5	0.75	27	538	23	2056	27	538	23	2048	3	537	3	298	1.15	1.01	2.48	1.34	1.74	1.00	2.62	1.59	1.00	14.08	14472310	32318012
4	44	6	2.75	16.5	0.75	24	485	22	2005	24	485	22	1999	3	431	2	347	1.15	1.00	2.51	1.33	1.80	1.00	2.94	1.63	1.00	16.06	14187564	31909222
4	44	7	2.357	16.5	0.75	22	443	22	1963	22	443	22	1958	3	512	2	395	1.16	1.00	2.55	1.33	1.85	1.00	3.25	1.67	1.00	17.97	13972354	31601565
4	44	8	2.06	16.5	0.75	20	408	21	1928	20	408	21	1924	3	579	2	442	1.17	1.00	2.56	1.33	1.88	1.00	3.54	1.70	1.00	19.83	13811870	31383186
4	44	9	1.83	16.5	0.75	19	380	21	1897	19	380	21	1894	3	328	1	478	1.17	1.00	2.58	1.33	1.90	1.00	3.75	1.72	1.00	21.62	13725771	31254381
4	44	5	3.6	18	1.5	29	575	23	2092	29	575	23	2082	3	500	3	280	1.15	1.01	3.18	1.39	1.68	1.00	2.51	2.10	1.00	13.36	15199269	33513096
4	44	6	3	18	1.5	26	520	22	2039	26	520	22	2031	3	595	3	327	1.15	1.01	3.26	1.38	1.74	1.00	2.82	2.16	1.00	15.23	14885474	33037459
4	44	7	2.57	18	1.5	24	477	22	1994	24	477	22	1987	3	468	2	372	1.16	1.01	3.31	1.37	1.79	1.00	3.10	2.20	1.00	17.00	14645490	32656667
4	44	8	2.25	18	1.5	22	440	22	1960	22	440	21	1953	3	537	2	416	1.17	1.01	3.09	1.37	1.82	1.00	3.38	2.09	1.00	18.76	14457076	32408966
4	44	9	2	18	1.5	21	410	21	1927	21	410	21	1921	3	595	2	459	1.17	1.01	2.79	1.36	1.85	1.00	3.64	1.89	1.00	20.40	14283382	32129036
4	44	6	3.08	18.5	0	26	526	22	2043	26	526	22	2034	3	579	3	318	1.15	1.01	2.00	1.37	1.74	1.00	2.76	1.32	1.00	14.89	14796457	32866838
4	44	7	2.64	18.5	0	24	482	22	1999	24	482	22	1992	3	449	2	362	1.16	1.01	2.03	1.37	1.79	1.00	3.04	1.35	1.00	16.64	14546720	32489180
4	44	8	2.32	18.5	0	22	446	22	1964	22	446	22	1958	3	512	2	403	1.16	1.01	2.04	1.36	1.82	1.00	3.31	1.37	1.00	18.28	14333187	32181145
4	44	9	2.06	18.5	0	21	415	21	1933	21	415	21	1927	3	579	2	446	1.17	1.01	2.08	1.35	1.85	1.00	3.56	1.40	1.00	19.93	14184906	31971156
4	44	10	1.85	18.5	0	19	387	21	1907	19	387	21	1902	3	324	1	479	1.17	1.00	2.10	1.35	1.88	1.00	3.78	1.42	1.00	21.60	14057098	31814407
4	44	6	3.58	21.5	1.5	29	571	23	2091	29	571	23	2081	3	500	3	281	1.15	1.01	3.16	1.38	1.69	1.00	2.53	2.09	1.00	13.42	15119245	33404727
4	44	7	3.07	21.5	1.5	26	525	22	2045	26	525	22	2036	3	579	3	320	1.15	1.01	3.21	1.37	1.74	1.00	2.78	2.14	1.00	14.97	14846503	32976857
4	44	8	2.69	21.5	1.5	24	487	22	2007	24	487	22	1999	3	449	2	357	1.16	1.01	3.26	1.37	1.78	1.00	3.02	2.18	1.00	16.46	14619199	32629923
4	44	9	2.39	21.5	1.5	23	455	22	1973	23	455	22	1966	3	500	2	394	1.16	1.01	3.23	1.36	1.81	1.00	3.25	2.19	1.00	17.91	14434819	32339568
4	44	10	2.15	21.5	1.5	21	427	21	1945	21	427	21	1939	3	550	2	431	1.17	1.01	2.96	1.36	1.84	1.00	3.48	2.00	1.00	19.34	14293387	32135580
4	44	7	3.14	22	0	27	530	23	2048	27	530	22	2040	3	564	3	313	1.15	1.01	1.97	1.37	1.73	1.00	2.74	1.31	1.00	14.69	14758361	32809451
4	44	8	2.75	22	0	25	492	22	2009	25	492	22	2001	3	431	2	349	1.16	1.01	2.01	1.36	1.77	1.00	2.97	1.34	1.00	16.13	14525572	32442925
4	44	9	2.44	22	0	23	459	22	1979	23	459	22	1972	3	489	2	387	1.16	1.01	2.02	1.36	1.81	1.00	3.21	1.36	1.00	17.64	14408353	32307912
4	44	10	2.2	22	0	22	431	21	1949	22	431	21	1943	3	537	2	421	1.17	1.01	2.06	1.35	1.84	1.00	3.42	1.38	1.00	18.97	14203404	31982608

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	44	11	2	22	0	20	406	21	1925	20	406	21	1920	3	595	2	457	1.17	1.01	2.07	1.35	1.86	1.00	3.64	1.40	1.00	20.36	14084810	31826900
4	44	12	1.83	22	0	19	384	21	1904	19	384	21	1899	3	328	1	482	1.17	1.00	2.08	1.35	1.88	1.00	3.79	1.42	1.00	21.77	14027491	31769790
4	44	7	3.57	25	1.5	28	569	23	2088	28	569	23	2078	3	500	3	282	1.15	1.01	3.15	1.37	1.69	1.00	2.53	2.09	1.00	13.42	15032004	33250400
4	44	8	3.125	25	1.5	26	529	23	2048	26	529	22	2039	3	564	3	314	1.15	1.01	3.20	1.37	1.73	1.00	2.75	2.13	1.00	14.75	14789755	32870048
4	44	9	2.78	25	1.5	25	496	22	2013	25	496	22	2005	3	431	2	347	1.16	1.01	3.21	1.37	1.77	1.00	2.96	2.16	1.00	16.02	14596506	32557648
4	44	10	2.5	25	1.5	23	466	22	1985	23	466	22	1977	3	478	2	379	1.16	1.01	3.24	1.36	1.80	1.00	3.17	2.20	1.00	17.32	14445828	32353785
4	44	11	2.27	25	1.5	22	441	22	1958	22	441	21	1951	3	524	2	411	1.17	1.01	3.09	1.36	1.82	1.00	3.36	2.09	1.00	18.56	14327008	32166210
4	44	12	1.83	25	1.5	24	476	22	1996	24	476	22	1977	3	328	1	553	1.19	1.02	2.14	1.80	1.59	1.00	4.08	1.76	1.00	23.92	20570853	41900636
4	48	3	1.5	4.5	0	19	379	23	2057	19	379	22	2045	2	436	1	403	1.18	1.01	2.22	1.48	1.86	1.00	4.33	1.45	1.00	31.01	21252857	44669012
4	48	3	2	6	0.75	21	428	23	2105	21	428	23	2093	3	329	1	486	1.17	1.01	2.11	1.38	1.90	1.00	4.09	1.32	1.00	24.36	19348046	41826511
4	48	4	1.5	6	0.75	19	373	23	2051	19	373	22	2037	3	436	1	599	1.18	1.01	2.21	1.46	1.87	1.00	4.37	1.47	1.00	30.82	20735915	43898027
4	48	3	2.33	7	1.25	24	475	24	2155	24	475	23	2138	3	558	2	442	1.17	1.01	3.31	1.40	1.84	1.00	3.71	2.11	1.00	21.90	19968586	42830921
4	48	4	1.75	7	1.25	20	395	23	2075	20	395	23	2062	3	375	1	546	1.17	1.01	2.89	1.39	1.90	1.00	4.27	1.88	1.00	27.04	19481671	42057886
4	48	3	2.67	8	0	25	501	24	2178	25	501	24	2161	3	490	2	386	1.16	1.01	2.29	1.35	1.85	1.00	3.37	1.42	1.00	19.52	19124877	41469984
4	48	4	2	8	0	21	418	23	2098	21	418	23	2085	3	329	1	494	1.17	1.01	2.35	1.34	1.92	1.00	4.06	1.49	1.00	24.18	18677062	40816064
4	48	5	1.6	8	0	19	376	23	2053	19	376	22	2039	3	407	1	580	1.18	1.01	2.44	1.40	1.89	1.00	4.34	1.62	1.00	28.95	19649549	42266980
4	48	3	3.17	9.5	0.75	27	541	24	2218	27	541	24	2200	3	414	2	330	1.15	1.01	2.76	1.32	1.84	1.00	3.01	1.69	1.00	17.05	18625918	40652776
4	48	4	2.375	9.5	0.75	23	455	23	2135	23	455	23	2120	3	545	2	421	1.16	1.01	2.84	1.31	1.91	1.00	3.63	1.77	1.00	21.09	18157872	39977161
4	48	5	1.9	9.5	0.75	20	395	23	2073	20	395	23	2061	3	343	1	503	1.17	1.01	2.90	1.30	1.96	1.00	4.15	1.84	1.00	24.85	17892053	39570994
4	48	6	1.583	9.5	0.75	19	372	23	2050	19	372	22	2036	3	414	1	583	1.18	1.01	2.60	1.40	1.89	1.00	4.37	1.75	1.00	29.19	19573826	42163535
4	48	3	3.67	11	1.5	30	603	25	2283	30	603	25	2259	3	533	3	297	1.15	1.02	3.47	1.38	1.75	1.00	2.81	2.20	1.00	15.61	20032331	42957033
4	48	4	2.75	11	1.5	26	513	24	2191	26	513	24	2171	3	471	2	379	1.16	1.02	3.55	1.37	1.82	1.00	3.36	2.29	1.00	19.18	19429760	41964419
4	48	5	2.2	11	1.5	22	448	23	2127	22	448	23	2109	3	585	2	458	1.17	1.01	3.66	1.36	1.87	1.00	3.87	2.37	1.00	22.60	19056866	41393786
4	48	6	1.833	11	1.5	20	398	23	2076	20	398	23	2061	3	358	1	523	1.17	1.01	3.70	1.35	1.90	1.00	4.30	2.44	1.00	25.84	18770185	40941317
4	48	7	1.57	11	1.5	18	357	22	2036	18	357	22	2024	3	414	1	575	1.18	1.01	3.79	1.34	1.93	1.00	4.65	2.50	1.00	29.03	18588730	40673063
4	48	4	2.875	11.5	1.75	26	522	24	2199	26	522	24	2179	3	453	2	363	1.16	1.01	3.71	1.35	1.82	1.00	3.25	2.37	1.00	18.48	19179746	41553603
4	48	5	2.3	11.5	1.75	23	456	23	2135	23	456	23	2118	3	558	2	438	1.17	1.01	3.83	1.34	1.87	1.00	3.76	2.46	1.00	21.79	18800445	40989569
4	48	6	1.917	11.5	1.75	20	406	23	2084	20	406	23	2069	3	343	1	506	1.17	1.01	3.87	1.33	1.91	1.00	4.19	2.53	1.00	24.90	18529605	40566115
4	48	7	1.643	11.5	1.75	18	365	22	2043	18	365	22	2030	3	400	1	556	1.17	1.01	3.96	1.33	1.94	1.00	4.53	2.60	1.00	27.92	18322994	40252362
4	48	4	3.25	13	2.5	27	548	24	2228	27	548	24	2208	3	407	2	323	1.15	1.01	3.65	1.32	1.82	1.00	3.00	2.27	1.00	16.78	18694431	40791077
4	48	5	2.6	13	2.5	24	481	24	2161	24	481	24	2144	3	500	2	390	1.16	1.01	3.71	1.31	1.88	1.00	3.46	2.35	1.00	19.74	18302869	40193087
4	48	6	2.167	13	2.5	22	430	23	2107	22	430	23	2092	3	304	1	454	1.17	1.01	3.79	1.30	1.92	1.00	3.87	2.41	1.00	22.51	17993204	39698779
4	48	7	1.857	13	2.5	19	388	23	2066	19	388	23	2053	3	353	1	509	1.17	1.01	3.84	1.30	1.95	1.00	4.24	2.48	1.00	25.26	17798550	39427708
4	48	4	3.625	14.5	3.25	30	595	25	2273	30	595	25	2248	3	533	3	299	1.15	1.02	3.67	1.36	1.75	1.00	2.83	2.34	1.00	15.66	19690649	42382713
4	48	5	2.9	14.5	3.25	26	525	24	2202	26	525	24	2181	3	453	2	360	1.16	1.02	3.73	1.35	1.81	1.00	3.26	2.41	1.00	18.38	19225558	41627922
4	48	6	2.417	14.5	3.25	24	471	24	2149	24	471	23	2130	3	533	2	420	1.17	1.02	3.82	1.35	1.85	1.00	3.66	2.48	1.00	21.00	18911482	41148715
4	48	7	2.07	14.5	3.25	21	427	23	2107	21	427	23	2090	3	316	1	479	1.17	1.01	3.87	1.34	1.89	1.00	4.04	2.54	1.00	23.57	18694272	40840661
4	48	4	2.875	11.5	0	26	522	24	2199	26	522	24	2179	3	453	2	363	1.16	1.01	2.26	1.35	1.82	1.00	3.25	1.44	1.00	18.48	19179746	41553603
4	48	5	2.3	11.5	0	23	456	23	2135	23	456	23	2118	3	558	2	438	1.17	1.01	2.33	1.34	1.87	1.00	3.76	1.49	1.00	21.79	18800445	40989569
4	48	6	1.917	11.5	0	20	406	23	2084	20	406	23	2069	3	343	1	506	1.17	1.01	2.35	1.33	1.91	1.00	4.19	1.54	1.00	24.90	18529605	40566115
4	48	7	1.643	11.5	0	18	365	22	2043	18	365	22	2030	3	400	1	556	1.17	1.01	2.41	1.33	1.94	1.00	4.53	1.58	1.00	27.92	18322994	40252362
4	48	4	3.25	13	0.75	27	548	24	2228	27	548	24	2208	3	407	2	323	1.15	1.01	2.71	1.32	1.82	1.00	3.00	1.69	1.00	16.78	18694431	40791077
4	48	5	2.6	13	0.75	24	481	24	2161	24	481	24	2144	3	500	2	390	1.16	1.01	2.76	1.31	1.88	1.00	3.46	1.75	1.00	19.74	18302869	40193087
4	48	6	2.167	13	0.75	22	430	23	2107	22	430	23	2092	3	304	1	454	1.17	1.01	2.82	1.30	1.92	1.00	3.87	1.80	1.00	22.51	17993204	39698779
4	48	7	1.857	13	0.75	19	388	23	2066	19	388	23	2053	3	353	1	509	1.17	1.01	2.86	1.30	1.95	1.00	4.24	1.84	1.00	25.26	17798550	39427708
4	48	4	3.625	14.5	1.5	30	595	25	2273	30	595	25	2248	3	533	3	299	1.15	1.02	3.47	1.36	1.75	1.00	2.83	2.21	1.00	15.66	19690649	42382713
4	48	5	2.9	14.5	1.5	26	525	24	2202	26	525	24	2181	3	453	2	360	1.16	1.02	3.53	1.35	1.81	1.00	3.26	2.28	1.00	18.38	19225558	41627922
4	48	6	2.417	14.5	1.5	24	471	24	2149	24	471	23	2130	3	533	2	420	1.17	1.02	3.61	1.35	1.85	1.00	3.66	2.34	1.00	21.00	18911482	41148715
4	48	7	2.07	14.5	1.5	21	427	23	2107	21	427	23	2090	3	316	1	479	1.17	1.01	3.18	1.34	1.89	1.00	4.04	2.09	1.00	23.57	18694272	40840661
4	48	5	3	15	0	27	532	24	2209	27	532	24	2188	3	436	2	348	1.16	1.02	2.22	1.34	1.81	1.00	3.18	1.42	1.00	17.87	19056690	41353717
4	48	6	2.5	15	0	24	477	24	2157	24	477	23	2138	3	522	2	407	1.17	1.02	2.25	1.34	1.86	1.00	3.58	1.46	1.00	20.45	18751310	40913601
4	48	7	2.14	15	0	22	434	23	2111	22	434	23	2094	3	308	1	464	1.17	1.01	2.30	1.33	1.89	1.00	3.94	1.50	1.00	22.88	18506755	40510227
4	48	8	1.875	15	0	20	397	23	2076	20	397	23	2061	3	348	1	511	1.17	1.01	2.33	1.32	1.92	1.00	4.26	1.53	1.00	25.26	18302726	40225657
4	48	9	1.67	15	0	19	373	23	2052	19	373	22	2037	3	393	1	553	1.18	1.01	2.36	1.34	1.91	1.00	4.35	1.59	1.00	27.71	18652635	40771661
4	48	5	3.3	16.5	0.75	28	551	25	2230	28	551	24	2209	3	585	3	318	1.15	1.01	2.69	1.31	1.81	1.00	2.98	1.69	1.00	16.56	18585152	40601293
4	48	6	2.75	16.5	0.75	25	496	24	2174	25	496	24	2155	3	471	2	371	1.16	1.01	2.71	1.30	1.86	1.00	3.34	1.73	1.00	18.89	18251813	40080397
4	48	7	2.357	16.5	0.75	23	451	23	2131	23	451	23	2114	3	558	2	422	1.16	1.01	2.78	1.30	1.90	1.00	3.69	1.78	1.00	21.17	18018169	39756083
4	48	8	2.06	16.5	0.75	21	414	23	2094	21	414	23	2079	3	320	1	474	1.17	1.01	2.79	1.29	1.93	1.00	4.03	1.81	1.00	23.39	17849245	39513222
4	48	9	1.83	16.5	0.75	19	384	23	2062	19	384	23	2048	3	358	1	513	1.17	1.01	2.80	1.29	1.95	1.00	4.26	1.83	1.00	25.53	17772027	39388231
4	48	5	3.6	18	1.5	30	590	25	2268	30	590	25	2243	3	545	3	299	1.15	1.02	3.40	1.35	1.75	1.00	2.85	2.20	1.00	15.70	19491253	42058825
4	48	6	3	18	1.5	27	532	24	2212	27	532	24	2190	3	436	2	349	1.16	1.02	3.48	1.35	1.80	1.00	3.20	2.25	1.00	17.92	19127912	41499213
4	48	7	2.57	18	1.5	24	486	24	2166	24	486	24	2145	3	511	2	398	1.17	1.02	3.52	1.34	1.84	1.00	3.53	2.30	1.00	20.06	18866043	41093236
4	48	8	2.25	18	1.5	22	448	23	2127	22	448	23	2108	3	585	2	445	1.17	1.02	3.38	1.33	1.87	1.00	3.84	2.22	1.00	22.10	18633381	40726793
4	48	9	2	18	1.5	21	415	23	2095	21	415	23	2078	3	329	1	492	1.17	1.01	3.05	1.33	1.90	1.00	4.14	2.01	1.00	24.12	18457457	40472948
4	48	6	3.08	18.5	0	27	538	24	2217	27	538	24	2195	3	421	2	340	1.16	1.02	2.19	1.34	1.80	1.00	3.14	1.41	1.00	17.54	19012644	41301436
4	48	7	2.64	18.5	0	25	492	24	2170	25	492	24	2149	3	490	2	388	1.16	1.02	2.22	1.33	1.84	1.00	3.46	1.44	1.00	19.60	18732188	40855941
4	48	8	2.32	18.5	0	23	454	23	2132	23	454	23	2114	3	558	2	432	1.17	1.01	2.25	1.32	1.87	1.00	3.76	1.47	1.00	21.54	18471342	40457838
4	48	9	2.06	18.5	0	21	421	23	2099	21	421	23	2082	3	320	1	478	1.17	1.01	2.28	1.32	1.90	1.00	4.05	1.50	1.00	23.50	18297140	40196146
4	48	10	1.85	18.5	0	20	392	23	2070	20	392	23	2055	3	353	1	514	1.17	1.01	2.32	1.32	1.92	1.00	4.29	1.53	1.00	25.45	18155722	39986295
4	48	6	3.58	21.5	1.5	29	586	25	2266	29	586	25	2241	3	545	3	300	1.16	1.02	3.39	1.35	1.76	1.00	2.87	2.19	1.00	15.76	19378657	41895635
4	48	7	3.07	21.5	1.5	27	538	24	2216	27	538	24	2193	3	421	2	342	1.16	1.02	3.43	1.34	1.80	1.00	3.16	2.23	1.00	17.58	19051006	41353233
4	48	8	2.69	21.5	1.5	25	498	24	2176	25	498	24	2155	3	490	2	382	1.16	1.02	3.47	1.34	1.83	1.00	3.43	2.28	1.00	19.34	18797567	40958354
4	48	9	2.39	21.5	1.5	23	463	24	2143	23	463	23	2124	3	545	2	422	1.17	1.02	3.53	1.33	1.86	1.00	3.71	2.32	1.00	21.12	18603042	40683313
4	48	10	2.15	21.5	1.5	22	434	23	2111	22	434	23	2093	3	304	1	461	1.17	1.01	3.23	1.33	1.88	1.00	3.96	2.13	1.00	22.79	18424684	40382031

Bridge Configuration						Support Location Symmetrical I-Girder Section				Midspan Location Symmetrical I-Girder Section				Support Location Shear Studs		Midspan Location Shear Studs		SLS CTD Ratios			ULS CTD Ratios				FLS CTD	Lowest CTD	Aw / S	Is / S	Ics / S
Number of Spans	L (m)	N	S (m)	B (m)	Shld (m)	t (mm)	b (mm)	w(mm)	h (mm)	t (mm)	b (mm)	w(mm)	h (mm)	Transverse Rows	S (mm)	Transverse Rows	S (mm)	Construction Deflection Positive	Construction Deflection Negative	Superstructure Vibration	Construction Moment	ULS Moment+	ULS Moment-	ULS Shear			(mm^2/mm)	(mm^4/mm)	(mm^4/mm)
4	48	7	3.14	22	0	27	543	24	2220	27	543	24	2197	3	421	2	334	1.16	1.02	2.16	1.33	1.80	1.00	3.11	1.40	1.00	17.26	18941710	41166384
4	48	8	2.75	22	0	25	502	24	2181	25	502	24	2160	3	471	2	374	1.16	1.02	2.19	1.33	1.83	1.00	3.38	1.43	1.00	19.02	18688410	40793315
4	48	9	2.44	22	0	23	468	24	2147	23	468	23	2127	3	533	2	414	1.17	1.02	2.22	1.33	1.86	1.00	3.65	1.45	1.00	20.76	18546265	40579871
4	48	10	2.2	22	0	22	438	23	2117	22	438	23	2099	3	585	2	451	1.17	1.02	2.26	1.32	1.88	1.00	3.90	1.48	1.00	22.39	18334437	40257818
4	48	11	2	22	0	21	412	23	2090	21	412	23	2073	3	329	1	489	1.17	1.01	2.27	1.31	1.90	1.00	4.14	1.50	1.00	24.00	18188539	40029191
4	48	12	1.83	22	0	19	389	23	2067	19	389	23	2051	3	358	1	517	1.18	1.01	2.28	1.31	1.92	1.00	4.31	1.52	1.00	25.66	18134036	39953510
4	48	7	3.57	25	1.5	29	584	25	2262	29	584	25	2237	3	545	3	300	1.16	1.02	3.37	1.34	1.76	1.00	2.88	2.18	1.00	15.76	19257028	41679537
4	48	8	3.125	25	1.5	27	542	24	2220	27	542	24	2197	3	421	2	336	1.16	1.02	3.42	1.34	1.79	1.00	3.13	2.22	1.00	17.33	18985061	41245523
4	48	9	2.78	25	1.5	25	506	24	2186	25	506	24	2164	3	471	2	371	1.16	1.02	3.47	1.33	1.83	1.00	3.37	2.26	1.00	18.89	18781275	40949922
4	48	10	2.5	25	1.5	24	475	24	2154	24	475	23	2134	3	522	2	405	1.17	1.02	3.49	1.33	1.85	1.00	3.60	2.30	1.00	20.40	18589900	40647639
4	48	11	2.27	25	1.5	22	448	23	2127	22	448	23	2108	3	571	2	440	1.17	1.02	3.35	1.33	1.87	1.00	3.83	2.23	1.00	21.91	18473092	40474220
4	48	12	1.83	25	1.5	24	484	24	2164	24	484	23	2129	3	358	1	594	1.20	1.03	2.35	1.74	1.63	1.00	4.61	1.82	1.00	28.12	26297729	52222603

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