FRACTURE CRITICAL CAP BEAMS

Bridge 69840

MnDOT Contract No. 1026462

FINAL REPORT

REDUNDANCY ASSESSMENT AND REPAIR REPORT

January 25, 2018

PREPARED FOR

Minnesota Department of Transportation
MnDOT Bridge Office
3485 Hadley Avenue N.
Oakdale, MN 55128
Phone: (651) 366-4500

Contacts:
Jessica Duncan, PE
Karl Johnson, PE

PREPARED BY

HNTB Corporation
5500 Wayzata Boulevard
Suite 450
Minneapolis, MN 55416
Phone: (763) 852-2130

Contact:
Travis Konda, PE
Angela Kingsley, PE

HNTB

Table of Contents

Section **Page**

Executive Summary

This report summarizes the approach, findings and recommendations for the redundancy investigation of Bridge 69840 for the integral steel box girder cap beam at Piers 1 and 2.

HNTB has contracted with MnDOT to determine if the noted pier caps in Bridge 69840 are truly fracture critical as currently designated or if redundancy can be demonstrated through analysis in accordance FHWA Technical Memorandum, "Clarification of Requirements for Fracture Critical Members", and the application of criteria established in NCHRP Report 406, "Redundancy in Highway Bridge Superstructures." The investigation of redundancy includes developing detailed FEM models and member capacities upon which to compare demand. In locations where structural redundancy is not present, repairs to provide load path, structural or internal member redundancy were developed to reduce the risk of fracture critical failure. The project aims to also extend the bridge service life through painting and repair recommendations. Details of the bridge, the redundancy evaluation and structural recommendations are included.

Applying the criteria from NCHRP 406 and based on the results of these analyses, Bridge 69840 is currently considered overall non-redundant, as shown:

- Integral steel box girder cap beam at Piers 1 and 2, at Girders B and C

  $r_1 = 2.34 > 1.0$, $r_u = 1.01 > 1.0$, $r_d = 0.66 < 1.0$, NOT REDUNDANT

- Integral steel box girder cap beam at Piers 1 and 2, at Girders C and D

  $r_1 = 2.34 > 1.0$, $r_u = 1.01 > 1.0$, $r_d = 1.003 > 1.0$, REDUNDANT

The classification as non-redundant is due to the damaged limit state at the interior girders of the integral steel box girder cap beam at Piers 1 and 2. Analysis results indicate a fracture of the pier cap will reduce the load carrying capacity of the structure below established thresholds for redundancy.

The bridge can be classified as redundant if an alternative load path can be designed. This could be achieved by providing system redundancy by modifying the framing layout to include carrying the girder loads to the supports. Alternatively, internal member redundancy may be achieved by providing an alternate path for the loads to be resisted by built up sections and plates connected to the box girder cap beam top and bottom flanges. Concept designs for both repair alternatives were prepared and submitted to MnDOT for review.

A scoping level cost estimate was developed for both repair concepts. The estimated cost of the load path redundancy repair is approximately $333,000, while the estimated cost of the internal member redundancy repair is $206,800.

Details of the cost estimate are included in Appendix 5 – Scoping Level Cost Estimate of Repairs.

The load path redundancy repair was the preferred concept for advancement to final design. After discussions with MnDOT, it was decided that the most economical way to provide a load path would be to avoid the early system failure due to the total fracture/damage of the box section at a location between the column shaft and either girders B or C. Installing a backup corbel/bracket in the column designed with sufficient capacity would prevent the early system failure from occurring. The corbel/bracket would serve as a backup pedestal capturing and supporting the cross beam and girder B or C in the event of section total failure at the specified locations in the cross beam. The backup corbel/bracket would prevent such failure from occurring and therefor the system would be classified as redundant. The bracket design and detailing are included in Appendix 6 – Advanced Redundancy Repair Plans and Cost Estimate. The revised cost estimate for the repairs is $104,958.

Additional repairs proposed to extend the service life of the bridge include bearing reconstruction, concrete surface repairs on the bridge abutments and full repainting of the steel superstructure and substructure components.

Introduction

This report summarizes the approach, findings and recommendations for the redundancy investigation of Bridge 69840 for the integral steel box girder cap beam at Piers 1 and 2.

HNTB has contracted with MnDOT to determine if the noted pier caps in Bridge 69840 are truly fracture critical as currently designated or if redundancy can be demonstrated through analysis in accordance FHWA Technical Memorandum, “Clarification of Requirements for Fracture Critical Members”, and the application of criteria established in NCHRP Report 406, “Redundancy in Highway Bridge Superstructures.” The investigation of redundancy includes developing detailed FEM models and member capacities upon which to compare demand. In locations where structural redundancy is not present, repairs to provide load path, structural or internal member redundancy were developed to reduce the risk of fracture critical failure. While addressing redundancy, the project aims to also extend the bridge service life through painting and structural repair recommendations. Details of the bridge, the redundancy evaluation and recommendations are included.

Bridge Description

Bridge No. 69840 carries the ramp from northbound I-35 to northbound Mesaba Avenue (TH-194) over West Superior Street. The zero skew bridge was constructed in 1968 on a straight alignment. The three-span structure is 299.5 feet in overall length and is composed of continuous welded steel plate girders, two hammerhead type piers and two reinforced concrete parapet abutments.

The two piers are comprised of an integral steel box girder cap welded directly to a cylindrical steel column. The exterior girders are continuous through the cap beam while the two interior girder webs terminate at the box girder and are replaced with a ½-inch stiffener plate with a hole to allow internal access. The girders are not made composite with the concrete deck in the negative moment regions near the piers. The pier caps are not composite with the concrete deck. The bridge was designed and constructed prior to the introduction of Fracture Critical Plan requirements. As such, the cap beams and columns were not fabricated to meet the Fracture Critical Plan material or welding requirements defined by AASHTO and AWS. Both piers are currently considered fracture critical elements.

The bridge deck carries two lanes of traffic. The original concrete deck has uncoated reinforcement and a thickness of 7 inches. In 1987 the deck overhangs and bridge rail were removed and replaced. The deck was scarified ½“ ± and a 2-inch, low slump overlay was applied. In 2017, the interior surfaces of the pier caps and columns were cleaned and painted.

Analysis and Redundancy Investigation

The redundancy investigation was based upon the approach outlined in the NCHRP 406 "Redundancy in Highway Bridge Superstructures" with bridge redundancy defined by considering member, ultimate, damaged and functionality limit states. Each limit state was investigated through extensive finite element modeling including both linear and nonlinear approaches. Given the complexity of the structures and related modeling, two models, a record model in Larsa 4D and an independent check model in CSi Bridge, were created to assess the structural behavior.

Modeling Description

The models for Bridge 69840 from south abutment to north abutment implement various assumptions to accurately represent the structural behavior of the superstructure and its interaction with the steel substructure. The models include multiple material property manipulations as well as precise element selection to capture local and global behavior. See Figure 1 for a representative view of the Larsa 4D (record) model of Bridge 69840.

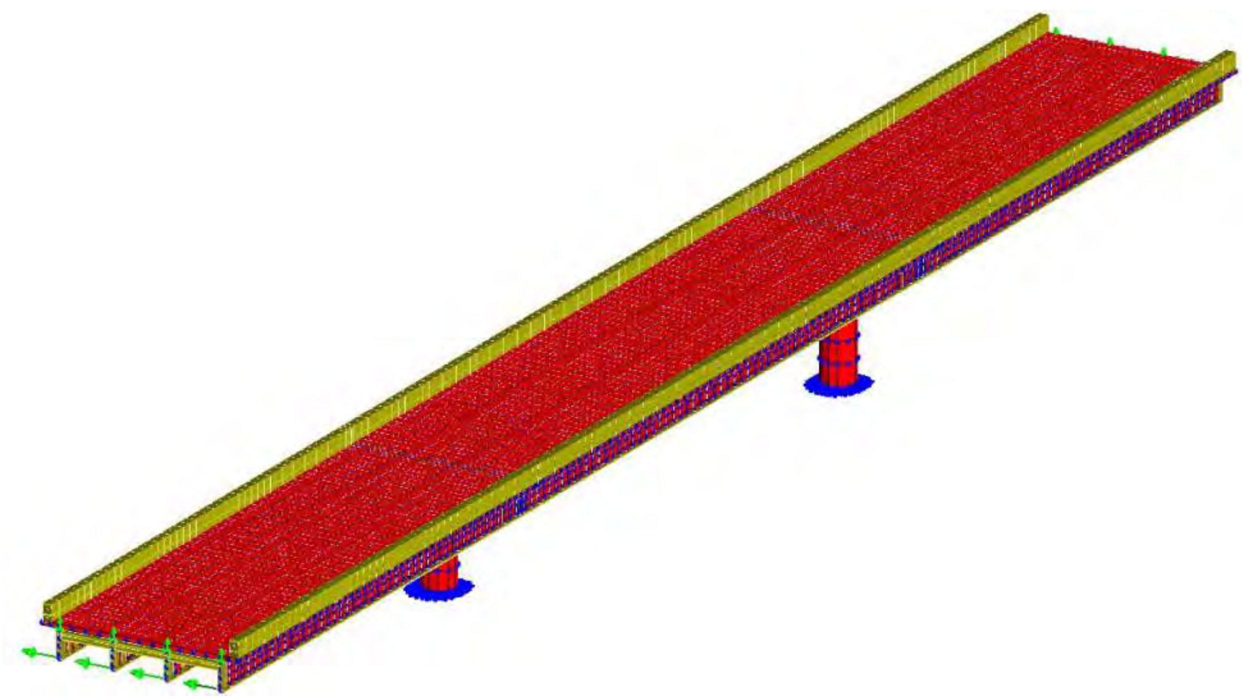


Figure 1. Larsa (Record) Model of Bridge 69840

The steel girders are modeled using four shell elements for the 54-inch deep web discretized into approximately 2' increments longitudinally. The top and bottom web nodes are shared with the top and bottom girder flanges which are modeled as beam elements. Beam elements are used to represent the intermediate and bearing stiffeners, which also act as the connection plates of the diaphragms and cross frames to the webs. The stiffeners are discretized vertically into four frame elements each and share nodes with each node of the web. The stiffeners are offset from the web.

The deck is modeled with shell elements connected to the top node of the girder via rigid beam elements to represent a composite deck condition. In the non-composite regions near the piers, axial-only constraints are used to link the vertical translation of the deck and girder joints. The stiffness of the deck shells in the negative bending region is reduced to 10% of their respective concrete modulus of elasticity. The concrete barriers are discretized vertically into two lines of beam elements placed parallel to the deck to account for the continuous lower half and the discontinuous upper half with deflection joints. The top beam elements account for the deflection joints by releasing axial loads at each joint location. Both sections utilize geometric properties calculated to account for the additional stiffness they provide to the structure. The barrier elements are also reduced to 10% of their stiffness in the negative bending region to account for tensile effects in the concrete.

The diaphragms, cross frames, and lateral bracing are modeled with beam elements that have moment releases at each end. These elements are defined to share nodes with the girders (generally the top and bottom flange nodes) and are offset accordingly to represent the existing plan connection configuration.

The cap beams and columns are modeled with shell elements. The cap beam webs are discretized vertically with four to five shells, depending on the depth of the section. The top and bottom flanges are discretized to four elements along the bridge alignment. The transverse stiffeners are discretized to five elements vertically and four elements longitudinally and incorporate the access holes by removing the appropriate middle shell elements. The girders frame into the cap beams by sharing the same nodes at the connections. Since the there is a gap only at the top flanges of girders C and B (i.e. the interior girders), the interior three nodes of the top flanges of the caps at these girders are not shared with the girder nodes. The circular hollow columns are discretized into 12 elements radially and 10 elements vertically. The pier column bases are modeled to resist all six degrees of freedom at all 12 joints while the abutments are modeled to provide resist vertical and transverse translation only. See Figure 2 for a representative view of the Larsa (record) model pier.

The material properties are as reported in the 1968 original plans. A36 steel with a modulus of elasticity of 29,000 ksi is used for all steel elements in the elastic range. All concrete elements are 4,000 psi with a modulus of elasticity of 3,605 ksi except for the deck shells in the non-composite region which are softened to 360.5 ksi.

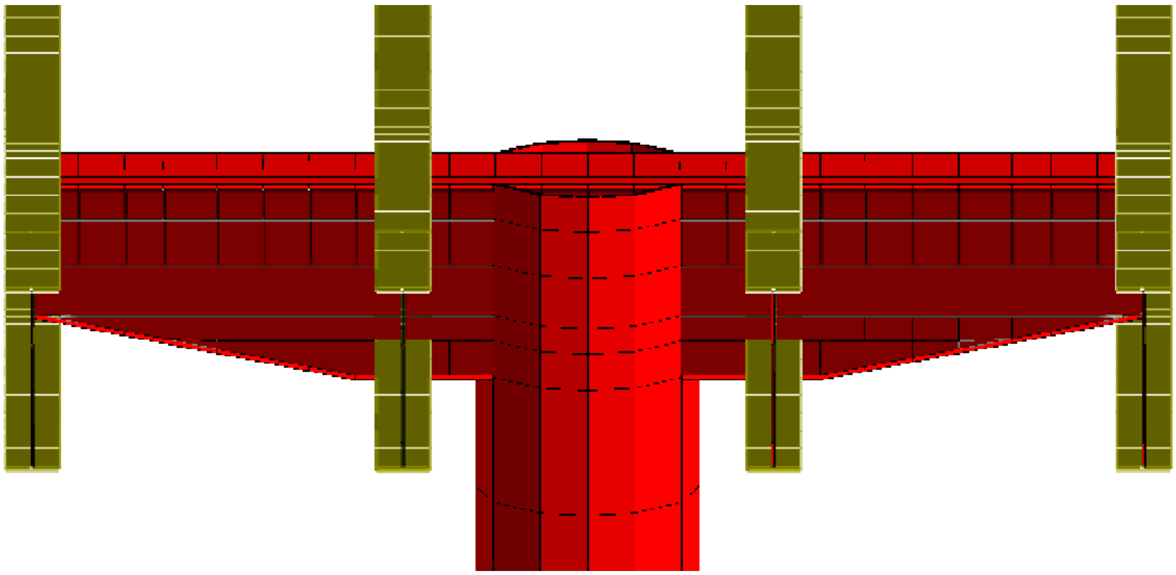


Figure 2: Larsa (Record) Model Pier

Dead load was applied both using the self-weight feature of Larsa 4D, which uses the geometry of the modeled elements to calculate volume which is then multiplied by the density, as well as shell pressure for items like wearing surface. The weight of steel and deck were applied to the bare steel sections, while superimposed dead loads were applied to the long-term composite section. Controlling live load cases were obtained using the Larsa 4D influence surface generator feature that defines thousands of influence surfaces for every compound section in the girders at every location in the structure. These loads were then used to identify the controlling most critical members in the structure.

Independent Modeling Description

The independent check model developed in CSi Bridge was built using the same boundary conditions, element types, material properties, and similar element refinement as described above for the Larsa (record) model. The CSi bridge model is shown in Figure 3 and the CSi bridge model pier can be seen in Figure 4. HL-93 live loading was applied using CSi's moving load analysis capabilities. The software calculates an influence surface of maximum response for each element in the model. The lane placement and vehicle are defined by the user in accordance with AASTHO specifications, and the software calculates the envelope of maximum and minimum response for any member in the model.

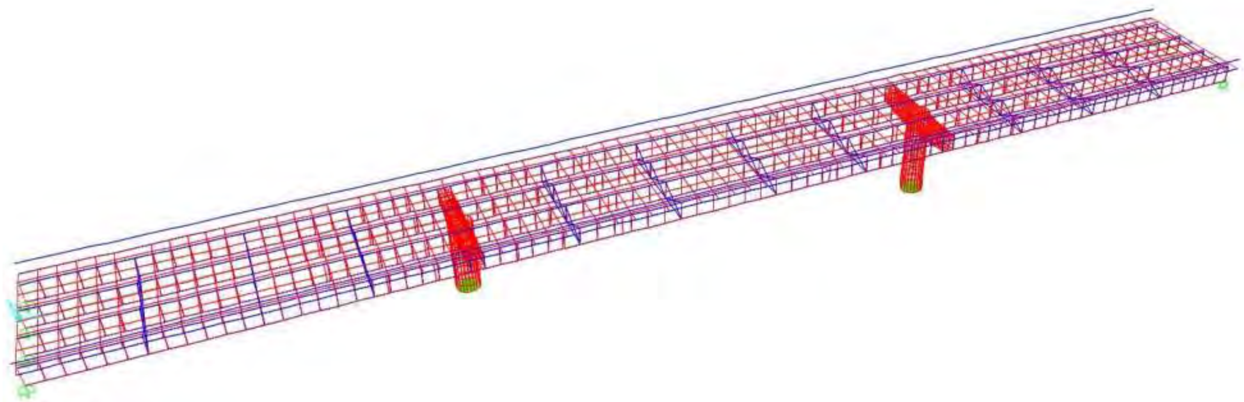


Figure 3: Independent model of in CSi

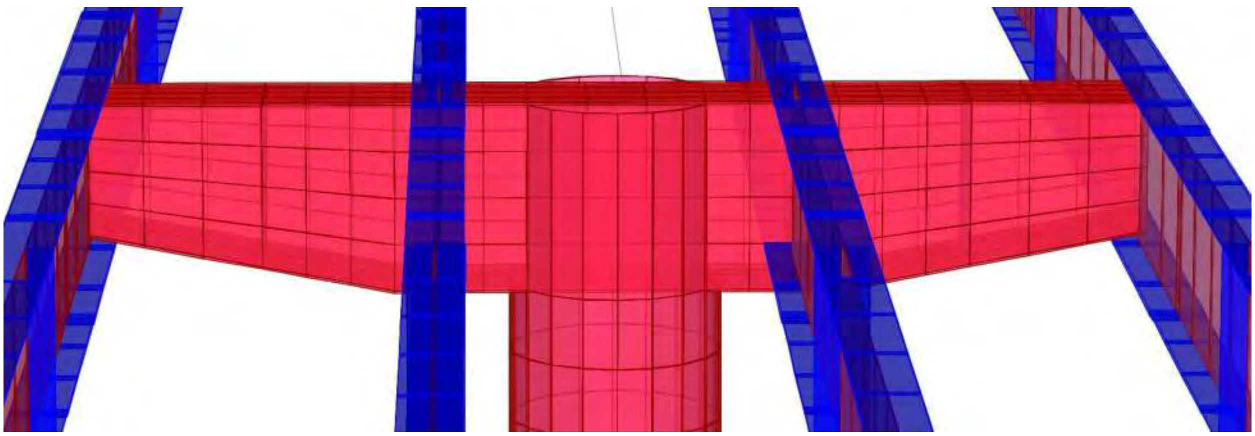


Figure 4: Independent Model Pier (deck not shown for clarity)

Elastic models for both the record and independent check were developed and selective descriptive members compared to establish correlation between the models. This was accomplished through an iterative review process. The models were refined to establish a 1% variance between models for dead load reactions and dead load member demands (moment, shear) and a 10% variance for live load member demands. Results of the elastic comparison are summarized in Appendix 1 – Elastic Model Comparison.

Member Capacities

The member capacities were developed external to the modeling by applying AASHTO LRFD standards and considered the findings from the inspection of the fracture critical members. For each member, the demand from the record model was compared to the established member capacities. Member capacities calculated for Bridge 69840 are summarized in Appendix 2 – Member Capacity Calculations.

Redundancy Procedure

The following procedure was used to evaluate the redundancy of the system:

1. Run elastic analyses for Dead Loads and Live Loads on the bridge to obtain all the demands for DC, DW, and LL min and max

2. Determine ϕR_{req} based on required demands, using the Strength I combination:

   $\phi R_{req} = 1.25DL + 1.5DW + 1.75(LL + I)$ (including Impact)

3. Find the minimum required member capacities for all sections and members of the structure

4. Using AASHTO Specifications calculate $R_{provided}$ at every section based on section geometry, bracing conditions and inspection conditions.

5. Using the Larsa4D influence surface based LL modeler identify the controlling HL-93 truck and lane position that would maximize the demand at all locations in the bridge (live load envelopes)

6. Apply the HL-93 loading (without impact) at all the positions defined by Larsa4D and perform a linear elastic analysis to calculate L_{HL93}, which gives the effect of the HL-93 loads on all the members. Calculate LF_{1Req} from:

   $$LF_{1Req} = \frac{\mathrm{R_{Req}} - \mathrm{D}}{\mathrm{L_{HL93}}}$$

   Based on LF_{1Req}, identify the controlling members in the structure. Once these members are identified, referencing the influence surfaces stored within Larsa4D, the individual controlling HL-93 truck and lane load position for the controlling members is applied in the subsequent steps.

7. Increment the HL-93 loading until the first member reaches its limiting capacity. Note the load factor LF_1 by which the original trucks are scaled for the first member failure to occur. Calculate the member reserve ratio, r_1, for each member:

   $$r_1 = \frac{\mathrm{LF_1}}{\mathrm{LF_{1Req}}} = \frac{\mathrm{R_{provided}} - D}{\mathrm{R_{Req}} - D}$$

   Identify the most critical member with the lowest r_1. The controlling LF_1 is the load factor associated with the first member failure and the member with the lowest r_1. This is the LF_1 used in all subsequent redundancy equations at all locations.

8. Continue beyond the elastic state and into nonlinear analyses with nonlinear geometry and material properties. Increment the applied HL-93 loading until the maximum vertical deflection of a primary member reaches a deflection equal to span length/100. Note that load factor LF_f by which the original HL-93 loads are scaled to achieve the span length/100 displacement level. If

the ratio $R_f = LF_f / LF_1$ is greater than 1.1, then the bridge has sufficient redundancy to satisfy the functionality limit state. Calculate the redundancy ratio for functionality:

$$r_f = \frac{\mathrm{R_f}}{1.1}$$

9. Continue the nonlinear analyses, incrementing the HL-93 loading until a mechanism forms causing structural collapse. Note the load factor LF_u by which the original HL-93 loads are scaled to cause collapse. If the ratio $R_u = LF_u/LF_1$ is greater than 1.3, then the bridge has sufficient redundancy to satisfy the ultimate limit state. Calculate the redundancy ratio:

$$r_u = \frac{\mathrm{R_u}}{1.3}$$

10. Evaluate the damaged condition by initiating a fracture in the model at the critical location, and repeat the nonlinear analysis. Determine the load factor LF_d for the damaged bridge in terms of HL-93 loading that would cause collapse of any main members. If the ratio $R_d = LF_d/LF_1$ is greater than 0.5, the bridge provides a sufficient level of redundancy to meet the damaged limit state. Calculate the redundancy ratio for the damaged condition:

$$r_d = \frac{\mathrm{R_d}}{0.5}$$

Summary of Redundancy Results

Critical locations for redundancy assessment were based on regions of highest demand to capacity and at fracture critical members:

- Negative moment region of the fascia girder at CF2
- Negative bending in pier 1 cap beam between girders B and C
- Negative bending n pier 1 cap beam between girders C and D

The integral cap beams at pier 1 and 2 are both designated as fracture critical members. Due to the symmetry of the bridge spans, and the similarity in cap beam dimensions, only the cap beam with the larger demand to capacity ratio was evaluated for redundancy. The results of the redundancy assessment at each location are summarized in the table below. Further description of analyses at each location follow.

Location	LF_1	r_1	LF_u	R_u	r_u	LF_f	R_f	r_f	LF_d	R_d	r_d
Fascia Girder D at Sp 1	**3.05**	1.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pier Cap 1 between B and C	6.03	2.34	4.00†	1.31†	1.01†	4.0	1.31	1.19	1.01	0.33	0.66
Pier Cap 1 between C and D	N/A	N/A	N/A	N/A	N/A	4.0	1.31	1.19	1.53	0.501	1.003

† Analysis was stopped due to satisfying the minimum redundancy criteria of NCHRP 406. Actual value is likely higher than reported.

Member Limit State for Structure

Based on the LF_{1Req} values calculated for each member, the critical location for first member failure is fascia girder D at mid-span of span 1. Using the Larsa4D influence surface based LL modeler, the controlling 2 x HL93 truck plus lane position that would maximize the moments at this location was identified as shown in Figure 5.

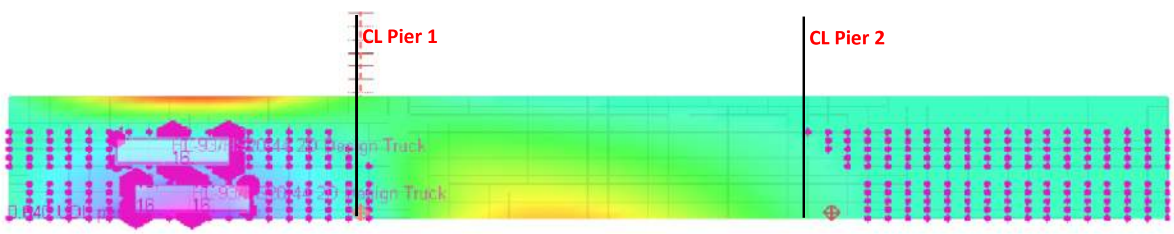


Figure 5: LARSA 4D influence surface of controlling case at member limit state

This HL-93 loading was incremented until the first member reached its limiting capacity. The controlling member reserve ratio for the fascia girder was calculated as:

$$r_1 = \frac{\mathrm{LF}_1}{\mathrm{LF}_{1\mathrm{Req}}} = \frac{\mathrm{R}_{\mathrm{provided}} - D}{\mathrm{R}_{\mathrm{Req}} - D} = \frac{3.05}{2.56} = 1.19$$

This LF_1 was used to calculate R_f, R_u, and R_d at all subsequent areas of investigation.

Integral Pier Cap Between Girders B and C – Ultimate Limit State

The Larsa4D influence surface based LL modeler was used to identify the controlling HL-93 load position that would maximize the moments at the critical location in the cap beam at pier 1. For this case, the critical section in the cap beam is at the transverse section adjacent to the face of the column shown in Figure 6.

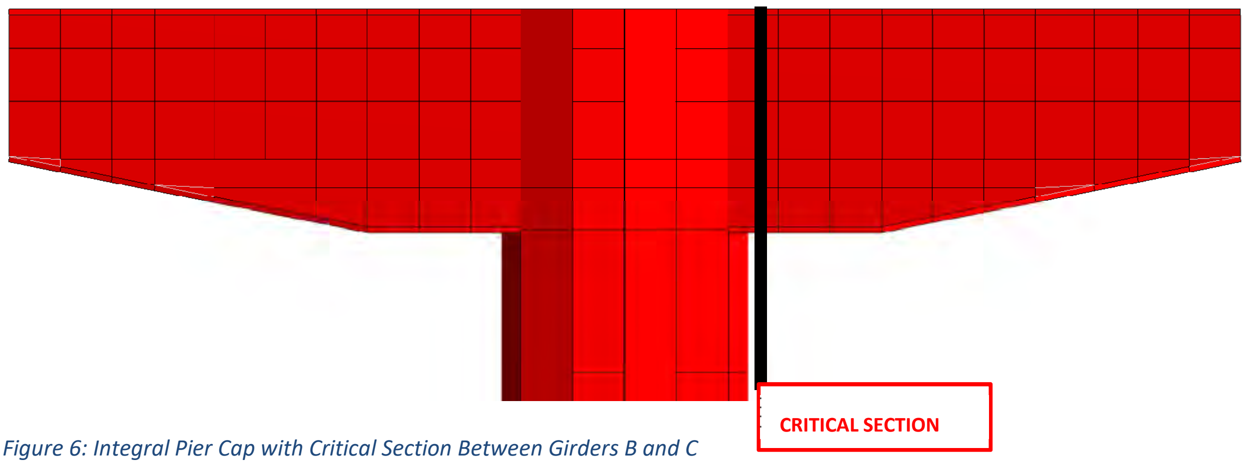


Figure 6: Integral Pier Cap with Critical Section Between Girders B and C

The largest demand at the critical section results from 2 lanes of HL-93 loading, as shown in Figure 7.

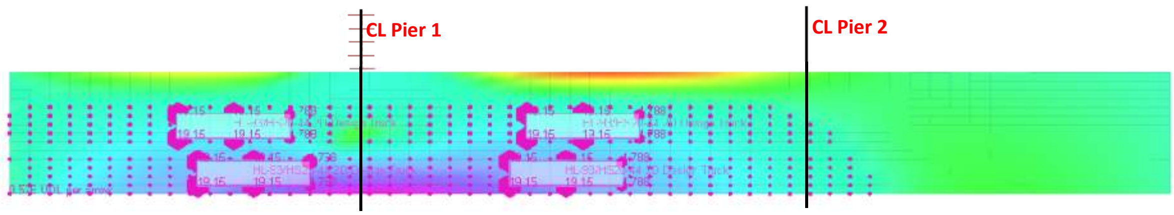


Figure 7: Influence surface with controlling HL-93 Loading for pier 1 critical section

Initial testing increments increased the loading to 3.5 x HL-93 which resulted in a progressive collapse followed by a succession of hinges forming until the structure became unstable. Corresponding design checks suggested that girders C and D reach their capacity in negative bending at pier 1. Per AASHTO, the section is considered to fail in lateral torsional bending. However, based on discussions with MnDOT and applying engineering judgement, it was assumed that the buckling of these flanges is not enough to collapse the bridge. Therefore, these local failures were converted into elastic hinges and the analysis was continued. The elastic hinges were modeled by removing the flanges and softening the web shells adjacent to the cap beam such that the resultant moment was equal to about 10% of the maximum moment capacity. However, there is no way to ensure that the member will still preserve integrity beyond the AASHTO defined capacity without further, more refined analysis or tests.

Once these two assumed hinges were formed, girder B also reached its capacity at pier 1 so this process was repeated to create a third assumed elastic hinge. Figure 8 illustrates the deflected shape of the structure as failure progressed through the ultimate condition.

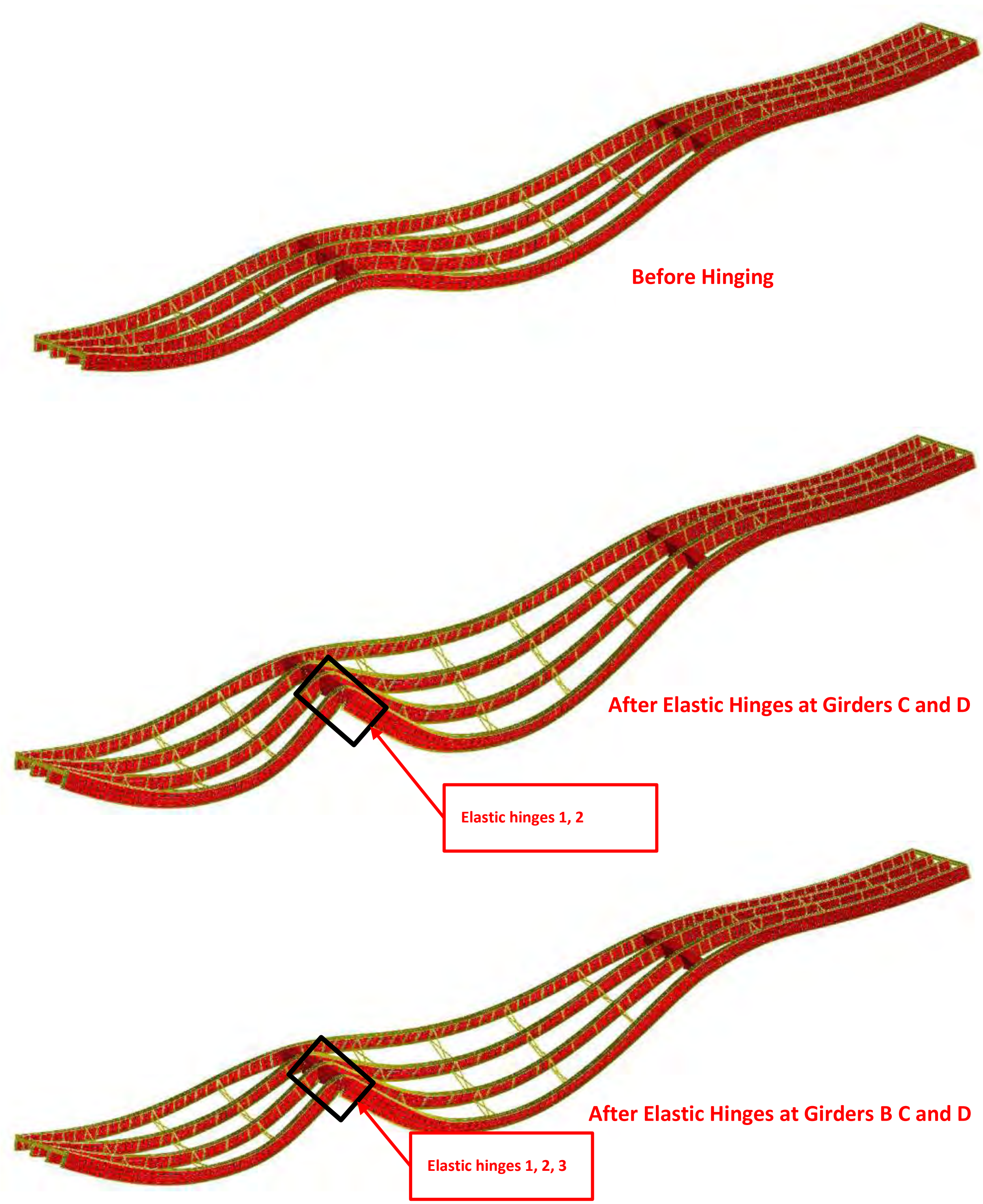


Figure 8: Progression of Failure at Pier Cap Under 3.5 x H-L93 Loading (deck not shown for clarity)

In addition to the girders reaching their negative bending limit, several cross frames reached their compression limits. Once one member of a cross frame reached the limiting code capacity, all three components were removed. Cross frames were removed sequentially after the three hinges at 3.5 x HL-93 until all remaining member demands were within its calculated capacity. Then, the applied load was incremented to 4.0 x HL-93, and the cross frame removal process was repeated. See Figure 9 for an illustration of cross frame removals.

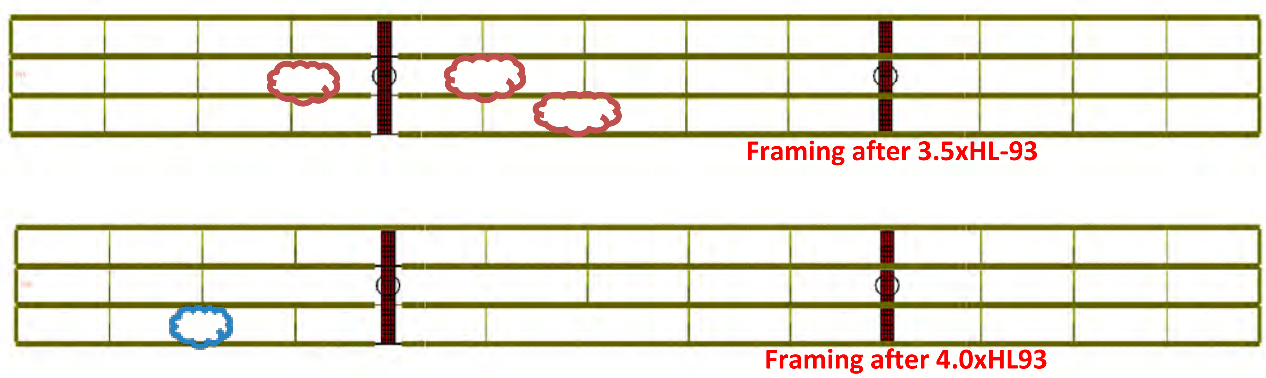


Figure 9: Framing Plan after Cross Frame Removals

Although this process caused higher deflections on the fascia girder, it was not enough to violate the L/100 criteria. At 4.0 x HL-93 loading, the ultimate limit state of 1.3 x LF_1 was satisfied. While the ultimate limit state is defined as the maximum possible truck load that can be applied on the structure before collapse, it was decided that the nonlinear analyses will be concluded when the structure passes the necessary requirement to prove redundancy in the ultimate limit state as $LF_u > 1.3 \times LF_1$, due to the negative capacity being reached on several members.

The load factor calculated in this step as $LF_u = 4.0$ shows that $R_u = LF_u / LF_1 = 4.0 / 3.05 = 1.31 > 1.3$, then it is established that the bridge does exhibit sufficient level of redundancy to satisfy the ultimate limit state. The calculated redundancy ratio r_u:

$$r_u = \frac{\mathrm{R_u}}{1.3} = \frac{1.31}{1.3} = 1.01 > 1.0$$

does meet the criterion for being classified as redundant structure based on the ultimate factor for this element.

<u>Integral Pier Cap Between Girders B and C – Functionality Limit State</u>

In this case, at no point was the L/100 displacement criteria reached. The displacement was measured for the case where the structure reached the required $r_u = \frac{\mathrm{R_u}}{1.3}$ and that displacement was D = 9.083 inches downwards at the fascia girder in span 2, and was reached at 4.0 x HL-93 trucks. Therefore, $R_f = LF_f / LF_1 = 4.00/3.05 = 1.31$ and the redundancy ratio for functionality, r_f is calculated as: $R_f / 1.1 > 1.0$.

$$r_f = \frac{R_f}{1.1} = \frac{1.31}{1.1} = 1.19^{\dagger}$$

Integral Pier Cap Between Girders B and C – Damaged Limit State

The nonlinear model was altered to reflect the critical damaged condition. This was achieved by removing a critical section as designated in agreement with MnDOT, right after all dead load had been added and before the first increment of live loading is applied. Figure 10 shows the pier cap after the section was removed.

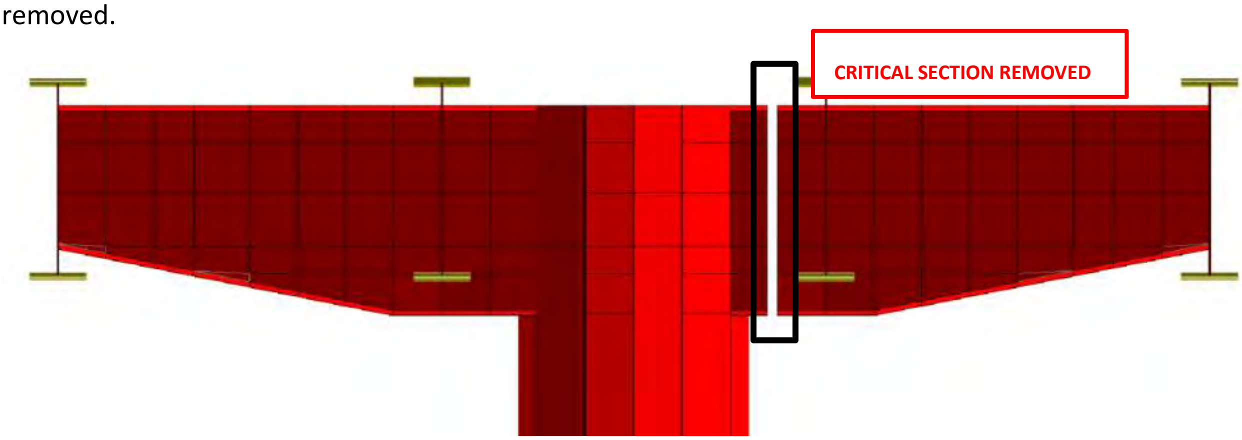


Figure 10: Location of Fracture in Damaged Condition at Integral Pier Cap Between Girder B and C

After the section is removed, the worst load case positioning of live loading was applied to the structure incrementally until an element has reached its capacity. The same position of live load used in the ultimate loading condition for the pier cap section adjacent to the column, and shown if Figure 7, was implemented for the damaged condition.

Following the pier cap cut, 6 cross frames in the center bay (between girders B and C) and 1 cross frame in the west bay (between girders A and B) were removed. As in the ultimate loading condition, the cross frames are removed sequentially until the all member demands were within their capacity limits. A deformed shape and framing plan of this condition are shown in Figure 11.

† Analysis was stopped due to satisfying the minimum redundancy criteria of NCHRP 406. Actual value is likely higher than reported.

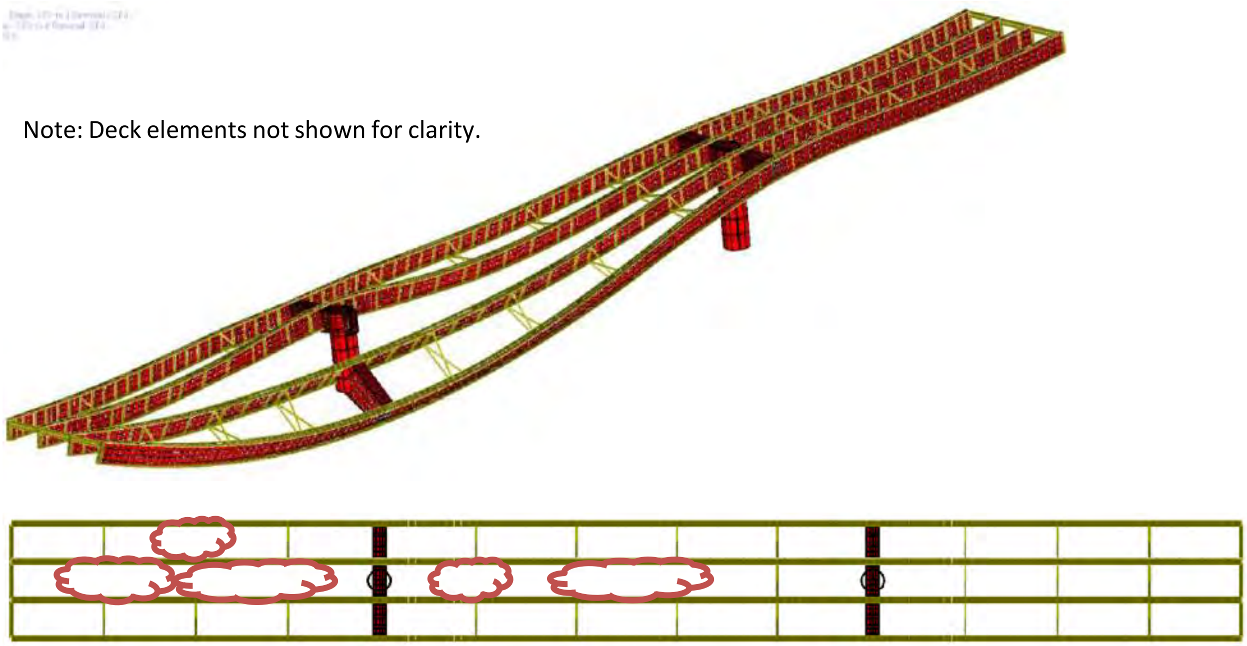


Figure 11: Deflected Shape and Framing Plan - After Fracture and After Cross Frame Removal Prior to Live Load

Initial testing increments increased the loading to 0.25 x HL-93 loading and corresponding interaction/checking with design checks suggested that girder B reaches its capacity in negative bending in span 2 near pier 1. Per AASHTO, the section is considered to fail in lateral torsional bending. However, based on discussions with MnDOT and applying engineering judgment, it was assuming that the buckling of these flanges is not enough to collapse the bridge. Therefore, the analysis was continued by converting these locations into elastic hinges by removing the flanges and softening the web shells such that the resultant moment is equal to about 10% of the maximum moment capacity. However, there is no way to ensure that the member will still preserve integrity beyond its AASHTO defined capacity without further, more refined analyses or tests. A deformed shape after the initial elastic hinge formation is shown in Figure 12.

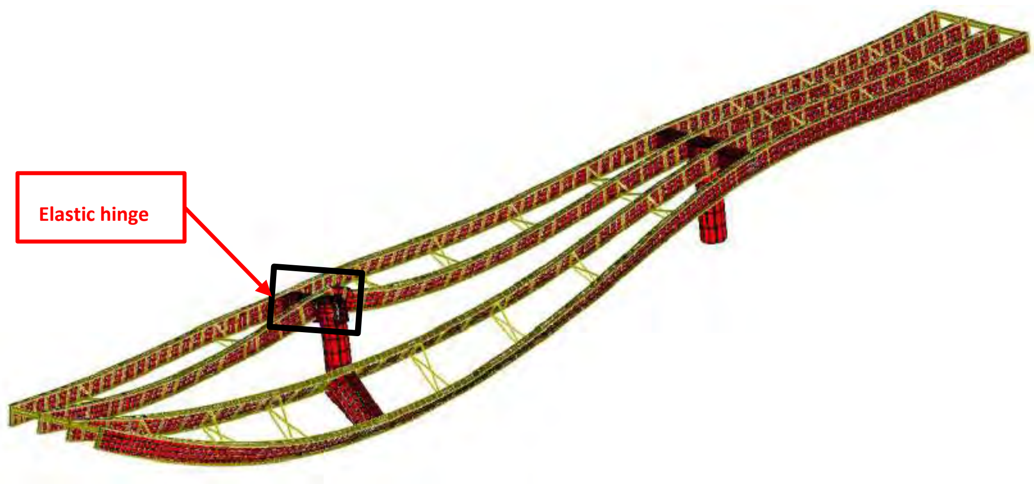


Figure 12: Deformed Shape After Forming Elastic Hinge on Girder B at 0.25xHL93

After forming the first elastic hinge, the design checks show that girder D reaches its negative bending capacity in span 2 near pier 2. Therefore, this region is also converted to an elastic hinge as described above. In addition, the remaining cross frames in the middle bay were removed. A deformed shape and framing plan of this condition is shown in Figure 13.

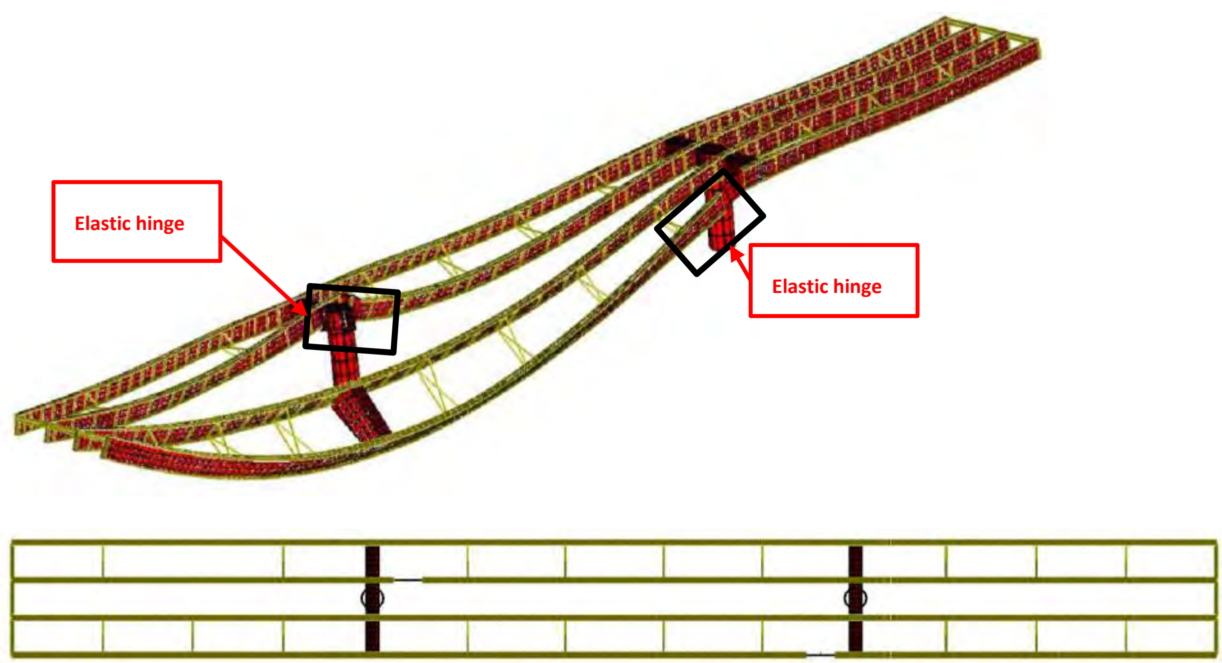


Figure 13: Framing Plan after Elastic Hinge in Girder D at 0.25xHL93 (Deck not shown for clarity)

After forming the second elastic hinge, the design checks show that girder C reaches its negative bending capacity in span 2 near pier 2. Therefore, this region is also converted to an elastic hinge as described above and two more cross frames are removed. A deformed shape and framing plan showing this condition is shown in Figure 14.

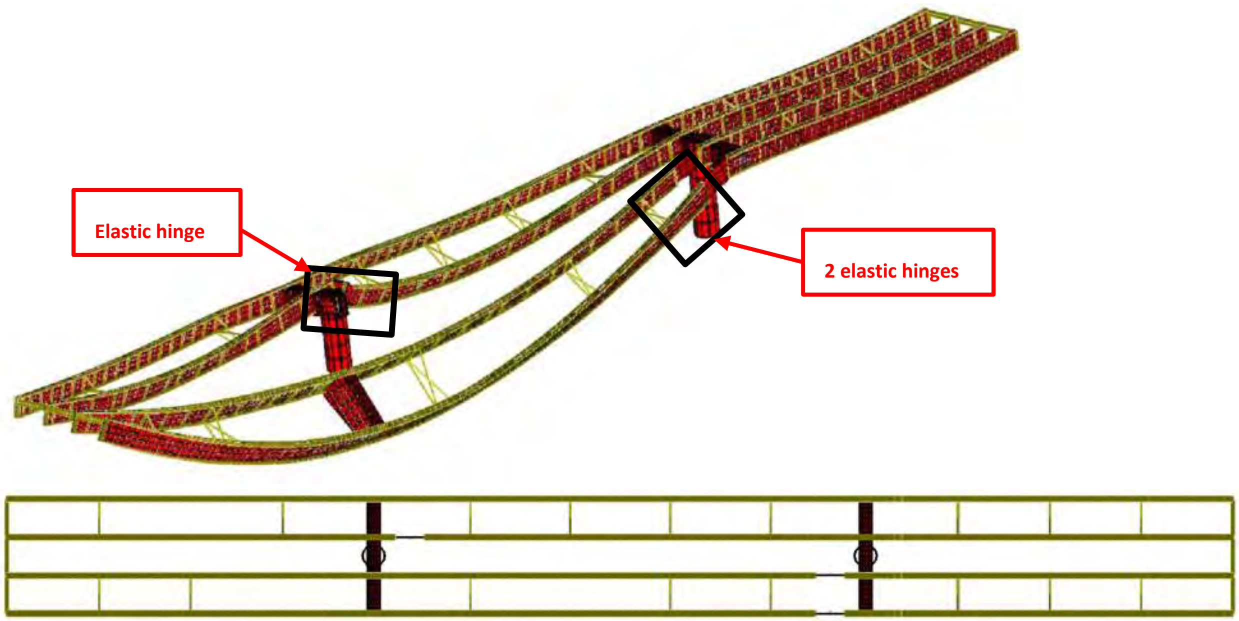


Figure 14: Framing Plan After Elastic Hinge in Girder C at 0.25xHL93

Following the third elastic hinge formation, the design checks show that girder D reaches it positive bending capacity in both spans 1 and 2. Therefore, these regions are converted into plastic hinges by softening the web elements such that the total moment on the section would not exceed the plastic moment capacity, M_p. Upon this formation, the load was increased to 1.01 x HL-93 where two more cross frames are removed. A deformed shape and framing plan showing this condition is shown in Figure 15.

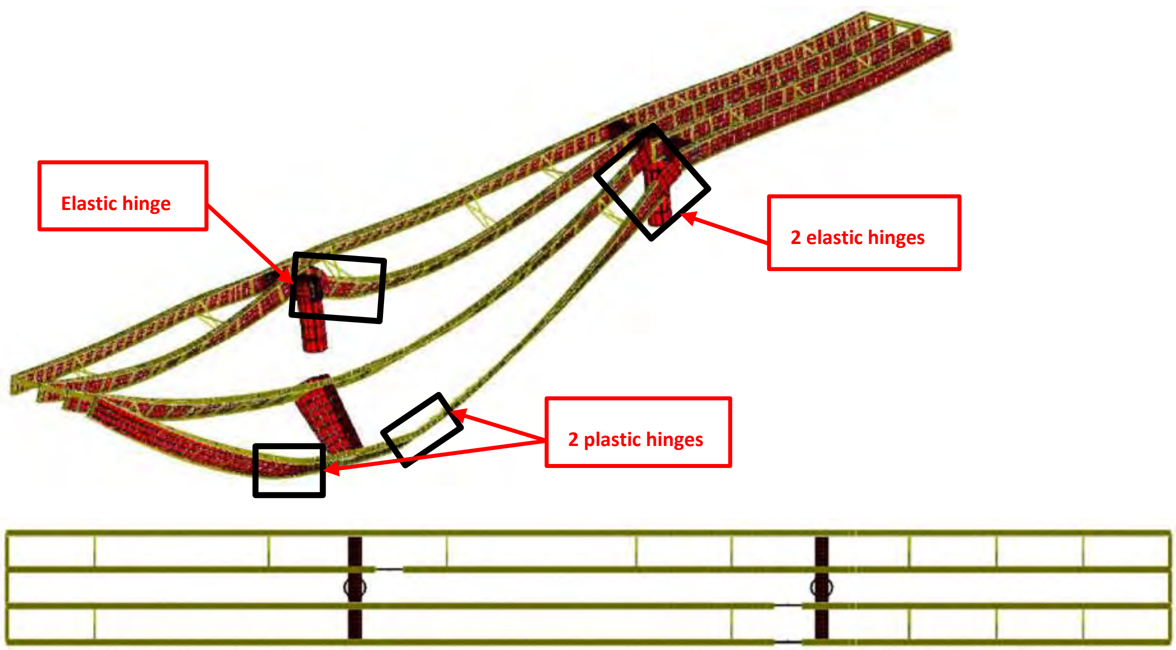


Figure 15: Framing Plan After Hinges are Placed at 1.01xHL93 (Deck not shown for clarity)

At this stage, the analysis noted a maximum deflection of 23.29" and deemed the structure to have failed. Therefore, $R_d = LF_d / LF1 = 1.01 / 3.05 = 0.33 < 0.5$. The calculated redundancy ratio r_d:

$$r_d = \frac{R_d}{0.5} = \frac{0.33}{0.5} = 0.66 < 1.0$$

Therefore, it does not meet the criterion for being classified as a redundant element.

<u>Independent Analysis Results for Damaged Limit State Between Girders B and C</u>

Pier 1 hammerhead fracturing was induced between the column and Girder C, and immediately there were cross-frame failures. After only 25% of HL93 loading, a plastic hinge occurred in Girder D in Span 1 near Pier 1 where the bottom flange is the thinnest (3/4").

After 50% live load, a negative moment hinge occurred in Girder B part-way into Span 2. The redistribution in loading due to this hinging caused another positive moment hinge in Girder D, this time at the ¼-span of Span 2. It also induced a negative moment elastic hinge in Girder D and 7/8-span of Span 2.

The next step of the modeling removed some cross-frames where the capacity was exceeded. Then a negative moment elastic hinge was created in Girder C at the 7/8-span point of Span 2. The live load was increased to 75%, and more cross-frames were removed. The live load was increased to 100% of HL93 and then a positive moment plastic hinge was triggered in Girder C at the ¼-span of Span 2. More cross-frames were removed and finally the loading was stopped at 101% of HL93.

The maximum deflection of 27" occurs in Girder D at Pier 1. See Figure 16 for the deflected shape at this last stage. The colored dots represent the plastic hinges modeled in CSiBridge, and the elastic hinges are modeled by removing the flanges.

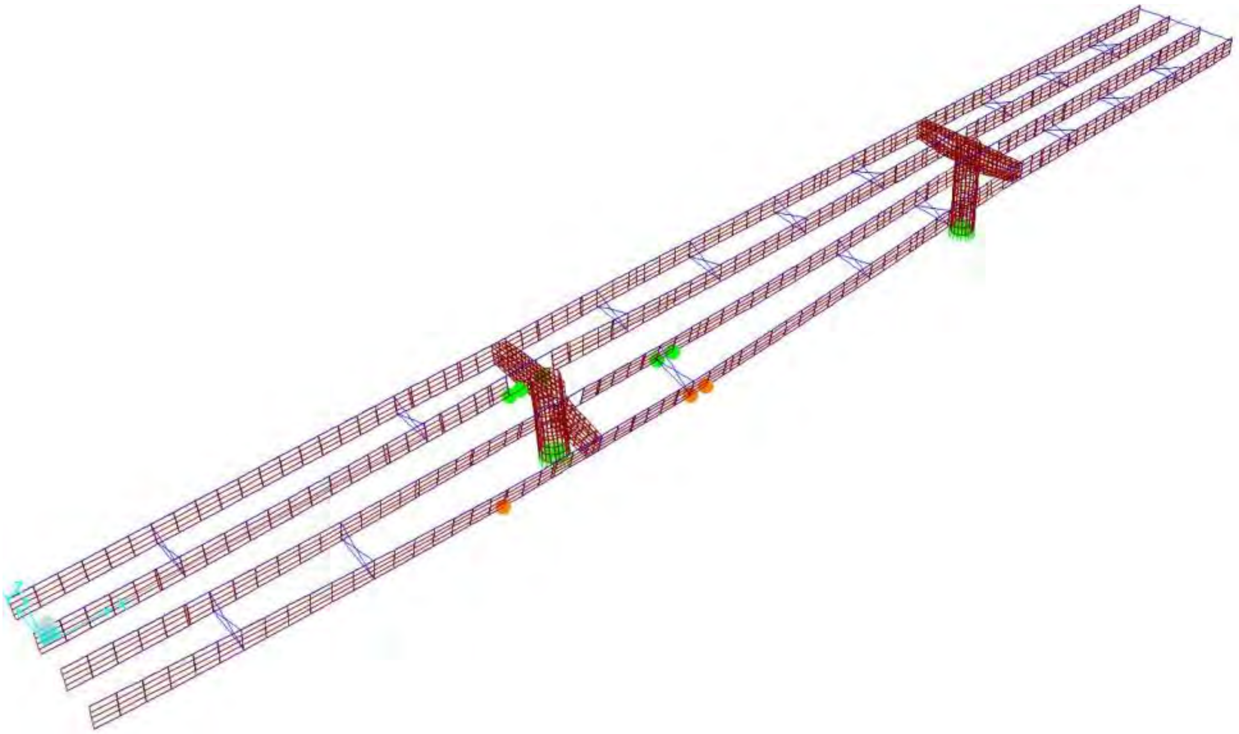


Figure 16: CSi (Independent) model deformed shape at 1.01xHL93

Comparisons between the record and independent models indicate a similar progression of failure of the bridge, confirming a lack of redundancy in the presented damaged limit state.

Integral Pier Cap Between Girders C and D – Damaged Limit State

The nonlinear model was altered to reflect the critical damaged condition. This was achieved by removing a critical section as designated in agreement with MnDOT, right after all dead load had been added and before the first increment of live loading is applied. The pier cap after the section was removed is shown in Figure 17.

Figure 17: Location of Fracture in Damaged Condition at Integral Pier Cap Between Girders C and D

After the section is removed, the worst load case of live loading is applied to the structure incrementally until it is seen that an element is reaching its capacity. The same position of live load as used in the ultimate loading condition shown in Figure 7 was again implemented for the damaged condition.

Following the pier cap fracture, 6 cross frames in the east bay (between girders C and D) and 4 cross frames in the west bay (between girders A and B) were removed. As in the ultimate loading condition, the cross frames are removed sequentially until the all members are within their capacity limits. A deformed shape and framing of this condition is shown in Figure 18.

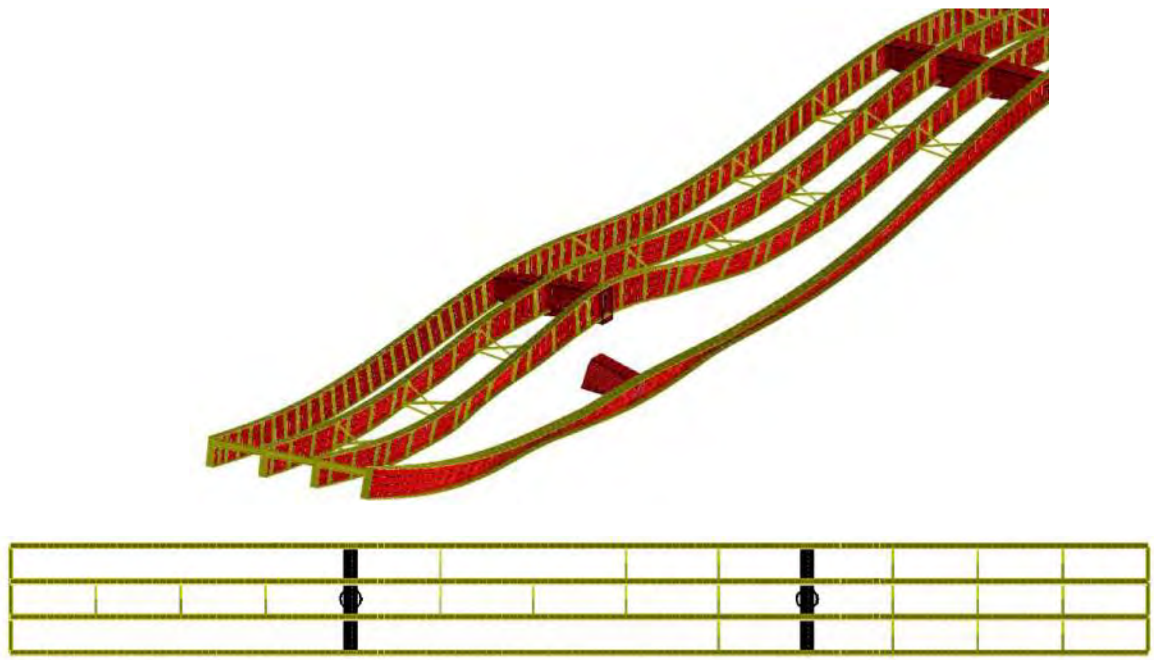


Figure 18: Deflected Shape at Integral Pier Cap - After Fracture and After Cross Frame Removal Prior to Live Load (Deck not shown for clarity)

Initial testing increments increased the loading to 1.25 x HL-93 loading and corresponding interaction/checking with design checks suggested that girder C reaches its capacity in negative bending at pier 1. Per AASHTO, the section is considered to fail in lateral torsional bending. However, based on discussions with MnDOT and applying engineering judgment, it was assuming that the buckling of these flanges is not enough to collapse the bridge. Therefore, the analysis was continued by converting these locations into elastic hinges by removing the flanges and softening the web shells such that the resultant moment is equal to about 10% of the maximum moment capacity. However, there is no way to ensure that the member will still preserve integrity beyond its AASHTO defined capacity without further, more refined analyses or tests. A deformed shape of the bridge after the formation of the elastic hinge is shown in Figure 19.

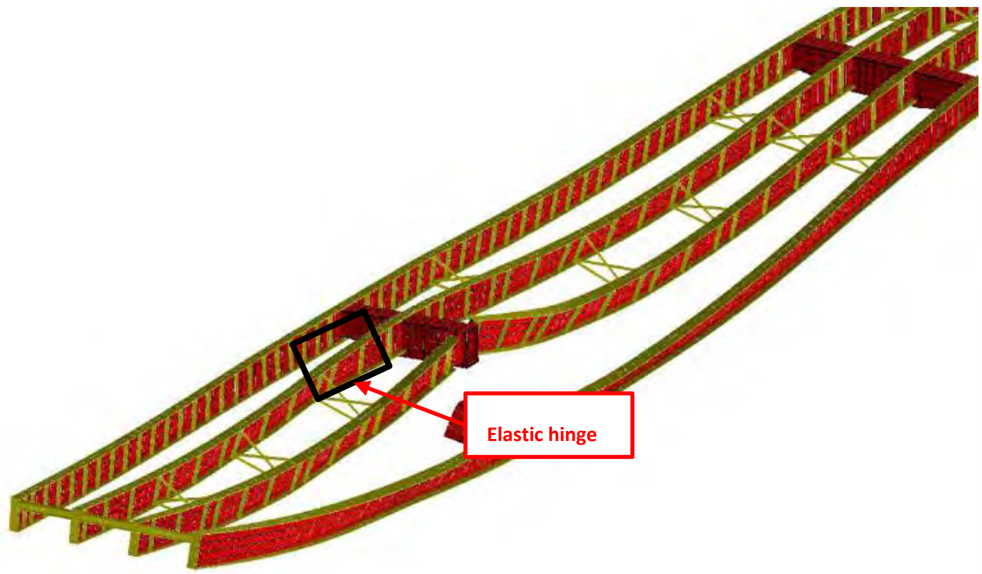


Figure 19: Deflected Shape After Forming Elastic Hinge on Girder C (Deck not shown for clarity)

After forming the hinge, the load is increased to 1.5 x HL-93 where girder C reaches its positive bending capacity in span 1 near the pier. Therefore, this region is converted into a plastic hinge by softening the web elements such that the total moment on the section would not exceed the plastic moment capacity, M_p. Upon this formation, the load was increased to 1.53 x HL-93 where another elastic hinge was formed on girder D at pier 2. Forming this hinge then created another plastic hinge on girder C in span 2. By this point, all the cross frames between girders C and D, along with most in the remaining bays in spans 1 and 2 have failed. A progression of the failures is shown in Figure 20.

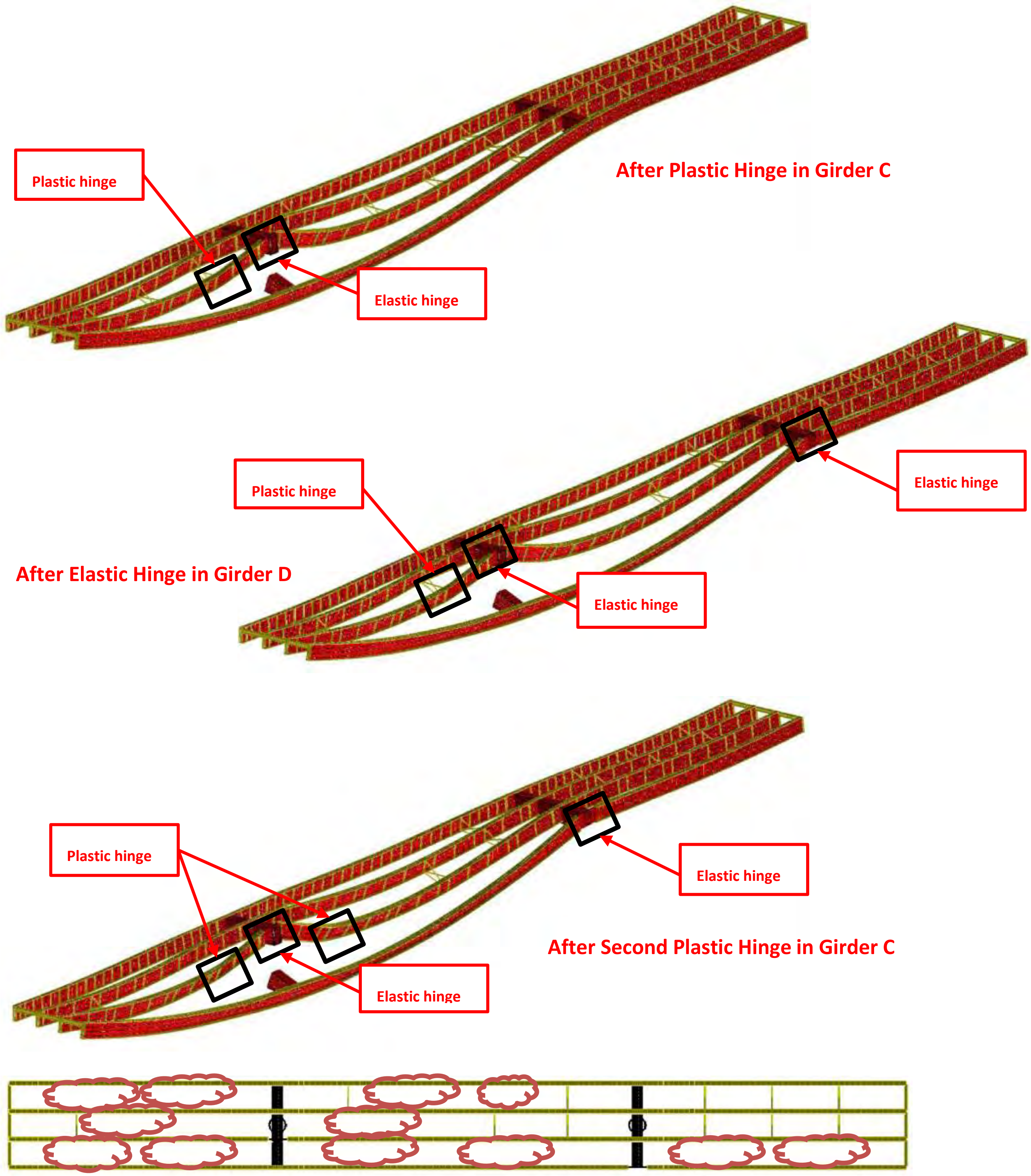


Figure 20: Progression of Failure under 1.53xHL93 Loading (Deck not shown for clarity)

Although this process caused a 13.5" deflection on the fascia girder, it was not enough to violate the L/100 criteria of 118'/100 = 14.2". At 1.53xHL-93, the damaged limit state of 0.5xLF1 was reached and it was decided that the non-linear analysis will cease when the structure passes the necessary requirement to prove redundancy and due to the negative capacity being reached on several members.

Therefore, $R_d = LF_d$ / LF1 = 1.53 / 3.05 = 0.501 > 0.5. The calculated the redundancy ratio r_d:

$$r_d = \frac{\mathrm{R_d}}{0.5} = \frac{0.501}{0.5} = 1.003 > 1.0$$

<u>*Independent Analysis Results for Damaged Limit State Between Girders C and D*</u>

After Pier 1 fracture between Girders C and D some of the cross-frames buckled or yielded and were removed from the model. The live load was applied and after 125% of HL93 there was a negative moment hinge in Girder C over Pier 1. Due to lack of flange bracing, this hinging was treated as an elastic hinge. The hinging over the pier immediately triggered positive moment plastic hinging in the ¼-span regions that have reduced flange thickness, since they are normally at inflection points.

Live load was increased to 153% of HL93, at which point a negative moment hinge occurred at Girder D over Pier 2. This hinge was modeled as an elastic hinge. More cross-frames were removed. The analysis was stopped here since the r-factor exceeded 0.5. The maximum deflection of 12" occurs in Girder D at Pier 1. See Figure 21 for the deflected shape at this last stage. The orange dots represent the plastic hinges modeled in CSiBridge, and the elastic hinges are modeled by removing the flanges.

Comparisons between the models indicate a similar mode of failure and support a redundant response for the given fracture.

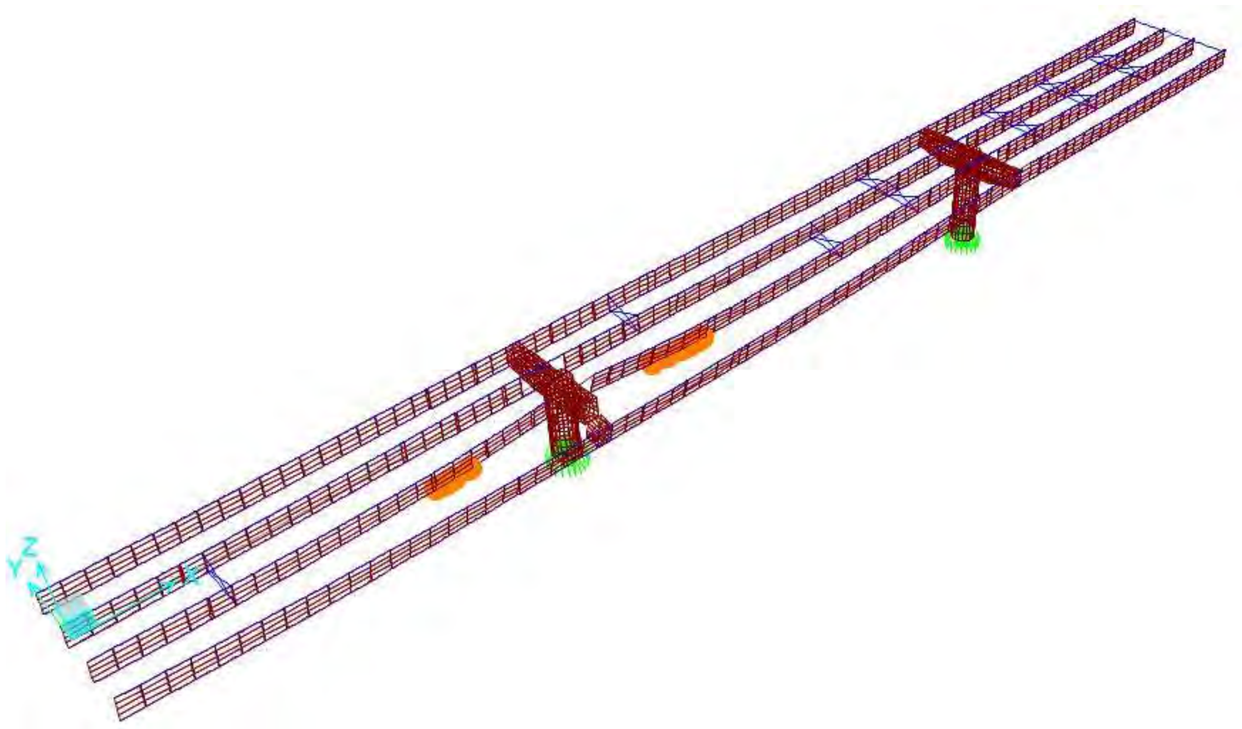


Figure 21: CSi (Independent) model deformed shape at 1.53xHL93 (Deck not shown for clarity)

Conclusions and Recommendations

Using the criteria from NCHRP 406 and based on the results of these analyses, that are also confirmed by the independent modeling, the Bridge 69840 is to be considered overall non-redundant, as shown:

- Integral steel box girder cap beam at Piers 1 and 2, at Girders B and C

  $r_1 = 2.34 > 1.0$, $r_u = 1.01 > 1.0$, $r_d = 0.66 < 1.0$, NOT REDUNDANT

- Integral steel box girder cap beam at Piers 1 and 2, at Girders C and D

  $r_1 = 2.34 > 1.0$, $r_u = 1.01 > 1.0$, $r_d = 1.003 > 1.0$, REDUNDANT

However, when the results are inspected closely, the only elements in the structure that force the entire structure to be classified as non-redundant is the integral steel box girder caps at both piers when the damaged condition full depth crack occurs between the pier column and girders B or C.

Therefore, based on the above results, the bridge may be classified as redundant if the integral steel box girder cap beam can be designed to have an alternate load path. This could be done by providing system redundancy by modifying the framing layout to include an alternate load path that would carry the load shed from the fractured cap. Alternatively, member redundancy could be achieved by providing an alternate path for the loads to be resisted by back up elements within the box girder itself. Conceptual drawings of both alternatives are included in Appendix 4 – Proposed Redundancy Repairs.

A scoping level cost estimate was developed for both repair concepts. The estimated cost of the system redundancy repair is approximately $333,000, while the estimated cost of the member redundancy repair is $206,800. Details of the cost estimate are included in Appendix 5 – Scoping Level Cost Estimate of Repairs.

After discussions with MnDOT, it was decided that the most economical way to provide a load path would be to avoid the early system failure due to the total fracture/damage of the box section at a location between the column shaft and either girders B or C. Installing a backup corbel/bracket in the column designed with sufficient capacity would prevent the early system failure from occurring. The corbel/bracket would serve as a backup pedestal capturing and supporting the cross beam and girder B or C in the event of section total failure at the specified locations in the cross beam. The backup corbel/bracket would prevent such failure from occurring and therefor the system would be classified as redundant. The bracket design and detailing are included in Appendix 6 – Advanced Redundancy Repair Plans and Cost Estimate. The revised cost estimate for the repairs is $104,958.

Additional repairs proposed to extend the service life of the bridge include, bearing reconstruction, concrete surface repairs on the bridge abutments and full repainting of the steel superstructure and substructure components.

Appendices

Appendix 1. Elastic Model Comparisons
Appendix 2. Member Capacity Calculations
Appendix 3. Redundancy Analysis Comparisons
Appendix 4. Initial Proposed Redundancy Repair Options
Appendix 5. Scoping Level Cost Estimate of Initially Proposed Repairs
Appendix 6. Advanced Redundancy Repair Plans and Cost Estimate

Appendix 1

Elastic Model Comparisons

	Record	Independent	Difference	
Stage	**[k]**	**[k]**	**[k]**	**[%]**
Steel	295.7	295.6	0.04	-0.01%
Concrete	1062.4	1062.4	0.1	0.00%
SDL	370.3	370.2	0.0	-0.01%
Total	1728.4	1728.2	0.12	0.01%

Figure 1: Dead Load Reactions

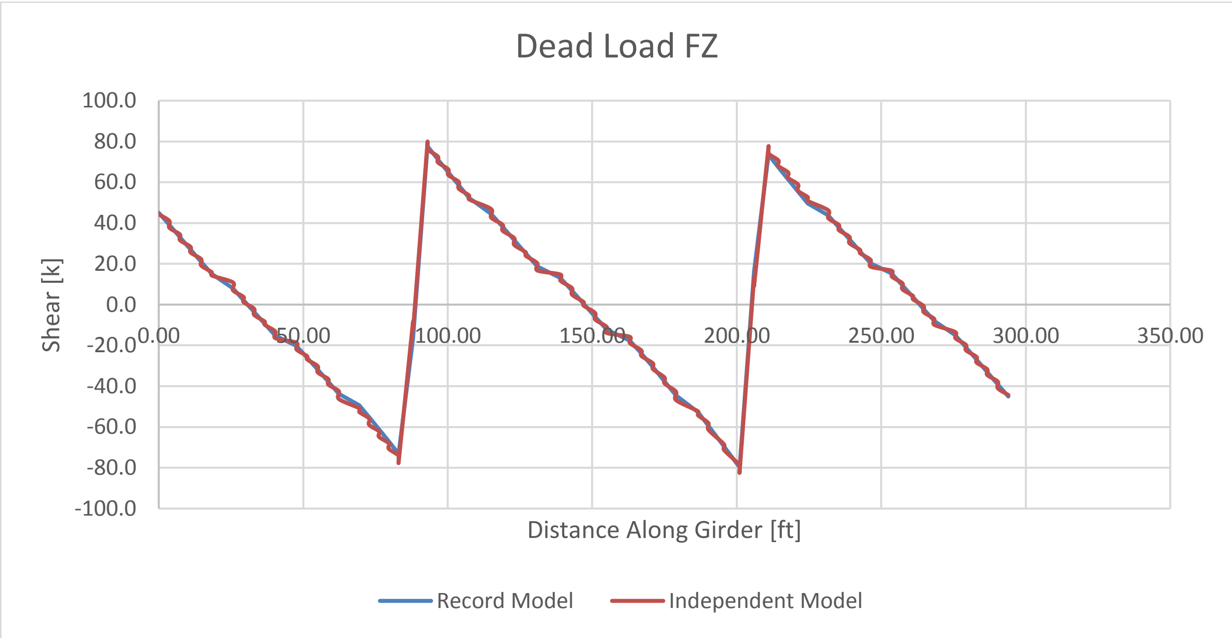


Figure 2: Girder D Dead Load Shear

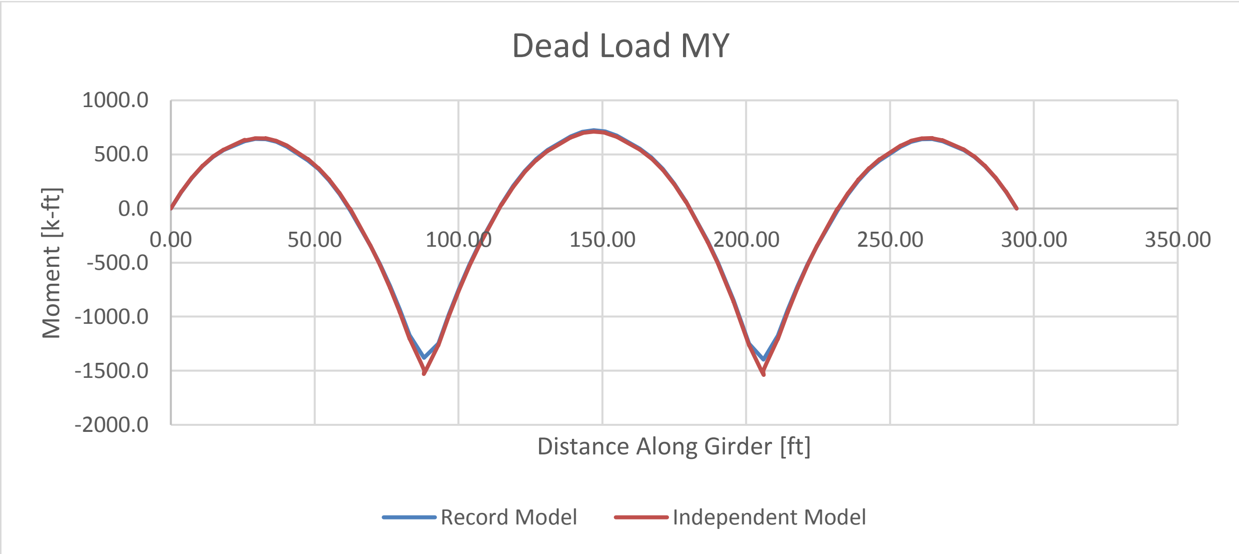


Figure 3: Girder D Dead Load Moment

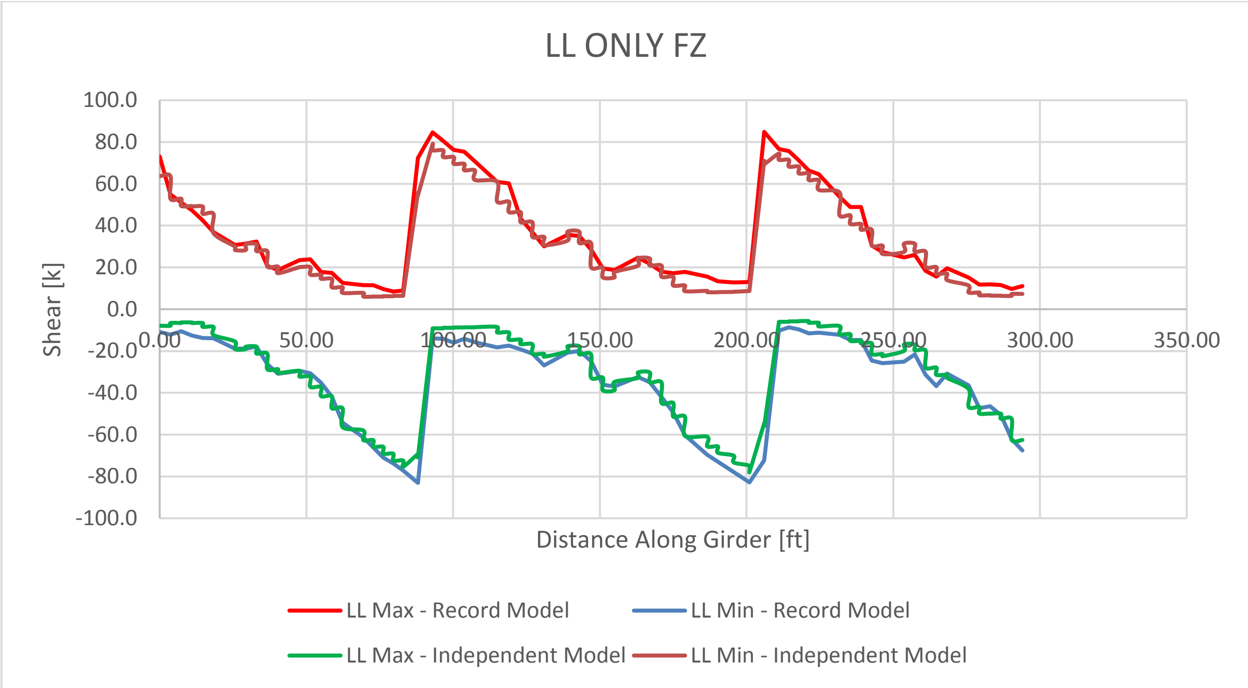


Figure 4: Girder D Live Load Shear

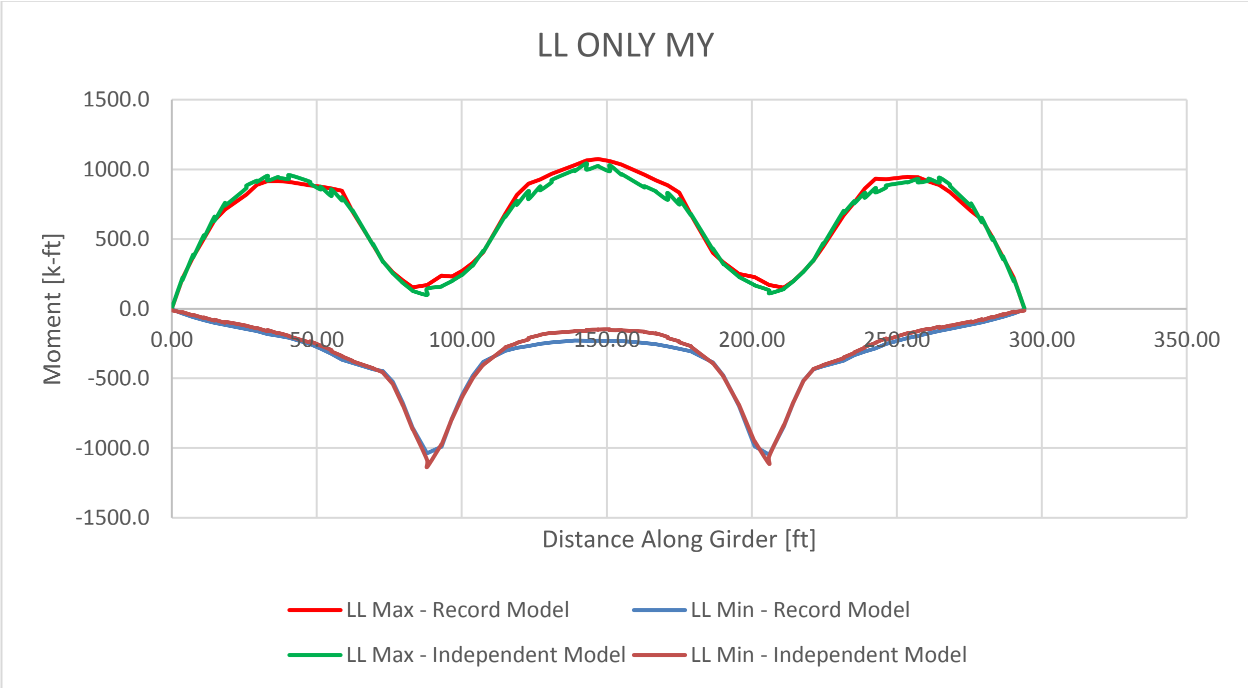


Figure 5: Girder D Live Load Moment

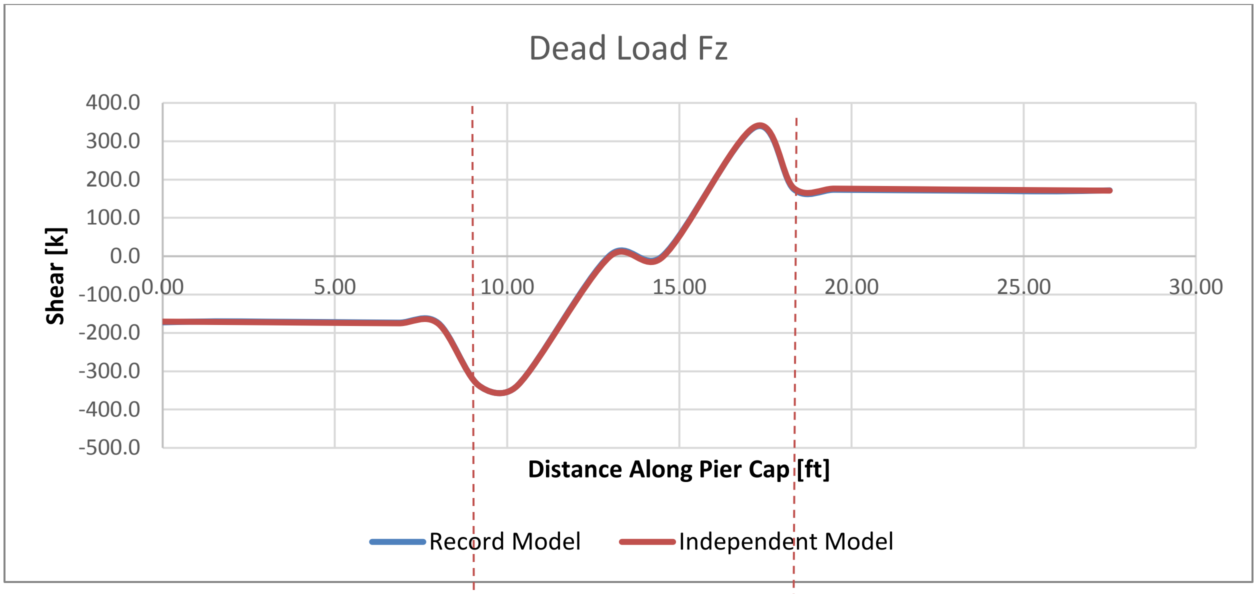
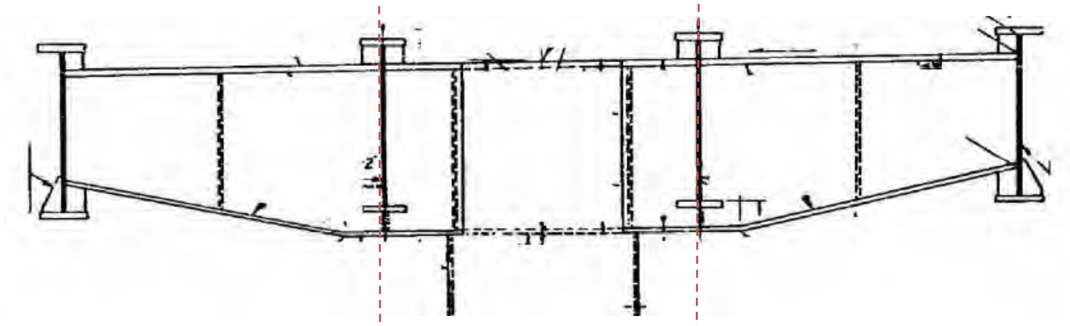


Figure 6: Pier 1 Cap Beam Dead Load Shear



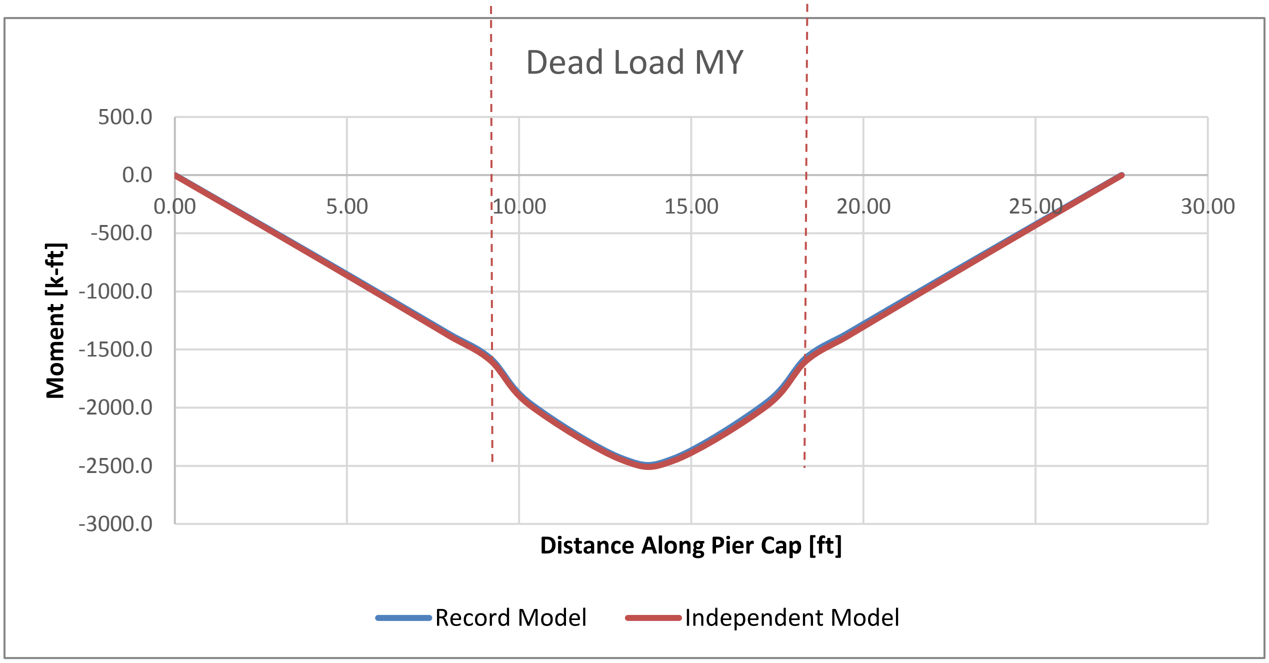


Figure 7: Pier 1 Cap Beam Dead Load Moment

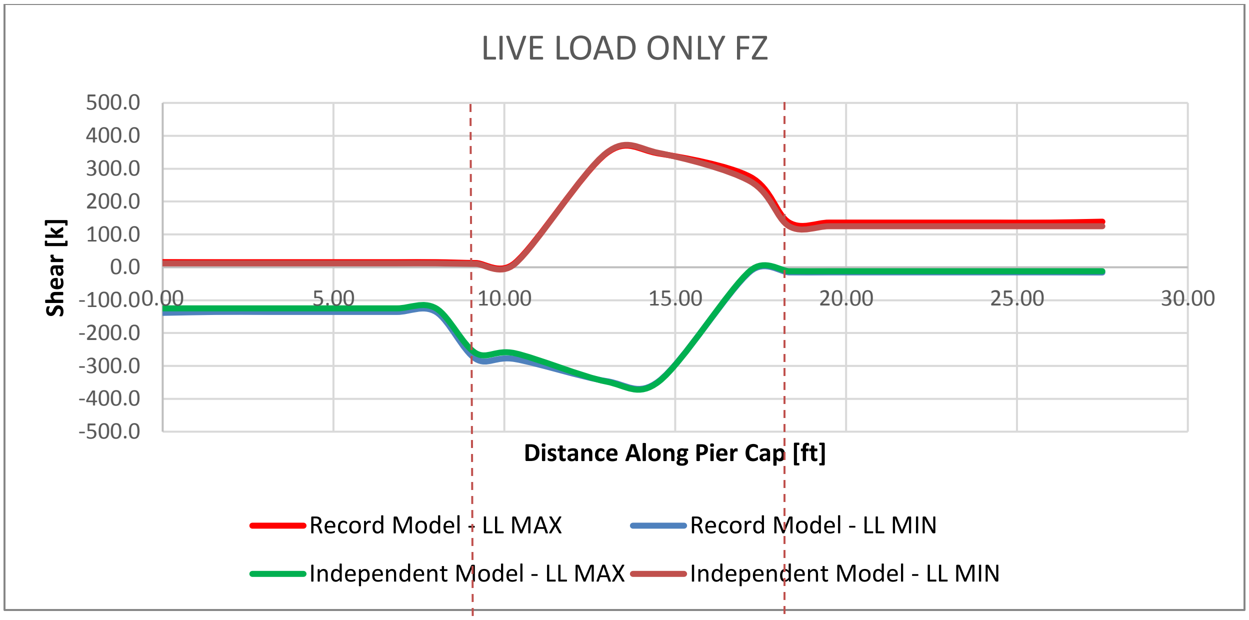
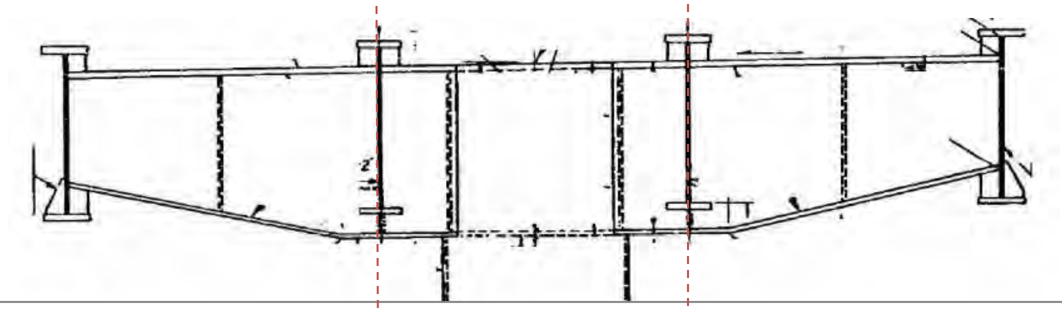


Figure 8: Pier 1 Cap Beam Live Load Shear



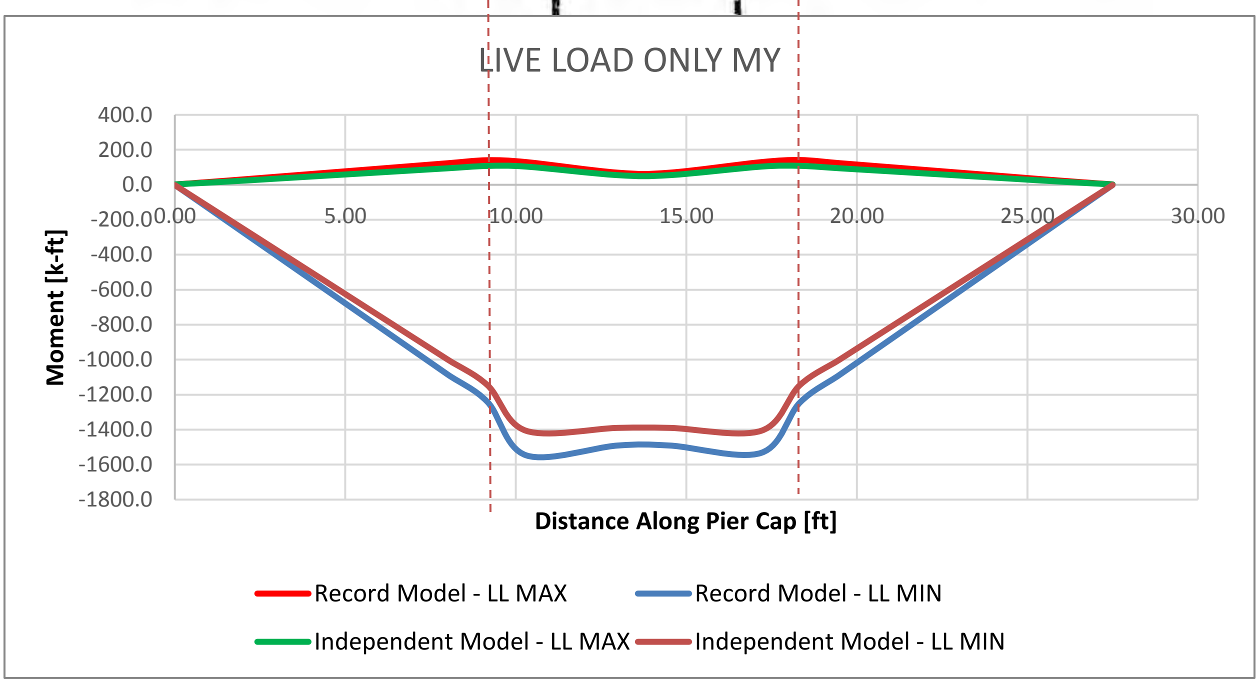


Figure 9: Pier 1 Cap Beam Live Load Moment

Appendix 2

Member Capacity Calculations

HNTB	Prepared by: Craig Hetue	Approved by:	Document number: QF 06
Calculation Cover Sheet	Revision Number: 0	Revision Date: 6/19/2017	Page 1 of __

Project: Fracture Critical Pier Caps – Br 69840	**Job No: 64517**	**Design Criteria Document:**
Client: MnDOT	**Discipline:**	**Calculation No:**

Name or Description of Calculation: Bridge ~~69102~~ 69840 Member Capacity and Redundancy Calculations.

Calc. Rev. No.	Originator	Checker	Senior Technical Reviewer (if required)	Confirmation Required (Y/N)

Calculation Objective: Establish the Member Capacity and redundancy values for Member and Ultimate loading conditions.

Calculation Methodology/List of Assumptions:
Applied AASHTO design and NCHRP 406 criteria to establish the redundancy limit states.

References/Inputs:

Attachments: (List each attachment following the subject calculation)
Bridge 69840 Design Calculations

Conclusions:

Document Check:	Name	Signature	Date
Originator:	Michael Xin	[signature]	8/29/17
Checker:	Travis Konda/Jay Carter	[signatures]	8/29/17
BackChecker:	Michael Xin	[signature]	8/29/17
Updater:	Michael Xin	[signature]	8/29/17
Verifier:	Travis Konda/Jay Carter	[signatures]	8/29/17

BRIDGE 69840 DESIGN CALCULATION

HNTB JOB #: 64517

INDEX OF DESIGN CALCULATION

Page

1. Design Summary

HNTB HNTB Corp.	By: MX	Date: 08/23/17	Job No. 64517
	Chkd By: JWC/EPP	Date: 8/31/2017	
	Bckchk By: MX	Date: 8/31/2017	Sht. No.

BR 69840

	Marco ID	LF1	r_1	LF_u	LF_u/LF1	r_u	LF_d	LF_d/LF1	r_d
Girder D @ CF2	1005	3.05	1.19	N/A	N/A	N/A	N/A	N/A	N/A
Pier 1 Cap Beam - Case BC	1192	6.03	2.34	4.00	1.31	1.01	1.01	0.33	0.66
Pier 1 Cap Beam - Case CD	1192	6.03	2.34	4.00	1.31	1.01	1.01	0.501	1.003

Summary of Elastic Results for Bridge 69840

	Location	Macro ID	Larsa Sta. (ft)	LF1	r_1	M+ Capacity (under Str I LCB)	M- Capacity (under StrI LCB)
						(k-ft)	(k-ft)
Girder D	S Abutment	1001	0.0	6.31	2.71	4376	-2666
Span 1 (Girder D)	Girder D_Sect_1	1002	18.0	4.17	1.69	4116	-2585
	Girder D_Sect_2	1003	18.1	4.14	1.68	4115	-2584
	Girder D_@ CF1	1004	22.0	3.45	1.29	4087	-2386
	Girder D @ CF2	1005	44.0	3.05	1.19	4126	-2571
	Girder D_Sect_2	1006	58.0	4.16	1.77	4313	-2544
	Girder D_Sect_3	1007	58.1	4.18	1.78	4315	-2545
	Girder D @ CF3	1008	66.0	6.33	2.52	4481	-2593
	Girder_D_Sect_3	1009	69.0	5.79	2.41	2476	-2433
	Girder D_Sect_4	1010	69.1	7.04	2.95	3443	-3395
	Girder D_Sect_4	1011	79.0	4.65	1.78	3443	-3398
	Girder D_Sect_5	1012	79.1	5.56	2.30	5055	-5007
	Girder D_Sect_5	1013	82.8	5.43	2.08	5055	-5006
	Pier 1	1014	86.5	3.93	1.48	5055	-5002
	Pier 1	1015	88.0	4.17	1.65	5055	-5009
	Pier 1	1016	89.5	3.31	1.29	5055	-4983
Span 2 (Girder D)	Girder D_Sect_5	1017	96.9	4.87	2.05	5055	-4987
	Girder D_Sect_6	1018	97.0	3.68	1.44	3443	-3379
	Girder D_Sect_6	1019	106.9	5.84	2.48	3443	-3382
	Girder D_Sect_7	1020	107.0	6.17	2.37	2476	-2416
	Girder D @ CF4	1021	111.0	6.46	2.76	4481	-2531
	Girder D_Sect_7	1022	121.0	4.02	1.69	4278	-2533
	Girder D_Sect_8	1023	121.1	4.97	2.10	5169	-2989
	Girder D @ CF5	1024	135.0	3.39	1.32	5002	-2653
	Girder D @ CF6	1025	159.0	3.35	1.30	5000	-2891
	Girder D_Sect_8	1026	173.0	4.85	2.04	5166	-2892
	Girder D_Sect_9	1027	173.1	3.96	1.67	4274	-2407
	Girder D @ CF7	1028	183.0	6.12	2.58	2476	-2415
	Girder D_Sect_9	1029	187.0	6.21	2.37	2476	-2148
	Girder D_Sect_10	1030	187.1	5.83	2.47	3443	-3215
	Girder D_Sect_10	1031	197.0	3.69	1.42	3443	-3373
	Girder D_Sect_11	1032	204.5	5.31	2.22	5055	-4980
	Pier 2	1033	206.0	4.08	1.63	5055	-5001
	Pier 2	1034	207.5	3.96	1.50	5055	-4999
Span 3 (Girder D)	Girder D_Sect_11	1035	214.9	5.59	2.32	5055	-4999
	Girder D_Sect_12	1036	215.0	4.65	1.76	3443	-3390
	Girder D_Sect_12	1037	224.9	7.10	2.97	3443	-3386
	Girder D_Sect_13	1038	225.0	6.09	2.49	2476	-2417
	Girder D @ CF8	1039	228.0	7.08	2.93	4480	-2558
	Girder D_Sect_13	1040	236.0	4.68	2.01	4311	-2430
	Girder D_Sect_14	1041	236.1	4.66	2.00	4309	-2420
	Girder D @ CF9	1042	250.0	3.02	1.20	4126	-2344
	Girder_D @ CF10	1043	272.0	3.46	1.31	4087	-2586
	Girder D_Sect_14	1044	276.0	4.20	1.71	4116	-2586
	Girder D_Sect_15	1045	276.1	4.22	1.71	4117	-2587
	Girder D_Sect_15	1046	285.1	7.19	2.71	4221	-2602
	N Abutment	1047	294.0	6.87	2.92	4376	-2666

Summary of Elastic Results for Bridge 69840

	Location	Macro ID	Larsa Sta. (ft)	LF1	r_1	M+ Capacity (under Str I LCB)	M- Capacity (under StrI LCB)
Girder C	S Abutment	1048	0.0	4.99	2.14	4422	-2674
Span 1 (Girder C)	Girder C_Sect_1	1049	18.0	3.87	1.57	4147	-2572
	Girder C_Sect_2	1050	18.1	4.82	1.96	5052	-3149
	Girder CF1	1051	22.0	4.36	1.75	5024	-2840
	Girder CF2	1052	44.0	3.81	1.58	5054	-3113
	Girder C_Sect_2	1053	58.0	5.51	2.47	5250	-3142
	Girder C_Sect_3	1054	58.1	4.57	2.05	4355	-2546
	Girder C @ CF3	1055	66.0	6.13	2.57	4544	-2622
	Girder C_Sect_3	1056	69.0	5.76	2.43	2476	-2445
	Girder C_Sect_4	1057	69.1	6.43	2.67	3765	-3730
	Girder C_Sect_4	1058	79.0	4.22	1.65	3765	-3730
	Girder C_Sect_5	1059	79.1	4.83	2.02	6025	-5987
	Girder C_Sect_5	1060	82.8	4.34	1.81	6025	-5986
	Pier 1	1061	86.5	4.05	1.55	6025	-5986
	Pier 1	1062	88.0	4.02	1.59	6025	-5968
	Pier 1	1063	89.5	3.72	1.43	6025	-5957
Span 2 (Girder C)	Girder C_Sect_5	1064	96.9	4.43	1.86	6025	-5959
	Girder C_Sect_6	1065	97.0	3.63	1.41	3765	-3704
	Girder C_Sect_6	1066	106.9	5.75	2.40	3765	-3706
	Girder C_Sect_7	1067	107.0	5.68	2.29	2476	-2424
	Girder C @ CF4	1068	111.0	6.42	2.68	4531	-2624
	Girder C_Sect_7	1069	121.0	4.40	1.90	4295	-2332
	Girder C_Sect_8	1070	121.1	5.91	2.57	5641	-3224
	Girder C @ CF5	1071	135.0	3.99	1.63	5458	-2903
	Girder C @ CF6	1072	159.0	3.97	1.62	5457	-3040
	Girder C_Sect_8	1073	173.0	5.93	2.57	5642	-3088
	Girder C_Sect_9	1074	173.1	4.42	1.90	4296	-2347
	Girder @ CF7	1075	183.0	5.73	2.41	2476	-2023
	Girder C_Sect_9	1076	187.0	5.72	2.31	2476	-2422
	Girder C_Sect_10	1077	187.1	5.68	2.37	3765	-3704
	Girder C_Sect_10	1078	197.0	3.59	1.38	3765	-3701
	Girder C_Sect_11	1079	204.5	4.78	2.00	6025	-5956
	Pier 2	1080	206.0	4.00	1.57	6025	-5968
	Pier 2	1081	207.5	3.99	1.51	6025	-5985
Span 3 (Girder C)	Girder C_Sect_11	1082	214.9	4.89	2.05	6025	-5986
	Girder C_Sect_12	1083	215.0	4.12	1.59	3765	-3729
	Girder C_Sect_12	1084	224.9	6.42	2.65	3765	-3728
	Girder C_Sect_13	1085	225.0	5.89	2.45	2476	-2444
	Girder C @ CF8	1086	228.0	6.57	2.72	4545	-2626
	Girder C_Sect_13	1087	236.0	4.81	2.15	4353	-2572
	Girder C_Sect_14	1088	236.1	5.81	2.60	5248	-3148
	Girder C @ CF9	1089	250.0	3.71	1.54	5053	-2785
	Girder C @ CF10	1090	272.0	4.33	1.74	5024	-3140
	Girder C_Sect_14	1091	276.0	4.89	2.00	5053	-3152
	Girder C_Sect_15	1092	276.1	3.92	1.60	4147	-2574
	Girder C_Sect_15	1093	285.1	6.49	2.61	4256	-2602
	N Abutment	1094	294.0	6.40	2.71	4422	-2700

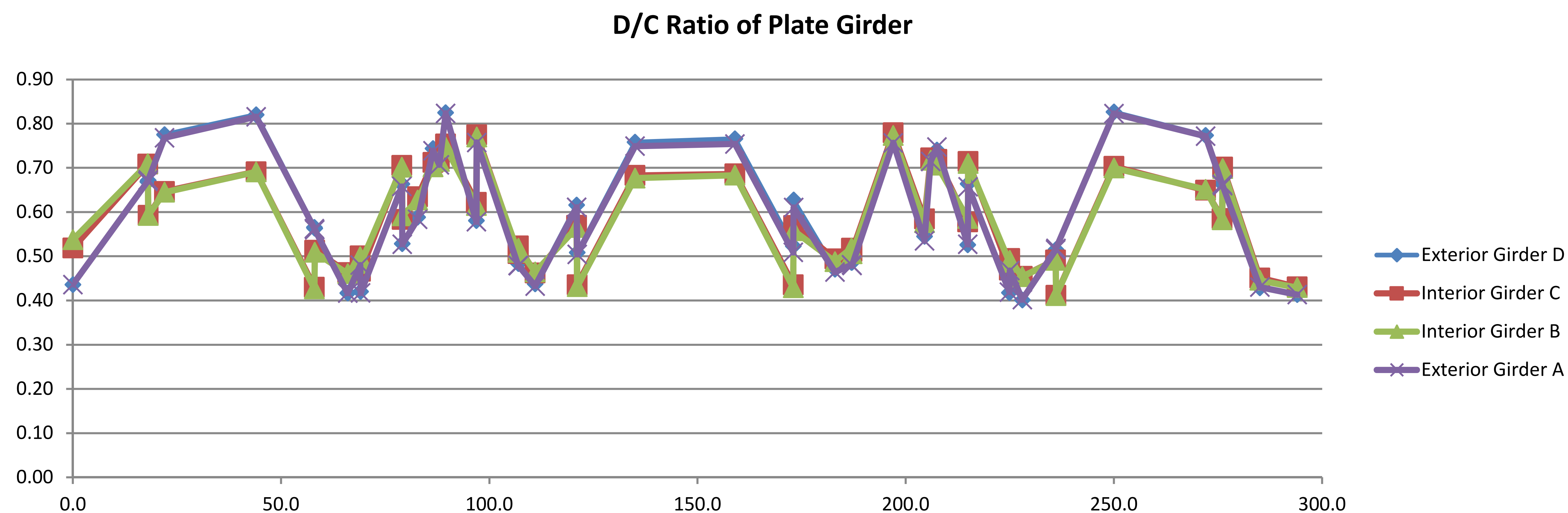
Made by: MX 08/23/17
Checked By: JWC on 08/24/17
Backchecked By: MX on 08/28/17

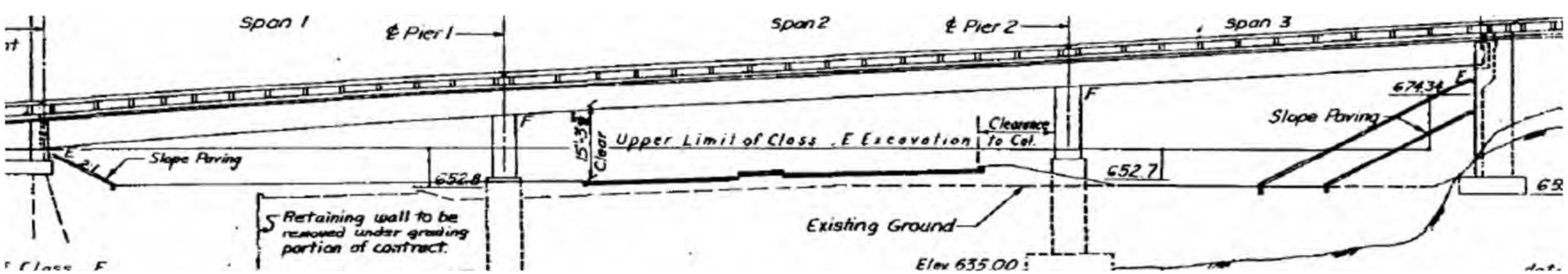
Summary of Elastic Results for Bridge 69840

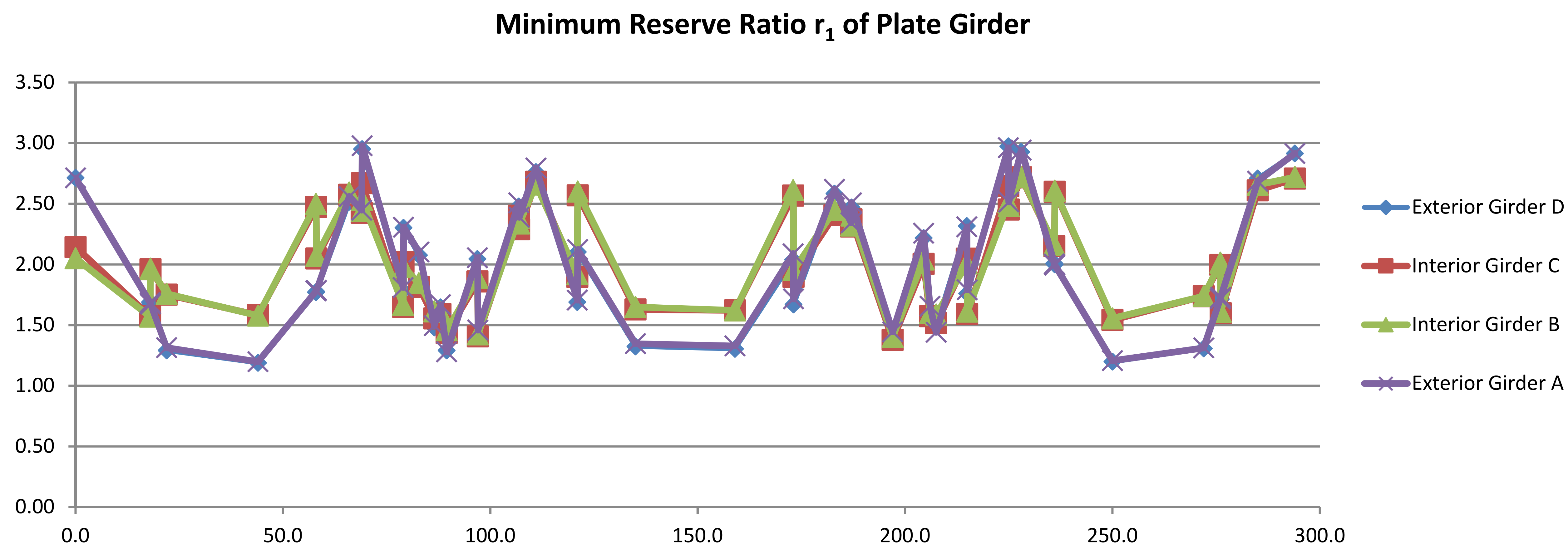
	Location	Macro ID	Larsa Sta. (ft)	LF1	r_1	M+ Capacity (under Str I LCB)	M- Capacity (under StrI LCB)
Girder B	S Abutment	1095	0.0	4.78	2.05	4422	-2699
Span 1 (Girder B)	Girder B_Sect_1	1096	18.0	3.86	1.57	4147	-2567
	Girder B_Sect_2	1097	18.1	4.82	1.96	5052	-3145
	Girder B @ CF1	1098	22.0	4.38	1.76	5024	-2835
	Girder B @ CF2	1099	44.0	3.82	1.58	5054	-3114
	Girder B_Sect_2	1100	58.0	5.57	2.50	5250	-3150
	Girder B_Sect_3	1101	58.1	4.62	2.07	4355	-2548
	Girder B @ CF3	1102	66.0	6.15	2.59	4544	-2625
	Girder B_Sect_3	1103	69.0	5.80	2.44	2476	-2445
	Girder B_Sect_4	1104	69.1	6.12	2.53	3765	-3730
	Girder B_Sect_4	1105	79.0	4.28	1.67	3765	-3730
	Girder B_Sect_5	1106	79.1	4.71	1.98	6025	-5987
	Girder B_Sect_5	1107	82.8	4.41	1.84	6025	-5986
	Pier 1	1108	86.5	4.17	1.61	6025	-5986
	Pier 1	1109	88.0	4.07	1.61	6025	-5968
	Pier 1	1110	89.5	3.77	1.46	6025	-5958
Span 2 (Girder B)	Girder B_Sect_5	1111	96.9	4.50	1.89	6025	-5959
	Girder B_Sect_6	1112	97.0	3.67	1.42	3765	-3704
	Girder B_Sect_6	1113	106.9	5.70	2.38	3765	-3706
	Girder B_Sect_7	1114	107.0	5.78	2.34	2476	-2424
	Girder B @ CF4	1115	111.0	6.36	2.66	4531	-2622
	Girder B_Sect_7	1116	121.0	4.45	1.92	4296	-2280
	Girder B_Sect_8	1117	121.1	5.98	2.60	5642	-3186
	Girder B @ CF5	1118	135.0	4.03	1.65	5459	-2880
	Girder B @ CF6	1119	159.0	3.98	1.62	5459	-3073
	Girder B_Sect_8	1120	173.0	6.01	2.61	5644	-3118
	Girder B_Sect_9	1121	173.1	4.51	1.95	4298	-2352
	Girder B @ CF7	1122	183.0	5.83	2.45	2476	-2063
	Girder B_Sect_9	1123	187.0	5.74	2.32	2476	-2422
	Girder B_Sect_10	1124	187.1	5.75	2.40	3765	-3704
	Girder B_Sect_10	1125	197.0	3.63	1.40	3765	-3701
	Girder B_Sect_11	1126	204.5	4.86	2.04	6025	-5956
	Pier 2	1127	206.0	4.04	1.60	6025	-5968
	Pier 2	1128	207.5	4.11	1.59	6025	-5985
Span 3 (Girder B)	Girder B_Sect_11	1129	214.9	4.78	2.01	6025	-5986
	Girder B_Sect_12	1130	215.0	4.16	1.61	3765	-3729
	Girder B_Sect_12	1131	224.9	6.06	2.51	3765	-3728
	Girder B_Sect_13	1132	225.0	5.95	2.48	2476	-2444
	Girder B @ CF8	1133	228.0	6.59	2.72	4545	-2626
	Girder B_Sect_13	1134	236.0	4.83	2.16	4354	-2573
	Girder B_Sect_14	1135	236.1	5.83	2.61	5249	-3149
	Girder B @ CF9	1136	250.0	3.74	1.56	5053	-2817
	Girder B @ CF10	1137	272.0	4.36	1.74	5024	-3140
	Girder B_Sect_14	1138	276.0	4.93	2.01	5053	-3153
	Girder B_Sect_15	1139	276.1	3.95	1.61	4148	-2575
	Girder B_Sect_15	1140	285.1	6.59	2.66	4256	-2603
	N Abutment	1141	294.0	6.41	2.72	4422	-2700

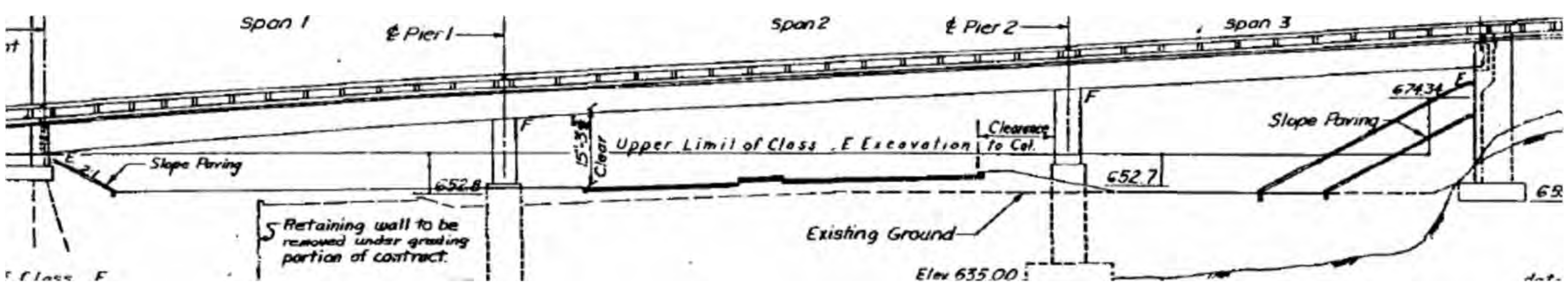
	Summary of Elastic Results for Bridge 69840						
	Location	Macro ID	Larsa Sta. (ft)	LF1	r_1	M+ Capacity (under Str I LCB)	M- Capacity (under StrI LCB)
Girder A	S Abutment	1142	0.0	6.31	2.71	4376	-2666
Span 1 (Girder A)	Girder A_Sect_1	1143	18.0	4.16	1.69	4116	-2585
	Girder A_Sect_2	1144	18.1	4.14	1.67	4115	-2585
	Girder @ CF1	1145	22.0	3.50	1.31	4087	-2385
	Girder A @ CF2	1146	44.0	3.08	1.20	4126	-2571
	Girder A_Sect_2	1147	58.0	4.20	1.78	4313	-2544
	Girder A_Sect_3	1148	58.1	4.21	1.79	4315	-2545
	Girder A @ CF3	1149	66.0	6.42	2.56	4480	-2593
	Girder A_Sect_3	1150	69.0	5.86	2.45	2476	-2433
	Girder A_Sect_4	1151	69.1	7.14	2.98	3443	-3395
	Girder A_Sect_4	1152	79.0	4.71	1.81	3443	-3398
	Girder A_Sect_5	1153	79.1	5.56	2.31	5055	-5007
	Girder A_Sect_5	1154	82.8	5.50	2.10	5055	-5006
	Pier 1	1155	86.5	3.98	1.50	5055	-5002
	Pier 1	1156	88.0	4.24	1.67	5055	-5009
	Pier 1	1157	89.5	3.31	1.28	5055	-4983
Span 2 (Girder A)	Girder A_Sect_5	1158	96.9	4.89	2.05	5055	-4987
	Girder A_Sect_6	1159	97.0	3.75	1.46	3443	-3379
	Girder A_Sect_6	1160	106.9	5.92	2.51	3443	-3382
	Girder A_Sect_7	1161	107.0	6.21	2.39	2476	-2399
	Girder A @ CF4	1162	111.0	6.57	2.79	4481	-2528
	Girder A_Sect_7	1163	121.0	4.08	1.71	4279	-2538
	Girder A_Sect_8	1164	121.1	5.04	2.12	5171	-2981
	Girder A @ CF5	1165	135.0	3.45	1.35	5005	-2646
	Girder A @ CF6	1166	159.0	3.42	1.33	5004	-2849
	Girder A_Sect_8	1167	173.0	4.96	2.09	5172	-2850
	Girder A_Sect_9	1168	173.1	4.06	1.72	4280	-2372
	Girder A @ CF7	1169	183.0	6.21	2.62	2476	-2415
	Girder A_Sect_9	1170	187.0	6.21	2.34	2476	-2239
	Girder A_Sect_10	1171	187.1	5.93	2.51	3443	-3247
	Girder A_Sect_10	1172	197.0	3.73	1.44	3443	-3373
	Girder A_Sect_11	1173	204.5	5.41	2.26	5055	-4980
	Pier 2	1174	206.0	4.15	1.65	5055	-5001
	Pier 2	1175	207.5	3.89	1.44	5055	-4999
Span 3 (Girder A)	Girder A_Sect_11	1176	214.9	5.57	2.31	5055	-4999
	Girder A_Sect_12	1177	215.0	4.72	1.79	3443	-3390
	Girder A_Sect_12	1178	224.9	7.07	2.96	3443	-3376
	Girder A_Sect_13	1179	225.0	6.17	2.51	2476	-2405
	Girder A @ CF8	1180	228.0	7.15	2.94	4481	-2550
	Girder A_Sect_13	1181	236.0	4.66	2.00	4313	-2421
	Girder A_Sect_14	1182	236.1	4.64	1.99	4311	-2411
	Girder A @ CF9	1183	250.0	3.04	1.21	4127	-2340
	Girder A @ CF10	1184	272.0	3.48	1.31	4087	-2586
	Girder A_Sect_14	1185	276.0	4.22	1.72	4116	-2586
	Girder A_Sect_15	1186	276.1	4.25	1.73	4117	-2587
	Girder A_Sect_15	1187	285.1	7.16	2.69	4221	-2604
	N Abutment	1188	294.0	6.87	2.92	4376	-2666

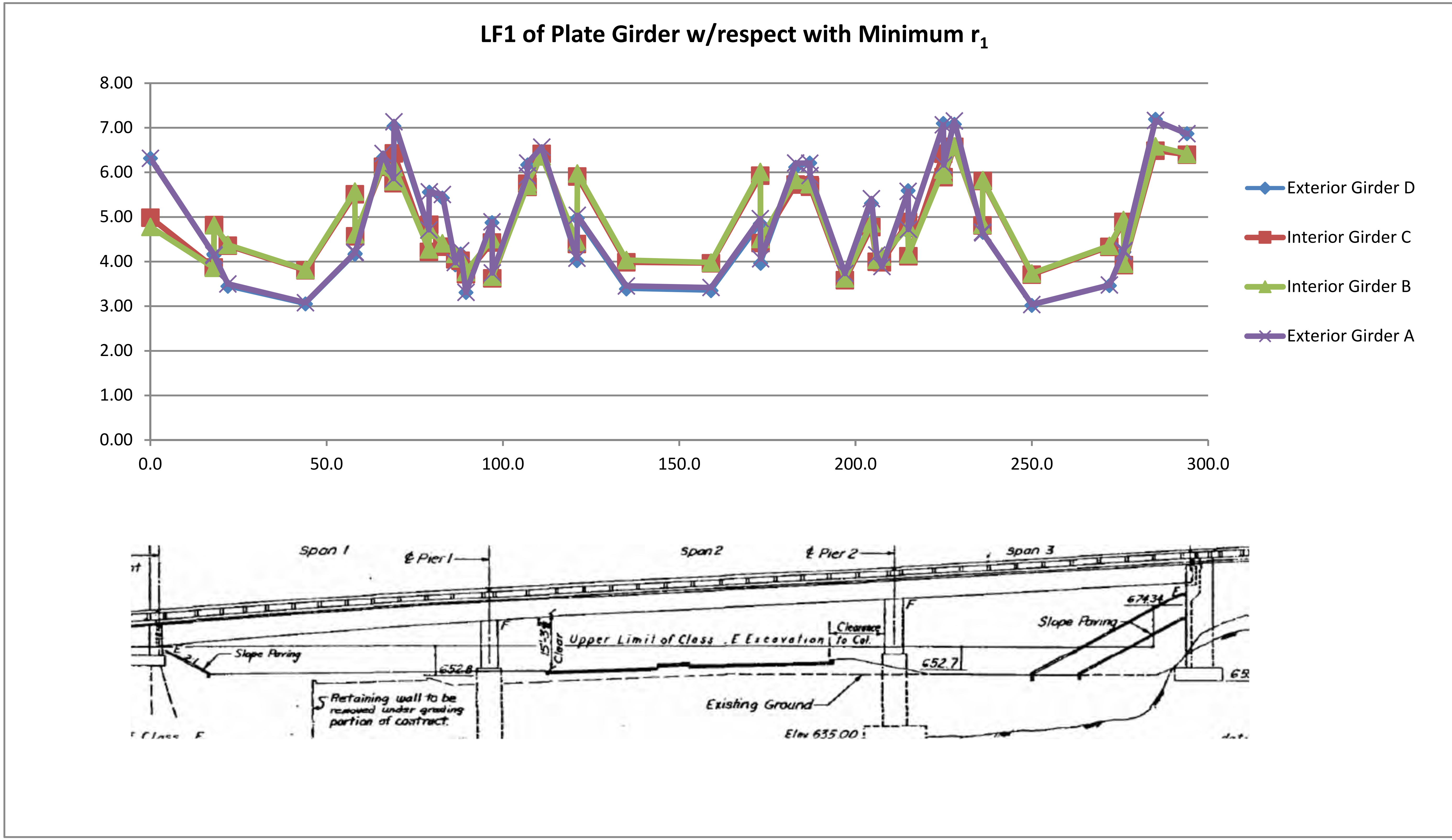
	Location	Macro ID	Larsa Sta. (ft)	LF1	r_1	M+ Capacity (under Str I LCB)	M- Capacity (under StrI LCB)
	Summary of Elastic Results for Bridge 69840						
At Edge Girder	Section_A	1189	0.1	9.07	3.67	7149	-7149
	Section_B	1190	4.0	11.85	4.78	9278	-9278
	Section_C	1191	9.2	9.45	3.68	11542	-11542
At Critical Section	Section_C	1192	11.2	6.03	2.34	11531	-11531
At Critical Section	Section_C	1193	16.3	6.11	2.37	11533	-11533
	Section_C	1194	18.3	9.53	3.71	11543	-11543
	Section_B	1195	23.5	11.86	4.80	9279	-9279
At Edge Girder	Section_A	1196	27.4	9.09	3.69	7150	-7150

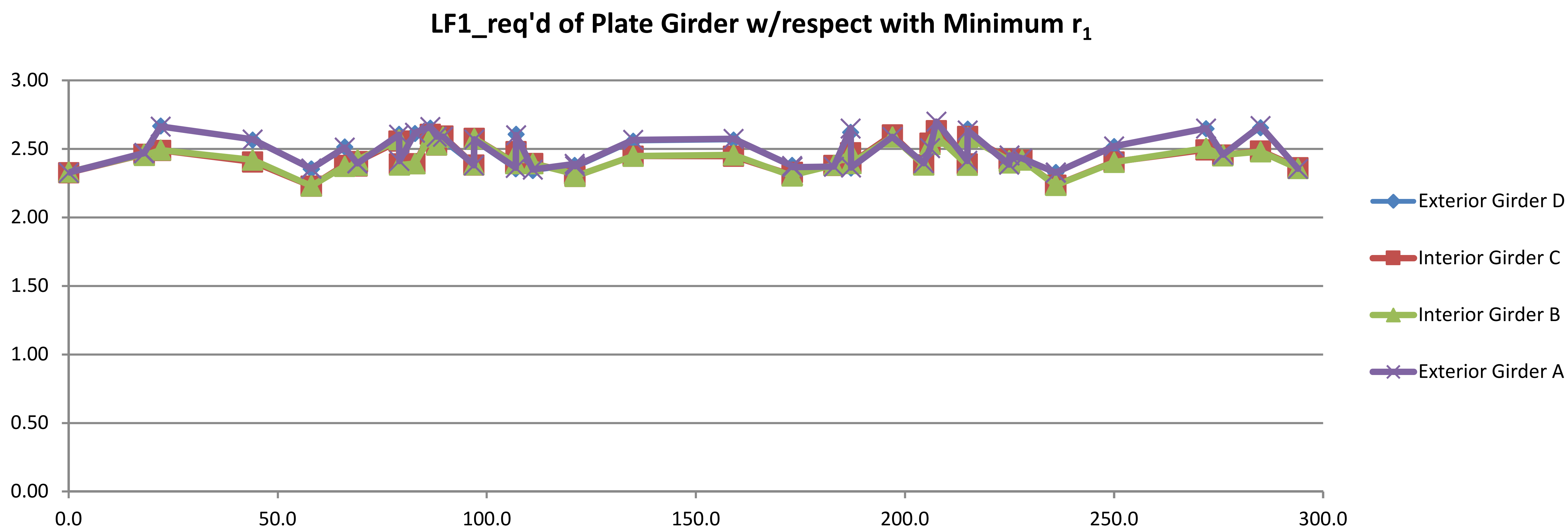

D/C Ratio of Plate Girder
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Exterior Girder D
Interior Girder C
Interior Girder B
Exterior Girder A

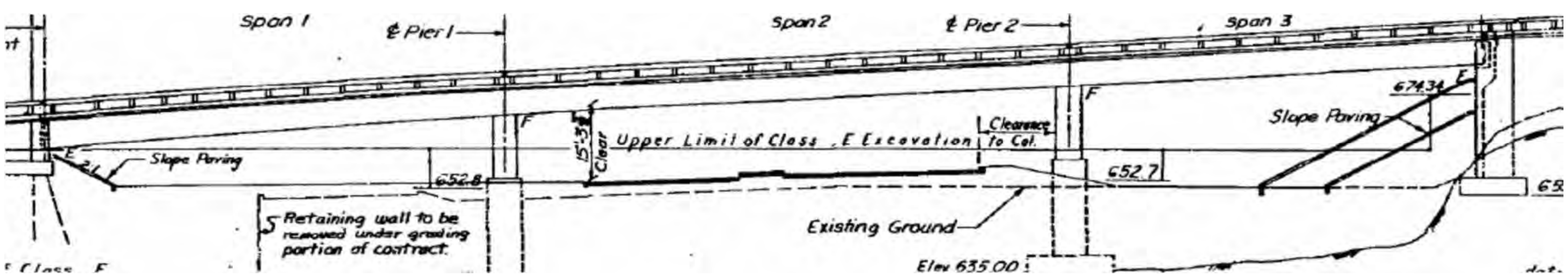

Span 1
℄ Pier 1
Span 2
℄ Pier 2
Span 3
Slope Paving
Upper Limit of Class E Excavation
Clearance to Col.
652.8
652.7
Slope Paving
Retaining wall to be removed under grading portion of contract.
Existing Ground
Elev 635.00


Minimum Reserve Ratio r_1 of Plate Girder
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Exterior Girder D
Interior Girder C
Interior Girder B
Exterior Girder A

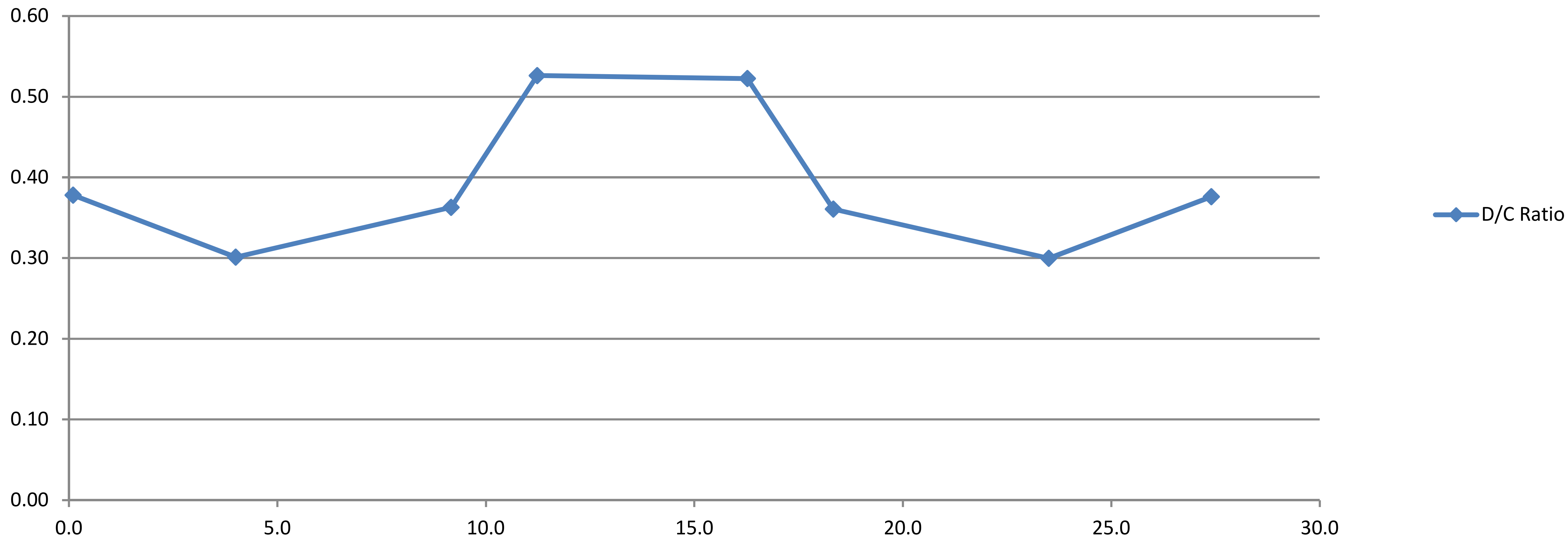

Span 1
℄ Pier 1
Span 2
℄ Pier 2
Span 3
Slope Paving
Upper Limit of Class E Excavation
Clearance to Col.
652.8
652.7
674.34
Slope Paving
Retaining wall to be removed under grading portion of contract
Existing Ground
Elev 635.00

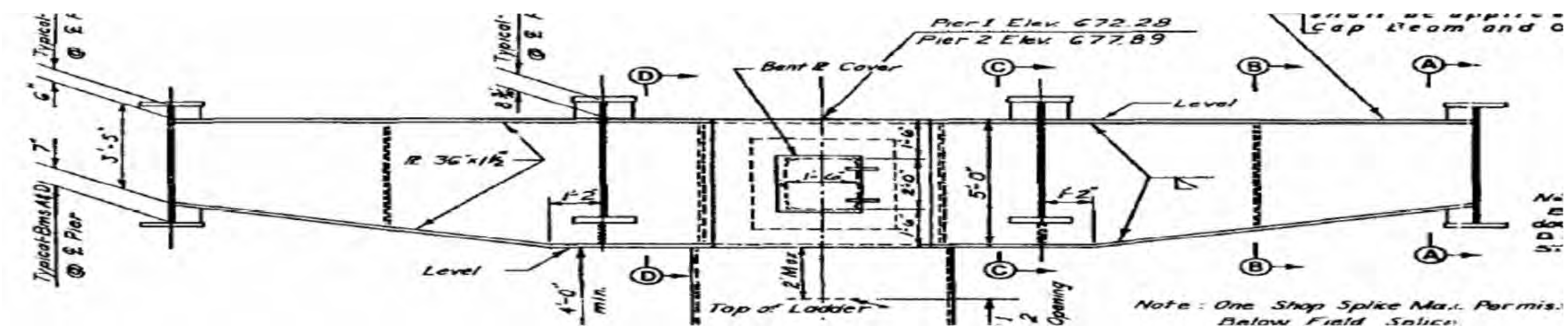

LF1 of Plate Girder w/respect with Minimum r_1
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Exterior Girder D
Interior Girder C
Interior Girder B
Exterior Girder A
Span 1
℄ Pier 1
Span 2
℄ Pier 2
Span 3
Slope Paving
Slope Paving
Upper Limit of Class E Excavation
Clearance to Col.
652.8
652.7
674.34
Retaining wall to be removed under grading portion of contract.
Existing Ground
Elev 635.00

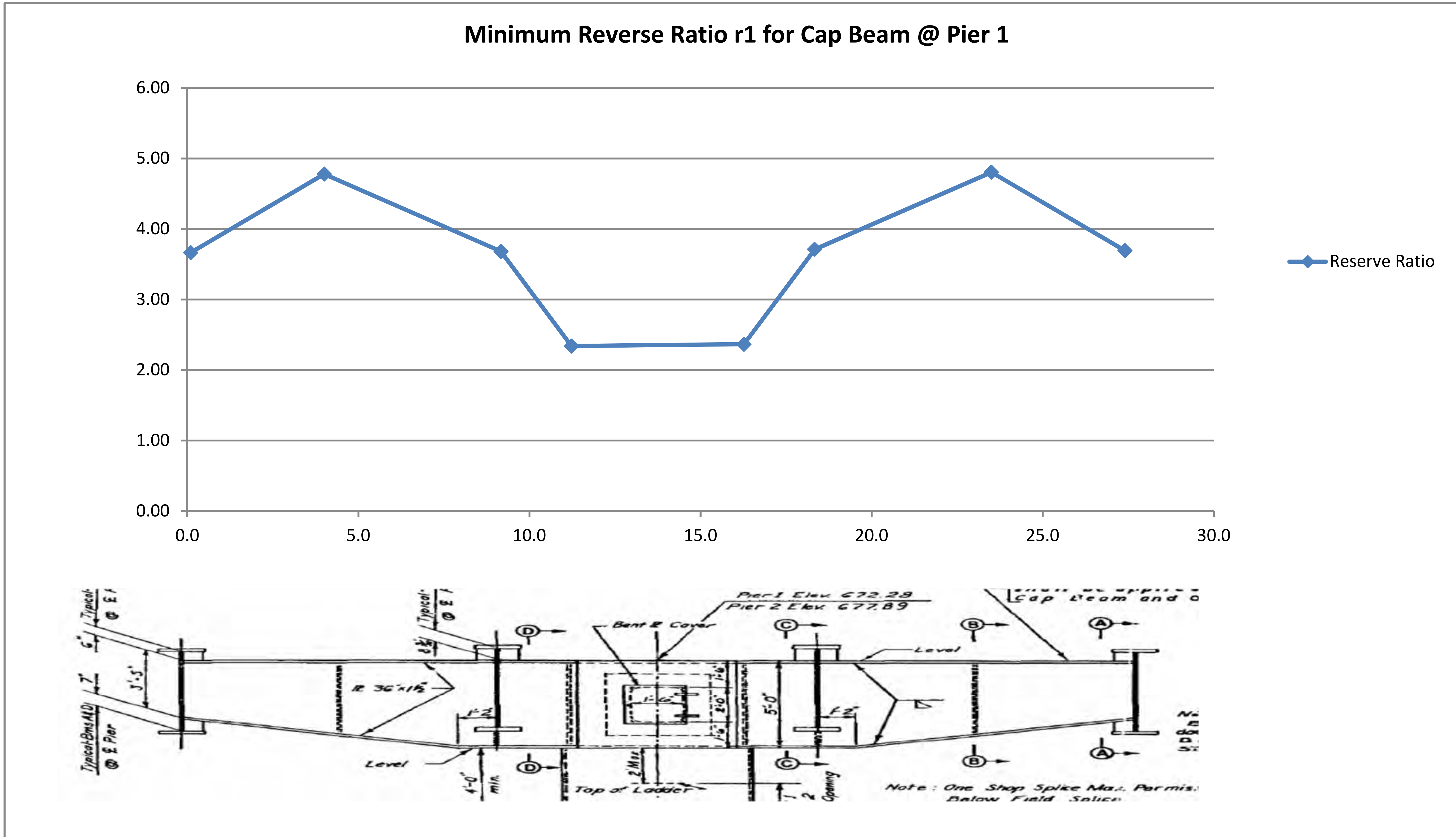

LF1_req'd of Plate Girder w/respect with Minimum r_1
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Exterior Girder D
Interior Girder C
Interior Girder B
Exterior Girder A

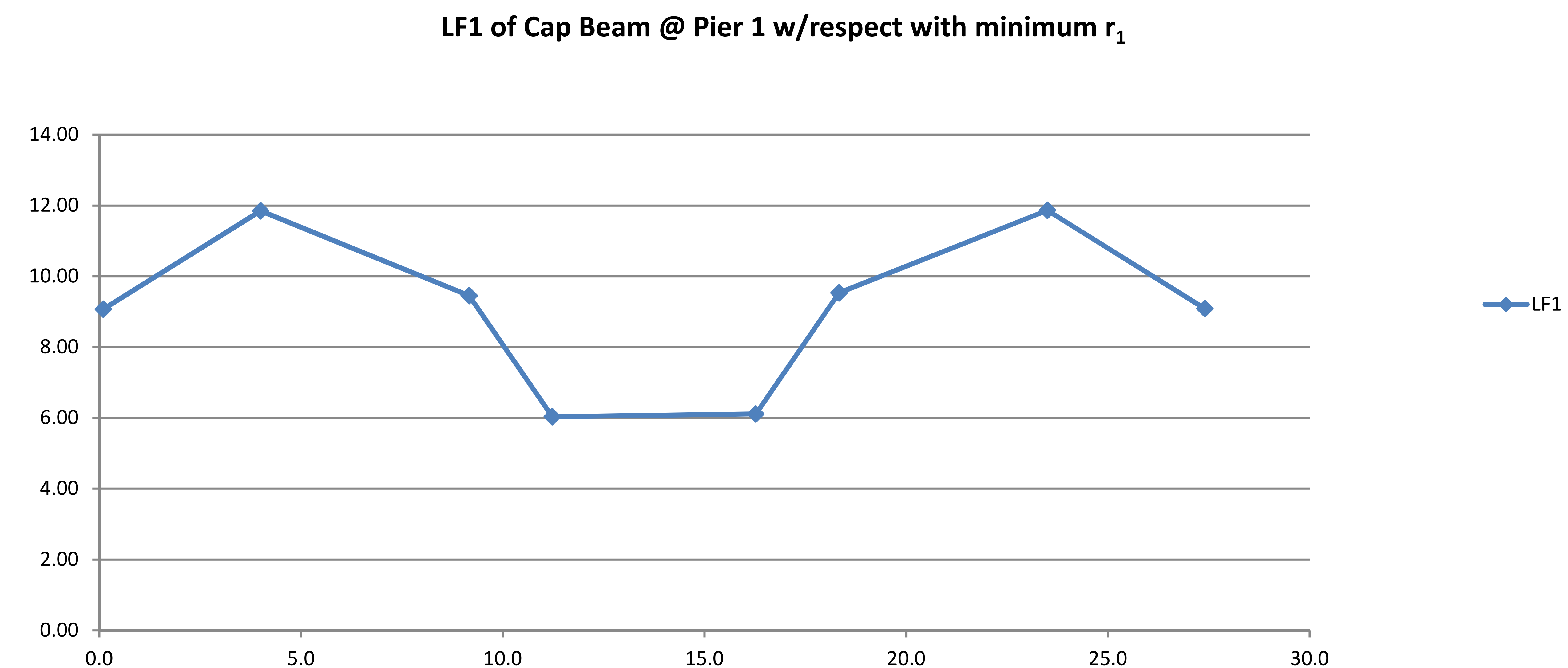

Span 1
℄ Pier 1
Span 2
℄ Pier 2
Span 3
Slope Paving
Upper Limit of Class E Excavation
Clearance to Col.
652.8
652.7
674.34
Slope Paving
Retaining wall to be removed under grading portion of contract.
Existing Ground
Elev 635.00

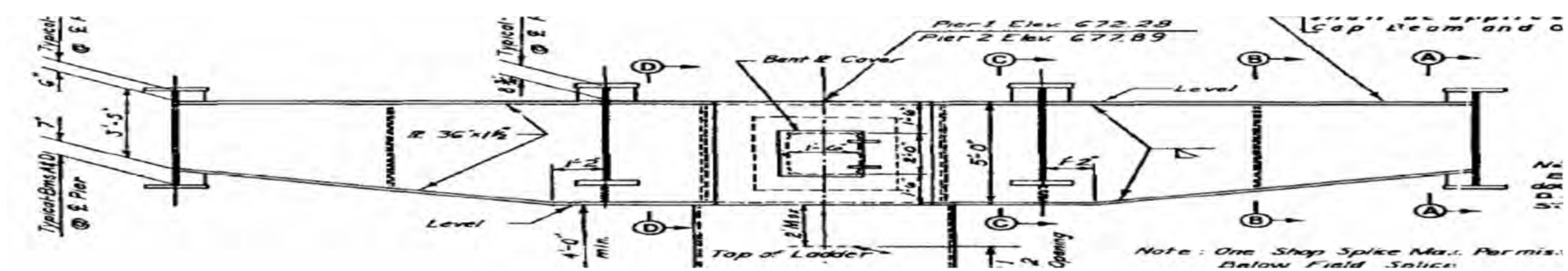
D/C Ratio for Cap Beam @ Pier 1

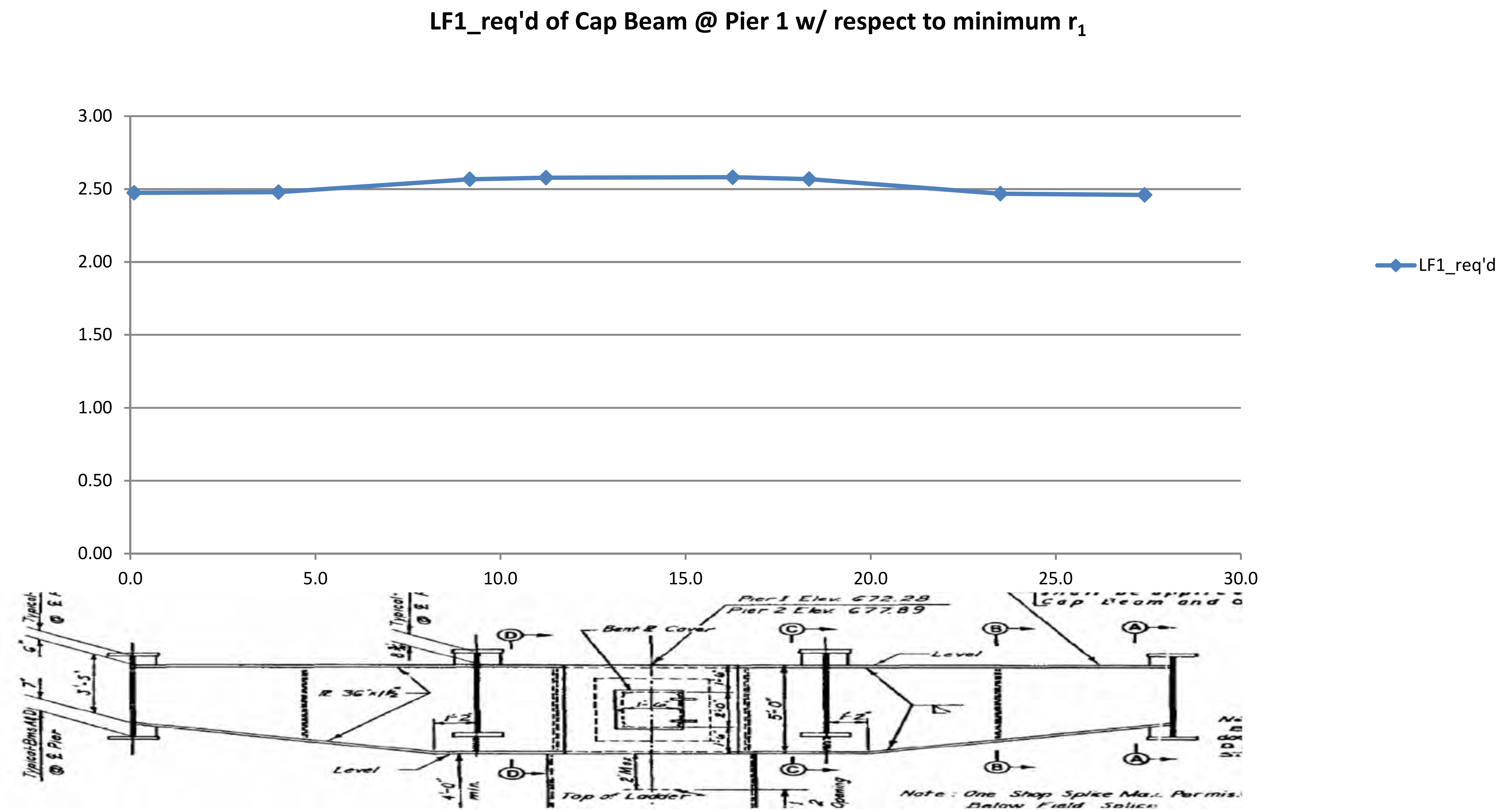




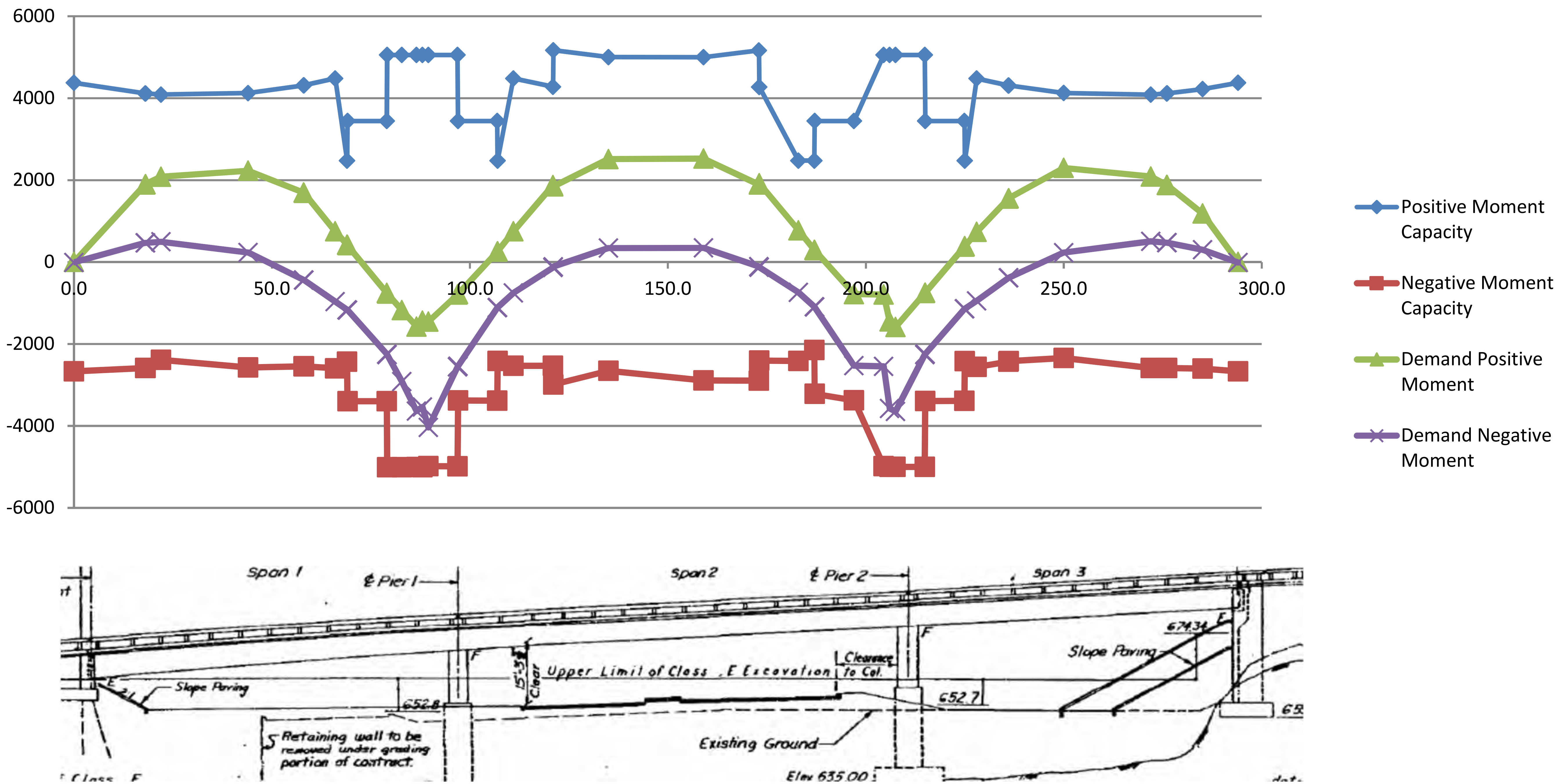

Minimum Reverse Ratio r1 for Cap Beam @ Pier 1
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.0
5.0
10.0
15.0
20.0
25.0
30.0
Reserve Ratio
Pier 1 Elev. 672.28
Pier 2 Elev. 677.89
Bent ℄ Cover
Level
Top of Ladder
Note : One Shop Splice Max. Permis.
Below Field Splice

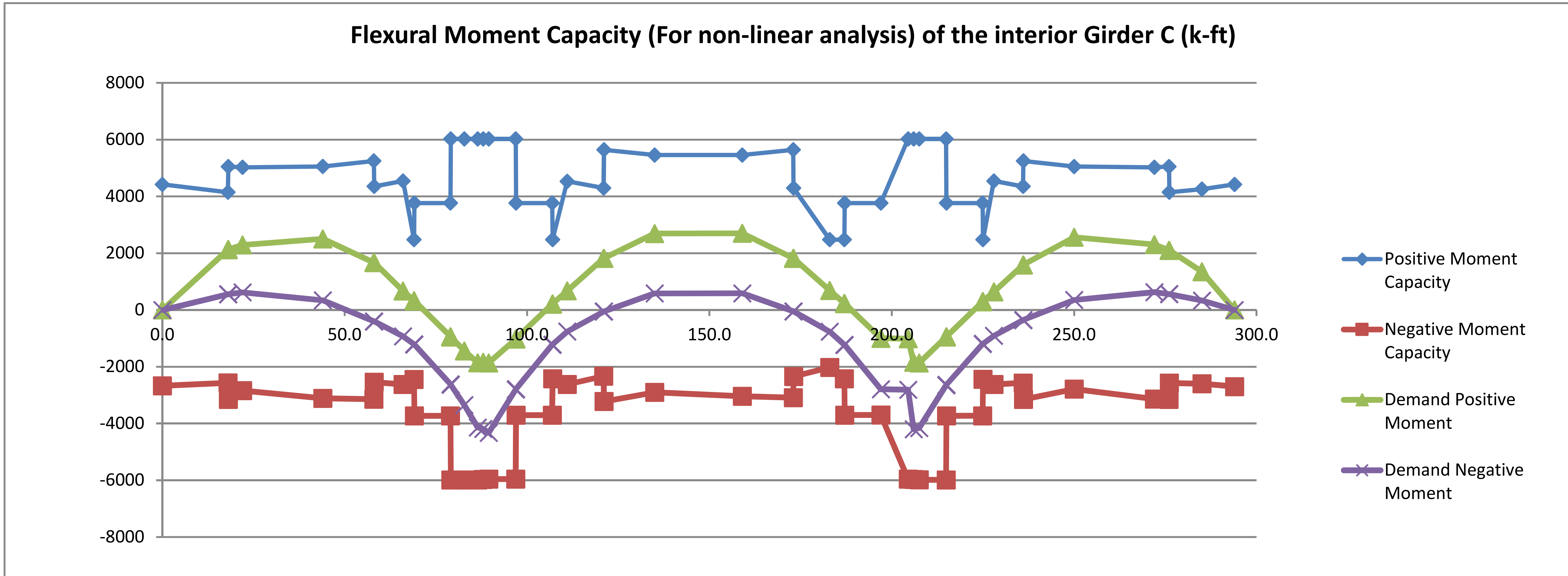

LF1 of Cap Beam @ Pier 1 w/respect with minimum r_1
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.0
5.0
10.0
15.0
20.0
25.0
30.0
LF1

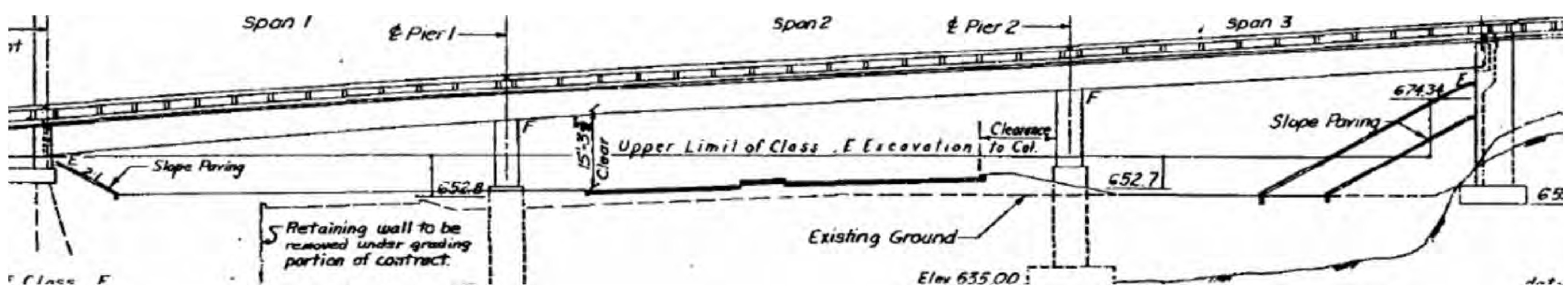

Pier 1 Elev. 672.28
Pier 2 Elev. 677.89
Bent ℄ Cover
Level
Level
Top of Ladder

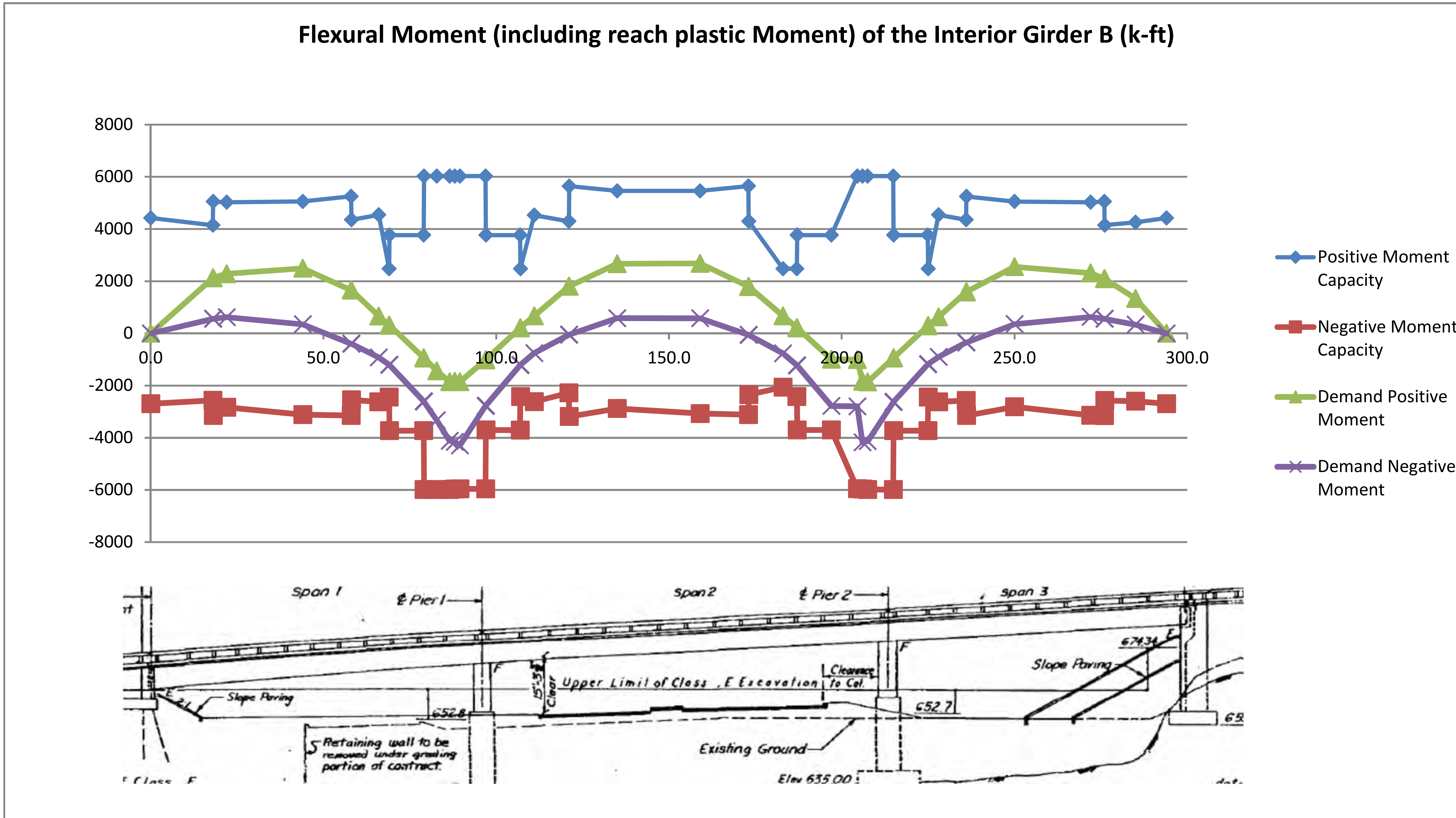

LF1_req'd of Cap Beam @ Pier 1 w/ respect to minimum r_1
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.0
5.0
10.0
15.0
20.0
25.0
30.0
LF1_req'd
Pier 1 Elev. 672.28
Pier 2 Elev. 677.89
Bent Ⓔ Cover
Level
Level
Top of Ladder
Note: One Shop Splice Max. Permis.

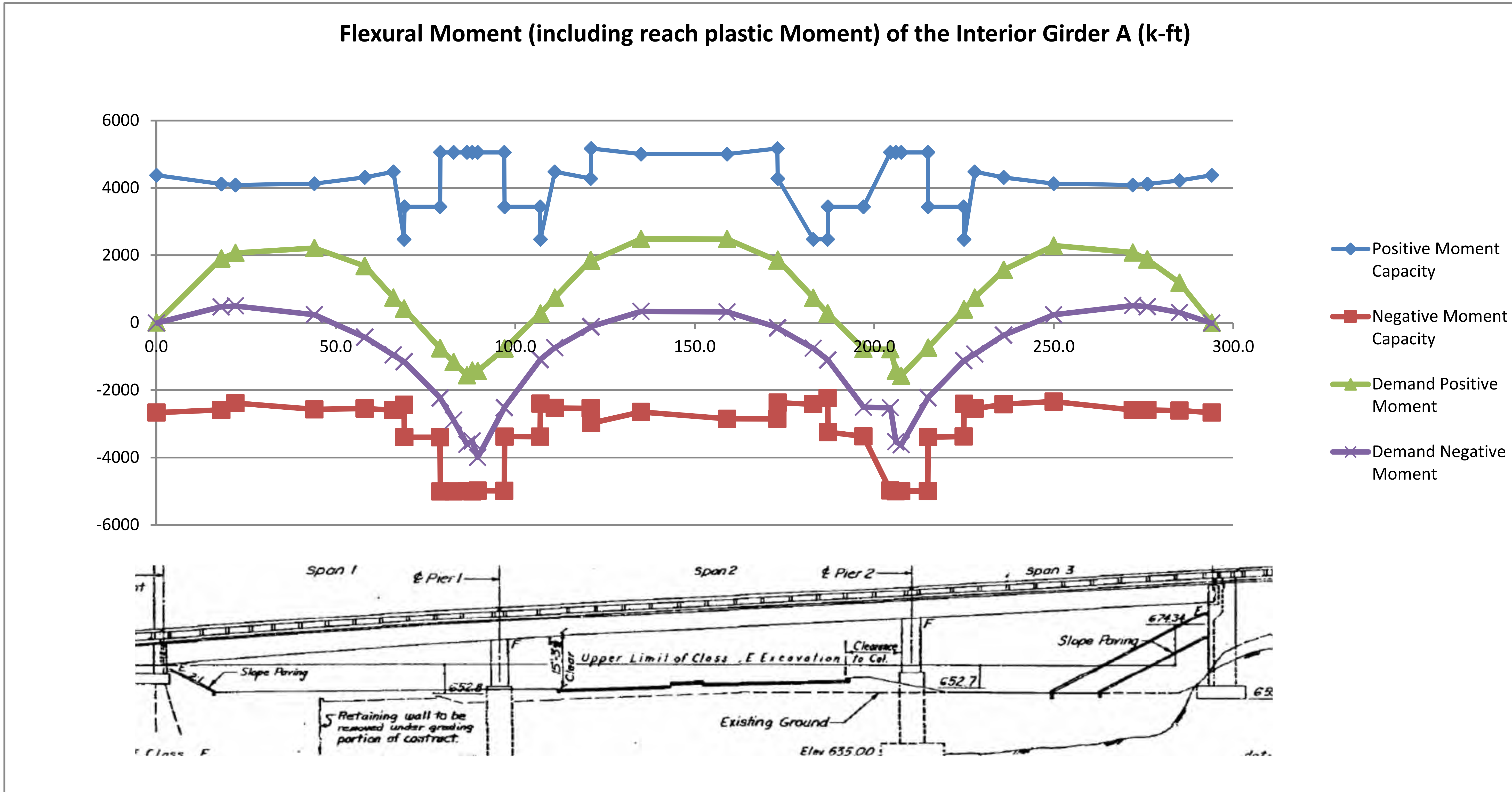
Flexural Moment Capacity (For non-linear analysis) of the Exterior Girder D (k-ft)



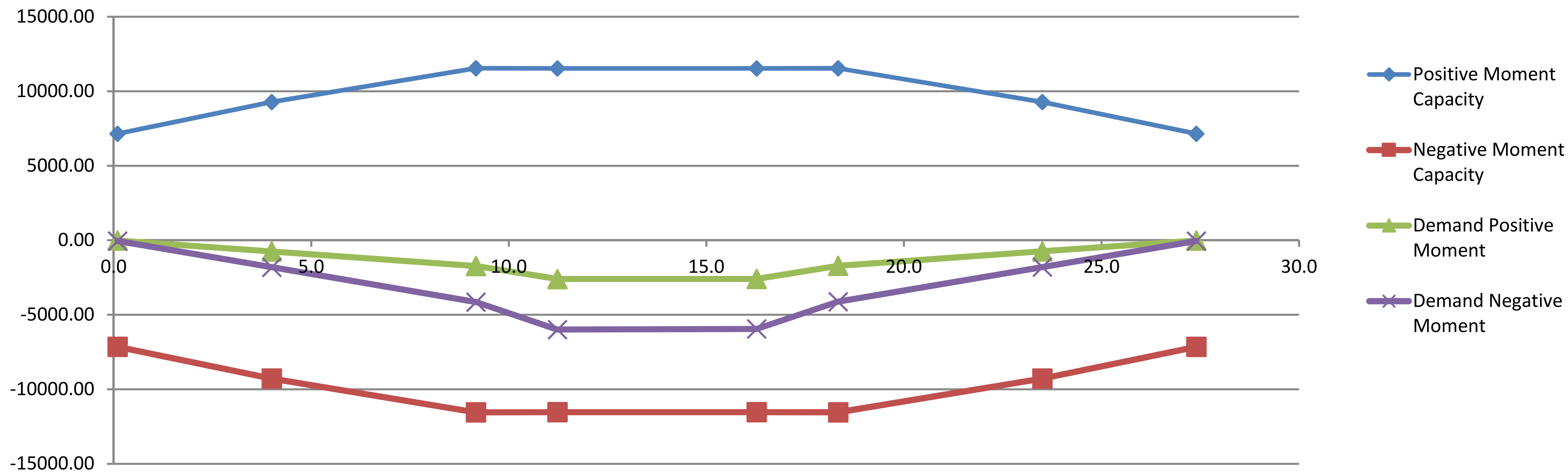

Flexural Moment Capacity (For non-linear analysis) of the interior Girder C (k-ft)
8000
6000
4000
2000
0
-2000
-4000
-6000
-8000
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Positive Moment Capacity
Negative Moment Capacity
Demand Positive Moment
Demand Negative Moment

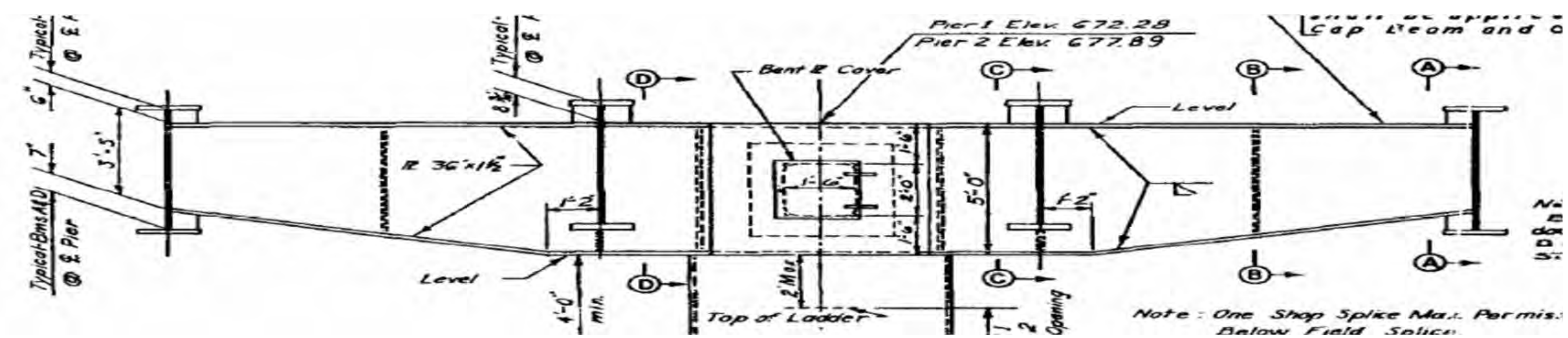

Span 1
℄ Pier 1
Span 2
℄ Pier 2
Span 3
Slope Paving
Upper Limit of Class E Excavation
Clearance to Col.
652.8
652.7
674.34
Retaining wall to be removed under grading portion of contract
Existing Ground
Elev 635.00


Flexural Moment (including reach plastic Moment) of the Interior Girder B (k-ft)
8000
6000
4000
2000
0
-2000
-4000
-6000
-8000
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Positive Moment Capacity
Negative Moment Capacity
Demand Positive Moment
Demand Negative Moment
Span 1
℄ Pier 1
Span 2
℄ Pier 2
Span 3
Slope Paving
Upper Limit of Class E Excavation
Clearance to Col.
652.7
Retaining wall to be removed under grading portion of contract
Existing Ground
Elev 635.00


Flexural Moment (including reach plastic Moment) of the Interior Girder A (k-ft)
6000
4000
2000
0
-2000
-4000
-6000
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Positive Moment Capacity
Negative Moment Capacity
Demand Positive Moment
Demand Negative Moment
Span 1
℄ Pier 1
Span 2
℄ Pier 2
Span 3
Slope Paving
Upper Limit of Class E Excavation
Clearance to Col.
652.8
652.7
674.34
Retaining wall to be removed under grading portion of contract.
Existing Ground
Elev 635.00

Flexural Moment Capacity of the Cap Beam (for Non-linear analysis) @ Pier 1 (k-ft)





2. Design Data

						Load Factor		Resistance Factor		Longitudinal Stiffener dist to Bott Flange		Transverse Stiffener			Hybrid factor	Material Properties														
	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Flange lateral bending stress			Flexual	Shear	No, of Longitudinal stiffener provided ?	Dist from stiffener to bottom flg	Is transverse stiffener provided?	Transverse Stiffener Spacing	Is end panel or interior panel?		Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	Rebar yield strength	Conc deck	Girder E	Conc deck	Modular Ratio	Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Shear Stud Location	Unbracing length for M-	Is Section Loss Considered /
					f_l	Condition Factor ϕ_c	System Factor ϕ_s	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	(Stud provided =Yes: No shear stud = No)	L_b	
								6.5.4.2	6.5.4.2						6.10.1.10.1															
				(ft)	(ksi)						(in)		(ft)			(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)		(in^2)	(in)	(in)	(ft)		(in)	
	S Abutment	1001	Plate Girder	0.010		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
Span 1 -Girder D	Girder D_Sect_1	1002	Plate Girder	18.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_Sect_2	1003	Plate Girder	18.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_@ CF1	1004	Plate Girder	22.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D @ CF2	1005	Plate Girder	44.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_Sect_2	1006	Plate Girder	58.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_Sect_3	1007	Plate Girder	58.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D @ CF3	1008	Plate Girder	66.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder_D_Sect_3	1009	Plate Girder	69.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder D_Sect_4	1010	Plate Girder	69.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder D_Sect_4	1011	Plate Girder	79.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder D_Sect_5	1012	Plate Girder	79.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder D_Sect_5	1013	Plate Girder	82.80		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Pier 1	1014	Plate Girder	86.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Pier 1	1015	Plate Girder	88.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	258.0	No
	Pier 1	1016	Plate Girder	89.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
Span 2 -Girder D	Girder D_Sect_5	1017	Plate Girder	96.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_6	1018	Plate Girder	97.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_6	1019	Plate Girder	106.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_7	1020	Plate Girder	107.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	No	276.0	No
	Girder D @ CF4	1021	Plate Girder	111.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	276.0	No
	Girder D_Sect_7	1022	Plate Girder	121.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder D_Sect_8	1023	Plate Girder	121.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder D @ CF5	1024	Plate Girder	135.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder D @ CF6	1025	Plate Girder	159.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder D_Sect_8	1026	Plate Girder	173.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder D_Sect_9	1027	Plate Girder	173.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder D @ CF7	1028	Plate Girder	183.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	288.0	No
	Girder D_Sect_9	1029	Plate Girder	187.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_10	1030	Plate Girder	187.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_10	1031	Plate Girder	197.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_11	1032	Plate Girder	204.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Pier 2	1033	Plate Girder	206.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	258.0	No
	Pier 2	1034	Plate Girder	207.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
Span 3 - Girder D	Girder D_Sect_11	1035	Plate Girder	214.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_12	1036	Plate Girder	215.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_12	1037	Plate Girder	224.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D_Sect_13	1038	Plate Girder	225.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder D @ CF8	1039	Plate Girder	228.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	276.0	No
	Girder D_Sect_13	1040	Plate Girder	236.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_Sect_14	1041	Plate Girder	236.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D @ CF9	1042	Plate Girder	250.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder_D @ CF10	1043	Plate Girder	272.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_Sect_14	1044	Plate Girder	276.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_Sect_15	1045	Plate Girder	276.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder D_Sect_15	1046	Plate Girder	285.05		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	N Abutment	1047	Plate Girder	294.00		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No

Designed by: MX on 08/20/17
Checked by: TFK on 08/21/17
Backchecked by: MX on 08/29/17

					Non-Composite Section																
	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange
					b_{f_top}	$t_{\_top\ flg}$	$A_{\_st\_top\_flg}$	b_{f_bott}	$t_{\_bott\ flg}$	$A_{\_st\_bott\_flg}$	$D_{\_web}$	$t_{\_web}$	$A_{\_web}$	$A_{\_steel}$	$I_{\_steel}$	Y_T	Y_D	$S_{\_top\_flg}$	$S_{\_bott\_flg}$	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$
				(ft)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^4)	(in^4)
	S Abutment	1001	Plate Girder	0.010	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
Span 1 -Girder D	Girder D_Sect_1	1002	Plate Girder	18.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_2	1003	Plate Girder	18.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_@ CF1	1004	Plate Girder	22.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D @ CF2	1005	Plate Girder	44.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_2	1006	Plate Girder	58.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_3	1007	Plate Girder	58.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D @ CF3	1008	Plate Girder	66.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder_D_Sect_3	1009	Plate Girder	69.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_4	1010	Plate Girder	69.10	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_4	1011	Plate Girder	79.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_5	1012	Plate Girder	79.10	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Girder D_Sect_5	1013	Plate Girder	82.80	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 1	1014	Plate Girder	86.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 1	1015	Plate Girder	88.00	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 1	1016	Plate Girder	89.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
Span 2 -Girder D	Girder D_Sect_5	1017	Plate Girder	96.90	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Girder D_Sect_6	1018	Plate Girder	97.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_6	1019	Plate Girder	106.90	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_7	1020	Plate Girder	107.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D @ CF4	1021	Plate Girder	111.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_7	1022	Plate Girder	121.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_8	1023	Plate Girder	121.10	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder D @ CF5	1024	Plate Girder	135.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder D @ CF6	1025	Plate Girder	159.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder D_Sect_8	1026	Plate Girder	173.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder D_Sect_9	1027	Plate Girder	173.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D @ CF7	1028	Plate Girder	183.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_9	1029	Plate Girder	187.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_10	1030	Plate Girder	187.10	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_10	1031	Plate Girder	197.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_11	1032	Plate Girder	204.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 2	1033	Plate Girder	206.00	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 2	1034	Plate Girder	207.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
Span 3 - Girder D	Girder D_Sect_11	1035	Plate Girder	214.90	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Girder D_Sect_12	1036	Plate Girder	215.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_12	1037	Plate Girder	224.90	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder D_Sect_13	1038	Plate Girder	225.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D @ CF8	1039	Plate Girder	228.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_13	1040	Plate Girder	236.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_14	1041	Plate Girder	236.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D @ CF9	1042	Plate Girder	250.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder_D @ CF10	1043	Plate Girder	272.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_14	1044	Plate Girder	276.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_15	1045	Plate Girder	276.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder D_Sect_15	1046	Plate Girder	285.05	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	N Abutment	1047	Plate Girder	294.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0

Bridge # 69840

Designed by: MX on 08/20/17
Checked by: TFK on 08/21/17
Backchecked by: MX on 08/29/17

					Composite Section with Modular Ratio = n (at Positive Moment Region)							Composite Section with Modular Ratio = 3n(at Positive Moment Reigion)							Composite Section with Modular Ratio = n (at Negative Moment Region)								
	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Joint	Steel Section No.
					$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$	$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		
				(ft)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)		
	S Abutment	1001	Plate Girder	0.010	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	S Abutment	D_Sect_1
Span 1 -Girder D	Girder D_Sect_1	1002	Plate Girder	18.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_1	D_Sect_1
	Girder D_Sect_2	1003	Plate Girder	18.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_2	D_Sect_2
	Girder D_@ CF1	1004	Plate Girder	22.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_@ CF1	D_Sect_2
	Girder D @ CF2	1005	Plate Girder	44.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D @ CF2	D_Sect_2
	Girder D_Sect_2	1006	Plate Girder	58.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_2	D_Sect_2
	Girder D_Sect_3	1007	Plate Girder	58.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_3	D_Sect_3
	Girder D @ CF3	1008	Plate Girder	66.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D @ CF3	D_Sect_3
	Girder_D_Sect_3	1009	Plate Girder	69.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder_D_Sect_3	D_Sect_3
	Girder D_Sect_4	1010	Plate Girder	69.10	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_4	D_Sect_4
	Girder D_Sect_4	1011	Plate Girder	79.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_4	D_Sect_4
	Girder D_Sect_5	1012	Plate Girder	79.10	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder D_Sect_5	D_Sect_5
	Girder D_Sect_5	1013	Plate Girder	82.80	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder D_Sect_5	D_Sect_5
	Pier 1	1014	Plate Girder	86.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 1	D_Sect_5
	Pier 1	1015	Plate Girder	88.00	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 1	D_Sect_5
	Pier 1	1016	Plate Girder	89.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 1	D_Sect_5
Span 2 -Girder D	Girder D_Sect_5	1017	Plate Girder	96.90	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder D_Sect_5	D_Sect_5
	Girder D_Sect_6	1018	Plate Girder	97.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_6	D_Sect_6
	Girder D_Sect_6	1019	Plate Girder	106.90	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_6	D_Sect_6
	Girder D_Sect_7	1020	Plate Girder	107.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder D_Sect_7	D_Sect_7
	Girder D @ CF4	1021	Plate Girder	111.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D @ CF4	D_Sect_7
	Girder D_Sect_7	1022	Plate Girder	121.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_7	D_Sect_7
	Girder D_Sect_8	1023	Plate Girder	121.10	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder D_Sect_8	D_Sect_8
	Girder D @ CF5	1024	Plate Girder	135.00	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder D @ CF5	D_Sect_8
	Girder D @ CF6	1025	Plate Girder	159.00	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder D @ CF6	D_Sect_8
	Girder D_Sect_8	1026	Plate Girder	173.00	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder D_Sect_8	D_Sect_8
	Girder D_Sect_9	1027	Plate Girder	173.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_9	D_Sect_9
	Girder D @ CF7	1028	Plate Girder	183.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder D @ CF7	D_Sect_9
	Girder D_Sect_9	1029	Plate Girder	187.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder D_Sect_9	D_Sect_9
	Girder D_Sect_10	1030	Plate Girder	187.10	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_10	D_Sect_10
	Girder D_Sect_10	1031	Plate Girder	197.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_10	D_Sect_10
	Girder D_Sect_11	1032	Plate Girder	204.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder D_Sect_11	D_Sect_11
	Pier 2	1033	Plate Girder	206.00	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 2	D_Sect_11
	Pier 2	1034	Plate Girder	207.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 2	D_Sect_11
Span 3 - Girder D	Girder D_Sect_11	1035	Plate Girder	214.90	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder D_Sect_11	D_Sect_11
	Girder D_Sect_12	1036	Plate Girder	215.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_12	D_Sect_12
	Girder D_Sect_12	1037	Plate Girder	224.90	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder D_Sect_12	D_Sect_12
	Girder D_Sect_13	1038	Plate Girder	225.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder D_Sect_13	D_Sect_13
	Girder D @ CF8	1039	Plate Girder	228.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D @ CF8	D_Sect_13
	Girder D_Sect_13	1040	Plate Girder	236.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_13	D_Sect_13
	Girder D_Sect_14	1041	Plate Girder	236.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_14	D_Sect_14
	Girder D @ CF9	1042	Plate Girder	250.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D @ CF9	D_Sect_14
	Girder_D @ CF10	1043	Plate Girder	272.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder_D @ CF10	D_Sect_14
	Girder D_Sect_14	1044	Plate Girder	276.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_14	D_Sect_14
	Girder D_Sect_15	1045	Plate Girder	276.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_15	D_Sect_15
	Girder D_Sect_15	1046	Plate Girder	285.05	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder D_Sect_15	D_Sect_15
	N Abutment	1047	Plate Girder	294.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	N Abutment	D_Sect_15

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Top Flange PL width	Bottom Flange PL width	Top Flange PL thickness	Bottom Flange PL thickness	Top Flg Width (2-L8x8x3/4)	Bottom Flg Width (2_L8x8x3/4)	Area of Top Flg (2-L8x8x3/4)	Area of Bott Flg (2-L8x8x3/4)	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Top Flange: 2-L8x8x3/4			Bottom Flange: 2-L8x8x3/4			Web thickness
					$W_{\_tc1}$	$W_{\_bc1}$	$T_{\_tc1}$	$T_{\_bc1}$	$W_{\_tfg}$	$W_{\_bfg}$	$A_{\_2\text{-}L8x8x3/4}$	$A_{\_2\text{-}L8x8x3/4}$	T_y	B_y	$I_{\_strong\_2\text{-}L8x8x3/4}$	$I_{\_weak\_1\text{-}L8x8x3/4}$	Flg Thickness $T_{\_tflg}$	$I_{\_strong\_2\text{-}L8x8x3/4}$	$I_{\_weak\_2\text{-}L8x8x3/4}$	Flg Thickness $B_{\_tflg}$	$T_{\_web}$
				(ft)	(in)	(in)	(in)	(in)	(in)	(in)	(in^2)	(in^2)	(in)	(in)	(in^4)	(in^4)	(in)	(in^4)	(in^4)	(in)	(in)
	S Abutment	1001	Plate Girder	0.010	16.0	16.0	0.750	0.750	0.000	0.000	0.00	0.00	0	0	0	0	0	0	0	0	0.375
Span 1 -Girder D	Girder D_Sect_1	1002	Plate Girder	18.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_2	1003	Plate Girder	18.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_@ CF1	1004	Plate Girder	22.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF2	1005	Plate Girder	44.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_2	1006	Plate Girder	58.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_3	1007	Plate Girder	58.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF3	1008	Plate Girder	66.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder_D_Sect_3	1009	Plate Girder	69.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_4	1010	Plate Girder	69.10	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_4	1011	Plate Girder	79.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_5	1012	Plate Girder	79.10	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_5	1013	Plate Girder	82.80	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1014	Plate Girder	86.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1015	Plate Girder	88.00	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1016	Plate Girder	89.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 2 -Girder D	Girder D_Sect_5	1017	Plate Girder	96.90	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_6	1018	Plate Girder	97.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_6	1019	Plate Girder	106.90	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_7	1020	Plate Girder	107.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF4	1021	Plate Girder	111.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_7	1022	Plate Girder	121.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_8	1023	Plate Girder	121.10	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF5	1024	Plate Girder	135.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF6	1025	Plate Girder	159.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_8	1026	Plate Girder	173.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_9	1027	Plate Girder	173.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF7	1028	Plate Girder	183.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_9	1029	Plate Girder	187.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_10	1030	Plate Girder	187.10	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_10	1031	Plate Girder	197.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_11	1032	Plate Girder	204.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1033	Plate Girder	206.00	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1034	Plate Girder	207.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 3 - Girder D	Girder D_Sect_11	1035	Plate Girder	214.90	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_12	1036	Plate Girder	215.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_12	1037	Plate Girder	224.90	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_13	1038	Plate Girder	225.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF8	1039	Plate Girder	228.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_13	1040	Plate Girder	236.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_14	1041	Plate Girder	236.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D @ CF9	1042	Plate Girder	250.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder_D @ CF10	1043	Plate Girder	272.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_14	1044	Plate Girder	276.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_15	1045	Plate Girder	276.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder D_Sect_15	1046	Plate Girder	285.05	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	N Abutment	1047	Plate Girder	294.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Web depth	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Left Stringer Spacing	Right Stringer Spacing	Overhang Width	Effective Width (Link from plan)	Total thickness of concrete deck	Thickness of wearing surface	Effective thickness of concrete deck	Fillet Height	Fillet Width	% of rebar within effective of deck	Area of rebar within effective deck width
					$D_{\_web}$	T_x	B_x	$S_{\_Left\ Stringer}$	$S_{\_Right\_Stringer}$	$b_{\_overhang}$	$B_{\_effective}$	$t_{\_deck\_total}$	$t_{\_wearing}$	$t_{\_deck\_effective}$	$H_{\_fillet}$	$b_{\_fillet}$		A_{rs}
				(ft)	(in)	(in)	(in)	(ft)	(ft)	(ft)	(ft)	(in)	(in)	(in)	(in)	(in)		(in^2)
	S Abutment	1001	Plate Girder	0.010	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16.0	0.614%	4.423
Span 1 -Girder D	Girder D_Sect_1	1002	Plate Girder	18.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_2	1003	Plate Girder	18.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_@ CF1	1004	Plate Girder	22.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D @ CF2	1005	Plate Girder	44.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_2	1006	Plate Girder	58.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_3	1007	Plate Girder	58.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D @ CF3	1008	Plate Girder	66.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder_D_Sect_3	1009	Plate Girder	69.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder D_Sect_4	1010	Plate Girder	69.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder D_Sect_4	1011	Plate Girder	79.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder D_Sect_5	1012	Plate Girder	79.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder D_Sect_5	1013	Plate Girder	82.80	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1014	Plate Girder	86.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1015	Plate Girder	88.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1016	Plate Girder	89.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
Span 2 -Girder D	Girder D_Sect_5	1017	Plate Girder	96.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder D_Sect_6	1018	Plate Girder	97.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder D_Sect_6	1019	Plate Girder	106.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_7	1020	Plate Girder	107.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D @ CF4	1021	Plate Girder	111.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_7	1022	Plate Girder	121.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_8	1023	Plate Girder	121.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D @ CF5	1024	Plate Girder	135.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D @ CF6	1025	Plate Girder	159.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_8	1026	Plate Girder	173.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_9	1027	Plate Girder	173.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D @ CF7	1028	Plate Girder	183.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D_Sect_9	1029	Plate Girder	187.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D_Sect_10	1030	Plate Girder	187.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D_Sect_10	1031	Plate Girder	197.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D_Sect_11	1032	Plate Girder	204.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Pier 2	1033	Plate Girder	206.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Pier 2	1034	Plate Girder	207.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
Span 3 - Girder D	Girder D_Sect_11	1035	Plate Girder	214.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D_Sect_12	1036	Plate Girder	215.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D_Sect_12	1037	Plate Girder	224.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D_Sect_13	1038	Plate Girder	225.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder D @ CF8	1039	Plate Girder	228.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_13	1040	Plate Girder	236.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_14	1041	Plate Girder	236.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D @ CF9	1042	Plate Girder	250.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder_D @ CF10	1043	Plate Girder	272.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_14	1044	Plate Girder	276.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_15	1045	Plate Girder	276.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder D_Sect_15	1046	Plate Girder	285.05	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	N Abutment	1047	Plate Girder	294.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Flange lateral bending stress	Load Factor		Resistance Factor: Flexual	Resistance Factor: Shear	Longitudinal Stiffener dist to Bott Flange: No, of Longitudinal stiffener provided ?	Longitudinal Stiffener dist to Bott Flange: Dist from stiffener to bottom flg	Transverse Stiffener: Is transverse stiffener provided?	Transverse Stiffener: Transverse Stiffener Spacing	Transverse Stiffener: Is end panel or interior panel?	Hybrid factor	Material Properties: Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	Rebar yield strength	Conc deck	Girder E	Conc deck	Modular Ratio	Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Shear Stud Location	Unbracing length for M-	Is Section Loss Considered /
					f_l	Condition Factor ϕ_c	System Factor ϕs	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	(Stud provided =Yes: No shear stud = No)	L_b	
								6.5.4.2	6.5.4.2						6.10.1.10.1															
				(ft)	(ksi)						(in)		(ft)			(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)		(in^2)	(in)	(in)	(ft)		(in)	
	S Abutment	1048	Plate Girder	0.010		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
Span 1 -Girder C	Girder C_Sect_1	1049	Plate Girder	18.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_2	1050	Plate Girder	18.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder CF1	1051	Plate Girder	22.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder CF2	1052	Plate Girder	44.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_2	1053	Plate Girder	58.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_3	1054	Plate Girder	58.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C @ CF3	1055	Plate Girder	66.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_3	1056	Plate Girder	69.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder C_Sect_4	1057	Plate Girder	69.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder C_Sect_4	1058	Plate Girder	79.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder C_Sect_5	1059	Plate Girder	79.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder C_Sect_5	1060	Plate Girder	82.80		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Pier 1	1061	Plate Girder	86.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Pier 1	1062	Plate Girder	88.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	258.0	No
	Pier 1	1063	Plate Girder	89.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
Span 2 -Girder C	Girder C_Sect_5	1064	Plate Girder	96.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_6	1065	Plate Girder	97.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_6	1066	Plate Girder	106.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_7	1067	Plate Girder	107.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	No	276.0	No
	Girder C @ CF4	1068	Plate Girder	111.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	276.0	No
	Girder C_Sect_7	1069	Plate Girder	121.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder C_Sect_8	1070	Plate Girder	121.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder C @ CF5	1071	Plate Girder	135.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder C @ CF6	1072	Plate Girder	159.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder C_Sect_8	1073	Plate Girder	173.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder C_Sect_9	1074	Plate Girder	173.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder @ CF7	1075	Plate Girder	183.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	288.0	No
	Girder C_Sect_9	1076	Plate Girder	187.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_10	1077	Plate Girder	187.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_10	1078	Plate Girder	197.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_11	1079	Plate Girder	204.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Pier 2	1080	Plate Girder	206.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	258.0	No
	Pier 2	1081	Plate Girder	207.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
Span 3 - Girder C	Girder C_Sect_11	1082	Plate Girder	214.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_12	1083	Plate Girder	215.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_12	1084	Plate Girder	224.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C_Sect_13	1085	Plate Girder	225.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder C @ CF8	1086	Plate Girder	228.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	276.0	No
	Girder C_Sect_13	1087	Plate Girder	236.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_14	1088	Plate Girder	236.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C @ CF9	1089	Plate Girder	250.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C @ CF10	1090	Plate Girder	272.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_14	1091	Plate Girder	276.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_15	1092	Plate Girder	276.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder C_Sect_15	1093	Plate Girder	285.05		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	N Abutment	1094	Plate Girder	294.00		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No

					Non-Composite Section																
	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange
					b_{f_top}	$t_{\_top\ flg}$	$A_{\_st\_top\_flg}$	b_{f_bott}	$t_{\_bott\ flg}$	$A_{\_st\_bott\_flg}$	$D_{\_web}$	$t_{\_web}$	$A_{\_web}$	$A_{\_steel}$	$I_{\_steel}$	Y_T	Y_D	$S_{\_top\_flg}$	$S_{\_bott\_flg}$	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$
				(ft)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^4)	(in^4)
	S Abutment	1048	Plate Girder	0.010	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
Span 1 -Girder C	Girder C_Sect_1	1049	Plate Girder	18.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_2	1050	Plate Girder	18.10	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder CF1	1051	Plate Girder	22.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder CF2	1052	Plate Girder	44.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder C_Sect_2	1053	Plate Girder	58.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder C_Sect_3	1054	Plate Girder	58.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C @ CF3	1055	Plate Girder	66.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_3	1056	Plate Girder	69.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_4	1057	Plate Girder	69.10	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_4	1058	Plate Girder	79.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_5	1059	Plate Girder	79.10	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Girder C_Sect_5	1060	Plate Girder	82.80	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 1	1061	Plate Girder	86.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 1	1062	Plate Girder	88.00	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 1	1063	Plate Girder	89.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
Span 2 -Girder C	Girder C_Sect_5	1064	Plate Girder	96.90	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Girder C_Sect_6	1065	Plate Girder	97.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_6	1066	Plate Girder	106.90	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_7	1067	Plate Girder	107.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C @ CF4	1068	Plate Girder	111.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_7	1069	Plate Girder	121.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_8	1070	Plate Girder	121.10	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder C @ CF5	1071	Plate Girder	135.00	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder C @ CF6	1072	Plate Girder	159.00	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder C_Sect_8	1073	Plate Girder	173.00	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder C_Sect_9	1074	Plate Girder	173.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder @ CF7	1075	Plate Girder	183.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_9	1076	Plate Girder	187.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_10	1077	Plate Girder	187.10	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_10	1078	Plate Girder	197.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_11	1079	Plate Girder	204.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 2	1080	Plate Girder	206.00	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 2	1081	Plate Girder	207.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
Span 3 - Girder C	Girder C_Sect_11	1082	Plate Girder	214.90	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Girder C_Sect_12	1083	Plate Girder	215.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_12	1084	Plate Girder	224.90	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder C_Sect_13	1085	Plate Girder	225.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C @ CF8	1086	Plate Girder	228.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_13	1087	Plate Girder	236.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_14	1088	Plate Girder	236.10	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder C @ CF9	1089	Plate Girder	250.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder C @ CF10	1090	Plate Girder	272.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder C_Sect_14	1091	Plate Girder	276.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder C_Sect_15	1092	Plate Girder	276.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder C_Sect_15	1093	Plate Girder	285.05	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	N Abutment	1094	Plate Girder	294.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Composite Section with Modular Ratio = n (at Positive Moment Region)							Composite Section with Modular Ratio = 3n(at Positive Moment Reigion)							Composite Section with Modular Ratio = n (at Negative Moment Region)							Joint	Steel Section No.
					Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel		
					$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$	$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		
				(ft)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)		
	S Abutment	1048	Plate Girder	0.010	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	S Abutment	C_Sect_1
Span 1 -Girder C	Girder C_Sect_1	1049	Plate Girder	18.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C_Sect_1	C_Sect_1
	Girder C_Sect_2	1050	Plate Girder	18.10	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder C_Sect_2	C_Sect_2
	Girder CF1	1051	Plate Girder	22.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder CF1	C_Sect_2
	Girder CF2	1052	Plate Girder	44.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder CF2	C_Sect_2
	Girder C_Sect_2	1053	Plate Girder	58.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder C_Sect_2	C_Sect_2
	Girder C_Sect_3	1054	Plate Girder	58.10	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C_Sect_3	C_Sect_3
	Girder C @ CF3	1055	Plate Girder	66.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C @ CF3	C_Sect_3
	Girder C_Sect_3	1056	Plate Girder	69.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder C_Sect_3	C_Sect_3
	Girder C_Sect_4	1057	Plate Girder	69.10	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_4	C_Sect_4
	Girder C_Sect_4	1058	Plate Girder	79.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_4	C_Sect_4
	Girder C_Sect_5	1059	Plate Girder	79.10	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder C_Sect_5	C_Sect_5
	Girder C_Sect_5	1060	Plate Girder	82.80	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder C_Sect_5	C_Sect_5
	Pier 1	1061	Plate Girder	86.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 1	C_Sect_5
	Pier 1	1062	Plate Girder	88.00	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 1	C_Sect_5
	Pier 1	1063	Plate Girder	89.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 1	C_Sect_5
Span 2 -Girder C	Girder C_Sect_5	1064	Plate Girder	96.90	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder C_Sect_5	C_Sect_5
	Girder C_Sect_6	1065	Plate Girder	97.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_6	C_Sect_6
	Girder C_Sect_6	1066	Plate Girder	106.90	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_6	C_Sect_6
	Girder C_Sect_7	1067	Plate Girder	107.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder C_Sect_7	C_Sect_7
	Girder C @ CF4	1068	Plate Girder	111.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C @ CF4	C_Sect_7
	Girder C_Sect_7	1069	Plate Girder	121.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C_Sect_7	C_Sect_7
	Girder C_Sect_8	1070	Plate Girder	121.10	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder C_Sect_8	C_Sect_8
	Girder C @ CF5	1071	Plate Girder	135.00	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder C @ CF5	C_Sect_8
	Girder C @ CF6	1072	Plate Girder	159.00	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder C @ CF6	C_Sect_8
	Girder C_Sect_8	1073	Plate Girder	173.00	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder C_Sect_8	C_Sect_8
	Girder C_Sect_9	1074	Plate Girder	173.10	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C_Sect_9	C_Sect_9
	Girder @ CF7	1075	Plate Girder	183.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder @ CF7	C_Sect_9
	Girder C_Sect_9	1076	Plate Girder	187.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder C_Sect_9	C_Sect_9
	Girder C_Sect_10	1077	Plate Girder	187.10	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_1	C_Sect_10
	Girder C_Sect_10	1078	Plate Girder	197.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_1	C_Sect_10
	Girder C_Sect_11	1079	Plate Girder	204.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder C_Sect_1	C_Sect_11
	Pier 2	1080	Plate Girder	206.00	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 2	C_Sect_11
	Pier 2	1081	Plate Girder	207.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 2	C_Sect_11
Span 3 - Girder C	Girder C_Sect_11	1082	Plate Girder	214.90	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder C_Sect_1	C_Sect_11
	Girder C_Sect_12	1083	Plate Girder	215.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_1	C_Sect_12
	Girder C_Sect_12	1084	Plate Girder	224.90	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder C_Sect_1	C_Sect_12
	Girder C_Sect_13	1085	Plate Girder	225.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder C_Sect_1	C_Sect_13
	Girder C @ CF8	1086	Plate Girder	228.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C @ CF8	C_Sect_13
	Girder C_Sect_13	1087	Plate Girder	236.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C_Sect_1	C_Sect_13
	Girder C_Sect_14	1088	Plate Girder	236.10	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder C_Sect_1	C_Sect_14
	Girder C @ CF9	1089	Plate Girder	250.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder C @ CF9	C_Sect_14
	Girder C @ CF10	1090	Plate Girder	272.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder C @ CF1	C_Sect_14
	Girder C_Sect_14	1091	Plate Girder	276.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder C_Sect_1	C_Sect_14
	Girder C_Sect_15	1092	Plate Girder	276.10	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C_Sect_1	C_Sect_15
	Girder C_Sect_15	1093	Plate Girder	285.05	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder C_Sect_1	C_Sect_15
	N Abutment	1094	Plate Girder	294.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	N Abutment	C_Sect_15

Bridge # 69840

Designed by: MX on 08/20/17
Checked by: TFK on 08/21/17
Backchecked by: MX on 08/29/17

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Top Flange PL width	Bottom Flange PL width	Top Flange PL thickness	Bottom Flange PL thickness	Top Flg Width (2-L8x8x3/4)	Bottom Flg Width (2_L8x8x3/4)	Area of Top Flg (2-L8x8x3/4)	Area of Bott Flg (2-L8x8x3/4)	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Top Flange: 2-L8x8x3/4			Bottom Flange: 2-L8x8x3/4			Web thickness
					$W_{\_tc1}$	$W_{\_bc1}$	$T_{\_tc1}$	$T_{\_bc1}$	$W_{\_tfg}$	$W_{\_bfg}$	$A_{\_2\text{-}L8x8x3/4}$	$A_{\_2\text{-}L8x8x3/4}$	T_y	B_y	$I_{\_strong\_2\text{-}L8x8x3/4}$	$I_{\_weak\_1\text{-}L8x8x3/4}$	Flg Thickness $T_{\_tflg}$	$I_{\_strong\_2\text{-}L8x8x3/4}$	$I_{\_weak\_2\text{-}L8x8x3/4}$	Flg Thickness $B_{\_tflg}$	$T_{\_web}$
				(ft)	(in)	(in)	(in)	(in)	(in)	(in)	(in^2)	(in^2)	(in)	(in)	(in^4)	(in^4)	(in)	(in^4)	(in^4)	(in)	(in)
	S Abutment	1048	Plate Girder	0.010	16.0	16.0	0.750	0.750	0.000	0.000	0.00	0.00	0	0	0	0	0	0	0	0	0.375
Span 1 -Girder C	Girder C_Sect_1	1049	Plate Girder	18.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_2	1050	Plate Girder	18.10	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder CF1	1051	Plate Girder	22.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder CF2	1052	Plate Girder	44.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_2	1053	Plate Girder	58.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_3	1054	Plate Girder	58.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C @ CF3	1055	Plate Girder	66.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_3	1056	Plate Girder	69.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_4	1057	Plate Girder	69.10	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_4	1058	Plate Girder	79.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_5	1059	Plate Girder	79.10	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_5	1060	Plate Girder	82.80	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1061	Plate Girder	86.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1062	Plate Girder	88.00	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1063	Plate Girder	89.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 2 -Girder C	Girder C_Sect_5	1064	Plate Girder	96.90	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_6	1065	Plate Girder	97.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_6	1066	Plate Girder	106.90	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_7	1067	Plate Girder	107.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C @ CF4	1068	Plate Girder	111.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_7	1069	Plate Girder	121.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_8	1070	Plate Girder	121.10	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C @ CF5	1071	Plate Girder	135.00	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C @ CF6	1072	Plate Girder	159.00	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_8	1073	Plate Girder	173.00	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_9	1074	Plate Girder	173.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder @ CF7	1075	Plate Girder	183.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_9	1076	Plate Girder	187.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_10	1077	Plate Girder	187.10	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_10	1078	Plate Girder	197.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_11	1079	Plate Girder	204.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1080	Plate Girder	206.00	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1081	Plate Girder	207.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 3 - Girder C	Girder C_Sect_11	1082	Plate Girder	214.90	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_12	1083	Plate Girder	215.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_12	1084	Plate Girder	224.90	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_13	1085	Plate Girder	225.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C @ CF8	1086	Plate Girder	228.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_13	1087	Plate Girder	236.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_14	1088	Plate Girder	236.10	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C @ CF9	1089	Plate Girder	250.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C @ CF10	1090	Plate Girder	272.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_14	1091	Plate Girder	276.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_15	1092	Plate Girder	276.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder C_Sect_15	1093	Plate Girder	285.05	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	N Abutment	1094	Plate Girder	294.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375

	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Web depth	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Left Stringer Spacing	Right Stringer Spacing	Overhang Width	Effective Width (Link from plan)	Total thickness of concrete deck	Thickness of wearing surface	Effective thickness of concrete deck	Fillet Height	Fillet Width	% of rebar within effective of deck	Area of rebar within effective deck width
					$D_{\_web}$	T_x	B_x	$S_{\_Left\ Stringer}$	$S_{\_Right\_Stringer}$	$b_{\_overhang}$	$B_{\_effective}$	$t_{\_deck\_total}$	$t_{\_wearing}$	$t_{\_deck\_effective}$	$H_{\_fillet}$	$b_{\_fillet}$		A_{rs}
				(ft)	(in)	(in)	(in)	(ft)	(ft)	(ft)	(ft)	(in)	(in)	(in)	(in)	(in)		(in^2)
	S Abutment	1048	Plate Girder	0.010	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16.0	0.614%	5.406
Span 1 -Girder C	Girder C_Sect_1	1049	Plate Girder	18.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_2	1050	Plate Girder	18.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder CF1	1051	Plate Girder	22.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder CF2	1052	Plate Girder	44.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_2	1053	Plate Girder	58.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_3	1054	Plate Girder	58.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C @ CF3	1055	Plate Girder	66.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_3	1056	Plate Girder	69.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder C_Sect_4	1057	Plate Girder	69.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder C_Sect_4	1058	Plate Girder	79.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder C_Sect_5	1059	Plate Girder	79.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder C_Sect_5	1060	Plate Girder	82.80	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1061	Plate Girder	86.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1062	Plate Girder	88.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1063	Plate Girder	89.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
Span 2 -Girder C	Girder C_Sect_5	1064	Plate Girder	96.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder C_Sect_6	1065	Plate Girder	97.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder C_Sect_6	1066	Plate Girder	106.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_7	1067	Plate Girder	107.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C @ CF4	1068	Plate Girder	111.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_7	1069	Plate Girder	121.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_8	1070	Plate Girder	121.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C @ CF5	1071	Plate Girder	135.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C @ CF6	1072	Plate Girder	159.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_8	1073	Plate Girder	173.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_9	1074	Plate Girder	173.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder @ CF7	1075	Plate Girder	183.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C_Sect_9	1076	Plate Girder	187.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C_Sect_10	1077	Plate Girder	187.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C_Sect_10	1078	Plate Girder	197.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C_Sect_11	1079	Plate Girder	204.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Pier 2	1080	Plate Girder	206.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Pier 2	1081	Plate Girder	207.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
Span 3 - Girder C	Girder C_Sect_11	1082	Plate Girder	214.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C_Sect_12	1083	Plate Girder	215.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C_Sect_12	1084	Plate Girder	224.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C_Sect_13	1085	Plate Girder	225.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder C @ CF8	1086	Plate Girder	228.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_13	1087	Plate Girder	236.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_14	1088	Plate Girder	236.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C @ CF9	1089	Plate Girder	250.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C @ CF10	1090	Plate Girder	272.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_14	1091	Plate Girder	276.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_15	1092	Plate Girder	276.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder C_Sect_15	1093	Plate Girder	285.05	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	N Abutment	1094	Plate Girder	294.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406

								Resistance Factor		Longitudinal Stiffener dist to Bott Flange		Transverse Stiffener			Hybrid factor	Material Properties														
	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Flange lateral bending stress	Load Factor		Flexual	Shear	No. of Longitudinal stiffener provided ?	Dist from stiffener to bottom flg	Is transverse stiffener provided?	Transverse Stiffener Spacing	Is end panel or interior panel?		Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	Rebar yield strength	Conc deck	Girder E	Conc deck	Modular Ratio	Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Shear Stud Location	Unbracing length for M-	Is Section Loss Considered /
					f_l	Condition Factor ϕ_c	System Factor ϕs	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f'_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	(Stud provided =Yes: No shear stud = No)	L_b	
								6.5.4.2	6.5.4.2						6.10.1.10.1															
				(ft)	(ksi)						(in)		(ft)			(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)		(in^2)	(in)	(in)	(ft)		(in)	
	S Abutment	1095	Plate Girder	0.010		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
Span 1 -Girder B	Girder B_Sect_1	1096	Plate Girder	18.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_2	1097	Plate Girder	18.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B @ CF1	1098	Plate Girder	22.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B @ CF2	1099	Plate Girder	44.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_2	1100	Plate Girder	58.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_3	1101	Plate Girder	58.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B @ CF3	1102	Plate Girder	66.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_3	1103	Plate Girder	69.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder B_Sect_4	1104	Plate Girder	69.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder B_Sect_4	1105	Plate Girder	79.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder B_Sect_5	1106	Plate Girder	79.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Girder B_Sect_5	1107	Plate Girder	82.80		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Pier 1	1108	Plate Girder	86.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	264.0	No
	Pier 1	1109	Plate Girder	88.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	258.0	No
	Pier 1	1110	Plate Girder	89.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
Span 2 -Girder B	Girder B_Sect_5	1111	Plate Girder	96.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_6	1112	Plate Girder	97.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_6	1113	Plate Girder	106.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_7	1114	Plate Girder	107.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	No	276.0	No
	Girder B @ CF4	1115	Plate Girder	111.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	276.0	No
	Girder B_Sect_7	1116	Plate Girder	121.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder B_Sect_8	1117	Plate Girder	121.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder B @ CF5	1118	Plate Girder	135.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder B @ CF6	1119	Plate Girder	159.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder B_Sect_8	1120	Plate Girder	173.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder B_Sect_9	1121	Plate Girder	173.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	288.0	No
	Girder B @ CF7	1122	Plate Girder	183.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	288.0	No
	Girder B_Sect_9	1123	Plate Girder	187.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_10	1124	Plate Girder	187.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_10	1125	Plate Girder	197.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_11	1126	Plate Girder	204.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Pier 2	1127	Plate Girder	206.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	258.0	No
	Pier 2	1128	Plate Girder	207.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
Span 3 - Girder B	Girder B_Sect_11	1129	Plate Girder	214.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_12	1130	Plate Girder	215.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_12	1131	Plate Girder	224.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B_Sect_13	1132	Plate Girder	225.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	9.2	No	276.0	No
	Girder B @ CF8	1133	Plate Girder	228.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	276.0	No
	Girder B_Sect_13	1134	Plate Girder	236.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_14	1135	Plate Girder	236.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B @ CF9	1136	Plate Girder	250.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B @ CF10	1137	Plate Girder	272.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_14	1138	Plate Girder	276.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_15	1139	Plate Girder	276.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	Girder B_Sect_15	1140	Plate Girder	285.05		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No
	N Abutment	1141	Plate Girder	294.00		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	5.4	8.0	1.5	9.2	Yes	264.0	No

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Non-Composite Section: Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange
					b_{f_top}	$t_{\_top\ flg}$	$A_{\_st\_top\_flg}$	b_{f_bott}	$t_{\_bott\ flg}$	$A_{\_st\_bott\_flg}$	$D_{\_web}$	$t_{\_web}$	$A_{\_web}$	$A_{\_steel}$	$I_{\_steel}$	Y_T	Y_D	$S_{\_top\_flg}$	$S_{\_bott\_flg}$	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$
				(ft)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^4)	(in^4)
	S Abutment	1095	Plate Girder	0.010	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
Span 1 -Girder B	Girder B_Sect_1	1096	Plate Girder	18.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_2	1097	Plate Girder	18.10	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B @ CF1	1098	Plate Girder	22.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B @ CF2	1099	Plate Girder	44.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B_Sect_2	1100	Plate Girder	58.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B_Sect_3	1101	Plate Girder	58.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B @ CF3	1102	Plate Girder	66.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_3	1103	Plate Girder	69.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_4	1104	Plate Girder	69.10	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_4	1105	Plate Girder	79.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_5	1106	Plate Girder	79.10	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Girder B_Sect_5	1107	Plate Girder	82.80	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 1	1108	Plate Girder	86.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 1	1109	Plate Girder	88.00	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 1	1110	Plate Girder	89.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
Span 2 -Girder B	Girder B_Sect_5	1111	Plate Girder	96.90	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Girder B_Sect_6	1112	Plate Girder	97.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_6	1113	Plate Girder	106.90	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_7	1114	Plate Girder	107.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B @ CF4	1115	Plate Girder	111.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_7	1116	Plate Girder	121.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_8	1117	Plate Girder	121.10	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder B @ CF5	1118	Plate Girder	135.00	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder B @ CF6	1119	Plate Girder	159.00	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder B_Sect_8	1120	Plate Girder	173.00	16.0	0.750	12.00	16.0	1.125	18.0	54.0	0.3750	20.3	50.3	27031.2	31.1	24.8	869.6	1090.4	256.0	384.0
	Girder B_Sect_9	1121	Plate Girder	173.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B @ CF7	1122	Plate Girder	183.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_9	1123	Plate Girder	187.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_10	1124	Plate Girder	187.10	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_10	1125	Plate Girder	197.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_11	1126	Plate Girder	204.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 2	1127	Plate Girder	206.00	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Pier 2	1128	Plate Girder	207.50	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
Span 3 - Girder B	Girder B_Sect_11	1129	Plate Girder	214.90	16.0	2.125	34.00	16.0	2.125	34.0	54.0	0.3750	20.3	88.3	58496.6	29.1	29.1	2008.5	2008.5	725.3	725.3
	Girder B_Sect_12	1130	Plate Girder	215.00	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_12	1131	Plate Girder	224.90	16.0	1.250	20.00	16.0	1.250	20.0	54.0	0.3750	20.3	60.3	35451.6	28.3	28.3	1254.9	1254.9	426.7	426.7
	Girder B_Sect_13	1132	Plate Girder	225.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B @ CF8	1133	Plate Girder	228.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_13	1134	Plate Girder	236.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_14	1135	Plate Girder	236.10	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B @ CF9	1136	Plate Girder	250.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B @ CF10	1137	Plate Girder	272.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B_Sect_14	1138	Plate Girder	276.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder B_Sect_15	1139	Plate Girder	276.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder B_Sect_15	1140	Plate Girder	285.05	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	N Abutment	1141	Plate Girder	294.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0

					Composite Section with Modular Ratio = n (at Positive Moment Region)							Composite Section with Modular Ratio = 3n(at Positive Moment Reigion)							Composite Section with Modular Ratio = n (at Negative Moment Region)								
	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Joint	Steel Section No.
					$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$	$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		
				(ft)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)		
	S Abutment	1095	Plate Girder	0.010	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	S Abutment	B_Sect_1
Span 1 -Girder B	Girder B_Sect_1	1096	Plate Girder	18.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B_Sect_1	B_Sect_1
	Girder B_Sect_2	1097	Plate Girder	18.10	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B_Sect_2	B_Sect_2
	Girder B @ CF1	1098	Plate Girder	22.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B @ CF1	B_Sect_2
	Girder B @ CF2	1099	Plate Girder	44.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B @ CF2	B_Sect_2
	Girder B_Sect_2	1100	Plate Girder	58.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B_Sect_2	B_Sect_2
	Girder B_Sect_3	1101	Plate Girder	58.10	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B_Sect_3	B_Sect_3
	Girder B @ CF3	1102	Plate Girder	66.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B @ CF3	B_Sect_3
	Girder B_Sect_3	1103	Plate Girder	69.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder B_Sect_3	B_Sect_3
	Girder B_Sect_4	1104	Plate Girder	69.10	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_4	B_Sect_4
	Girder B_Sect_4	1105	Plate Girder	79.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_4	B_Sect_4
	Girder B_Sect_5	1106	Plate Girder	79.10	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder B_Sect_5	B_Sect_5
	Girder B_Sect_5	1107	Plate Girder	82.80	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder B_Sect_5	B_Sect_5
	Pier 1	1108	Plate Girder	86.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 1	B_Sect_5
	Pier 1	1109	Plate Girder	88.00	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 1	B_Sect_5
	Pier 1	1110	Plate Girder	89.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 1	B_Sect_5
Span 2 -Girder B	Girder B_Sect_5	1111	Plate Girder	96.90	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder B_Sect_5	B_Sect_5
	Girder B_Sect_6	1112	Plate Girder	97.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_6	B_Sect_6
	Girder B_Sect_6	1113	Plate Girder	106.90	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_6	B_Sect_6
	Girder B_Sect_7	1114	Plate Girder	107.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder B_Sect_7	B_Sect_7
	Girder B @ CF4	1115	Plate Girder	111.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B @ CF4	B_Sect_7
	Girder B_Sect_7	1116	Plate Girder	121.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B_Sect_7	B_Sect_7
	Girder B_Sect_8	1117	Plate Girder	121.10	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder B_Sect_8	B_Sect_8
	Girder B @ CF5	1118	Plate Girder	135.00	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder B @ CF5	B_Sect_8
	Girder B @ CF6	1119	Plate Girder	159.00	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder B @ CF6	B_Sect_8
	Girder B_Sect_8	1120	Plate Girder	173.00	163.3	73921.1	15.3	5.8	50.0	12638.7	1477.6	87.9	55867.5	25.0	15.5	40.4	3612.5	1382.5	55.7	33564.5	37.0	27.5	28.3	1219.1	1184.2	Girder B_Sect_8	B_Sect_8
	Girder B_Sect_9	1121	Plate Girder	173.10	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B_Sect_9	B_Sect_9
	Girder B @ CF7	1122	Plate Girder	183.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder B @ CF7	B_Sect_9
	Girder B_Sect_9	1123	Plate Girder	187.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder B_Sect_9	B_Sect_9
	Girder B_Sect_10	1124	Plate Girder	187.10	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_10	B_Sect_10
	Girder B_Sect_10	1125	Plate Girder	197.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_10	B_Sect_10
	Girder B_Sect_11	1126	Plate Girder	204.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder B_Sect_11	B_Sect_11
	Pier 2	1127	Plate Girder	206.00	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 2	B_Sect_11
	Pier 2	1128	Plate Girder	207.50	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Pier 2	B_Sect_11
Span 3 - Girder B	Girder B_Sect_11	1129	Plate Girder	214.90	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	88.3	58496.6	N/A	29.1	29.1	2008.5	2008.5	Girder B_Sect_11	B_Sect_11
	Girder B_Sect_12	1130	Plate Girder	215.00	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_12	B_Sect_12
	Girder B_Sect_12	1131	Plate Girder	224.90	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	60.3	35451.6	N/A	28.3	28.3	1254.9	1254.9	Girder B_Sect_12	B_Sect_12
	Girder B_Sect_13	1132	Plate Girder	225.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder B_Sect_13	B_Sect_13
	Girder B @ CF8	1133	Plate Girder	228.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B @ CF8	B_Sect_13
	Girder B_Sect_13	1134	Plate Girder	236.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B_Sect_13	B_Sect_13
	Girder B_Sect_14	1135	Plate Girder	236.10	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B_Sect_14	B_Sect_14
	Girder B @ CF9	1136	Plate Girder	250.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B @ CF9	B_Sect_14
	Girder B @ CF10	1137	Plate Girder	272.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B @ CF10	B_Sect_14
	Girder B_Sect_14	1138	Plate Girder	276.00	161.3	68866.4	14.7	5.2	50.5	13169.9	1363.1	85.9	52535.9	24.0	14.5	41.2	3616.7	1274.4	53.7	31905.3	36.0	26.5	29.3	1205.0	1090.0	Girder B_Sect_14	B_Sect_14
	Girder B_Sect_15	1139	Plate Girder	276.10	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B_Sect_15	B_Sect_15
	Girder B_Sect_15	1140	Plate Girder	285.05	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	Girder B_Sect_15	B_Sect_15
	N Abutment	1141	Plate Girder	294.00	157.3	58449.0	13.4	3.9	51.6	14807.9	1133.8	81.9	45449.4	22.0	12.5	43.0	3630.4	1057.4	49.7	28233.4	33.6	24.1	31.4	1170.1	900.0	N Abutment	B_Sect_15

Bridge # 69840

Designed by: MX on 08/20/17
Checked by: TFK on 08/21/17
Backchecked by: MX on 08/29/17

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Top Flange PL width	Bottom Flange PL width	Top Flange PL thickness	Bottom Flange PL thickness	Top Flg Width (2-L8x8x3/4)	Bottom Flg Width (2_L8x8x3/4)	Area of Top Flg (2-L8x8x3/4)	Area of Bott Flg (2-L8x8x3/4)	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Top Flange: 2-L8x8x3/4			Bottom Flange: 2-L8x8x3/4			Web thickness
					W_{tc1}	W_{bc1}	T_{tc1}	T_{bc1}	W_{tfg}	W_{bfg}	$A_{2\text{-}L8x8x3/4}$	$A_{2\text{-}L8x8x3/4}$	T_y	B_y	$I_{strong\_2\text{-}L8x3/4}$	$I_{weak\_1\text{-}L8x3/4}$	Flg Thickness T_{tflg}	$I_{strong\_2\text{-}L8x3/4}$	$I_{weak\_2\text{-}L8x3/4}$	Flg Thickness B_{tflg}	T_{web}
				(ft)	(in)	(in)	(in)	(in)	(in)	(in)	(in^2)	(in^2)	(in)	(in)	(in^4)	(in^4)	(in)	(in^4)	(in^4)	(in)	(in)
	S Abutment	1095	Plate Girder	0.010	16.0	16.0	0.750	0.750	0.000	0.000	0.00	0.00	0	0	0	0	0	0	0	0	0.375
Span 1 -Girder B	Girder B_Sect_1	1096	Plate Girder	18.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_2	1097	Plate Girder	18.10	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF1	1098	Plate Girder	22.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF2	1099	Plate Girder	44.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_2	1100	Plate Girder	58.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_3	1101	Plate Girder	58.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF3	1102	Plate Girder	66.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_3	1103	Plate Girder	69.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_4	1104	Plate Girder	69.10	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_4	1105	Plate Girder	79.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_5	1106	Plate Girder	79.10	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_5	1107	Plate Girder	82.80	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1108	Plate Girder	86.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1109	Plate Girder	88.00	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1110	Plate Girder	89.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 2 -Girder B	Girder B_Sect_5	1111	Plate Girder	96.90	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_6	1112	Plate Girder	97.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_6	1113	Plate Girder	106.90	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_7	1114	Plate Girder	107.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF4	1115	Plate Girder	111.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_7	1116	Plate Girder	121.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_8	1117	Plate Girder	121.10	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF5	1118	Plate Girder	135.00	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF6	1119	Plate Girder	159.00	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_8	1120	Plate Girder	173.00	16.0	16.0	0.750	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_9	1121	Plate Girder	173.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF7	1122	Plate Girder	183.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_9	1123	Plate Girder	187.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_10	1124	Plate Girder	187.10	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_10	1125	Plate Girder	197.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_11	1126	Plate Girder	204.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1127	Plate Girder	206.00	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1128	Plate Girder	207.50	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 3 - Girder B	Girder B_Sect_11	1129	Plate Girder	214.90	16.0	16.0	2.125	2.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_12	1130	Plate Girder	215.00	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_12	1131	Plate Girder	224.90	16.0	16.0	1.250	1.250	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_13	1132	Plate Girder	225.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF8	1133	Plate Girder	228.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_13	1134	Plate Girder	236.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_14	1135	Plate Girder	236.10	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF9	1136	Plate Girder	250.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B @ CF10	1137	Plate Girder	272.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_14	1138	Plate Girder	276.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_15	1139	Plate Girder	276.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder B_Sect_15	1140	Plate Girder	285.05	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	N Abutment	1141	Plate Girder	294.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Web depth	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Left Stringer Spacing	Right Stringer Spacing	Overhang Width	Effective Width (Link from plan)	Total thickness of concrete deck	Thickness of wearing surface	Effective thickness of concrete deck	Fillet Height	Fillet Width	% of rebar within effective of deck	Area of rebar within effective deck width
					$D_{\_web}$	T_x	B_x	$S_{\_Left\ Stringer}$	$S_{\_Right\_Stringer}$	$b_{\_overhang}$	$B_{\_effective}$	$t_{\_deck\_total}$	$t_{\_wearing}$	$t_{\_deck\_effective}$	$H_{\_fillet}$	$b_{\_fillet}$		A_{rs}
				(ft)	(in)	(in)	(in)	(ft)	(ft)	(ft)	(ft)	(in)	(in)	(in)	(in)	(in)		(in^2)
	S Abutment	1095	Plate Girder	0.010	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16.0	0.614%	5.406
Span 1 -Girder B	Girder B_Sect_1	1096	Plate Girder	18.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_2	1097	Plate Girder	18.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF1	1098	Plate Girder	22.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF2	1099	Plate Girder	44.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_2	1100	Plate Girder	58.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_3	1101	Plate Girder	58.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF3	1102	Plate Girder	66.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_3	1103	Plate Girder	69.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder B_Sect_4	1104	Plate Girder	69.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder B_Sect_4	1105	Plate Girder	79.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder B_Sect_5	1106	Plate Girder	79.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder B_Sect_5	1107	Plate Girder	82.80	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1108	Plate Girder	86.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1109	Plate Girder	88.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1110	Plate Girder	89.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
Span 2 -Girder B	Girder B_Sect_5	1111	Plate Girder	96.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder B_Sect_6	1112	Plate Girder	97.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.000%	
	Girder B_Sect_6	1113	Plate Girder	106.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_7	1114	Plate Girder	107.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF4	1115	Plate Girder	111.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_7	1116	Plate Girder	121.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_8	1117	Plate Girder	121.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF5	1118	Plate Girder	135.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF6	1119	Plate Girder	159.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_8	1120	Plate Girder	173.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_9	1121	Plate Girder	173.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF7	1122	Plate Girder	183.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B_Sect_9	1123	Plate Girder	187.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B_Sect_10	1124	Plate Girder	187.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B_Sect_10	1125	Plate Girder	197.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B_Sect_11	1126	Plate Girder	204.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Pier 2	1127	Plate Girder	206.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Pier 2	1128	Plate Girder	207.50	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
Span 3 - Girder B	Girder B_Sect_11	1129	Plate Girder	214.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B_Sect_12	1130	Plate Girder	215.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B_Sect_12	1131	Plate Girder	224.90	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B_Sect_13	1132	Plate Girder	225.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16		
	Girder B @ CF8	1133	Plate Girder	228.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_13	1134	Plate Girder	236.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_14	1135	Plate Girder	236.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF9	1136	Plate Girder	250.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B @ CF10	1137	Plate Girder	272.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_14	1138	Plate Girder	276.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_15	1139	Plate Girder	276.10	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	Girder B_Sect_15	1140	Plate Girder	285.05	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406
	N Abutment	1141	Plate Girder	294.00	54.0	0.000	0.000	x	x		9.167	8.500	2.000	8.00	1.500	16	0.614%	5.406

						Load Factor		Resistance Factor		Longitudinal Stiffener dist to Bott Flange		Transverse Stiffener			Hybrid factor	Material Properties														
	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Flange lateral bending stress			Flexual	Shear	No. of Longitudinal stiffener provided ?	Dist from stiffener to bottom flg	Is transverse stiffener provided?	Transverse Stiffener Spacing	Is end panel or interior panel?		Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	Rebar yield strength	Conc deck	Girder E	Conc deck	Modular Ratio	Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Shear Stud Location	Unbracing length for M-	Is Section Loss Considered /
					f_l	Condition Factor ϕ_c	System Factor ϕ_s	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	(Stud provided =Yes: No shear stud = No)	L_b	
								6.5.4.2	6.5.4.2						6.10.1.10.1															
				(ft)	(ksi)						(in)		(ft)			(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)		(in²)	(in)	(in)	(ft)		(in)	
	S Abutment	1142	Plate Girder	0.010		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
Span 1 -Girder A	Girder A_Sect_1	1143	Plate Girder	18.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_2	1144	Plate Girder	18.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder @ CF1	1145	Plate Girder	22.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A @ CF2	1146	Plate Girder	44.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_2	1147	Plate Girder	58.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_3	1148	Plate Girder	58.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A @ CF3	1149	Plate Girder	66.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_3	1150	Plate Girder	69.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder A_Sect_4	1151	Plate Girder	69.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder A_Sect_4	1152	Plate Girder	79.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder A_Sect_5	1153	Plate Girder	79.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Girder A_Sect_5	1154	Plate Girder	82.80		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Pier 1	1155	Plate Girder	86.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	264.0	No
	Pier 1	1156	Plate Girder	88.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	258.0	No
	Pier 1	1157	Plate Girder	89.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
Span 2 -Girder A	Girder A_Sect_5	1158	Plate Girder	96.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_6	1159	Plate Girder	97.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_6	1160	Plate Girder	106.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_7	1161	Plate Girder	107.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	No	276.0	No
	Girder A @ CF4	1162	Plate Girder	111.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	276.0	No
	Girder A_Sect_7	1163	Plate Girder	121.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder A_Sect_8	1164	Plate Girder	121.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder A @ CF5	1165	Plate Girder	135.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder A @ CF6	1166	Plate Girder	159.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder A_Sect_8	1167	Plate Girder	173.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder A_Sect_9	1168	Plate Girder	173.10		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	288.0	No
	Girder A @ CF7	1169	Plate Girder	183.00		1.00	1.00	1.0	1.0	0	10000.0	0	4.00	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	288.0	No
	Girder A_Sect_9	1170	Plate Girder	187.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_10	1171	Plate Girder	187.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_10	1172	Plate Girder	197.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.60	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_11	1173	Plate Girder	204.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Pier 2	1174	Plate Girder	206.00		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	258.0	No
	Pier 2	1175	Plate Girder	207.50		1.00	1.00	1.0	1.0	0	10000.0	0	1.50	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
Span 3 - Girder A	Girder A_Sect_11	1176	Plate Girder	214.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_12	1177	Plate Girder	215.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_12	1178	Plate Girder	224.90		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A_Sect_13	1179	Plate Girder	225.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	8.0	1.5	7.5	No	276.0	No
	Girder A @ CF8	1180	Plate Girder	228.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.40	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	276.0	No
	Girder A_Sect_13	1181	Plate Girder	236.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_14	1182	Plate Girder	236.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A @ CF9	1183	Plate Girder	250.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A @ CF10	1184	Plate Girder	272.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_14	1185	Plate Girder	276.00		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_15	1186	Plate Girder	276.10		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	Girder A_Sect_15	1187	Plate Girder	285.05		1.00	1.00	1.0	1.0	0	10000.0	0	3.67	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No
	N Abutment	1188	Plate Girder	294.00		1.00	1.00	1.0	1.0	0	10000.0	0	2.00	1	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	Yes	264.0	No

Cap Beam	Section_A	1189	Box Girder	0.10		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	55.0	No
Cap Beam	Section_B	1190	Box Girder	4.00		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	55.0	No
Cap Beam	Section_C	1191	Box Girder	9.17		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	110.0	No
Cap Beam	Section_C	1192	Box Girder	11.23		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	110.0	No
Cap Beam	Section_C	1193	Box Girder	16.27		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	110.0	No
Cap Beam	Section_C	1194	Box Girder	18.33		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	110.0	No
Cap Beam	Section_B	1195	Box Girder	23.50		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	55.0	No
Cap Beam	Section_A	1196	Box Girder	27.40		1.00	1.00	1.0	1.0	0	10000.0	0	9.17	0	1.0	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	0.0	7.0	1.5		No	55.0	No

					Non-Composite Section																
	Location	**Girder Node ID**	Is plate girder or box girder ?	Larsa Station	Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange
					b_{f_top}	$t_{\_top\ flg}$	$A_{\_st\_top\_flg}$	b_{f_bott}	$t_{\_bott\ flg}$	$A_{\_st\_bott\_flg}$	$D_{\_web}$	$t_{\_web}$	$A_{\_web}$	$A_{\_steel}$	$I_{\_steel}$	Y_T	Y_D	$S_{\_top\_flg}$	$S_{\_bott\_flg}$	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$
				(ft)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^4)	(in^4)
	S Abutment	1142	Plate Girder	0.010	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
Span 1 -Girder A	Girder A_Sect_1	1143	Plate Girder	18.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_2	1144	Plate Girder	18.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder @ CF1	1145	Plate Girder	22.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A @ CF2	1146	Plate Girder	44.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_2	1147	Plate Girder	58.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_3	1148	Plate Girder	58.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A @ CF3	1149	Plate Girder	66.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_3	1150	Plate Girder	69.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_4	1151	Plate Girder	69.10	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_4	1152	Plate Girder	79.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_5	1153	Plate Girder	79.10	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Girder A_Sect_5	1154	Plate Girder	82.80	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 1	1155	Plate Girder	86.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 1	1156	Plate Girder	88.00	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 1	1157	Plate Girder	89.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
Span 2 -Girder A	Girder A_Sect_5	1158	Plate Girder	96.90	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Girder A_Sect_6	1159	Plate Girder	97.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_6	1160	Plate Girder	106.90	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_7	1161	Plate Girder	107.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A @ CF4	1162	Plate Girder	111.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_7	1163	Plate Girder	121.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_8	1164	Plate Girder	121.10	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder A @ CF5	1165	Plate Girder	135.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder A @ CF6	1166	Plate Girder	159.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder A_Sect_8	1167	Plate Girder	173.00	16.0	0.750	12.00	16.0	1.000	16.0	54.0	0.3750	20.3	48.3	25757.7	30.1	25.7	856.9	1002.7	256.0	341.3
	Girder A_Sect_9	1168	Plate Girder	173.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A @ CF7	1169	Plate Girder	183.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_9	1170	Plate Girder	187.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_10	1171	Plate Girder	187.10	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_10	1172	Plate Girder	197.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_11	1173	Plate Girder	204.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 2	1174	Plate Girder	206.00	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Pier 2	1175	Plate Girder	207.50	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
Span 3 - Girder A	Girder A_Sect_11	1176	Plate Girder	214.90	16.0	1.750	28.00	16.0	1.750	28.0	54.0	0.3750	20.3	76.3	48447.9	28.8	28.8	1685.1	1685.1	597.3	597.3
	Girder A_Sect_12	1177	Plate Girder	215.00	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_12	1178	Plate Girder	224.90	16.0	1.125	18.00	16.0	1.125	18.0	54.0	0.3750	20.3	56.3	32273.4	28.1	28.1	1147.5	1147.5	384.0	384.0
	Girder A_Sect_13	1179	Plate Girder	225.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A @ CF8	1180	Plate Girder	228.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_13	1181	Plate Girder	236.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_14	1182	Plate Girder	236.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A @ CF9	1183	Plate Girder	250.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A @ CF10	1184	Plate Girder	272.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_14	1185	Plate Girder	276.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_15	1186	Plate Girder	276.10	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	Girder A_Sect_15	1187	Plate Girder	285.05	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
	N Abutment	1188	Plate Girder	294.00	16.0	0.750	12.00	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0

Cap Beam	Section_A	1189	Box Girder	0.10	36.0	1.500	54.00	36.0	1.500	54.00	38.0	0.750	57.000	165.000	49006	21	21	2391	2391	29373	29373
Cap Beam	Section_B	1190	Box Girder	4.00	36.0	1.500	54.00	36.0	1.500	54.00	47.5	0.750	71.250	179.250	78244	25	25	3099	3099	33800	33800
Cap Beam	Section_C	1191	Box Girder	9.17	36.0	1.500	54.00	36.0	1.500	54.00	57.0	0.750	85.500	193.500	115570	30	30	3852	3852	38228	38228
Cap Beam	Section_C	1192	Box Girder	11.23	36.0	1.500	54.00	36.0	1.500	54.00	57.0	0.750	85.500	193.500	115570	30	30	3852	3852	38228	38228
Cap Beam	Section_C	1193	Box Girder	16.27	36.0	1.500	54.00	36.0	1.500	54.00	57.0	0.750	85.500	193.500	115570	30	30	3852	3852	38228	38228
Cap Beam	Section_C	1194	Box Girder	18.33	36.0	1.500	54.00	36.0	1.500	54.00	57.0	0.750	85.500	193.500	115570	30	30	3852	3852	38228	38228
Cap Beam	Section_B	1195	Box Girder	23.50	36.0	1.500	54.00	36.0	1.500	54.00	47.5	0.750	71.250	179.250	78244	25	25	3099	3099	33800	33800
Cap Beam	Section_A	1196	Box Girder	27.40	36.0	1.500	54.00	36.0	1.500	54.00	38.0	0.750	57.000	165.000	49006	21	21	2391	2391	29373	29373

Designed by: MX on 08/20/17
Checked by: TFK on 08/21/17
Backchecked by: MX on 08/29/17

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Composite Section with Modular Ratio = n (at Positive Moment Region): Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Composite Section with Modular Ratio = 3n(at Positive Moment Reigion): Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Composite Section with Modular Ratio = n (at Negative Moment Region): Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Joint	Steel Section No.
					$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$	$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		
				(ft)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)		
	S Abutment	1142	Plate Girder	0.010	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	S Abutment	A_Sect_1
Span 1 -Girder A	Girder A_Sect_1	1143	Plate Girder	18.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_1	A_Sect_1
	Girder A_Sect_2	1144	Plate Girder	18.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_2	A_Sect_2
	Girder @ CF1	1145	Plate Girder	22.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder @ CF1	A_Sect_2
	Girder A @ CF2	1146	Plate Girder	44.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A @ CF2	A_Sect_2
	Girder A_Sect_2	1147	Plate Girder	58.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_2	A_Sect_2
	Girder A_Sect_3	1148	Plate Girder	58.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_3	A_Sect_3
	Girder A @ CF3	1149	Plate Girder	66.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A @ CF3	A_Sect_3
	Girder A_Sect_3	1150	Plate Girder	69.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder A_Sect_3	A_Sect_3
	Girder A_Sect_4	1151	Plate Girder	69.10	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_4	A_Sect_4
	Girder A_Sect_4	1152	Plate Girder	79.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_4	A_Sect_4
	Girder A_Sect_5	1153	Plate Girder	79.10	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder A_Sect_5	A_Sect_5
	Girder A_Sect_5	1154	Plate Girder	82.80	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder A_Sect_5	A_Sect_5
	Pier 1	1155	Plate Girder	86.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 1	A_Sect_5
	Pier 1	1156	Plate Girder	88.00	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 1	A_Sect_5
	Pier 1	1157	Plate Girder	89.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 1	A_Sect_5
Span 2 -Girder A	Girder A_Sect_5	1158	Plate Girder	96.90	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder A_Sect_5	A_Sect_5
	Girder A_Sect_6	1159	Plate Girder	97.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_6	A_Sect_6
	Girder A_Sect_6	1160	Plate Girder	106.90	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_6	A_Sect_6
	Girder A_Sect_7	1161	Plate Girder	107.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder A_Sect_7	A_Sect_7
	Girder A @ CF4	1162	Plate Girder	111.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A @ CF4	A_Sect_7
	Girder A_Sect_7	1163	Plate Girder	121.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_7	A_Sect_7
	Girder A_Sect_8	1164	Plate Girder	121.10	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder A_Sect_8	A_Sect_8
	Girder A @ CF5	1165	Plate Girder	135.00	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder A @ CF5	A_Sect_8
	Girder A @ CF6	1166	Plate Girder	159.00	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder A @ CF6	A_Sect_8
	Girder A_Sect_8	1167	Plate Girder	173.00	141.3	66131.5	16.2	6.7	49.0	9799.8	1349.6	79.3	49601.8	25.7	16.2	39.5	3059.8	1254.5	52.7	30881.4	36.6	27.1	28.7	1140.6	1076.9	Girder A_Sect_8	A_Sect_8
	Girder A_Sect_9	1168	Plate Girder	173.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_9	A_Sect_9
	Girder A @ CF7	1169	Plate Girder	183.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder A @ CF7	A_Sect_9
	Girder A_Sect_9	1170	Plate Girder	187.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder A_Sect_9	A_Sect_9
	Girder A_Sect_10	1171	Plate Girder	187.10	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_1	A_Sect_10
	Girder A_Sect_10	1172	Plate Girder	197.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_1	A_Sect_10
	Girder A_Sect_11	1173	Plate Girder	204.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder A_Sect_1	A_Sect_11
	Pier 2	1174	Plate Girder	206.00	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 2	A_Sect_11
	Pier 2	1175	Plate Girder	207.50	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Pier 2	A_Sect_11
Span 3 - Girder A	Girder A_Sect_11	1176	Plate Girder	214.90	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	76.3	48447.9	N/A	28.8	28.8	1685.1	1685.1	Girder A_Sect_1	A_Sect_11
	Girder A_Sect_12	1177	Plate Girder	215.00	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_1	A_Sect_12
	Girder A_Sect_12	1178	Plate Girder	224.90	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	56.3	32273.4	N/A	28.1	28.1	1147.5	1147.5	Girder A_Sect_1	A_Sect_12
	Girder A_Sect_13	1179	Plate Girder	225.00	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	44.3	22907.3	N/A	27.8	27.8	825.5	825.5	Girder A_Sect_1	A_Sect_13
	Girder A @ CF8	1180	Plate Girder	228.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A @ CF8	A_Sect_13
	Girder A_Sect_13	1181	Plate Girder	236.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_1	A_Sect_13
	Girder A_Sect_14	1182	Plate Girder	236.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_1	A_Sect_14
	Girder A @ CF9	1183	Plate Girder	250.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A @ CF9	A_Sect_14
	Girder A @ CF10	1184	Plate Girder	272.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A @ CF1	A_Sect_14
	Girder A_Sect_14	1185	Plate Girder	276.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_1	A_Sect_14
	Girder A_Sect_15	1186	Plate Girder	276.10	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_1	A_Sect_15
	Girder A_Sect_15	1187	Plate Girder	285.05	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	Girder A_Sect_1	A_Sect_15
	N Abutment	1188	Plate Girder	294.00	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9	N Abutment	A_Sect_15

Cap Beam	Section_A	1189	Box Girder	0.10	165.0	49006.0	N/A	20.5	20.5	2390.5	2390.5	165.0	49006.0	N/A	20.5	20.5	2390.5	2390.5	165.0	49006.0	N/A	20.5	20.5	2390.5	2390.5	Section_A	Section_A
Cap Beam	Section_B	1190	Box Girder	4.00	179.3	78243.7	N/A	25.3	25.3	3098.8	3098.8	179.3	78243.7	N/A	25.3	25.3	3098.8	3098.8	179.3	78243.7	N/A	25.3	25.3	3098.8	3098.8	Section_B	Section_B
Cap Beam	Section_C	1191	Box Girder	9.17	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	Section_C	Section_C
Cap Beam	Section_C	1192	Box Girder	11.23	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	Section_C	Section_C
Cap Beam	Section_C	1193	Box Girder	16.27	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	Section_C	Section_C
Cap Beam	Section_C	1194	Box Girder	18.33	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	193.5	115570.1	N/A	30.0	30.0	3852.3	3852.3	Section_C	Section_C
Cap Beam	Section_B	1195	Box Girder	23.50	179.3	78243.7	N/A	25.3	25.3	3098.8	3098.8	179.3	78243.7	N/A	25.3	25.3	3098.8	3098.8	179.3	78243.7	N/A	25.3	25.3	3098.8	3098.8	Section_B	Section_B
Cap Beam	Section_A	1196	Box Girder	27.40	165.0	49006.0	N/A	20.5	20.5	2390.5	2390.5	165.0	49006.0	N/A	20.5	20.5	2390.5	2390.5	165.0	49006.0	N/A	20.5	20.5	2390.5	2390.5	Section_A	Section_A

Designed by: MX on 08/20/17
Checked by: TFK on 08/21/17
Backchecked by: MX on 08/29/17

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Top Flange PL width	Bottom Flange PL width	Top Flange PL thickness	Bottom Flange PL thickness	Top Flg Width (2-L8x8x3/4)	Bottom Flg Width (2_L8x8x3/4)	Area of Top Flg (2-L8x8x3/4)	Area of Bott Flg (2-L8x8x3/4)	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Top Flange: 2-L8x8x3/4			Bottom Flange: 2-L8x8x3/4			Web thickness
					W_{tc1}	W_{bc1}	T_{tc1}	T_{bc1}	W_{tfg}	W_{bfg}	$A_{2-L8x8x3/4}$	$A_{2-L8x8x3/4}$	T_y	B_y	$I_{strong\_2-L8x8x3/4}$	$I_{weak\_1-L8x8x3/4}$	Flg Thickness T_{tflg}	$I_{strong\_2-L8x8x3/4}$	$I_{weak\_2-L8x8x3/4}$	Flg Thickness B_{tflg}	T_{web}
				(ft)	(in)	(in)	(in)	(in)	(in)	(in)	(in^2)	(in^2)	(in)	(in)	(in^4)	(in^4)	(in)	(in^4)	(in^4)	(in)	(in)
	S Abutment	1142	Plate Girder	0.010	16.0	16.0	0.750	0.750	0.000	0.000	0.00	0.00	0	0	0	0	0	0	0	0	0.375
Span 1 -Girder A	Girder A_Sect_1	1143	Plate Girder	18.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_2	1144	Plate Girder	18.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder @ CF1	1145	Plate Girder	22.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF2	1146	Plate Girder	44.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_2	1147	Plate Girder	58.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_3	1148	Plate Girder	58.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF3	1149	Plate Girder	66.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_3	1150	Plate Girder	69.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_4	1151	Plate Girder	69.10	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_4	1152	Plate Girder	79.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_5	1153	Plate Girder	79.10	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_5	1154	Plate Girder	82.80	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1155	Plate Girder	86.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1156	Plate Girder	88.00	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 1	1157	Plate Girder	89.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 2 -Girder A	Girder A_Sect_5	1158	Plate Girder	96.90	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_6	1159	Plate Girder	97.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_6	1160	Plate Girder	106.90	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_7	1161	Plate Girder	107.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF4	1162	Plate Girder	111.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_7	1163	Plate Girder	121.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_8	1164	Plate Girder	121.10	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF5	1165	Plate Girder	135.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF6	1166	Plate Girder	159.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_8	1167	Plate Girder	173.00	16.0	16.0	0.750	1.000	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_9	1168	Plate Girder	173.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF7	1169	Plate Girder	183.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_9	1170	Plate Girder	187.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_10	1171	Plate Girder	187.10	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_10	1172	Plate Girder	197.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_11	1173	Plate Girder	204.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1174	Plate Girder	206.00	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Pier 2	1175	Plate Girder	207.50	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
Span 3 - Girder A	Girder A_Sect_11	1176	Plate Girder	214.90	16.0	16.0	1.750	1.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_12	1177	Plate Girder	215.00	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_12	1178	Plate Girder	224.90	16.0	16.0	1.125	1.125	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_13	1179	Plate Girder	225.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF8	1180	Plate Girder	228.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_13	1181	Plate Girder	236.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_14	1182	Plate Girder	236.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF9	1183	Plate Girder	250.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A @ CF10	1184	Plate Girder	272.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_14	1185	Plate Girder	276.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_15	1186	Plate Girder	276.10	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	Girder A_Sect_15	1187	Plate Girder	285.05	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375
	N Abutment	1188	Plate Girder	294.00	16.0	16.0	0.750	0.750	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.375

Cap Beam	Section_A	1189	Box Girder	0.10	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750
Cap Beam	Section_B	1190	Box Girder	4.00	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750
Cap Beam	Section_C	1191	Box Girder	9.17	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750
Cap Beam	Section_C	1192	Box Girder	11.23	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750
Cap Beam	Section_C	1193	Box Girder	16.27	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750
Cap Beam	Section_C	1194	Box Girder	18.33	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750
Cap Beam	Section_B	1195	Box Girder	23.50	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750
Cap Beam	Section_A	1196	Box Girder	27.40	36.0	36.0	1.500	1.500	0.000	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.750

	Location	Girder Node ID	Is plate girder or box girder ?	Larsa Station	Web depth	Distance from CG of top flg (2-L8x8x3/4) to Top/Top flg	Distance from CG of bottom flg(2-L8x8x3/4) to Bott/Bott flg	Left Stringer Spacing	Right Stringer Spacing	Overhang Width	Effective Width (Link from plan)	Total thickness of concrete deck	Thickness of wearing surface	Effective thickness of concrete deck	Fillet Height	Fillet Width	% of rebar within effective of deck	Area of rebar within effective deck width
					$D_{\_web}$	T_x	B_x	$S_{\_Left\ Stringer}$	$S_{\_Right\_Stringer}$	$b_{\_overhang}$	$B_{\_effective}$	$t_{\_deck\_total}$	$t_{\_wearing}$	$t_{\_deck\_effective}$	$H_{\_fillet}$	$b_{\_fillet}$		A_{rs}
				(ft)	(in)	(in)	(in)	(ft)	(ft)	(ft)	(ft)	(in)	(in)	(in)	(in)	(in)		(in^2)
	S Abutment	1142	Plate Girder	0.010	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16.0	0.614%	4.423
Span 1 -Girder A	Girder A_Sect_1	1143	Plate Girder	18.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_2	1144	Plate Girder	18.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder @ CF1	1145	Plate Girder	22.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF2	1146	Plate Girder	44.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_2	1147	Plate Girder	58.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_3	1148	Plate Girder	58.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF3	1149	Plate Girder	66.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_3	1150	Plate Girder	69.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder A_Sect_4	1151	Plate Girder	69.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder A_Sect_4	1152	Plate Girder	79.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder A_Sect_5	1153	Plate Girder	79.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder A_Sect_5	1154	Plate Girder	82.80	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1155	Plate Girder	86.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1156	Plate Girder	88.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Pier 1	1157	Plate Girder	89.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
Span 2 -Girder A	Girder A_Sect_5	1158	Plate Girder	96.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder A_Sect_6	1159	Plate Girder	97.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.000%	
	Girder A_Sect_6	1160	Plate Girder	106.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_7	1161	Plate Girder	107.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF4	1162	Plate Girder	111.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_7	1163	Plate Girder	121.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_8	1164	Plate Girder	121.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF5	1165	Plate Girder	135.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF6	1166	Plate Girder	159.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_8	1167	Plate Girder	173.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_9	1168	Plate Girder	173.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF7	1169	Plate Girder	183.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A_Sect_9	1170	Plate Girder	187.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A_Sect_10	1171	Plate Girder	187.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A_Sect_10	1172	Plate Girder	197.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A_Sect_11	1173	Plate Girder	204.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Pier 2	1174	Plate Girder	206.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Pier 2	1175	Plate Girder	207.50	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
Span 3 - Girder A	Girder A_Sect_11	1176	Plate Girder	214.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A_Sect_12	1177	Plate Girder	215.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A_Sect_12	1178	Plate Girder	224.90	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A_Sect_13	1179	Plate Girder	225.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16		
	Girder A @ CF8	1180	Plate Girder	228.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_13	1181	Plate Girder	236.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_14	1182	Plate Girder	236.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF9	1183	Plate Girder	250.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A @ CF10	1184	Plate Girder	272.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_14	1185	Plate Girder	276.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_15	1186	Plate Girder	276.10	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	Girder A_Sect_15	1187	Plate Girder	285.05	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423
	N Abutment	1188	Plate Girder	294.00	54.0	0.000	0.000	x	x		7.500	8.500	2.000	8.00	1.500	16	0.614%	4.423

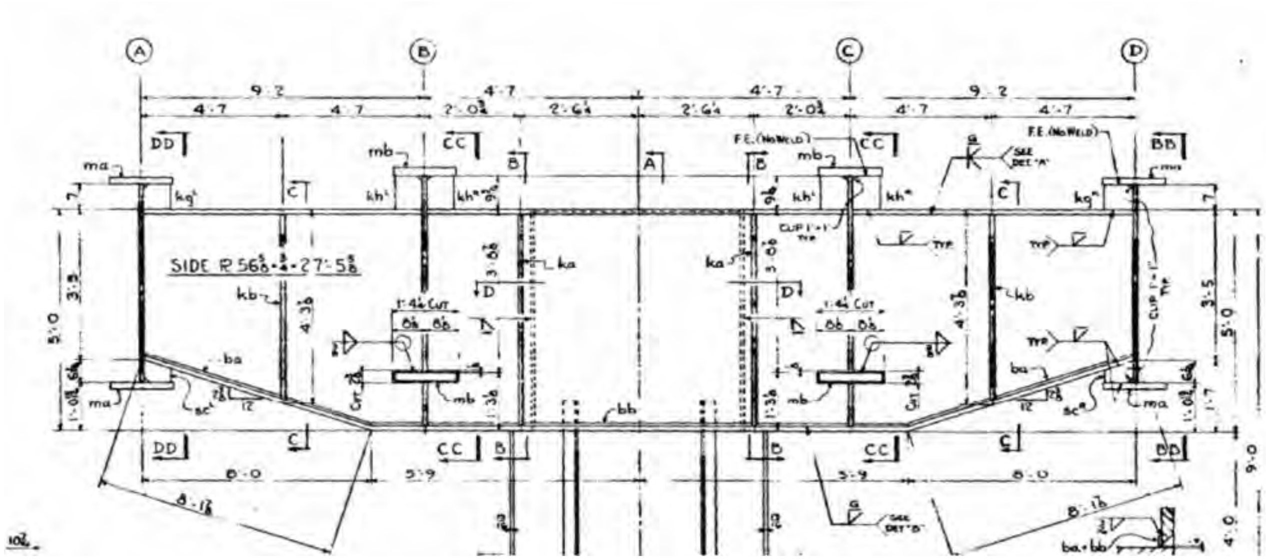
Cap Beam	Section_A	1189	Box Girder	0.10	38.0	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000
Cap Beam	Section_B	1190	Box Girder	4.00	47.5	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000
Cap Beam	Section_C	1191	Box Girder	9.17	57.0	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000
Cap Beam	Section_C	1192	Box Girder	11.23	57.0	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000
Cap Beam	Section_C	1193	Box Girder	16.27	57.0	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000
Cap Beam	Section_C	1194	Box Girder	18.33	57.0	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000
Cap Beam	Section_B	1195	Box Girder	23.50	47.5	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000
Cap Beam	Section_A	1196	Box Girder	27.40	38.0	0.000	0.000	x	x		0.000	8.500	2.000	8.00	1.500	36	0.000%	0.000

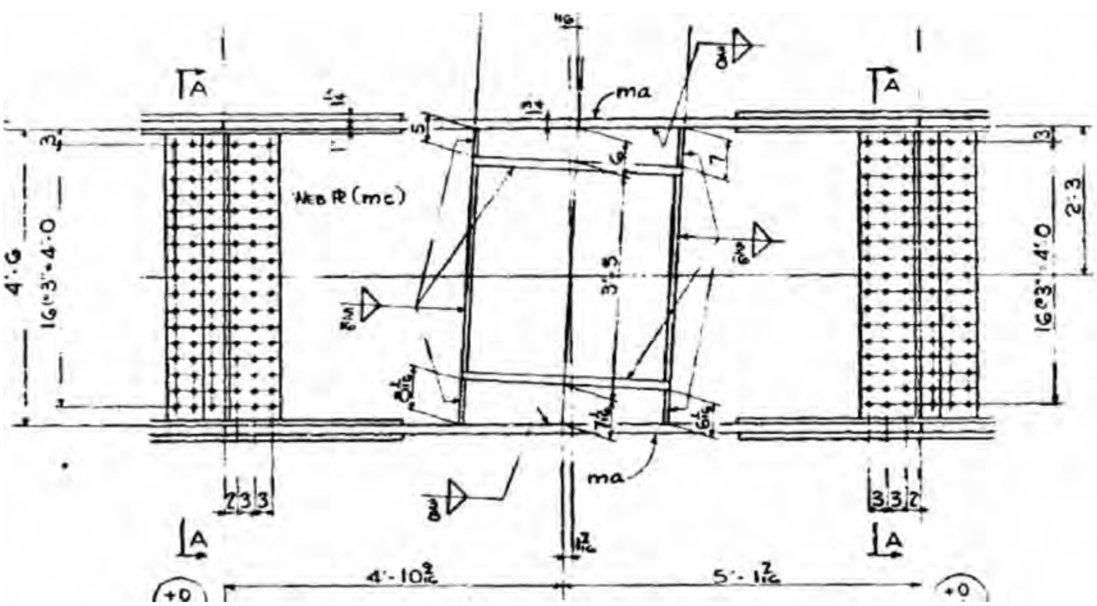
3. Connection Capacities

HNTB	By: MX	Date: 08/23/17	Job No. 64517
	Chkd By: JWC	Date: 8/23/2017	
HNTB Corp.	Bckchk By: MX	Date: 8/28/2017	Sht. No.

BR 69840

1. CONNECTION CAPACITY @ EXTERIOR GIRDER AND CAP BEAM





1) Assumptions

F_{exx} =	70	ksi	(Need to verify)
Fillet weld size =	0.3125	in	(Per shop drawing from 1969)
$t_{\_eff}$ =	0.2209	in	
weld length =	38.70	in	
No. of weld at the connection	4	weld per connection	
Steel F_u =	66	ksi	(Per Table 6A.6.2.1-1 in MBE)

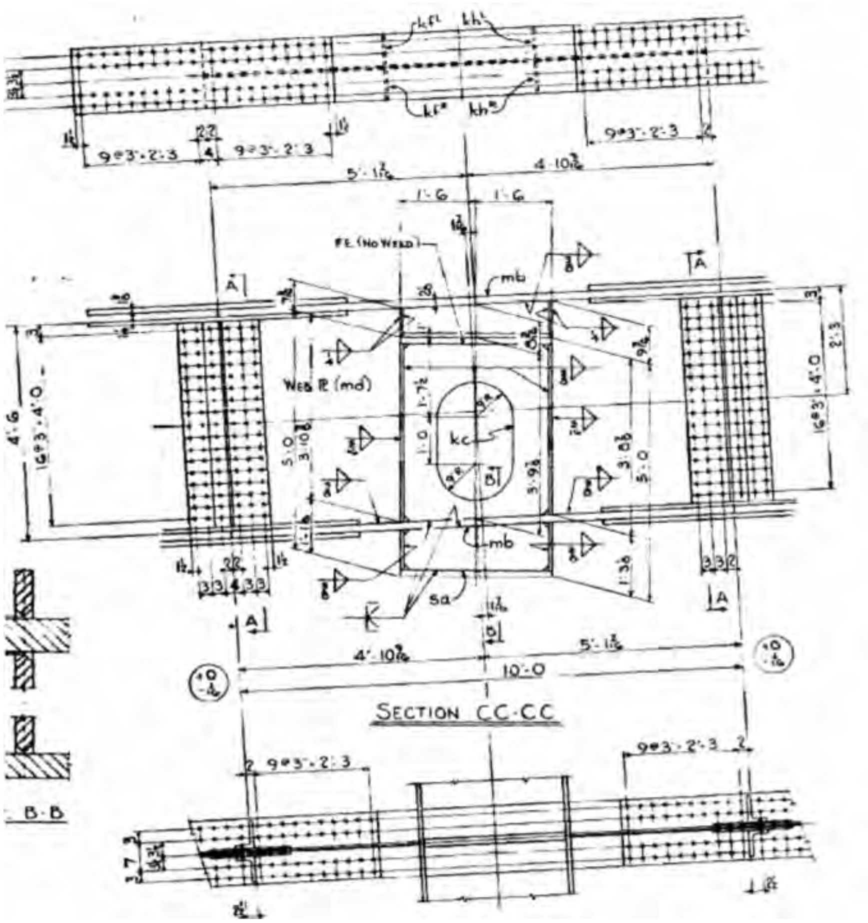
2) Shear Capacity of the Weld, R_r

$R_r = 0.6\Phi_{e2}F_{exx}$ =	34	ksi
Weld Shear Capacity, $F_{\_weld}$ =	**1149**	kips @ Edge Girder/Cap Beam Connection

HNTB	By: MX	Date: 08/23/17	Job No. 64517
	Chkd By: JWC	Date: 8/23/2017	
HNTB Corp.	Bckchk By: MX	Date: 8/28/2017	Sht. No.

2. CALCULATE CAPACITY OF FIELD SPLICE OF INTERIOR GIRDERS B & C NEAR THE CAP BEAM

1) Calculate Bolt Capacity on Splice PL (By inspection, shear capacity control)



Connection Input Data

Insider Splice = two 7.5"x1.25"
Outside Splice = One 16"x1.375"

Splice PL Thickness (smiallest) =	1.25	in
Bolt Diameter =	0.875	inch
Bolt Area =	0.601	in^2
Bolt hole diameter =	1.00	inch
Connection plate yield strength =	36	ksi
Connection plate ultimate strength =	65	ksi (Per Table 6A.6.2.1-1 in MBE
Surface condition specification =	A	

Input Bolt Pattern (Each side)

Vertical:

Spacing =	3	inch
End Distance =	1.5	inch
Bolt clear distance =	2.00	inch

6.13.2.7 Shear Resistance

$\phi_{bolt\ shear}$ = 0.8

Length Factor = 1

"The nominal shear resistance of a high-strength bolt or an ASTM A307 bolt at the strength limit state in joints whose length between extreme fasteners measured parallel to the line of action of the force is less than 50.0 inches shall be taken as…where threads are included" in the shear plane:"

$R_n = 0.38A_bF_{ub}N_s$ **BOLT THREADS INCLUDED FROM SHEAR PLANE**

Fub =	120	ksi, Reference 6.4.3
Ns =	2	
Rn =	54.8	kips/bolt
ϕRn x Length Factor =	43.9	kips/bolt

Bearing Resistance will be not control

Total No of HS 7/8" dia bolts per rod =	40	per bolts
Bolt Capacity T =	1755	kips (Top or Bottom Splice)

2) Calculate Tension Capacity of Splice PL

Φ_y =	0.95	
Φ_u =	0.8	
A_g = 2*7.5"*1.25"+16"*1.375" =	40.75	in^2
A_n = 2*(7.5"-2")*1.25"+(16-4)"*1.375" =	30.25	in^2

For yielding, $T_y = \Phi_y A_g F_y$ =	1394	kips	(control)
For fracture, $T_u = \Phi_u A_n F_u$ =	1573	kips	

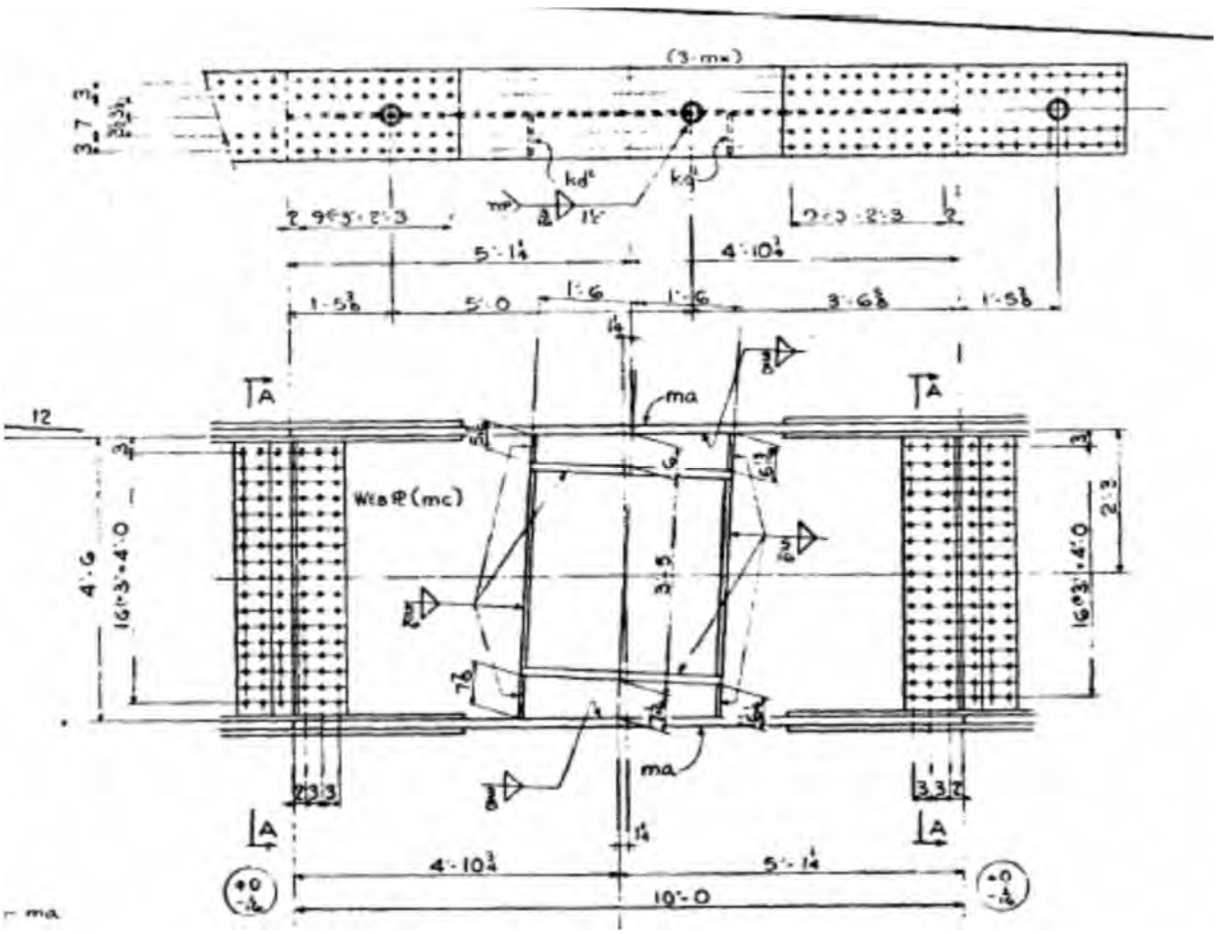
Moment Arm =Web Height + (Top FLG Thk + Bott FLG Thk)/2 = 56.125 in

Estimated Moment Capacity of FS = T_y*Moment Arm = **6518** k-ft (For Girders B & C)

HNTB	By: MX	Date: 08/23/17	Job No. 64517
	Chkd By: JWC	Date: 8/23/2017	
HNTB Corp.	Bckchk By: MX	Date: 8/28/2017	Sht. No.

3. CALCULATE CAPACITY OF FIELD SPLICE OF EXTERIOR GIRDERS A & D NEAR THE CAP BEAM

1) Calculate Bolt Capacity on Splice PL (By inspection, shear capacity control)



Connection Input Data

Insider Splice = two 7.5"x1"
Outside Splice = One 16"x1.25"

Splice PL Thickness (smallest) =	1	in
Bolt Diameter =	0.875	inch
Bolt Area =	0.601	in^2
Bolt hole diameter =	1.00	inch
Connection plate yield strength =	36	ksi
Connection plate ultimate strength =	65	ksi (Per Table 6A.6.2.1-1 in MBE
Surface condition specification =	A	

Input Bolt Pattern (Each side)

Vertical:

Spacing =	3	inch
End Distance =	1.5	inch
Bolt clear distance =	2.000	inch

6.13.2.7 Shear Resistance

$\phi_{bolt\ shear}$ = 0.8
Length Factor = 1

"The nominal shear resistance of a high-strength bolt or an ASTM A307 bolt at the strength limit state in joints whose length between extreme fasteners measured parallel to the line of action of the force is less than 50.0 inches shall be taken as…where threads are included" in the shear plane:"

$R_n = 0.38 A_b F_{ub} N_s$ **BOLT THREADS INCLUDED FROM SHEAR PLANE**

Fub =	120	ksi, Reference 6.4.3
Ns =	2	
Rn =	54.8	kips/bolt
ϕRn x Length Factor =	43.9	kips/bolt

Bearing Resistance will be not control

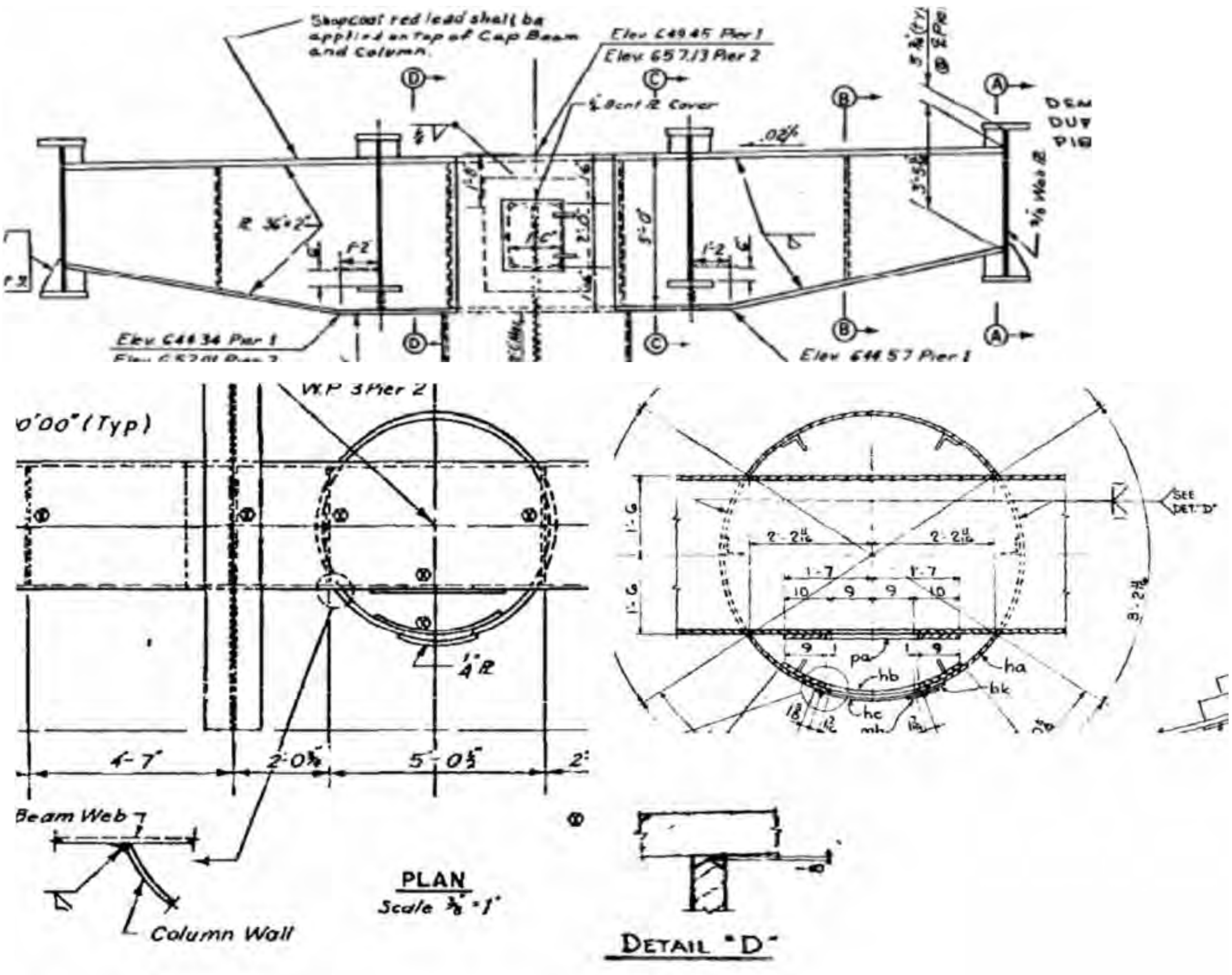
Total No of HS 7/8" dia bolts per rod =	40	per bolts
Bolt Capacity T =	1755	kips (Top or Bottom Splice)

2) Calculate Tension Capacity of Splice PL

Φ_y =	0.95	
Φ_u =	0.8	
A_g = 2*7.5"*1"+16"*1.25" =	35	in^2
A_n = 2*(7.5"-2")*1"+(16-4)"*1.25" =	26	in^2
For yielding, $T_y = \Phi_y A_g F_y$ =	1197	kips (control)
For fracture, $T_u = \Phi_u A_g F_y$ =	1352	kips
Moment Arm =Web Height + (Top FLG Thk + Bott FLG Thk)/2 =	56.125	in
Estimated Moment Capacity of FS = T_y*Moment Arm =	**5598**	k-ft (For Girders A & D)

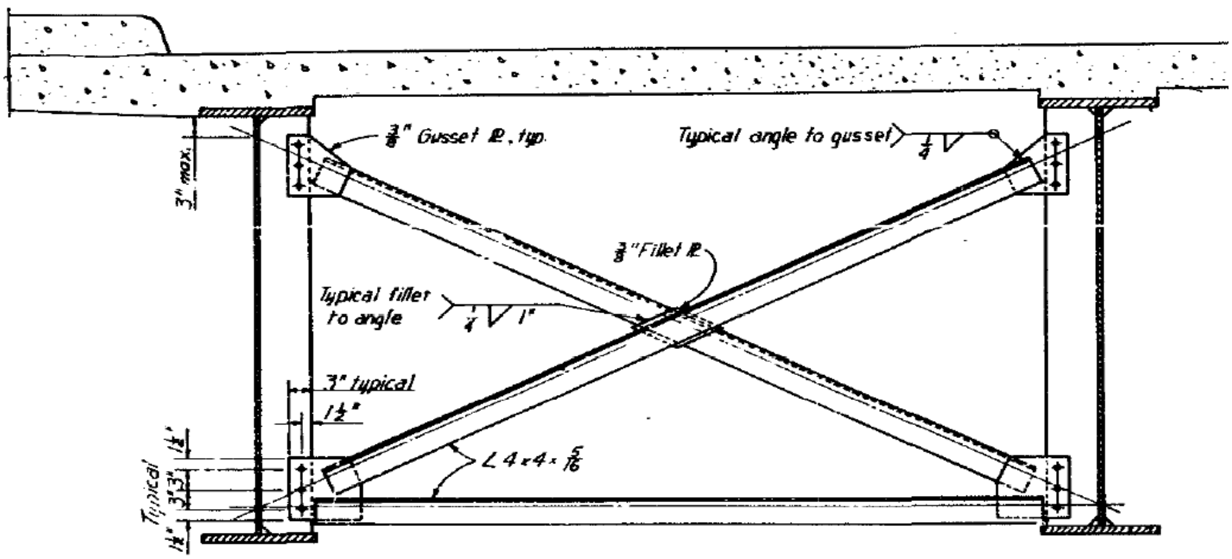
HNTB	By: MX	Date: 08/23/17	Job No. 64517
	Chkd By: JWC	Date: 8/23/2017	
HNTB Corp.	Bckchk By: MX	Date: 8/28/2017	Sht. No.

4. CAPACITY OF COLUMN TO CAP BEAM CONNECTION



Thickness of Column Wall =	0.8125	in
Column Wall, F_y =	36	ksi
For shear weld strength with full pen weld		
Φ_{e1} =	0.85	
For full pen weld, $R_r = 0.6\Phi_{e1}F_{exx}$ =	20.52	ksi
Weld area per side, A_{weld} = 13/16"x2x57" =	92.6	in^2
Shear strength per side, $F_v = R_r{*}A_{weld}$ =	1901	kips
For tension weld strength per side with full pen weld		
Φ_y =	0.95	
A_g = 36"x13/16" =	29.3	in^2
$T_r = \Phi_y A_g F_y$=	1000	kips
Moment Arm, H =	4.50	ft
Moment capacity from weld = $(F_v + T_r){*}H$ =	**13055**	k-ft

5. Cross Frame Capacity (L4x4x5/16)



1. Assumptions

F_y =	36	ksi	
F_u =	66	ksi	(Per Table 6A.6.2.1-1 in MBE)
A_g =	2.40	in^2	
KL =	8.85	ft	

2. Tensile Resistance of L4x4x5/16

$P_r = \Phi_y F_y A_g$ = **82.1** kips (control since no hole in the member)

3. Compressive Resistance L4x4x5/16

P_r = **28.4** kips (from AISC LRFFD Table 4-11)

4. Bolt Resistance (7/8" dia ASTM 325 H.S. Bolt)

Shear Resistance (AASHTO LRFD, 6.13.2.7) (Control Bolt Capacity

Bolt Diameter =	0.875	inch
Bolt Area =	0.601	in^2

$\phi_{bolt\ shear}$ = 0.8

Length Factor = 1

"The nominal shear resistance of a high-strength bolt or an ASTM A307 bolt at the strength limit state in joints whose length between extreme fasteners measured parallel to the line of action of the force is less than 50.0 inches shall be taken as…where threads are included" in the shear plane:"

$R_n = 0.38A_bF_{ub}N_s$

BOLT THREADS INCLUDED FROM SHEAR PLANE

Fub =	120	ksi, Reference 6.4.3
Ns =	1	
Rn =	27.4	kips/bolt
ϕRn x Length Factor =	21.9	kips/bolt
No of Bolt provided =	3	
Bolt Group Capacity @ Top FlG of the exterior girder =	65.8	kips

4. Sample Calculation at the Point 44 feet from South Abutment on Span 1 of Girder D

A design spreadsheet is developed to calculate the capacities, LF1, r1, D/C ratio of the girders and cap beams. The calculations were performed on several locations along those structural elements using Microsoft Macro. The following shows an example calculation at the point about 44 feet from South Abutment on Span 1 of Girder D

HNTB	By:	MX	Date:	08/23/17	Job No.	64517
	Chkd By:	JWC	Date:	8/23/2017		
HNTB Corp.	Bckchk By:	MX	Date:	8/28/2017	Sht. No.	

BR 69839

Node ID : 1005
larsa ID: 44.0 (Station)

Fy_Rebar = 40 ksi
Deck rebar Area, Ars = 4.423 in^2
Is plate girder or box girder ? Plate Girder
No of Webs of the Box Girder (or Plate Girder) = 1 webs
Is transverse bending consider? Yes

Evaulation Factors (for Strength Limit States)
1. Condition Factor ϕ_c = 1.00
2. System Factor ϕ_S = 1.00

Is it Cap Beam ? 0
Is redundant Load Path Diaphragm ? 0
Is Continuous span ? Yes
Is Curve Girder ? No

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Location	Node ID	larsa Sta	Inventory Rating				For Composite Positive Moment		For Non -Composite Positive Moment (Comp Flg full Bracing)		For Negative Moment for plate girders or positive moment for Steel Box Beam Strandel Bent				Positive Moment Capacity	Negative Moment Capacity
		larsa	$RF_{\_flexure}$		$RF_{\_shear}$	$RF_{\_inv}$	M_n	Positive $1.3R_hM_y$	Positive M_p (Use if θ_{RL} >0.009 Radians)	Positive $1.3R_hM_y$	Negative M_p (For Comparsion purpose only)	M_{nc} (Yield)	F_{nc_final}	M_c (Based on F_{nc}) (failure before yielding)	To use	To use
			Top Flange	Bott Flange			k-ft	k-ft	k-ft	k-ft	k-ft	k-ft	(ksi)	k-ft	k-ft	k-ft
Controlling Rating	1005	44.0	100.00	1.33	6.13	1.33	4126	4126	N/A	N/A	Yield	Not to Yield	36.00	-2571	4126	-2571
	1005	44.0	100.00	1.33	6.13	1.33	4547	4126	N/A	N/A	Yield	Not to Yield	36.00	2571		

Is it composite section ? **Yes**

(+) Stress indicates Tension

HNTB	By:	MX	Date:	08/23/17	Job No.	64517
	Chkd By:	JWC	Date:	8/23/2017		
HNTB Corp.	Bckchk By:	MX	Date:	8/28/2017	Sht. No.	

BR 69839

Node ID : 1005
Iarsa ID: 44.0 (Station)

Evaluation Factors (for Strength Limit States)
1. Condition Factor ϕ_c = 1.00
2. System Factor ϕ_S = 1.00 N(

	3	4	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Location	Node ID	Iarsa Sta	Maximum Positive M_u	Max Negative M_u	Web Shear			LF1 with respect to Minimum r_1	LF1_Top_Flg	LF1_Bott_Flg	LF1_Shear	LF1 req'd_Top_Flg	LF1 req'd_bott_Flg	LF1 req'd_shear	Min Reserve ratio r_1	LF1 req'd with respect to Minimum r_1
		Iarsa	To use	To use	Demand/ Capacity	Ultimate Shear Force, V_u (kips)	Capacity, $\Phi_v V_n$ (kips)									
			k-ft	k-ft												
Controlling Rating	1005	44.0	2231.5	233.4	0.2191	85.53	390.37	3.051	393.960	3.051	31.191	21.85	2.57	2.68	1.19	2.57
	1005	44.0			0.2191	85.53	390.37									
											1.19	18.03	1.19	11.66		3
											1.19	21.85	2.57	2.68		

Is it composite section ? **Yes**

(+) Stress indicates Tension

HNTB	By:	MX	Date:	08/23/17	Job No.	64517
	Chkd By:	JWC	Date:	8/23/2017		
HNTB Corp.	Bckchk By:	MX	Date:	8/28/2017	Sht. No.	

BR 69839

Node ID : 1005
Iarsa ID: 44.0 (Station)

Evaluation Factors (for Strength Limit States)
1. Condition Factor ϕ_c = 1.00
2. System Factor ϕ_S = 1.00

No

	3	4	33	34	35	36	37	38	39	40	41	42	43	44
			1.1 Strength I - 1.25DC + 1.5DW + 1.75LL+I											
Location	Node ID	Iarsa Sta	Top Flange Flexural Bending			Bottom Flange Flexural Bending			Web Shear			Maximum	$M_{\_DL}$	$M_{\_LL}$
		Iarsa	D/C	Ultimate Stress f_u (ksi)	Capacity, F_{nc} or F_{nt} (ksi)	D/C	Ultimate Stress f_u (ksi)	Capacity, F_{nc} or F_{nt} (ksi)	D/C	Ultimate Shear Force, V_u (kips)	Capacity, V_n (kips)	D/C	(k-ft)	(k-ft)
Controlling Rating	1005	44.0	0.212	-7.637	-36.000	0.820	29.531	36.000	0.219	85.535	390.375	0.82	505.53	746.39
	1005	44.0												

Is it composite section ? **Yes**

(+) Stress indicates Tension

Load Cases and Load Combination	Live Load Consider			Member Forces from Iarsa				Flange lateral bending stress
		Macro Node No	Iarsa Station	Axial (FX)	Shear (Fz)	Weak Axis Moment (Mz)	Strong Axis Moment (My)	f_l
			(ft)	(kips)	(kips)	(k-ft)	(k-ft)	(ksi)
DC1		1005	44.0	0.0	13.7	-0.1	382.7	0.01
		1005	44.0	0.0	13.7	-0.1	382.7	0.01
DC2		1005	44.0	5.5	7.0	5.2	122.7	1.94
		1005	44.0	5.5	7.0	5.2	122.7	1.94
DW		1005	44.0	0.1	0.1	0.1	0.1	0.04
		1005	44.0	0.1	0.1	0.1	0.1	0.04
1.25DC1+1.25DC2+1.5DW		1005	44.0	7.0	26.1	6.6	631.9	2.49
		1005	44.0	7.0	26.1	6.6	631.9	2.49
LL+I_MaxFX (LL+IM)	HL-93	1005	44.0	142.0	20.3	-6.8	830.7	2.55
		1005	44.0	142.0	20.3	-6.8	830.7	2.55
LL+I_MINFX (LL+IM)		1005	44.0	-58.4	6.3	2.5	-195.6	0.93
		1005	44.0	-58.4	6.3	2.5	-195.6	0.93
LL+I_MaxFZ (LL+IM)		1005	44.0	92.3	17.5	-5.2	518.5	1.95
		1005	44.0	92.3	17.5	-5.2	518.5	1.95
LL+I_MINFZ (LL+IM)		1005	44.0	95.6	34.0	-4.1	523.2	1.53
		1005	44.0	95.6	34.0	-4.1	523.2	1.53
LL+I_MaxMY (LL+IM)		1005	44.0	128.8	15.1	-5.2	914.0	1.95
		1005	44.0	128.8	15.1	-5.2	914.0	1.95
LL+I_MINMY (LL+IM)		1005	44.0	-28.8	6.3	-4.1	-227.9	1.53
		1005	44.0	-28.8	6.3	-4.1	-227.9	1.53

DC1_Bracing Start		1005	44.0	0.000	13.687	-0.1	382.715	
DC1_Bracing End		1008	66.000	0.000	35.672	0.2	-157.048	
DC2_Bracing Start		1005	44.000	5.512	7.048	5.2	122.720	
DC2_Bracing End		1008	66.000	-0.075	13.773	2.6	-31.289	
DW_Bracing Start		1005	44.000	0.100	0.100	0.1	0.100	
DW_Bracing End		1008	66.000	0.100	0.100	0.1	0.100	
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005	44.000	141.981	20.284	-6.8	830.673	
LL+I_MaxFX_Bracing End (LL+IM)		1008	66.000	40.544	33.822	-5.3	460.868	
LL+I_MINFX_Bracing_Start (LL+IM)		1005	44.000	-58.438	6.255	2.5	-195.555	
LL+I_MINFX_Bracing_End (LL+IM)		1008	66.000	-27.905	3.695	-0.1	-263.620	
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	44.000	92.285	17.523	-5.2	518.548	
LL+I_MaxFZ_Bracing_End (LL+IM)		1008	66.000	11.362	10.668	-4.5	229.822	
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	44.000	95.643	33.981	-4.1	523.189	
LL+I_MINFZ_Bracing_End (LL+IM)		1008	66.000	28.922	59.748	-4.1	360.515	
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	44.000	128.795	15.123	-5.2	914.011	
LL+I_MaxMY_Bracing_End (LL+IM)		1008	66.000	26.763	32.651	-4.5	563.211	
LL+I_MINMY_Bracing_Start (LL+IM)		1005	44.000	-28.845	6.254	-4.1	-227.856	
LL+I_MINMY_Bracing_End (LL+IM)		1008	66.000	-4.453	6.454	-4.2	-417.421	
1.25DC+1.5DW_Bracing Start		1005	44.000	7.040	26.068	6.6	631.944	
1.25DC+1.5DW_Bracing End		1008	66.000	0.056	61.957	3.6	-235.271	
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	44.000	255.507	61.565	-5.3	2085.621	

Load Cases and Load Combination	Live Load Consider			Member Forces from Iarsa				Flange lateral bending stress
		Macro Node No	Iarsa Station	Axial (FX)	Shear (Fz)	Weak Axis Moment (Mz)	Strong Axis Moment (My)	f_l
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	66.000	71.008	121.145	-5.8	571.248	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	44.000	-95.227	37.016	10.9	289.722	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	66.000	-48.778	68.423	3.4	-696.607	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	44.000	168.538	56.734	-2.5	1539.403	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	66.000	19.940	80.626	-4.3	166.918	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	44.000	174.415	85.535	-0.6	1547.525	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	66.000	50.670	166.516	-3.7	395.630	
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	44.000	232.432	52.534	-2.5	2231.463	
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	66.000	46.891	119.096	-4.3	750.349	
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	44.000	-43.440	37.014	-0.6	233.195	
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	66.000	-7.737	73.251	-3.7	-965.757	

		Macro Node No	Iarsa Station	Axial (FX)	Shear (Fz)	Weak Axis Moment (Mz)	Strong Axis Moment (My)	fl
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	44.0	255.5	61.6	-5.3	2085.6	6.95
		1005	44.0	255.5	61.6	-5.3	2085.6	6.95
1.25DC+1.5DW+1.75LL+I_MinFX		1005	44.0	-95.2	37.0	10.9	289.7	4.13
		1005	44.0	-95.2	37.0	10.9	289.7	4.13
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	44.0	168.5	56.7	-2.5	1539.4	5.90
		1005	44.0	168.5	56.7	-2.5	1539.4	5.90
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	44.0	174.4	85.5	-0.6	1547.5	5.18
		1005	44.0	174.4	85.5	-0.6	1547.5	5.18
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	44.0	232.4	52.5	-2.5	2231.5	5.90
		1005	44.0	232.4	52.5	-2.5	2231.5	5.90
1.25DC+1.5DW+1.75LL+I_MinMY		1005	44.0	-43.4	37.0	-0.6	233.2	5.18
		1005	44.0	-43.4	37.0	-0.6	233.2	5.18

Load Cases and Load Combination	Live Load Consider			Member Forces from Iarsa				Flange lateral bending stress
		Macro Node No	Iarsa Station	Axial (FX)	Shear (Fz)	Weak Axis Moment (Mz)	Strong Axis Moment (My)	f_l
			(ft)	(kips)	(kips)	(k-ft)	(k-ft)	(ksi)
DC1		1005	44.0	0.0	13.7	-0.1	382.7	0.01
		1005	44.0	0.0	13.7	-0.1	382.7	0.01
DC2		1005	44.0	5.5	7.0	5.2	122.7	1.94
		1005	44.0	5.5	7.0	5.2	122.7	1.94
DW		1005	44.0	0.1	0.1	0.1	0.1	0.04
		1005	44.0	0.1	0.1	0.1	0.1	0.04
DC1+DC2+DW		1005	44.0	5.6	20.8	5.2	505.5	1.99
		1005	44.0	5.6	20.8	5.2	505.5	1.99

Load Cases and Load Combination	Live Load Consider			Member Forces from larsa				Flange lateral bending stress
		Macro Node No	larsa Station	Axial (FX)	Shear (Fz)	Weak Axis Moment (Mz)	Strong Axis Moment (My)	f_l
LL_MaxFX (LL)	HL-93	1005	44.0	116.6	15.9	-5.5	677.5	2.06
		1005	44.0	116.6	15.9	-5.5	677.5	2.06
LL_MINFX (LL)		1005	44.0	-48.8	5.2	2.3	-165.0	0.88
		1005	44.0	-48.8	5.2	2.3	-165.0	0.88
LL_MaxFZ (LL)		1005	44.0	73.9	14.0	-4.1	414.1	1.55
		1005	44.0	73.9	14.0	-4.1	414.1	1.55
LL_MINFZ (LL)		1005	44.0	75.3	27.5	-3.1	407.5	1.18
		1005	44.0	75.3	27.5	-3.1	407.5	1.18
LL_MaxMY (LL)		1005	44.0	105.8	11.8	-4.1	746.4	1.55
		1005	44.0	105.8	11.8	-4.1	746.4	1.55
LL_MINMY (LL)		1005	44.0	-24.0	5.2	-3.1	-190.1	1.18
		1005	44.0	-24.0	5.2	-3.1	-190.1	1.18

Load Cases and Load Combination	Live Load Consider		Load Factor					Resistance Factor		Longitudinal Stiffener		Transverse Stiffener			Hybrid factor
								Flexual	Shear	No, of Longitudinal stiffener provided ?	Dist from stiffener to comp. flg	Is transverse stiffener provided?	Transverse Stiffener Spacing	Is end panel or interior panel?	
		Macro Node No	γ_{DC1}	γ_{DC2}	γ_{PL}	γ_{DW}	γ_{LL}	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h
								6.5.4.2	6.5.4.2						6.10.1.10.1
											(in)		(ft)		
DC1		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
DC2		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
DW		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
1.25DC1+1.25DC2+1.5DW		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
LL+I_MaxFX (LL+IM)		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
LL+I_MINFX (LL+IM)		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
LL+I_MaxFZ (LL+IM)		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
	HL-93	1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
LL+I_MINFZ (LL+IM)		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
LL+I_MaxMY (LL+IM)		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
LL+I_MINMY (LL+IM)		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	4	0	1.0

DC1_Bracing Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
DC1_Bracing End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
DC2_Bracing Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
DC2_Bracing End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
DW_Bracing Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
DW_Bracing End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
LL+I_MaxFX_Bracing Start (LL+IM)		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
LL+I_MaxFX_Bracing End (LL+IM)		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
LL+I_MINFX_Bracing_Start (LL+IM)		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
LL+I_MINFX_Bracing_End (LL+IM)		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
LL+I_MaxFZ_Bracing_End (LL+IM)	HL-93	1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
LL+I_MINFZ_Bracing_End (LL+IM)		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
LL+I_MaxMY_Bracing_End (LL+IM)		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
LL+I_MINMY_Bracing_Start (LL+IM)		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
LL+I_MINMY_Bracing_End (LL+IM)		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
1.25DC+1.5DW_Bracing Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	4	0	1.000
1.25DC+1.5DW_Bracing End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3	0	1.000
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.7	0	1.000

Load Cases and Load Combination	Live Load Consider		Load Factor					Resistance Factor		Longitudinal Stiffener		Transverse Stiffener			Hybrid factor
								Flexual	Shear	No, of Longitudinal stiffener provided ?	Dist from stiffener to comp. flg	Is transverse stiffener provided?	Transverse Stiffener Spacing	Is end panel or interior panel?	
		Macro Node No	Y_{DC1}	Y_{DC2}	Y_{PL}	Y_{DW}	Y_{LL}	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h
								6.5.4.2	6.5.4.2						6.10.1.10.1
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.4	0	1.000
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.7	0	1.000
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.4	0	1.000
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.7	0	1.000
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.4	0	1.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.7	0	1.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.4	0	1.000
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.7	0	1.000
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.4	0	1.000
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.7	0	1.000
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	1.250	1.250	1.750	1.500	1.750	1.00	1.00	0	10000.00	0	3.4	0	1.000

		Macro Node No	YDC1	YDC2	YPL	YDW	YLL	ϕf	ϕv		ds	(Yes =0,No=1)	do	nterior =0, End=	Rh
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
1.25DC+1.5DW+1.75LL+I_MinFX		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
1.25DC+1.5DW+1.75LL+I_MinMY		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0
		1005	1.25	1.25	1.75	1.50	1.75	1.00	1.00	0	10000.00	0	3.7	0	1.0

Load Cases and Load Combination	Live Load Consider		Load Factor					Resistance Factor		Longitudinal Stiffener		Transverse Stiffener			Hybrid factor
								Flexual	Shear	No, of Longitudinal stiffener provided ?	Dist from stiffener to comp. flg	Is transverse stiffener provided?	Transverse Stiffener Spacing	Is end panel or interior panel?	
		Macro Node No	Y_{DC1}	Y_{DC2}	Y_{PL}	Y_{DW}	Y_{LL}	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h
								6.5.4.2	6.5.4.2						6.10.1.10.1
											(in)		(ft)		
DC1		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
DC2		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
DW		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
DC1+DC2+DW		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0

Load Cases and Load Combination	Live Load Consider		Load Factor					Resistance Factor		Longitudinal Stiffener		Transverse Stiffener			Hybrid factor
								Flexual	Shear	No, of Longitudinal stiffener provided ?	Dist from stiffener to comp. flg	Is transverse stiffener provided?	Transverse Stiffener Spacing	Is end panel or interior panel?	
		Macro Node No	Y_{DC1}	Y_{DC2}	Y_{PL}	Y_{DW}	Y_{LL}	ϕ_f	ϕ_v		d_s	(Yes =0,No=1)	d_o	(Interior =0, End=1)	R_h
								6.5.4.2	6.5.4.2						6.10.1.10.1
LL_MaxFX (LL)	HL-93	1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
LL_MINFX (LL)		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
LL_MaxFZ (LL)		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
LL_MINFZ (LL)		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
LL_MaxMY (LL)		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
LL_MINMY (LL)		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0
		1005	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	10000.00	0	4	0	1.0

Load Cases and Load Combination	Live Load Consider		Material Properties								Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Area of Concrete Deck	Unbacing length	$(LL+I)_{long}$+1/3*$(LL+I)_{Trans}$ (At Bottom Flange)
			Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	rebar yield strength	conc deck	Girder	conc deck	Modular Ratio							
		Macro Node No	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f'_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	As	L_b	
			(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)		(in^2)	(in)	(in)	(ft)	(in^2)	(in)	
DC1		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
DC2		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
DW		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
1.25DC1+1.25DC2+1.5DW		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	
LL+I_MaxFX (LL+IM)	HL-93	1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	10.77
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	10.77
LL+I_MINFX (LL+IM)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-4.15
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-4.15
LL+I_MaxFZ (LL+IM)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	6.87
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	6.87
LL+I_MINFZ (LL+IM)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	6.80
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	6.80
LL+I_MaxMY (LL+IM)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	11.36
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	11.36
LL+I_MINMY (LL+IM)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-4.18
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-4.18

DC1_Bracing Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
DC1_Bracing End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
DC2_Bracing Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
DC2_Bracing End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
DW_Bracing Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
DW_Bracing End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MaxFX_Bracing End (LL+IM)		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MINFX_Bracing_Start (LL+IM)		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MINFX_Bracing_End (LL+IM)		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MaxFZ_Bracing_End (LL+IM)		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MINFZ_Bracing_End (LL+IM)		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MaxMY_Bracing_End (LL+IM)		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MINMY_Bracing_Start (LL+IM)		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
LL+I_MINMY_Bracing_End (LL+IM)		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW_Bracing Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW_Bracing End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	

Load Cases and Load Combination	Live Load Consider		Material Properties: Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	rebar yield strength	conc deck	Girder	conc deck	Modular Ratio	Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Area of Concrete Deck	Unbacing length	$(LL+I)_{long}+1/3*(LL+I)_{Trans}$ (At Bottom Flange)
		Macro Node No	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	As	L_b	
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	36.000	36.000	36.000	40.000	4.000	29000.000	3604.997	8.000	4.423	8.000	1.500	7.500	720.000	264.000	

		Macro Node No	Fyf	Fyw	Fyc	Fy_rebar	fc	E_steel	E_deck	n	Ars	t_deck	h_haunch	beff		Lb	
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	30.81
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	30.81
1.25DC+1.5DW+1.75LL+I_MinFX		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	4.85
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	4.85
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	23.63
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	23.63
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	23.28
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	23.28
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	31.50
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	31.50
1.25DC+1.5DW+1.75LL+I_MinMY		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.85
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.85
															Max =	**264.0**	

Load Cases and Load Combination	Live Load Consider		Material Properties: Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	rebar yield strength	conc deck	Girder	conc deck	Modular Ratio	Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Area of Concrete Deck	Unbacing length	$(LL+I)_{long}+1/3*(LL+I)_{Trans}$ (At Bottom Flange)
		Macro Node No	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	As	L_b	
			(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)		(in^2)	(in)	(in)	(ft)	(in^2)	(in)	
DC1		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.6
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.6
DC2		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	2.1
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	2.1
DW		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	0.0
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	0.0
DC1+DC2+DW		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	7.7
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	7.7

Load Cases and Load Combination	Live Load Consider		Material Properties								Area of deck rebar within effective width	Deck thickness	Haunch thickness	Effective width of the deck	Area of Concrete Deck	Unbacing length	$(LL+I)_{\_long}+1/3*(LL+I)_{\_Trans}$ (At Bottom Flange)
			Specified min flg yield strength	Specified web flg yield strength	Specified min yield strength of comp. flg	rebar yield strength	conc deck	Girder	conc deck	Modular Ratio							
		Macro Node No	F_{yf}	F_{yw}	F_{yc}	F_{y_rebar}	f_c	$E_{\_steel}$	$E_{\_deck}$	n	A_{rs}	$t_{\_deck}$	$h_{\_haunch}$	b_{eff}	As	L_b	
LL_MaxFX (LL)	HL-93	1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	8.78
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	8.78
LL_MINFX (LL)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-3.52
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-3.52
LL_MaxFZ (LL)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.48
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.48
LL_MINFZ (LL)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.30
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	5.30
LL_MaxMY (LL)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	9.27
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	9.27
LL_MINMY (LL)		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-3.45
		1005	36.0	36.0	36.0	40.0	4.0	29000.0	3605.0	8.0	4.4	8.0	1.5	7.5	720.0	264.0	-3.45

Load Cases and Load Combination	Live Load Consider		Non-Composite Section																
			Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange
		Macro Node No	b_{f_top}	$t_{\_top\ flg}$	$A_{\_st\_top\_flg}$	b_{f_bott}	$t_{\_bott\ flg}$	$A_{\_st\_bott\_flg}$	$D_{\_web}$	$t_{\_web}$	$A_{\_web}$	$A_{\_steel}$	$I_{\_steel}$	Y_T	Y_D	$S_{\_top\_flg}$	$S_{\_bott\_flg}$	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$
			(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^4)	(in^4)
DC1		1005	16.0	0.750	12.0	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
DC2		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
DW		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
1.25DC1+1.25DC2+1.5DW		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
LL+I_MaxFX (LL+IM)	HL-93	1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
LL+I_MINFX (LL+IM)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
LL+I_MaxFZ (LL+IM)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
LL+I_MINFZ (LL+IM)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
LL+I_MaxMY (LL+IM)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
LL+I_MINMY (LL+IM)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
DC1_Bracing Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
DC1_Bracing End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
DC2_Bracing Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
DC2_Bracing End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
DW_Bracing Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
DW_Bracing End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MaxFX_Bracing End (LL+IM)		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MINFX_Bracing_Start (LL+IM)		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MINFX_Bracing_End (LL+IM)		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MaxFZ_Bracing_End (LL+IM)		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MINFZ_Bracing_End (LL+IM)		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MaxMY_Bracing_End (LL+IM)		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MINMY_Bracing_Start (LL+IM)		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
LL+I_MINMY_Bracing_End (LL+IM)		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW_Bracing Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW_Bracing End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000

Load Cases and Load Combination	Live Load Consider		Non-Composite Section																
			Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange
		Macro Node No	b_{f_top}	$t_{\_top\ flg}$	$A_{\_st\_top\_flg}$	b_{f_bott}	$t_{\_bott\ flg}$	$A_{\_st\_bott\_flg}$	$D_{\_web}$	$t_{\_web}$	$A_{\_web}$	$A_{\_steel}$	$I_{\_steel}$	Y_T	Y_D	$S_{\_top\_flg}$	$S_{\_bott\_flg}$	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	16.000	0.750	12.000	16.000	0.750	12.000	54.000	0.375	20.250	44.250	22907.250	27.750	27.750	825.486	825.486	256.000	256.000

		Macro Node No	bf_top	t_top flg	A_st_top_flg	bf_bott	t_bott flg	A_st_bott_flg	D_web	t_web	A_web	A_steel	I_steel	YT	YD	S_top_flg	S_bott_flg	Iy_top_flg	Iy_bott_flg
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
1.25DC+1.5DW+1.75LL+I_MinFX		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
1.25DC+1.5DW+1.75LL+I_MinMY		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.8	12.0	16.0	0.750	12.0	54.0	0.375	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0

Load Cases and Load Combination	Live Load Consider		Non-Composite Section																
			Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange
		Macro Node No	b_{f_top}	$t_{\_top\ flg}$	$A_{\_st\_top\_flg}$	b_{f_bott}	$t_{\_bott\ flg}$	$A_{\_st\_bott\_flg}$	$D_{\_web}$	$t_{\_web}$	$A_{\_web}$	$A_{\_steel}$	$I_{\_steel}$	Y_T	Y_D	$S_{\_top\_flg}$	$S_{\_bott\_flg}$	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$
			(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in)	(in)	(in^2)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^4)	(in^4)
DC1		1005	16.0	0.750	12.0	16.0	0.750	12.0	54.0	0.3750	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
DC2		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
DW		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
DC1+DC2+DW		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0

Load Cases and Load Combination	Live Load Consider		Non-Composite Section																	
			Top steel flange width	Top steel flange thk	Top steel flange area	Bott steel flange width	Bott steel flange thk	Bott steel flange area	Girder Web Depth	Girder Web thk	Girder web area	Total Steel Area	Moment of inertia	CG to Top/Flange	CG to Bott/Flange	Section Modulus about major bending axis		Moment of Inertia of top Flange	Moment of Inertia of bott Flange	
		Macro Node No	b_{f_top}	$t_{top\ flg}$	$A_{st\_top\_flg}$	b_{f_bott}	$t_{bott\ flg}$	$A_{st\_bott\_flg}$	D_{web}	t_{web}	A_{web}	A_{steel}	I_{steel}	Y_T	Y_D	S_{top_flg}	S_{bott_flg}	$I_{y\_top\_flg}$	$I_{y\_bott\_flg}$	
LL_MaxFX (LL)	HL-93	1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
LL_MINFX (LL)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
LL_MaxFZ (LL)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
LL_MINFZ (LL)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
LL_MaxMY (LL)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
LL_MINMY (LL)		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	
		1005	16.0	0.75	12.0	16.0	0.75	12.0	54.0	0.4	20.3	44.3	22907.3	27.8	27.8	825.5	825.5	256.0	256.0	

Load Cases and Load Combination	Live Load Consider		Composite Section with Modular Ratio = n (at Positive Moment Region)							Composite Section with Modular Ratio = 3n (at Positive Moment Reigion)						
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel
		Macro Node No	$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$	$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$
			(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)
DC1		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
DC2		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
DW		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
1.25DC1+1.25DC2+1.5DW		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
LL+I_MaxFX (LL+IM)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
LL+I_MINFX (LL+IM)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
LL+I_MaxFZ (LL+IM)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
	HL-93	1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
LL+I_MINFZ (LL+IM)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
LL+I_MaxMY (LL+IM)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
LL+I_MINMY (LL+IM)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4

DC1_Bracing Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
DC1_Bracing End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
DC2_Bracing Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
DC2_Bracing End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
DW_Bracing Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
DW_Bracing End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MaxFX_Bracing Start (LL+IM)		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MaxFX_Bracing End (LL+IM)		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MINFX_Bracing_Start (LL+IM)		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MINFX_Bracing_End (LL+IM)		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MaxFZ_Bracing_End (LL+IM)		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MINFZ_Bracing_Start (LL+IM)	HL-93	1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MINFZ_Bracing_End (LL+IM)		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MaxMY_Bracing_End (LL+IM)		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MINMY_Bracing_Start (LL+IM)		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
LL+I_MINMY_Bracing_End (LL+IM)		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW_Bracing Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW_Bracing End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425

Load Cases and Load Combination	Live Load Consider		Composite Section with Modular Ratio = n (at Positive Moment Region)							Composite Section with Modular Ratio = 3n (at Positive Moment Reigion)						
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel
		Macro Node No	$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$	$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	137.250	56297.3	14.824	5.324	50.176	10574.696	1121.991	75.250	43057.513	23.615	14.115	41.385	3050.382	1040.425

		Macro Node No	Ac(n)	Ic(n)	Yslabc(n)	Ytc(n)	Ybc(n)	Stc(n)	Sbc(n)	Ac(3n)	Ic(3n)	Yslabc(3n)	Ytc(3n)	Ybc(3n)	Stc(3n)	Sbc(3n)
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
1.25DC+1.5DW+1.75LL+I_MinFX		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
1.25DC+1.5DW+1.75LL+I_MinMY		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4

Load Cases and Load Combination	Live Load Consider		Composite Section with Modular Ratio = n (at Positive Moment Region)							Composite Section with Modular Ratio = 3n (at Positive Moment Reigion)						
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel
		Macro Node No	$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$	$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$
			(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)	(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)
DC1		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
DC2		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
DW		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
DC1+DC2+DW		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0	75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4

Load Cases and Load Combination	Live Load Consider	Composite Section with Modular Ratio = n (at Positive Moment Region)									Composite Section with Modular Ratio = 3n (at Positive Moment Reigion)							
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel		Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel	
		Macro Node No	$A_{c(n)}$	$I_{c(n)}$	$Y_{slabc(n)}$	$Y_{tc(n)}$	$Y_{bc(n)}$	$S_{tc(n)}$	$S_{bc(n)}$		$A_{c(3n)}$	$I_{c(3n)}$	$Y_{slabc(3n)}$	$Y_{tc(3n)}$	$Y_{bc(3n)}$	$S_{tc(3n)}$	$S_{bc(3n)}$	
LL_MaxFX (LL)	HL-93	1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
LL_MINFX (LL)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
LL_MaxFZ (LL)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
LL_MINFZ (LL)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
LL_MaxMY (LL)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
LL_MINMY (LL)		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	
		1005	137.3	56297.3	14.8	5.3	50.2	10574.7	1122.0		75.3	43057.5	23.6	14.1	41.4	3050.4	1040.4	

Load Cases and Load Combination	Live Load Consider		Composite Section with Modular Ratio = n (at Negative Moment Region)								Check if it is compact composite section for M+ (6.10.6.2.2)					
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel		Depth of web in compression at the M_p	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤3.76*$(E/F_{yc})^{1/2}$?	Is compact composite section?	
		Macro Node No	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		D_{cp}	Yes =0, No=1	Yes =0,No=1	Yes =0, No=1		
											(D6.3.2-1)				AASHTO 6.10.6.2.2	
			(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)		(in)					
DC1		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
DC2		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
DW		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
1.25DC1+1.25DC2+1.5DW		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL+I_MaxFX (LL+IM)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL+I_MINFX (LL+IM)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL+I_MaxFZ (LL+IM)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
	HL-93	1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL+I_MINFZ (LL+IM)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL+I_MaxMY (LL+IM)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL+I_MINMY (LL+IM)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	

DC1_Bracing Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
DC1_Bracing End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
DC2_Bracing Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
DC2_Bracing End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
DW_Bracing Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
DW_Bracing End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MaxFX_Bracing Start (LL+IM)		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MaxFX_Bracing End (LL+IM)		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MINFX_Bracing_Start (LL+IM)		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MINFX_Bracing_End (LL+IM)		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MaxFZ_Bracing_End (LL+IM)	HL-93	1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MINFZ_Bracing_End (LL+IM)		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MaxMY_Bracing_End (LL+IM)		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MINMY_Bracing_Start (LL+IM)		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
LL+I_MINMY_Bracing_End (LL+IM)		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW_Bracing Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW_Bracing End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	

Load Cases and Load Combination	Live Load Consider		Composite Section with Modular Ratio = n (at Negative Moment Region)								Check if it is compact composite section for M+ (6.10.6.2.2)					
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel		Depth of web in compression at the M_p	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤3.76*$(E/F_{yc})^{1/2}$?	Is compact composite section?	
		Macro Node No	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		D_{cp}	Yes =0, No=1	Yes =0,No=1	Yes =0, No=1		
											(D6.3.2-1)				AASHTO 6.10.6.2.2	
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	48.673	27352.983	34.228	24.728	30.772	1106.137	888.903		0.000	0.000	0.000	0.000	compact, follow 6.10.7.1	

		Macro Node No	Ac	Ic	Yslabc	Ytc	Ybc	Stc(n)	Sbc(n)		Dcp	Yes =0, No=1	Yes =0,No=1	Yes =0, No=1		
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinFX		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
1.25DC+1.5DW+1.75LL+I_MinMY		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		-70.2	0.0	0.0	0.0	compact, follow 6.10.7.1	

Load Cases and Load Combination	Live Load Consider		Composite Section with Modular Ratio = n (at Negative Moment Region)								Check if it is compact composite section for M+ (6.10.6.2.2)					
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel		Depth of web in compression at the M_p	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤3.76*$(E/F_{yc})^{1/2}$?	Is compact composite section?	
		Macro Node No	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		D_{cp}	Yes =0, No=1	Yes =0,No=1	Yes =0, No=1		
											(D6.3.2-1)				AASHTO 6.10.6.2.2	
			(in^2)	(in^4)	(in)	(in)	(in^3)	(in^3)	(in^3)		(in)					
DC1		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
DC2		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
DW		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
DC1+DC2+DW		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	

Load Cases and Load Combination	Live Load Consider		Composite Section with Modular Ratio = n (at Negative Moment Region)								Check if it is compact composite section for M+ (6.10.6.2.2)					
			Area	Moment of inertia	Distance from CG to top of deck	Distance from CG to top of steel	Distance from CG to bott of steel	Section Modulus to top of steel	Section Modulus to bott of steel		Depth of web in compression at the M_p	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤3.76*$(E/F_{yc})^{1/2}$?	Is compact composite section?	
		Macro Node No	A_c	I_c	Y_{slabc}	Y_{tc}	Y_{bc}	$S_{tc(n)}$	$S_{bc(n)}$		D_{cp}	Yes =0, No=1	Yes =0,No=1	Yes =0, No=1		
											(D6.3.2-1)				AASHTO 6.10.6.2.2	
LL_MaxFX (LL)	HL-93	1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL_MINFX (LL)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL_MaxFZ (LL)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL_MINFZ (LL)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL_MaxMY (LL)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
LL_MINMY (LL)		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	
		1005	48.7	27353.0	34.2	24.7	30.8	1106.1	888.9		0.0	0.0	0.0	0.0	compact, follow 6.10.7.1	

Load Cases and Load Combination	Live Load Consider		Check if it is compact composite section for M- (6.10.6.2.3)							6.10.1.9 - Web Bend-Buckling Resistance F_{crw} 6.10.1.9.1 without longitudinal stiffeners				
			D_{cp}	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤ $5.76*(E/F_{yc})^{1/2}$?	Is I_{yc}/I_{yt} ≥ 0.3 ?	Is compact composite section?		Sum of Top -flange stress	Sum of Bottom -flange stress	Depth of web in compression	Bend-buckling coefficient	Nominal bend-buckling resistance
		Macro Node No	(D6.3.2-2)	Yes =0,No=1	Yes =0,No=1	Yes =0,No=1				f_top	f_bottom	D_c	k	F_{crw}
								AASHTO 6.10.6.2.2		D6.3.1	D6.3.1	D6.3.1-1	6.10.1.9.1-2	6.10.1.9.1-1
			(in)							(ksi)	(ksi)	(in)		
DC1		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.56	5.56	27.0	36.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.56	5.56	27.0	36.0	36.0
DC2		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.410	1.489	11.2	208.3	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.41	1.49	11.2	208.3	36.0
DW		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.00	0.00	4.4	1366.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.00	0.00	4.4	1366.0	36.0
1.25DC1+1.25DC2+1.5DW		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.46	8.82	24.7	43.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.46	8.82	24.7	43.0	36.0
LL+I_MaxFX (LL+IM)	HL-93	1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.09	9.92	54.2	8.9	11.2
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.09	9.92	54.2	8.9	11.2
LL+I_MINFX (LL+IM)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.92	-3.84	44.0	13.5	17.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.92	-3.84	44.0	13.5	17.0
LL+I_MaxFZ (LL+IM)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.08	6.22	54.0	9.0	11.3
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.08	6.22	54.0	9.0	11.3
LL+I_MINFZ (LL+IM)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.10	6.29	53.9	9.0	11.4
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.10	6.29	53.9	9.0	11.4
LL+I_MaxMY (LL+IM)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.10	10.71	0.1	2624400.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.10	10.71	0.1	2624400.0	36.0
LL+I_MINMY (LL+IM)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		1.88	-3.67	36.0	20.3	25.6
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		1.88	-3.67	36.0	20.3	25.6

DC1_Bracing Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-5.6	5.6	27.000	36.000	36.000
DC1_Bracing End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		2.3	-2.3	27.000	36.000	36.000
DC2_Bracing Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-0.410	1.5	11.224	208.326	36.000
DC2_Bracing End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		0.338	-0.4	30.134	28.902	36.000
DW_Bracing Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		0.00	0.00	4.383	1366.017	36.000
DW_Bracing End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		0.00	0.00	4.383	1366.017	36.000
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005	33.553	0.000	0.000	1.000	0.000	Non-compact		0.1	9.9	54.241	8.920	11.228
LL+I_MaxFX_Bracing End (LL+IM)		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		-0.2	5.2	1.567	10691.825	36.000
LL+I_MINFX_Bracing_Start (LL+IM)		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		0.9	-3.8	44.016	13.546	17.050
LL+I_MINFX_Bracing_End (LL+IM)		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		2.3	-4.1	34.979	21.450	26.998
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		0.1	6.2	54.011	8.996	11.324
LL+I_MaxFZ_Bracing_End (LL+IM)		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		-0.2	2.5	2.884	3155.558	36.000
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		0.1	6.3	53.855	9.049	11.389
LL+I_MINFZ_Bracing_End (LL+IM)		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		-0.2	4.1	1.832	7823.150	36.000
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-0.1	10.7	0.100	2624400.000	36.000
LL+I_MaxMY_Bracing_End (LL+IM)		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		-0.4	6.2	2.950	3016.654	36.000
LL+I_MINMY_Bracing_Start (LL+IM)		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		1.9	-3.7	35.950	20.306	25.559
LL+I_MINMY_Bracing_End (LL+IM)		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		4.4	-5.7	30.521	28.173	35.460
1.25DC+1.5DW_Bracing Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-7.46	8.82	24.696	43.031	36.000
1.25DC+1.5DW_Bracing End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		3.28	-3.38	27.436	34.865	36.000
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-7.30	26.17	11.358	203.452	36.000

Load Cases and Load Combination	Live Load Consider		Check if it is compact composite section for M- (6.10.6.2.3)							6.10.1.9 - Web Bend-Buckling Resistance F_{crw} — 6.10.1.9.1 without longitudinal stiffeners				
			D_{cp}	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤ $5.76*(E/F_{yc})^{1/2}$?	Is I_{yc}/I_{yt} ≥ 0.3 ?	Is compact composite section?		Sum of Top -flange stress	Sum of Bottom -flange stress	Depth of web in compression	Bend-buckling coefficient	Nominal bend-buckling resistance
		Macro Node No	(D6.3.2-2)	Yes =0,No=1	Yes =0,No=1	Yes =0,No=1				f_top	f_bottom	D_c	k	F_{crw}
								AASHTO 6.10.6.2.2		D6.3.1	D6.3.1	D6.3.1-1	6.10.1.9.1-2	6.10.1.9.1-1
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	33.553	0.000	0.000	1.000	0.000	Non-compact		2.88	5.76	36.247	19.975	25.142
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-5.85	2.09	40.122	16.303	20.520
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		7.28	-10.61	32.171	25.358	31.917
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-7.32	19.70	14.282	128.662	36.000
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		2.97	1.06	13.889	136.051	36.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-7.28	19.83	14.160	130.890	36.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		2.93	3.73	30.337	28.515	35.891
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-7.64	27.56	11.290	205.889	36.000
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		2.50	7.50	40.868	15.713	19.778
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	33.553	0.000	0.000	1.000	0.000	Non-compact		-4.17	2.40	34.516	22.028	27.727
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	33.553	0.000	0.000	1.000	0.000	Non-compact		11.04	-13.40	29.681	29.791	36.000

		Macro Node No	(D6.3.2-2)	Yes =0,No=1	Yes =0,No=1	Yes =0,No=1				f_top	f_bottom	Dc	k	Fcrw
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.30	28.49	10.6	234.7	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.30	28.49	10.6	234.7	36.0
1.25DC+1.5DW+1.75LL+I_MinFX		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.85	3.47	34.1	22.6	28.4
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.85	3.47	34.1	22.6	28.4
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.32	21.66	13.3	149.2	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.32	21.66	13.3	149.2	36.0
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.28	21.55	13.3	149.1	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.28	21.55	13.3	149.1	36.0
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.64	29.53	10.7	231.2	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-7.64	29.53	10.7	231.2	36.0
1.25DC+1.5DW+1.75LL+I_MinMY		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-4.17	4.12	27.2	35.5	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-4.17	4.12	27.2	35.5	36.0

Load Cases and Load Combination	Live Load Consider		Check if it is compact composite section for M- (6.10.6.2.3)							6.10.1.9.1 without longitudinal stiffeners				
			D_{cp}	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤ $5.76*(E/F_{yc})^{1/2}$?	Is I_{yc}/I_{yt} ≥ 0.3 ?	Is compact composite section?		Sum of Top -flange stress	Sum of Bottom -flange stress	Depth of web in compression	Bend-buckling coefficient	Nominal bend-buckling resistance
		Macro Node No	(D6.3.2-2)	Yes =0,No=1	Yes =0,No=1	Yes =0,No=1				f_top	f_bottom	D_c	k	F_{crw}
								AASHTO 6.10.6.2.2		D6.3.1	D6.3.1	D6.3.1-1	6.10.1.9.1-2	6.10.1.9.1-1
			(in)							(ksi)	(ksi)	(in)		
DC1		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.56	5.56	27.0	36.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.56	5.56	27.0	36.0	36.0
DC2		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.410	1.489	11.2	208.3	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.41	1.49	11.2	208.3	36.0
DW		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.00	0.00	4.4	1366.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.00	0.00	4.4	1366.0	36.0
DC1+DC2+DW		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.97	7.05	24.7	43.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-5.97	7.05	24.7	43.0	36.0

Load Cases and Load Combination	Live Load Consider		Check if it is compact composite section for M- (6.10.6.2.3)							6.10.1.9 - Web Bend-Buckling Resistance F_{crw} — 6.10.1.9.1 without longitudinal stiffeners				
			D_{cp}	Is flg strength ≤70 ksi ?	Is D/t_w≤150 ?	Is $2D_{cp}/t_w$≤ $5.76*(E/F_{yc})^{1/2}$?	Is I_{yc}/I_{yt} ≥ 0.3 ?	Is compact composite section?		Sum of Top -flange stress	Sum of Bottom -flange stress	Depth of web in compression	Bend-buckling coefficient	Nominal bend-buckling resistance
		Macro Node No	(D6.3.2-2)	Yes =0,No=1	Yes =0,No=1	Yes =0,No=1				f_top	f_bottom	D_c	k	F_{crw}
								AASHTO 6.10.6.2.2		D6.3.1	D6.3.1	D6.3.1-1	6.10.1.9.1-2	6.10.1.9.1-1
LL_MaxFX (LL)	HL-93	1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.080	8.10	54.2	8.9	11.2
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.080	8.10	54.2	8.9	11.2
LL_MINFX (LL)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.788	-3.23	43.9	13.6	17.2
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.788	-3.23	43.9	13.6	17.2
LL_MaxFZ (LL)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.069	4.97	54.0	9.0	11.3
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.069	4.97	54.0	9.0	11.3
LL_MINFZ (LL)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.086	4.91	53.8	9.1	11.4
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		0.086	4.91	53.8	9.1	11.4
LL_MaxMY (LL)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.076	8.75	0.1	2624400.0	36.0
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		-0.076	8.75	0.1	2624400.0	36.0
LL_MINMY (LL)		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		1.569	-3.06	35.9	20.3	25.6
		1005	33.6	0.0	0.0	1.0	0.0	Non-compact		1.569	-3.06	35.9	20.3	25.6

Load Cases and Load Combination	Live Load Consider	Macro Node No	6.10.1.9.2 with longitudinal stiffeners: Bend-buckling coefficient k	Nominal bend-buckling resistance F_{crw}	Nominal bend-buckling resistance (Use) F_{crw}		6.10.1.10.2 - W — R_b without longitudinal stiffener: Limiting slenderness ratio for a noncompact web λ_{rw}	Full width of compression flg b_{fc}	Thickness of compression flg t_{fc}	a_{wc}	Web Load-Shedding Factor R_b Exclude composite in positive flexure with	Web Load-Shedding Factor R_b Composite in positive flexure	Web Load-Shedding Factor R_b ("0" means not applicable)
			6.10.1.9.2-1	6.10.1.9.1-1			6.10.1.10.2-4			6.10.1.10.2-5			
					(ksi)			(in)	(in)				
DC1		1005	36.0	36.0	36.0		161.8	16.0	0.8	1.7	1.000	1.0	1.0
		1005	36.0	36.0	36.0		161.8	16.0	0.8	1.7	1.000	1.0	1.0
DC2		1005	208.3	36.0	36.0		161.8	16.0	0.8	0.7	1.000	1.0	1.0
		1005	208.3	36.0	36.0		161.8	16.0	0.8	0.7	1.000	1.0	1.0
DW		1005	1366.0	36.0	36.0		161.8	16.0	0.8	0.3	1.000	1.0	1.0
		1005	1366.0	36.0	36.0		161.8	16.0	0.8	0.3	1.000	1.0	1.0
1.25DC1+1.25DC2+1.5DW		1005	43.0	36.0	36.0		161.8	16.0	0.8	1.5	1.000	1.0	1.0
		1005	43.0	36.0	36.0		161.8	16.0	0.8	1.5	1.000	1.0	1.0
LL+I_MaxFX (LL+IM)	HL-93	1005	8.9	11.2	11.2		161.8	16.0	0.8	3.4	0.805	1.0	1.0
		1005	8.9	11.2	11.2		161.8	16.0	0.8	3.4	0.805	1.0	1.0
LL+I_MINFX (LL+IM)		1005	13.5	17.0	17.0		161.8	16.0	0.8	2.8	0.901	1.0	0.9
		1005	13.5	17.0	17.0		161.8	16.0	0.8	2.8	0.901	1.0	0.9
LL+I_MaxFZ (LL+IM)		1005	9.0	11.3	11.3		161.8	16.0	0.8	3.4	0.807	1.0	1.0
		1005	9.0	11.3	11.3		161.8	16.0	0.8	3.4	0.807	1.0	1.0
LL+I_MINFZ (LL+IM)		1005	9.0	11.4	11.4		161.8	16.0	0.8	3.4	0.809	1.0	1.0
		1005	9.0	11.4	11.4		161.8	16.0	0.8	3.4	0.809	1.0	1.0
LL+I_MaxMY (LL+IM)		1005	2624400.0	36.0	36.0		161.8	16.0	0.8	0.0	1.000	1.0	1.0
		1005	2624400.0	36.0	36.0		161.8	16.0	0.8	0.0	1.000	1.0	1.0
LL+I_MINMY (LL+IM)		1005	20.3	25.6	25.6		161.8	16.0	0.8	2.2	0.964	1.0	1.0
		1005	20.3	25.6	25.6		161.8	16.0	0.8	2.2	0.964	1.0	1.0

DC1_Bracing Start		1005	36.000	36.000	36.000		161.779	16.000	0.750	1.687	1.000	1.000	1.000
DC1_Bracing End		1008	36.000	36.000	36.000		161.779	16.000	0.750	1.687	1.000	1.000	1.000
DC2_Bracing Start		1005	208.326	36.000	36.000		161.779	16.000	0.750	0.701	1.000	1.000	1.000
DC2_Bracing End		1008	28.902	36.000	36.000		161.779	16.000	0.750	1.883	1.000	1.000	1.000
DW_Bracing Start		1005	1366.017	36.000	36.000		161.779	16.000	0.750	0.274	1.000	1.000	1.000
DW_Bracing End		1008	1366.017	36.000	36.000		161.779	16.000	0.750	0.274	1.000	1.000	1.000
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005	8.920	11.228	11.228		161.779	16.000	0.750	3.390	0.805	1.000	1.000
LL+I_MaxFX_Bracing End (LL+IM)		1008	10691.825	36.000	36.000		161.779	16.000	0.750	0.098	1.000	1.000	1.000
LL+I_MINFX_Bracing_Start (LL+IM)		1005	13.546	17.050	17.050		161.779	16.000	0.750	2.751	0.901	1.000	0.901
LL+I_MINFX_Bracing_End (LL+IM)		1008	21.450	26.998	26.998		161.779	16.000	0.750	2.186	0.971	1.000	0.971
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	8.996	11.324	11.324		161.779	16.000	0.750	3.376	0.807	1.000	1.000
LL+I_MaxFZ_Bracing_End (LL+IM)		1008	3155.558	36.000	36.000		161.779	16.000	0.750	0.180	1.000	1.000	1.000
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	9.049	11.389	11.389		161.779	16.000	0.750	3.366	0.809	1.000	1.000
LL+I_MINFZ_Bracing_End (LL+IM)		1008	7823.150	36.000	36.000		161.779	16.000	0.750	0.114	1.000	1.000	1.000
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	2624400.000	36.000	36.000		161.779	16.000	0.750	0.006	1.000	1.000	1.000
LL+I_MaxMY_Bracing_End (LL+IM)		1008	3016.654	36.000	36.000		161.779	16.000	0.750	0.184	1.000	1.000	1.000
LL+I_MINMY_Bracing_Start (LL+IM)		1005	20.306	25.559	25.559		161.779	16.000	0.750	2.247	0.964	1.000	0.964
LL+I_MINMY_Bracing_End (LL+IM)		1008	28.173	35.460	35.460		161.779	16.000	0.750	1.908	0.999	1.000	0.999
1.25DC+1.5DW_Bracing Start		1005	43.031	36.000	36.000		161.779	16.000	0.750	1.543	1.000	1.000	1.000
1.25DC+1.5DW_Bracing End		1008	34.865	36.000	36.000		161.779	16.000	0.750	1.715	1.000	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	203.452	36.000	36.000		161.779	16.000	0.750	0.710	1.000	1.000	1.000

Load Cases and Load Combination	Live Load Consider		6.10.1.9.2 with longitudinal stiffeners: Bend-buckling coefficient	6.10.1.9.2 with longitudinal stiffeners: Nominal bend-buckling resistance	Nominal bend-buckling resistance (Use)	6.10.1.10.2 - W… R_b without longitudinal stiffener: Limiting slenderness ratio for a noncompact web	Full width of compression flg	Thickness of compression flg	α_{wc}	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b
		Macro Node No	k	F_{crw}	$\mathbf{F_{crw}}$	λ_{rw}	b_{fc}	t_{fc}		Exclude composite in positive flexure with	Composite in positive flexure	("0" means not applicable)
			6.10.1.9.2-1	6.10.1.9.1-1		6.10.1.10.2-4			6.10.1.10.2-5			
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	19.975	25.142	25.142	161.779	16.000	0.750	2.265	0.962	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	16.303	20.520	20.520	161.779	16.000	0.750	2.508	0.933	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	25.358	31.917	31.917	161.779	16.000	0.750	2.011	0.989	1.000	0.989
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	128.662	36.000	36.000	161.779	16.000	0.750	0.893	1.000	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	136.051	36.000	36.000	161.779	16.000	0.750	0.868	1.000	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	130.890	36.000	36.000	161.779	16.000	0.750	0.885	1.000	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	28.515	35.891	35.891	161.779	16.000	0.750	1.896	1.000	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	205.889	36.000	36.000	161.779	16.000	0.750	0.706	1.000	1.000	1.000
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	15.713	19.778	19.778	161.779	16.000	0.750	2.554	0.927	1.000	1.000
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	22.028	27.727	27.727	161.779	16.000	0.750	2.157	0.974	1.000	1.000
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	29.791	36.000	36.000	161.779	16.000	0.750	1.855	1.000	1.000	1.000

		Macro Node No	k	Fcrw	Fcrw	λ_{rw}	bfc	tfc		Rb	Rb	Rb
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	234.7	36.0	36.0	161.8	16.0	0.750	0.7	1.000	1.0	1.0
		1005	234.7	36.0	36.0	161.8	16.0	0.750	0.7	1.000	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MinFX		1005	22.6	28.4	28.4	161.8	16.0	0.750	2.1	0.977	1.0	1.0
		1005	22.6	28.4	28.4	161.8	16.0	0.750	2.1	0.977	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	149.2	36.0	36.0	161.8	16.0	0.750	0.8	1.000	1.0	1.0
		1005	149.2	36.0	36.0	161.8	16.0	0.750	0.8	1.000	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	149.1	36.0	36.0	161.8	16.0	0.750	0.8	1.000	1.0	1.0
		1005	149.1	36.0	36.0	161.8	16.0	0.750	0.8	1.000	1.0	1.0
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	231.2	36.0	36.0	161.8	16.0	0.750	0.7	1.000	1.0	1.0
		1005	231.2	36.0	36.0	161.8	16.0	0.750	0.7	1.000	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MinMY		1005	35.5	36.0	36.0	161.8	16.0	0.750	1.7	1.000	1.0	1.0
		1005	35.5	36.0	36.0	161.8	16.0	0.750	1.7	1.000	1.0	1.0

Load Cases and Load Combination	Live Load Consider		6.10.1.9.2 with longitudinal stiffeners: Bend-buckling coefficient	6.10.1.9.2 with longitudinal stiffeners: Nominal bend-buckling resistance	Nominal bend-buckling resistance (Use)	6.10.1.10.2 - W… R_b without longitudinal stiffener: Limiting slenderness ratio for a noncompact web	Full width of compression flg	Thickness of compression flg	α_{wc}	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b
		Macro Node No	k	F_{crw}	$\mathbf{F_{crw}}$	Y_{rw}	b_{fc}	t_{fc}		Exclude composite in positive flexure with	Composite in positive flexure	("0" means not applicable)
			6.10.1.9.2-1	6.10.1.9.1-1		6.10.1.10.2-4			6.10.1.10.2-5			
					(ksi)							
DC1		1005	36.0	36.0	36.0							
		1005	36.0	36.0	36.0							
DC2		1005	208.3	36.0	36.0							
		1005	208.3	36.0	36.0							
DW		1005	1366.0	36.0	36.0							
		1005	1366.0	36.0	36.0							
DC1+DC2+DW		1005	43.0	36.0	36.0							
		1005	43.0	36.0	36.0							

6.10.1.10.2 - We

Load Cases and Load Combination	Live Load Consider	Macro Node No	6.10.1.9.2 with longitudinal stiffeners: Bend-buckling coefficient k	6.10.1.9.2 with longitudinal stiffeners: Nominal bend-buckling resistance F_{crw}	Nominal bend-buckling resistance (Use) F_{crw}	R_b without longitudinal stiffener: Limiting slenderness ratio for a noncompact web λ_{rw}	Full width of compression flg b_{fc}	Thickness of compression flg t_{fc}	a_{wc}	Web Load-Shedding Factor R_b Exclude composite in positive flexure with	Web Load-Shedding Factor R_b Composite in positive flexure	Web Load-Shedding Factor R_b ("0" means not applicable)
			6.10.1.9.2-1	6.10.1.9.1-1		6.10.1.10.2-4			6.10.1.10.2-5			
						λ_{rw}	bfc	tfc		Rb	Rb	Rb
LL_MaxFX (LL)	HL-93	1005	8.9	11.2	11.2	161.8	16.0	0.750	0.7	1.000	1.0	1.0
		1005	8.9	11.2	11.2	161.8	16.0	0.750	0.7	1.000	1.0	1.0
LL_MINFX (LL)		1005	13.6	17.2	17.2	161.8	16.0	0.750	2.1	0.977	1.0	1.0
		1005	13.6	17.2	17.2	161.8	16.0	0.750	2.1	0.977	1.0	1.0
LL_MaxFZ (LL)		1005	9.0	11.3	11.3	161.8	16.0	0.750	0.8	1.000	1.0	1.0
		1005	9.0	11.3	11.3	161.8	16.0	0.750	0.8	1.000	1.0	1.0
LL_MINFZ (LL)		1005	9.1	11.4	11.4	161.8	16.0	0.750	0.8	1.000	1.0	1.0
		1005	9.1	11.4	11.4	161.8	16.0	0.750	0.8	1.000	1.0	1.0
LL_MaxMY (LL)		1005	2624400.0	36.0	36.0	161.8	16.0	0.750	0.7	1.000	1.0	1.0
		1005	2624400.0	36.0	36.0	161.8	16.0	0.750	0.7	1.000	1.0	1.0
LL_MINMY (LL)		1005	20.3	25.6	25.6	161.8	16.0	0.750	1.7	1.000	1.0	1.0
		1005	20.3	25.6	25.6	161.8	16.0	0.750	1.7	1.000	1.0	1.0

			eb Load-Shedding Factor R_b									6.10.7 - Flexural Resistance -Composite Sections in Positive Flexure									Comp Section in Postive Flexure
			R_b with longitudinal stiffener								R_{b_final}	6.10.7.1 - Flexural Resistance - Composite Compact Section in Positive Flexure				6.10.7.2 - Flexural Resistance - Composite Non Compact Section in Positive Flexure					
Load Cases and Load Combination	Live Load Consider		Bend-buckling coefficient	Is $D/t_w \le 0.95(Ek/F_{yc})^{1/2}$?	Is $2D_c/t_w \le \lambda_{rw}$?	α_{wc}	α_{wc}	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b	Apply ?	Dist from T/deck to comp sect NA	Plastic Moment	Nominal flexural resistance	Apply ?	Dist from T/deck to comp sect NA	$D_p \le 0.42\ D_t$?	Nominal flexural resistance of compression flange	Nominal flexural resistance of tension flange	D6.2.2-2
		Macro Node No	k	Yes =0, No=1	Yes =0,No=1	(For positive Moment)	(for others)	Exclude composite in positive flexure	Composite in positive flexure	("0" means not applicable)	Use	Yes =0, No=1	D_p	M_p	M_n	Yes =0, No=1	D_p	Yes=OK, No=NG	F_{nc}	F_{nt}	My
						6.10.1.10.2-6	6.10.1.10.2-5							D6.1	6.10.7.1.2			6.10.7.3-1	6.10.7.2.2-1	6.10.7.2.2-2	D6.2.2-2
														(k-ft)	(k-ft)				(ksi)	(ksi)	(k-ft)
DC1		1005	36.0	0.0	0.0	0.54	1.69	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
		1005	36.0	0.0	0.0	0.54	1.69	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
DC2		1005	208.3	0.0	0.0	0.23	0.70	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
		1005	208.3	0.0	0.0	0.23	0.70	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
DW		1005	1366.0	0.0	0.0	0.09	0.27	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
		1005	1366.0	0.0	0.0	0.09	0.27	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
1.25DC1+1.25DC2+1.5DW		1005	43.0	0.0	0.0	0.50	1.54	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
		1005	43.0	0.0	0.0	0.50	1.54	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
LL+I_MaxFX (LL+IM)		1005	8.9	1.0	1.0	1.09	3.39	0.805	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
		1005	8.9	1.0	1.0	1.09	3.39	0.805	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
LL+I_MINFX (LL+IM)		1005	13.5	1.0	1.0	0.88	2.75	0.901	1.000	0.000	0.901	0	10.3	4546.5	4546.5	1.0	N/A	N/A	32.4	36.0	
		1005	13.5	1.0	1.0	0.88	2.75	0.901	1.000	0.000	0.901	0	10.3	4546.5	4546.5	1.0	N/A	N/A	32.4	36.0	
LL+I_MaxFZ (LL+IM)		1005	9.0	1.0	1.0	1.08	3.38	0.807	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
	HL-93	1005	9.0	1.0	1.0	1.08	3.38	0.807	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
LL+I_MINFZ (LL+IM)		1005	9.0	1.0	1.0	1.08	3.37	0.809	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
		1005	9.0	1.0	1.0	1.08	3.37	0.809	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
LL+I_MaxMY (LL+IM)		1005	########	0.0	0.0	0.00	0.01	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
		1005	########	0.0	0.0	0.00	0.01	1.000	1.000	0.000	1.000	0	10.3	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	
LL+I_MINMY (LL+IM)		1005	20.3	1.0	1.0	0.72	2.25	0.964	1.000	0.000	0.964	0	10.3	4546.5	4546.5	1.0	N/A	N/A	34.7	36.0	
		1005	20.3	1.0	1.0	0.72	2.25	0.964	1.000	0.000	0.964	0	10.3	4546.5	4546.5	1.0	N/A	N/A	34.7	36.0	

DC1_Bracing Start		1005	36.000	0.000	0.000	0.54	1.69	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
DC1_Bracing End		1008	36.000	0.000	0.000	0.54	1.69	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
DC2_Bracing Start		1005	208.326	0.000	0.000	0.23	0.70	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
DC2_Bracing End		1008	28.902	0.000	0.000	0.60	1.88	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
DW_Bracing Start		1005	1366.017	0.000	0.000	0.09	0.27	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
DW_Bracing End		1008	1366.017	0.000	0.000	0.09	0.27	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MaxFX_Bracing Start (LL+IM)		1005	8.920	1.000	1.000	1.09	3.39	0.805	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MaxFX_Bracing End (LL+IM)		1008	########	0.000	0.000	0.03	0.10	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MINFX_Bracing_Start (LL+IM)		1005	13.546	1.000	1.000	0.88	2.75	0.901	1.000	0.000	0.901	0	10.250	4546.5	4546.5	1.000	N/A	N/A	32.432	36.000	
LL+I_MINFX_Bracing_End (LL+IM)		1008	21.450	1.000	1.000	0.70	2.19	0.971	1.000	0.000	0.971	0	10.250	4546.5	4546.5	1.000	N/A	N/A	34.949	36.000	
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	8.996	1.000	1.000	1.08	3.38	0.807	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MaxFZ_Bracing_End (LL+IM)	HL-93	1008	3155.558	0.000	0.000	0.06	0.18	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	9.049	1.000	1.000	1.08	3.37	0.809	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MINFZ_Bracing_End (LL+IM)		1008	7823.150	0.000	0.000	0.04	0.11	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	########	0.000	0.000	0.00	0.01	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MaxMY_Bracing_End (LL+IM)		1008	3016.654	0.000	0.000	0.06	0.18	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
LL+I_MINMY_Bracing_Start (LL+IM)		1005	20.306	1.000	1.000	0.72	2.25	0.964	1.000	0.000	0.964	0	10.250	4546.5	4546.5	1.000	N/A	N/A	34.707	36.000	
LL+I_MINMY_Bracing_End (LL+IM)		1008	28.173	1.000	1.000	0.61	1.91	0.999	1.000	0.000	0.999	0	10.250	4546.5	4546.5	1.000	N/A	N/A	35.961	36.000	
1.25DC+1.5DW_Bracing Start		1005	43.031	0.000	0.000	0.50	1.54	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW_Bracing End		1008	34.865	0.000	0.000	0.55	1.71	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	203.452	0.000	0.000	0.23	0.71	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	

Load Cases and Load Combination	Live Load Consider	Macro Node No	Web Load-Shedding Factor R_b — R_b with longitudinal stiffener: Bend-buckling coefficient k	Is D/t_w ≤0.95(Ek/F$_{yc}$)$^{1/2}$? (Yes =0, No=1)	Is $2D_c/t_w$ ≤ λ_{rw} ? (Yes =0,No=1)	α_{wc} (For positive Moment) 6.10.1.10.2-6	α_{wc} (for others) 6.10.1.10.2-5	Web Load-Shedding Factor R_b (Exclude composite in positive flexure)	Web Load-Shedding Factor R_b (Composite in positive flexure)	Web Load-Shedding Factor R_b ("0" means not applicable)	R_{b_final}: Web Load-Shedding Factor R_b (Use)	6.10.7.1 - Flexural Resistance - Composite Compact Section in Positive Flexure: Apply ? (Yes =0, No=1)	Dist from T/deck to comp sect NA (D_p)	Plastic Moment (M_p) D6.1	Nominal flexural resistance (M_n) 6.10.7.1.2	6.10.7.2 - Flexural Resistance - Composite Non Compact Section in Positive Flexure: Apply ? (Yes =0, No=1)	Dist from T/deck to comp sect NA (D_p)	$D_p \le 0.42\ D_t$? (Yes=OK, No=NG) 6.10.7.3-1	Nominal flexural resistance of compression flange (F_{nc}) 6.10.7.2.2-1	Nominal flexural resistance of tension flange (F_{nt}) 6.10.7.2.2-2	Comp Section in Postive Flexure: D6.2.2-2 (My) D6.2.2-2
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	19.975	1.000	1.000	0.73	2.27	0.962	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	16.303	1.000	1.000	0.81	2.51	0.933	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	25.358	1.000	1.000	0.65	2.01	0.989	1.000	0.000	0.989	0	10.250	4546.5	4546.5	1.000	N/A	N/A	35.607	36.000	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	128.662	0.000	0.000	0.29	0.89	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	136.051	0.000	0.000	0.28	0.87	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	130.890	0.000	0.000	0.28	0.88	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	28.515	1.000	1.000	0.61	1.90	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	205.889	0.000	0.000	0.23	0.71	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	15.713	1.000	1.000	0.82	2.55	0.927	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	22.028	1.000	1.000	0.69	2.16	0.974	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	29.791	0.000	0.000	0.60	1.86	1.000	1.000	0.000	1.000	0	10.250	4546.5	4546.5	1.000	N/A	N/A	36.000	36.000	

		Macro Node No	k	es =0, No=	s =0,No	α_{wc}	α_{wc}	Rb	Rb	Rb	Rb_final	Yes =0, No=1	Dp	Mp	Mn	Yes =0, No=	Dp	es=OK, No=N	Fnc	Fnt	My
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	234.7	0.0	0.0	0.21	0.66	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	234.7	0.0	0.0	0.21	0.66	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
1.25DC+1.5DW+1.75LL+I_MinFX		1005	22.6	1.0	1.0	0.68	2.13	0.977	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	22.6	1.0	1.0	0.68	2.13	0.977	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	149.2	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	149.2	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	149.1	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	149.1	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	231.2	0.0	0.0	0.21	0.67	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	231.2	0.0	0.0	0.21	0.67	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
1.25DC+1.5DW+1.75LL+I_MinMY		1005	35.5	0.0	0.0	0.55	1.70	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	35.5	0.0	0.0	0.55	1.70	1.000	1.000	0.000	1.000	0	-60.0	4546.5	4546.5	1.0	N/A	N/A	36.0	36.0	3173.7

Load Cases and Load Combination	Live Load Consider	Macro Node No	Web Load-Shedding Factor R_b — R_b with longitudinal stiffener: Bend-buckling coefficient k	Is D/t_w ≤0.95(Ek/F$_{yc}$)$^{1/2}$? (Yes =0, No=1)	Is $2D_c/t_w$ ≤ λ_{rw} ? (Yes =0,No=1)	α_{wc} (For positive Moment) 6.10.1.10.2-6	α_{wc} (for others) 6.10.1.10.2-5	Web Load-Shedding Factor R_b (Exclude composite in positive flexure)	Web Load-Shedding Factor R_b (Composite in positive flexure)	Web Load-Shedding Factor R_b ("0" means not applicable)	R_{b_final}: Web Load-Shedding Factor R_b (Use)	6.10.7.1 - Flexural Resistance - Composite Compact Section in Positive Flexure: Apply ? (Yes =0, No=1)	Dist from T/deck to comp sect NA (D_p)	Plastic Moment (M_p) D6.1	Nominal flexural resistance (M_n) 6.10.7.1.2	6.10.7.2 - Flexural Resistance - Composite Non Compact Section in Positive Flexure: Apply ? (Yes =0, No=1)	Dist from T/deck to comp sect NA (D_p)	$D_p \le 0.42\ D_t$? (Yes=OK, No=NG) 6.10.7.3-1	Nominal flexural resistance of compression flange (F_{nc}) 6.10.7.2.2-1	Nominal flexural resistance of tension flange (F_{nt}) 6.10.7.2.2-2	Comp Section in Postive Flexure: D6.2.2-2 (My) D6.2.2-2
DC1		1005																			
		1005																			
DC2		1005																			
		1005																			
DW		1005																			
		1005																			
DC1+DC2+DW		1005																			
		1005																			

Load Cases and Load Combination	Live Load Consider		eb Load-Shedding Factor R_b										6.10.7 - Flexural Resistance -Composite Sections in Positive Flexure										Comp Section in Postive Flexure
			R_b with longitudinal stiffener								R_{b_final}		6.10.7.1 - Flexural Resistance - Composite Compact Section in Positive Flexure					6.10.7.2 - Flexural Resistance - Composite Non Compact Section in Positive Flexure					
			Bend-buckling coefficient	Is $D/t_w \le 0.95(Ek/F_{yc})^{1/2}$?	Is $2D_c/t_w \le \lambda_{rw}$?	α_{wc}	α_{wc}	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b	Web Load-Shedding Factor R_b		Apply ?	Dist from T/deck to comp sect NA	Plastic Moment	Nominal flexural resistance		Apply ?	Dist from T/deck to comp sect NA	$D_p \le 0.42\ D_t$?	Nominal flexural resistance of compression flange	Nominal flexural resistance of tension flange	D6.2.2-2
		Macro Node No	k	Yes =0, No=1	Yes =0,No= 1	(For positive Moment)	(for others)	Exclude composite in positive flexure	Composite in positive flexure	("0" means not applicable)	Use		Yes =0, No=1	D_p	M_p	M_n		Yes =0, No=1	D_p	Yes=OK, No=NG	F_{nc}	F_{nt}	My
						6.10.1.10.2-6	6.10.1.10.2-5								D6.1	6.10.7.1.2				6.10.7.3-1	6.10.7.2.2-1	6.10.7.2.2-2	D6.2.2-2
			k	es =0, No=	s =0,No	α_{wc}	α_{wc}	Rb	Rb	Rb	Rb_final		Yes =0, No=1	Dp	Mp	Mn		Yes =0, No=	Dp	es=OK, No=N	Fnc	Fnt	My
LL_MaxFX (LL)	HL-93	1005	234.7	0.0	0.0	0.21	0.66	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	234.7	0.0	0.0	0.21	0.66	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
LL_MINFX (LL)		1005	22.6	1.0	1.0	0.68	2.13	0.977	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	22.6	1.0	1.0	0.68	2.13	0.977	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
LL_MaxFZ (LL)		1005	149.2	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	149.2	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
LL_MINFZ (LL)		1005	149.1	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	149.1	0.0	0.0	0.27	0.83	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
LL_MaxMY (LL)		1005	231.2	0.0	0.0	0.21	0.67	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	231.2	0.0	0.0	0.21	0.67	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
LL_MINMY (LL)		1005	35.5	0.0	0.0	0.55	1.70	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7
		1005	35.5	0.0	0.0	0.55	1.70	1.000	1.000	0.000	1.000	0.0	0	-60.0	4546.5	4546.5	0.0	1.0	N/A	N/A	36.0	36.0	3173.7

Load Cases and Load Combination	Live Load Consider		6.10.8 - Flexural Resistance -Composite Sections in Negative Flexure and Noncomposite Sections																		Comp Section in Negative Flexure
			6.10.8.2.2 - Compression Flange Flexural Restance due to Local Buckling						6.10.8.2.3 - Compression Flange Flexure Resistance due to Lateral Torsional Buckling											6.10.8.3 - Tension-Flg Flexural Resistance	
			Slenderness ratio for the compression flange		Slenderness ratio for a noncompact flange	Compression-flange at the onset of nominal yielding, incuding residual stress	Local buckling resistance of comp flg		Effective radius of gyration for lateral torsional buckling			Stress in the compression flange at brace pt w/ small force due to factored loading	Moment gradient modifier	Elastic lateral torsional buckling stress	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	F_{nc_final}	Nominal Flexural Resistance of Tension Flange	D6.2.2-2
		Macro Node No	λ_f	λ_{pf}	λ_{rf}	F_{yr}	F_{nc}		r_t	L_p	L_r	f_1/f_2	C_b	F_{cr}	F_{nc} (For $L_b \le L_p$)	F_{nc} (For $L_p \le L_b \le L_r$)	F_{nc} (For $L_p \ge L_r$)	F_{nc}		F_{nt}	M_{yc}
			6.10.8.2.2-3	6.10.8.2.2-4	6.10.8.2.2-5		6.10.8.2.2-1 or 2		6.10.8.2.3-9	6.10.8.2.3-4	6.10.8.2.3-5		6.10.8.2.3-6 or 7	6.10.8.2.3-8	6.10.8.2.3-1	6.10.8.2.3-1	6.10.8.2.3-1			6.10.8.3-1	D6.2.2-2
						(ksi)	(ksi)		(in)	(in)	(in)				(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(ksi)	(k-ft)
DC1		1005	10.7	10.8	19.0	25.2	36.0		4.1	115.8	434.9	-0.4	2.2	152.6	36.0	36.0	36.0	36.0	36.0	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		4.1	115.8	434.9	-0.4	2.2	152.6	36.0	36.0	36.0	36.0	36.0	36.0	
DC2		1005	10.7	10.8	19.0	25.2	36.0		4.4	124.0	465.8	-0.8	2.3	180.4	36.0	36.0	36.0	36.0	36.0	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		4.4	124.0	465.8	-0.8	2.3	180.4	36.0	36.0	36.0	36.0	36.0	36.0	
DW		1005	10.7	10.8	19.0	25.2	36.0		4.5	128.2	481.4	1.0	1.0	83.8	36.0	31.8	36.0	31.8	31.8	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		4.5	128.2	481.4	1.0	1.0	83.8	36.0	31.8	36.0	31.8	31.8	36.0	
1.25DC1+1.25DC2+1.5DW		1005	10.7	10.8	19.0	25.2	36.0		4.1	116.9	439.0	-0.4	2.3	158.1	36.0	36.0	36.0	36.0	36.0	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		4.1	116.9	439.0	-0.4	2.3	158.1	36.0	36.0	36.0	36.0	36.0	36.0	
LL+I_MaxFX (LL+IM)	HL-93	1005	10.7	10.8	19.0	25.2	36.0		3.7	104.8	393.5	0.5	1.3	71.7	36.0	36.0	36.0	36.0	36.0	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		3.7	104.8	393.5	0.5	1.3	71.7	36.0	36.0	36.0	36.0	36.0	36.0	
LL+I_MINFX (LL+IM)		1005	10.7	10.8	19.0	25.2	32.4		3.8	108.5	407.6	0.9	1.0	55.9	32.4	28.3	32.4	28.3	28.3	36.0	
		1005	10.7	10.8	19.0	25.2	32.4		3.8	108.5	407.6	0.9	1.0	55.9	32.4	28.3	32.4	28.3	28.3	36.0	
LL+I_MaxFZ (LL+IM)		1005	10.7	10.8	19.0	25.2	36.0		3.7	104.9	393.8	0.4	1.4	76.9	36.0	36.0	36.0	36.0	36.0	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		3.7	104.9	393.8	0.4	1.4	76.9	36.0	36.0	36.0	36.0	36.0	36.0	
LL+I_MINFZ (LL+IM)		1005	10.7	10.8	19.0	25.2	36.0		3.7	104.9	394.0	0.6	1.2	67.2	36.0	36.0	36.0	36.0	36.0	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		3.7	104.9	394.0	0.6	1.2	67.2	36.0	36.0	36.0	36.0	36.0	36.0	
LL+I_MaxMY (LL+IM)		1005	10.7	10.8	19.0	25.2	36.0		4.6	131.0	492.0	0.2	1.5	134.0	36.0	36.0	36.0	36.0	36.0	36.0	
		1005	10.7	10.8	19.0	25.2	36.0		4.6	131.0	492.0	0.2	1.5	134.0	36.0	36.0	36.0	36.0	36.0	36.0	
LL+I_MINMY (LL+IM)		1005	10.7	10.8	19.0	25.2	34.7		3.9	111.8	419.9	0.6	1.2	73.8	34.7	34.7	34.7	34.7	34.7	36.0	
		1005	10.7	10.8	19.0	25.2	34.7		3.9	111.8	419.9	0.6	1.2	73.8	34.7	34.7	34.7	34.7	34.7	36.0	

DC1_Bracing Start		1005	10.667	10.785	18.997	25.200	36.000		4.080	115.814	434.9	-0.410
DC1_Bracing End		1008	10.667	10.785	18.997	25.200	36.000		4.080	115.814	434.9	
DC2_Bracing Start		1005	10.667	10.785	18.997	25.200	36.000		4.370	124.041	465.8	-0.825
DC2_Bracing End		1008	10.667	10.785	18.997	25.200	36.000		4.029	114.366	429.4	
DW_Bracing Start		1005	10.667	10.785	18.997	25.200	36.000		4.517	128.198	481.4	1.000
DW_Bracing End		1008	10.667	10.785	18.997	25.200	36.000		4.517	128.198	481.4	
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005	10.667	10.785	18.997	25.200	36.000		3.692	104.790	393.5	0.527
LL+I_MaxFX_Bracing End (LL+IM)		1008	10.667	10.785	18.997	25.200	36.000		4.582	130.035	488.3	
LL+I_MINFX_Bracing_Start (LL+IM)		1005	10.667	10.785	18.997	25.200	32.432		3.825	108.548	407.6	0.929
LL+I_MINFX_Bracing_End (LL+IM)		1008	10.667	10.785	18.997	25.200	34.949		3.954	112.231	421.4	
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005	10.667	10.785	18.997	25.200	36.000		3.695	104.870	393.8	0.409
LL+I_MaxFZ_Bracing_End (LL+IM)		1008	10.667	10.785	18.997	25.200	36.000		4.551	129.167	485.0	
LL+I_MINFZ_Bracing_Start (LL+IM)		1005	10.667	10.785	18.997	25.200	36.000		3.697	104.925	394.0	0.646
LL+I_MINFZ_Bracing_End (LL+IM)		1008	10.667	10.785	18.997	25.200	36.000		4.575	129.859	487.6	
LL+I_MaxMY_Bracing_Start (LL+IM)		1005	10.667	10.785	18.997	25.200	36.000		4.616	131.024	492.0	0.222
LL+I_MaxMY_Bracing_End (LL+IM)		1008	10.667	10.785	18.997	25.200	36.000		4.549	129.124	484.8	
LL+I_MINMY_Bracing_Start (LL+IM)		1005	10.667	10.785	18.997	25.200	34.707		3.940	111.817	419.9	0.641
LL+I_MINMY_Bracing_End (LL+IM)		1008	10.667	10.785	18.997	25.200	35.961		4.023	114.191	428.8	
1.25DC+1.5DW_Bracing Start		1005	10.667	10.785	18.997	25.200	36.000		4.119	116.914	439.0	-0.439
1.25DC+1.5DW_Bracing End		1008	10.667	10.785	18.997	25.200	36.000		4.073	115.609	434.1	
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005	10.667	10.785	18.997	25.200	36.000		4.368	123.964	465.5	-0.394

Load Cases and Load Combination	Live Load Consider		6.10.8 - Flexural Resistance -Composite Sections in Negative Flexure and Noncomposite Sections: 6.10.8.2.2 - Compression Flange Flexural Restance due to Local Buckling						6.10.8.2.3 - Compression Flange Flexure Resistance due to Lateral Torsional Buckling											6.10.8.3 - Tension-Flg Flexural Resistance	Comp Section in Negative Flexure
			Slenderness ratio for the compression flange		Slenderness ratio for a noncompact flange	Compression-flange at the onset of nominal yielding, incuding residual stress	Local buckling resistance of comp flg		Effective radius of gyration for lateral torsional buckling			Stress in the compression flange at brace pt w/ small force due to factored loading	Moment gradient modifier	Elastic lateral torsional buckling stress	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	F_{nc_final}	Nominal Flexural Resistance of Tension Flange	D6.2.2-2
		Macro Node No	λ_f	λ_{pf}	λ_{rf}	F_{yr}	F_{nc}		r_t	L_p	L_r	f_1/f_2	C_b	F_{cr}	F_{nc} (For $L_b \le L_p$)	F_{nc} (For $L_p \le L_b \le L_r$)	F_{nc} (For $L_p \ge L_r$)	F_{nc}		F_{nt}	M_{yc}
			6.10.8.2.2-3	6.10.8.2.2-4	6.10.8.2.2-5		6.10.8.2.2-1 or 2		6.10.8.2.3-9	6.10.8.2.3-4	6.10.8.2.3-5		6.10.8.2.3-6 or 7	6.10.8.2.3-8	6.10.8.2.3-1	6.10.8.2.3-1	6.10.8.2.3-1			6.10.8.3-1	D6.2.2-2
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008	10.667	10.785	18.997	25.200	36.000		3.935	111.691	419.4										
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005	10.667	10.785	18.997	25.200	36.000		3.879	110.090	413.4	-0.804									
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008	10.667	10.785	18.997	25.200	35.607		3.997	113.454	426.0										
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005	10.667	10.785	18.997	25.200	36.000		4.309	122.310	459.2	-0.406									
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008	10.667	10.785	18.997	25.200	36.000		4.317	122.528	460.1										
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005	10.667	10.785	18.997	25.200	36.000		4.312	122.377	459.5	-0.403									
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008	10.667	10.785	18.997	25.200	36.000		4.026	114.274	429.1										
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005	10.667	10.785	18.997	25.200	36.000		4.369	124.003	465.6	-0.328									
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008	10.667	10.785	18.997	25.200	36.000		3.868	109.790	412.2										
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005	10.667	10.785	18.997	25.200	36.000		3.961	112.430	422.2	-0.378									
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008	10.667	10.785	18.997	25.200	36.000		4.037	114.572	430.2										

		Macro Node No	λf	λpf	λrf	Fyr	Fnc		rt	Lp	Lr	f1/f2	Cb	Fcr	Fnc (For Lb ≤ Lp)	Fnc (For Lp ≤ Lb ≤ Lr)	Fnc (For Lp ≥ Lr)	F_{nc}	F_{nc_final}	F_{nt}	M_{yc}
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	10.7	10.8	19.0	25.2	36.0		4.4	124.4	467.2	-0.4	2.21	174.5	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0		4.4	124.4	467.2	-0.4	2.21	174.5	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
1.25DC+1.5DW+1.75LL+I_MinFX		1005	10.7	10.8	19.0	25.2	36.0		4.0	112.6	422.8	-0.8	2.30	148.7	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0		4.0	112.6	422.8	-0.8	2.30	148.7	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	10.7	10.8	19.0	25.2	36.0		4.3	122.9	461.4	-0.4	2.23	171.3	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0		4.3	122.9	461.4	-0.4	2.23	171.3	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	10.7	10.8	19.0	25.2	36.0		4.3	122.9	461.4	-0.4	2.22	171.0	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0		4.3	122.9	461.4	-0.4	2.22	171.0	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	10.7	10.8	19.0	25.2	36.0		4.4	124.4	467.0	-0.3	2.13	167.7	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0		4.4	124.4	467.0	-0.3	2.13	167.7	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
1.25DC+1.5DW+1.75LL+I_MinMY		1005	10.7	10.8	19.0	25.2	36.0		4.1	115.7	434.5	-0.4	2.19	149.5	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0		4.1	115.7	434.5	-0.4	2.19	149.5	36.0	36.0	36.0	36.0	36.00	36.0	2687.8
								Min =	**112.6**	422.8											

Load Cases and Load Combination	Live Load Consider		6.10.8 - Flexural Resistance -Composite Sections in Negative Flexure and Noncomposite Sections: 6.10.8.2.2 - Compression Flange Flexural Restance due to Local Buckling						6.10.8.2.3 - Compression Flange Flexure Resistance due to Lateral Torsional Buckling											6.10.8.3 - Tension-Flg Flexural Resistance	Comp Section in Negative Flexure
			Slenderness ratio for the compression flange		Slenderness ratio for a noncompact flange	Compression-flange at the onset of nominal yielding, incuding residual stress	Local buckling resistance of comp flg		Effective radius of gyration for lateral torsional buckling			Stress in the compression flange at brace pt w/ small force due to factored loading	Moment gradient modifier	Elastic lateral torsional buckling stress	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	F_{nc_final}	Nominal Flexural Resistance of Tension Flange	D6.2.2-2
		Macro Node No	λ_f	λ_{pf}	λ_{rf}	F_{yr}	F_{nc}		r_t	L_p	L_r	f_1/f_2	C_b	F_{cr}	F_{nc} (For $L_b \le L_p$)	F_{nc} (For $L_p \le L_b \le L_r$)	F_{nc} (For $L_p \ge L_r$)	F_{nc}		F_{nt}	M_{yc}
			6.10.8.2.2-3	6.10.8.2.2-4	6.10.8.2.2-5		6.10.8.2.2-1 or 2		6.10.8.2.3-9	6.10.8.2.3-4	6.10.8.2.3-5		6.10.8.2.3-6 or 7	6.10.8.2.3-8	6.10.8.2.3-1	6.10.8.2.3-1	6.10.8.2.3-1			6.10.8.3-1	D6.2.2-2
DC1		1005																			
		1005																			
DC2		1005																			
		1005																			
DW		1005																			
		1005																			
DC1+DC2+DW		1005																			
		1005						1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0

Load Cases and Load Combination	Live Load Consider		6.10.8 - Flexural Resistance -Composite Sections in Negative Flexure and Noncomposite Sections																		Comp Section in Negative Flexure
			6.10.8.2.2 - Compression Flange Flexural Restance due to Local Buckling						6.10.8.2.3 - Compression Flange Flexure Resistance due to Lateral Torsional Buckling											6.10.8.3 - Tension-Flg Flexural Resistance	
			Slenderness ratio for the compression flange		Slenderness ratio for a noncompact flange	Compression-flange at the onset of nominal yielding, incuding residual stress	Local buckling resistance of comp flg		Effective radius of gyration for lateral torsional buckling			Stress in the compression flange at brace pt w/ small force due to factored loading	Moment gradient modifier	Elastic lateral torsional buckling stress	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	Lateral Torsional Buckling Resistance	F_{nc_final}	Nominal Flexural Resistance of Tension Flange	D6.2.2-2
		Macro Node No	λ_f	λ_{pf}	λ_{rf}	F_{yr}	F_{nc}		r_t	L_p	L_r	f_1/f_2	C_b	F_{cr}	F_{nc} (For $L_b \le L_p$)	F_{nc} (For $L_p \le L_b \le L_r$)	F_{nc} (For $L_p \ge L_r$)	F_{nc}		F_{nt}	M_{yc}
			6.10.8.2.2-3	6.10.8.2.2-4	6.10.8.2.2-5		6.10.8.2.2-1 or 2		6.10.8.2.3-9	6.10.8.2.3-4	6.10.8.2.3-5		6.10.8.2.3-6 or 7	6.10.8.2.3-8	6.10.8.2.3-1	6.10.8.2.3-1	6.10.8.2.3-1			6.10.8.3-1	D6.2.2-2
			λf	λpf	λrf	Fyr	Fnc	**Revise ratio r_1**	rt	Lp	Lr	f1/f2	Cb	Fcr	Fnc (For Lb ≤ Lp)	Fnc (For Lp ≤ Lb ≤ Lr)	Fnc (For Lp ≥ Lr)	F_{nc}	F_{nc_final}	F_{nt}	M_{yc}
LL_MaxFX (LL)	HL-93	1005	10.7	10.8	19.0	25.2	36.0	1.225	4.4	124.4	467.2	-0.4	2.21	174.5	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0	1.225	4.4	124.4	467.2	-0.4	2.21	174.5	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
LL_MINFX (LL)		1005	10.7	10.8	19.0	25.2	36.0	22.838	4.0	112.6	422.8	-0.8	2.30	148.7	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0	22.838	4.0	112.6	422.8	-0.8	2.30	148.7	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
LL_MaxFZ (LL)		1005	10.7	10.8	19.0	25.2	36.0	1.777	4.3	122.9	461.4	-0.4	2.23	171.3	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0	1.777	4.3	122.9	461.4	-0.4	2.23	171.3	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
LL_MINFZ (LL)		1005	10.7	10.8	19.0	25.2	36.0	1.817	4.3	122.9	461.4	-0.4	2.22	171.0	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0	1.817	4.3	122.9	461.4	-0.4	2.22	171.0	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
LL_MaxMY (LL)		1005	10.7	10.8	19.0	25.2	36.0	1.189	4.4	124.4	467.0	-0.3	2.13	167.7	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0	1.189	4.4	124.4	467.0	-0.3	2.13	167.7	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
LL_MINMY (LL)		1005	10.7	10.8	19.0	25.2	36.0	22.841	4.1	115.7	434.5	-0.4	2.19	149.5	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
		1005	10.7	10.8	19.0	25.2	36.0	22.841	4.1	115.7	434.5	-0.4	2.19	149.5	36.0	36.0	36.0	36.0	36.0	36.0	2687.8
								1.189													

Load Cases and Load Combination	Live Load Consider		**Flexural Resistance**		**Rating Factor for Flexure $RF_{flexural}$**			Shear Resistance: Plastic Shear Force	Unstiffened Web			Stiffener Web				$\phi_v V_{n\_use}$	Rating Factor for Shear $RF_{\_shear}$
			Flexural Resistance for Compression Flange $\phi_f F_{nc}$	Flexural Resistance for Tension Flange $\phi_f F_{nt}$	$RF=(\phi_c\phi_s\phi F_n-Y_{DC}f_{DC}-Y_{DW}f_{DW}-Y_{PL}f_{PL}-Y_{TU}f_{TU})/(Y_{LL}f_{LL})$				Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	Nominal Shear Resistance	Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	End Panel Nominal Shear Resistance	Interior Panel Nominal Shear Resistance		$RF=(\phi_c\phi_s\phi V_n-Y_{DC}V_{DC}-Y_{DW}V_{DW}-Y_{PL}V_{PL}-Y_{TU}V_{TU})/(Y_{LL}V_{LL})$
		Macro Node No	$\phi_f F_{nc}$	$\phi_f F_{nt}$	Top Flange	Bottom Flange		V_p	k	C	V_n	k	C	V_{n_end}	$V_{n\_interior}$		
								6.10.9.2-2	C6.10.9.2	6.10.9.3.2-4 to 6	6.10.9.2-1	C6.10.9.3.2-7	6.10.9.3.2-4 to 6	6.10.9.2-1	6.10.9.2-1		
								(kips)						(kips)	(kips)	(kips)	
DC1		1005	36.0	36.0				422.8	5.0	0.30	128.9	12.5	0.764	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
DC2		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
DW		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
1.25DC1+1.25DC2+1.5DW		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
LL+I_MaxFX (LL+IM)	HL-93	1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
LL+I_MINFX (LL+IM)		1005	28.3	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	28.3	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
LL+I_MaxFZ (LL+IM)		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
LL+I_MINFZ (LL+IM)		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
LL+I_MaxMY (LL+IM)		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	36.0	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
LL+I_MINMY (LL+IM)		1005	34.7	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	
		1005	34.7	36.0				422.8	5.0	0.3	128.9	12.5	0.8	323.2	390.4	390.4	

DC1_Bracing Start		1005
DC1_Bracing End		1008
DC2_Bracing Start		1005
DC2_Bracing End		1008
DW_Bracing Start		1005
DW_Bracing End		1008
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005
LL+I_MaxFX_Bracing End (LL+IM)		1008
LL+I_MINFX_Bracing_Start (LL+IM)		1005
LL+I_MINFX_Bracing_End (LL+IM)		1008
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005
LL+I_MaxFZ_Bracing_End (LL+IM)		1008
LL+I_MINFZ_Bracing_Start (LL+IM)		1005
LL+I_MINFZ_Bracing_End (LL+IM)		1008
LL+I_MaxMY_Bracing_Start (LL+IM)		1005
LL+I_MaxMY_Bracing_End (LL+IM)		1008
LL+I_MINMY_Bracing_Start (LL+IM)		1005
LL+I_MINMY_Bracing_End (LL+IM)		1008
1.25DC+1.5DW_Bracing Start		1005
1.25DC+1.5DW_Bracing End		1008
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005

Load Cases and Load Combination	Live Load Consider		Flexural Resistance		Rating Factor for Flexure $RF_{flexural}$			Shear Resistance									Rating Factor for Shear RF_{shear}
								Plastic Shear Force	Unstiffened Web			Stiffener Web				$\phi_v V_{n\_use}$	
			Flexural Resistance for Compression Flange $\phi_f F_{nc}$	Flexural Resistance for Tension Flange $\phi_f F_{nt}$	$RF=(\phi_c\phi_s\phi F_n-Y_{DC}f_{DC}-Y_{DW}f_{DW}-Y_{PL}f_{PL}-Y_{TU}f_{TU})/(Y_{LL}f_{LL})$				Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	Nominal Shear Resistance	Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	End Panel Nominal Shear Resistance	Interior Panel Nominal Shear Resistance		$RF=(\phi_c\phi_s\phi V_n-Y_{DC}V_{DC}-Y_{DW}V_{DW}-Y_{PL}V_{PL}-Y_{TU}V_{TU})/(Y_{LL}V_{LL})$
		Macro Node No	$\phi_f F_{nc}$	$\phi_f F_{nt}$	Top Flange	Bottom Flange		V_p	k	C	V_n	k	C	V_{n_end}	$V_{n\_interior}$		
								6.10.9.2-2	C6.10.9.2	6.10.9.3.2-4 to 6	6.10.9.2-1	C6.10.9.3.2-7	6.10.9.3.2-4 to 6	6.10.9.2-1	6.10.9.2-1		
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008															
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005															
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008															
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005															
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008															
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005															
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008															
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005															
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008															
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005															
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008															

		Macro Node No	$\phi_f F_{nc}$	$\phi_f F_{nt}$	$RF_{\_Top\_Flg}$	$RF_{\_Bottom\_Flg}$	$M_{c\ (Based\ on\ Fnc)}$	Vp	k	C	Vn	k	C	Vn_end	Vn_interior	V_n_final	$RF_{\_Shear}$
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	36.0	36.0	100.00	1.40	2687.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	10.26
		1005	36.0	36.0	100.00	1.40	2687.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	10.26
1.25DC+1.5DW+1.75LL+I_MinFX		1005	36.0	36.0	100.00	100.00	2666.7	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	33.28
		1005	36.0	36.0	100.00	100.00	2666.7	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	33.28
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	36.0	36.0	100.00	2.19	2570.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	11.88
		1005	36.0	36.0	100.00	2.19	2570.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	11.88
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	36.0	36.0	100.00	2.21	2577.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	6.13
		1005	36.0	36.0	100.00	2.21	2577.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	6.13
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	36.0	36.0	165.04	1.33	2608.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	13.77
		1005	36.0	36.0	165.04	1.33	2608.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	13.77
1.25DC+1.5DW+1.75LL+I_MinMY		1005	36.0	36.0	100.000	100.00	2609.6	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	33.29
		1005	36.0	36.0	100.00	100.000	2609.6	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	33.29

Load Cases and Load Combination	Live Load Consider		Flexural Resistance		Rating Factor for Flexure $RF_{flexural}$			Shear Resistance									Rating Factor for Shear RF_{shear}	
								Plastic Shear Force	Unstiffened Web			Stiffener Web				$\phi_v V_{n\_use}$		
			Flexural Resistance for Compression Flange $\phi_f F_{nc}$	Flexural Resistance for Tension Flange $\phi_f F_{nt}$	$RF=(\phi_c\phi_s\phi F_n-Y_{DC}f_{DC}-Y_{DW}f_{DW}-Y_{PL}f_{PL}-Y_{TU}f_{TU})/(Y_{LL}f_{LL})$				Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	Nominal Shear Resistance	Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	End Panel Nominal Shear Resistance	Interior Panel Nominal Shear Resistance		$RF=(\phi_c\phi_s\phi V_n-Y_{DC}V_{DC}-Y_{DW}V_{DW}-Y_{PL}V_{PL}-Y_{TU}V_{TU})/(Y_{LL}V_{LL})$	
		Macro Node No	$\phi_f F_{nc}$	$\phi_f F_{nt}$	Top Flange	Bottom Flange		V_p	k	C	V_n	k	C	V_{n_end}	$V_{n\_interior}$			
								6.10.9.2-2	C6.10.9.2	6.10.9.3.2-4 to 6	6.10.9.2-1	C6.10.9.3.2-7	6.10.9.3.2-4 to 6	6.10.9.2-1	6.10.9.2-1			
DC1		1005																
		1005																
DC2		1005																
		1005																
DW		1005																
		1005																
DC1+DC2+DW		1005																
		1005	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0

Load Cases and Load Combination	Live Load Consider		**Flexural Resistance**		**Rating Factor for Flexure $RF_{flexural}$**			Shear Resistance									Rating Factor for Shear RF_{shear}	
								Plastic Shear Force	Unstiffened Web			Stiffener Web				$\phi_v V_{n\_use}$		
			Flexural Resistance for Compression Flange $\phi_f F_{nc}$	Flexural Resistance for Tension Flange $\phi_f F_{nt}$	$RF=(\phi_c\phi_s\phi F_n-Y_{DC}f_{DC}-Y_{DW}f_{DW}-Y_{PL}f_{PL}-Y_{TU}f_{TU})/(Y_{LL}f_{LL})$				Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	Nominal Shear Resistance	Shear Buckling Coefficient	Ratio of the shear-bucking resistance to shear yield strength	End Panel Nominal Shear Resistance	Interior Panel Nominal Shear Resistance		$RF=(\phi_c\phi_s\phi V_n-Y_{DC}V_{DC}-Y_{DW}V_{DW}-Y_{PL}V_{PL}-Y_{TU}V_{TU})/(Y_{LL}V_{LL})$	
		Macro Node No	$\phi_f F_{nc}$	$\phi_f F_{nt}$	Top Flange	Bottom Flange		V_p	k	C	V_n	k	C	V_{n_end}	$V_{n\_interior}$			
								6.10.9.2-2	C6.10.9.2	6.10.9.3.2-4 to 6	6.10.9.2-1	C6.10.9.3.2-7	6.10.9.3.2-4 to 6	6.10.9.2-1	6.10.9.2-1			
			$\phi_f F_{nc}$	$\phi_f F_{nt}$	**$LF1_{Top\_Flg}$**	**$LF1_{Bottom\_Flg}$**	M_c (Based on Fnc)	Vp	k	C	Vn	k	C	Vn_end	Vn_interior	V_n_final	**$LF1_{Shear}$**	**$LF1_{min}$**
LL_MaxFX (LL)	HL-93	1005	36.0	36.0	100.00	3.22	2687.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	23.17	3.22
		1005	36.0	36.0	100.00	3.22	2687.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	23.17	3.22
LL_MINFX (LL)		1005	36.0	36.0	100.00	100.00	2666.7	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	70.55	70.55
		1005	36.0	36.0	100.00	100.00	2666.7	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	70.55	70.55
LL_MaxFZ (LL)		1005	36.0	36.0	100.00	5.16	2570.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	26.42	5.16
		1005	36.0	36.0	100.00	5.16	2570.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	26.42	5.16
LL_MINFZ (LL)		1005	36.0	36.0	100.00	5.34	2577.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	13.45	5.34
		1005	36.0	36.0	100.00	5.34	2577.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	13.45	5.34
LL_MaxMY (LL)		1005	36.0	36.0	393.96	3.05	2608.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	31.19	3.05
		1005	36.0	36.0	393.96	3.05	2608.8	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	31.19	3.05
LL_MINMY (LL)		1005	36.0	36.0	100.00	100.00	2609.6	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	70.83	70.83
		1005	36.0	36.0	100.00	100.00	2609.6	422.8	5.0	0.3	128.9	12.5	0.764	323.2	390.4	390.4	70.83	70.83
					393.960	3.051											31.191	3.051

Load Cases and Load Combination	Live Load Consider	Macro Node No	D_n	A_{fn}	$\beta = 2D_nt_w/A_{fn}$	ρ	$R_h = (12+\beta(3\rho-\rho^3))/(12+2\beta)$
			6.10.1.10.1	6.10.1.10.1	6.10.1.10.1-2	6.10.1.10.1	6.10.1.10.1-1
			(in)	(in^2)			
DC1		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
DC2		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
DW		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
1.25DC1+1.25DC2+1.5DW		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL+I_MaxFX (LL+IM)	HL-93	1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL+I_MINFX (LL+IM)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL+I_MaxFZ (LL+IM)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL+I_MINFZ (LL+IM)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL+I_MaxMY (LL+IM)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL+I_MINMY (LL+IM)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0

DC1_Bracing Start		1005
DC1_Bracing End		1008
DC2_Bracing Start		1005
DC2_Bracing End		1008
DW_Bracing Start		1005
DW_Bracing End		1008
LL+I_MaxFX_Bracing Start (LL+IM)	HL-93	1005
LL+I_MaxFX_Bracing End (LL+IM)		1008
LL+I_MINFX_Bracing_Start (LL+IM)		1005
LL+I_MINFX_Bracing_End (LL+IM)		1008
LL+I_MaxFZ_Bracing_Start (LL+IM)		1005
LL+I_MaxFZ_Bracing_End (LL+IM)		1008
LL+I_MINFZ_Bracing_Start (LL+IM)		1005
LL+I_MINFZ_Bracing_End (LL+IM)		1008
LL+I_MaxMY_Bracing_Start (LL+IM)		1005
LL+I_MaxMY_Bracing_End (LL+IM)		1008
LL+I_MINMY_Bracing_Start (LL+IM)		1005
LL+I_MINMY_Bracing_End (LL+IM)		1008
1.25DC+1.5DW_Bracing Start		1005
1.25DC+1.5DW_Bracing End		1008
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_Start		1005

Load Cases and Load Combination	Live Load Consider	Macro Node No	D_n	A_{fn}	$\beta = 2D_nt_w/A_{fn}$	ρ	$R_h = (12+\beta(3\rho-\rho^3))/(12+2\beta)$
			6.10.1.10.1	6.10.1.10.1	6.10.1.10.1-2	6.10.1.10.1	6.10.1.10.1-1
1.25DC+1.5DW+1.75LL+I_MaxFX_Bracing_End	HL-93	1008					
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_Start		1005					
1.25DC+1.5DW+1.75LL+I_MinFX_Bracing_End		1008					
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_Start		1005					
1.25DC+1.5DW+1.75LL+I_MaxFZ_Bracing_End		1008					
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing Start		1005					
1.25DC+1.5DW+1.75LL+I_MinFZ_Bracing End		1008					
1.25DC+1.5DW+1.75LL+I_MaxMY_Bracing Start		1005					
1.25DC+1.5DW+1.75PL+I_MaxMY_Bracing End		1008					
1.25DC+1.5DW+1.75PL+I_MinMY_Bracing Start		1005					
1.25DC+1.5DW+1.75LL+I_MinMY_Bracing End		1008					

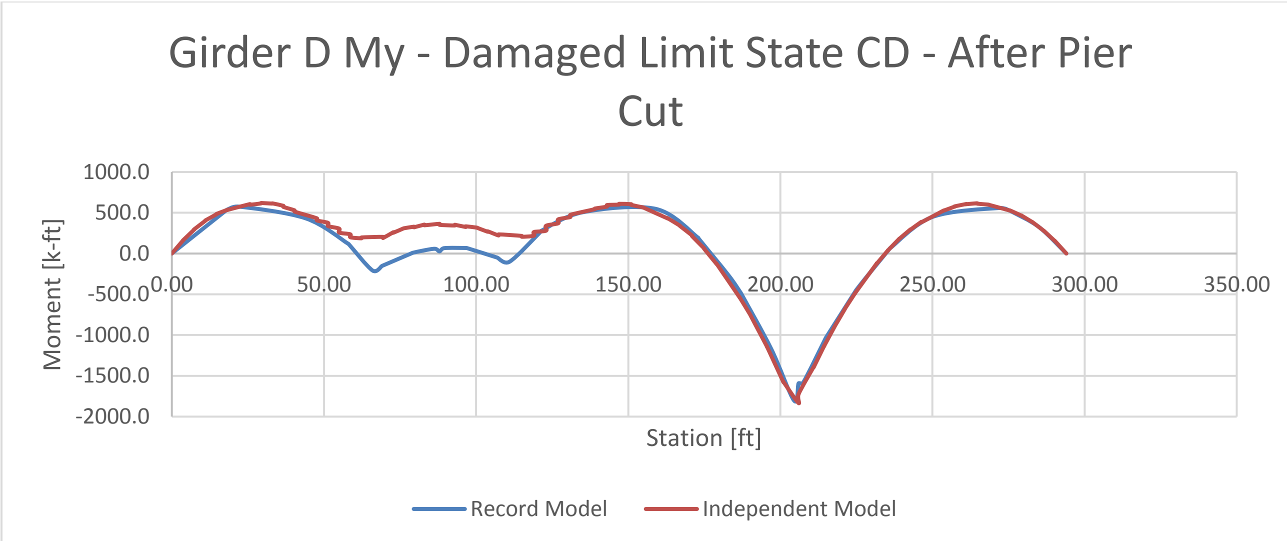
		Macro Node No	D_n	A_{fn}	$\beta = 2D_nt_w/A_{fn}$	ρ	R_h
1.25DC+1.5DW+1.75LL+I_MaxFX	HL-93 for Inventory Rating	1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MinFX		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MaxFZ		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MinFZ		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
1.25DC+1.5DW+1.2Tu+1.75LL+I_MaxMY		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
1.25DC+1.5DW+1.75LL+I_MinMY		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0

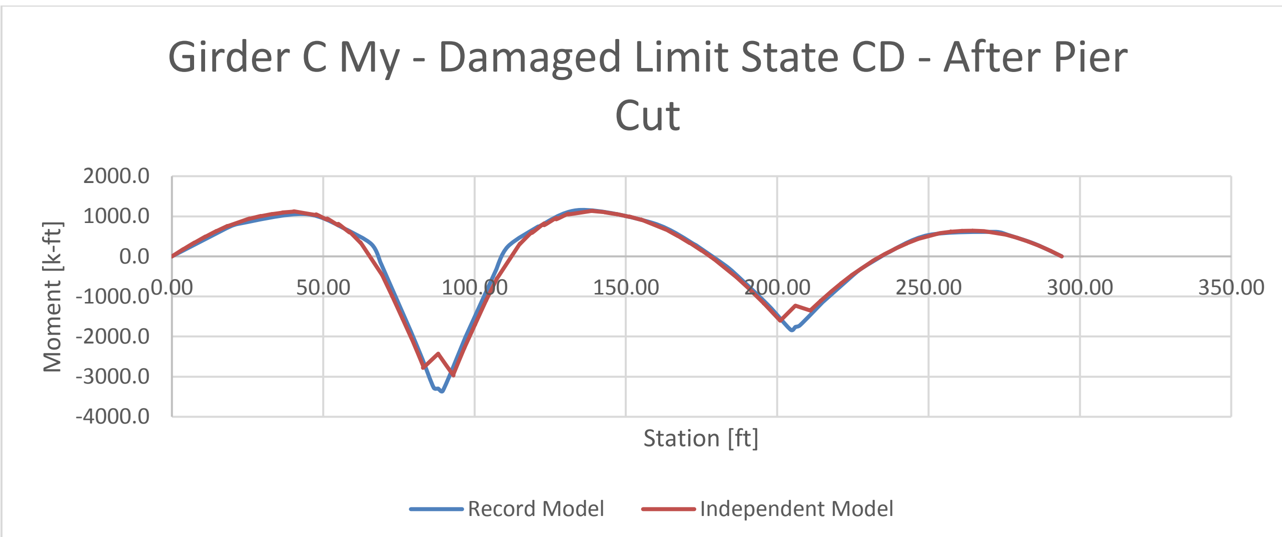
Load Cases and Load Combination	Live Load Consider	Macro Node No	D_n	A_{fn}	$\beta = 2D_nt_w/A_{fn}$	ρ	$R_h = (12+\beta(3\rho-\rho^3))/(12+2\beta)$
			6.10.1.10.1	6.10.1.10.1	6.10.1.10.1-2	6.10.1.10.1	6.10.1.10.1-1
DC1		1005					
		1005					
DC2		1005					
		1005					
DW		1005					
		1005					
DC1+DC2+DW		1005					
		1005					

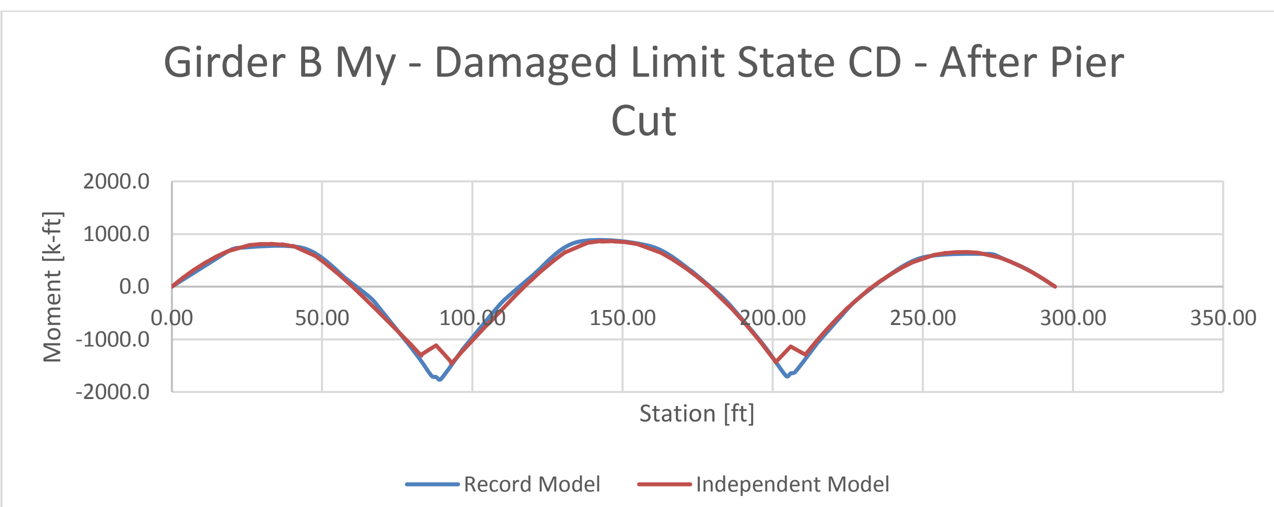
Load Cases and Load Combination	Live Load Consider	Macro Node No	D_n	A_{fn}	$\beta = 2D_nt_w/A_{fn}$	ρ	$R_h = (12+\beta(3\rho-\rho^3))/(12+2\beta)$
			6.10.1.10.1	6.10.1.10.1	6.10.1.10.1-2	6.10.1.10.1	6.10.1.10.1-1
			D_n	A_{fn}	$\beta = 2D_nt_w/A_{fn}$	ρ	R_h
LL_MaxFX (LL)	HL-93	1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL_MINFX (LL)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL_MaxFZ (LL)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL_MINFZ (LL)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL_MaxMY (LL)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0
LL_MINMY (LL)		1005	27.0	12.0	1.688	1.0	1.0
		1005	27.0	12.0	1.688	1.0	1.0

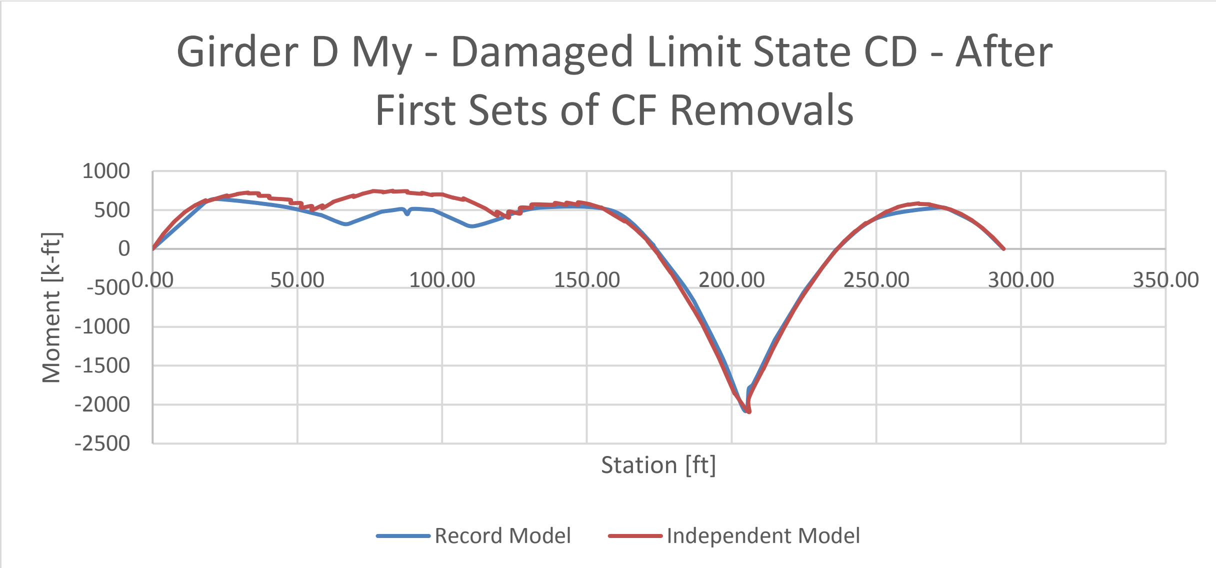
Appendix 3

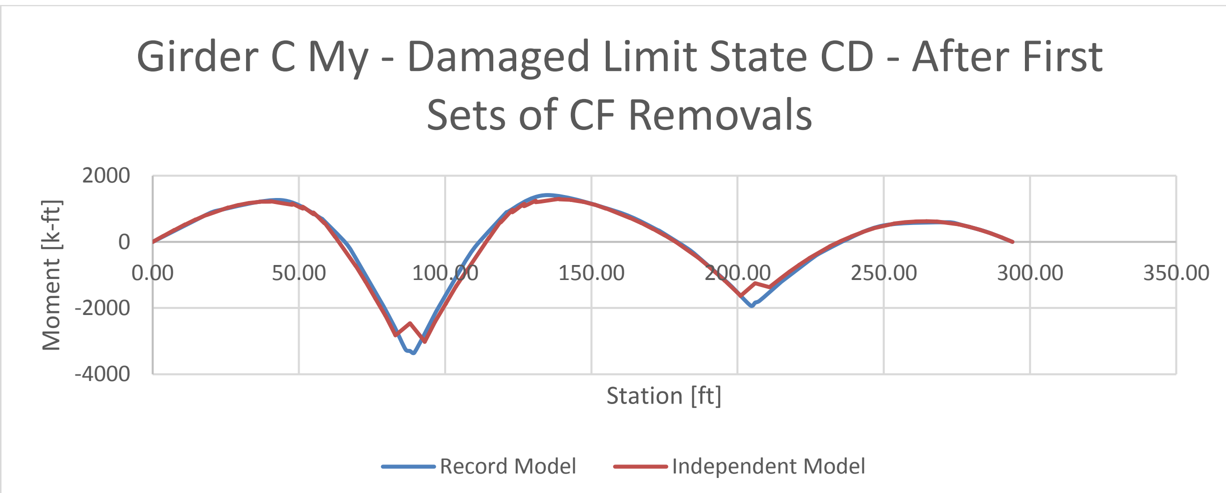
Redundancy Analysis Comparisons

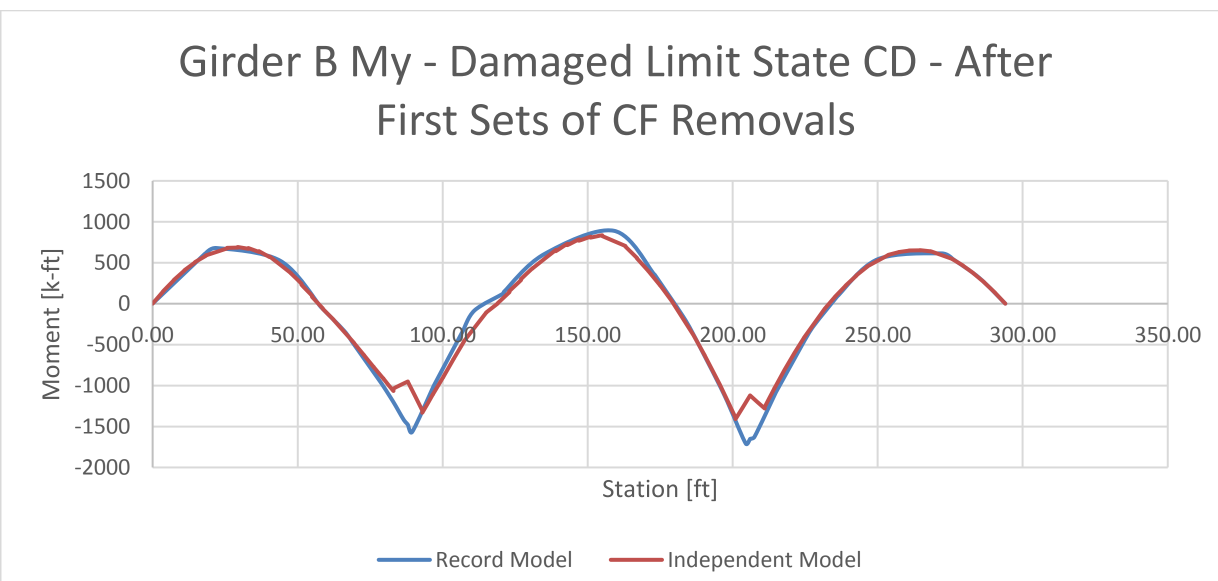

Girder D My - Damaged Limit State CD - After Pier Cut
1000.0
500.0
0.0
-500.0
-1000.0
-1500.0
-2000.0
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

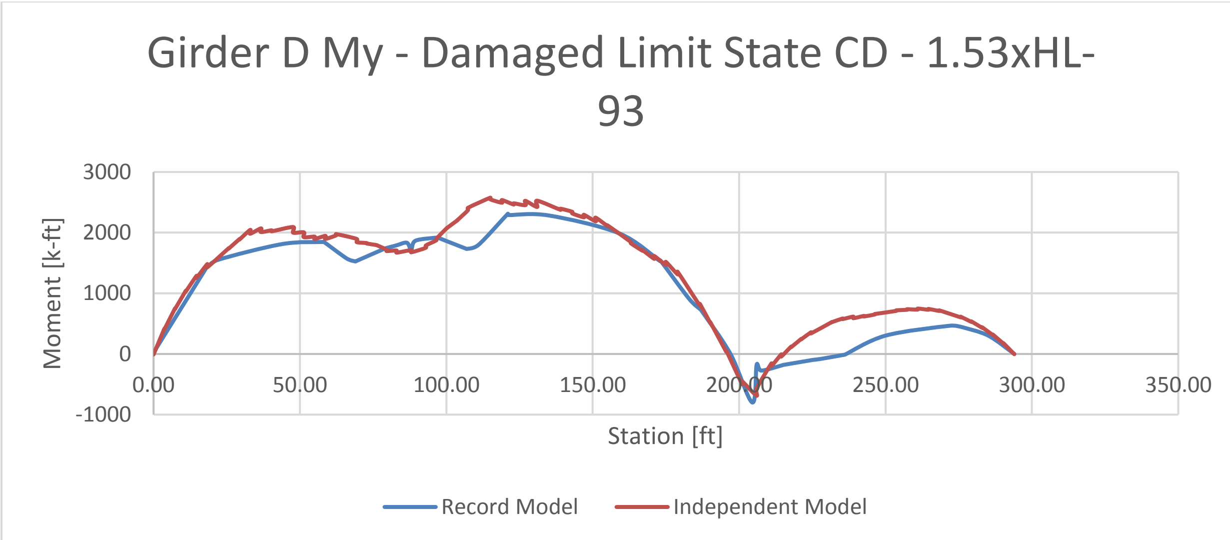

Girder C My - Damaged Limit State CD - After Pier Cut
2000.0
1000.0
0.0
-1000.0
-2000.0
-3000.0
-4000.0
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

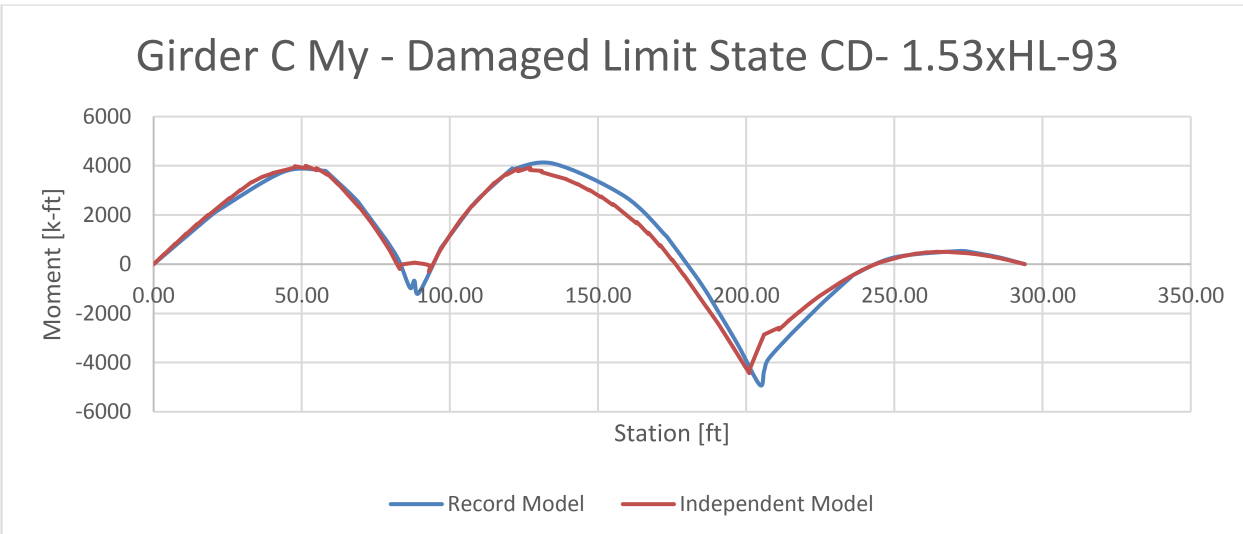

Girder B My - Damaged Limit State CD - After Pier Cut
2000.0
1000.0
0.0
-1000.0
-2000.0
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

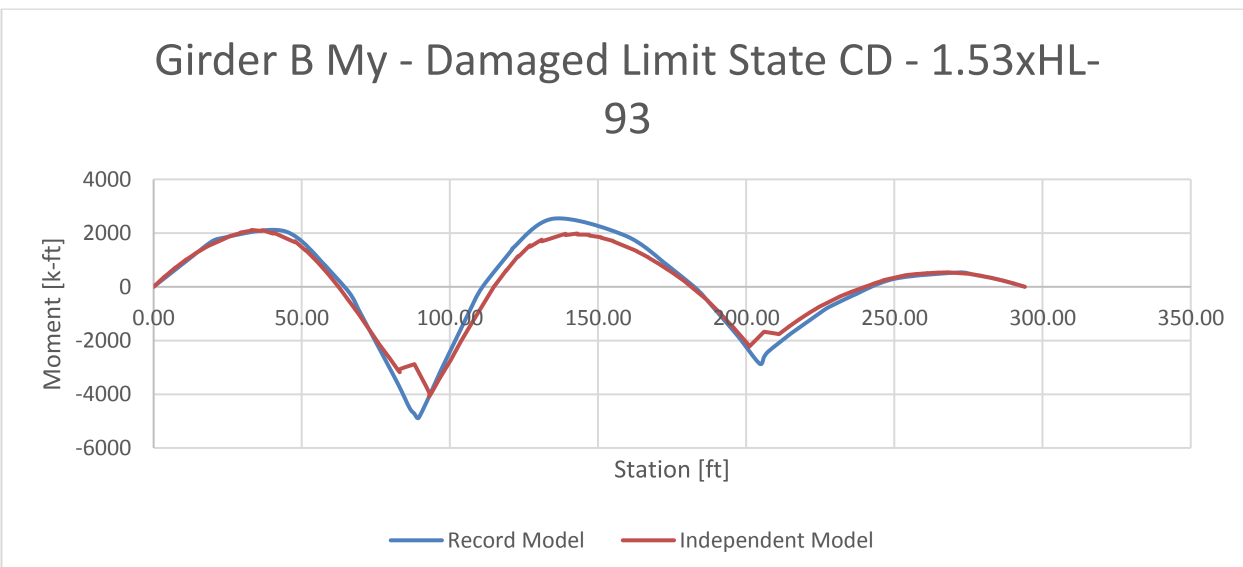

Girder D My - Damaged Limit State CD - After First Sets of CF Removals
1000
500
0
-500
-1000
-1500
-2000
-2500
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

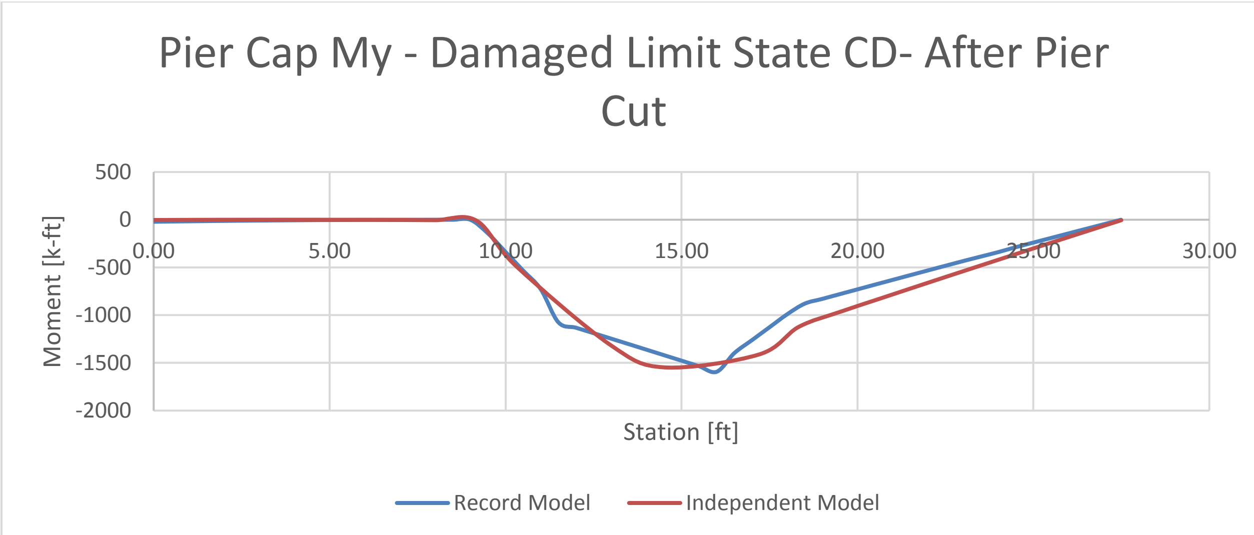

Girder C My - Damaged Limit State CD - After First Sets of CF Removals
2000
0
-2000
-4000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

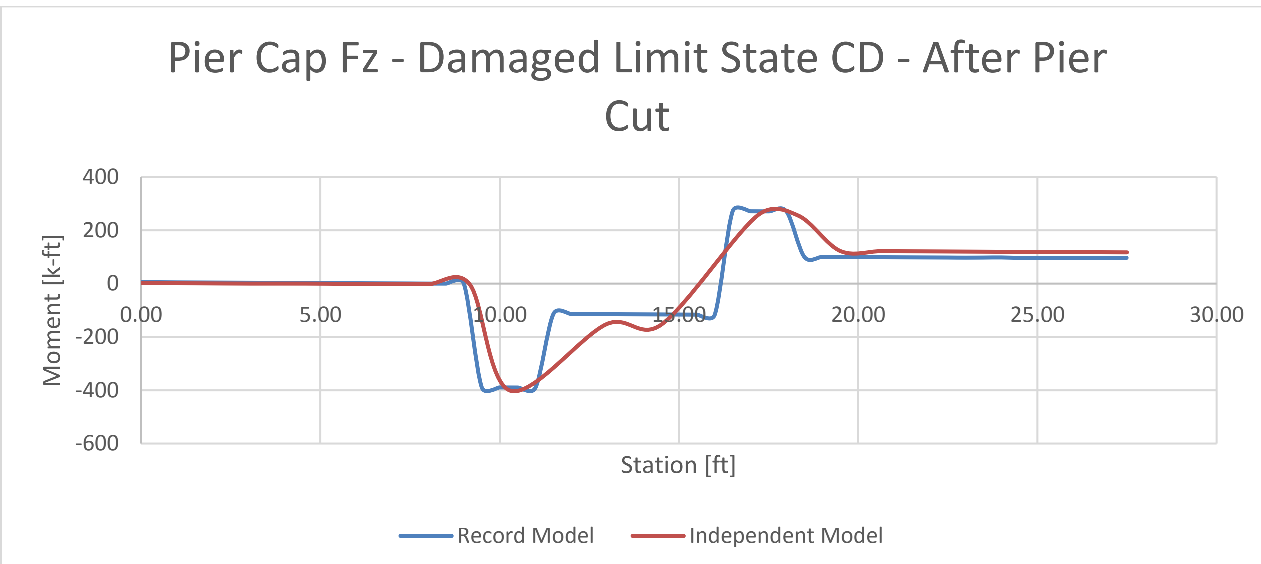

Girder B My - Damaged Limit State CD - After First Sets of CF Removals
1500
1000
500
0
-500
-1000
-1500
-2000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

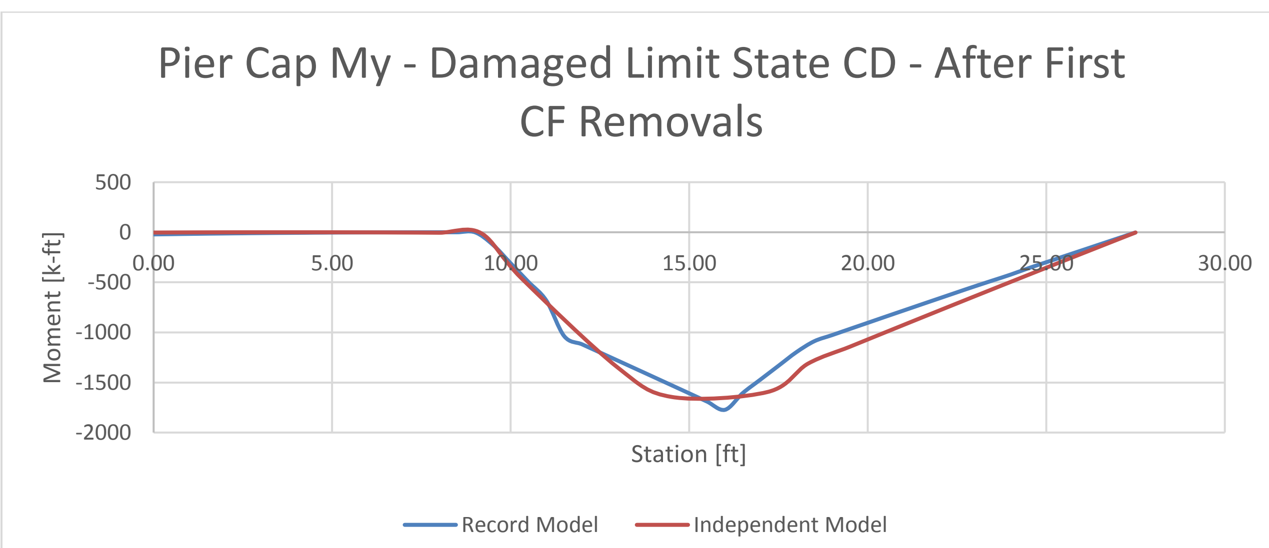

Girder D My - Damaged Limit State CD - 1.53xHL-93
3000
2000
1000
0
-1000
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model

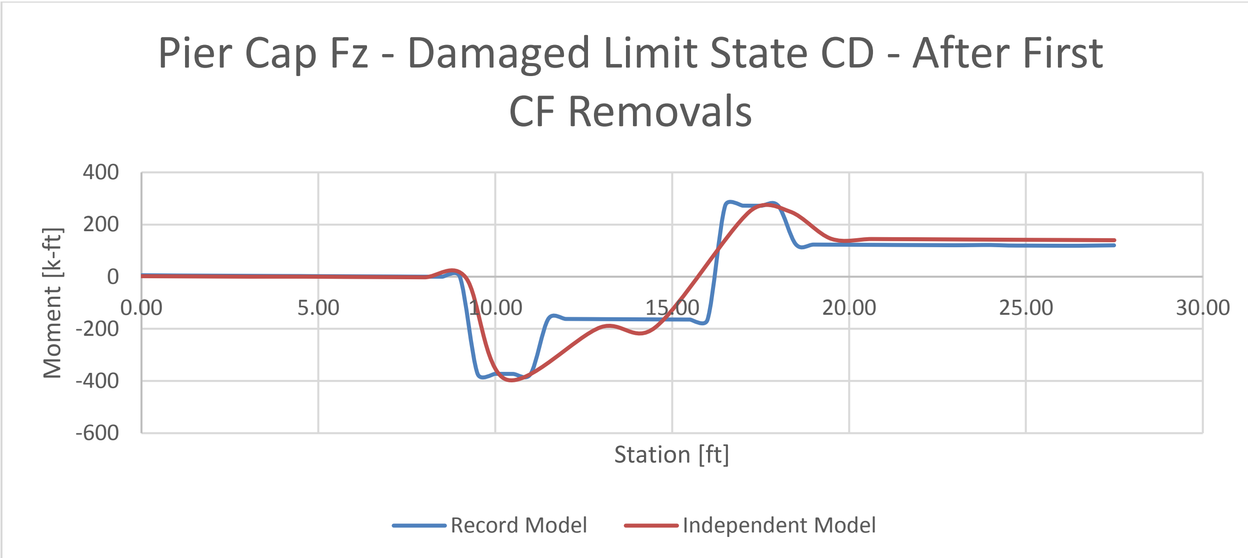

Girder C My - Damaged Limit State CD- 1.53xHL-93
6000
4000
2000
0
-2000
-4000
-6000
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model

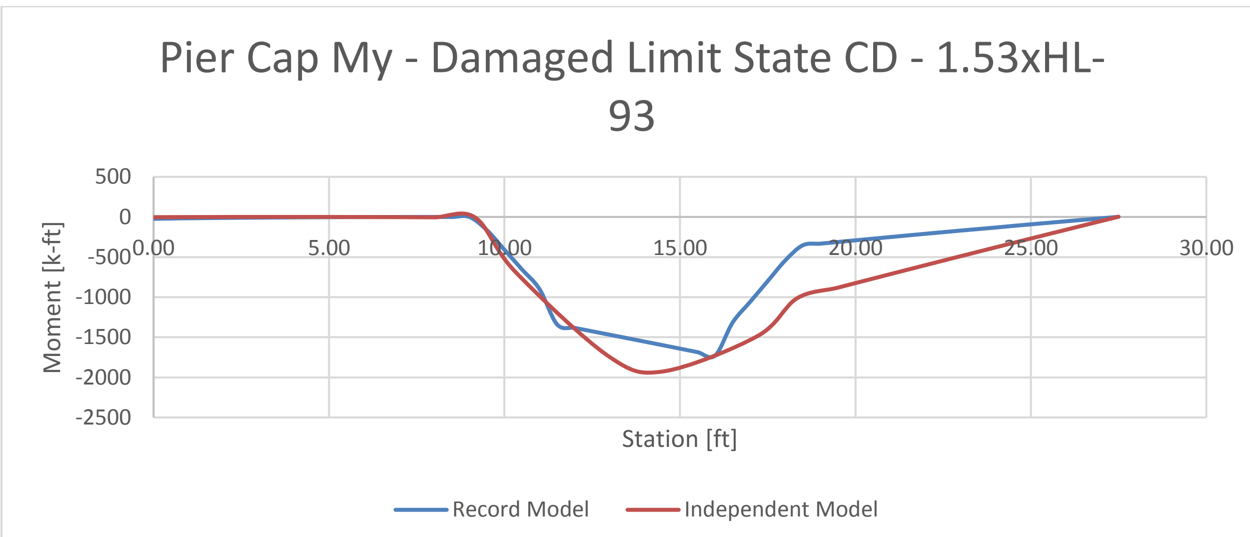

Girder B My - Damaged Limit State CD - 1.53xHL-93
4000
2000
0
-2000
-4000
-6000
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model

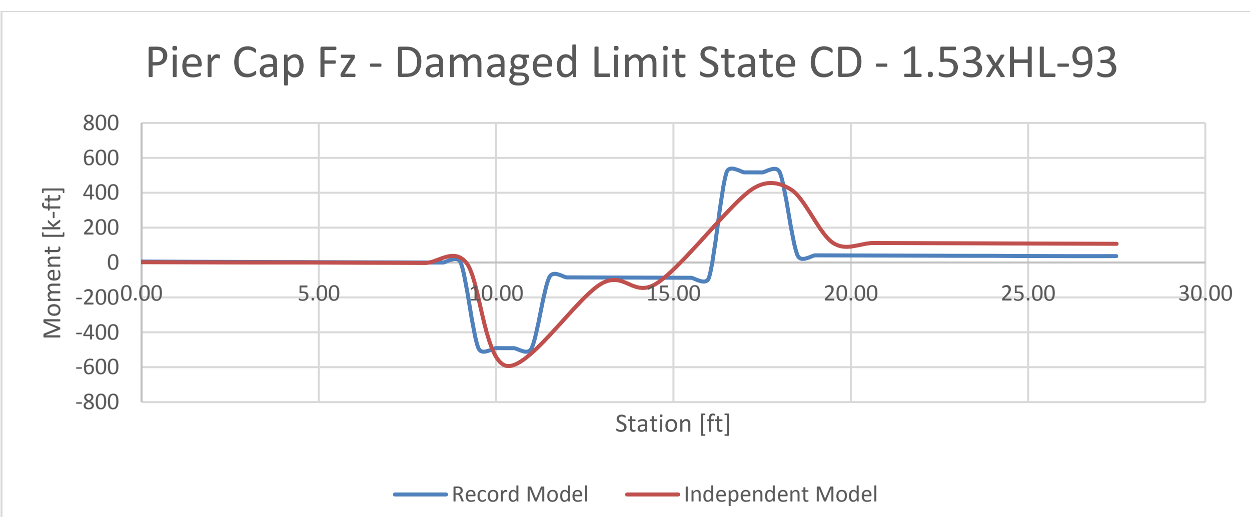

Pier Cap My - Damaged Limit State CD- After Pier Cut
500
0
-500
-1000
-1500
-2000
Moment [k-ft]
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station [ft]
Record Model
Independent Model

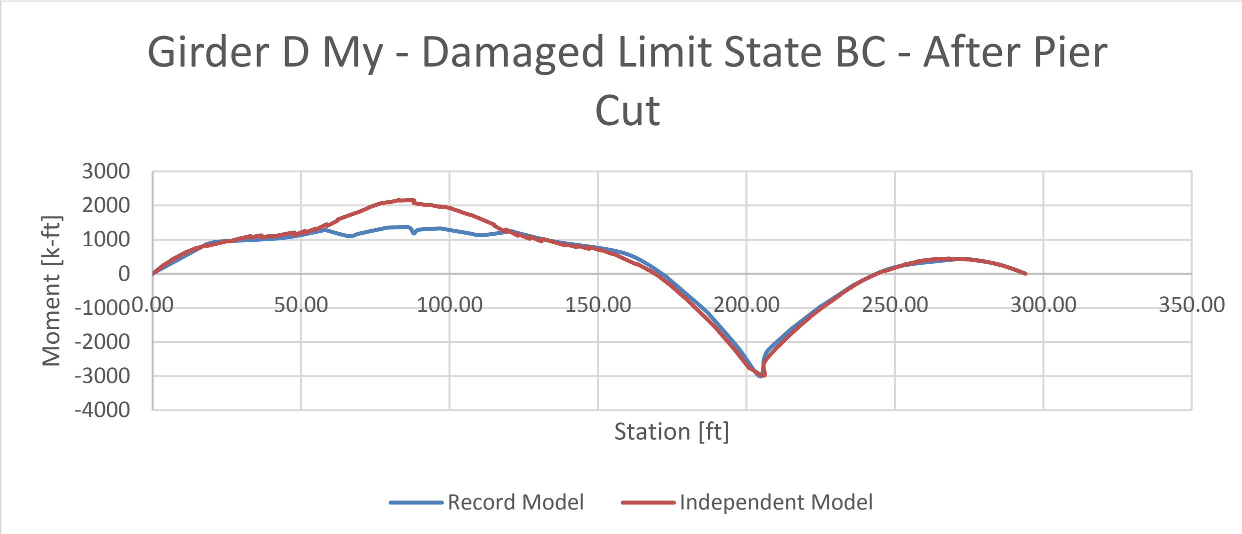

Pier Cap Fz - Damaged Limit State CD - After Pier Cut
400
200
0
-200
-400
-600
Moment [k-ft]
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station [ft]
Record Model
Independent Model

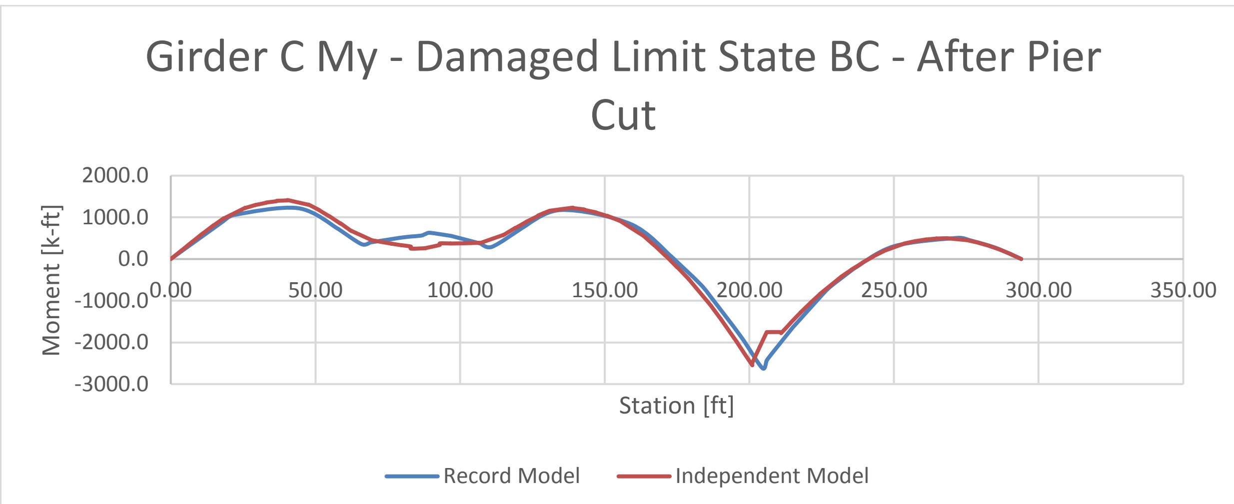

Pier Cap My - Damaged Limit State CD - After First CF Removals
500
0
-500
-1000
-1500
-2000
Moment [k-ft]
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station [ft]
Record Model
Independent Model

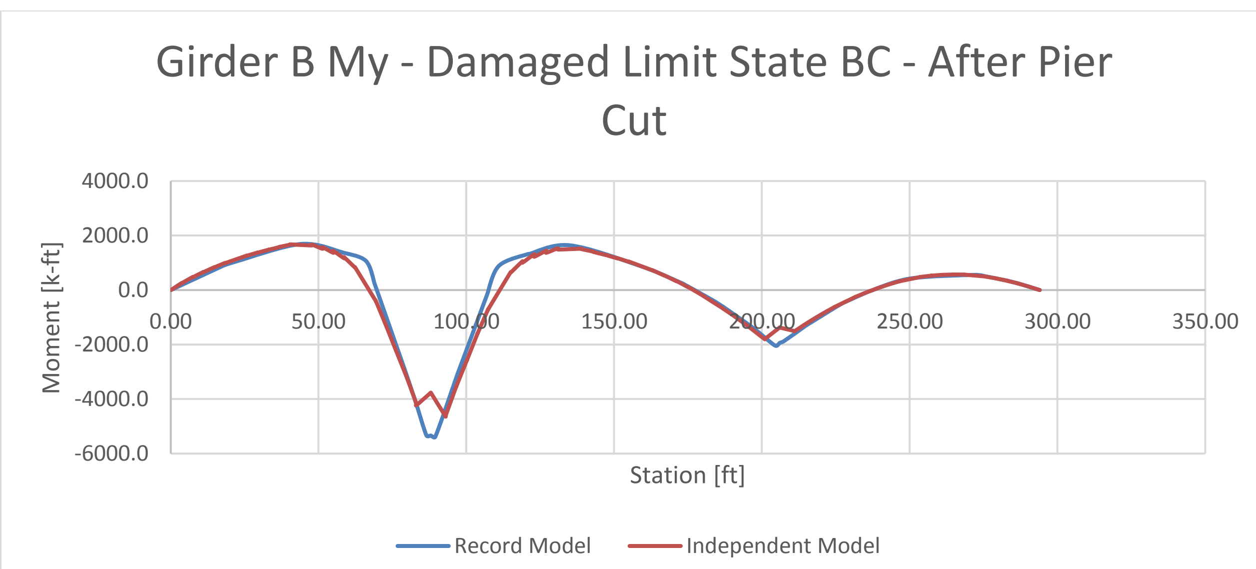

Pier Cap Fz - Damaged Limit State CD - After First CF Removals
400
200
0
-200
-400
-600
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model

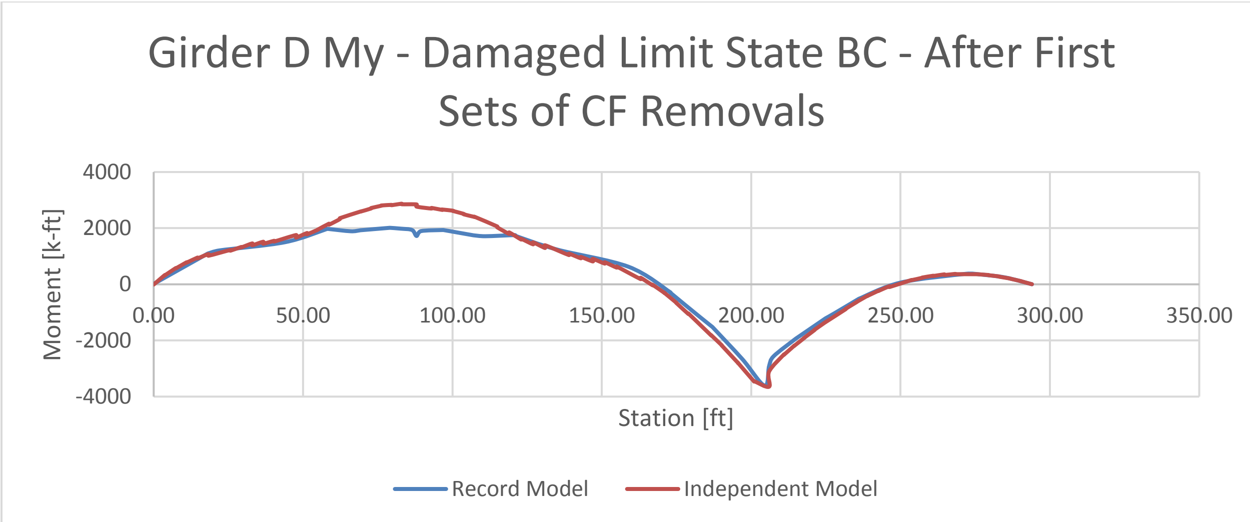

Pier Cap My - Damaged Limit State CD - 1.53xHL-93
500
0
-500
-1000
-1500
-2000
-2500
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model

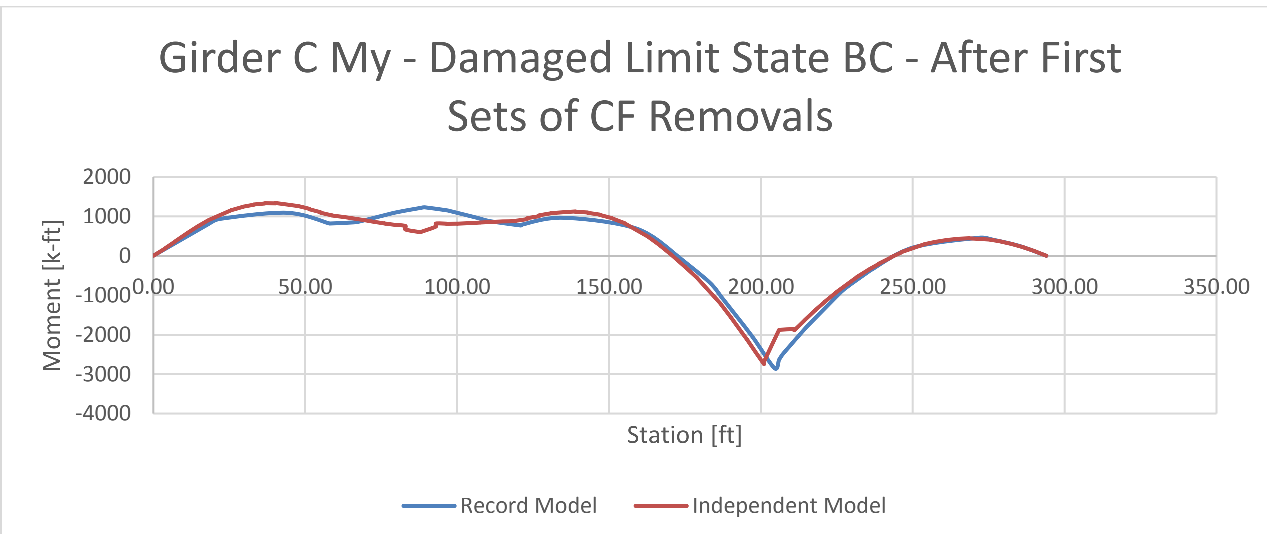

Pier Cap Fz - Damaged Limit State CD - 1.53xHL-93
800
600
400
200
0
-200
-400
-600
-800
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model

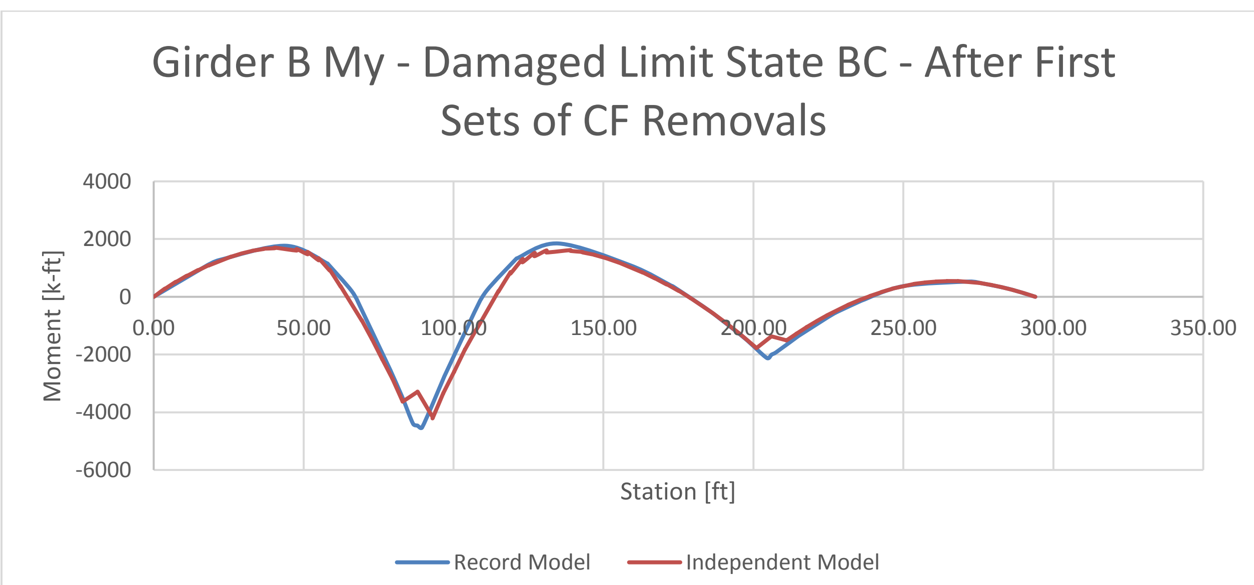

Girder D My - Damaged Limit State BC - After Pier Cut
Moment [k-ft]
3000
2000
1000
0
-1000
-2000
-3000
-4000
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

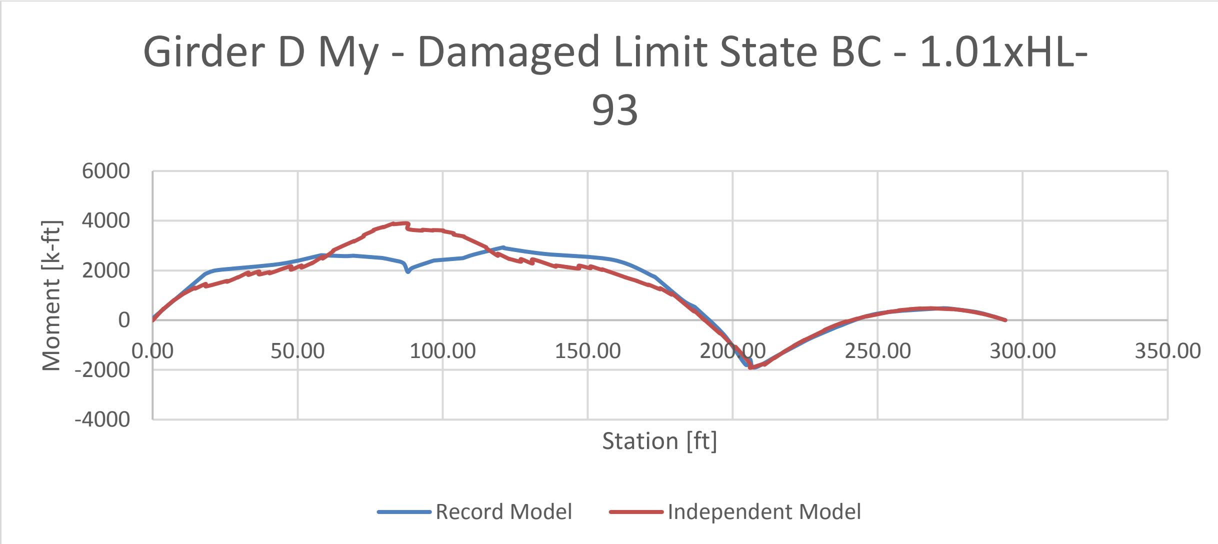

Girder C My - Damaged Limit State BC - After Pier Cut
Moment [k-ft]
2000.0
1000.0
0.0
-1000.0
-2000.0
-3000.0
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

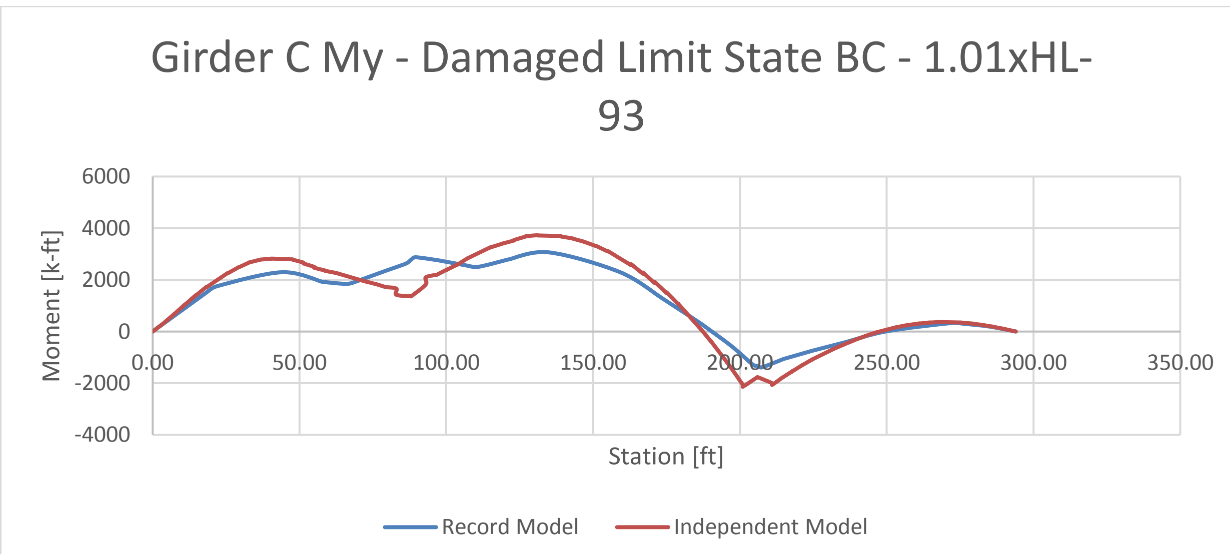

Girder B My - Damaged Limit State BC - After Pier Cut
Moment [k-ft]
4000.0
2000.0
0.0
-2000.0
-4000.0
-6000.0
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

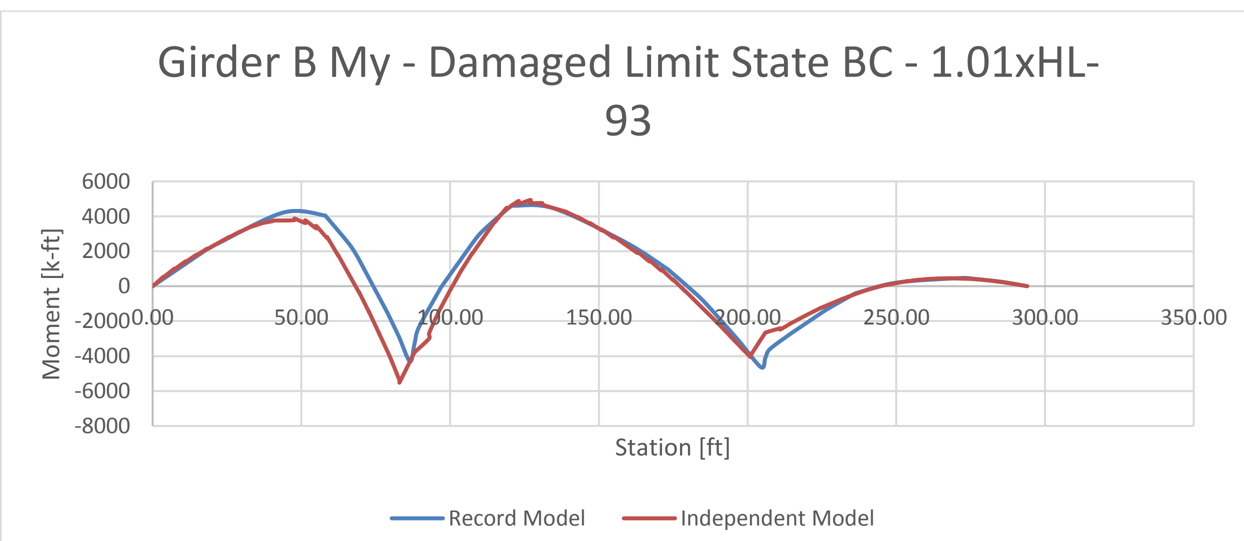

Girder D My - Damaged Limit State BC - After First Sets of CF Removals
4000
2000
0
-2000
-4000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

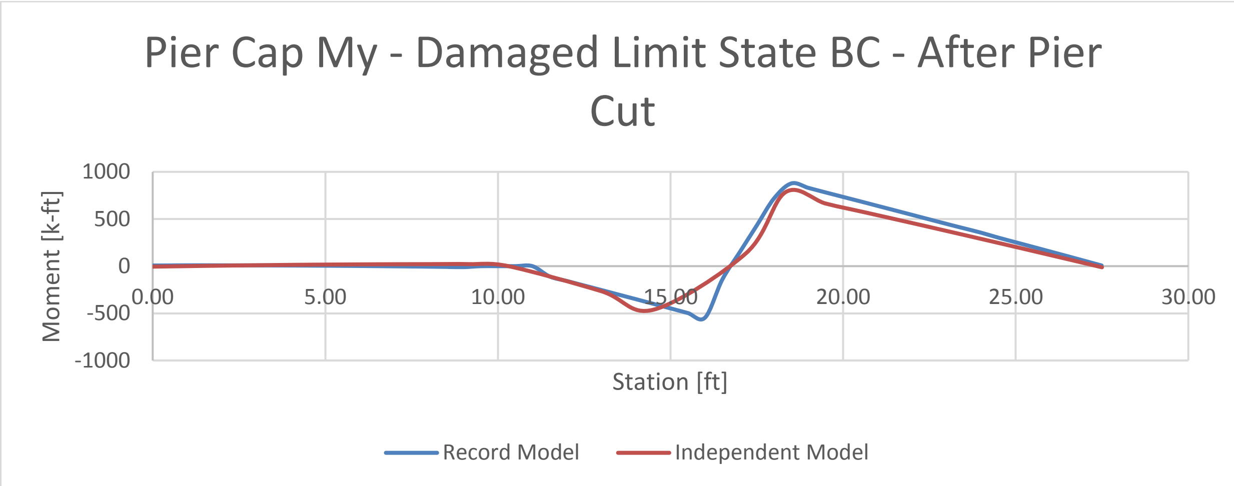

Girder C My - Damaged Limit State BC - After First Sets of CF Removals
2000
1000
0
-1000
-2000
-3000
-4000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

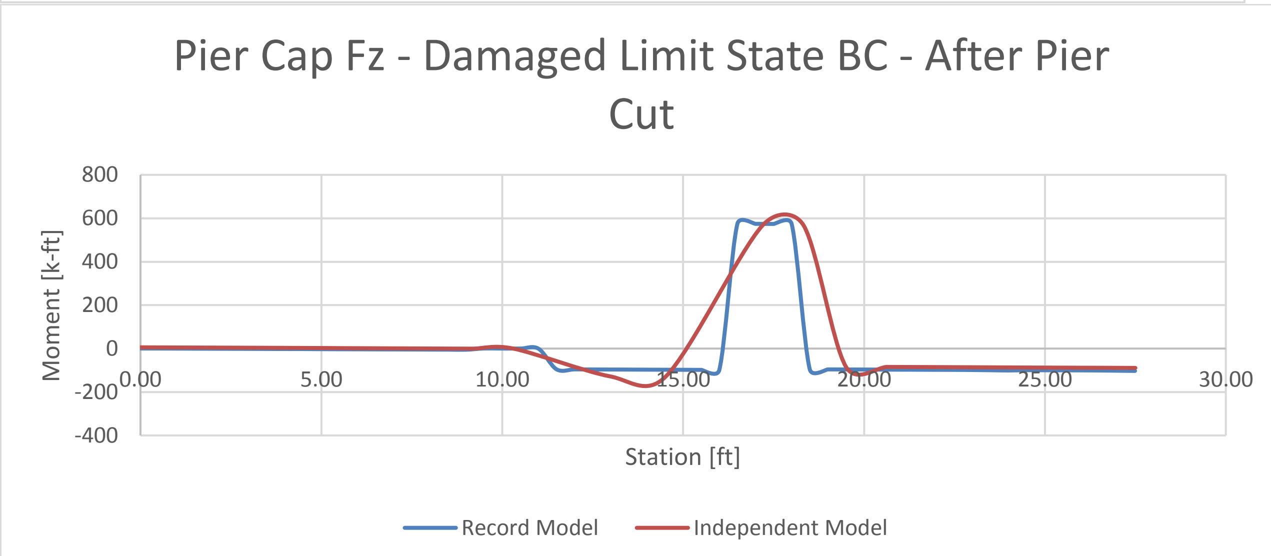

Girder B My - Damaged Limit State BC - After First Sets of CF Removals
4000
2000
0
-2000
-4000
-6000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

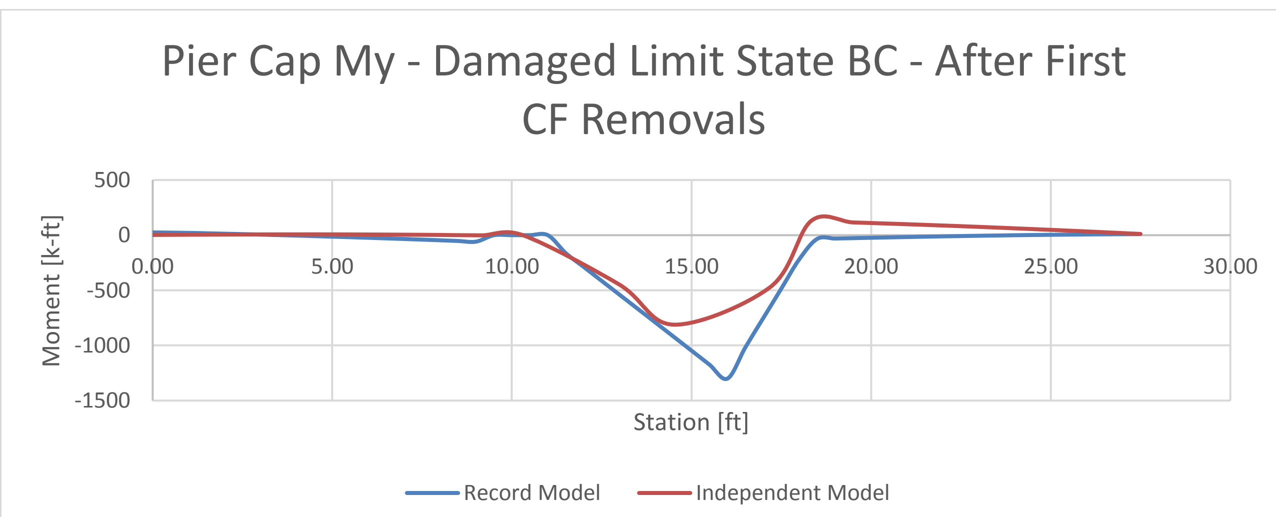

Girder D My - Damaged Limit State BC - 1.01xHL-93
6000
4000
2000
0
-2000
-4000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

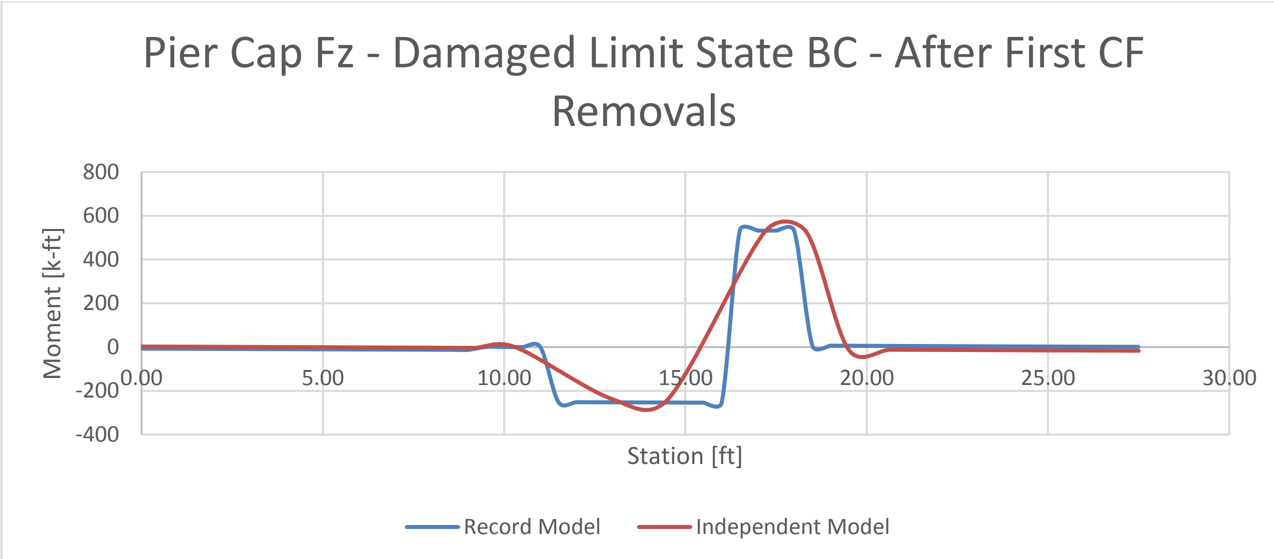

Girder C My - Damaged Limit State BC - 1.01xHL-93
6000
4000
2000
0
-2000
-4000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model


Girder B My - Damaged Limit State BC - 1.01xHL-93
6000
4000
2000
0
-2000
-4000
-6000
-8000
Moment [k-ft]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Station [ft]
Record Model
Independent Model

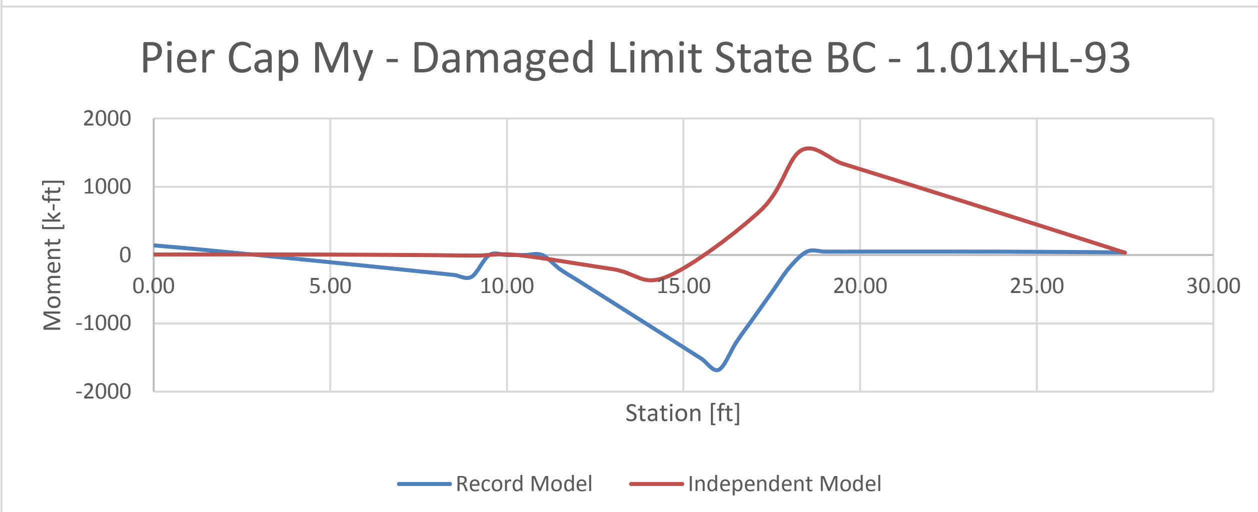

Pier Cap My - Damaged Limit State BC - After Pier Cut
1000
500
0
-500
-1000
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model


Pier Cap Fz - Damaged Limit State BC - After Pier Cut
800
600
400
200
0
-200
-400
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model

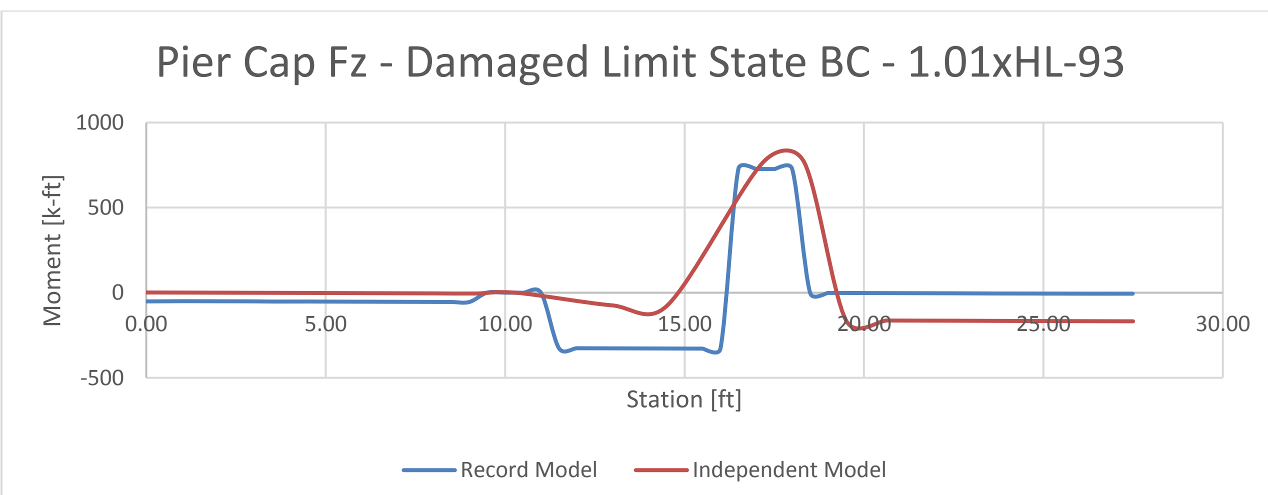

Pier Cap My - Damaged Limit State BC - After First CF Removals
500
0
-500
-1000
-1500
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Moment [k-ft]
Station [ft]
Record Model
Independent Model



Pier Cap Fz - Damaged Limit State BC - After First CF Removals
Moment [k-ft]
800
600
400
200
0
-200
-400
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station [ft]
Record Model
Independent Model



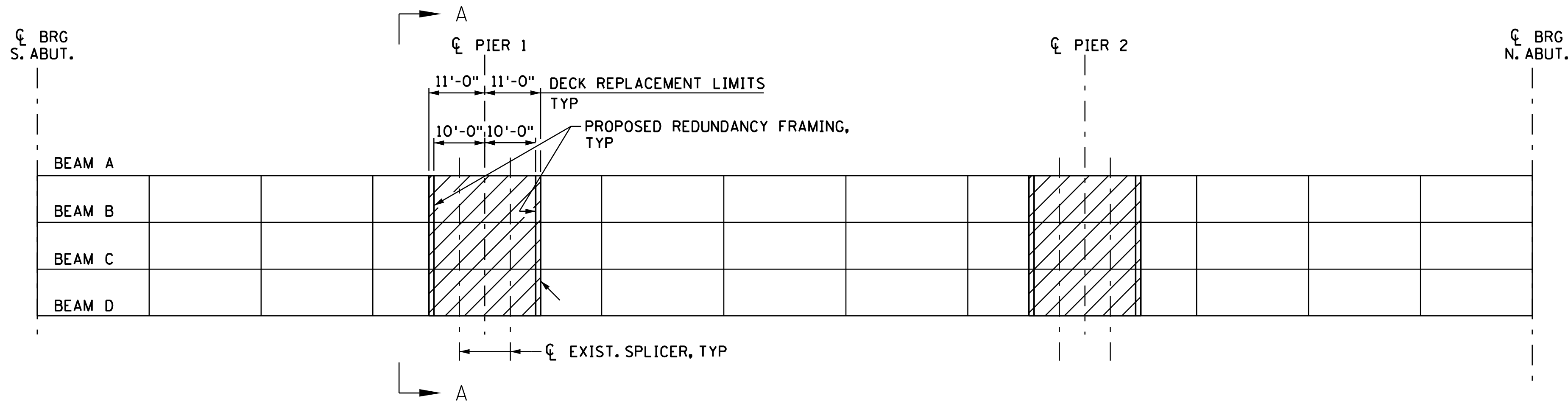
Pier Cap My - Damaged Limit State BC - 1.01xHL-93
Moment [k-ft]
2000
1000
0
-1000
-2000
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station [ft]
Record Model
Independent Model



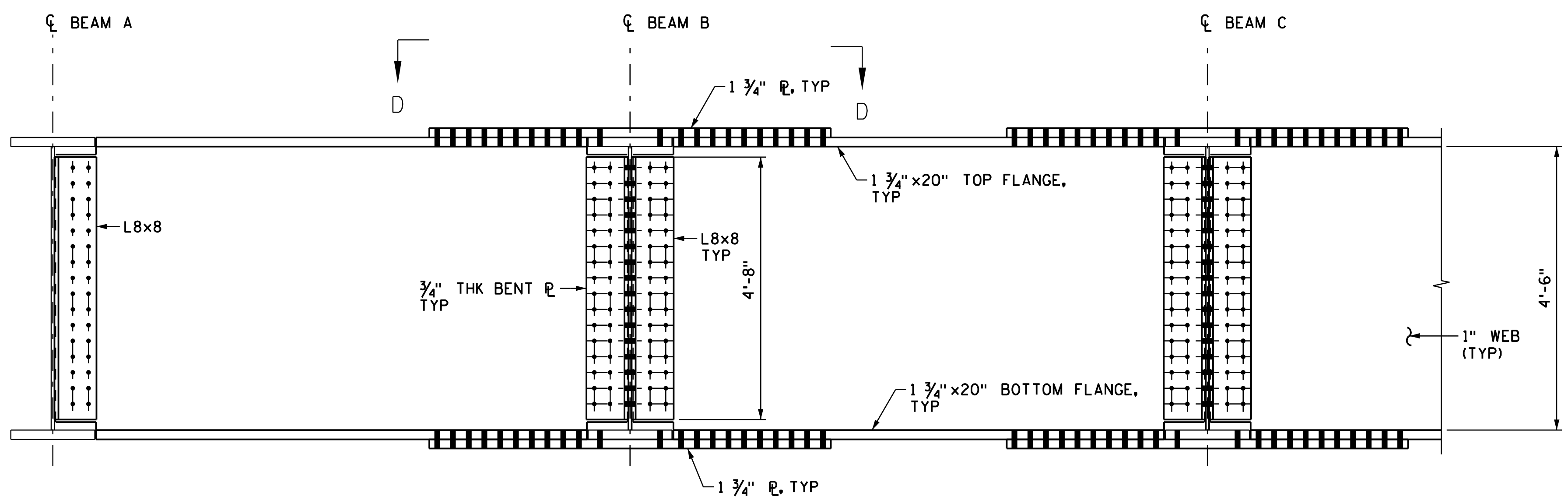
Pier Cap Fz - Damaged Limit State BC - 1.01xHL-93
Moment [k-ft]
1000
500
0
-500
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station [ft]
Record Model
Independent Model

Appendix 4

Proposed Redundancy Repairs

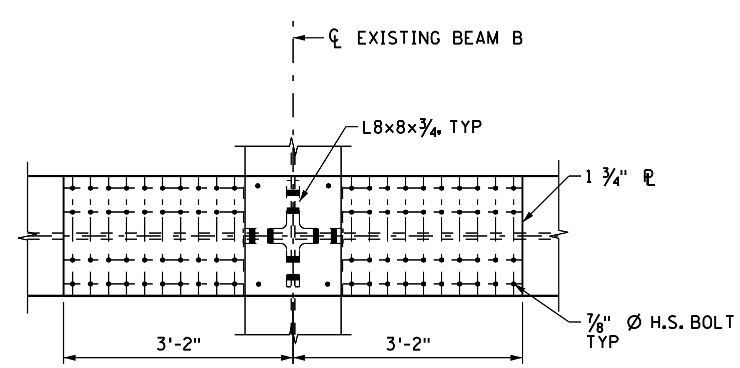


FRAMING PLAN



SECTION A-A

(NO OF BOLTS AS SHOWN)



VIEW D

NOTES:

1. ALL STEEL TO BE Fy = 50 ksi
2. ALL BOLTS TO BE 7/8" Ø H.S. ASTM A325 BOLTS

HNTB

CERTIFIED BY

LICENSED PROFESSIONAL ENGINEER DATE

NAME: LIC. NO. ____

TITLE: ALTERNATE PATH FRAMING REDUNDANCY OPTION 1

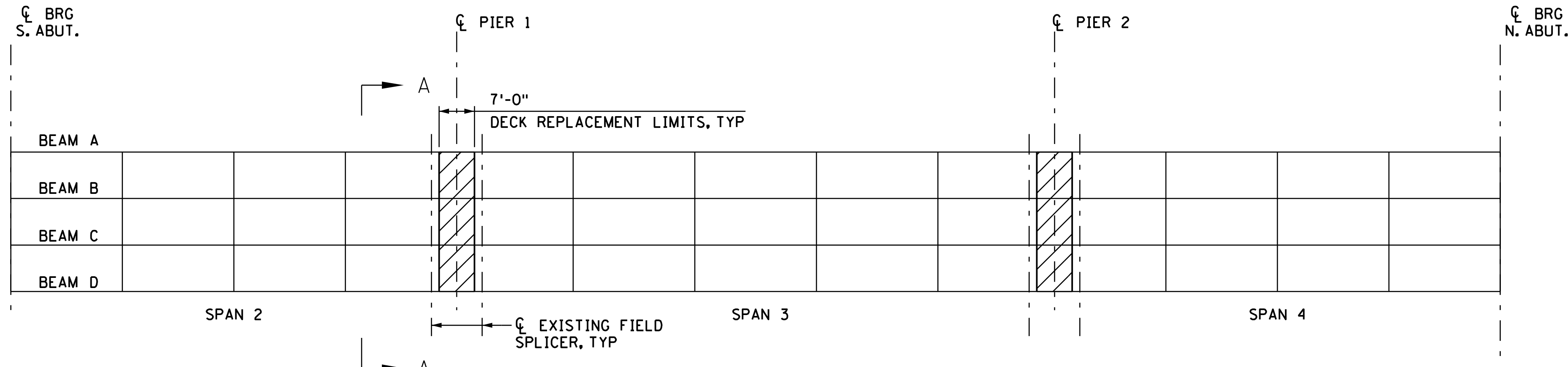
DES: DR: CHK: CHK: APPROVED:

SHEET NO. OF SHEETS

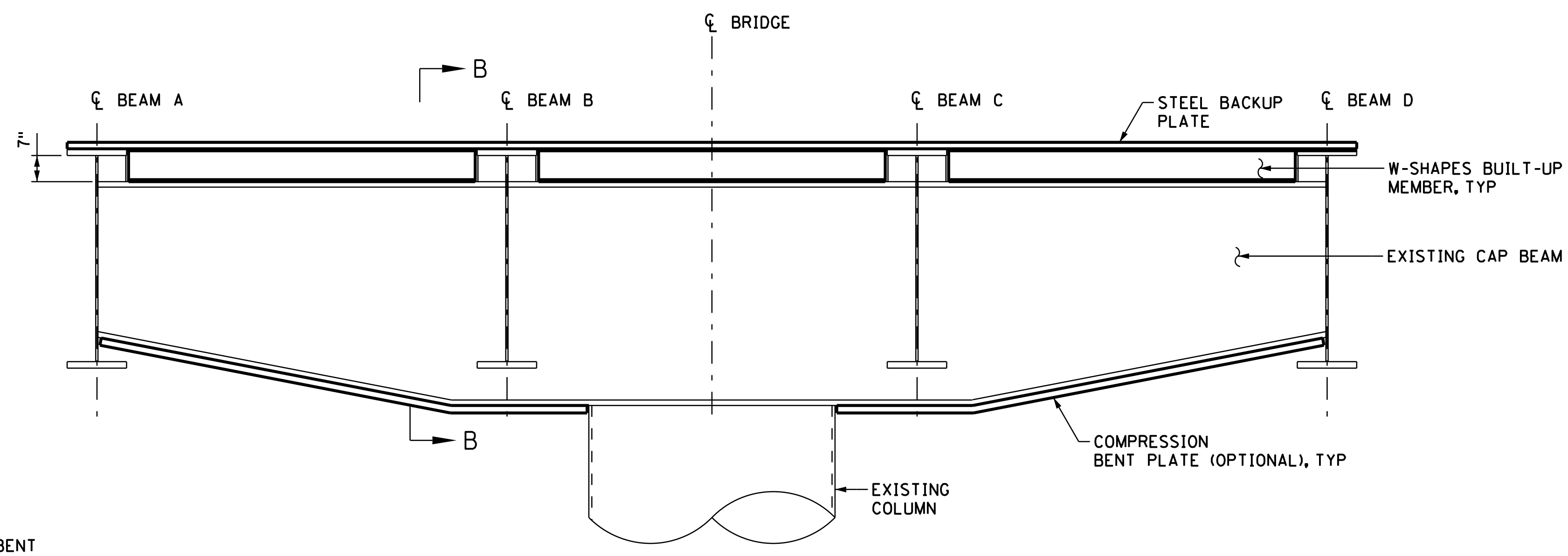
BRIDGE NO. 69840

8/23/2017 b69840_S001.dgn

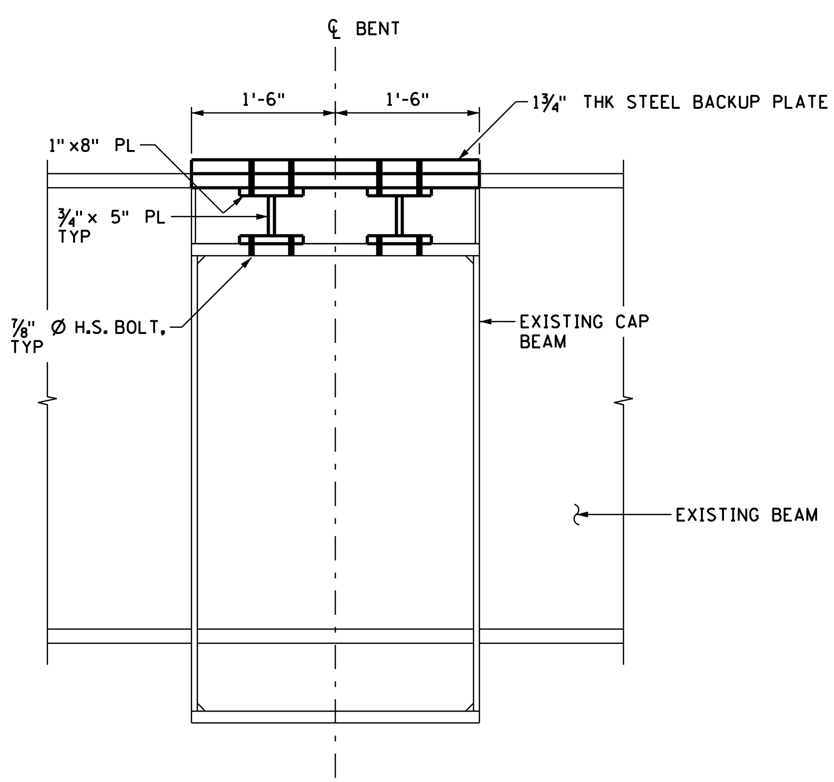
...\60477\CADD\cds\b69840_S001.dgn



FRAMING PLAN



SECTION A-A



SECTION B-B

NOTES:

1. ALL CONCRETE TO BE fc' = 4 ksi
2. ALL STEEL TO BE Fy = 50 ksi
3. ALL BOLTS TO BE ⅞" Ø H.S. ASTM A325 BOLTS.

HNTB	CERTIFIED BY ______ LICENSED PROFESSIONAL ENGINEER ______ DATE NAME: LIC. NO. ______	TITLE: MEMEBER REDUNDANCY OPTION 2	DES: DR: CHK: CHK: SHEET NO. OF SHEETS	APPROVED:	BRIDGE NO. 69840

8/23/2017 b69840_S002.dgn

...\60477\CADD\cds\b69840_S002.dgn

Appendix 5

Scoping Level Cost Estimate Repairs

1.0 PROJECT

Sponsor (Lead Agency):	MnDOT
Design Organization (Sponsor or Consultant):	HNTB
Estimator:	Steven Schantzen
Estimator's Organization:	HNTB
Project Location (County):	St. Louis
Date of Estimate Submittal:	September 11, 2017
Anticipated Contract Method:	Design Bid Build
Start of Construction:	1st Quarter 2018
Anticipated Mid-Point of Construction:	2018
Estimating Processing Software:	Excel
Design Development (%, or level of design developed):	Conceptual Level
Project Identification No.	SP 6937-102 T.H. US2

2.0 PURPOSE

The purpose of this document is to provide a basis of estimate for the rehabilitation of fracture critical bridges in Duluth, MN and provide a conceptual cost estimate for two alternative designs.

The following estimates were grouped into general cost categories as listed below. For future iterations, the estimate will utilize MNDOT bid items.

- Erosion Control
- Maintenance of Traffic
- Striping
- Bridge Deck Demolition
- Structural Steel
- Bridge Deck Concrete
- Concrete Rail
- Rebar

The Basis of Estimate (BOE) Report defines the estimate parameters, scope of work, estimate structure, assumptions and exclusions. Separate reports may be developed if new alternatives are evaluated during the review process. As the design develops and advances, it is recommended the cost estimate be updated with new information to understand potential impacts or savings to the project.

3.0 SCOPE & PARAMETERS

Summary of Key elements:

Hazardous Materials:	None – Excluded and not anticipated
Wetlands Issues:	None, Excluded

Archeological Impacts:	None, Excluded
Native American (Tribal) Issues:	None, Excluded

3.1 Erosion Control

A lump sum allowance of $8,000 was assumed for each alternative. This cost would include temporary and permanent erosion control means and methods.

3.2 Maintenance of Traffic

A lump sum allowance of $20,000 and $15,000 was included for options 1 and 2 respectively. This would include temporary detours, road closures and temporary lane closures.

3.3 Striping

A lump sum allowance of $2,000 was assumed for restriping portions of the bridge decks that will be removed and replaced during bridge rehabilitation.

3.4 Bridge Deck Demolition

Portions of the bridge deck will be removed over Piers 1 and 2 to complete steel repairs. It was assumed that the bridge deck will be removed to 11’ past the centerline of pier (22’ total) on both sides for alternative 1 and 7’ total for alternative 2. The cost includes protecting the roadway under the bridges, demolition of the bridge deck and concrete rail, and hauling away rubble. It was assumed that the contractor would borrow soil from the existing shoulders to cover the road during bridge deck demolition.

3.5 Structural Steel

Structural steel is assumed to be fabricated at a MNDOT approved fabricator and shipped to the project site. Gusset plates and connection angles are assumed to be fully drilled and attached to framing. The connection angles will be used as a template to drill holes in the existing steel. A similar method will be used in alternative 2. To complete bolting of the steel in alternative 2, an access hole will have to be cut in the side of the straddle bent. It was assumed that this access hole will have a cover plate bolted over the opening after all steel work is complete.

A compression plate was not included.

3.6 Bridge Deck Concrete

Cost for replacement of the concrete deck is included in this item. A full depth deck was assumed to be poured in place.

3.7 Concrete Rail

Cost for replacement of the concrete rail is included in this item

3.8 Rebar

Rebar for bridge deck and concrete rail is included in this item. All rebar is assumed to be epoxy coated.

4.0 DESIGN BASIS

It is understood that the current design is at a preliminary/conceptual level. Elements of the project have not yet been fully detailed and designed, therefore estimating assumptions were utilized when required to generate the quantities and costs. Minnesota Department of Transportation (MnDOT) standards and specifications were utilized for reference where applicable. The documents provided for use in the preparation of the estimate include concept level drawings.

5.0 PLANNING BASIS

The project is expected to be delivered by a design/bid/build contract method. The contract is tentatively expected to be awarded in the first quarter of 2018 with work completed by the end of 2018.

Access for work associated with these bridges will require the bridges to be closed as well as the roadway beneath them. It is expected that the contractor will stage cranes and aerial lifts on adjacent shoulders under the bridges.

6.0 COST BASIS

Where details were missing or not available, assumptions were made and documented to progress the estimate. In certain scenarios where quantities and/or responsible assumptions were not viable, allowances were used to serve as place holders for known cost. As design progresses and details/scope advance, the estimate should be adjusted and the allowance dollars re-defined as hard cost.

Prices are calculated in 2017 dollars. All rates are taken from prevailing wages or estimator experience.

Current Year Dollars	Estimate is priced utilizing 2017 dollars
Labor Rates & Burden	Labor rates are based off of St. Louis County
Overtime	No overtime has been included
Standard Shift Assumption	Mon-Fri 40 hours / week
Bonds and Insurances	Bonds & Insurances are included at 1.5% of construction
Overhead and Profit	Overhead and Profit is included at 15%
Material Tax Rate	7.0%
Escalation	Labor rates have been escalated by 2.5%
Unallocated Contingency	No contingency is included. Assumed to be added at the project level
Mobilization	No mobilization is included. Assumed to be added at the project level
Maintenance of Traffic	Lump sum allowance
Betterments (or potentials)	NA
Warranties	NA
Right of Way / Easements	Not Included

7.0 ALLOWANCES

The following items have been assigned a lump sum allowance

- Erosion control was given a value of $8,000
- MOT was given a $20,000 allowance for option 1 and $15,000 for option 2
- Striping was given an allowance of $2,000
- Bonds and insurance was calculated at 1.5%

8.0 ASSUMPTIONS

The following assumptions have been made in this estimate:

- Materials needed for construction are readily available
- All work can be completed as listed above

9.0 EXCLUSIONS

The following items were not included in the pricing of the work and are thereby excluded from the estimate:

- Archeological finds and/or any delays caused by them
- Hazardous materials or contaminated materials due to asbestos, lead, or soils
- 3rd party utility impacts
- Right of way, special permits, or easement costs
- Unforeseen conditions due to geotechnical investigations
- Special environmental considerations or mitigation
- Mobilization. This is understood to be carried at the project level
- Contingency

10.0 RISKS

A general risk occurs because of the preliminary stage of design. The estimate should be updated as design progresses.

11.0 ATTACHMENTS

Attachment A: Estimate

Attachment B: Takeoffs

Estimate

Minnesota Department of Transportation
Bridges 69840
Fracture Critical Bridges
Option 1 - Alternate Path Framig Redundancy
Cost Estimate

	No. Each	Unit	Qty	Unit Cost	Extended Amount
Erosion Control	**1**	**LS**		**$ 4,000.00**	**$ 4,000.00**
MOT	**1**	**LS**		**$ 7,500.00**	**$ 7,500.00**
Striping	**1**	**LS**		**$ 1,000.00**	**$ 1,000.00**
Demo Deck	**1**	**LS**		**$ 7,670.00**	**$ 7,670.00**
Sawcutting	1		130	$ 3.00	*$ 390.00*
Labor Foreman	*1*		*16*	*$ 66.00*	*$ 1,056.00*
Laborers	*3*		*16*	*$ 65.00*	*$ 3,120.00*
Bobcat & Breaker	*1*		*16*	*$ 55.00*	*$ 880.00*
Manlift	*1*		*16*	*$ 40.00*	$ 640.00
Operator	*1*		*16*	*$ 74.00*	*$ 1,184.00*
Dump Truck & Operator	*1*		*4*	*$ 100.00*	*$ 400.00*
Structural Steel	***69400***	**LBS**		**$ 2.84**	**$ 197,036.00**
Furnish Steel	69400			*$ 1.50*	*$ 104,100.00*
45 Ton RT Crane	*1*		*176*	*$ 100.00*	$ 17,600.00
Manlift	*1*		*176*	*$ 40.00*	$ 7,040.00
Ironworker	*2*		*176*	*$ 75.00*	$ 26,400.00
Ironworker Foreman	*1*		*176*	*$ 76.00*	$ 13,376.00
Crane Operator	*1*		*176*	*$ 75.00*	$ 13,200.00
Oiler	*1*		*176*	*$ 70.00*	$ 12,320.00
Mag Drill, Bits	*1*			$ 3,000.00	$ 3,000.00
Bridge Deck Concrete	***40***	**CY**		**$ 967.50**	**$ 38,700.00**
Carpenter Foreman	*1*		*50*	*$ 76.00*	$ 3,800.00
Carpenter	*3*		*50*	*$ 75.00*	$ 11,250.00
Crane Operator	*1*		*50*	*$ 75.00*	$ 3,750.00
Oiler	*1*		*50*	*$ 70.00*	$ 3,500.00
45 Ton RT Crane	*1*		*50*	*$ 100.00*	$ 5,000.00
Manlift	*1*		*50*	*$ 40.00*	$ 2,000.00
Concrete	*40*			*$ 110.00*	$ 4,400.00
Tools, Forming Material	*1*			*$ 5,000.00*	$ 5,000.00
Concrete Railing	***88***	**LF**		**$ 245.14**	**$ 21,572.00**
Carpenter Foreman	*1*		*32*	*$ 76.00*	$ 2,432.00
Carpenter	*3*		*32*	*$ 75.00*	$ 7,200.00
Crane Operator	*1*		*32*	*$ 75.00*	$ 2,400.00

Oiler	*1*		*32*	*$ 70.00*	$ 2,240.00
45 Ton RT Crane	*1*		*32*	*$ 100.00*	$ 3,200.00
Concrete	*10*			*$ 110.00*	$ 1,100.00
Tools, Forming Material	*1*			*$ 3,000.00*	$ 3,000.00
Rebar	***7500***	**LBS**		**$ 1.03**	**$ 7,750.00**
Ironworker Foreman	*1*		10	*$ 75.00*	$ 750.00
Ironworker	*1*		10	*$ 75.00*	$ 750.00
Rebar	*7500*			$ 0.70	$ 5,250.00
General Contractor Support	*1*			*$ 1,000.00*	$ 1,000.00
Bonds and Insurance (1.5%)					**$ 4,278.42**
Labor Escalation (2.5%)					**$ 2,688.60**
Overhead Profit(15%)					**$ 43,425.96**
Option 1 Summary					**$ 332,932.38**

Minnesota Department of Transportation
Bridge 69840
Fracture Critical Bridges
Option 2 - Member Redundancy
Cost Estimate

	No. Each	Unit	Qty	Unit Cost	Extended Amount
Erosion Control	**1**	**LS**		**$ 4,000.00**	**$ 4,000.00**
MOT	**1**	**LS**		**$ 7,500.00**	**$ 7,500.00**
Striping	**1**	**LS**		**$ 1,000.00**	**$ 1,000.00**
Demo Deck	**1**	**LS**		**$ 5,800.00**	**$ 5,800.00**
Sawcutting	1		130	$ 3.00	*$ 390.00*
Labor Foreman	*1*		*12*	*$ 66.00*	*$ 792.00*
Laborers	*3*		*12*	*$ 65.00*	*$ 2,340.00*
Bobcat & Breaker	*1*		*12*	*$ 55.00*	*$ 660.00*
Manlift	*1*		*12*	*$ 40.00*	$ 480.00
Operator	*1*		*12*	*$ 74.00*	*$ 888.00*
Dump Truck & Operator	*1*		*2.5*	*$ 100.00*	*$ 250.00*
Structural Steel	***32000***	**LBS**		**$ 3.49**	**$ 111,809.00**
Furnish Steel	32000			*$ 1.50*	*$ 48,000.00*
45 Ton RT Crane	*1*		*119*	*$ 100.00*	$ 11,900.00
Manlift	*1*		*119*	*$ 40.00*	$ 4,760.00
Ironworker	*2*		*119*	*$ 75.00*	$ 17,850.00
Ironworker Foreman	*1*		*119*	*$ 76.00*	$ 9,044.00
Crane Operator	*1*		*119*	*$ 75.00*	$ 8,925.00
Oiler	*1*		*119*	*$ 70.00*	$ 8,330.00
Mag Drill, Bits	*1*			$ 3,000.00	$ 3,000.00
Bridge Deck Concrete	***13***	**CY**		**$ 1,783.23**	**$ 23,182.00**
Carpenter Foreman	*1*		*32*	*$ 76.00*	$ 2,432.00
Carpenter	*3*		*32*	*$ 75.00*	$ 7,200.00
Crane Operator	*1*		*32*	*$ 75.00*	$ 2,400.00
Oiler	*1*		*32*	*$ 70.00*	$ 2,240.00
45 Ton RT Crane	*1*		*32*	*$ 100.00*	$ 3,200.00
Manlift	*1*		*32*	*$ 40.00*	$ 1,280.00
Concrete	*13*			*$ 110.00*	$ 1,430.00
Tools, Forming Material	*1*			*$ 3,000.00*	$ 3,000.00
Concrete Railing	***28***	**LF**		**$ 664.93**	**$ 18,618.00**
Carpenter Foreman	*1*		*28*	*$ 76.00*	$ 2,128.00
Carpenter	*3*		*28*	*$ 75.00*	$ 6,300.00
Crane Operator	*1*		*28*	*$ 75.00*	$ 2,100.00
Oiler	*1*		*28*	*$ 70.00*	$ 1,960.00
45 Ton RT Crane	*1*		*28*	*$ 100.00*	$ 2,800.00

Concrete	*3*			*$ 110.00*	$ 330.00
Tools, Forming Material	*1*			*$ 3,000.00*	$ 3,000.00
Rebar	***2400***	**LBS**		**$ 1.39**	**$ 3,330.00**
Ironworker Foreman	*1*		6	*$ 75.00*	$ 450.00
Ironworker	*1*		6	*$ 75.00*	$ 450.00
Rebar	*2400*			$ 0.70	$ 1,680.00
General Contractor Support	*1*			*$ 750.00*	$ 750.00
Bonds and Insurance (1.5%)					**$ 2,628.59**
Labor Escalation (2.5%)					**$ 1,895.73**
Overhead & Profit (15%)	***1***				**$ 26,964.50**
Option 2 Summary					**$ 206,727.81**

Quantity Takeoffs

Bridge 69840

Option 1

Web	Web thickness	1	in
	Web depth	57.5	in
	Length	27.5	Ft
	Volume	10.98	Cu. Ft.
Flanges	Top Flange area	35	in^2
	Bottom flange area	35	in^2
	Length	26.17	Ft
	Volume	12.72	Cu. Ft.
1.75" Plates	Area Per Plate	35	in^2
	Length Per Plate	6.33	ft
	Number of Plates	4	Plates
	Volume	6.16	Cu. Ft.
L8x8	Area Per Angle	11.5	in^2
	Length Per Angle	4	ft
	Total Angles	12	angles
	Volume	3.83	Cu. Ft.

Per Diaphragm	Total Volume	33.69	Cu. Ft.
	Unit weight of Steel	490	Lb/kcf
	Weight of Steel	16509.16	Lbs
	5% additional for Bolts	17334.6	Lbs

Total Weight of steel for Option 1 **69400** **Lbs**

Bridge 69839

Assume an additional 5% steel weight due to curve on 69839

Total Weight of steel for Option 1 (Bridge 69839) **72900** **Lbs**

Bridge 69840

Option 2

Web	Web Thickness	0.75	in
	Web Depth	5	in
	Length	23.5	ft
	Volume (2 built up shapes)	1.22	Cu. Ft.
Flanges	Top Flange area	8	in^2
	Bottom flange area	8	in^2
	Length	23.50	Ft
	Volume (2 built up shapes)	5.22	Cu. Ft.
1.75" backup Plate	Area	63	in^2
	Length	28.83	Ft
	Volume	12.61	Cu. Ft.
Compression Plate	Area	63	in^2
	Length	27.5	Ft
	Volume	12.03	Cu. Ft.

Per Pier	Total Volume	31.09	Cu. Ft.
	Unit weight of Steel	490	Lb/cf
	Weight of Steel	15235.10	Lbs
	5% additional for Bolts	15996.9	Lbs

Total Weight of steel for Option 2 32000 Lbs

Bridge 69839

Assume an additional 5% steel weight due to curve on 69839

Total Weight of steel for Option 1 (Bridge 69839) 33600.0 Lbs

Appendix 6

Advanced Redundancy Repair Plans and Cost Estimate

ENGINEER'S ESTIMATE
SP 6937-102

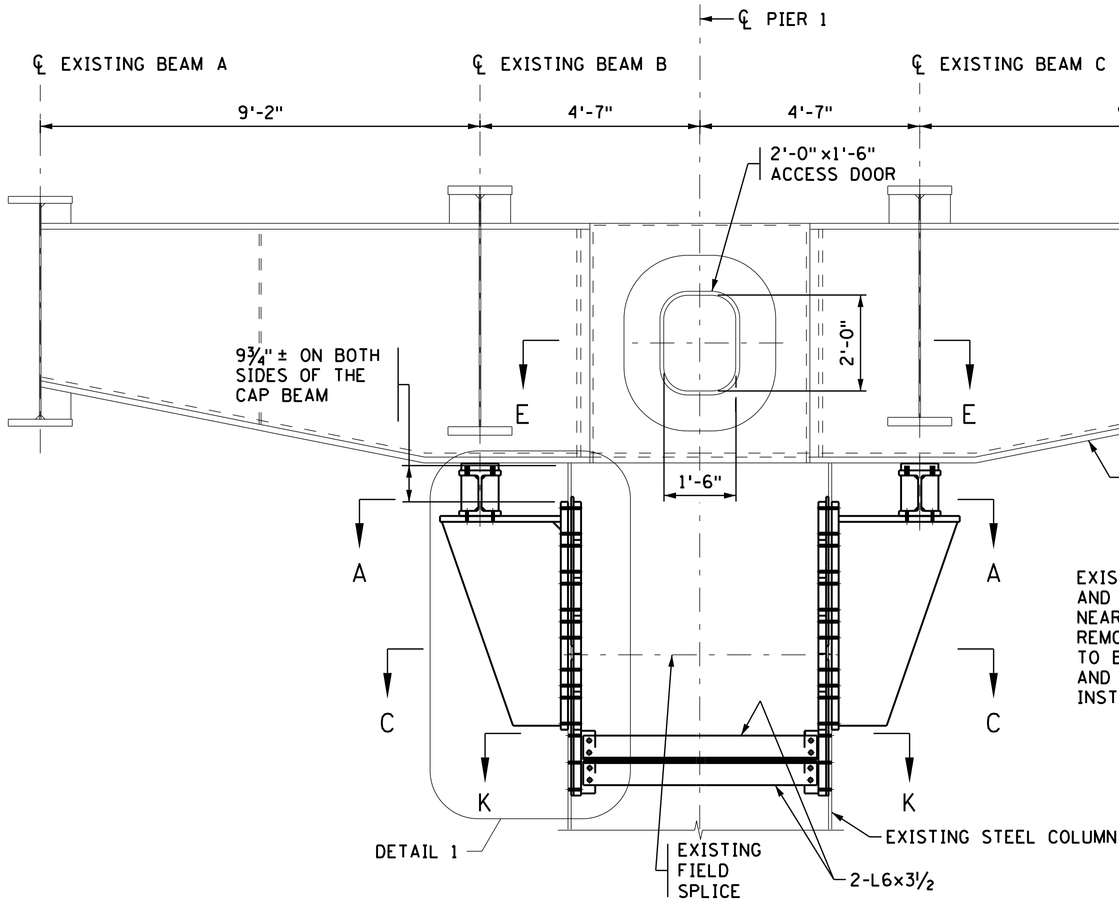
MICHIGAN ST. (N.B) TO MESABA AVE. & SUPERIOR ST. OVER MESABA AVE. & SUPERIOR ST. TO T.H. 35 S.B.
0.8 MILES NOTH OF JCT. I-35 & T.H.2 IN DULUTH

BR. NO: 69839

PRICED: S. Schantzen
REVIEWED: M. Stowman
LET DATE: 2/23/2018
TYPE CODE:
RDWY WIDTH: 33.33 FT
SKEW: N/A
SDWKS: N/A

STRUCTURE ID: 3 SPAN (91'-130'-91') 401
WORK TYPE: Bridge Repair
FUND CODE:
LENGTH: 317.5'
DECK AREA: 10584 S.F.
OVERLAY: Yes
WIDEN AREA: None, New Bridge Deck

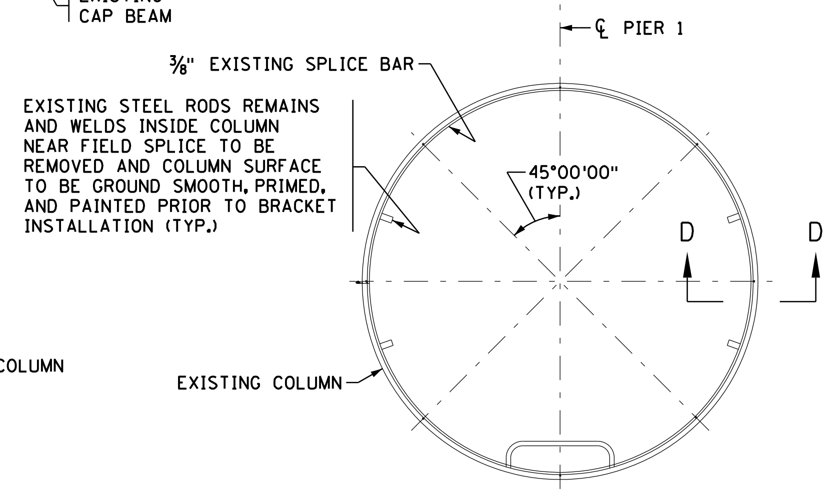
ITEM NO.	ITEM	UNIT	QUANTITIY	UNIT PRICE	ENG AMOUNT
2013.602	TCLP TEST	EACH	1	$ 512.77	$ 512.77
2104.601	REMOVE CONDUIT SYSTEM	LUMP SUM	1	$ 3,914.60	$ 3,914.60
2104.601	REMOVE REGULATED WASTE MATERIAL (BRIDGE)	LUMP SUM	1	$ 10,717.43	$ 10,717.43
2401.503	TYPE S (TL-4) 36" BARRIER CONCRETE (3S52)	LIN. FT.	713	$ 78.00	$ 55,610.44
2401.508	REINFORCEMENT BARS (EPOXY COATED)	POUND	85310	$ 1.30	$ 110,476.45
2401.618	BRIDGE SLAB CONCRETE (3YHPC-M)	SQ. FT.	10483	$ 25.54	$ 267,735.82
2401.618	SPECIAL SURFACE FINISH (INPLACE)	SQ. FT.	1295	$ 2.53	$ 3,276.35
2402.503	EXPANSION JOINT DEVICES TYPE 5	LIN. FT.	67	$ 161.35	$ 10,810.45
2402.602	SHEAR STUDS	EACH	4300	$ 9.08	$ 39,029.67
2402.602	SUPPLEMENTAL STEEL DIAPHRAGM	EACH	4	$ 84,035.00	$ 336,140.00
2402.602	SUPPLEMENTAL STIFFENER	EACH	24	$ 328.59	$ 7,886.16
2402.602	BRACING	EACH	4	$ 2,963.52	$ 11,854.08
2402.602	STEEL CORBEL BRACKET	EACH	4	$ 26,239.50	$ 104,958.00
2433.502	ANCHORAGES TYPE REINF BARS	EACH	48	$ 25.72	$ 1,234.44
2433.518	REMOVE CONCRETE SLAB, CURBS, OVERLAY, AND BARRIER	SQ. FT.	10689	$ 33.52	$ 358,259.65
2433.601	PRE-REMOVAL SURVEY	LUMP SUM	1	$ 4,500.00	$ 4,500.00
2433.602	GREASE EXPANSION BEARING ASSEMBLIES	EACH	8	$ 574.28	$ 4,594.20
2433.603	RECONSTRUCT PAVING BRACKET AND WALL	SQ. FT.	212	$ 182.54	$ 38,698.57
2433.618	CONCRETE SURFACE REPAIR	SQ. FT.	400	$ 128.61	$ 51,443.00
2476.601	LEAD SUBSTANCES COLLECTION AND DISPOSAL	LUMP SUM	1	$ 25,783.00	$ 25,783.00
2478.518	ORGANIC ZINC-RICH PAINT SYSTEM (OLD)	SQ. FT.	21256	$ 7.82	$ 166,221.92
2478.618	CLEAN AND PAINT STEEL	SQ. FT.	2087	$ 7.22	$ 15,065.73
2545.501	CONDUIT SYSTEM TYPE 1	LUMP SUM	1	$ 13,728.56	$ 13,728.56



ELEVATION

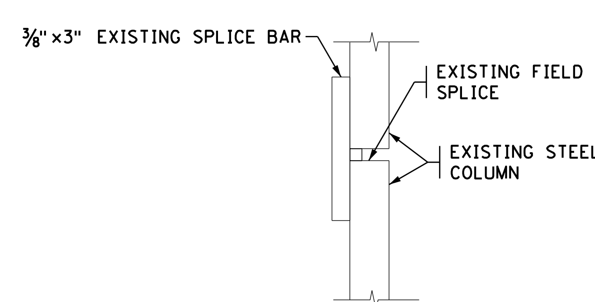
(PIER 1 SHOWN, PIER 2 SIMILAR)
(BRACKET ON BOTH SIDES OF THE CAP BEAM ARE LEVEL)

**** VERIFY THE BOLT SPACING TO AVOID THE ⅜"×3" EXISTING SPLICE BAR BEFORE DRILLING THE HOLES. ADJUST THE BOLT SPACING AS NECESSARY.

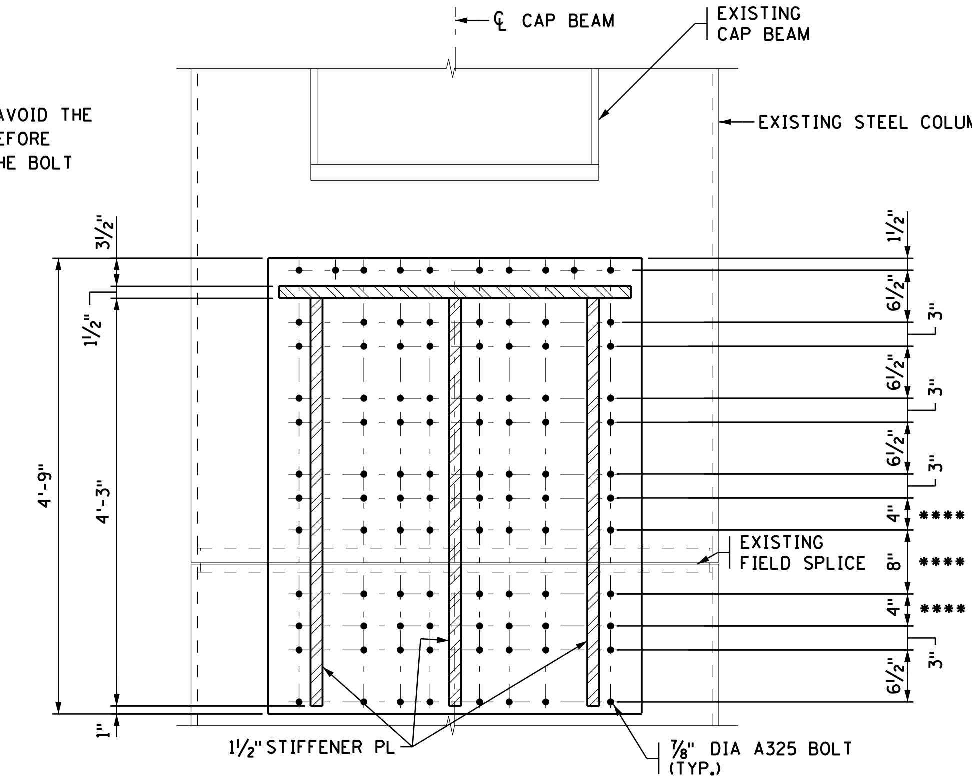


SECTION C-C

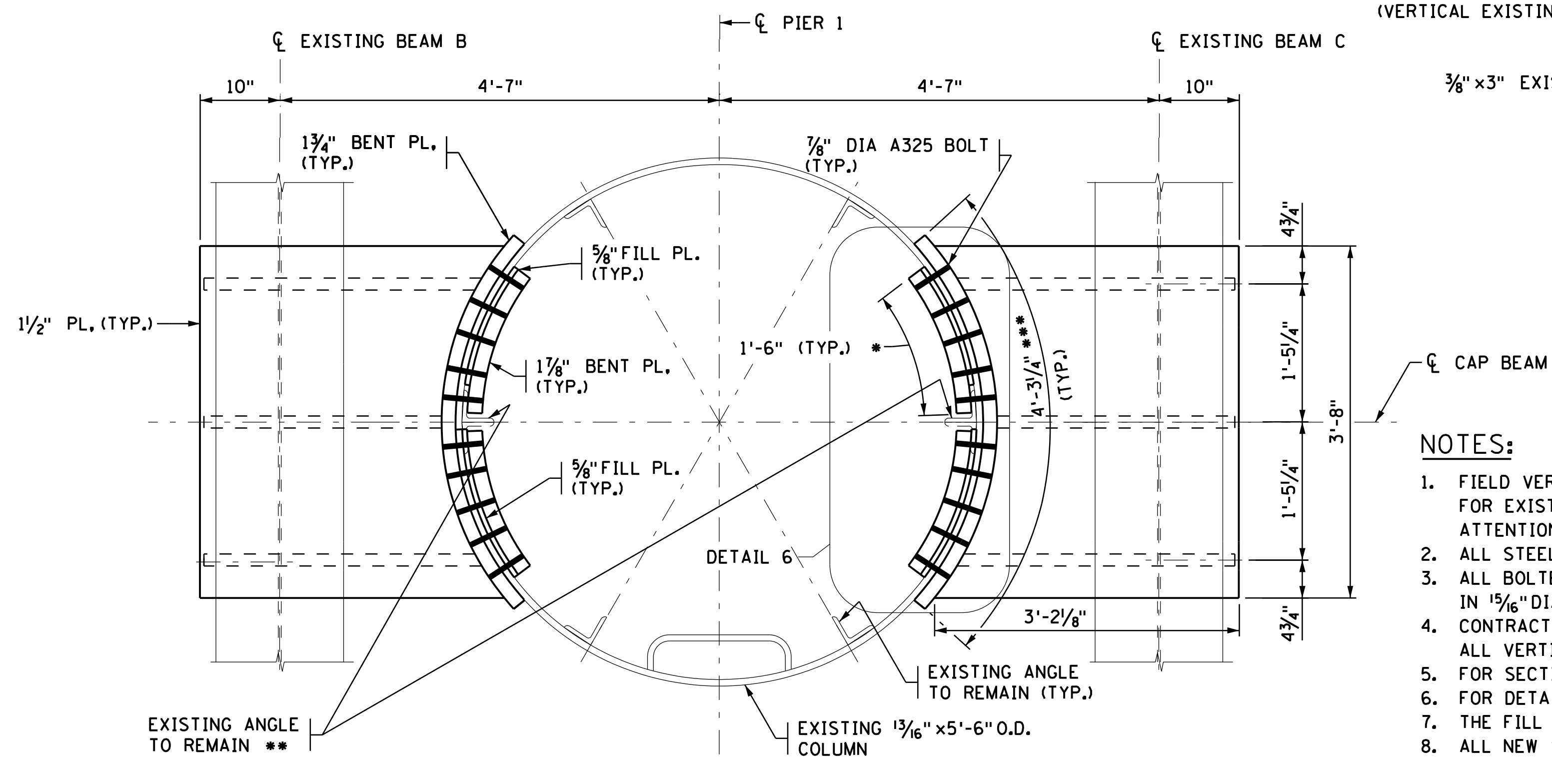
(PROPOSED NOT SHOWN FOR CLARITY)
(VERTICAL EXISTING ANGLE NOT SHOWN FOR CLARITY)



SECTION D-D

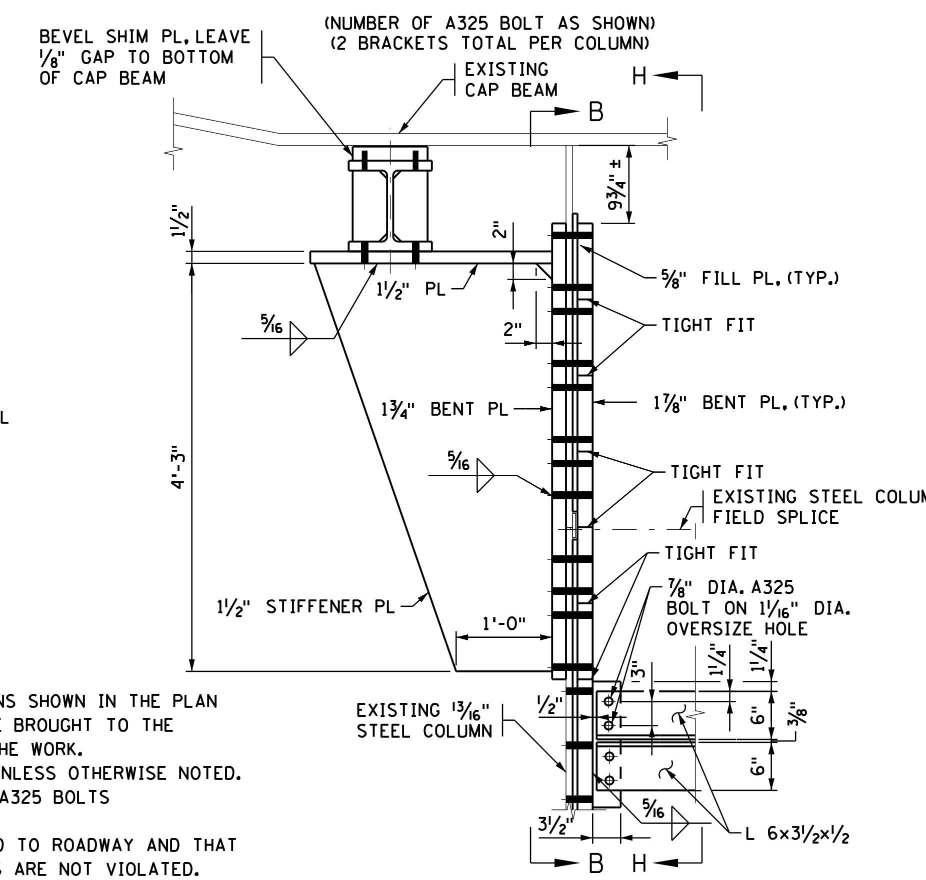


SECTION B-B



* MEASURED INSIDE FACE OF 1⅞" BENT PLATE
** EXISTING ANGLE FLIPPED BELOW COLUMN FIELD SPLICE LINE
*** MEASURED OUTSIDE FACE OF 1¾" BENT PLATE

SECTION A-A



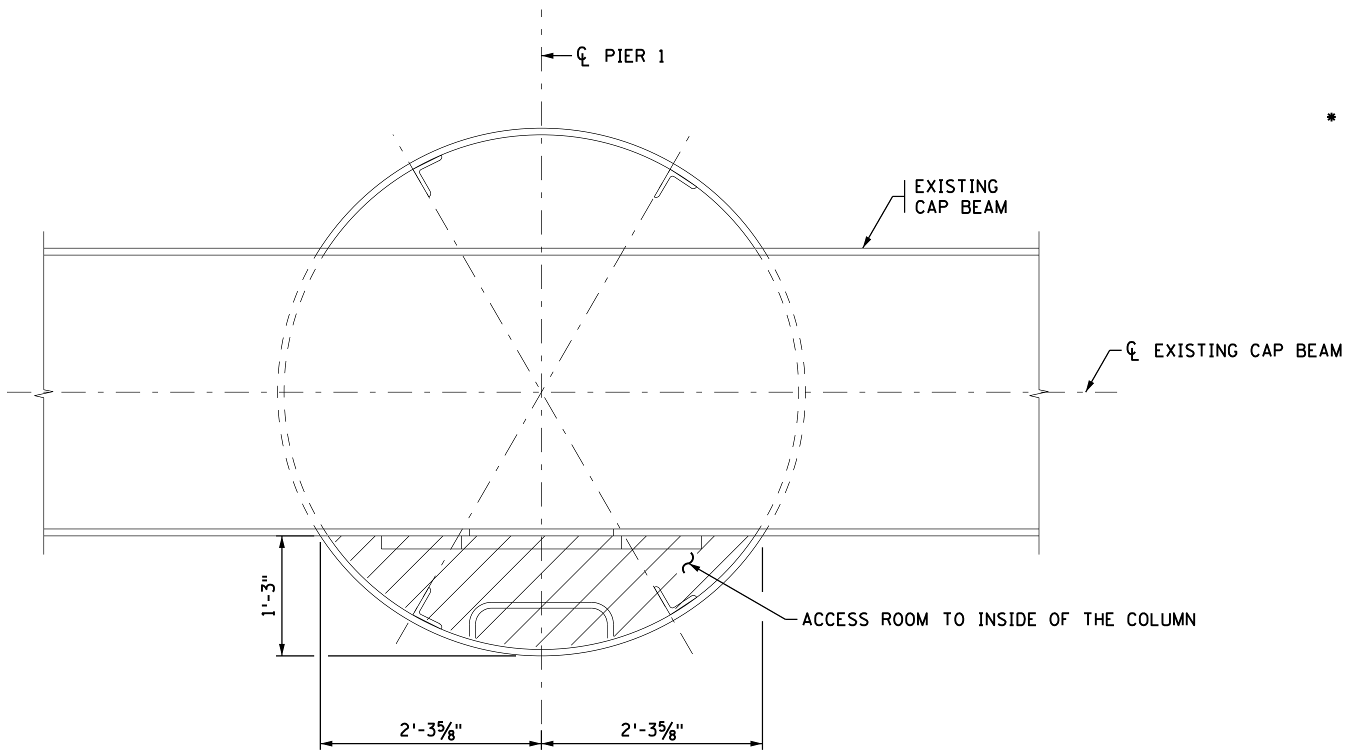
DETAIL 1
PROPOSED BRACKET

NOTES:

1. FIELD VERIFY ALL DIMENSIONS, LOCATIONS, AND ELEVATIONS SHOWN IN THE PLAN FOR EXISTING STRUCTURES. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
2. ALL STEEL SHALL CONFORM TO SPEC.3309, Fy = 50 KSI, UNLESS OTHERWISE NOTED.
3. ALL BOLTED CONNECTIONS SHALL BE MADE WITH ⅞" DIA. A325 BOLTS IN 15/16" DIA STANDARD HOLES, EXCEPT AS NOTED.
4. CONTRACTOR TO VERIFY THAT BRACKET DOES NOT EXTEND TO ROADWAY AND THAT ALL VERTICAL AND HORIZONTAL CLEARANCE REQUIREMENTS ARE NOT VIOLATED.
5. FOR SECTION E-E AND SECTION H-H, SEE SHEET 3.
6. FOR DETAIL 6, SEE SHEET 3.
7. THE FILL PLATES SHOULD BE OMITTED AROUND FIELD SPLICE AND EXISTING VERTICAL ANGLES.
8. ALL NEW STEEL SHOWN ON THIS SHEET IS INCLUDED IN "STEEL CORBEL BRACKET". STEEL SHOWN REPRESENTS 2 BRACKETS.
9. FOR SECTION K-K SEE SHEET 4.

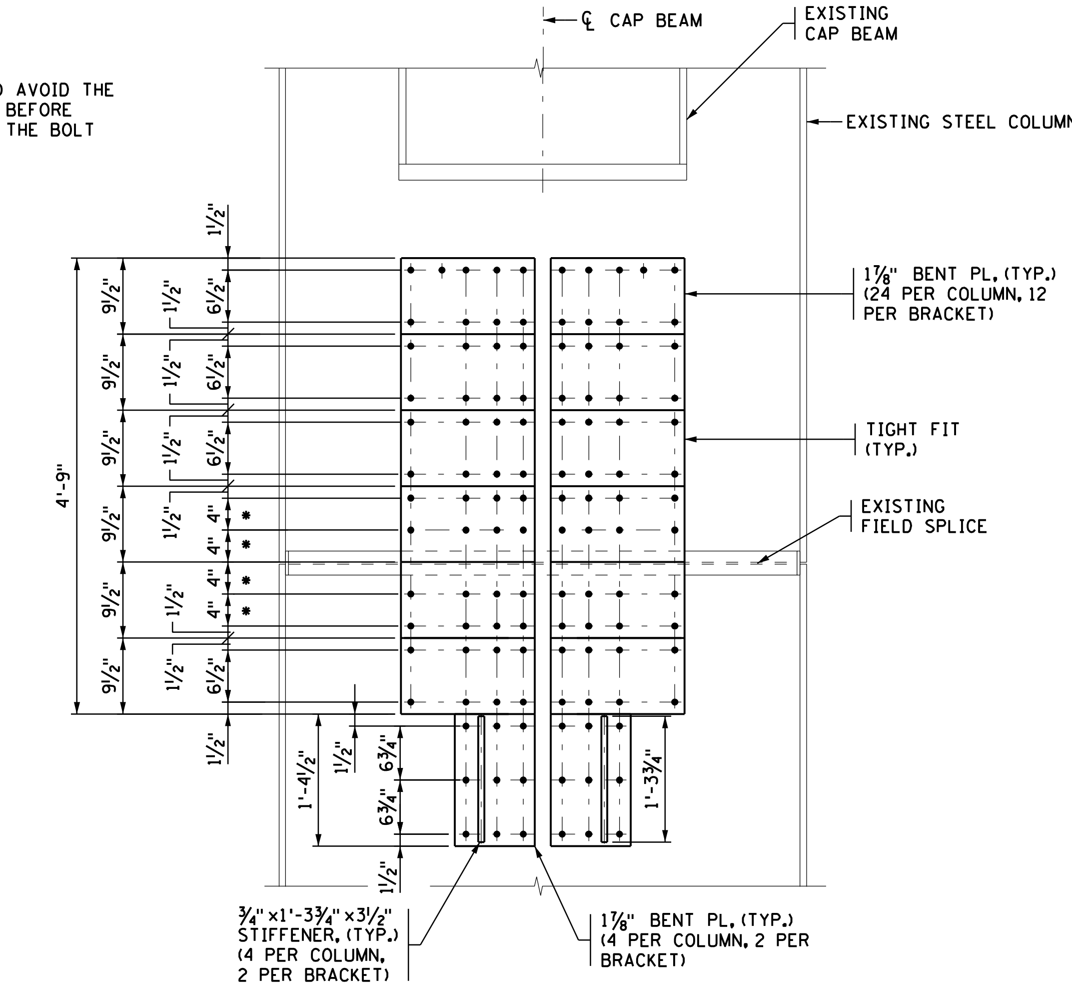
CERTIFIED BY	TITLE:	DES: MX	DR: LK	APPROVED:	BRIDGE NO.
LICENSED PROFESSIONAL ENGINEER / DATE	STEEL REPAIR DETAILS - 1	CHK: TFS	CHK: TFS		69840
NAME: TONY SHKURTI / LIC. NO. 48479		SHEET NO. 2 OF 4 SHEETS			

1/8/2018 CBR69840_SUP01.dgn



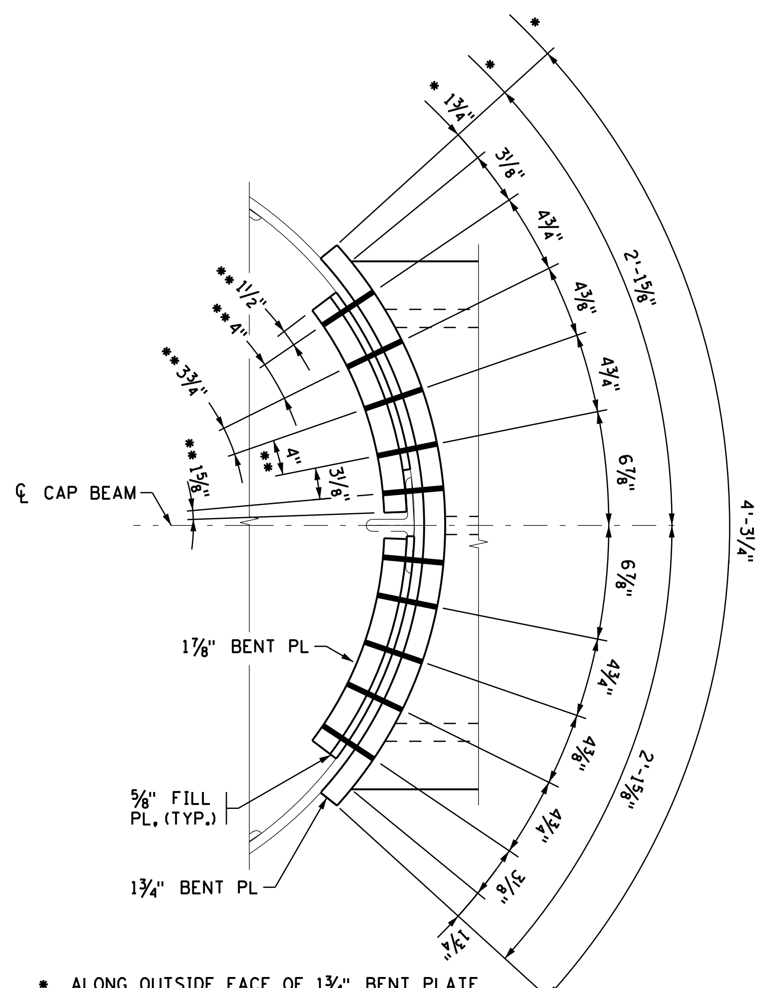
SECTION E-E

* VERIFY THE BOLT SPACING TO AVOID THE ⅜"X3" EXISTING SPLICE BAR BEFORE DRILLING THE HOLES. ADJUST THE BOLT SPACING AS NECESSARY



SECTION H-H

(COLUMN INSIDE BRACKET DETAIL)
(NUMBER OF BOLTS AS SHOWN)
(EXISTING VERTICAL ANGLE NOT SHOWN FOR CLARITY)



* ALONG OUTSIDE FACE OF 1¾" BENT PLATE
** ALONG INSIDE FACE OF 1⅞" BENT PLATE

DETAIL 6

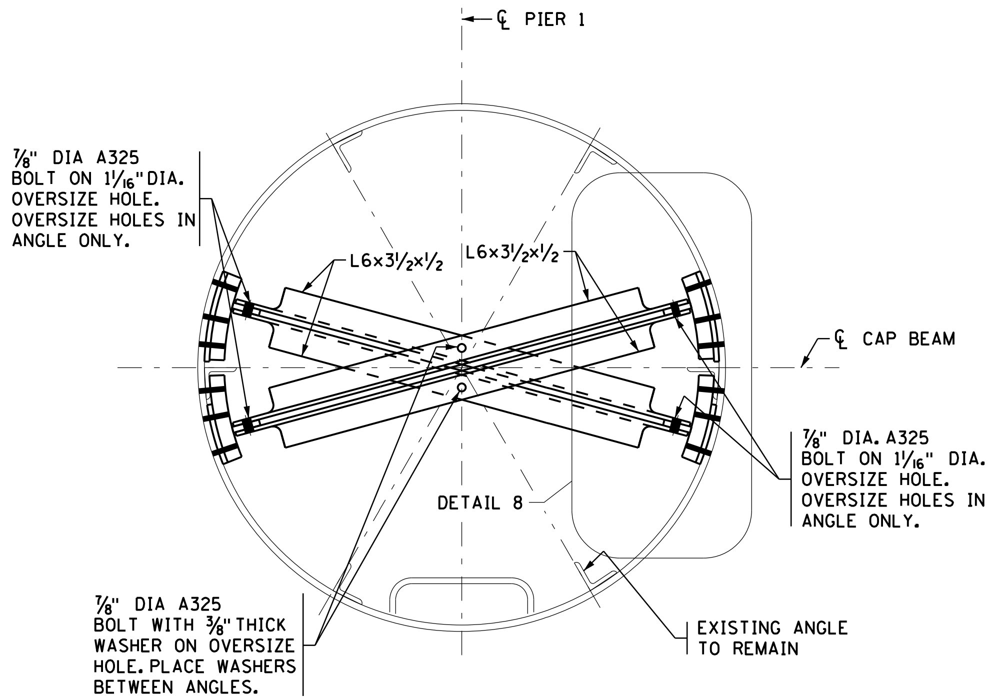
(DIMENSIONS SYMMETRICAL ABOUT ℄ CAP BEAM)

NOTES:

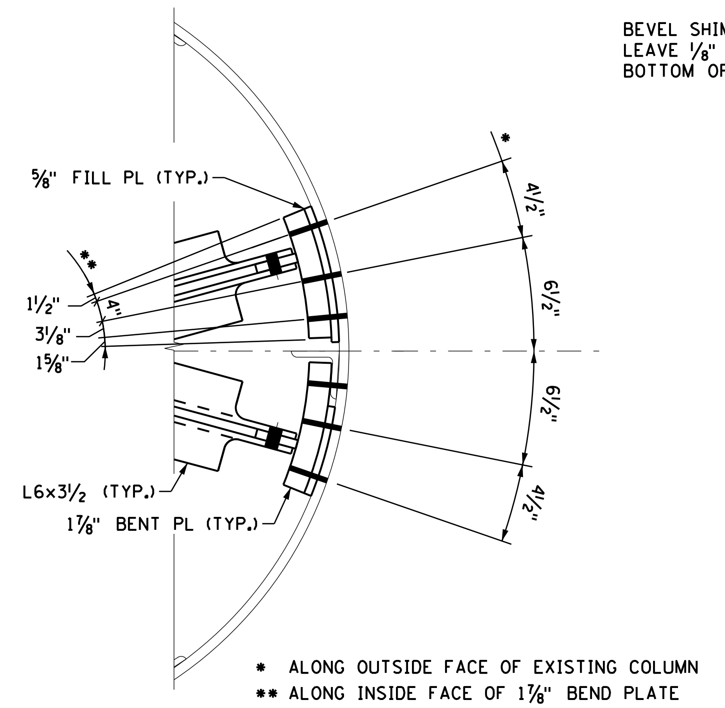
1. FOR LOCATIONS OF SECTIONS E-E & H-H, SEE SHEET 2.
2. FOR LOCATIONS OF DETAIL 6, SEE SHEET 2.

CERTIFIED BY ____ LICENSED PROFESSIONAL ENGINEER ____ DATE NAME: TONY SHKURTI LIC. NO. 48479	TITLE: STEEL REPAIR DETAILS - 2	DES: MX CHK: TFS DR: LK CHK: TFS APPROVED: SHEET NO. 3 OF 4 SHEETS	BRIDGE NO. 69840

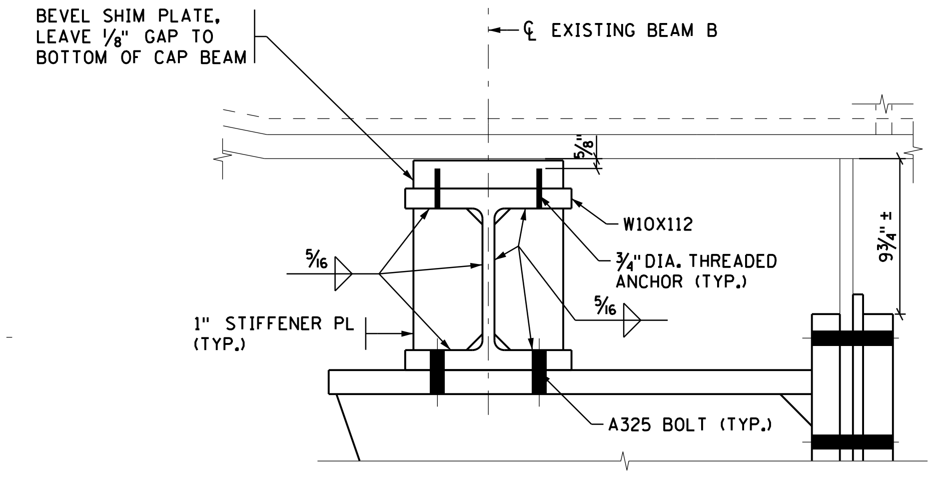
1/8/2018 CBR69840_SUP02.dgn



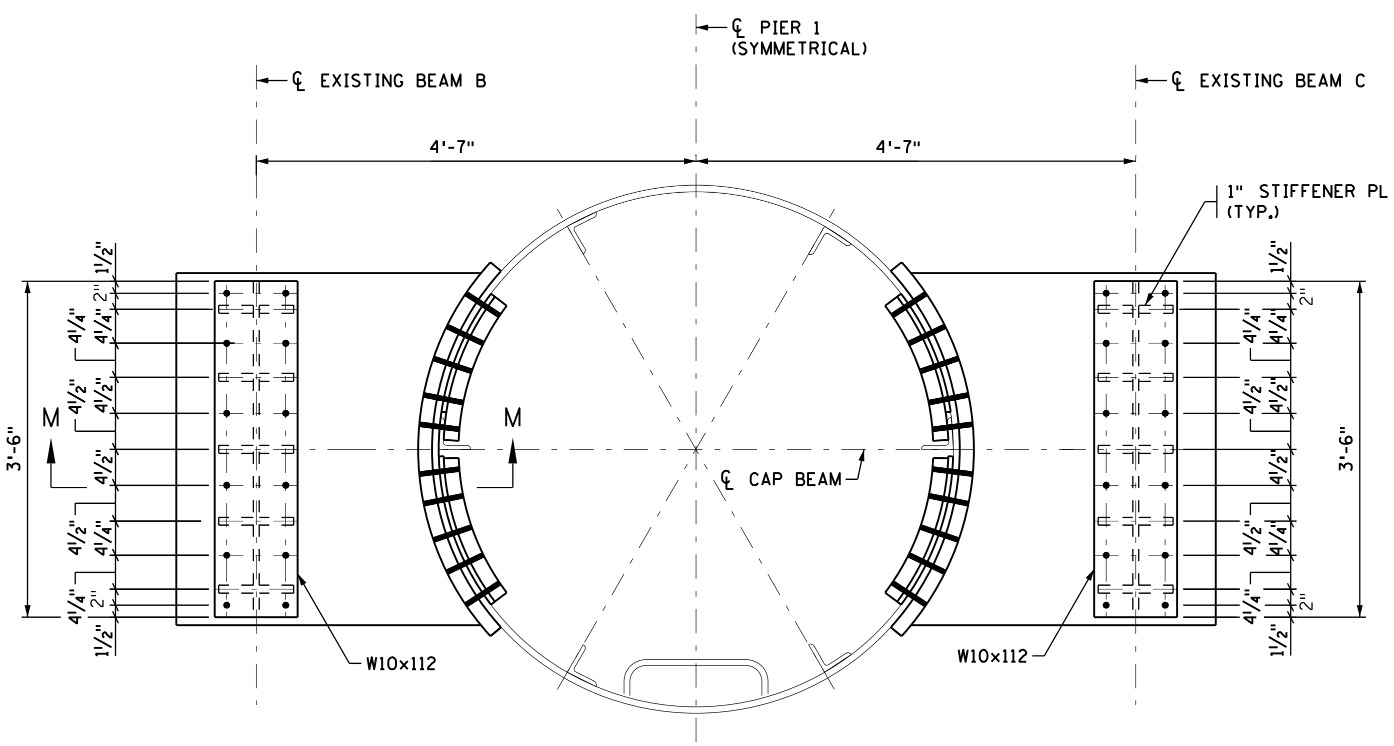
SECTION K-K



DETAIL 8



SECTION M-M



SHIM BLOCK DETAIL

NOTES:

1. SEE ADDITIONAL NOTES ON SHEET 2.
2. CONTRACTOR TO DETERMINE THE BEVEL SHIM PLATE THICKNESS BASED ON THE SURVEY DATA. LEAVE 1/8" GAP TO THE BOTTOM OF EXISTING CAP BEAMS.
3. FOR LOCATION OF SECTION K-K, SEE SHEET 2.
4. ALL NEW STEEL SHOWN ON THIS SHEET IS INCLUDED IN "STEEL CORBEL BRACKET". STEEL SHOWN REPRESENTS 2 BRACKETS.

CERTIFIED BY	TITLE:	DES: TFS	DR: LK	APPROVED:	BRIDGE NO.
LICENSED PROFESSIONAL ENGINEER / DATE	STEEL REPAIR DETAILS - 3	CHK: MX	CHK: EPP		69840
NAME: TONY SHKURTI LIC. NO. 48479		SHEET NO. 4 OF 4 SHEETS			

1/8/2018 CBR69840_SUP03.dgn