



## BRIDGE ANALYSIS AND RATINGS

BRIDGE NO.: 270017

COUNTY: DARE

STATE PROJECT NO.: WBS 42080.1.80

ANALYSIS DATE: 3/10/2022



FINAL REVIEW BY: Mindy B. Isenhour

FINAL REVIEW DATE: 03/10/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
STRUCTURES MANAGEMENT UNIT - ANALYSIS SECTION

RATING SUMMARY SHEET

BRIDGE NUMBER: 270017  
COUNTY: Dare

COMPLIED BY: JFK  
CHECKED BY: MBI

DATE: 3/10/2022  
DATE: 3/10/2022

Non-Interstate Highway Bridge

Member	Truck Weight	Span 1	Span 1	Span 1	Span 2	Span 2	Span 2	Span 3	Span 3	Span 3	
		Ext. Lt.	Int.	Ext. Rt.	Ext. Lt.	Int.	Ext. Rt.	Ext. Lt.	Int.	Ext. Rt.	
Span Length		30'-0"	30'-0"	30'-0"	55'-0"	55'-0"	55'-0"	55'-0"	55'-0"	55'-0"	
Beam Spacing		3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	
Analysis Method		LRFR	LRFR	LRFR	LRFR	LRFR	LRFR	LRFR	LRFR	LRFR	
HS Inventory Rating	36.00	79.90	84.20	80.60	64.40	59.40	64.80	106.60	113.80	107.20	
HS Operating Rating	36.00	103.70	109.40	104.40	83.50	77.00	84.20	138.20	147.60	139.00	
Single Vehicle Run	SNSH	13.50	63.50	66.30	63.70	63.90	58.90	64.30	75.50	80.50	75.70
	SNGARBS2	20.00	44.80	46.80	45.00	40.40	37.20	40.60	56.80	60.60	57.00
	SNAGRIS2	22.00	45.10	47.30	45.30	40.30	37.20	40.50	56.80	60.50	57.00
	SNCOTTS3	27.25	58.90	61.60	59.10	53.70	49.60	54.20	74.70	79.80	75.20
	SNAGGRS4	34.93	69.20	72.30	69.50	61.10	56.20	61.50	89.10	95.00	89.40
	SNS5A	35.55	83.20	86.70	83.50	83.90	77.10	84.30	102.00	108.80	102.40
	SNS6A	39.95	161.80	170.20	162.60	141.00	129.80	141.80	215.30	229.70	216.10
SNS7B	42.00	168.00	177.20	168.80	153.70	141.50	154.60	215.50	230.20	216.70	
TTST Run	TNAGRIT3	33.00	87.10	91.10	87.50	73.90	68.30	74.30	118.50	126.40	119.10
	TNT4A	33.08	74.10	77.40	74.40	65.20	60.20	65.50	91.60	97.90	92.30
	TNT6A	41.50	95.70	100.30	96.50	77.80	71.60	78.20	122.30	130.60	123.10
	TNT7A	42.00	93.20	97.30	93.70	73.50	67.60	73.90	123.90	132.30	124.70
	TNT7B	42.00	88.60	93.70	89.00	72.20	66.40	72.70	118.00	126.00	118.40
	TNAGRIT4	43.00	108.40	113.50	109.20	97.20	89.40	97.60	135.50	144.50	136.30
	TNAGT5A	45.00	102.20	107.10	102.60	84.20	77.40	84.60	131.90	140.40	132.30
TNAGT5B	45.00	105.80	110.70	106.20	85.10	78.30	85.50	137.70	146.70	138.60	

CALCULATED POSTING: <b>No Posting Required</b>	DESIGN LOADING: <b>HS-20</b>
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CONTROLLING MEMBER: <b>None</b>	INVENTORY RATING: <b>HS 59.40</b>
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EXISTING POSTING: <b>Not Posted</b>	OPERATING RATING: <b>HS 77.00</b>
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RECOMENDED POSTING: <b>No Posting Required</b>	ITEM 70 - BRIDGE POSTING CODE: <b>5</b>
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ANALYSIS INVENTORY RATING : **LRFR** OPERATING RATING : **LRFR**  
METHOD: Engineering Judgement based on Inspection and NCDOT Load Rating Assignment Criteria  
POSTING RATING: **None**

OVERLOAD BRIDGE ONLY: HS OPERATING DROPPED 3 TONS OR MORE:

COMMENTS: Plans used for load rating.



801 Jones Franklin Rd., Suite 300  
Raleigh, NC 27606-3394

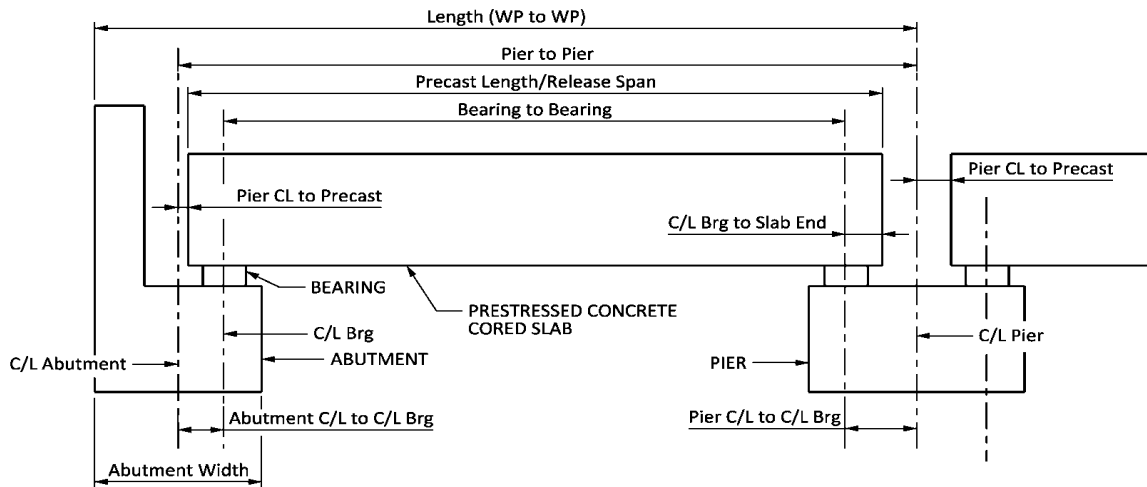
Project: 270017  
Location: Cored Slab All Spans  
Contents: CONSPAN Input    Calc. by: JFK    Date: 2/2/2022  
Job No.: 171002272    Check by: MBI    Date: 3/7/2022

# CONSPAN INPUT: CORED SLAB ALL SPANS

## REFERENCES

AASHTO LRFD Bridge Design Specifications, 7th Edition.

## GEOMETRY



## Span Details

No. Spans =  (max of 6)

Abutment C/L to C/L Brg =

Pier C/L to C/L Brg =

C/L Brg to Girder End =

Abutment Width =

(NOTE: the WP to WP dimensions may not perfectly match the plans if the bearings are before the C/L of the abutment since Conspan will not allow the user to place a bearing before the C/L of the abutment. However, the brg. to brg. and precast lengths should match.

Span #	Length (WP to WP)	No. Bms. (max of 25)	Bm. Spa.	C/L Lt. GRDR to Edge of Deck	C/L Rt. GRDR to Edge of Deck
1	31.1875 ft	11	3 ft	1.5 ft	1.5 ft
2	55.125 ft	11	3 ft	1.5 ft	1.5 ft
3	26.1875 ft	11	3 ft	1.5 ft	1.5 ft



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## CONSPAN INPUT: CORED SLAB ALL SPANS

CONSPAN "Add/Edit Multi-Span" INPUT							
Span #	Pier to Pier, ft <sup>1</sup>	Precast Length, ft	Bearing to Bearing, ft	Pier CL Precast, ft <sup>2</sup>	Release Span, ft	Skew Angle Start, deg	Skew Angle End, deg
1	29.8125	30.0000	29.0000	-0.250000	30.0000	0.00	0.00
2	55.1250	55.0000	54.0000	0.062500	55.0000	0.00	0.00
3	24.8125	25.0000	24.0000	0.062500	25.0000	0.00	0.00

1 - Centerline of pier or abutment to centerline of pier or abutment.

2 - Centerline of pier or abutment to precast end on near side of span.

### Deck Geometry

Bridge Width = 33 ft (out-to-out)

### Curb Data

#### Left Side of Bridge

Barrier Type = 3'-6" Vertical concrete barrier rail

Barrier Rail Width = 1.083333 ft  
 Barrier Weight = 482 lb/ft  
 Sidewalk Width = 0 ft  
 Sidewalk Height (Curb Height) = 0 ft  
 Sidewalk Weight = 0 lb/ft  
 Total Width of Barrier and Sidewalk = 1.083333 ft  
 Total Weight of Barrier and Sidewalk = 482 lb/ft

#### Right Side of Bridge

Barrier Type = Two bar metal rail with 2'-6" concrete parapet

Barrier Rail Width = 1.25 ft  
 Barrier Rail Weight = 455 lb/ft  
 Sidewalk Width = 0 ft  
 Sidewalk Height (Curb Height) = 0 ft  
 Sidewalk Weight = 0 lb/ft  
 Total Width of Barrier and Sidewalk = 1.25 ft  
 Total Weight of Barrier and Sidewalk = 530 lb/ft

Clear Distance Between Barrier Rails = 30.667 ft  
 Clear Roadway Between Sidewalks = 30.667 ft

### Topping Data

Total Deck Thickness = 0 in  
 Effective Thickness = 0 in  
 Sacrificial Thickness = 0 in  
 Haunch Thickness = 0 in  
 Haunch Width = 0 in

$f'_c$  = (concrete compressive strength)  
 $w_c$  = 0.15 kcf (concrete unit weight)

(Set haunch width to 0 in Conspan so that the concrete area of the haunch will not contribute to the composite strength, yet leave the thickness as is so that the CG of the beam will be in the correct location relative to the deck.)









Sheet #	1				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**PROPERTIES**

Span:1, Beam:1

**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Fing width	Top	36.000	in	Bot	36.000	in
thick	Top	4.500	in	Bot	4.500*	in
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	1.50/ 3.00	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Exterior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**

Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)



			Sheet #	2	
			Job #	171002272	
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**GENERAL LOAD DATA:**

**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	30.000	ft
Release length	30.000	ft
Design length	29.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**

Type g

Live Moment	(2+ lanes loaded)	0.278	(Calculated)
Live Moment	(1 lane loaded)	0.335	(Calculated)
Live Shear	(2+ lanes loaded)	0.290	(Calculated)
Live Shear	(1 lane loaded)	0.369	(Calculated)

The LL distribution computation is using the effective slab depth ( $t_s = 0.00\text{in}$ ).

Include sacrificial deck thick in  $t_s$ : NO

Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.060	(Manual input)



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Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90

**SECTION PROPERTIES:**

	PRECAST		COMPOSITE		
Area	522.3	in <sup>2</sup>	522.3	in <sup>2</sup>	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (I <sub>xx</sub> )	25390	in <sup>4</sup>	25390	in <sup>4</sup>	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (I <sub>yy</sub> )	62796.0	in <sup>4</sup>			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using  $E_c/E_c = 1.0000$

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only



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Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 2.50	0.20L 5.50	0.30L 8.50	0.40L 11.50	Midspan 14.50
Precast:(At Release, using	Ec =	4266.2ksi)							
Area,	in2	523.7	531.8	526.3	531.8	533.4	533.4	533.4	533.4
Yb,	in	10.39	10.33	10.38	10.33	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25410	25546	25443	25546	25634	25634	25634	25634
Composite:(At Final, using	Ec =	4592.2ksi)							
Area,	in2	523.6	531.0	525.9	531.0	532.5	532.5	532.5	532.5
Yb,	in	10.39	10.34	10.38	10.34	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25408	25533	25439	25533	25614	25614	25614	25614

Span:1, Beam:1

STRESS LIMITS (Art. 5.9.2):

STRESS LIMITS AT RELEASE BEFORE LOSSES:

	PRECAST	
Strength	4.00	ksi
Elasticity	4266.2	ksi
Max comp	2.60	ksi
Max tens	-0.19	ksi
Max tens, w/reinf	-0.48	ksi

STRESS LIMITS AT FINAL AFTER LOSSES:

	PRECAST		DECK	
Strength	5.00	ksi	5.00	ksi
Elasticity	4592.23	ksi	4592.23	ksi

STRESS LIMITS AT FINAL 1 (P/S + DL + LL):

	PRECAST		DECK	
Max comp	3.00	ksi	3.00	ksi



Sheet #	5				
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**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.25 ksi		2.25 ksi	

**FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.00 ksi		- ksi	

**SERVICE III (Tension):**

	<b>PRECAST</b>		<b>DECK</b>	
Max tens	-0.42 ksi		-0.42 ksi	

**Span:1, Beam:1**

**PRESTRESSED STEEL:**

9 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 5.67 in):**

7 @ 2.000 in	2 @ 18.500 in		
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**SHIELDING AND REDUCED INITIAL PULLS:**

Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	2.000	in	2.000	in	2.00	ft	0.00	ft	6.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK



Sheet #	6				
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Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	1.953	in <sup>2</sup>
Trans. Len,bonded	3.000	ft
Trans. Len,debonded	3.000	ft
Dev. Len, bonded	6.503	ft
Dev. Len, debonded	13.006	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	395.5	kips
Beam Shrtng (PL/AE)	0.063	in

Span:1, Beam:1

**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
270.000	740	199.800	4.030	16321.908	171.997	40.838

Span:1, Beam:1

**REINFORCING STEEL:**

Tension steel:		
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**

# legs	Size	fy (ksi)	Area (in <sup>2</sup> )	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.2083	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	24.5000	No
4	US#4[M13]	60.0	0.80	9.00	24.5000	29.9167	No
4	US#5[M16]	60.0	1.24	1.00	29.9167	30.0000	No





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**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	30.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	1.9530	in2
Ycg	5.67	in
P_init	395.5	kips
Ecc	4.74	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4266	ksi

**AASHTO LOSSES**

Elastic Shortening \*\* 6.12 ksi (Eq 5.9.5.2.3a-1), (fcgp= 0.917 ksi)

Elastic Gains		Gains	Adjustment
due to Precast Loads		-0.00 ksi	0.00 ksi
due to Composite Loads		-0.40 ksi	0.00 ksi
due to Live Loads		-1.81 ksi	0.00 ksi

**Time Dependent Losses (Approximate Method (Art.5.9.3.3))**



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		Initial		Final		
Steel relaxation	0.00	ksi		2.40	ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00	ksi		11.40	ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00	ksi		7.19	ksi	(Eq 5.9.3.3-1)
Sub-total	6.12	ksi	( 3.02 %)	18.78	ksi	( 9.27 %)
Total Prestress Losses				24.90	ksi	(12.30 %)

Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK  
initial fpe = 177.6 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.



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**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 1, SERVICE I**  
**Shears: kips, Moments: kft**

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.6	6.2	2.7	6.2	11.6	15.5	17.8	18.6
(Max)	V	2.5	2.0	2.3	2.0	1.5	1.0	0.5	0.0
LL + I :	M+	5.9	60.2	26.3	60.2	108.8	143.2	162.4	167.8
	V	26.1	23.8	25.3	23.8	20.1	17.0	13.8	0.8
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	27.4	23.8	26.1	23.8	20.2	17.3	14.3	11.5
	M	6.2	60.2	26.8	60.2	105.7	137.2	153.1	154.1
Total :	M+	6.9	88.1	37.3	88.1	162.4	215.2	245.3	254.6
	V	37.9	33.5	36.4	33.5	27.5	21.9	16.3	0.9
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	39.2	33.5	37.2	33.5	27.6	22.2	16.8	11.5
	M	7.2	88.1	37.7	88.1	159.3	209.1	236.1	240.9



Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	18.0	15.8	12.1	6.9	3.4	6.9	1.4
DW(Max)	V	0.5	1.0	1.5	2.0	2.3	2.0	2.4
LL + I :	M+	164.7	146.7	113.4	65.8	32.8	65.8	13.0
	V	1.5	4.6	7.8	8.0	18.1	8.0	23.6
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	12.7	15.6	19.0	22.8	25.4	22.8	26.9
	M	139.5	128.8	104.9	63.4	32.4	63.4	13.2
Total :	M+	248.0	219.1	167.7	94.7	45.0	94.7	15.2
	V	3.9	9.5	15.1	17.7	29.1	17.7	35.3
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	15.1	20.4	26.3	32.4	36.4	32.4	38.6
	M	222.7	201.2	159.2	92.3	44.5	92.3	15.4

**REACTIONS (kips), SERVICE I**



			Sheet #	11
			Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022

Load Type		Left Support	Right Support
Self Wt.		7.9	7.9
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		16.0	15.7
DL-Comp.(DW)		41.0	40.1
Live		58.2	58.2
	Truck	48.8	48.8
	Lane	9.4	9.4
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 1, SERVICE III**

**Shears: kips, Moments: kft**



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.6	6.2	2.7	6.2	11.6	15.5	17.8	18.6
DW(Max)	V	2.5	2.0	2.3	2.0	1.5	1.0	0.5	0.0
LL + I :	M+	4.7	48.1	21.1	48.1	87.0	114.6	129.9	134.2
	V	20.9	19.0	20.2	19.0	16.1	13.6	11.1	0.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	21.9	19.0	20.9	19.0	16.2	13.8	11.5	9.2
	M	5.0	48.1	21.4	48.1	84.6	109.7	122.5	123.3
Total :	M+	5.7	76.1	32.0	76.1	140.6	186.5	212.9	221.0
	V	32.7	28.8	31.3	28.8	23.4	18.5	13.5	0.7
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	33.7	28.8	32.0	28.8	23.5	18.7	13.9	9.2
	M	5.9	76.1	32.4	76.1	138.1	181.7	205.5	210.1



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	18.0	15.8	12.1	6.9	3.4	6.9	1.4
DW(Max)	V	0.5	1.0	1.5	2.0	2.3	2.0	2.4
LL + I :	M+	131.8	117.4	90.7	52.6	26.3	52.6	10.4
	V	1.2	3.7	6.2	6.4	14.5	6.4	18.9
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	10.2	12.5	15.2	18.2	20.3	18.2	21.5
	M	111.6	103.0	83.9	50.7	25.9	50.7	10.6
Total :	M+	215.0	189.8	145.0	81.5	38.4	81.5	12.6
	V	3.6	8.5	13.5	16.1	25.5	16.1	30.6
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	12.5	17.3	22.5	27.9	31.3	27.9	33.2
	M	194.8	175.4	138.3	79.6	38.0	79.6	12.8

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 1, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	22.5	8.4	22.5	44.0	59.3	68.4	71.5
(Max)	V	9.9	8.2	9.3	8.2	6.1	4.1	2.0	0.0
Self wt. :	M	0.0	16.2	6.0	16.2	31.6	42.7	49.3	51.5
(Min)	V	7.1	5.9	6.7	5.9	4.4	2.9	1.5	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.5	4.6	2.0	4.6	8.5	11.3	13.1	13.7
DC(Max)	V	1.8	1.5	1.7	1.5	1.1	0.8	0.4	0.0
DL-Comp :	M	0.3	3.3	1.4	3.3	6.1	8.2	9.4	9.8
DC(Min)	V	1.3	1.1	1.2	1.1	0.8	0.5	0.3	0.0
DL-Comp :	M	0.9	9.4	4.1	9.4	17.4	23.2	26.7	27.9
DW(Max)	V	3.7	3.1	3.5	3.1	2.3	1.5	0.8	0.0
DL-Comp :	M	0.4	4.1	1.8	4.1	7.5	10.0	11.6	12.1
DW(Min)	V	1.6	1.3	1.5	1.3	1.0	0.7	0.3	0.0
LL + I :	M+	10.3	105.3	46.1	105.3	190.4	250.6	284.1	293.7
	V	45.7	41.6	44.3	41.6	35.2	29.7	24.2	1.5
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	48.0	41.6	45.7	41.6	35.4	30.2	25.1	20.1
	M	10.8	105.3	46.8	105.3	185.0	240.0	268.0	269.7
Total :	M+	11.7	141.8	60.5	141.8	260.2	344.4	392.3	406.8
	V	61.1	54.3	58.7	54.3	44.8	36.1	27.4	1.5





Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	63.3	54.3	60.2	54.3	45.0	36.6	28.3	20.2
	M	12.2	141.8	61.2	141.8	254.9	333.8	376.1	382.9



Sheet #	16				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	68.4	59.3	44.0	22.5	8.4	22.5	0.0
(Max)	V	2.0	4.1	6.1	8.2	9.3	8.2	9.9
Self wt. :	M	49.3	42.7	31.6	16.2	6.0	16.2	0.0
(Min)	V	1.5	2.9	4.4	5.9	6.7	5.9	7.1
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	13.2	11.6	8.9	5.0	2.5	5.0	1.0
DC(Max)	V	0.4	0.7	1.1	1.5	1.7	1.5	1.8
DL-Comp :	M	9.5	8.3	6.4	3.6	1.8	3.6	0.7
DC(Min)	V	0.3	0.5	0.8	1.0	1.2	1.0	1.3
DL-Comp :	M	26.9	23.7	18.1	10.3	5.1	10.3	2.1
DW(Max)	V	0.7	1.5	2.2	3.0	3.4	3.0	3.6
DL-Comp :	M	11.7	10.2	7.8	4.5	2.2	4.5	0.9
DW(Min)	V	0.3	0.6	1.0	1.3	1.5	1.3	1.6
LL + I :	M+	288.3	256.7	198.4	115.1	57.5	115.1	22.8
	V	2.6	8.1	13.7	14.0	31.7	14.0	41.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	22.2	27.3	33.3	39.8	44.5	39.8	47.0
	M	244.1	225.3	183.6	111.0	56.7	111.0	23.2
Total :	M+	396.8	351.2	269.3	153.0	73.5	153.0	25.9
	V	5.7	14.4	23.1	26.6	46.0	26.6	56.5



Sheet #	17				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	25.3	33.6	42.7	52.4	58.8	52.4	62.2
	M	352.6	319.8	254.5	148.8	72.7	148.8	26.2

**REACTIONS (kips), STRENGTH I**

Load Type		Left Support	Right Support
Self Wt.		9.9	9.9
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		20.0	19.6
DL-Comp.(DW)		61.5	60.1
Live		101.9	101.9
	Truck	85.5	85.5
	Lane	16.4	16.4
Pedestrian		0.0	0.0

Upward reactions are positive.  
 Live Load reactions are per lane with no distribution factor and no impact.  
 Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
 Non-composite load types are per beam.  
 Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 1, FATIGUE I**  
**Shears: kips, Moments: kft**



Sheet #	18				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.6	6.2	2.7	6.2	11.6	15.5	17.8	18.6
DW(Max)	V	2.5	2.0	2.3	2.0	1.5	1.0	0.5	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	5.0	49.8	21.8	49.8	91.3	119.3	133.7	134.7
	V	22.2	19.9	21.4	19.9	17.5	15.0	12.5	9.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	22.2	19.9	21.4	19.9	17.5	15.0	12.5	10.0
	M	5.0	49.8	21.8	49.8	91.3	119.3	133.7	134.7
Total :	M+	6.0	77.8	32.8	77.8	144.9	191.2	216.7	221.5
	V	34.0	29.7	32.5	29.7	24.8	19.9	15.0	9.8



Sheet #	19				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	34.0	29.7	32.5	29.7	24.8	19.9	15.0	10.1
	M	6.0	77.8	32.8	77.8	144.9	191.2	216.7	221.5



Sheet #	20				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	18.0	15.8	12.1	6.9	3.4	6.9	1.4
DW(Max)	V	0.5	1.0	1.5	2.0	2.3	2.0	2.4
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	134.8	121.4	94.5	54.1	27.0	54.1	10.9
	V	7.3	4.8	2.3	0.2	12.0	0.2	18.3
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	11.8	14.2	16.7	19.2	20.9	19.2	21.8
	M	129.0	117.3	92.1	53.4	26.8	53.4	10.9
Total :	M+	218.0	193.8	148.8	83.0	39.1	83.0	13.1
	V	9.7	9.6	9.6	9.8	23.0	9.8	30.0



Sheet #	21				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	14.2	19.1	24.0	28.9	31.9	28.9	33.5
	M	212.3	189.8	146.4	82.3	38.9	82.3	13.1



Sheet #	22				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:1, Beam:1

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.34	2.22	80.09	0.6L	17.50	0.37	5.60	201.45	0.2L	5.50
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.34	1.67	-	0.5L	14.50	0.37	4.88	-	0.2L	5.50
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.34	2.88	103.82	0.6L	17.50	0.37	7.33	263.96	0.2L	5.50
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.34	2.16	-	0.5L	14.50	0.37	6.40	-	0.2L	5.50
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	2.82	101.51	0.6L	17.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.05	-	0.5L	14.50	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	2.82	101.51	0.6L	17.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.05	-	0.5L	14.50	-	-	-	-	-





Sheet #	23				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.34	4.70	63.51	0.6L	17.50	0.37	13.51	182.36	0.2L	5.50
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.34	4.00	80.06	0.6L	17.50	0.37	10.67	213.31	0.2L	5.50
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.34	4.05	88.99	0.6L	17.50	0.37	10.39	228.60	Critical	1.53
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.34	2.37	64.62	0.5L	14.50	0.37	6.68	182.04	0.2L	5.50
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.34	2.24	78.07	0.6L	17.50	0.37	6.37	222.38	0.2L	5.50
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.34	2.19	78.01	0.5L	14.50	0.37	6.69	237.95	0.2L	5.50
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.34	2.08	83.27	0.5L	14.50	0.37	6.32	252.47	0.2L	5.50
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.34	2.01	84.41	0.5L	14.50	0.37	6.39	268.55	0.2L	5.50
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.34	4.70	63.40	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.34	4.06	81.18	0.6L	17.50	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.34	4.10	90.23	0.6L	17.50	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.34	2.34	63.65	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.34	2.24	78.12	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.34	2.16	76.83	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.34	2.05	82.02	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.34	1.98	83.13	0.5L	14.50	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	24				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
 For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80



Sheet #	25				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	-
Permit	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No



Sheet #	26				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**RATING RESULTS**

Span:1, Beam:1

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.61	1.00	3.61	5.99	-	6.65	-
Critical : 1.5	-	-	-	5.63	-	-	-
0.1L : 2.5	3.61	1.00	3.61	5.83	-	6.65	-
0.2L : 5.5	2.96	1.00	2.96	5.60	-	4.16	-
0.3L : 8.5	2.38	1.00	2.38	6.81	-	3.13	10.87
0.4L : 11.5	2.25	1.00	2.25	8.80	-	2.85	7.36
0.5L : 14.5	2.46	1.00	2.46	12.38	-	3.03	8.11
0.6L : 17.5	2.22	1.00	2.22	9.63	-	2.82	7.15
0.7L : 20.5	2.33	1.00	2.33	7.31	-	3.06	10.06
0.8L : 23.5	2.84	1.00	2.84	5.92	-	4.00	-
0.9L : 26.5	3.29	1.00	3.29	6.10	-	6.07	-
Critical : 27.5	-	-	-	5.83	-	-	-
Transfer : 26.5	3.29	1.00	3.29	6.28	-	6.07	-
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	27				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.13	1.00	3.13	5.24	-	5.77	-
Critical : 1.5	-	-	-	4.92	-	-	-
0.1L : 2.5	3.13	1.00	3.13	5.10	-	5.77	-
0.2L : 5.5	2.52	1.00	2.52	4.88	-	3.55	37.17
0.3L : 8.5	1.93	1.00	1.93	5.72	-	2.53	6.23
0.4L : 11.5	1.70	1.00	1.70	6.95	-	2.15	4.22
0.5L : 14.5	1.67	1.00	1.67	8.81	-	2.05	3.84
0.6L : 17.5	1.67	1.00	1.67	7.90	-	2.12	4.11
0.7L : 20.5	1.88	1.00	1.88	6.35	-	2.47	5.86
0.8L : 23.5	2.41	1.00	2.41	5.20	-	3.40	24.73
0.9L : 26.5	2.85	1.00	2.85	5.32	-	5.26	67.86
Critical : 27.5	-	-	-	5.09	-	-	-
Transfer : 26.5	2.85	1.00	2.85	5.47	-	5.26	67.86
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



Sheet #	28				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.68	1.00	4.68	7.82
Critical : 1.5	-	-	-	7.34
0.1L : 2.5	4.68	1.00	4.68	7.60
0.2L : 5.5	3.84	1.00	3.84	7.33
0.3L : 8.5	3.09	1.00	3.09	8.94
0.4L : 11.5	2.92	1.00	2.92	11.54
0.5L : 14.5	3.19	1.00	3.19	16.22
0.6L : 17.5	2.88	1.00	2.88	12.63
0.7L : 20.5	3.02	1.00	3.02	9.58
0.8L : 23.5	3.68	1.00	3.68	7.76
0.9L : 26.5	4.27	1.00	4.27	7.97
Critical : 27.5	-	-	-	7.60
Transfer : 26.5	4.27	1.00	4.27	8.19
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.



Sheet #	29				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.06	1.00	4.06	6.85
Critical : 1.5	-	-	-	6.42
0.1L : 2.5	4.06	1.00	4.06	6.66
0.2L : 5.5	3.27	1.00	3.27	6.40
0.3L : 8.5	2.50	1.00	2.50	7.51
0.4L : 11.5	2.20	1.00	2.20	9.14
0.5L : 14.5	2.16	1.00	2.16	11.59
0.6L : 17.5	2.17	1.00	2.17	10.38
0.7L : 20.5	2.44	1.00	2.44	8.34
0.8L : 23.5	3.13	1.00	3.13	6.81
0.9L : 26.5	3.70	1.00	3.70	6.95
Critical : 27.5	-	-	-	6.63
Transfer : 26.5	3.70	1.00	3.70	7.15
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.

Span:1, Beam:1

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	30				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.75	1.00	8.75	14.78	-	12.89
Critical : 1.5	-	-	-	14.03	-	-
0.1L : 2.5	8.75	1.00	8.75	14.37	-	12.89
0.2L : 5.5	6.95	1.00	6.95	13.51	-	7.82
0.3L : 8.5	5.35	1.00	5.35	15.78	-	5.62
0.4L : 11.5	4.75	1.00	4.75	19.08	-	4.81
0.5L : 14.5	4.77	1.00	4.77	24.07	-	4.70
0.6L : 17.5	4.70	1.00	4.70	20.31	-	4.77
0.7L : 20.5	5.25	1.00	5.25	16.62	-	5.52
0.8L : 23.5	6.70	1.00	6.70	14.12	-	7.54
0.9L : 26.5	8.04	1.00	8.04	14.92	-	11.85
Critical : 27.5	-	-	-	14.44	-	-
Transfer : 26.5	8.04	1.00	8.04	15.36	-	11.85
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	31				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.80	1.00	6.80	11.45	-	10.02
Critical : 1.5	-	-	-	10.80	-	-
0.1L : 2.5	6.80	1.00	6.80	11.13	-	10.02
0.2L : 5.5	5.52	1.00	5.52	10.67	-	6.21
0.3L : 8.5	4.38	1.00	4.38	12.83	-	4.60
0.4L : 11.5	4.04	1.00	4.04	16.19	-	4.10
0.5L : 14.5	4.34	1.00	4.34	21.86	-	4.27
0.6L : 17.5	4.00	1.00	4.00	17.54	-	4.06
0.7L : 20.5	4.28	1.00	4.28	13.67	-	4.50
0.8L : 23.5	5.31	1.00	5.31	11.24	-	5.97
0.9L : 26.5	6.22	1.00	6.22	11.62	-	9.17
Critical : 27.5	-	-	-	11.16	-	-
Transfer : 26.5	6.22	1.00	6.22	11.96	-	9.17
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	32				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.57	1.00	6.57	11.04	-	9.67
Critical : 1.5	-	-	-	10.39	-	-
0.1L : 2.5	6.57	1.00	6.57	10.73	-	9.67
0.2L : 5.5	5.38	1.00	5.38	10.39	-	6.05
0.3L : 8.5	4.33	1.00	4.33	12.69	-	4.55
0.4L : 11.5	4.09	1.00	4.09	16.38	-	4.15
0.5L : 14.5	4.48	1.00	4.48	22.98	-	4.41
0.6L : 17.5	4.05	1.00	4.05	17.91	-	4.10
0.7L : 20.5	4.23	1.00	4.23	13.60	-	4.44
0.8L : 23.5	5.17	1.00	5.17	10.99	-	5.81
0.9L : 26.5	5.99	1.00	5.99	11.25	-	8.83
Critical : 27.5	-	-	-	10.76	-	-
Transfer : 26.5	5.99	1.00	5.99	11.57	-	8.83
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	33				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.41	1.00	4.41	7.35	-	6.49
Critical : 1.5	-	-	-	7.00	-	-
0.1L : 2.5	4.41	1.00	4.41	7.15	-	6.49
0.2L : 5.5	3.51	1.00	3.51	6.68	-	3.95
0.3L : 8.5	2.71	1.00	2.71	7.80	-	2.85
0.4L : 11.5	2.41	1.00	2.41	9.46	-	2.45
0.5L : 14.5	2.37	1.00	2.37	12.03	-	2.34
0.6L : 17.5	2.39	1.00	2.39	11.05	-	2.42
0.7L : 20.5	2.65	1.00	2.65	8.86	-	2.79
0.8L : 23.5	3.37	1.00	3.37	7.43	-	3.79
0.9L : 26.5	4.02	1.00	4.02	7.83	-	5.92
Critical : 27.5	-	-	-	7.45	-	-
Transfer : 26.5	4.02	1.00	4.02	8.05	-	5.92
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	34				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.09	1.00	4.09	6.82	-	6.03
Critical : 1.5	-	-	-	6.43	-	-
0.1L : 2.5	4.09	1.00	4.09	6.63	-	6.03
0.2L : 5.5	3.35	1.00	3.35	6.37	-	3.77
0.3L : 8.5	2.60	1.00	2.60	7.74	-	2.73
0.4L : 11.5	2.25	1.00	2.25	9.95	-	2.29
0.5L : 14.5	2.27	1.00	2.27	13.08	-	2.24
0.6L : 17.5	2.24	1.00	2.24	10.85	-	2.27
0.7L : 20.5	2.55	1.00	2.55	8.28	-	2.68
0.8L : 23.5	3.19	1.00	3.19	6.72	-	3.59
0.9L : 26.5	3.70	1.00	3.70	6.93	-	5.45
Critical : 27.5	-	-	-	6.65	-	-
Transfer : 26.5	3.70	1.00	3.70	7.13	-	5.45
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	35				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.33	1.00	4.33	7.23	-	6.38
Critical : 1.5	-	-	-	6.83	-	-
0.1L : 2.5	4.33	1.00	4.33	7.03	-	6.38
0.2L : 5.5	3.31	1.00	3.31	6.69	-	3.72
0.3L : 8.5	2.52	1.00	2.52	8.03	-	2.64
0.4L : 11.5	2.25	1.00	2.25	10.12	-	2.28
0.5L : 14.5	2.19	1.00	2.19	13.06	-	2.16
0.6L : 17.5	2.23	1.00	2.23	10.95	-	2.26
0.7L : 20.5	2.46	1.00	2.46	8.55	-	2.58
0.8L : 23.5	3.17	1.00	3.17	7.04	-	3.57
0.9L : 26.5	3.92	1.00	3.92	7.33	-	5.78
Critical : 27.5	-	-	-	7.05	-	-
Transfer : 26.5	3.92	1.00	3.92	7.54	-	5.78
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	36				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.06	1.00	4.06	6.75	-	5.98
Critical : 1.5	-	-	-	6.38	-	-
0.1L : 2.5	4.06	1.00	4.06	6.57	-	5.98
0.2L : 5.5	3.15	1.00	3.15	6.32	-	3.55
0.3L : 8.5	2.43	1.00	2.43	7.70	-	2.55
0.4L : 11.5	2.15	1.00	2.15	9.53	-	2.18
0.5L : 14.5	2.08	1.00	2.08	12.41	-	2.05
0.6L : 17.5	2.13	1.00	2.13	10.33	-	2.16
0.7L : 20.5	2.38	1.00	2.38	8.25	-	2.50
0.8L : 23.5	3.03	1.00	3.03	6.76	-	3.41
0.9L : 26.5	3.70	1.00	3.70	6.94	-	5.45
Critical : 27.5	-	-	-	6.65	-	-
Transfer : 26.5	3.70	1.00	3.70	7.14	-	5.45
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	37				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.14	1.00	4.14	6.89	-	6.09
Critical : 1.5	-	-	-	6.52	-	-
0.1L : 2.5	4.14	1.00	4.14	6.70	-	6.09
0.2L : 5.5	3.19	1.00	3.19	6.39	-	3.58
0.3L : 8.5	2.39	1.00	2.39	7.70	-	2.51
0.4L : 11.5	2.04	1.00	2.04	9.53	-	2.07
0.5L : 14.5	2.01	1.00	2.01	12.41	-	1.98
0.6L : 17.5	2.02	1.00	2.02	10.33	-	2.05
0.7L : 20.5	2.34	1.00	2.34	8.25	-	2.46
0.8L : 23.5	3.06	1.00	3.06	6.82	-	3.44
0.9L : 26.5	3.77	1.00	3.77	7.06	-	5.55
Critical : 27.5	-	-	-	6.78	-	-
Transfer : 26.5	3.77	1.00	3.77	7.26	-	5.55
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



		Sheet # 1			
				Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:1, Beam:1

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.34	2.22	80.09	0.6L	17.50	0.37	5.60	201.45	0.2L	5.50
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.34	1.67	-	0.5L	14.50	0.37	4.88	-	0.2L	5.50
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.34	2.88	103.82	0.6L	17.50	0.37	7.33	263.96	0.2L	5.50
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.34	2.16	-	0.5L	14.50	0.37	6.40	-	0.2L	5.50
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	2.82	101.51	0.6L	17.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.05	-	0.5L	14.50	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	2.82	101.51	0.6L	17.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.05	-	0.5L	14.50	-	-	-	-	-





		Sheet # 2	
		Job # 171002272	
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked MBI
File Name:	270017_Spans 1+3_TTST.lbcx		Date Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.34	2.68	88.43	0.5L	14.50	0.37	7.60	250.67	Critical	1.53
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.34	2.56	84.76	0.5L	14.50	0.37	7.10	234.71	Critical	1.53
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.34	2.31	96.01	0.5L	14.50	0.37	6.72	279.66	0.2L	5.50
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.34	2.38	99.87	0.6L	17.50	0.37	6.48	272.12	Critical	1.53
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.34	2.27	95.49	0.5L	14.50	0.37	6.32	265.42	Critical	1.53
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.34	2.34	100.56	0.5L	14.50	0.37	6.13	263.61	Critical	1.53
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.34	2.26	101.56	0.5L	14.50	0.37	6.57	295.49	0.2L	5.50
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.34	2.11	95.09	0.6L	17.50	0.37	5.77	259.46	Critical	1.53
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.34	2.64	87.09	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.34	2.52	83.49	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.34	2.27	94.56	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.34	2.35	98.73	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.34	2.24	94.05	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.34	2.30	99.04	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.34	2.22	100.03	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.34	2.14	96.42	0.6L	17.50	-	-	-	-	-



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Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-



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**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	-
Permit	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No



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**RATING RESULTS**

**Span:1, Beam:1**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.61	1.00	3.61	5.99	-	6.65	-
Critical : 1.5	-	-	-	5.63	-	-	-
0.1L : 2.5	3.61	1.00	3.61	5.83	-	6.65	-
0.2L : 5.5	2.96	1.00	2.96	5.60	-	4.16	-
0.3L : 8.5	2.38	1.00	2.38	6.81	-	3.13	10.87
0.4L : 11.5	2.25	1.00	2.25	8.80	-	2.85	7.36
0.5L : 14.5	2.46	1.00	2.46	12.38	-	3.03	8.11
0.6L : 17.5	2.22	1.00	2.22	9.63	-	2.82	7.15
0.7L : 20.5	2.33	1.00	2.33	7.31	-	3.06	10.06
0.8L : 23.5	2.84	1.00	2.84	5.92	-	4.00	-
0.9L : 26.5	3.29	1.00	3.29	6.10	-	6.07	-
Critical : 27.5	-	-	-	5.83	-	-	-
Transfer : 26.5	3.29	1.00	3.29	6.28	-	6.07	-
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet # 6			
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**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.13	1.00	3.13	5.24	-	5.77	-
Critical : 1.5	-	-	-	4.92	-	-	-
0.1L : 2.5	3.13	1.00	3.13	5.10	-	5.77	-
0.2L : 5.5	2.52	1.00	2.52	4.88	-	3.55	37.17
0.3L : 8.5	1.93	1.00	1.93	5.72	-	2.53	6.23
0.4L : 11.5	1.70	1.00	1.70	6.95	-	2.15	4.22
0.5L : 14.5	1.67	1.00	1.67	8.81	-	2.05	3.84
0.6L : 17.5	1.67	1.00	1.67	7.90	-	2.12	4.11
0.7L : 20.5	1.88	1.00	1.88	6.35	-	2.47	5.86
0.8L : 23.5	2.41	1.00	2.41	5.20	-	3.40	24.73
0.9L : 26.5	2.85	1.00	2.85	5.32	-	5.26	67.86
Critical : 27.5	-	-	-	5.09	-	-	-
Transfer : 26.5	2.85	1.00	2.85	5.47	-	5.26	67.86
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



		Sheet #	7		
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**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.68	1.00	4.68	7.82
Critical : 1.5	-	-	-	7.34
0.1L : 2.5	4.68	1.00	4.68	7.60
0.2L : 5.5	3.84	1.00	3.84	7.33
0.3L : 8.5	3.09	1.00	3.09	8.94
0.4L : 11.5	2.92	1.00	2.92	11.54
0.5L : 14.5	3.19	1.00	3.19	16.22
0.6L : 17.5	2.88	1.00	2.88	12.63
0.7L : 20.5	3.02	1.00	3.02	9.58
0.8L : 23.5	3.68	1.00	3.68	7.76
0.9L : 26.5	4.27	1.00	4.27	7.97
Critical : 27.5	-	-	-	7.60
Transfer : 26.5	4.27	1.00	4.27	8.19
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.



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### HL93 Design Load Positive Live Load

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.06	1.00	4.06	6.85
Critical : 1.5	-	-	-	6.42
0.1L : 2.5	4.06	1.00	4.06	6.66
0.2L : 5.5	3.27	1.00	3.27	6.40
0.3L : 8.5	2.50	1.00	2.50	7.51
0.4L : 11.5	2.20	1.00	2.20	9.14
0.5L : 14.5	2.16	1.00	2.16	11.59
0.6L : 17.5	2.17	1.00	2.17	10.38
0.7L : 20.5	2.44	1.00	2.44	8.34
0.8L : 23.5	3.13	1.00	3.13	6.81
0.9L : 26.5	3.70	1.00	3.70	6.95
Critical : 27.5	-	-	-	6.63
Transfer : 26.5	3.70	1.00	3.70	7.15
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.

Span:1, Beam:1

#### B) Legal Live Load Rating

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



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**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.84	1.00	4.84	8.09	-	7.13
Critical : 1.5	-	-	-	7.60	-	-
0.1L : 2.5	4.84	1.00	4.84	7.86	-	7.13
0.2L : 5.5	4.04	1.00	4.04	7.74	-	4.55
0.3L : 8.5	3.34	1.00	3.34	9.71	-	3.51
0.4L : 11.5	2.85	1.00	2.85	13.12	-	2.89
0.5L : 14.5	2.68	1.00	2.68	17.22	-	2.64
0.6L : 17.5	2.81	1.00	2.81	17.06	-	2.85
0.7L : 20.5	3.29	1.00	3.29	13.04	-	3.45
0.8L : 23.5	3.89	1.00	3.89	9.72	-	4.38
0.9L : 26.5	4.42	1.00	4.42	9.45	-	6.51
Critical : 27.5	-	-	-	8.57	-	-
Transfer : 26.5	4.42	1.00	4.42	9.72	-	6.51
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





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**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.52	1.00	4.52	7.54	-	6.66
Critical : 1.5	-	-	-	7.10	-	-
0.1L : 2.5	4.52	1.00	4.52	7.33	-	6.66
0.2L : 5.5	3.72	1.00	3.72	7.11	-	4.19
0.3L : 8.5	2.98	1.00	2.98	8.61	-	3.13
0.4L : 11.5	2.65	1.00	2.65	10.64	-	2.69
0.5L : 14.5	2.56	1.00	2.56	13.92	-	2.52
0.6L : 17.5	2.63	1.00	2.63	12.06	-	2.67
0.7L : 20.5	2.90	1.00	2.90	9.78	-	3.04
0.8L : 23.5	3.56	1.00	3.56	8.06	-	4.00
0.9L : 26.5	4.09	1.00	4.09	8.12	-	6.03
Critical : 27.5	-	-	-	7.61	-	-
Transfer : 26.5	4.09	1.00	4.09	8.35	-	6.03
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.35	1.00	4.35	7.26	-	6.41
Critical : 1.5	-	-	-	6.86	-	-
0.1L : 2.5	4.35	1.00	4.35	7.06	-	6.41
0.2L : 5.5	3.41	1.00	3.41	6.72	-	3.84
0.3L : 8.5	2.61	1.00	2.61	8.06	-	2.74
0.4L : 11.5	2.35	1.00	2.35	10.16	-	2.38
0.5L : 14.5	2.31	1.00	2.31	13.11	-	2.27
0.6L : 17.5	2.34	1.00	2.34	10.99	-	2.37
0.7L : 20.5	2.55	1.00	2.55	8.58	-	2.67
0.8L : 23.5	3.27	1.00	3.27	7.07	-	3.68
0.9L : 26.5	3.94	1.00	3.94	7.23	-	5.81
Critical : 27.5	-	-	-	7.00	-	-
Transfer : 26.5	3.94	1.00	3.94	7.43	-	5.81
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.13	1.00	4.13	6.88	-	6.09
Critical : 1.5	-	-	-	6.48	-	-
0.1L : 2.5	4.13	1.00	4.13	6.69	-	6.09
0.2L : 5.5	3.35	1.00	3.35	6.55	-	3.77
0.3L : 8.5	2.70	1.00	2.70	8.16	-	2.83
0.4L : 11.5	2.38	1.00	2.38	10.55	-	2.42
0.5L : 14.5	2.39	1.00	2.39	13.81	-	2.35
0.6L : 17.5	2.38	1.00	2.38	11.48	-	2.41
0.7L : 20.5	2.65	1.00	2.65	8.81	-	2.78
0.8L : 23.5	3.23	1.00	3.23	7.02	-	3.63
0.9L : 26.5	3.77	1.00	3.77	7.09	-	5.55
Critical : 27.5	-	-	-	6.76	-	-
Transfer : 26.5	3.77	1.00	3.77	7.29	-	5.55
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.04	1.00	4.04	6.72	-	5.95
Critical : 1.5	-	-	-	6.32	-	-
0.1L : 2.5	4.04	1.00	4.04	6.54	-	5.95
0.2L : 5.5	3.35	1.00	3.35	6.37	-	3.77
0.3L : 8.5	2.68	1.00	2.68	7.73	-	2.81
0.4L : 11.5	2.33	1.00	2.33	9.56	-	2.36
0.5L : 14.5	2.27	1.00	2.27	12.44	-	2.24
0.6L : 17.5	2.32	1.00	2.32	10.36	-	2.35
0.7L : 20.5	2.63	1.00	2.63	8.28	-	2.76
0.8L : 23.5	3.22	1.00	3.22	6.80	-	3.63
0.9L : 26.5	3.68	1.00	3.68	6.96	-	5.43
Critical : 27.5	-	-	-	6.61	-	-
Transfer : 26.5	3.68	1.00	3.68	7.16	-	5.43
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	14		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx		Date	Mar/7/2022	

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.94	1.00	3.94	6.56	-	5.81
Critical : 1.5	-	-	-	6.13	-	-
0.1L : 2.5	3.94	1.00	3.94	6.38	-	5.81
0.2L : 5.5	3.33	1.00	3.33	6.33	-	3.75
0.3L : 8.5	2.61	1.00	2.61	7.88	-	2.74
0.4L : 11.5	2.37	1.00	2.37	9.95	-	2.40
0.5L : 14.5	2.34	1.00	2.34	13.45	-	2.30
0.6L : 17.5	2.36	1.00	2.36	11.89	-	2.39
0.7L : 20.5	2.57	1.00	2.57	9.07	-	2.70
0.8L : 23.5	3.18	1.00	3.18	7.34	-	3.58
0.9L : 26.5	3.57	1.00	3.57	7.17	-	5.25
Critical : 27.5	-	-	-	6.64	-	-
Transfer : 26.5	3.57	1.00	3.57	7.37	-	5.25
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	15		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx		Date	Mar/7/2022	

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.24	1.00	4.24	7.07	-	6.25
Critical : 1.5	-	-	-	6.59	-	-
0.1L : 2.5	4.24	1.00	4.24	6.87	-	6.25
0.2L : 5.5	3.45	1.00	3.45	6.57	-	3.88
0.3L : 8.5	2.72	1.00	2.72	7.88	-	2.85
0.4L : 11.5	2.33	1.00	2.33	9.95	-	2.36
0.5L : 14.5	2.26	1.00	2.26	13.45	-	2.22
0.6L : 17.5	2.30	1.00	2.30	10.96	-	2.33
0.7L : 20.5	2.66	1.00	2.66	8.63	-	2.79
0.8L : 23.5	3.29	1.00	3.29	6.99	-	3.71
0.9L : 26.5	3.84	1.00	3.84	7.05	-	5.66
Critical : 27.5	-	-	-	6.74	-	-
Transfer : 26.5	3.84	1.00	3.84	7.25	-	5.66
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

		Sheet #	16		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx		Date	Mar/7/2022	

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.71	1.00	3.71	6.16	-	5.46
Critical : 1.5	-	-	-	5.77	-	-
0.1L : 2.5	3.71	1.00	3.71	5.99	-	5.46
0.2L : 5.5	3.09	1.00	3.09	5.86	-	3.48
0.3L : 8.5	2.39	1.00	2.39	7.30	-	2.51
0.4L : 11.5	2.12	1.00	2.12	9.76	-	2.15
0.5L : 14.5	2.19	1.00	2.19	13.40	-	2.16
0.6L : 17.5	2.11	1.00	2.11	10.83	-	2.14
0.7L : 20.5	2.35	1.00	2.35	7.89	-	2.47
0.8L : 23.5	2.95	1.00	2.95	6.23	-	3.32
0.9L : 26.5	3.35	1.00	3.35	6.17	-	4.94
Critical : 27.5	-	-	-	5.91	-	-
Transfer : 26.5	3.35	1.00	3.35	6.35	-	4.94
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



		Sheet # 1	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date Feb/2/2022
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File Name:	270017_Spans 1+3_SV.lbcx		Date Mar/7/2022

**PROPERTIES**

**Span:1, Beam:2**  
**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Fing width	Top	36.000	in	Bot	36.000	in
thick	Top	4.500	in	Bot	4.500*	in
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	3.00/ 3.00	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Interior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**

Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)





		Sheet # 2			
				Job # 171002272	
Program: LEAP® Bridge Concrete CONNECT Edition		Stantec Consulting Ltd		Designed: JFK	
Module: Precast/Prestressed Girder		Copyright © Bentley Systems, Inc. 2019 - 2019		Date: Feb/2/2022	
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File Name: 270017_Spans 1+3_SV.lbcx				Date: Mar/7/2022	

**GENERAL LOAD DATA:**

**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	30.000	ft
Release length	30.000	ft
Design length	29.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**

Type g

Live Moment	(2+ lanes loaded)	0.277	(Calculated)	
Live Moment	(1 lane loaded)	0.306	(Calculated)	
Live Shear	(2+ lanes loaded)	0.277	(Calculated)	(!)
Live Shear	(1 lane loaded)	0.306	(Calculated)	(!)

(!) Taken as for moment (4.6.2.2.3a)

The LL distribution computation is using the effective slab depth ( $t_s = 0.00\text{in}$ ).

Include sacrificial deck thick in  $t_s$ : NO



Sheet #	3				
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Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.100	(Manual input)

Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90

**SECTION PROPERTIES:**

	PRECAST		COMPOSITE		
Area	522.3	in2	522.3	in2	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (Ixx)	25390	in4	25390	in4	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (Iyy)	62796.0	in4			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using  $E_c/E_c = 1.0000$

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths



		Sheet #	4		
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up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.  
Use transformed strand and rebar: Strand Only

Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 2.50	0.20L 5.50	0.30L 8.50	0.40L 11.50	Midspan 14.50
Precast:(At Release, using	Ec =	4266.2ksi)							
Area,	in2	523.7	531.8	526.3	531.8	533.4	533.4	533.4	533.4
Yb,	in	10.39	10.33	10.38	10.33	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25410	25546	25443	25546	25634	25634	25634	25634
Composite:(At Final, using	Ec =	4592.2ksi)							
Area,	in2	523.6	531.0	525.9	531.0	532.5	532.5	532.5	532.5
Yb,	in	10.39	10.34	10.38	10.34	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25408	25533	25439	25533	25614	25614	25614	25614

**Span:1, Beam:2**

**STRESS LIMITS (Art. 5.9.2):**

**STRESS LIMITS AT RELEASE BEFORE LOSSES:**

	PRECAST	
Strength	4.00	ksi
Elasticity	4266.2	ksi
Max comp	2.60	ksi
Max tens	-0.19	ksi
Max tens, w/reinf	-0.48	ksi

**STRESS LIMITS AT FINAL AFTER LOSSES:**

	PRECAST		DECK	
Strength	5.00	ksi	5.00	ksi
Elasticity	4592.23	ksi	4592.23	ksi



				Sheet #	5
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
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**STRESS LIMITS AT FINAL 1 (P/S + DL + LL):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	3.00	ksi	3.00	ksi

**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.25	ksi	2.25	ksi

**FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.00	ksi	-	ksi

**SERVICE III (Tension):**

	<b>PRECAST</b>		<b>DECK</b>	
Max tens	-0.42	ksi	-0.42	ksi

**Span:1, Beam:2**

**PRESTRESSED STEEL:**

9 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 5.67 in):**

7 @ 2.000 in	2 @ 18.500 in		
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**SHIELDING AND REDUCED INITIAL PULLS:**



		Sheet #	6		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
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Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	2.000	in	2.000	in	2.00	ft	0.00	ft	6.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK

Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	1.953	in <sup>2</sup>
Trans. Len, bonded	3.000	ft
Trans. Len, debonded	3.000	ft
Dev. Len, bonded	6.503	ft
Dev. Len, debonded	13.006	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	395.5	kips
Beam Shrtng (PL/AE)	0.063	in

**Span:1, Beam:2**  
**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
270.000	740	199.800	4.030	16321.908	171.997	40.838

**Span:1, Beam:2**  
**REINFORCING STEEL:**

Tension steel:	fy	Es
	60.0	ksi
	29000	ksi

**Stirrups:**



		Sheet #	7		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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# legs	Size	fy (ksi)	Area (in2)	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.2083	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	24.5000	No
4	US#4[M13]	60.0	0.80	9.00	24.5000	29.9167	No
4	US#5[M16]	60.0	1.24	1.00	29.9167	30.0000	No

**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	30.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	1.9530	in2
Ycg	5.67	in
P_init	395.5	kip
Ecc	4.74	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4266	ksi

**AASHTO LOSSES**

Elastic Shortening \*\* 6.12 ksi (Eq 5.9.5.2.3a-1), (fcgp= 0.917 ksi)



Sheet #	8				
Job #	171002272				
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Elastic Gains		Gains	Adjustment
due to Precast Loads	-0.00	ksi	0.00 ksi
due to Composite Loads	-0.57	ksi	0.00 ksi
due to Live Loads	-1.66	ksi	0.00 ksi

**Time Dependent Losses (Approximate Method (Art.5.9.3.3))**

	Initial	Final	
Steel relaxation	0.00 ksi	2.40 ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00 ksi	11.40 ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00 ksi	7.19 ksi	(Eq 5.9.3.3-1)
Sub-total	6.12 ksi	18.77 ksi	( 9.27 %)
Total Prestress Losses		24.89 ksi	(12.29 %)

**Prestressing Stress Limit Check (Table 5.9.3.1)**

initial fpi = 202.5 ksi < 0.75 fpu, OK  
 initial fpe = 177.6 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.



Sheet #	9				
Job #	171002272				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 2, SERVICE I**  
**Shears: kips, Moments: kft**

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	1.0	10.4	4.5	10.4	19.3	25.8	29.7	31.1
DW(Max)	V	4.1	3.4	3.9	3.4	2.6	1.7	0.9	0.0
LL + I :	M+	5.4	55.0	24.1	55.0	99.4	130.9	148.4	153.3
	V	21.7	19.7	21.0	19.7	16.7	14.1	11.5	0.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	22.8	19.7	21.7	19.7	16.8	14.3	11.9	9.5
	M	5.7	55.0	24.4	55.0	96.6	125.3	139.9	140.9
Total :	M+	6.8	87.1	36.8	87.1	160.7	213.1	243.2	252.5
	V	35.1	30.9	33.6	30.9	25.1	19.7	14.3	0.8
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	36.2	30.9	34.3	30.9	25.2	19.9	14.7	9.6
	M	7.1	87.1	37.2	87.1	157.9	207.6	234.8	240.0





Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	29.9	26.3	20.1	11.4	5.7	11.4	2.3
DW(Max)	V	0.8	1.6	2.5	3.3	3.8	3.3	4.0
LL + I :	M+	150.5	134.1	103.6	60.1	30.0	60.1	11.9
	V	1.2	3.9	6.5	6.6	15.0	6.6	19.6
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	10.5	13.0	15.8	18.9	21.1	18.9	22.3
	M	127.5	117.7	95.9	57.9	29.6	57.9	12.1
Total :	M+	245.8	217.0	166.0	93.6	44.4	93.6	15.0
	V	3.9	9.3	14.7	17.6	27.5	17.6	32.9
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	13.2	18.4	24.0	29.9	33.6	29.9	35.6
	M	222.7	200.6	158.3	91.4	44.0	91.4	15.2

**REACTIONS (kips), SERVICE I**



		Sheet # 11			
				Job # 171002272	
Program: LEAP® Bridge Concrete CONNECT Edition		Stantec Consulting Ltd		Designed: JFK	
Module: Precast/Prestressed Girder		Copyright © Bentley Systems, Inc. 2019 - 2019		Date: Feb/2/2022	
Version: 19.01.00.11		<a href="http://www.bentley.com">www.bentley.com</a>		Phone: 1-800-778-4277	
File Name: 270017_Spans 1+3_SV.lbcx				Checked: MBI	
				Date: Mar/7/2022	

Load Type		Left Support	Right Support
Self Wt.		7.9	7.9
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		16.0	15.7
DL-Comp.(DW)		41.0	40.1
Live		58.2	58.2
	Truck	48.8	48.8
	Lane	9.4	9.4
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 2, SERVICE III**

**Shears: kips, Moments: kft**



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	1.0	10.4	4.5	10.4	19.3	25.8	29.7	31.1
DW(Max)	V	4.1	3.4	3.9	3.4	2.6	1.7	0.9	0.0
LL + I :	M+	4.3	44.0	19.2	44.0	79.5	104.7	118.7	122.7
	V	17.4	15.8	16.8	15.8	13.4	11.3	9.2	0.6
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	18.2	15.8	17.4	15.8	13.4	11.5	9.5	7.6
	M	4.5	44.0	19.6	44.0	77.3	100.3	111.9	112.7
Total :	M+	5.7	76.1	32.0	76.1	140.8	186.9	213.5	221.9
	V	30.8	26.9	29.4	26.9	21.7	16.9	12.0	0.6
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	31.6	26.9	30.0	26.9	21.8	17.1	12.4	7.7
	M	5.9	76.1	32.4	76.1	138.6	182.5	206.8	211.9



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	29.9	26.3	20.1	11.4	5.7	11.4	2.3
DW(Max)	V	0.8	1.6	2.5	3.3	3.8	3.3	4.0
LL + I :	M+	120.4	107.3	82.9	48.1	24.0	48.1	9.5
	V	1.0	3.1	5.2	5.3	12.0	5.3	15.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	8.4	10.4	12.6	15.1	16.9	15.1	17.8
	M	102.0	94.1	76.7	46.4	23.7	46.4	9.7
Total :	M+	215.6	190.2	145.3	81.6	38.4	81.6	12.6
	V	3.7	8.6	13.4	16.3	24.5	16.3	29.0
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	11.1	15.8	20.9	26.1	29.4	26.1	31.2
	M	197.2	177.1	139.1	79.9	38.1	79.9	12.8

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 2, STRENGTH I**

**Shears: kips, Moments: kft**



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	22.5	8.4	22.5	44.0	59.3	68.4	71.5
(Max)	V	9.9	8.2	9.3	8.2	6.1	4.1	2.0	0.0
Self wt. :	M	0.0	16.2	6.0	16.2	31.6	42.7	49.3	51.5
(Min)	V	7.1	5.9	6.7	5.9	4.4	2.9	1.5	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.5	4.6	2.0	4.6	8.5	11.3	13.1	13.7
DC(Max)	V	1.8	1.5	1.7	1.5	1.1	0.8	0.4	0.0
DL-Comp :	M	0.3	3.3	1.4	3.3	6.1	8.2	9.4	9.8
DC(Min)	V	1.3	1.1	1.2	1.1	0.8	0.5	0.3	0.0
DL-Comp :	M	1.5	15.6	6.8	15.6	29.0	38.6	44.5	46.6
DW(Max)	V	6.1	5.1	5.8	5.1	3.8	2.6	1.3	0.1
DL-Comp :	M	0.7	6.8	2.9	6.8	12.6	16.7	19.3	20.2
DW(Min)	V	2.7	2.2	2.5	2.2	1.7	1.1	0.6	0.0
LL + I :	M+	9.4	96.2	42.1	96.2	174.0	229.0	259.6	268.3
	V	38.0	34.5	36.8	34.5	29.3	24.7	20.1	1.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	39.8	34.5	38.0	34.5	29.4	25.1	20.8	16.7
	M	9.9	96.2	42.8	96.2	169.1	219.4	244.9	246.5
Total :	M+	11.4	139.0	59.2	139.0	255.4	338.3	385.6	400.1



Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Total :	V	55.8	49.3	53.5	49.3	40.4	32.1	23.8	1.3
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	57.7	49.3	54.7	49.3	40.5	32.5	24.6	16.8
	M	11.9	139.0	59.9	139.0	250.5	328.6	370.9	378.2



Sheet #	16				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	68.4	59.3	44.0	22.5	8.4	22.5	0.0
(Max)	V	2.0	4.1	6.1	8.2	9.3	8.2	9.9
Self wt. :	M	49.3	42.7	31.6	16.2	6.0	16.2	0.0
(Min)	V	1.5	2.9	4.4	5.9	6.7	5.9	7.1
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	13.2	11.6	8.9	5.0	2.5	5.0	1.0
DC(Max)	V	0.4	0.7	1.1	1.5	1.7	1.5	1.8
DL-Comp :	M	9.5	8.3	6.4	3.6	1.8	3.6	0.7
DC(Min)	V	0.3	0.5	0.8	1.0	1.2	1.0	1.3
DL-Comp :	M	44.9	39.4	30.2	17.2	8.6	17.2	3.4
DW(Max)	V	1.2	2.5	3.7	5.0	5.6	5.0	6.0
DL-Comp :	M	19.5	17.1	13.1	7.4	3.7	7.4	1.5
DW(Min)	V	0.5	1.1	1.6	2.2	2.4	2.2	2.6
LL + I :	M+	263.4	234.6	181.3	105.2	52.5	105.2	20.8
	V	2.1	6.7	11.3	11.6	26.3	11.6	34.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	18.4	22.7	27.6	33.1	37.0	33.1	39.0
	M	223.1	205.9	167.8	101.4	51.8	101.4	21.2
Total :	M+	389.9	344.9	264.3	149.9	71.9	149.9	25.3



		Sheet #	17		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Total :	V	5.7	14.0	22.3	26.2	42.9	26.2	51.9
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	22.0	29.9	38.6	47.7	53.5	47.7	56.7
	M	349.6	316.2	250.8	146.1	71.3	146.1	25.6

**REACTIONS (kips), STRENGTH I**

Load Type		Left Support	Right Support
Self Wt.		9.9	9.9
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		20.0	19.6
DL-Comp.(DW)		61.5	60.1
Live		101.9	101.9
	Truck	85.5	85.5
	Lane	16.4	16.4
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 2, FATIGUE I**

**Shears: kips, Moments: kft**





Sheet #	18				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.0	10.4	4.5	10.4	19.3	25.8	29.7	31.1
DW(Max)	V	4.1	3.4	3.9	3.4	2.6	1.7	0.9	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	4.6	45.6	19.9	45.6	83.4	109.0	122.2	123.1
	V	18.4	16.6	17.8	16.6	14.5	12.5	10.4	8.1
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	18.4	16.6	17.8	16.6	14.5	12.5	10.4	8.3
	M	4.6	45.6	19.9	45.6	83.4	109.0	122.2	123.1
Total :	M+	6.0	77.6	32.7	77.6	144.7	191.2	217.1	222.3



Sheet #	19				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Total :	V	31.9	27.7	30.4	27.7	22.9	18.0	13.2	8.2
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	31.9	27.7	30.4	27.7	22.9	18.0	13.2	8.4
	M	6.0	77.6	32.7	77.6	144.7	191.2	217.1	222.3



Sheet #	20				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	29.9	26.3	20.1	11.4	5.7	11.4	2.3
DW(Max)	V	0.8	1.6	2.5	3.3	3.8	3.3	4.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	123.2	110.9	86.3	49.4	24.7	49.4	10.0
	V	6.0	4.0	1.9	0.1	9.9	0.1	15.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	9.8	11.8	13.9	15.9	17.4	15.9	18.1
	M	117.9	107.2	84.2	48.8	24.5	48.8	9.9
Total :	M+	218.4	193.9	148.7	82.9	39.1	82.9	13.1



Sheet #	21				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Total :	V	8.7	9.5	10.2	11.1	22.4	11.1	28.5
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	12.5	17.3	22.1	26.9	29.9	26.9	31.4
	M	213.1	190.2	146.6	82.3	38.9	82.3	13.0



Sheet #	22				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:1, Beam:2

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.31	2.34	84.38	0.6L	17.50	0.31	6.69	240.87	0.2L	5.50
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.31	1.76	-	0.5L	14.50	0.31	5.84	-	0.2L	5.50
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.31	3.04	109.38	0.6L	17.50	0.31	8.76	315.29	0.2L	5.50
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.31	2.28	-	0.5L	14.50	0.31	7.65	-	0.2L	5.50
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.31	2.95	106.32	0.6L	17.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.31	2.15	-	0.5L	14.50	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.31	2.95	106.32	0.6L	17.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.31	2.15	-	0.5L	14.50	-	-	-	-	-



		Sheet #	23		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.31	4.96	66.91	0.6L	17.50	0.31	16.11	217.47	0.2L	5.50
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.31	4.22	84.35	0.6L	17.50	0.31	12.73	254.52	0.2L	5.50
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.31	4.26	93.75	0.6L	17.50	0.31	12.39	272.57	Critical	1.53
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.31	2.50	68.03	0.5L	14.50	0.31	7.98	217.52	0.2L	5.50
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.31	2.36	82.25	0.6L	17.50	0.31	7.61	265.76	0.2L	5.50
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.31	2.31	82.12	0.5L	14.50	0.31	8.00	284.32	0.2L	5.50
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.31	2.19	87.66	0.5L	14.50	0.31	7.55	301.73	0.2L	5.50
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.31	2.12	88.85	0.5L	14.50	0.31	7.64	320.93	0.2L	5.50
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.31	4.91	66.25	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.31	4.25	85.03	0.6L	17.50	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.31	4.30	94.51	0.6L	17.50	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.31	2.44	66.51	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.31	2.34	81.64	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.31	2.26	80.29	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.31	2.15	85.71	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.31	2.07	86.87	0.5L	14.50	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	24				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

#### Legal Live Load Factors (Table 6A.4.4.2.3a-1)

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

#### Allowable Stresses (ksi)

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	0.90 x fy = 218.70
Design Operating	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	0.90 x fy = 218.70
Legal	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	-
Permit	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	0.90 x fy = 218.70



				Sheet #	25
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Consider shear reinf. across plane (FDOT alternative): No





Sheet #	26				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**RATING RESULTS**

Span:1, Beam:2

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.88	1.00	3.88	7.16	-	7.17	-
Critical : 1.5	-	-	-	6.73	-	-	-
0.1L : 2.5	3.88	1.00	3.88	6.96	-	7.17	-
0.2L : 5.5	3.16	1.00	3.16	6.69	-	4.44	-
0.3L : 8.5	2.52	1.00	2.52	8.17	-	3.30	10.79
0.4L : 11.5	2.37	1.00	2.37	10.57	-	2.99	7.18
0.5L : 14.5	2.59	1.00	2.59	14.91	-	3.17	7.70
0.6L : 17.5	2.34	1.00	2.34	11.58	-	2.95	6.99
0.7L : 20.5	2.46	1.00	2.46	8.76	-	3.22	9.98
0.8L : 23.5	3.03	1.00	3.03	7.08	-	4.26	-
0.9L : 26.5	3.53	1.00	3.53	7.29	-	6.53	-
Critical : 27.5	-	-	-	6.97	-	-	-
Transfer : 26.5	3.53	1.00	3.53	7.50	-	6.53	-
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	27				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.36	1.00	3.36	6.27	-	6.22	-
Critical : 1.5	-	-	-	5.88	-	-	-
0.1L : 2.5	3.36	1.00	3.36	6.10	-	6.22	-
0.2L : 5.5	2.69	1.00	2.69	5.84	-	3.79	43.95
0.3L : 8.5	2.05	1.00	2.05	6.86	-	2.68	6.44
0.4L : 11.5	1.79	1.00	1.79	8.36	-	2.25	4.32
0.5L : 14.5	1.76	1.00	1.76	10.63	-	2.15	3.92
0.6L : 17.5	1.76	1.00	1.76	9.50	-	2.22	4.20
0.7L : 20.5	1.99	1.00	1.99	7.61	-	2.61	6.05
0.8L : 23.5	2.58	1.00	2.58	6.22	-	3.62	27.72
0.9L : 26.5	3.06	1.00	3.06	6.36	-	5.66	83.44
Critical : 27.5	-	-	-	6.07	-	-	-
Transfer : 26.5	3.06	1.00	3.06	6.54	-	5.66	83.44
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



Sheet #	28				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	5.03	1.00	5.03	9.34
Critical : 1.5	-	-	-	8.76
0.1L : 2.5	5.03	1.00	5.03	9.08
0.2L : 5.5	4.10	1.00	4.10	8.76
0.3L : 8.5	3.27	1.00	3.27	10.70
0.4L : 11.5	3.07	1.00	3.07	13.85
0.5L : 14.5	3.36	1.00	3.36	19.51
0.6L : 17.5	3.04	1.00	3.04	15.16
0.7L : 20.5	3.20	1.00	3.20	11.48
0.8L : 23.5	3.93	1.00	3.93	9.27
0.9L : 26.5	4.58	1.00	4.58	9.51
Critical : 27.5	-	-	-	9.07
Transfer : 26.5	4.58	1.00	4.58	9.78
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.



		Sheet #	29		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.36	1.00	4.36	8.18
Critical : 1.5	-	-	-	7.66
0.1L : 2.5	4.36	1.00	4.36	7.96
0.2L : 5.5	3.49	1.00	3.49	7.65
0.3L : 8.5	2.65	1.00	2.65	9.00
0.4L : 11.5	2.32	1.00	2.32	10.98
0.5L : 14.5	2.28	1.00	2.28	13.96
0.6L : 17.5	2.28	1.00	2.28	12.47
0.7L : 20.5	2.58	1.00	2.58	9.99
0.8L : 23.5	3.34	1.00	3.34	8.14
0.9L : 26.5	3.96	1.00	3.96	8.30
Critical : 27.5	-	-	-	7.92
Transfer : 26.5	3.96	1.00	3.96	8.54
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.

**Span:1, Beam:2**

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	30				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.40	1.00	9.40	17.63	-	13.90
Critical : 1.5	-	-	-	16.72	-	-
0.1L : 2.5	9.40	1.00	9.40	17.13	-	13.90
0.2L : 5.5	7.42	1.00	7.42	16.11	-	8.34
0.3L : 8.5	5.67	1.00	5.67	18.87	-	5.93
0.4L : 11.5	5.00	1.00	5.00	22.87	-	5.04
0.5L : 14.5	5.02	1.00	5.02	28.94	-	4.91
0.6L : 17.5	4.96	1.00	4.96	24.35	-	5.00
0.7L : 20.5	5.56	1.00	5.56	19.88	-	5.82
0.8L : 23.5	7.15	1.00	7.15	16.84	-	8.04
0.9L : 26.5	8.62	1.00	8.62	17.80	-	12.76
Critical : 27.5	-	-	-	17.21	-	-
Transfer : 26.5	8.62	1.00	8.62	18.32	-	12.76
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	31				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.30	1.00	7.30	13.66	-	10.80
Critical : 1.5	-	-	-	12.88	-	-
0.1L : 2.5	7.30	1.00	7.30	13.27	-	10.80
0.2L : 5.5	5.89	1.00	5.89	12.73	-	6.62
0.3L : 8.5	4.64	1.00	4.64	15.34	-	4.85
0.4L : 11.5	4.26	1.00	4.26	19.41	-	4.30
0.5L : 14.5	4.57	1.00	4.57	26.28	-	4.46
0.6L : 17.5	4.22	1.00	4.22	21.03	-	4.25
0.7L : 20.5	4.53	1.00	4.53	16.35	-	4.74
0.8L : 23.5	5.66	1.00	5.66	13.41	-	6.36
0.9L : 26.5	6.66	1.00	6.66	13.87	-	9.87
Critical : 27.5	-	-	-	13.31	-	-
Transfer : 26.5	6.66	1.00	6.66	14.27	-	9.87
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	32		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.05	1.00	7.05	13.17	-	10.42
Critical : 1.5	-	-	-	12.39	-	-
0.1L : 2.5	7.05	1.00	7.05	12.80	-	10.42
0.2L : 5.5	5.74	1.00	5.74	12.40	-	6.46
0.3L : 8.5	4.59	1.00	4.59	15.18	-	4.80
0.4L : 11.5	4.31	1.00	4.31	19.64	-	4.35
0.5L : 14.5	4.72	1.00	4.72	27.62	-	4.61
0.6L : 17.5	4.26	1.00	4.26	21.48	-	4.30
0.7L : 20.5	4.48	1.00	4.48	16.27	-	4.69
0.8L : 23.5	5.51	1.00	5.51	13.12	-	6.19
0.9L : 26.5	6.42	1.00	6.42	13.42	-	9.50
Critical : 27.5	-	-	-	12.83	-	-
Transfer : 26.5	6.42	1.00	6.42	13.81	-	9.50
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	33				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.73	1.00	4.73	8.78	-	7.00
Critical : 1.5	-	-	-	8.35	-	-
0.1L : 2.5	4.73	1.00	4.73	8.53	-	7.00
0.2L : 5.5	3.74	1.00	3.74	7.98	-	4.21
0.3L : 8.5	2.87	1.00	2.87	9.35	-	3.00
0.4L : 11.5	2.54	1.00	2.54	11.37	-	2.56
0.5L : 14.5	2.50	1.00	2.50	14.49	-	2.44
0.6L : 17.5	2.52	1.00	2.52	13.27	-	2.54
0.7L : 20.5	2.81	1.00	2.81	10.61	-	2.94
0.8L : 23.5	3.59	1.00	3.59	8.88	-	4.04
0.9L : 26.5	4.30	1.00	4.30	9.35	-	6.37
Critical : 27.5	-	-	-	8.89	-	-
Transfer : 26.5	4.30	1.00	4.30	9.62	-	6.37
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	34				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.40	1.00	4.40	8.14	-	6.50
Critical : 1.5	-	-	-	7.68	-	-
0.1L : 2.5	4.40	1.00	4.40	7.92	-	6.50
0.2L : 5.5	3.58	1.00	3.58	7.61	-	4.02
0.3L : 8.5	2.75	1.00	2.75	9.27	-	2.88
0.4L : 11.5	2.37	1.00	2.37	11.95	-	2.39
0.5L : 14.5	2.39	1.00	2.39	15.75	-	2.34
0.6L : 17.5	2.36	1.00	2.36	13.03	-	2.37
0.7L : 20.5	2.70	1.00	2.70	9.92	-	2.83
0.8L : 23.5	3.41	1.00	3.41	8.04	-	3.83
0.9L : 26.5	3.96	1.00	3.96	8.28	-	5.87
Critical : 27.5	-	-	-	7.94	-	-
Transfer : 26.5	3.96	1.00	3.96	8.52	-	5.87
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	35				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.65	1.00	4.65	8.63	-	6.88
Critical : 1.5	-	-	-	8.15	-	-
0.1L : 2.5	4.65	1.00	4.65	8.39	-	6.88
0.2L : 5.5	3.53	1.00	3.53	8.00	-	3.97
0.3L : 8.5	2.67	1.00	2.67	9.62	-	2.79
0.4L : 11.5	2.37	1.00	2.37	12.16	-	2.39
0.5L : 14.5	2.31	1.00	2.31	15.73	-	2.26
0.6L : 17.5	2.35	1.00	2.35	13.15	-	2.37
0.7L : 20.5	2.60	1.00	2.60	10.24	-	2.72
0.8L : 23.5	3.38	1.00	3.38	8.42	-	3.80
0.9L : 26.5	4.20	1.00	4.20	8.76	-	6.23
Critical : 27.5	-	-	-	8.42	-	-
Transfer : 26.5	4.20	1.00	4.20	9.01	-	6.23
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	36				
Job #	171002272				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
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File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.36	1.00	4.36	8.06	-	6.44
Critical : 1.5	-	-	-	7.62	-	-
0.1L : 2.5	4.36	1.00	4.36	7.84	-	6.44
0.2L : 5.5	3.37	1.00	3.37	7.55	-	3.78
0.3L : 8.5	2.57	1.00	2.57	9.23	-	2.69
0.4L : 11.5	2.27	1.00	2.27	11.45	-	2.29
0.5L : 14.5	2.19	1.00	2.19	14.95	-	2.15
0.6L : 17.5	2.24	1.00	2.24	12.41	-	2.26
0.7L : 20.5	2.52	1.00	2.52	9.89	-	2.64
0.8L : 23.5	3.23	1.00	3.23	8.08	-	3.63
0.9L : 26.5	3.96	1.00	3.96	8.29	-	5.86
Critical : 27.5	-	-	-	7.93	-	-
Transfer : 26.5	3.96	1.00	3.96	8.53	-	5.86
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	37		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.44	1.00	4.44	8.22	-	6.57
Critical : 1.5	-	-	-	7.79	-	-
0.1L : 2.5	4.44	1.00	4.44	8.00	-	6.57
0.2L : 5.5	3.40	1.00	3.40	7.64	-	3.82
0.3L : 8.5	2.54	1.00	2.54	9.23	-	2.65
0.4L : 11.5	2.15	1.00	2.15	11.45	-	2.16
0.5L : 14.5	2.12	1.00	2.12	14.95	-	2.07
0.6L : 17.5	2.12	1.00	2.12	12.41	-	2.14
0.7L : 20.5	2.48	1.00	2.48	9.89	-	2.59
0.8L : 23.5	3.26	1.00	3.26	8.15	-	3.67
0.9L : 26.5	4.04	1.00	4.04	8.43	-	5.97
Critical : 27.5	-	-	-	8.09	-	-
Transfer : 26.5	4.04	1.00	4.04	8.67	-	5.97
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:1, Beam:2

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.31	2.34	84.38	0.6L	17.50	0.31	6.69	240.87	0.2L	5.50
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.31	1.76	-	0.5L	14.50	0.31	5.84	-	0.2L	5.50
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.31	3.04	109.38	0.6L	17.50	0.31	8.76	315.29	0.2L	5.50
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.31	2.28	-	0.5L	14.50	0.31	7.65	-	0.2L	5.50
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.31	2.95	106.32	0.6L	17.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.31	2.15	-	0.5L	14.50	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.31	2.95	106.32	0.6L	17.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.31	2.15	-	0.5L	14.50	-	-	-	-	-



Sheet #	2				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.31	2.82	93.08	0.5L	14.50	0.31	9.06	299.05	Critical	1.53
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.31	2.70	89.23	0.5L	14.50	0.31	8.47	280.05	Critical	1.53
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.31	2.43	101.07	0.5L	14.50	0.31	8.03	334.15	0.2L	5.50
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.31	2.51	105.22	0.6L	17.50	0.31	7.73	324.75	Critical	1.53
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.31	2.39	100.52	0.5L	14.50	0.31	7.54	316.78	Critical	1.53
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.31	2.46	105.86	0.5L	14.50	0.31	7.32	314.64	Critical	1.53
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.31	2.38	106.91	0.5L	14.50	0.31	7.85	353.10	0.2L	5.50
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.31	2.23	100.18	0.6L	17.50	0.31	6.88	309.73	Critical	1.53
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.31	2.76	91.01	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.31	2.64	87.24	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.31	2.38	98.82	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.31	2.46	103.17	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.31	2.34	98.29	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.31	2.41	103.50	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.31	2.32	104.53	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.31	2.24	100.99	0.6L	17.50	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	3				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
 For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80



Sheet #	4				
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**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	-
Permit	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No





Sheet #	5				
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### RATING RESULTS

Span:1, Beam:2

#### A) Design Live Load Rating

#### Inventory Rating Level

Shear and Moment RF's are for Strength I Limit State

Tension Stress RF's are for Service III Limit State

Prestress tendon RF is for Service I Limit State

#### HS20 Truck Positive Live Load

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.88	1.00	3.88	7.16	-	7.17	-
Critical : 1.5	-	-	-	6.73	-	-	-
0.1L : 2.5	3.88	1.00	3.88	6.96	-	7.17	-
0.2L : 5.5	3.16	1.00	3.16	6.69	-	4.44	-
0.3L : 8.5	2.52	1.00	2.52	8.17	-	3.30	10.79
0.4L : 11.5	2.37	1.00	2.37	10.57	-	2.99	7.18
0.5L : 14.5	2.59	1.00	2.59	14.91	-	3.17	7.70
0.6L : 17.5	2.34	1.00	2.34	11.58	-	2.95	6.99
0.7L : 20.5	2.46	1.00	2.46	8.76	-	3.22	9.98
0.8L : 23.5	3.03	1.00	3.03	7.08	-	4.26	-
0.9L : 26.5	3.53	1.00	3.53	7.29	-	6.53	-
Critical : 27.5	-	-	-	6.97	-	-	-
Transfer : 26.5	3.53	1.00	3.53	7.50	-	6.53	-
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	6				
Job #	171002272				
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**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.36	1.00	3.36	6.27	-	6.22	-
Critical : 1.5	-	-	-	5.88	-	-	-
0.1L : 2.5	3.36	1.00	3.36	6.10	-	6.22	-
0.2L : 5.5	2.69	1.00	2.69	5.84	-	3.79	43.95
0.3L : 8.5	2.05	1.00	2.05	6.86	-	2.68	6.44
0.4L : 11.5	1.79	1.00	1.79	8.36	-	2.25	4.32
0.5L : 14.5	1.76	1.00	1.76	10.63	-	2.15	3.92
0.6L : 17.5	1.76	1.00	1.76	9.50	-	2.22	4.20
0.7L : 20.5	1.99	1.00	1.99	7.61	-	2.61	6.05
0.8L : 23.5	2.58	1.00	2.58	6.22	-	3.62	27.72
0.9L : 26.5	3.06	1.00	3.06	6.36	-	5.66	83.44
Critical : 27.5	-	-	-	6.07	-	-	-
Transfer : 26.5	3.06	1.00	3.06	6.54	-	5.66	83.44
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



Sheet #	7				
Job #	171002272				
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File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	5.03	1.00	5.03	9.34
Critical : 1.5	-	-	-	8.76
0.1L : 2.5	5.03	1.00	5.03	9.08
0.2L : 5.5	4.10	1.00	4.10	8.76
0.3L : 8.5	3.27	1.00	3.27	10.70
0.4L : 11.5	3.07	1.00	3.07	13.85
0.5L : 14.5	3.36	1.00	3.36	19.51
0.6L : 17.5	3.04	1.00	3.04	15.16
0.7L : 20.5	3.20	1.00	3.20	11.48
0.8L : 23.5	3.93	1.00	3.93	9.27
0.9L : 26.5	4.58	1.00	4.58	9.51
Critical : 27.5	-	-	-	9.07
Transfer : 26.5	4.58	1.00	4.58	9.78
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.



Sheet #	8				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.36	1.00	4.36	8.18
Critical : 1.5	-	-	-	7.66
0.1L : 2.5	4.36	1.00	4.36	7.96
0.2L : 5.5	3.49	1.00	3.49	7.65
0.3L : 8.5	2.65	1.00	2.65	9.00
0.4L : 11.5	2.32	1.00	2.32	10.98
0.5L : 14.5	2.28	1.00	2.28	13.96
0.6L : 17.5	2.28	1.00	2.28	12.47
0.7L : 20.5	2.58	1.00	2.58	9.99
0.8L : 23.5	3.34	1.00	3.34	8.14
0.9L : 26.5	3.96	1.00	3.96	8.30
Critical : 27.5	-	-	-	7.92
Transfer : 26.5	3.96	1.00	3.96	8.54
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.

Span:1, Beam:2

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	9				
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**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	5.19	1.00	5.19	9.66	-	7.68
Critical : 1.5	-	-	-	9.06	-	-
0.1L : 2.5	5.19	1.00	5.19	9.39	-	7.68
0.2L : 5.5	4.31	1.00	4.31	9.24	-	4.85
0.3L : 8.5	3.54	1.00	3.54	11.62	-	3.70
0.4L : 11.5	3.00	1.00	3.00	15.74	-	3.02
0.5L : 14.5	2.82	1.00	2.82	20.72	-	2.76
0.6L : 17.5	2.96	1.00	2.96	20.46	-	2.98
0.7L : 20.5	3.48	1.00	3.48	15.60	-	3.64
0.8L : 23.5	4.15	1.00	4.15	11.60	-	4.67
0.9L : 26.5	4.73	1.00	4.73	11.28	-	7.01
Critical : 27.5	-	-	-	10.23	-	-
Transfer : 26.5	4.73	1.00	4.73	11.61	-	7.01
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	10				
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**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.85	1.00	4.85	9.00	-	7.17
Critical : 1.5	-	-	-	8.47	-	-
0.1L : 2.5	4.85	1.00	4.85	8.75	-	7.17
0.2L : 5.5	3.98	1.00	3.98	8.50	-	4.47
0.3L : 8.5	3.15	1.00	3.15	10.31	-	3.30
0.4L : 11.5	2.80	1.00	2.80	12.78	-	2.82
0.5L : 14.5	2.70	1.00	2.70	16.76	-	2.64
0.6L : 17.5	2.77	1.00	2.77	14.49	-	2.79
0.7L : 20.5	3.07	1.00	3.07	11.72	-	3.21
0.8L : 23.5	3.80	1.00	3.80	9.62	-	4.27
0.9L : 26.5	4.39	1.00	4.39	9.70	-	6.49
Critical : 27.5	-	-	-	9.09	-	-
Transfer : 26.5	4.39	1.00	4.39	9.98	-	6.49
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	11				
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**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.67	1.00	4.67	8.67	-	6.91
Critical : 1.5	-	-	-	8.19	-	-
0.1L : 2.5	4.67	1.00	4.67	8.43	-	6.91
0.2L : 5.5	3.64	1.00	3.64	8.03	-	4.09
0.3L : 8.5	2.76	1.00	2.76	9.66	-	2.89
0.4L : 11.5	2.48	1.00	2.48	12.21	-	2.50
0.5L : 14.5	2.43	1.00	2.43	15.79	-	2.38
0.6L : 17.5	2.46	1.00	2.46	13.20	-	2.48
0.7L : 20.5	2.70	1.00	2.70	10.28	-	2.82
0.8L : 23.5	3.48	1.00	3.48	8.45	-	3.92
0.9L : 26.5	4.22	1.00	4.22	8.63	-	6.25
Critical : 27.5	-	-	-	8.36	-	-
Transfer : 26.5	4.22	1.00	4.22	8.87	-	6.25
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.44	1.00	4.44	8.22	-	6.56
Critical : 1.5	-	-	-	7.73	-	-
0.1L : 2.5	4.44	1.00	4.44	7.99	-	6.56
0.2L : 5.5	3.58	1.00	3.58	7.82	-	4.02
0.3L : 8.5	2.86	1.00	2.86	9.78	-	2.99
0.4L : 11.5	2.51	1.00	2.51	12.67	-	2.53
0.5L : 14.5	2.51	1.00	2.51	16.62	-	2.46
0.6L : 17.5	2.51	1.00	2.51	13.78	-	2.53
0.7L : 20.5	2.80	1.00	2.80	10.55	-	2.93
0.8L : 23.5	3.44	1.00	3.44	8.39	-	3.87
0.9L : 26.5	4.04	1.00	4.04	8.47	-	5.98
Critical : 27.5	-	-	-	8.06	-	-
Transfer : 26.5	4.04	1.00	4.04	8.71	-	5.98
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	13				
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**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.34	1.00	4.34	8.03	-	6.41
Critical : 1.5	-	-	-	7.54	-	-
0.1L : 2.5	4.34	1.00	4.34	7.81	-	6.41
0.2L : 5.5	3.58	1.00	3.58	7.61	-	4.02
0.3L : 8.5	2.84	1.00	2.84	9.26	-	2.97
0.4L : 11.5	2.45	1.00	2.45	11.48	-	2.47
0.5L : 14.5	2.39	1.00	2.39	14.99	-	2.34
0.6L : 17.5	2.44	1.00	2.44	12.45	-	2.46
0.7L : 20.5	2.79	1.00	2.79	9.92	-	2.91
0.8L : 23.5	3.44	1.00	3.44	8.13	-	3.86
0.9L : 26.5	3.95	1.00	3.95	8.31	-	5.84
Critical : 27.5	-	-	-	7.89	-	-
Transfer : 26.5	3.95	1.00	3.95	8.55	-	5.84
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.23	1.00	4.23	7.83	-	6.26
Critical : 1.5	-	-	-	7.32	-	-
0.1L : 2.5	4.23	1.00	4.23	7.61	-	6.26
0.2L : 5.5	3.56	1.00	3.56	7.57	-	4.00
0.3L : 8.5	2.76	1.00	2.76	9.44	-	2.89
0.4L : 11.5	2.49	1.00	2.49	11.95	-	2.51
0.5L : 14.5	2.46	1.00	2.46	16.20	-	2.41
0.6L : 17.5	2.48	1.00	2.48	14.28	-	2.50
0.7L : 20.5	2.72	1.00	2.72	10.86	-	2.84
0.8L : 23.5	3.39	1.00	3.39	8.77	-	3.81
0.9L : 26.5	3.82	1.00	3.82	8.56	-	5.66
Critical : 27.5	-	-	-	7.93	-	-
Transfer : 26.5	3.82	1.00	3.82	8.81	-	5.66
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	15				
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File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.55	1.00	4.55	8.44	-	6.74
Critical : 1.5	-	-	-	7.87	-	-
0.1L : 2.5	4.55	1.00	4.55	8.21	-	6.74
0.2L : 5.5	3.68	1.00	3.68	7.85	-	4.14
0.3L : 8.5	2.88	1.00	2.88	9.44	-	3.01
0.4L : 11.5	2.46	1.00	2.46	11.95	-	2.48
0.5L : 14.5	2.38	1.00	2.38	16.20	-	2.32
0.6L : 17.5	2.42	1.00	2.42	13.16	-	2.44
0.7L : 20.5	2.82	1.00	2.82	10.34	-	2.94
0.8L : 23.5	3.51	1.00	3.51	8.36	-	3.95
0.9L : 26.5	4.11	1.00	4.11	8.42	-	6.09
Critical : 27.5	-	-	-	8.04	-	-
Transfer : 26.5	4.11	1.00	4.11	8.66	-	6.09
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	16				
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File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.98	1.00	3.98	7.36	-	5.89
Critical : 1.5	-	-	-	6.88	-	-
0.1L : 2.5	3.98	1.00	3.98	7.15	-	5.89
0.2L : 5.5	3.30	1.00	3.30	7.01	-	3.71
0.3L : 8.5	2.54	1.00	2.54	8.75	-	2.65
0.4L : 11.5	2.24	1.00	2.24	11.73	-	2.26
0.5L : 14.5	2.30	1.00	2.30	16.13	-	2.25
0.6L : 17.5	2.23	1.00	2.23	13.01	-	2.24
0.7L : 20.5	2.49	1.00	2.49	9.45	-	2.61
0.8L : 23.5	3.15	1.00	3.15	7.45	-	3.54
0.9L : 26.5	3.59	1.00	3.59	7.38	-	5.32
Critical : 27.5	-	-	-	7.06	-	-
Transfer : 26.5	3.59	1.00	3.59	7.59	-	5.32
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
 CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
 PSSiT - Prestress Steel Tension.



		Sheet #		1	
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**PROPERTIES**

**Span:1, Beam:11**

**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Flng width	Top	36.000	in	Bot	36.000	in
	thick	Top	4.500	in	Bot	4.500*
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	3.00/ 1.50	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Exterior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**



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Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)

**GENERAL LOAD DATA:**

**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	30.000	ft
Release length	30.000	ft
Design length	29.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**

Type g



		Sheet #	3		
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Live Moment	(2+ lanes loaded)	0.277	(Calculated)
Live Moment	(1 lane loaded)	0.334	(Calculated)
Live Shear	(2+ lanes loaded)	0.277	(Calculated)
Live Shear	(1 lane loaded)	0.366	(Calculated)

The LL distribution computation is using the effective slab depth ( $t_s = 0.00\text{in}$ ).  
Include sacrificial deck thick in  $t_s$ : NO

Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.060	(Manual input)

Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90

**SECTION PROPERTIES:**



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	PRECAST		COMPOSITE		
Area	522.3	in2	522.3	in2	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (Ixx)	25390	in4	25390	in4	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (Iyy)	62796.0	in4			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using Ect/Ec = 1.0000

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only

Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 2.50	0.20L 5.50	0.30L 8.50	0.40L 11.50	Midspan 14.50
Precast:(At Release, using	Ec =	4266.2ksi)							
Area,	in2	523.7	531.8	526.3	531.8	533.4	533.4	533.4	533.4
Yb,	in	10.39	10.33	10.38	10.33	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25410	25546	25443	25546	25634	25634	25634	25634
Composite:(At Final, using	Ec =	4592.2ksi)							
Area,	in2	523.6	531.0	525.9	531.0	532.5	532.5	532.5	532.5
Yb,	in	10.39	10.34	10.38	10.34	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25408	25533	25439	25533	25614	25614	25614	25614





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**Span:1, Beam:11**

**STRESS LIMITS (Art. 5.9.2):**

**STRESS LIMITS AT RELEASE BEFORE LOSSES:**

		PRECAST	
Strength		4.00	ksi
Elasticity		4266.2	ksi
Max comp		2.60	ksi
Max tens		-0.19	ksi
Max tens, w/reinf		-0.48	ksi

**STRESS LIMITS AT FINAL AFTER LOSSES:**

	PRECAST		DECK	
Strength	5.00	ksi	5.00	ksi
Elasticity	4592.23	ksi	4592.23	ksi

**STRESS LIMITS AT FINAL 1 (P/S + DL + LL):**

	PRECAST		DECK	
Max comp	3.00	ksi	3.00	ksi

**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	PRECAST		DECK	
Max comp	2.25	ksi	2.25	ksi

**FATIGUE | STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**



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	<b>PRECAST</b>	<b>DECK</b>	
Max comp	2.00 ksi	-	ksi

**SERVICE III (Tension):**

	<b>PRECAST</b>	<b>DECK</b>	
Max tens	-0.42 ksi	-0.42	ksi

**Span:1, Beam:11**

**PRESTRESSED STEEL:**

9 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 5.67 in):**

7 @ 2.000 in	2 @ 18.500 in		
--------------	---------------	--	--

**SHIELDING AND REDUCED INITIAL PULLS:**

Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	2.000	in	2.000	in	2.00	ft	0.00	ft	6.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK



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Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	1.953	in <sup>2</sup>
Trans. Len,bonded	3.000	ft
Trans. Len,debonded	3.000	ft
Dev. Len, bonded	6.503	ft
Dev. Len, debonded	13.006	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	395.5	kips
Beam Shrtng (PL/AE)	0.063	in

**Span:1, Beam:11**  
**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
270.000	740	199.800	4.030	16321.908	171.997	40.838

**Span:1, Beam:11**  
**REINFORCING STEEL:**

Tension	steel:	
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**



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# legs	Size	fy (ksi)	Area (in2)	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.2083	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	24.5000	No
4	US#4[M13]	60.0	0.80	9.00	24.5000	29.9167	No
4	US#5[M16]	60.0	1.24	1.00	29.9167	30.0000	No

**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	30.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	1.9530	in2
Ycg	5.67	in
P_init	395.5	kips
Ecc	4.74	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4266	ksi



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### AASHTO LOSSES

Elastic Shortening \*\* 6.12 ksi (Eq 5.9.5.2.3a-1), (fcgp= 0.917 ksi)

Elastic Gains		Gains	Adjustment
due to Precast Loads		-0.00 ksi	0.00 ksi
due to Composite Loads		-0.40 ksi	0.00 ksi
due to Live Loads		-1.80 ksi	0.00 ksi

### Time Dependent Losses (Approximate Method (Art.5.9.3.3))

	Initial	Final	
Steel relaxation	0.00 ksi	2.40 ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00 ksi	11.40 ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00 ksi	7.19 ksi	(Eq 5.9.3.3-1)
Sub-total	6.12 ksi	18.79 ksi	( 9.28 %)
Total Prestress Losses		24.91 ksi	(12.30 %)

### Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK  
 initial fpe = 177.6 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.

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**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 11, SERVICE I**  
**Shears: kips, Moments: kft**



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		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.6	6.2	2.7	6.2	11.6	15.5	17.8	18.6
DW(Max)	V	2.5	2.0	2.3	2.0	1.5	1.0	0.5	0.0
LL + I :	M+	5.9	59.9	26.2	59.9	108.2	142.5	161.5	166.9
	V	25.9	23.6	25.1	23.6	20.0	16.9	13.7	0.8
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	27.2	23.6	26.0	23.6	20.1	17.1	14.2	11.4
	M	6.2	59.9	26.6	59.9	105.2	136.5	152.3	153.4
Total :	M+	6.9	87.8	37.2	87.8	161.8	214.4	244.5	253.7
	V	37.7	33.4	36.2	33.4	27.3	21.8	16.2	0.9
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	39.0	33.4	37.0	33.4	27.4	22.0	16.7	11.5
	M	7.2	87.8	37.6	87.8	158.7	208.4	235.3	240.1



		Sheet #	12		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	18.0	15.8	12.1	6.9	3.4	6.9	1.4
DW(Max)	V	0.5	1.0	1.5	2.0	2.3	2.0	2.4
LL + I :	M+	163.9	146.0	112.8	65.4	32.7	65.4	13.0
	V	1.5	4.6	7.7	7.9	18.0	7.9	23.4
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	12.6	15.5	18.9	22.6	25.3	22.6	26.7
	M	138.8	128.1	104.4	63.1	32.2	63.1	13.2
Total :	M+	247.1	218.4	167.1	94.3	44.8	94.3	15.2
	V	3.9	9.4	15.0	17.6	29.0	17.6	35.1
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	15.0	20.3	26.1	32.3	36.2	32.3	38.4
	M	222.0	200.5	158.7	92.0	44.4	92.0	15.4

REACTIONS (kips), SERVICE I





				Sheet #	13
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Load Type		Left Support	Right Support
Self Wt.		7.9	7.9
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		16.0	15.7
DL-Comp.(DW)		41.0	40.1
Live		58.2	58.2
	Truck	48.8	48.8
	Lane	9.4	9.4
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 11, SERVICE III**

**Shears: kips, Moments: kft**



		Sheet #	14		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.6	6.2	2.7	6.2	11.6	15.5	17.8	18.6
DW(Max)	V	2.5	2.0	2.3	2.0	1.5	1.0	0.5	0.0
LL + I :	M+	4.7	47.9	21.0	47.9	86.6	114.0	129.2	133.6
	V	20.8	18.9	20.1	18.9	16.0	13.5	11.0	0.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	21.8	18.9	20.8	18.9	16.1	13.7	11.4	9.1
	M	4.9	47.9	21.3	47.9	84.1	109.2	121.9	122.7
Total :	M+	5.7	75.8	31.9	75.8	140.2	185.9	212.2	220.3
	V	32.5	28.6	31.2	28.6	23.3	18.4	13.5	0.7
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	33.6	28.6	31.8	28.6	23.4	18.6	13.9	9.2
	M	5.9	75.8	32.3	75.8	137.7	181.1	204.9	209.4



		Sheet #	15		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	18.0	15.8	12.1	6.9	3.4	6.9	1.4
DW(Max)	V	0.5	1.0	1.5	2.0	2.3	2.0	2.4
LL + I :	M+	131.1	116.8	90.2	52.3	26.1	52.3	10.4
	V	1.2	3.7	6.2	6.3	14.4	6.3	18.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	10.1	12.4	15.1	18.1	20.2	18.1	21.3
	M	111.0	102.5	83.5	50.5	25.8	50.5	10.5
Total :	M+	214.4	189.2	144.6	81.3	38.3	81.3	12.6
	V	3.6	8.5	13.4	16.0	25.4	16.0	30.4
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	12.5	17.2	22.4	27.8	31.2	27.8	33.0
	M	194.3	174.9	137.8	79.4	37.9	79.4	12.7

				Sheet #	16
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 11, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	17				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	22.5	8.4	22.5	44.0	59.3	68.4	71.5
(Max)	V	9.9	8.2	9.3	8.2	6.1	4.1	2.0	0.0
Self wt. :	M	0.0	16.2	6.0	16.2	31.6	42.7	49.3	51.5
(Min)	V	7.1	5.9	6.7	5.9	4.4	2.9	1.5	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.5	4.6	2.0	4.6	8.5	11.3	13.1	13.7
DC(Max)	V	1.8	1.5	1.7	1.5	1.1	0.8	0.4	0.0
DL-Comp :	M	0.3	3.3	1.4	3.3	6.1	8.2	9.4	9.8
DC(Min)	V	1.3	1.1	1.2	1.1	0.8	0.5	0.3	0.0
DL-Comp :	M	0.9	9.4	4.1	9.4	17.4	23.2	26.7	27.9
DW(Max)	V	3.7	3.1	3.5	3.1	2.3	1.5	0.8	0.0
DL-Comp :	M	0.4	4.1	1.8	4.1	7.5	10.0	11.6	12.1
DW(Min)	V	1.6	1.3	1.5	1.3	1.0	0.7	0.3	0.0
LL + I :	M+	10.3	104.8	45.8	104.8	189.4	249.4	282.7	292.2
	V	45.4	41.3	44.0	41.3	35.0	29.5	24.0	1.5
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



		Sheet #	18		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	47.6	41.3	45.4	41.3	35.2	30.0	24.9	20.0
	M	10.8	104.8	46.6	104.8	184.1	238.8	266.6	268.4
Total :	M+	11.7	141.2	60.2	141.2	259.3	343.1	390.9	405.3
	V	60.7	54.0	58.4	54.0	44.6	35.9	27.2	1.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	63.0	54.0	59.9	54.0	44.7	36.4	28.1	20.0
	M	12.2	141.2	61.0	141.2	253.9	332.6	374.8	381.5



		Sheet # 19	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed: JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date: Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked: MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date: Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	68.4	59.3	44.0	22.5	8.4	22.5	0.0
(Max)	V	2.0	4.1	6.1	8.2	9.3	8.2	9.9
Self wt. :	M	49.3	42.7	31.6	16.2	6.0	16.2	0.0
(Min)	V	1.5	2.9	4.4	5.9	6.7	5.9	7.1
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	13.2	11.6	8.9	5.0	2.5	5.0	1.0
DC(Max)	V	0.4	0.7	1.1	1.5	1.7	1.5	1.8
DL-Comp :	M	9.5	8.3	6.4	3.6	1.8	3.6	0.7
DC(Min)	V	0.3	0.5	0.8	1.0	1.2	1.0	1.3
DL-Comp :	M	26.9	23.7	18.1	10.3	5.1	10.3	2.1
DW(Max)	V	0.7	1.5	2.2	3.0	3.4	3.0	3.6
DL-Comp :	M	11.7	10.2	7.8	4.5	2.2	4.5	0.9
DW(Min)	V	0.3	0.6	1.0	1.3	1.5	1.3	1.6
LL + I :	M+	286.8	255.4	197.4	114.5	57.2	114.5	22.7
	V	2.6	8.1	13.6	13.9	31.5	13.9	41.0
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0



		Sheet #	20		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	22.1	27.1	33.1	39.6	44.2	39.6	46.7
	M	242.9	224.2	182.7	110.4	56.4	110.4	23.0
Total :	M+	395.4	349.9	268.3	152.4	73.2	152.4	25.8
	V	5.7	14.3	23.0	26.5	45.8	26.5	56.2
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	25.2	33.4	42.5	52.2	58.5	52.2	61.9
	M	351.4	318.7	253.6	148.3	72.4	148.3	26.1

#### REACTIONS (kips), STRENGTH I

Load Type		Left Support	Right Support
Self Wt.		9.9	9.9
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		20.0	19.6
DL-Comp.(DW)		61.5	60.1
Live		101.9	101.9
	Truck	85.5	85.5
	Lane	16.4	16.4
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.



				Sheet #	21
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 1, Beam : 11, FATIGUE I**  
**Shears: kips, Moments: kft**



		Sheet #	22		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.50	5.50	8.50	11.50	14.50
Self wt. :	M	0.0	18.0	6.7	18.0	35.2	47.4	54.7	57.2
(Max)	V	7.9	6.5	7.4	6.5	4.9	3.3	1.6	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.4	3.7	1.6	3.7	6.8	9.1	10.5	10.9
DC(Max)	V	1.4	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.6	6.2	2.7	6.2	11.6	15.5	17.8	18.6
DW(Max)	V	2.5	2.0	2.3	2.0	1.5	1.0	0.5	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	5.0	49.6	21.7	49.6	90.8	118.6	133.0	134.0
	V	22.0	19.8	21.3	19.8	17.4	14.9	12.4	9.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



		Sheet #	23		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	22.0	19.8	21.3	19.8	17.4	14.9	12.4	10.0
	M	5.0	49.6	21.7	49.6	90.8	118.6	133.0	134.0
Total :	M+	6.0	77.5	32.6	77.5	144.4	190.6	216.0	220.8
	V	33.8	29.6	32.3	29.6	24.7	19.8	14.9	9.7
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	33.8	29.6	32.3	29.6	24.7	19.8	14.9	10.0
	M	6.0	77.5	32.6	77.5	144.4	190.6	216.0	220.8



		Sheet #	24		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	17.50	20.50	23.50	26.50	28.13	26.50	29.00
Self wt. :	M	54.7	47.4	35.2	18.0	6.7	18.0	0.0
(Max)	V	1.6	3.3	4.9	6.5	7.4	6.5	7.9
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	10.5	9.3	7.1	4.0	2.0	4.0	0.8
DC(Max)	V	0.3	0.6	0.9	1.2	1.3	1.2	1.4
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	18.0	15.8	12.1	6.9	3.4	6.9	1.4
DW(Max)	V	0.5	1.0	1.5	2.0	2.3	2.0	2.4
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	134.1	120.8	94.0	53.8	26.8	53.8	10.8
	V	7.2	4.8	2.3	0.1	11.9	0.1	18.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0



		Sheet #	25		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	11.7	14.1	16.6	19.1	20.8	19.1	21.7
Total :	M	128.4	116.7	91.6	53.1	26.7	53.1	10.8
	M+	217.4	193.2	148.3	82.7	39.0	82.7	13.0
Total :	V	9.6	9.6	9.6	9.8	22.9	9.8	29.9
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	14.1	19.0	23.9	28.7	31.8	28.7	33.4
	M	211.6	189.2	146.0	82.1	38.8	82.1	13.0



		Sheet # 26			
				Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:1, Beam:11

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.33	2.24	80.50	0.6L	17.50	0.37	5.64	202.91	0.2L	5.50
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.33	1.68	-	0.5L	14.50	0.37	4.91	-	0.2L	5.50
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.33	2.90	104.36	0.6L	17.50	0.37	7.38	265.85	0.2L	5.50
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.33	2.17	-	0.5L	14.50	0.37	6.45	-	0.2L	5.50
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.33	2.83	102.03	0.6L	17.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.33	2.06	-	0.5L	14.50	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.33	2.83	102.03	0.6L	17.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.33	2.06	-	0.5L	14.50	-	-	-	-	-



		Sheet # 27	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed: JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date: Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked: MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date: Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.33	4.73	63.83	0.6L	17.50	0.37	13.60	183.65	0.2L	5.50
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.33	4.02	80.47	0.6L	17.50	0.37	10.74	214.83	0.2L	5.50
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.33	4.07	89.45	0.6L	17.50	0.37	10.46	230.21	Critical	1.53
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.33	2.38	64.95	0.5L	14.50	0.37	6.73	183.35	0.2L	5.50
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.33	2.25	78.48	0.6L	17.50	0.37	6.41	223.98	0.2L	5.50
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.33	2.21	78.41	0.5L	14.50	0.37	6.74	239.66	0.2L	5.50
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.33	2.10	83.70	0.5L	14.50	0.37	6.37	254.29	0.2L	5.50
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.33	2.02	84.84	0.5L	14.50	0.37	6.44	270.49	0.2L	5.50
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.33	4.72	63.72	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.33	4.08	81.60	0.6L	17.50	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.33	4.12	90.70	0.6L	17.50	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.33	2.35	63.97	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.33	2.25	78.53	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.33	2.17	77.23	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.33	2.06	82.44	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.33	1.99	83.56	0.5L	14.50	-	-	-	-	-



		Sheet #	28	
		Job #	171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-



				Sheet #	29
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Design Operating	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Legal	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	-
Permit	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70

Consider shear reinf. across plane (FDOT alternative): No



		Sheet #	30		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**RATING RESULTS**

**Span:1, Beam:11**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.63	1.00	3.63	6.03	-	6.68	-
Critical : 1.5	-	-	-	5.67	-	-	-
0.1L : 2.5	3.63	1.00	3.63	5.87	-	6.68	-
0.2L : 5.5	2.97	1.00	2.97	5.64	-	4.18	-
0.3L : 8.5	2.39	1.00	2.39	6.86	-	3.14	11.05
0.4L : 11.5	2.26	1.00	2.26	8.86	-	2.87	7.45
0.5L : 14.5	2.47	1.00	2.47	12.47	-	3.05	8.21
0.6L : 17.5	2.24	1.00	2.24	9.70	-	2.83	7.24
0.7L : 20.5	2.34	1.00	2.34	7.36	-	3.07	10.21
0.8L : 23.5	2.86	1.00	2.86	5.96	-	4.02	-
0.9L : 26.5	3.31	1.00	3.31	6.15	-	6.10	-
Critical : 27.5	-	-	-	5.88	-	-	-
Transfer : 26.5	3.31	1.00	3.31	6.32	-	6.10	-
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #		31	
		Job #		171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.15	1.00	3.15	5.28	-	5.80	-
Critical : 1.5	-	-	-	4.96	-	-	-
0.1L : 2.5	3.15	1.00	3.15	5.14	-	5.80	-
0.2L : 5.5	2.54	1.00	2.54	4.91	-	3.57	39.22
0.3L : 8.5	1.94	1.00	1.94	5.76	-	2.55	6.30
0.4L : 11.5	1.71	1.00	1.71	7.00	-	2.16	4.26
0.5L : 14.5	1.68	1.00	1.68	8.88	-	2.06	3.87
0.6L : 17.5	1.68	1.00	1.68	7.96	-	2.13	4.14
0.7L : 20.5	1.89	1.00	1.89	6.39	-	2.48	5.93
0.8L : 23.5	2.43	1.00	2.43	5.23	-	3.41	25.66
0.9L : 26.5	2.87	1.00	2.87	5.36	-	5.29	72.02
Critical : 27.5	-	-	-	5.12	-	-	-
Transfer : 26.5	2.87	1.00	2.87	5.51	-	5.29	72.02
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



		Sheet #	32		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.71	1.00	4.71	7.87
Critical : 1.5	-	-	-	7.39
0.1L : 2.5	4.71	1.00	4.71	7.66
0.2L : 5.5	3.86	1.00	3.86	7.38
0.3L : 8.5	3.10	1.00	3.10	9.00
0.4L : 11.5	2.93	1.00	2.93	11.62
0.5L : 14.5	3.21	1.00	3.21	16.33
0.6L : 17.5	2.90	1.00	2.90	12.72
0.7L : 20.5	3.03	1.00	3.03	9.65
0.8L : 23.5	3.70	1.00	3.70	7.81
0.9L : 26.5	4.29	1.00	4.29	8.02
Critical : 27.5	-	-	-	7.66
Transfer : 26.5	4.29	1.00	4.29	8.25
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.



		Sheet # 33			
				Job # 171002272	
Program: LEAP® Bridge Concrete CONNECT Edition		Stantec Consulting Ltd		Designed: JFK	
Module: Precast/Prestressed Girder		Copyright © Bentley Systems, Inc. 2019 - 2019		Date: Feb/2/2022	
Version: 19.01.00.11		<a href="http://www.bentley.com">www.bentley.com</a>		Checked: MBI	
File Name: 270017_Spans 1+3_SV.lbcx				Date: Mar/7/2022	

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.08	1.00	4.08	6.90
Critical : 1.5	-	-	-	6.47
0.1L : 2.5	4.08	1.00	4.08	6.71
0.2L : 5.5	3.29	1.00	3.29	6.45
0.3L : 8.5	2.52	1.00	2.52	7.57
0.4L : 11.5	2.21	1.00	2.21	9.20
0.5L : 14.5	2.17	1.00	2.17	11.67
0.6L : 17.5	2.18	1.00	2.18	10.45
0.7L : 20.5	2.45	1.00	2.45	8.40
0.8L : 23.5	3.15	1.00	3.15	6.86
0.9L : 26.5	3.72	1.00	3.72	7.00
Critical : 27.5	-	-	-	6.68
Transfer : 26.5	3.72	1.00	3.72	7.20
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.

**Span:1, Beam:11**

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



		Sheet #	34		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.80	1.00	8.80	14.89	-	12.96
Critical : 1.5	-	-	-	14.13	-	-
0.1L : 2.5	8.80	1.00	8.80	14.47	-	12.96
0.2L : 5.5	6.98	1.00	6.98	13.60	-	7.86
0.3L : 8.5	5.38	1.00	5.38	15.89	-	5.65
0.4L : 11.5	4.77	1.00	4.77	19.21	-	4.84
0.5L : 14.5	4.79	1.00	4.79	24.24	-	4.72
0.6L : 17.5	4.73	1.00	4.73	20.45	-	4.79
0.7L : 20.5	5.28	1.00	5.28	16.74	-	5.54
0.8L : 23.5	6.74	1.00	6.74	14.22	-	7.58
0.9L : 26.5	8.08	1.00	8.08	15.03	-	11.91
Critical : 27.5	-	-	-	14.54	-	-
Transfer : 26.5	8.08	1.00	8.08	15.46	-	11.91
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	35		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.84	1.00	6.84	11.53	-	10.07
Critical : 1.5	-	-	-	10.88	-	-
0.1L : 2.5	6.84	1.00	6.84	11.20	-	10.07
0.2L : 5.5	5.54	1.00	5.54	10.74	-	6.24
0.3L : 8.5	4.40	1.00	4.40	12.92	-	4.62
0.4L : 11.5	4.07	1.00	4.07	16.30	-	4.12
0.5L : 14.5	4.36	1.00	4.36	22.01	-	4.29
0.6L : 17.5	4.02	1.00	4.02	17.66	-	4.08
0.7L : 20.5	4.31	1.00	4.31	13.77	-	4.52
0.8L : 23.5	5.33	1.00	5.33	11.32	-	6.00
0.9L : 26.5	6.25	1.00	6.25	11.71	-	9.21
Critical : 27.5	-	-	-	11.24	-	-
Transfer : 26.5	6.25	1.00	6.25	12.04	-	9.21
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	36		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.60	1.00	6.60	11.12	-	9.72
Critical : 1.5	-	-	-	10.46	-	-
0.1L : 2.5	6.60	1.00	6.60	10.81	-	9.72
0.2L : 5.5	5.41	1.00	5.41	10.47	-	6.08
0.3L : 8.5	4.35	1.00	4.35	12.78	-	4.57
0.4L : 11.5	4.11	1.00	4.11	16.49	-	4.17
0.5L : 14.5	4.50	1.00	4.50	23.14	-	4.44
0.6L : 17.5	4.07	1.00	4.07	18.04	-	4.12
0.7L : 20.5	4.26	1.00	4.26	13.69	-	4.47
0.8L : 23.5	5.19	1.00	5.19	11.07	-	5.84
0.9L : 26.5	6.02	1.00	6.02	11.33	-	8.87
Critical : 27.5	-	-	-	10.84	-	-
Transfer : 26.5	6.02	1.00	6.02	11.65	-	8.87
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





		Sheet #	37		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.43	1.00	4.43	7.40	-	6.53
Critical : 1.5	-	-	-	7.05	-	-
0.1L : 2.5	4.43	1.00	4.43	7.20	-	6.53
0.2L : 5.5	3.52	1.00	3.52	6.73	-	3.97
0.3L : 8.5	2.72	1.00	2.72	7.86	-	2.86
0.4L : 11.5	2.42	1.00	2.42	9.53	-	2.46
0.5L : 14.5	2.38	1.00	2.38	12.12	-	2.35
0.6L : 17.5	2.40	1.00	2.40	11.13	-	2.43
0.7L : 20.5	2.67	1.00	2.67	8.92	-	2.80
0.8L : 23.5	3.39	1.00	3.39	7.49	-	3.81
0.9L : 26.5	4.04	1.00	4.04	7.89	-	5.95
Critical : 27.5	-	-	-	7.51	-	-
Transfer : 26.5	4.04	1.00	4.04	8.11	-	5.95
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	38		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.12	1.00	4.12	6.86	-	6.06
Critical : 1.5	-	-	-	6.48	-	-
0.1L : 2.5	4.12	1.00	4.12	6.68	-	6.06
0.2L : 5.5	3.37	1.00	3.37	6.41	-	3.79
0.3L : 8.5	2.61	1.00	2.61	7.79	-	2.74
0.4L : 11.5	2.27	1.00	2.27	10.02	-	2.30
0.5L : 14.5	2.28	1.00	2.28	13.18	-	2.25
0.6L : 17.5	2.25	1.00	2.25	10.93	-	2.28
0.7L : 20.5	2.57	1.00	2.57	8.34	-	2.69
0.8L : 23.5	3.21	1.00	3.21	6.77	-	3.61
0.9L : 26.5	3.72	1.00	3.72	6.98	-	5.48
Critical : 27.5	-	-	-	6.70	-	-
Transfer : 26.5	3.72	1.00	3.72	7.18	-	5.48
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	39		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.36	1.00	4.36	7.28	-	6.42
Critical : 1.5	-	-	-	6.88	-	-
0.1L : 2.5	4.36	1.00	4.36	7.08	-	6.42
0.2L : 5.5	3.33	1.00	3.33	6.74	-	3.74
0.3L : 8.5	2.53	1.00	2.53	8.09	-	2.66
0.4L : 11.5	2.26	1.00	2.26	10.19	-	2.29
0.5L : 14.5	2.21	1.00	2.21	13.16	-	2.17
0.6L : 17.5	2.25	1.00	2.25	11.03	-	2.28
0.7L : 20.5	2.47	1.00	2.47	8.61	-	2.59
0.8L : 23.5	3.19	1.00	3.19	7.09	-	3.59
0.9L : 26.5	3.94	1.00	3.94	7.39	-	5.81
Critical : 27.5	-	-	-	7.10	-	-
Transfer : 26.5	3.94	1.00	3.94	7.59	-	5.81
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	40		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.08	1.00	4.08	6.80	-	6.01
Critical : 1.5	-	-	-	6.43	-	-
0.1L : 2.5	4.08	1.00	4.08	6.61	-	6.01
0.2L : 5.5	3.17	1.00	3.17	6.37	-	3.56
0.3L : 8.5	2.44	1.00	2.44	7.76	-	2.57
0.4L : 11.5	2.16	1.00	2.16	9.60	-	2.19
0.5L : 14.5	2.10	1.00	2.10	12.50	-	2.06
0.6L : 17.5	2.14	1.00	2.14	10.40	-	2.17
0.7L : 20.5	2.40	1.00	2.40	8.31	-	2.52
0.8L : 23.5	3.04	1.00	3.04	6.81	-	3.43
0.9L : 26.5	3.71	1.00	3.71	6.99	-	5.47
Critical : 27.5	-	-	-	6.69	-	-
Transfer : 26.5	3.71	1.00	3.71	7.19	-	5.47
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet # 41			
				Job # 171002272	
Program: LEAP® Bridge Concrete CONNECT Edition		Stantec Consulting Ltd		Designed: JFK	
Module: Precast/Prestressed Girder		Copyright © Bentley Systems, Inc. 2019 - 2019		Date: Feb/2/2022	
Version: 19.01.00.11		<a href="http://www.bentley.com">www.bentley.com</a>		Checked: MBI	
File Name: 270017_Spans 1+3_SV.lbcx		Phone: 1-800-778-4277		Date: Mar/7/2022	

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.16	1.00	4.16	6.93	-	6.12
Critical : 1.5	-	-	-	6.57	-	-
0.1L : 2.5	4.16	1.00	4.16	6.74	-	6.12
0.2L : 5.5	3.20	1.00	3.20	6.44	-	3.60
0.3L : 8.5	2.41	1.00	2.41	7.76	-	2.53
0.4L : 11.5	2.05	1.00	2.05	9.60	-	2.08
0.5L : 14.5	2.02	1.00	2.02	12.50	-	1.99
0.6L : 17.5	2.03	1.00	2.03	10.40	-	2.06
0.7L : 20.5	2.35	1.00	2.35	8.31	-	2.47
0.8L : 23.5	3.08	1.00	3.08	6.86	-	3.46
0.9L : 26.5	3.79	1.00	3.79	7.11	-	5.58
Critical : 27.5	-	-	-	6.83	-	-
Transfer : 26.5	3.79	1.00	3.79	7.31	-	5.58
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:1, Beam:11

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.33	2.24	80.50	0.6L	17.50	0.37	5.64	202.91	0.2L	5.50
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.33	1.68	-	0.5L	14.50	0.37	4.91	-	0.2L	5.50
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.33	2.90	104.36	0.6L	17.50	0.37	7.38	265.85	0.2L	5.50
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.33	2.17	-	0.5L	14.50	0.37	6.45	-	0.2L	5.50
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.33	2.83	102.03	0.6L	17.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.33	2.06	-	0.5L	14.50	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.33	2.83	102.03	0.6L	17.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.33	2.06	-	0.5L	14.50	-	-	-	-	-



Sheet #	2				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.33	2.69	88.88	0.5L	14.50	0.37	7.65	252.44	Critical	1.53
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.33	2.58	85.20	0.5L	14.50	0.37	7.15	236.37	Critical	1.53
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.33	2.32	96.50	0.5L	14.50	0.37	6.77	281.68	0.2L	5.50
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.33	2.39	100.39	0.6L	17.50	0.37	6.53	274.05	Critical	1.53
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.33	2.29	95.98	0.5L	14.50	0.37	6.36	267.31	Critical	1.53
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.33	2.35	101.08	0.5L	14.50	0.37	6.17	265.48	Critical	1.53
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.33	2.27	102.08	0.5L	14.50	0.37	6.61	297.62	0.2L	5.50
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.33	2.12	95.58	0.6L	17.50	0.37	5.81	261.30	Critical	1.53
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.33	2.65	87.54	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.33	2.54	83.92	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.33	2.28	95.05	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.33	2.36	99.23	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.33	2.25	94.54	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.33	2.32	99.55	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.33	2.23	100.54	0.5L	14.50	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.33	2.15	96.92	0.6L	17.50	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	3				
Job #	171002272				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
 For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

#### Legal Live Load Factors (Table 6A.4.4.2.3a-1)

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

#### Allowable Stresses (ksi)

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Design Operating	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Legal	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	-
Permit	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70





				Sheet #	4
				Job #	171002272
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>   Phone: 1-800-778-4277	Checked	MBI	
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Consider shear reinf. across plane (FDOT alternative): No



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**RATING RESULTS**

Span:1, Beam:11

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.63	1.00	3.63	6.03	-	6.68	-
Critical : 1.5	-	-	-	5.67	-	-	-
0.1L : 2.5	3.63	1.00	3.63	5.87	-	6.68	-
0.2L : 5.5	2.97	1.00	2.97	5.64	-	4.18	-
0.3L : 8.5	2.39	1.00	2.39	6.86	-	3.14	11.05
0.4L : 11.5	2.26	1.00	2.26	8.86	-	2.87	7.45
0.5L : 14.5	2.47	1.00	2.47	12.47	-	3.05	8.21
0.6L : 17.5	2.24	1.00	2.24	9.70	-	2.83	7.24
0.7L : 20.5	2.34	1.00	2.34	7.36	-	3.07	10.21
0.8L : 23.5	2.86	1.00	2.86	5.96	-	4.02	-
0.9L : 26.5	3.31	1.00	3.31	6.15	-	6.10	-
Critical : 27.5	-	-	-	5.88	-	-	-
Transfer : 26.5	3.31	1.00	3.31	6.32	-	6.10	-
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	6				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.15	1.00	3.15	5.28	-	5.80	-
Critical : 1.5	-	-	-	4.96	-	-	-
0.1L : 2.5	3.15	1.00	3.15	5.14	-	5.80	-
0.2L : 5.5	2.54	1.00	2.54	4.91	-	3.57	39.22
0.3L : 8.5	1.94	1.00	1.94	5.76	-	2.55	6.30
0.4L : 11.5	1.71	1.00	1.71	7.00	-	2.16	4.26
0.5L : 14.5	1.68	1.00	1.68	8.88	-	2.06	3.87
0.6L : 17.5	1.68	1.00	1.68	7.96	-	2.13	4.14
0.7L : 20.5	1.89	1.00	1.89	6.39	-	2.48	5.93
0.8L : 23.5	2.43	1.00	2.43	5.23	-	3.41	25.66
0.9L : 26.5	2.87	1.00	2.87	5.36	-	5.29	72.02
Critical : 27.5	-	-	-	5.12	-	-	-
Transfer : 26.5	2.87	1.00	2.87	5.51	-	5.29	72.02
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



Sheet #	7				
Job #	171002272				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
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File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.71	1.00	4.71	7.87
Critical : 1.5	-	-	-	7.39
0.1L : 2.5	4.71	1.00	4.71	7.66
0.2L : 5.5	3.86	1.00	3.86	7.38
0.3L : 8.5	3.10	1.00	3.10	9.00
0.4L : 11.5	2.93	1.00	2.93	11.62
0.5L : 14.5	3.21	1.00	3.21	16.33
0.6L : 17.5	2.90	1.00	2.90	12.72
0.7L : 20.5	3.03	1.00	3.03	9.65
0.8L : 23.5	3.70	1.00	3.70	7.81
0.9L : 26.5	4.29	1.00	4.29	8.02
Critical : 27.5	-	-	-	7.66
Transfer : 26.5	4.29	1.00	4.29	8.25
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.



Sheet #	8				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.08	1.00	4.08	6.90
Critical : 1.5	-	-	-	6.47
0.1L : 2.5	4.08	1.00	4.08	6.71
0.2L : 5.5	3.29	1.00	3.29	6.45
0.3L : 8.5	2.52	1.00	2.52	7.57
0.4L : 11.5	2.21	1.00	2.21	9.20
0.5L : 14.5	2.17	1.00	2.17	11.67
0.6L : 17.5	2.18	1.00	2.18	10.45
0.7L : 20.5	2.45	1.00	2.45	8.40
0.8L : 23.5	3.15	1.00	3.15	6.86
0.9L : 26.5	3.72	1.00	3.72	7.00
Critical : 27.5	-	-	-	6.68
Transfer : 26.5	3.72	1.00	3.72	7.20
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.

Span:1, Beam:11

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	9				
Job #	171002272				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.86	1.00	4.86	8.14	-	7.16
Critical : 1.5	-	-	-	7.65	-	-
0.1L : 2.5	4.86	1.00	4.86	7.92	-	7.16
0.2L : 5.5	4.06	1.00	4.06	7.79	-	4.57
0.3L : 8.5	3.36	1.00	3.36	9.78	-	3.53
0.4L : 11.5	2.86	1.00	2.86	13.21	-	2.90
0.5L : 14.5	2.69	1.00	2.69	17.34	-	2.65
0.6L : 17.5	2.83	1.00	2.83	17.18	-	2.86
0.7L : 20.5	3.30	1.00	3.30	13.13	-	3.47
0.8L : 23.5	3.91	1.00	3.91	9.79	-	4.40
0.9L : 26.5	4.44	1.00	4.44	9.52	-	6.55
Critical : 27.5	-	-	-	8.63	-	-
Transfer : 26.5	4.44	1.00	4.44	9.79	-	6.55
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	10				
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**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.54	1.00	4.54	7.59	-	6.69
Critical : 1.5	-	-	-	7.15	-	-
0.1L : 2.5	4.54	1.00	4.54	7.38	-	6.69
0.2L : 5.5	3.74	1.00	3.74	7.16	-	4.21
0.3L : 8.5	2.99	1.00	2.99	8.67	-	3.14
0.4L : 11.5	2.67	1.00	2.67	10.72	-	2.70
0.5L : 14.5	2.58	1.00	2.58	14.02	-	2.54
0.6L : 17.5	2.64	1.00	2.64	12.15	-	2.68
0.7L : 20.5	2.91	1.00	2.91	9.85	-	3.06
0.8L : 23.5	3.58	1.00	3.58	8.11	-	4.02
0.9L : 26.5	4.11	1.00	4.11	8.18	-	6.06
Critical : 27.5	-	-	-	7.67	-	-
Transfer : 26.5	4.11	1.00	4.11	8.41	-	6.06
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.38	1.00	4.38	7.31	-	6.44
Critical : 1.5	-	-	-	6.91	-	-
0.1L : 2.5	4.38	1.00	4.38	7.11	-	6.44
0.2L : 5.5	3.43	1.00	3.43	6.77	-	3.86
0.3L : 8.5	2.62	1.00	2.62	8.12	-	2.75
0.4L : 11.5	2.36	1.00	2.36	10.24	-	2.40
0.5L : 14.5	2.32	1.00	2.32	13.20	-	2.28
0.6L : 17.5	2.35	1.00	2.35	11.07	-	2.38
0.7L : 20.5	2.56	1.00	2.56	8.64	-	2.69
0.8L : 23.5	3.28	1.00	3.28	7.12	-	3.69
0.9L : 26.5	3.96	1.00	3.96	7.28	-	5.84
Critical : 27.5	-	-	-	7.05	-	-
Transfer : 26.5	3.96	1.00	3.96	7.48	-	5.84
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	12				
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**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.15	1.00	4.15	6.93	-	6.12
Critical : 1.5	-	-	-	6.53	-	-
0.1L : 2.5	4.15	1.00	4.15	6.74	-	6.12
0.2L : 5.5	3.37	1.00	3.37	6.59	-	3.79
0.3L : 8.5	2.71	1.00	2.71	8.22	-	2.85
0.4L : 11.5	2.40	1.00	2.40	10.62	-	2.43
0.5L : 14.5	2.40	1.00	2.40	13.90	-	2.36
0.6L : 17.5	2.39	1.00	2.39	11.56	-	2.42
0.7L : 20.5	2.66	1.00	2.66	8.87	-	2.79
0.8L : 23.5	3.24	1.00	3.24	7.08	-	3.65
0.9L : 26.5	3.79	1.00	3.79	7.14	-	5.58
Critical : 27.5	-	-	-	6.80	-	-
Transfer : 26.5	3.79	1.00	3.79	7.34	-	5.58
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.06	1.00	4.06	6.77	-	5.98
Critical : 1.5	-	-	-	6.36	-	-
0.1L : 2.5	4.06	1.00	4.06	6.58	-	5.98
0.2L : 5.5	3.37	1.00	3.37	6.42	-	3.79
0.3L : 8.5	2.69	1.00	2.69	7.78	-	2.83
0.4L : 11.5	2.34	1.00	2.34	9.63	-	2.37
0.5L : 14.5	2.29	1.00	2.29	12.53	-	2.25
0.6L : 17.5	2.33	1.00	2.33	10.43	-	2.36
0.7L : 20.5	2.64	1.00	2.64	8.34	-	2.78
0.8L : 23.5	3.24	1.00	3.24	6.85	-	3.64
0.9L : 26.5	3.70	1.00	3.70	7.01	-	5.46
Critical : 27.5	-	-	-	6.66	-	-
Transfer : 26.5	3.70	1.00	3.70	7.21	-	5.46
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.96	1.00	3.96	6.60	-	5.84
Critical : 1.5	-	-	-	6.17	-	-
0.1L : 2.5	3.96	1.00	3.96	6.42	-	5.84
0.2L : 5.5	3.35	1.00	3.35	6.38	-	3.77
0.3L : 8.5	2.62	1.00	2.62	7.94	-	2.75
0.4L : 11.5	2.38	1.00	2.38	10.02	-	2.41
0.5L : 14.5	2.35	1.00	2.35	13.55	-	2.32
0.6L : 17.5	2.37	1.00	2.37	11.97	-	2.40
0.7L : 20.5	2.58	1.00	2.58	9.13	-	2.71
0.8L : 23.5	3.20	1.00	3.20	7.39	-	3.60
0.9L : 26.5	3.58	1.00	3.58	7.22	-	5.28
Critical : 27.5	-	-	-	6.69	-	-
Transfer : 26.5	3.58	1.00	3.58	7.43	-	5.28
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.26	1.00	4.26	7.12	-	6.28
Critical : 1.5	-	-	-	6.64	-	-
0.1L : 2.5	4.26	1.00	4.26	6.92	-	6.28
0.2L : 5.5	3.47	1.00	3.47	6.61	-	3.90
0.3L : 8.5	2.73	1.00	2.73	7.94	-	2.87
0.4L : 11.5	2.34	1.00	2.34	10.02	-	2.37
0.5L : 14.5	2.27	1.00	2.27	13.55	-	2.23
0.6L : 17.5	2.31	1.00	2.31	11.04	-	2.34
0.7L : 20.5	2.67	1.00	2.67	8.69	-	2.81
0.8L : 23.5	3.31	1.00	3.31	7.04	-	3.72
0.9L : 26.5	3.86	1.00	3.86	7.10	-	5.69
Critical : 27.5	-	-	-	6.79	-	-
Transfer : 26.5	3.86	1.00	3.86	7.30	-	5.69
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	16				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.73	1.00	3.73	6.20	-	5.49
Critical : 1.5	-	-	-	5.81	-	-
0.1L : 2.5	3.73	1.00	3.73	6.03	-	5.49
0.2L : 5.5	3.11	1.00	3.11	5.90	-	3.50
0.3L : 8.5	2.41	1.00	2.41	7.35	-	2.53
0.4L : 11.5	2.14	1.00	2.14	9.84	-	2.17
0.5L : 14.5	2.20	1.00	2.20	13.49	-	2.17
0.6L : 17.5	2.12	1.00	2.12	10.91	-	2.15
0.7L : 20.5	2.37	1.00	2.37	7.94	-	2.48
0.8L : 23.5	2.97	1.00	2.97	6.27	-	3.34
0.9L : 26.5	3.37	1.00	3.37	6.22	-	4.97
Critical : 27.5	-	-	-	5.95	-	-
Transfer : 26.5	3.37	1.00	3.37	6.39	-	4.97
Bearing : 29.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
 CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
 PSStT - Prestress Steel Tension.



		Sheet #	1		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

**PROPERTIES**

**Span:2, Beam:1**

**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Flng width	Top	36.000	in	Bot	36.000	in
	thick	Top	4.500	in	Bot	4.500*
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	1.50/ 3.00	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Exterior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**



		Sheet # 2		
				Job # 171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022

Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:				
	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)

**GENERAL LOAD DATA:**

**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**

**Type g**

Live Moment	(2+ lanes loaded)	0.246	(Calculated)
Live Moment	(1 lane loaded)	0.248	(Calculated)
Live Shear	(2+ lanes loaded)	0.257	(Calculated)
Live Shear	(1 lane loaded)	0.272	(Calculated)

The LL distribution computation is using the effective slab depth ( $t_s = 0.00\text{in}$ ).

				Sheet #	3
				Job #	171002272
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Include sacrificial deck thick in ts: NO

Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

**SECTION PROPERTIES:**

(#) Of Total Section using  $E_{ct}/E_c = 1.0000$

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only





		Sheet #	4		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 5.00	0.20L 10.50	0.30L 16.00	0.40L 21.50	Midspan 27.00
Precast:(At Release, using Ec =		4561.7ksi)							
Area,	in2	525.1	539.4	530.1	539.4	543.9	543.9	543.9	543.9
Yb,	in	10.37	10.22	10.32	10.22	10.16	10.16	10.16	10.16
MI(Ixx),	in4	25481	25922	25638	25922	26147	26147	26147	26147
Composite:(At Final, using Ec =		5007.5ksi)							
Area,	in2	524.8	537.6	529.3	537.6	541.6	541.6	541.6	541.6
Yb,	in	10.38	10.24	10.33	10.24	10.19	10.19	10.19	10.19
MI(Ixx),	in4	25471	25867	25612	25867	26069	26069	26069	26069

Span:2, Beam:1

STRESS LIMITS (Art. 5.9.2):

STRESS LIMITS AT RELEASE BEFORE LOSSES:

STRESS LIMITS AT FINAL AFTER LOSSES:

STRESS LIMITS AT FINAL 1 (P/S + DL + LL):

STRESS LIMITS AT FINAL 2 (P/S + DL):

FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):



		Sheet #	5		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Max comp	<b>PRECAST</b>	2.60	ksi	<b>DECK</b>	-	ksi
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**SERVICE III (Tension):**

**Span:2, Beam:1**

**PRESTRESSED STEEL:**

19 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 4.37 in):**

**SHIELDING AND REDUCED INITIAL PULLS:**

Check for Art. 5.11.4.3 (debond termination distances): OK

**Span:2, Beam:1**

**ESTIMATED QUANTITIES**

**Span:2, Beam:1**

**REINFORCING STEEL:**



		Sheet # 6	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked MBI
File Name:	270017_Span 2_SV.lbcx		Date Mar/7/2022

<b>Tension steel:</b>		
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**

**Top Steel:**

**Bottom Steel:**

**LOSSES**

Note: Values are calculated at Midspan

**AASHTO LOSSES**

**Time Dependent Losses (Approximate Method (Art.5.9.3.3))**

		<b>Initial</b>		<b>Final</b>		
Steel relaxation	0.00	ksi		2.40	ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00	ksi		9.66	ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00	ksi		12.87	ksi	(Eq 5.9.3.3-1)
Sub-total	12.02	ksi	( 5.94 %)	19.79	ksi	( 9.77 %)
<b>Total Prestress Losses</b>				<b>31.82</b>	<b>ksi</b>	<b>(15.71 %)</b>

				Sheet #	7
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	<b>270017_Span 2_SV.lbcx</b>			Date	Mar/7/2022

Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK  
initial fpe = 170.7 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.

				Sheet #	8
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 1, SERVICE I**  
**Shears: kips, Moments: kft**



		Sheet #	9		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	61.2	53.6	40.9	23.1	6.5	13.4	2.6
DW(Max)	V	0.9	1.8	2.8	3.7	4.4	4.1	4.5
LL + I :	M+	290.3	258.7	203.6	117.7	31.8	67.8	11.2
	V	2.0	4.2	7.7	11.3	19.0	16.0	20.6
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	12.2	15.4	18.7	22.2	24.8	23.8	25.3
	M	244.3	232.1	188.5	112.1	32.3	66.0	12.9
Total :	M+	577.5	509.1	392.8	221.0	54.7	124.1	15.3
	V	6.5	13.1	21.1	29.1	40.2	35.8	42.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	16.6	24.3	32.1	40.0	46.0	43.6	47.2
	M	531.5	482.5	377.6	215.4	55.2	122.3	17.0

REACTIONS (kips), SERVICE I

				Sheet #	10
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
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File Name:	<b>270017_Span 2_SV.lbcx</b>			Date	Mar/7/2022

Upward reactions are positive.  
Live Load reactions are per lane with no distribution factor and no impact.  
Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
Non-composite load types are per beam.  
Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 1, SERVICE III**  
**Shears: kips, Moments: kft**



		Sheet #	11		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	61.2	53.6	40.9	23.1	6.5	13.4	2.6
DW(Max)	V	0.9	1.8	2.8	3.7	4.4	4.1	4.5
LL + I :	M+	232.2	207.0	162.9	94.1	25.4	54.3	9.0
	V	1.6	3.3	6.2	9.0	15.2	12.8	16.5
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	9.7	12.3	15.0	17.7	19.8	19.0	20.3
	M	195.5	185.7	150.8	89.7	25.9	52.8	10.3
Total :	M+	519.4	457.4	352.0	197.5	48.3	110.5	13.1
	V	6.1	12.2	19.6	26.9	36.4	32.6	38.4
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	14.2	21.2	28.4	35.6	41.0	38.9	42.1
	M	482.6	436.1	339.9	193.0	48.8	109.1	14.4





				Sheet #	12
				Job #	171002272
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**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 1, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	237.6	206.7	155.3	83.3	15.8	43.8	0.0
(Max)	V	3.7	7.5	11.2	15.0	17.8	16.7	18.4
Self wt. :	M	171.1	148.9	111.8	60.0	11.4	31.5	0.0
(Min)	V	2.7	5.4	8.1	10.8	12.8	12.0	13.2
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	44.9	39.3	30.0	17.0	4.8	9.8	1.9
DC(Max)	V	0.7	1.4	2.0	2.7	3.2	3.0	3.3
DL-Comp :	M	32.3	28.3	21.6	12.2	3.4	7.1	1.4
DC(Min)	V	0.5	1.0	1.5	2.0	2.3	2.2	2.4
DL-Comp :	M	91.8	80.3	61.3	34.7	9.7	20.1	3.9
DW(Max)	V	1.4	2.8	4.2	5.5	6.6	6.2	6.8
DL-Comp :	M	39.8	34.8	26.6	15.0	4.2	8.7	1.7
DW(Min)	V	0.6	1.2	1.8	2.4	2.8	2.7	2.9
LL + I :	M+	508.0	452.8	356.4	205.9	55.6	118.7	19.6
	V	3.5	7.3	13.5	19.8	33.2	27.9	36.1
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0



		Sheet #	14		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	21.3	27.0	32.8	38.8	43.4	41.6	44.3
	M	427.6	406.1	329.9	196.2	56.6	115.6	22.6
Total :	M+	882.3	779.2	603.0	340.9	85.9	192.3	25.4
	V	9.3	18.9	30.9	43.0	60.8	53.8	64.6
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	27.1	38.6	50.2	62.0	70.9	67.4	72.8
	M	801.8	732.5	576.5	331.1	86.8	189.2	28.4

### REACTIONS (kips), STRENGTH I

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

### SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 1, FATIGUE I

Shears: kips, Moments: kft



		Sheet #	15		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	35.0	12.6	66.6	124.3	165.4	190.1	198.3
(Max)	V	14.7	13.3	14.2	12.0	9.0	6.0	3.0	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.5	7.9	3.8	13.6	24.0	31.5	35.9	37.4
DC(Max)	V	2.7	2.4	2.6	2.2	1.6	1.1	0.5	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	2.6	13.4	6.5	23.1	40.9	53.6	61.2	63.7
DW(Max)	V	4.5	4.1	4.4	3.7	2.8	1.8	0.9	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	11.1	56.1	27.6	94.4	154.8	193.9	208.1	205.6
	V	21.7	20.2	21.2	18.7	0.8	2.3	5.6	8.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	16				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	21.7	20.2	21.2	18.7	15.4	11.4	9.4	8.2
	M	11.1	56.1	27.6	94.4	154.6	172.1	188.0	205.6
Total :	M+	15.2	112.4	50.5	197.7	343.9	444.3	495.3	505.1
Total :	V	43.6	40.0	42.3	36.5	14.2	11.2	10.0	8.2
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	43.6	40.0	42.3	36.5	28.8	20.3	13.8	8.2
	M	15.2	112.4	50.5	197.7	343.8	422.5	475.2	505.1

				Sheet #	17
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Span:2, Beam:1**



				Sheet #	18
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.25	4.73	63.92	0.5L	27.00	0.27	17.20	232.20	Critical	1.45
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.25	3.66	73.26	0.5L	27.00	0.27	12.36	247.28	Critical	1.45
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.25	3.53	77.62	0.5L	27.00	0.27	11.53	253.76	Critical	1.45
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.25	2.36	64.31	0.5L	27.00	0.27	8.46	230.63	Critical	1.45
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.25	2.02	70.66	0.5L	27.00	0.27	7.12	248.58	Critical	1.45
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.25	1.97	70.21	0.5L	27.00	0.27	7.25	257.59	Critical	1.45
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.25	1.83	73.27	0.5L	27.00	0.27	6.62	264.35	Critical	1.45
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.25	1.75	73.39	0.5L	27.00	0.27	6.56	275.63	Critical	1.45
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.25	5.00	67.44	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.25	3.86	77.29	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.25	3.72	81.90	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.25	2.49	67.85	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.25	2.13	74.55	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.25	2.08	74.07	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.25	1.94	77.31	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.25	1.84	77.43	0.5L	27.00	-	-	-	-	-

				Sheet #	19
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

Consider shear reinf. across plane (FDOT alternative): No



				Sheet #	20
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**RATING RESULTS**

**Span:2, Beam:1**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State  
Prestress tendon RF is for Service I Limit State



		Sheet #	21		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.11	1.00	6.11	5.00	-	9.86	5.87
Critical : 1.4	-	-	-	4.76	-	-	-
0.1L : 5.0	4.16	1.00	4.16	5.22	-	5.18	3.70
0.2L : 10.5	2.48	1.00	2.48	5.19	-	3.40	3.64
0.3L : 16.0	1.73	1.00	1.73	6.32	-	2.38	2.53
0.4L : 21.5	1.48	1.00	1.48	8.17	-	1.96	2.15
0.5L : 27.0	1.43	1.00	1.43	10.42	-	1.88	2.07
0.6L : 32.5	1.48	1.00	1.48	8.17	-	1.96	2.15
0.7L : 38.0	1.73	1.00	1.73	6.32	-	2.38	2.53
0.8L : 43.5	2.48	1.00	2.48	5.19	-	3.40	3.64
0.9L : 49.0	4.16	1.00	4.16	6.89	-	5.18	3.70
Critical : 52.6	-	-	-	4.86	-	-	-
Transfer : 51.5	6.11	1.00	6.11	5.07	-	9.86	5.87
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State

				Sheet #	22
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.92	1.00	7.92	6.54
Critical : 1.4	-	-	-	6.21
0.1L : 5.0	5.39	1.00	5.39	6.86
0.2L : 10.5	3.21	1.00	3.21	6.88
0.3L : 16.0	2.24	1.00	2.24	8.38
0.4L : 21.5	1.92	1.00	1.92	10.83
0.5L : 27.0	1.85	1.00	1.85	13.81
0.6L : 32.5	1.92	1.00	1.92	10.83
0.7L : 38.0	2.24	1.00	2.24	8.38
0.8L : 43.5	3.21	1.00	3.21	6.88
0.9L : 49.0	5.39	1.00	5.39	8.93
Critical : 52.6	-	-	-	6.34
Transfer : 51.5	7.92	1.00	7.92	6.64
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.

Span:2, Beam:1

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State

		Sheet #	23		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	15.40	1.00	15.40	13.10	-	19.87
Critical : 1.4	-	-	-	12.36	-	-
0.1L : 5.0	10.57	1.00	10.57	13.82	-	10.54
0.2L : 10.5	6.24	1.00	6.24	13.72	-	6.85
0.3L : 16.0	4.30	1.00	4.30	16.28	-	4.75
0.4L : 21.5	3.73	1.00	3.73	20.28	-	3.96
0.5L : 27.0	3.66	1.00	3.66	23.63	-	3.86
0.6L : 32.5	3.73	1.00	3.73	20.28	-	3.96
0.7L : 38.0	4.30	1.00	4.30	16.28	-	4.75
0.8L : 43.5	6.24	1.00	6.24	13.72	-	6.85
0.9L : 49.0	10.57	1.00	10.57	17.57	-	10.54
Critical : 52.6	-	-	-	12.81	-	-
Transfer : 51.5	15.40	1.00	15.40	13.44	-	19.87
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	24		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	10.66	1.00	10.66	8.89	-	13.75
Critical : 1.4	-	-	-	8.46	-	-
0.1L : 5.0	7.29	1.00	7.29	9.19	-	7.27
0.2L : 10.5	4.28	1.00	4.28	8.93	-	4.69
0.3L : 16.0	2.92	1.00	2.92	10.38	-	3.22
0.4L : 21.5	2.49	1.00	2.49	12.60	-	2.65
0.5L : 27.0	2.36	1.00	2.36	15.04	-	2.49
0.6L : 32.5	2.49	1.00	2.49	12.60	-	2.65
0.7L : 38.0	2.92	1.00	2.92	10.38	-	3.22
0.8L : 43.5	4.28	1.00	4.28	8.93	-	4.69
0.9L : 49.0	7.29	1.00	7.29	11.83	-	7.27
Critical : 52.6	-	-	-	8.63	-	-
Transfer : 51.5	10.66	1.00	10.66	9.02	-	13.75
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	25		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.31	1.00	9.31	7.61	-	12.01
Critical : 1.4	-	-	-	7.25	-	-
0.1L : 5.0	6.31	1.00	6.31	7.89	-	6.30
0.2L : 10.5	3.62	1.00	3.62	7.77	-	3.97
0.3L : 16.0	2.45	1.00	2.45	9.26	-	2.70
0.4L : 21.5	2.10	1.00	2.10	11.66	-	2.23
0.5L : 27.0	1.97	1.00	1.97	14.65	-	2.08
0.6L : 32.5	2.10	1.00	2.10	11.66	-	2.23
0.7L : 38.0	2.45	1.00	2.45	9.26	-	2.70
0.8L : 43.5	3.62	1.00	3.62	7.77	-	3.97
0.9L : 49.0	6.31	1.00	6.31	10.21	-	6.30
Critical : 52.6	-	-	-	7.36	-	-
Transfer : 51.5	9.31	1.00	9.31	7.70	-	12.01
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

		Sheet # 26	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked MBI
File Name:	270017_Span 2_SV.lbcx		Date Mar/7/2022

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.55	1.00	8.55	6.88	-	11.03
Critical : 1.4	-	-	-	6.56	-	-
0.1L : 5.0	5.79	1.00	5.79	7.12	-	5.77
0.2L : 10.5	3.31	1.00	3.31	7.08	-	3.63
0.3L : 16.0	2.18	1.00	2.18	8.58	-	2.41
0.4L : 21.5	1.85	1.00	1.85	10.94	-	1.96
0.5L : 27.0	1.75	1.00	1.75	14.02	-	1.84
0.6L : 32.5	1.85	1.00	1.85	10.94	-	1.96
0.7L : 38.0	2.18	1.00	2.18	8.58	-	2.41
0.8L : 43.5	3.31	1.00	3.31	7.08	-	3.63
0.9L : 49.0	5.79	1.00	5.79	9.25	-	5.77
Critical : 52.6	-	-	-	6.62	-	-
Transfer : 51.5	8.55	1.00	8.55	6.93	-	11.03
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:2, Beam:1

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.25	1.79	64.54	0.5L	27.00	0.27	5.87	211.49	Critical	1.45
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.25	1.43	-	0.5L	27.00	0.27	4.76	-	Critical	1.45
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.25	2.32	83.66	0.5L	27.00	0.27	7.66	275.71	Critical	1.45
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.25	1.85	-	0.5L	27.00	0.27	6.21	-	Critical	1.45
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.36	85.12	0.5L	27.00	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.88	-	0.5L	27.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.36	85.12	0.5L	27.00	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.88	-	0.5L	27.00	-	-	-	-	-





		Sheet # 2	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed JFK
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked MBI
File Name:	270017_Span 2_TTST.lbcx		Date Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.25	2.24	74.02	0.5L	27.00	0.27	7.97	262.86	Critical	1.45
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.25	2.26	74.72	0.5L	27.00	0.27	7.58	250.68	Critical	1.45
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.25	1.87	77.75	0.5L	27.00	0.27	7.15	297.34	Critical	1.45
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.25	1.89	79.39	0.5L	27.00	0.27	6.80	285.66	Critical	1.45
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.25	1.97	82.87	0.5L	27.00	0.27	6.39	268.25	Critical	1.45
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.25	1.87	80.25	0.5L	27.00	0.27	6.11	262.63	Critical	1.45
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.25	1.75	78.73	0.5L	27.00	0.27	6.14	276.34	Critical	1.45
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.25	1.72	77.37	0.5L	27.00	0.27	5.87	264.07	Critical	1.45
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.25	2.37	78.10	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.25	2.38	78.84	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.25	1.97	82.03	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.25	1.99	83.76	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.25	2.08	87.44	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.25	1.97	84.68	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.25	1.85	83.06	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.25	1.81	81.63	0.5L	27.00	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK



Sheet #	3				
Job #	171002272				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	0.90 x f <sub>y</sub> = 218.70
Design Operating	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	0.90 x f <sub>y</sub> = 218.70
Legal	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	-
Permit	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	0.90 x f <sub>y</sub> = 218.70

Consider shear reinf. across plane (FDOT alternative): No



Sheet #	4				
Job #	171002272				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**RATING RESULTS**

**Span:2, Beam:1**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.41	1.00	7.41	6.21	-	11.94	6.32
Critical : 1.4	-	-	-	5.87	-	-	-
0.1L : 5.0	5.11	1.00	5.11	6.55	-	6.36	4.03
0.2L : 10.5	3.06	1.00	3.06	6.49	-	4.19	4.26
0.3L : 16.0	2.14	1.00	2.14	7.84	-	2.96	2.92
0.4L : 21.5	1.85	1.00	1.85	10.09	-	2.45	2.47
0.5L : 27.0	1.79	1.00	1.79	12.01	-	2.36	2.38
0.6L : 32.5	1.85	1.00	1.85	10.09	-	2.45	2.47
0.7L : 38.0	2.14	1.00	2.14	7.84	-	2.96	2.92
0.8L : 43.5	3.06	1.00	3.06	6.43	-	4.19	4.26
0.9L : 49.0	5.11	1.00	5.11	8.55	-	6.36	4.03
Critical : 52.6	-	-	-	6.11	-	-	-
Transfer : 51.5	7.41	1.00	7.41	6.39	-	11.94	6.32
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	5				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.11	1.00	6.11	5.00	-	9.86	5.87
Critical : 1.4	-	-	-	4.76	-	-	-
0.1L : 5.0	4.16	1.00	4.16	5.22	-	5.18	3.70
0.2L : 10.5	2.48	1.00	2.48	5.19	-	3.40	3.64
0.3L : 16.0	1.73	1.00	1.73	6.32	-	2.38	2.53
0.4L : 21.5	1.48	1.00	1.48	8.17	-	1.96	2.15
0.5L : 27.0	1.43	1.00	1.43	10.42	-	1.88	2.07
0.6L : 32.5	1.48	1.00	1.48	8.17	-	1.96	2.15
0.7L : 38.0	1.73	1.00	1.73	6.32	-	2.38	2.53
0.8L : 43.5	2.48	1.00	2.48	5.19	-	3.40	3.64
0.9L : 49.0	4.16	1.00	4.16	6.89	-	5.18	3.70
Critical : 52.6	-	-	-	4.86	-	-	-
Transfer : 51.5	6.11	1.00	6.11	5.07	-	9.86	5.87
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



		Sheet #	6		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.60	1.00	9.60	8.11
Critical : 1.4	-	-	-	7.66
0.1L : 5.0	6.62	1.00	6.62	8.59
0.2L : 10.5	3.96	1.00	3.96	8.57
0.3L : 16.0	2.78	1.00	2.78	10.37
0.4L : 21.5	2.39	1.00	2.39	13.34
0.5L : 27.0	2.32	1.00	2.32	15.88
0.6L : 32.5	2.39	1.00	2.39	13.34
0.7L : 38.0	2.78	1.00	2.78	10.37
0.8L : 43.5	3.96	1.00	3.96	8.49
0.9L : 49.0	6.62	1.00	6.62	11.08
Critical : 52.6	-	-	-	7.96
Transfer : 51.5	9.60	1.00	9.60	8.34
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.



		Sheet #	7		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.92	1.00	7.92	6.54
Critical : 1.4	-	-	-	6.21
0.1L : 5.0	5.39	1.00	5.39	6.86
0.2L : 10.5	3.21	1.00	3.21	6.88
0.3L : 16.0	2.24	1.00	2.24	8.38
0.4L : 21.5	1.92	1.00	1.92	10.83
0.5L : 27.0	1.85	1.00	1.85	13.81
0.6L : 32.5	1.92	1.00	1.92	10.83
0.7L : 38.0	2.24	1.00	2.24	8.38
0.8L : 43.5	3.21	1.00	3.21	6.88
0.9L : 49.0	5.39	1.00	5.39	8.93
Critical : 52.6	-	-	-	6.34
Transfer : 51.5	7.92	1.00	7.92	6.64
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.

**Span:2, Beam:1**  
**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	8				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	10.00	1.00	10.00	8.42	-	12.90
Critical : 1.4	-	-	-	7.97	-	-
0.1L : 5.0	6.89	1.00	6.89	8.85	-	6.87
0.2L : 10.5	4.13	1.00	4.13	8.80	-	4.53
0.3L : 16.0	2.89	1.00	2.89	10.59	-	3.19
0.4L : 21.5	2.42	1.00	2.42	13.50	-	2.56
0.5L : 27.0	2.24	1.00	2.24	16.49	-	2.37
0.6L : 32.5	2.42	1.00	2.42	13.50	-	2.56
0.7L : 38.0	2.89	1.00	2.89	10.59	-	3.19
0.8L : 43.5	4.13	1.00	4.13	8.80	-	4.53
0.9L : 49.0	6.89	1.00	6.89	11.40	-	6.87
Critical : 52.6	-	-	-	8.21	-	-
Transfer : 51.5	10.00	1.00	10.00	8.60	-	12.90
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	9				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.64	1.00	9.64	7.92	-	12.44
Critical : 1.4	-	-	-	7.58	-	-
0.1L : 5.0	6.64	1.00	6.64	8.10	-	6.62
0.2L : 10.5	3.96	1.00	3.96	7.93	-	4.35
0.3L : 16.0	2.76	1.00	2.76	9.35	-	3.04
0.4L : 21.5	2.35	1.00	2.35	11.60	-	2.49
0.5L : 27.0	2.26	1.00	2.26	15.27	-	2.38
0.6L : 32.5	2.35	1.00	2.35	11.60	-	2.49
0.7L : 38.0	2.76	1.00	2.76	9.35	-	3.04
0.8L : 43.5	3.96	1.00	3.96	7.93	-	4.35
0.9L : 49.0	6.64	1.00	6.64	10.47	-	6.62
Critical : 52.6	-	-	-	7.58	-	-
Transfer : 51.5	9.64	1.00	9.64	7.93	-	12.44
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.26	1.00	9.26	7.54	-	11.95
Critical : 1.4	-	-	-	7.15	-	-
0.1L : 5.0	6.31	1.00	6.31	7.89	-	6.29
0.2L : 10.5	3.67	1.00	3.67	7.91	-	4.02
0.3L : 16.0	2.38	1.00	2.38	9.47	-	2.63
0.4L : 21.5	1.97	1.00	1.97	11.98	-	2.09
0.5L : 27.0	1.87	1.00	1.87	14.72	-	1.97
0.6L : 32.5	1.97	1.00	1.97	11.98	-	2.09
0.7L : 38.0	2.38	1.00	2.38	9.47	-	2.63
0.8L : 43.5	3.67	1.00	3.67	7.91	-	4.02
0.9L : 49.0	6.31	1.00	6.31	10.25	-	6.29
Critical : 52.6	-	-	-	7.28	-	-
Transfer : 51.5	9.26	1.00	9.26	7.65	-	11.95
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	11				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.56	1.00	8.56	7.14	-	11.04
Critical : 1.4	-	-	-	6.80	-	-
0.1L : 5.0	5.85	1.00	5.85	7.40	-	5.83
0.2L : 10.5	3.41	1.00	3.41	7.28	-	3.75
0.3L : 16.0	2.33	1.00	2.33	8.68	-	2.57
0.4L : 21.5	1.98	1.00	1.98	10.94	-	2.10
0.5L : 27.0	1.89	1.00	1.89	13.95	-	1.99
0.6L : 32.5	1.98	1.00	1.98	10.94	-	2.10
0.7L : 38.0	2.33	1.00	2.33	8.68	-	2.57
0.8L : 43.5	3.41	1.00	3.41	7.28	-	3.75
0.9L : 49.0	5.83	1.00	5.83	9.60	-	5.81
Critical : 52.6	-	-	-	6.86	-	-
Transfer : 51.5	8.53	1.00	8.53	7.19	-	11.01
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.12	1.00	8.12	6.71	-	10.47
Critical : 1.4	-	-	-	6.39	-	-
0.1L : 5.0	5.61	1.00	5.61	6.97	-	5.59
0.2L : 10.5	3.38	1.00	3.38	6.90	-	3.71
0.3L : 16.0	2.33	1.00	2.33	8.32	-	2.57
0.4L : 21.5	2.01	1.00	2.01	10.60	-	2.13
0.5L : 27.0	1.97	1.00	1.97	13.60	-	2.08
0.6L : 32.5	2.01	1.00	2.01	10.60	-	2.13
0.7L : 38.0	2.33	1.00	2.33	8.32	-	2.57
0.8L : 43.5	3.38	1.00	3.38	6.90	-	3.71
0.9L : 49.0	5.61	1.00	5.61	9.06	-	5.59
Critical : 52.6	-	-	-	6.49	-	-
Transfer : 51.5	8.12	1.00	8.12	6.79	-	10.47
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.82	1.00	7.82	6.38	-	10.08
Critical : 1.4	-	-	-	6.11	-	-
0.1L : 5.0	5.40	1.00	5.40	6.53	-	5.38
0.2L : 10.5	3.25	1.00	3.25	6.41	-	3.57
0.3L : 16.0	2.23	1.00	2.23	7.65	-	2.46
0.4L : 21.5	1.92	1.00	1.92	9.66	-	2.04
0.5L : 27.0	1.87	1.00	1.87	13.11	-	1.97
0.6L : 32.5	1.92	1.00	1.92	9.66	-	2.04
0.7L : 38.0	2.23	1.00	2.23	7.65	-	2.46
0.8L : 43.5	3.25	1.00	3.25	6.41	-	3.57
0.9L : 49.0	5.40	1.00	5.40	8.52	-	5.38
Critical : 52.6	-	-	-	6.11	-	-
Transfer : 51.5	7.82	1.00	7.82	6.38	-	10.08
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	14		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.87	1.00	7.87	6.42	-	10.15
Critical : 1.4	-	-	-	6.14	-	-
0.1L : 5.0	5.45	1.00	5.45	6.60	-	5.44
0.2L : 10.5	3.31	1.00	3.31	6.55	-	3.64
0.3L : 16.0	2.23	1.00	2.23	7.92	-	2.46
0.4L : 21.5	1.85	1.00	1.85	10.22	-	1.96
0.5L : 27.0	1.75	1.00	1.75	14.29	-	1.85
0.6L : 32.5	1.85	1.00	1.85	10.22	-	1.96
0.7L : 38.0	2.23	1.00	2.23	7.92	-	2.46
0.8L : 43.5	3.31	1.00	3.31	6.55	-	3.64
0.9L : 49.0	5.45	1.00	5.45	8.60	-	5.44
Critical : 52.6	-	-	-	6.15	-	-
Transfer : 51.5	7.87	1.00	7.87	6.43	-	10.15
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	15		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx		Date	Mar/7/2022	

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.44	1.00	7.44	6.17	-	9.60
Critical : 1.4	-	-	-	5.87	-	-
0.1L : 5.0	5.13	1.00	5.13	6.43	-	5.12
0.2L : 10.5	3.08	1.00	3.08	6.35	-	3.38
0.3L : 16.0	2.10	1.00	2.10	7.63	-	2.32
0.4L : 21.5	1.79	1.00	1.79	9.75	-	1.90
0.5L : 27.0	1.72	1.00	1.72	12.29	-	1.81
0.6L : 32.5	1.79	1.00	1.79	9.75	-	1.90
0.7L : 38.0	2.10	1.00	2.10	7.63	-	2.32
0.8L : 43.5	3.08	1.00	3.08	6.35	-	3.38
0.9L : 49.0	5.13	1.00	5.13	8.39	-	5.12
Critical : 52.6	-	-	-	6.00	-	-
Transfer : 51.5	7.44	1.00	7.44	6.27	-	9.60
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**PROPERTIES**

**Span:2, Beam:2**  
**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Flng width	Top	36.000	in	Bot	36.000	in
	thick	Top	4.500	in	Bot	4.500*
Stems	No	0				
	Top	N/A				
Shear width	Bot	N/A				
		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	3.00/ 3.00	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Interior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**



Sheet #	2				
Job #	171002272				
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File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:				
	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)

**GENERAL LOAD DATA:**  
**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	55.000	ft
Release length	55.000	ft
Design length	54.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**  
**Type g**





Sheet #	3				
Job #	171002272				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Live Moment	(2+ lanes loaded)	0.245	(Calculated)	
Live Moment	(1 lane loaded)	0.226	(Calculated)	
Live Shear	(2+ lanes loaded)	0.245	(Calculated)	(!)
Live Shear	(1 lane loaded)	0.226	(Calculated)	(!)

(!) Taken as for moment (4.6.2.2.3a)  
 The LL distribution computation is using the effective slab depth (ts = 0.00in).  
 Include sacrificial deck thick in ts: NO

Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.100	(Manual input)

Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90



Sheet #	4				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**SECTION PROPERTIES:**

	PRECAST		COMPOSITE		
Area	522.3	in2	522.3	in2	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (Ixx)	25390	in4	25390	in4	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (Iyy)	62796.0	in4			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using Ect/Ec = 1.0000

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only

Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 5.00	0.20L 10.50	0.30L 16.00	0.40L 21.50	Midspan 27.00
Precast:(At Release, using	Ec =	4561.7ksi)							
Area,	in2	525.1	539.4	530.1	539.4	543.9	543.9	543.9	543.9
Yb,	in	10.37	10.22	10.32	10.22	10.16	10.16	10.16	10.16
MI(Ixx),	in4	25481	25922	25638	25922	26147	26147	26147	26147
Composite:(At Final, using	Ec =	5007.5ksi)							
Area,	in2	524.8	537.6	529.3	537.6	541.6	541.6	541.6	541.6
Yb,	in	10.38	10.24	10.33	10.24	10.19	10.19	10.19	10.19
MI(Ixx),	in4	25471	25867	25612	25867	26069	26069	26069	26069



Sheet #	5				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**Span:2, Beam:2**

**STRESS LIMITS (Art. 5.9.2):**

**STRESS LIMITS AT RELEASE BEFORE LOSSES:**

	PRECAST	
Strength	4.90	ksi
Elasticity	4561.7	ksi
Max comp	3.19	ksi
Max tens	-0.20	ksi
Max tens, w/reinf	-0.53	ksi

**STRESS LIMITS AT FINAL AFTER LOSSES:**

	PRECAST		DECK	
Strength	6.50	ksi	6.50	ksi
Elasticity	5007.55	ksi	5007.55	ksi

**STRESS LIMITS AT FINAL 1 (P/S + DL + LL):**

	PRECAST		DECK	
Max comp	3.90	ksi	3.90	ksi

**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	PRECAST		DECK	
Max comp	2.93	ksi	2.93	ksi

**FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**



Sheet #	6				
Job #	171002272				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Max comp	<b>PRECAST</b>	2.60	ksi	<b>DECK</b>	-	ksi
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**SERVICE III (Tension):**

Max tens	<b>PRECAST</b>	-0.48	ksi	<b>DECK</b>	-0.48	ksi
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**Span:2, Beam:2**

**PRESTRESSED STEEL:**

19 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 4.37 in):**

11 @ 2.000 in	6 @ 4.000 in	2 @ 18.500 in
---------------	--------------	---------------

**SHIELDING AND REDUCED INITIAL PULLS:**

Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	4.000	in	4.000	in	6.00	ft	0.00	ft	2.000	in	75.0 %	43.9	kips
8	2	2.000	in	2.000	in	6.00	ft	0.00	ft	8.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK



Sheet #	7				
Job #	171002272				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	4.123	in <sup>2</sup>
Trans. Len,bonded	3.000	ft
Trans. Len,debonded	3.000	ft
Dev. Len, bonded	5.872	ft
Dev. Len, debonded	11.744	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	834.9	kips
Beam Shrtng (PL/AE)	0.228	in

**Span:2, Beam:2**  
**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
1045.000	740	773.300	7.389	29923.500	291.109	74.870

**Span:2, Beam:2**  
**REINFORCING STEEL:**

Tension	steel:	
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**



Sheet #	8				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

# legs	Size	fy (ksi)	Area (in2)	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.0833	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	49.5000	No
4	US#4[M13]	60.0	0.80	9.00	49.5000	54.9167	No
4	US#5[M16]	60.0	1.24	1.00	54.9167	55.0000	No

**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	55.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	4.1230	in2
Ycg	4.37	in
P_init	834.9	kips
Ecc	6.04	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4562	ksi



Sheet #	9				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

### AASHTO LOSSES

Elastic Shortening \*\* 12.02 ksi (Eq 5.9.5.2.3a-1), (fcgp= 1.925 ksi)

Elastic Gains		Gains	Adjustment
due to Precast Loads		-0.00 ksi	0.00 ksi
due to Composite Loads		-2.19 ksi	0.00 ksi
due to Live Loads		-3.56 ksi	0.00 ksi

### Time Dependent Losses (Approximate Method (Art.5.9.3.3))

	Initial	Final	
Steel relaxation	0.00 ksi	2.40 ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00 ksi	9.66 ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00 ksi	12.87 ksi	(Eq 5.9.3.3-1)
Sub-total	12.02 ksi	19.18 ksi	( 9.47 %)
Total Prestress Losses		31.20 ksi	(15.41 %)

### Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK  
 initial fpe = 171.3 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.



Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 2, SERVICE I**  
**Shears: kips, Moments: kft**





Sheet #	11				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	35.0	12.6	66.6	124.3	165.4	190.1	198.3
(Max)	V	14.7	13.3	14.2	12.0	9.0	6.0	3.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.5	7.9	3.8	13.6	24.0	31.5	35.9	37.4
DC(Max)	V	2.7	2.4	2.6	2.2	1.6	1.1	0.5	0.0
DL-Comp :	M	4.3	22.3	10.8	38.5	68.1	89.3	101.9	106.2
DW(Max)	V	7.5	6.8	7.3	6.1	4.6	3.1	1.5	0.0
LL + I :	M+	11.1	67.2	31.5	116.7	201.9	256.5	287.9	292.2
	V	19.0	14.6	17.4	10.2	7.0	3.8	1.8	7.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	23.5	21.7	22.9	20.0	16.9	13.9	11.0	8.9
	M	12.8	65.5	32.1	111.1	186.9	230.1	242.3	244.7
Total :	M+	16.9	132.4	58.7	235.4	418.3	542.6	615.8	634.1
	V	43.9	37.2	41.5	30.5	22.2	13.9	6.9	7.2
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	48.4	44.3	46.9	40.3	32.1	24.0	16.0	8.9
	M	18.6	130.6	59.3	229.9	403.3	516.2	570.2	586.6



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	101.9	89.3	68.1	38.5	10.8	22.3	4.3
DW(Max)	V	1.5	3.1	4.6	6.1	7.3	6.8	7.5
LL + I :	M+	287.9	256.5	201.9	116.7	31.5	67.2	11.1
	V	1.8	3.8	7.0	10.2	17.1	14.4	18.6
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	11.0	13.9	16.9	20.0	22.3	21.4	22.8
	M	242.3	230.1	186.9	111.1	32.1	65.5	12.8
Total :	M+	615.8	542.6	418.3	235.4	58.7	132.4	16.9
	V	6.9	13.9	22.2	30.5	41.2	37.0	43.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	16.0	24.0	32.1	40.3	46.4	44.0	47.7
	M	570.2	516.2	403.3	229.9	59.3	130.6	18.6

REACTIONS (kips), SERVICE I



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Load Type		Left Support	Right Support
Self Wt.		14.7	14.7
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		29.5	29.5
DL-Comp.(DW)		75.5	75.5
Live		76.2	76.2
	Truck	58.9	58.9
	Lane	17.3	17.3
Pedestrian		0.0	0.0

Upward reactions are positive.  
Live Load reactions are per lane with no distribution factor and no impact.  
Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
Non-composite load types are per beam.  
Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 2, SERVICE III**  
**Shears: kips, Moments: kft**



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	35.0	12.6	66.6	124.3	165.4	190.1	198.3
(Max)	V	14.7	13.3	14.2	12.0	9.0	6.0	3.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.5	7.9	3.8	13.6	24.0	31.5	35.9	37.4
DC(Max)	V	2.7	2.4	2.6	2.2	1.6	1.1	0.5	0.0
DL-Comp :	M	4.3	22.3	10.8	38.5	68.1	89.3	101.9	106.2
DW(Max)	V	7.5	6.8	7.3	6.1	4.6	3.1	1.5	0.0
LL + I :	M+	8.9	53.8	25.2	93.3	161.5	205.2	230.3	233.8
	V	15.2	11.7	14.0	8.1	5.6	3.0	1.4	5.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	18.8	17.4	18.3	16.0	13.5	11.1	8.8	7.1
	M	10.3	52.4	25.6	88.9	149.5	184.1	193.8	195.7
Total :	M+	14.7	119.0	52.4	212.1	377.9	491.3	558.2	575.7
	V	40.1	34.3	38.0	28.4	20.8	13.1	6.5	5.7
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	43.7	40.0	42.4	36.3	28.7	21.3	13.9	7.1
	M	16.1	117.6	52.9	207.7	365.9	470.2	521.8	537.6



Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	101.9	89.3	68.1	38.5	10.8	22.3	4.3
DW(Max)	V	1.5	3.1	4.6	6.1	7.3	6.8	7.5
LL + I :	M+	230.3	205.2	161.5	93.3	25.2	53.8	8.9
	V	1.4	3.0	5.6	8.1	13.7	11.5	14.9
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	8.8	11.1	13.5	16.0	17.9	17.1	18.3
	M	193.8	184.1	149.5	88.9	25.6	52.4	10.3
Total :	M+	558.2	491.3	377.9	212.1	52.4	119.0	14.7
	V	6.5	13.1	20.8	28.4	37.8	34.1	39.8
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	13.9	21.3	28.7	36.3	42.0	39.7	43.2
	M	521.8	470.2	365.9	207.7	52.9	117.6	16.1



Sheet #	16			
Job #	171002272			
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Checked	MBI
File Name:	270017_Span 2_SV.lbcx	Phone: 1-800-778-4277	Date	Mar/7/2022

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 2, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	17				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	43.8	15.8	83.3	155.3	206.7	237.6	247.9
(Max)	V	18.4	16.7	17.8	15.0	11.2	7.5	3.7	0.0
Self wt. :	M	0.0	31.5	11.4	60.0	111.8	148.9	171.1	178.5
(Min)	V	13.2	12.0	12.8	10.8	8.1	5.4	2.7	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.9	9.8	4.8	17.0	30.0	39.3	44.9	46.8
DC(Max)	V	3.3	3.0	3.2	2.7	2.0	1.4	0.7	0.0
DL-Comp :	M	1.4	7.1	3.4	12.2	21.6	28.3	32.3	33.7
DC(Min)	V	2.4	2.2	2.3	2.0	1.5	1.0	0.5	0.0
DL-Comp :	M	6.4	33.4	16.2	57.8	102.2	133.9	152.9	159.3
DW(Max)	V	11.3	10.3	11.0	9.2	6.9	4.6	2.3	0.0
DL-Comp :	M	2.8	14.5	7.0	25.0	44.3	58.0	66.3	69.0
DW(Min)	V	4.9	4.5	4.7	4.0	3.0	2.0	1.0	0.0
LL + I :	M+	19.4	117.7	55.2	204.2	353.4	448.9	503.7	511.4
	V	33.2	25.5	30.5	17.8	12.2	6.6	3.2	12.5
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	18				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	41.1	38.0	40.0	35.0	29.6	24.3	19.2	15.5
	M	22.4	114.6	56.1	194.5	327.1	402.7	424.0	428.2
Total :	M+	27.8	204.7	91.9	362.3	640.9	828.9	939.2	965.3
	V	66.2	55.5	62.5	44.7	32.4	20.0	9.9	12.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	74.1	68.0	71.9	61.8	49.7	37.8	25.9	15.5
	M	30.8	201.6	92.8	352.6	614.6	782.7	859.4	882.1





Sheet #	19				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	237.6	206.7	155.3	83.3	15.8	43.8	0.0
(Max)	V	3.7	7.5	11.2	15.0	17.8	16.7	18.4
Self wt. :	M	171.1	148.9	111.8	60.0	11.4	31.5	0.0
(Min)	V	2.7	5.4	8.1	10.8	12.8	12.0	13.2
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	44.9	39.3	30.0	17.0	4.8	9.8	1.9
DC(Max)	V	0.7	1.4	2.0	2.7	3.2	3.0	3.3
DL-Comp :	M	32.3	28.3	21.6	12.2	3.4	7.1	1.4
DC(Min)	V	0.5	1.0	1.5	2.0	2.3	2.2	2.4
DL-Comp :	M	152.9	133.9	102.2	57.8	16.2	33.4	6.4
DW(Max)	V	2.3	4.6	6.9	9.2	11.0	10.3	11.3
DL-Comp :	M	66.3	58.0	44.3	25.0	7.0	14.5	2.8
DW(Min)	V	1.0	2.0	3.0	4.0	4.7	4.5	4.9
LL + I :	M+	503.7	448.9	353.4	204.2	55.2	117.7	19.4
	V	3.2	6.6	12.2	17.8	29.9	25.2	32.5
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	20				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	19.2	24.3	29.6	35.0	39.1	37.5	40.0
	M	424.0	402.7	327.1	194.5	56.1	114.6	22.4
Total :	M+	939.2	828.9	640.9	362.3	91.9	204.7	27.8
	V	9.9	20.0	32.4	44.7	61.9	55.1	65.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	25.9	37.8	49.7	61.8	71.0	67.4	73.0
	M	859.4	782.7	614.6	352.6	92.8	201.6	30.8

**REACTIONS (kips), STRENGTH I**

Load Type		Left Support	Right Support
Self Wt.		18.4	18.4
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		36.9	36.9
DL-Comp.(DW)		113.2	113.2
Live		133.3	133.3
	Truck	103.0	103.0
	Lane	30.3	30.3
Pedestrian		0.0	0.0

Upward reactions are positive.  
 Live Load reactions are per lane with no distribution factor and no impact.  
 Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
 Non-composite load types are per beam.



Sheet #	21				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 2, FATIGUE I**  
**Shears: kips, Moments: kft**



Sheet #	22				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	35.0	12.6	66.6	124.3	165.4	190.1	198.3
(Max)	V	14.7	13.3	14.2	12.0	9.0	6.0	3.0	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.5	7.9	3.8	13.6	24.0	31.5	35.9	37.4
DC(Max)	V	2.7	2.4	2.6	2.2	1.6	1.1	0.5	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	4.3	22.3	10.8	38.5	68.1	89.3	101.9	106.2
DW(Max)	V	7.5	6.8	7.3	6.1	4.6	3.1	1.5	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	10.1	51.3	25.2	86.3	141.4	177.2	190.2	187.9
	V	18.0	16.8	17.6	15.5	0.7	1.9	4.6	6.8
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	23				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	18.0	16.8	17.6	15.5	12.8	9.5	7.8	6.8
	M	10.1	51.3	25.2	86.3	141.3	157.3	171.8	187.9
Total :	M+	15.9	116.4	52.5	205.0	357.8	463.3	518.1	529.8
	V	42.9	39.3	41.7	35.8	15.9	12.0	9.7	6.8
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	42.9	39.3	41.7	35.8	28.0	19.6	12.9	6.8
	M	15.9	116.5	52.5	205.0	357.7	443.4	499.8	529.8



Sheet #	24				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	101.9	89.3	68.1	38.5	10.8	22.3	4.3
DW(Max)	V	1.5	3.1	4.6	6.1	7.3	6.8	7.5
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	190.2	177.2	141.4	86.3	25.2	51.3	10.1
	V	4.6	1.9	0.7	15.5	17.5	16.7	18.0
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	25				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	8.2	10.1	12.8	15.5	17.5	16.7	18.0
	M	180.8	168.1	141.3	86.3	25.2	51.3	10.1
Total :	M+	518.1	463.3	357.8	205.0	52.5	116.4	15.9
	V	9.7	12.0	15.9	35.8	41.6	39.3	42.9
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	13.3	20.3	28.0	35.8	41.6	39.3	42.9
	M	508.8	454.2	357.7	205.0	52.5	116.5	15.9



Sheet #	26				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:2, Beam:2

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.25	1.65	59.45	0.5L	27.00	0.25	6.37	229.41	Critical	1.45
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.25	1.31	-	0.5L	27.00	0.25	5.16	-	Critical	1.45
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.25	2.14	77.07	0.5L	27.00	0.25	8.31	299.01	Critical	1.45
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.25	1.70	-	0.5L	27.00	0.25	6.73	-	Critical	1.45
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.16	77.62	0.5L	27.00	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.72	-	0.5L	27.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.16	77.62	0.5L	27.00	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.72	-	0.5L	27.00	-	-	-	-	-





Sheet #	27
Job #	171002272
Designed	JFK
Date	Feb/2/2022
Checked	MBI
Date	Mar/7/2022

Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277
File Name:	270017_Span 2_SV.lbcx	

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.25	4.36	58.88	0.5L	27.00	0.25	18.65	251.73	Critical	1.45
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.25	3.37	67.48	0.5L	27.00	0.25	13.41	268.11	Critical	1.45
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.25	3.25	71.50	0.5L	27.00	0.25	12.51	275.14	Critical	1.45
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.25	2.17	59.24	0.5L	27.00	0.25	9.18	250.10	Critical	1.45
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.25	1.86	65.09	0.5L	27.00	0.25	7.72	269.60	Critical	1.45
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.25	1.82	64.67	0.5L	27.00	0.25	7.86	279.37	Critical	1.45
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.25	1.69	67.49	0.5L	27.00	0.25	7.18	286.72	Critical	1.45
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.25	1.61	67.61	0.5L	27.00	0.25	7.12	298.96	Critical	1.45
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.25	4.56	61.50	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.25	3.52	70.49	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.25	3.39	74.69	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.25	2.27	61.88	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.25	1.95	67.99	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.25	1.90	67.55	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.25	1.76	70.50	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.25	1.68	70.62	0.5L	27.00	-	-	-	-	-



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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	0.90 x f <sub>y</sub> = 218.70
Design Operating	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	0.90 x f <sub>y</sub> = 218.70
Legal	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	-
Permit	0.60 x f <sub>c</sub> = 3.90	0.19 x sqrt(f <sub>c</sub> ) = 0.48	0.90 x f <sub>y</sub> = 218.70

Consider shear reinf. across plane (FDOT alternative): No



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**RATING RESULTS**

Span:2, Beam:2

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.33	1.00	7.33	6.73	-	11.84	5.99
Critical : 1.4	-	-	-	6.37	-	-	-
0.1L : 5.0	5.01	1.00	5.01	7.10	-	6.21	3.80
0.2L : 10.5	2.94	1.00	2.94	7.02	-	4.02	3.82
0.3L : 16.0	2.01	1.00	2.01	8.51	-	2.77	2.65
0.4L : 21.5	1.71	1.00	1.71	11.00	-	2.25	2.24
0.5L : 27.0	1.65	1.00	1.65	13.17	-	2.16	2.16
0.6L : 32.5	1.71	1.00	1.71	11.00	-	2.25	2.24
0.7L : 38.0	2.01	1.00	2.01	8.51	-	2.77	2.65
0.8L : 43.5	2.94	1.00	2.94	6.95	-	4.02	3.82
0.9L : 49.0	5.01	1.00	5.01	9.35	-	6.21	3.80
Critical : 52.6	-	-	-	6.63	-	-	-
Transfer : 51.5	7.33	1.00	7.33	6.93	-	11.84	5.99
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.05	1.00	6.05	5.42	-	9.78	5.59
Critical : 1.4	-	-	-	5.16	-	-	-
0.1L : 5.0	4.08	1.00	4.08	5.66	-	5.06	3.50
0.2L : 10.5	2.38	1.00	2.38	5.61	-	3.26	3.32
0.3L : 16.0	1.62	1.00	1.62	6.86	-	2.23	2.33
0.4L : 21.5	1.37	1.00	1.37	8.91	-	1.80	1.98
0.5L : 27.0	1.31	1.00	1.31	11.43	-	1.72	1.91
0.6L : 32.5	1.37	1.00	1.37	8.91	-	1.80	1.98
0.7L : 38.0	1.62	1.00	1.62	6.86	-	2.23	2.33
0.8L : 43.5	2.38	1.00	2.38	5.61	-	3.26	3.32
0.9L : 49.0	4.08	1.00	4.08	7.54	-	5.06	3.50
Critical : 52.6	-	-	-	5.27	-	-	-
Transfer : 51.5	6.05	1.00	6.05	5.50	-	9.78	5.59
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
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File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.50	1.00	9.50	8.80
Critical : 1.4	-	-	-	8.31
0.1L : 5.0	6.49	1.00	6.49	9.31
0.2L : 10.5	3.81	1.00	3.81	9.26
0.3L : 16.0	2.61	1.00	2.61	11.25
0.4L : 21.5	2.22	1.00	2.22	14.53
0.5L : 27.0	2.14	1.00	2.14	17.39
0.6L : 32.5	2.22	1.00	2.22	14.53
0.7L : 38.0	2.61	1.00	2.61	11.25
0.8L : 43.5	3.81	1.00	3.81	9.17
0.9L : 49.0	6.49	1.00	6.49	12.13
Critical : 52.6	-	-	-	8.64
Transfer : 51.5	9.50	1.00	9.50	9.05
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.



Sheet #	33				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

### HL93 Design Load Positive Live Load

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.84	1.00	7.84	7.10
Critical : 1.4	-	-	-	6.73
0.1L : 5.0	5.29	1.00	5.29	7.44
0.2L : 10.5	3.09	1.00	3.09	7.43
0.3L : 16.0	2.10	1.00	2.10	9.09
0.4L : 21.5	1.78	1.00	1.78	11.81
0.5L : 27.0	1.70	1.00	1.70	15.14
0.6L : 32.5	1.78	1.00	1.78	11.81
0.7L : 38.0	2.10	1.00	2.10	9.09
0.8L : 43.5	3.09	1.00	3.09	7.43
0.9L : 49.0	5.29	1.00	5.29	9.77
Critical : 52.6	-	-	-	6.87
Transfer : 51.5	7.84	1.00	7.84	7.20
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.

Span:2, Beam:2

#### B) Legal Live Load Rating

Shear and Moment RF's are for Strength I Limit State

Tension Stress RF's are for Service III Limit State



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Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	21.19	1.00	21.19	19.74	-	27.39
Critical : 1.4	-	-	-	18.65	-	-
0.1L : 5.0	14.35	1.00	14.35	20.72	-	14.24
0.2L : 10.5	8.22	1.00	8.22	20.38	-	8.99
0.3L : 16.0	5.46	1.00	5.46	23.93	-	6.00
0.4L : 21.5	4.59	1.00	4.59	29.29	-	4.83
0.5L : 27.0	4.36	1.00	4.36	33.80	-	4.56
0.6L : 32.5	4.59	1.00	4.59	29.29	-	4.83
0.7L : 38.0	5.46	1.00	5.46	23.93	-	6.00
0.8L : 43.5	8.22	1.00	8.22	20.38	-	8.99
0.9L : 49.0	14.35	1.00	14.35	26.46	-	14.24
Critical : 52.6	-	-	-	19.28	-	-
Transfer : 51.5	21.19	1.00	21.19	20.22	-	27.39
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





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**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	15.25	1.00	15.25	14.20	-	19.71
Critical : 1.4	-	-	-	13.41	-	-
0.1L : 5.0	10.37	1.00	10.37	14.97	-	10.29
0.2L : 10.5	6.00	1.00	6.00	14.81	-	6.57
0.3L : 16.0	4.04	1.00	4.04	17.64	-	4.44
0.4L : 21.5	3.46	1.00	3.46	22.07	-	3.64
0.5L : 27.0	3.37	1.00	3.37	25.86	-	3.52
0.6L : 32.5	3.46	1.00	3.46	22.07	-	3.64
0.7L : 38.0	4.04	1.00	4.04	17.64	-	4.44
0.8L : 43.5	6.00	1.00	6.00	14.81	-	6.57
0.9L : 49.0	10.37	1.00	10.37	19.23	-	10.29
Critical : 52.6	-	-	-	13.89	-	-
Transfer : 51.5	15.25	1.00	15.25	14.57	-	19.71
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	14.22	1.00	14.22	13.26	-	18.38
Critical : 1.4	-	-	-	12.51	-	-
0.1L : 5.0	9.69	1.00	9.69	14.00	-	9.62
0.2L : 10.5	5.63	1.00	5.63	13.91	-	6.17
0.3L : 16.0	3.82	1.00	3.82	16.67	-	4.19
0.4L : 21.5	3.29	1.00	3.29	21.07	-	3.46
0.5L : 27.0	3.25	1.00	3.25	24.87	-	3.39
0.6L : 32.5	3.29	1.00	3.29	21.07	-	3.46
0.7L : 38.0	3.82	1.00	3.82	16.67	-	4.19
0.8L : 43.5	5.63	1.00	5.63	13.91	-	6.17
0.9L : 49.0	9.69	1.00	9.69	18.02	-	9.62
Critical : 52.6	-	-	-	12.97	-	-
Transfer : 51.5	14.22	1.00	14.22	13.61	-	18.38
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	10.55	1.00	10.55	9.64	-	13.64
Critical : 1.4	-	-	-	9.18	-	-
0.1L : 5.0	7.16	1.00	7.16	9.96	-	7.10
0.2L : 10.5	4.11	1.00	4.11	9.65	-	4.50
0.3L : 16.0	2.74	1.00	2.74	11.26	-	3.01
0.4L : 21.5	2.31	1.00	2.31	13.73	-	2.43
0.5L : 27.0	2.17	1.00	2.17	16.48	-	2.27
0.6L : 32.5	2.31	1.00	2.31	13.73	-	2.43
0.7L : 38.0	2.74	1.00	2.74	11.26	-	3.01
0.8L : 43.5	4.11	1.00	4.11	9.65	-	4.50
0.9L : 49.0	7.16	1.00	7.16	12.95	-	7.10
Critical : 52.6	-	-	-	9.36	-	-
Transfer : 51.5	10.55	1.00	10.55	9.78	-	13.64
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.89	1.00	8.89	8.11	-	11.49
Critical : 1.4	-	-	-	7.72	-	-
0.1L : 5.0	6.06	1.00	6.06	8.42	-	6.01
0.2L : 10.5	3.53	1.00	3.53	8.23	-	3.86
0.3L : 16.0	2.36	1.00	2.36	9.77	-	2.59
0.4L : 21.5	1.96	1.00	1.96	12.23	-	2.06
0.5L : 27.0	1.86	1.00	1.86	15.08	-	1.95
0.6L : 32.5	1.96	1.00	1.96	12.23	-	2.06
0.7L : 38.0	2.36	1.00	2.36	9.77	-	2.59
0.8L : 43.5	3.53	1.00	3.53	8.23	-	3.86
0.9L : 49.0	6.06	1.00	6.06	11.01	-	6.01
Critical : 52.6	-	-	-	7.89	-	-
Transfer : 51.5	8.89	1.00	8.89	8.24	-	11.49
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.22	1.00	9.22	8.25	-	11.91
Critical : 1.4	-	-	-	7.86	-	-
0.1L : 5.0	6.20	1.00	6.20	8.55	-	6.15
0.2L : 10.5	3.48	1.00	3.48	8.40	-	3.81
0.3L : 16.0	2.30	1.00	2.30	10.05	-	2.53
0.4L : 21.5	1.94	1.00	1.94	12.71	-	2.04
0.5L : 27.0	1.82	1.00	1.82	16.06	-	1.90
0.6L : 32.5	1.94	1.00	1.94	12.71	-	2.04
0.7L : 38.0	2.30	1.00	2.30	10.05	-	2.53
0.8L : 43.5	3.48	1.00	3.48	8.40	-	3.81
0.9L : 49.0	6.20	1.00	6.20	11.17	-	6.15
Critical : 52.6	-	-	-	7.98	-	-
Transfer : 51.5	9.22	1.00	9.22	8.35	-	11.91
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	40				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.50	1.00	8.50	7.52	-	10.99
Critical : 1.4	-	-	-	7.18	-	-
0.1L : 5.0	5.71	1.00	5.71	7.75	-	5.66
0.2L : 10.5	3.20	1.00	3.20	7.63	-	3.50
0.3L : 16.0	2.13	1.00	2.13	9.17	-	2.34
0.4L : 21.5	1.79	1.00	1.79	11.69	-	1.89
0.5L : 27.0	1.69	1.00	1.69	15.03	-	1.76
0.6L : 32.5	1.79	1.00	1.79	11.69	-	1.89
0.7L : 38.0	2.13	1.00	2.13	9.17	-	2.34
0.8L : 43.5	3.20	1.00	3.20	7.63	-	3.50
0.9L : 49.0	5.71	1.00	5.71	10.17	-	5.66
Critical : 52.6	-	-	-	7.24	-	-
Transfer : 51.5	8.50	1.00	8.50	7.56	-	10.99
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	41				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.46	1.00	8.46	7.47	-	10.94
Critical : 1.4	-	-	-	7.12	-	-
0.1L : 5.0	5.68	1.00	5.68	7.72	-	5.64
0.2L : 10.5	3.18	1.00	3.18	7.66	-	3.48
0.3L : 16.0	2.05	1.00	2.05	9.31	-	2.25
0.4L : 21.5	1.71	1.00	1.71	11.93	-	1.80
0.5L : 27.0	1.61	1.00	1.61	15.36	-	1.68
0.6L : 32.5	1.71	1.00	1.71	11.93	-	1.80
0.7L : 38.0	2.05	1.00	2.05	9.31	-	2.25
0.8L : 43.5	3.18	1.00	3.18	7.66	-	3.48
0.9L : 49.0	5.68	1.00	5.68	10.13	-	5.64
Critical : 52.6	-	-	-	7.18	-	-
Transfer : 51.5	8.46	1.00	8.46	7.51	-	10.94
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSSiT - Prestress Steel Tension.



		Sheet # 1			
				Job # 171002272	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:2, Beam:2

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.25	1.65	59.45	0.5L	27.00	0.25	6.37	229.41	Critical	1.45
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.25	1.31	-	0.5L	27.00	0.25	5.16	-	Critical	1.45
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.25	2.14	77.07	0.5L	27.00	0.25	8.31	299.01	Critical	1.45
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.25	1.70	-	0.5L	27.00	0.25	6.73	-	Critical	1.45
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.16	77.62	0.5L	27.00	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.72	-	0.5L	27.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.16	77.62	0.5L	27.00	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.72	-	0.5L	27.00	-	-	-	-	-





		Sheet # 2			
		Job # 171002272			
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx		Date	Mar/7/2022	

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.25	2.07	68.19	0.5L	27.00	0.25	8.64	285.06	Critical	1.45
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.25	2.08	68.83	0.5L	27.00	0.25	8.22	271.86	Critical	1.45
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.25	1.72	71.62	0.5L	27.00	0.25	7.75	322.48	Critical	1.45
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.25	1.74	73.13	0.5L	27.00	0.25	7.38	309.83	Critical	1.45
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.25	1.82	76.34	0.5L	27.00	0.25	6.93	290.96	Critical	1.45
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.25	1.72	73.93	0.5L	27.00	0.25	6.62	284.87	Critical	1.45
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.25	1.61	72.52	0.5L	27.00	0.25	6.66	299.74	Critical	1.45
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.25	1.58	71.27	0.5L	27.00	0.25	6.37	286.45	Critical	1.45
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.25	2.16	71.22	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.25	2.17	71.90	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.25	1.80	74.81	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.25	1.82	76.39	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.25	1.90	79.74	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.25	1.80	77.22	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.25	1.68	75.75	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.25	1.65	74.45	0.5L	27.00	-	-	-	-	-



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		Job #	171002272	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx		Date	Mar/7/2022

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-



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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
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**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	-
Permit	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No



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### RATING RESULTS

Span:2, Beam:2

#### A) Design Live Load Rating

#### Inventory Rating Level

Shear and Moment RF's are for Strength I Limit State

Tension Stress RF's are for Service III Limit State

Prestress tendon RF is for Service I Limit State

#### HS20 Truck Positive Live Load

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.33	1.00	7.33	6.73	-	11.84	5.99
Critical : 1.4	-	-	-	6.37	-	-	-
0.1L : 5.0	5.01	1.00	5.01	7.10	-	6.21	3.80
0.2L : 10.5	2.94	1.00	2.94	7.02	-	4.02	3.82
0.3L : 16.0	2.01	1.00	2.01	8.51	-	2.77	2.65
0.4L : 21.5	1.71	1.00	1.71	11.00	-	2.25	2.24
0.5L : 27.0	1.65	1.00	1.65	13.17	-	2.16	2.16
0.6L : 32.5	1.71	1.00	1.71	11.00	-	2.25	2.24
0.7L : 38.0	2.01	1.00	2.01	8.51	-	2.77	2.65
0.8L : 43.5	2.94	1.00	2.94	6.95	-	4.02	3.82
0.9L : 49.0	5.01	1.00	5.01	9.35	-	6.21	3.80
Critical : 52.6	-	-	-	6.63	-	-	-
Transfer : 51.5	7.33	1.00	7.33	6.93	-	11.84	5.99
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	6		
		Job #	171002272		
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx		Date	Mar/7/2022	

### HL93 Design Load Positive Live Load

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.05	1.00	6.05	5.42	-	9.78	5.59
Critical : 1.4	-	-	-	5.16	-	-	-
0.1L : 5.0	4.08	1.00	4.08	5.66	-	5.06	3.50
0.2L : 10.5	2.38	1.00	2.38	5.61	-	3.26	3.32
0.3L : 16.0	1.62	1.00	1.62	6.86	-	2.23	2.33
0.4L : 21.5	1.37	1.00	1.37	8.91	-	1.80	1.98
0.5L : 27.0	1.31	1.00	1.31	11.43	-	1.72	1.91
0.6L : 32.5	1.37	1.00	1.37	8.91	-	1.80	1.98
0.7L : 38.0	1.62	1.00	1.62	6.86	-	2.23	2.33
0.8L : 43.5	2.38	1.00	2.38	5.61	-	3.26	3.32
0.9L : 49.0	4.08	1.00	4.08	7.54	-	5.06	3.50
Critical : 52.6	-	-	-	5.27	-	-	-
Transfer : 51.5	6.05	1.00	6.05	5.50	-	9.78	5.59
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

### Operating Rating Level

Shear and Moment RF's are for Strength I Limit State



		Sheet #	7	
		Job #	171002272	
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File Name:	270017_Span 2_TTST.Ibcx		Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.50	1.00	9.50	8.80
Critical : 1.4	-	-	-	8.31
0.1L : 5.0	6.49	1.00	6.49	9.31
0.2L : 10.5	3.81	1.00	3.81	9.26
0.3L : 16.0	2.61	1.00	2.61	11.25
0.4L : 21.5	2.22	1.00	2.22	14.53
0.5L : 27.0	2.14	1.00	2.14	17.39
0.6L : 32.5	2.22	1.00	2.22	14.53
0.7L : 38.0	2.61	1.00	2.61	11.25
0.8L : 43.5	3.81	1.00	3.81	9.17
0.9L : 49.0	6.49	1.00	6.49	12.13
Critical : 52.6	-	-	-	8.64
Transfer : 51.5	9.50	1.00	9.50	9.05
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.



		Sheet # 8			
				Job # 171002272	
Program: LEAP® Bridge Concrete CONNECT Edition		Stantec Consulting Ltd		Designed JFK	
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Version: 19.01.00.11		<a href="http://www.bentley.com">www.bentley.com</a>		Checked MBI	
File Name: 270017_Span 2_TTST.Ibcx				Date Mar/7/2022	

### HL93 Design Load Positive Live Load

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.84	1.00	7.84	7.10
Critical : 1.4	-	-	-	6.73
0.1L : 5.0	5.29	1.00	5.29	7.44
0.2L : 10.5	3.09	1.00	3.09	7.43
0.3L : 16.0	2.10	1.00	2.10	9.09
0.4L : 21.5	1.78	1.00	1.78	11.81
0.5L : 27.0	1.70	1.00	1.70	15.14
0.6L : 32.5	1.78	1.00	1.78	11.81
0.7L : 38.0	2.10	1.00	2.10	9.09
0.8L : 43.5	3.09	1.00	3.09	7.43
0.9L : 49.0	5.29	1.00	5.29	9.77
Critical : 52.6	-	-	-	6.87
Transfer : 51.5	7.84	1.00	7.84	7.20
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.

Span:2, Beam:2

#### B) Legal Live Load Rating

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State

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				Job #	171002272
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**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.90	1.00	9.90	9.12	-	12.80
Critical : 1.4	-	-	-	8.64	-	-
0.1L : 5.0	6.77	1.00	6.77	9.59	-	6.71
0.2L : 10.5	3.97	1.00	3.97	9.51	-	4.34
0.3L : 16.0	2.72	1.00	2.72	11.48	-	2.98
0.4L : 21.5	2.24	1.00	2.24	14.71	-	2.35
0.5L : 27.0	2.07	1.00	2.07	18.06	-	2.16
0.6L : 32.5	2.24	1.00	2.24	14.71	-	2.35
0.7L : 38.0	2.72	1.00	2.72	11.48	-	2.98
0.8L : 43.5	3.97	1.00	3.97	9.51	-	4.34
0.9L : 49.0	6.77	1.00	6.77	12.48	-	6.71
Critical : 52.6	-	-	-	8.91	-	-
Transfer : 51.5	9.90	1.00	9.90	9.33	-	12.80
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





		Sheet #	10		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx		Date	Mar/7/2022	

**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.55	1.00	9.55	8.59	-	12.34
Critical : 1.4	-	-	-	8.22	-	-
0.1L : 5.0	6.52	1.00	6.52	8.78	-	6.47
0.2L : 10.5	3.81	1.00	3.81	8.57	-	4.17
0.3L : 16.0	2.59	1.00	2.59	10.15	-	2.85
0.4L : 21.5	2.18	1.00	2.18	12.64	-	2.29
0.5L : 27.0	2.08	1.00	2.08	16.73	-	2.17
0.6L : 32.5	2.18	1.00	2.18	12.64	-	2.29
0.7L : 38.0	2.59	1.00	2.59	10.15	-	2.85
0.8L : 43.5	3.81	1.00	3.81	8.57	-	4.17
0.9L : 49.0	6.52	1.00	6.52	11.46	-	6.47
Critical : 52.6	-	-	-	8.23	-	-
Transfer : 51.5	9.55	1.00	9.55	8.59	-	12.34
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	11		
		Job #	171002272		
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.17	1.00	9.17	8.17	-	11.85
Critical : 1.4	-	-	-	7.75	-	-
0.1L : 5.0	6.19	1.00	6.19	8.55	-	6.15
0.2L : 10.5	3.53	1.00	3.53	8.55	-	3.86
0.3L : 16.0	2.24	1.00	2.24	10.27	-	2.46
0.4L : 21.5	1.83	1.00	1.83	13.05	-	1.92
0.5L : 27.0	1.72	1.00	1.72	16.13	-	1.80
0.6L : 32.5	1.83	1.00	1.83	13.05	-	1.92
0.7L : 38.0	2.24	1.00	2.24	10.27	-	2.46
0.8L : 43.5	3.53	1.00	3.53	8.55	-	3.86
0.9L : 49.0	6.19	1.00	6.19	11.21	-	6.15
Critical : 52.6	-	-	-	7.90	-	-
Transfer : 51.5	9.17	1.00	9.17	8.29	-	11.85
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	12	
		Job #	171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx		Date	Mar/7/2022

**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.47	1.00	8.47	7.74	-	10.95
Critical : 1.4	-	-	-	7.38	-	-
0.1L : 5.0	5.74	1.00	5.74	8.02	-	5.69
0.2L : 10.5	3.28	1.00	3.28	7.87	-	3.59
0.3L : 16.0	2.19	1.00	2.19	9.42	-	2.41
0.4L : 21.5	1.83	1.00	1.83	11.93	-	1.93
0.5L : 27.0	1.74	1.00	1.74	15.29	-	1.82
0.6L : 32.5	1.83	1.00	1.83	11.93	-	1.93
0.7L : 38.0	2.19	1.00	2.19	9.42	-	2.41
0.8L : 43.5	3.28	1.00	3.28	7.87	-	3.59
0.9L : 49.0	5.72	1.00	5.72	10.50	-	5.68
Critical : 52.6	-	-	-	7.44	-	-
Transfer : 51.5	8.45	1.00	8.45	7.79	-	10.91
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	13		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.04	1.00	8.04	7.28	-	10.39
Critical : 1.4	-	-	-	6.93	-	-
0.1L : 5.0	5.50	1.00	5.50	7.55	-	5.46
0.2L : 10.5	3.25	1.00	3.25	7.46	-	3.55
0.3L : 16.0	2.19	1.00	2.19	9.02	-	2.41
0.4L : 21.5	1.86	1.00	1.86	11.56	-	1.96
0.5L : 27.0	1.82	1.00	1.82	14.90	-	1.90
0.6L : 32.5	1.86	1.00	1.86	11.56	-	1.96
0.7L : 38.0	2.19	1.00	2.19	9.02	-	2.41
0.8L : 43.5	3.25	1.00	3.25	7.46	-	3.55
0.9L : 49.0	5.50	1.00	5.50	9.92	-	5.46
Critical : 52.6	-	-	-	7.04	-	-
Transfer : 51.5	8.04	1.00	8.04	7.36	-	10.39
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	14		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
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File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.74	1.00	7.74	6.92	-	10.00
Critical : 1.4	-	-	-	6.62	-	-
0.1L : 5.0	5.30	1.00	5.30	7.08	-	5.26
0.2L : 10.5	3.13	1.00	3.13	6.93	-	3.42
0.3L : 16.0	2.10	1.00	2.10	8.30	-	2.30
0.4L : 21.5	1.78	1.00	1.78	10.54	-	1.87
0.5L : 27.0	1.72	1.00	1.72	14.37	-	1.80
0.6L : 32.5	1.78	1.00	1.78	10.54	-	1.87
0.7L : 38.0	2.10	1.00	2.10	8.30	-	2.30
0.8L : 43.5	3.13	1.00	3.13	6.93	-	3.42
0.9L : 49.0	5.30	1.00	5.30	9.32	-	5.26
Critical : 52.6	-	-	-	6.63	-	-
Transfer : 51.5	7.74	1.00	7.74	6.92	-	10.00
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	15		
		Job #	171002272		
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.79	1.00	7.79	6.97	-	10.07
Critical : 1.4	-	-	-	6.66	-	-
0.1L : 5.0	5.35	1.00	5.35	7.15	-	5.31
0.2L : 10.5	3.19	1.00	3.19	7.08	-	3.49
0.3L : 16.0	2.09	1.00	2.09	8.60	-	2.30
0.4L : 21.5	1.71	1.00	1.71	11.14	-	1.80
0.5L : 27.0	1.61	1.00	1.61	15.66	-	1.68
0.6L : 32.5	1.71	1.00	1.71	11.14	-	1.80
0.7L : 38.0	2.09	1.00	2.09	8.60	-	2.30
0.8L : 43.5	3.19	1.00	3.19	7.08	-	3.49
0.9L : 49.0	5.35	1.00	5.35	9.42	-	5.31
Critical : 52.6	-	-	-	6.67	-	-
Transfer : 51.5	7.79	1.00	7.79	6.97	-	10.07
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

				Sheet #	16
				Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd		Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019		Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.36	1.00	7.36	6.69	-	9.52
Critical : 1.4	-	-	-	6.37	-	-
0.1L : 5.0	5.04	1.00	5.04	6.97	-	5.00
0.2L : 10.5	2.96	1.00	2.96	6.86	-	3.24
0.3L : 16.0	1.98	1.00	1.98	8.28	-	2.17
0.4L : 21.5	1.66	1.00	1.66	10.63	-	1.75
0.5L : 27.0	1.58	1.00	1.58	13.47	-	1.65
0.6L : 32.5	1.66	1.00	1.66	10.63	-	1.75
0.7L : 38.0	1.98	1.00	1.98	8.28	-	2.17
0.8L : 43.5	2.96	1.00	2.96	6.86	-	3.24
0.9L : 49.0	5.04	1.00	5.04	9.19	-	5.00
Critical : 52.6	-	-	-	6.51	-	-
Transfer : 51.5	7.36	1.00	7.36	6.80	-	9.52
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**PROPERTIES**

**Span:2, Beam:11**

**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Fing width	Top	36.000	in	Bot	36.000	in
thick	Top	4.500	in	Bot	4.500*	in
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	3.00/ 1.50	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Exterior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**

Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)





Sheet #	2				
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**GENERAL LOAD DATA:**  
**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	55.000	ft
Release length	55.000	ft
Design length	54.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**

Type g

Live Moment	(2+ lanes loaded)	0.245	(Calculated)
Live Moment	(1 lane loaded)	0.246	(Calculated)
Live Shear	(2+ lanes loaded)	0.245	(Calculated)
Live Shear	(1 lane loaded)	0.271	(Calculated)

The LL distribution computation is using the effective slab depth ( $t_s = 0.00\text{in}$ ).  
Include sacrificial deck thick in  $t_s$ : NO

Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.060	(Manual input)



Sheet #	3				
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Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90

**SECTION PROPERTIES:**

	PRECAST		COMPOSITE		
Area	522.3	in2	522.3	in2	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (Ixx)	25390	in4	25390	in4	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (Iyy)	62796.0	in4			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using  $E_c/E_c = 1.0000$

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only



Sheet #	4				
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File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 5.00	0.20L 10.50	0.30L 16.00	0.40L 21.50	Midspan 27.00
Precast:(At Release, using	Ec =	4561.7ksi)							
Area,	in2	525.1	539.4	530.1	539.4	543.9	543.9	543.9	543.9
Yb,	in	10.37	10.22	10.32	10.22	10.16	10.16	10.16	10.16
MI(Ixx),	in4	25481	25922	25638	25922	26147	26147	26147	26147
Composite:(At Final, using	Ec =	5007.5ksi)							
Area,	in2	524.8	537.6	529.3	537.6	541.6	541.6	541.6	541.6
Yb,	in	10.38	10.24	10.33	10.24	10.19	10.19	10.19	10.19
MI(Ixx),	in4	25471	25867	25612	25867	26069	26069	26069	26069

Span:2, Beam:11

STRESS LIMITS (Art. 5.9.2):

STRESS LIMITS AT RELEASE BEFORE LOSSES:

	PRECAST	
Strength	4.90	ksi
Elasticity	4561.7	ksi
Max comp	3.19	ksi
Max tens	-0.20	ksi
Max tens, w/reinf	-0.53	ksi

STRESS LIMITS AT FINAL AFTER LOSSES:

	PRECAST		DECK	
Strength	6.50	ksi	6.50	ksi
Elasticity	5007.55	ksi	5007.55	ksi

STRESS LIMITS AT FINAL 1 (P/S + DL + LL):

	PRECAST		DECK	
Max comp	3.90	ksi	3.90	ksi



Sheet #	5				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.93	ksi	2.93	ksi

**FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.60	ksi	-	ksi

**SERVICE III (Tension):**

	<b>PRECAST</b>		<b>DECK</b>	
Max tens	-0.48	ksi	-0.48	ksi

**Span:2, Beam:11**

**PRESTRESSED STEEL:**

19 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 4.37 in):**

11 @ 2.000 in	6 @ 4.000 in	2 @ 18.500 in
---------------	--------------	---------------

**SHIELDING AND REDUCED INITIAL PULLS:**

Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	4.000	in	4.000	in	6.00	ft	0.00	ft	2.000	in	75.0 %	43.9	kips
8	2	2.000	in	2.000	in	6.00	ft	0.00	ft	8.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK



Sheet #	6				
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File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	4.123	in <sup>2</sup>
Trans. Len,bonded	3.000	ft
Trans. Len,debonded	3.000	ft
Dev. Len, bonded	5.872	ft
Dev. Len, debonded	11.744	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	834.9	kips
Beam Shrtng (PL/AE)	0.228	in

**Span:2, Beam:11**  
**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
1045.000	740	773.300	7.389	29923.500	291.109	74.870

**Span:2, Beam:11**  
**REINFORCING STEEL:**

Tension	steel:	
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**

# legs	Size	fy (ksi)	Area (in <sup>2</sup> )	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.0833	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	49.5000	No
4	US#4[M13]	60.0	0.80	9.00	49.5000	54.9167	No
4	US#5[M16]	60.0	1.24	1.00	54.9167	55.0000	No



Sheet #	7				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	55.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	4.1230	in2
Ycg	4.37	in
P_init	834.9	kips
Ecc	6.04	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4562	ksi

**AASHTO LOSSES**

Elastic Shortening \*\* 12.02 ksi (Eq 5.9.5.2.3a-1), (fcgp= 1.925 ksi)

Elastic Gains		Gains	Adjustment
due to Precast Loads	-0.00	ksi	0.00 ksi
due to Composite Loads	-1.54	ksi	0.00 ksi
due to Live Loads	-3.58	ksi	0.00 ksi

**Time Dependent Losses (Approximate Method (Art.5.9.3.3))**



Sheet #	8				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Initial		Final		
Steel relaxation	0.00	ksi		2.40	ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00	ksi		9.66	ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00	ksi		12.87	ksi	(Eq 5.9.3.3-1)
Sub-total	12.02	ksi	( 5.94 %)	19.81	ksi	( 9.78 %)
Total Prestress Losses				31.84	ksi	(15.72 %)

Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK  
initial fpe = 170.7 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.



Sheet #	9				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 11, SERVICE I**  
**Shears: kips, Moments: kft**

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	35.0	12.6	66.6	124.3	165.4	190.1	198.3
(Max)	V	14.7	13.3	14.2	12.0	9.0	6.0	3.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.5	7.9	3.8	13.6	24.0	31.5	35.9	37.4
DC(Max)	V	2.7	2.4	2.6	2.2	1.6	1.1	0.5	0.0
DL-Comp :	M	2.6	13.4	6.5	23.1	40.9	53.6	61.2	63.7
DW(Max)	V	4.5	4.1	4.4	3.7	2.8	1.8	0.9	0.0
LL + I :	M+	11.1	67.5	31.6	117.1	202.6	257.4	288.8	293.2
	V	20.9	16.1	19.2	11.2	7.7	4.1	2.0	7.9
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	25.9	23.9	25.2	22.0	18.6	15.3	12.1	9.8
	M	12.9	65.7	32.2	111.5	187.5	230.9	243.1	245.5
Total :	M+	15.2	123.7	54.5	220.4	391.7	507.8	576.0	592.6
	V	42.8	35.9	40.4	29.1	21.1	13.1	6.5	7.9
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	47.7	43.8	46.4	39.8	32.0	24.2	16.6	9.8
	M	16.9	122.0	55.1	214.9	376.7	481.3	530.2	544.9





Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	61.2	53.6	40.9	23.1	6.5	13.4	2.6
DW(Max)	V	0.9	1.8	2.8	3.7	4.4	4.1	4.5
LL + I :	M+	288.8	257.4	202.6	117.1	31.6	67.5	11.1
	V	2.0	4.1	7.7	11.2	18.9	15.9	20.5
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	12.1	15.3	18.6	22.0	24.6	23.6	25.2
	M	243.1	230.9	187.5	111.5	32.2	65.7	12.9
Total :	M+	576.0	507.8	391.7	220.4	54.5	123.7	15.2
	V	6.5	13.1	21.1	29.1	40.0	35.7	42.4
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	16.6	24.2	32.0	39.8	45.8	43.4	47.0
	M	530.2	481.3	376.7	214.9	55.1	122.0	16.9

**REACTIONS (kips), SERVICE I**



Sheet #	11				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Load Type		Left Support	Right Support
Self Wt.		14.7	14.7
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		29.5	29.5
DL-Comp.(DW)		75.5	75.5
Live		76.2	76.2
	Truck	58.9	58.9
	Lane	17.3	17.3
Pedestrian		0.0	0.0

Upward reactions are positive.  
Live Load reactions are per lane with no distribution factor and no impact.  
Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
Non-composite load types are per beam.  
Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 11, SERVICE III**  
**Shears: kips, Moments: kft**



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	35.0	12.6	66.6	124.3	165.4	190.1	198.3
(Max)	V	14.7	13.3	14.2	12.0	9.0	6.0	3.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.5	7.9	3.8	13.6	24.0	31.5	35.9	37.4
DC(Max)	V	2.7	2.4	2.6	2.2	1.6	1.1	0.5	0.0
DL-Comp :	M	2.6	13.4	6.5	23.1	40.9	53.6	61.2	63.7
DW(Max)	V	4.5	4.1	4.4	3.7	2.8	1.8	0.9	0.0
LL + I :	M+	8.9	54.0	25.3	93.7	162.1	205.9	231.1	234.6
	V	16.7	12.9	15.4	9.0	6.1	3.3	1.6	6.3
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	20.7	19.1	20.2	17.6	14.9	12.2	9.7	7.8
	M	10.3	52.6	25.7	89.2	150.0	184.7	194.5	196.4
Total :	M+	13.0	110.2	48.2	197.0	351.2	456.3	518.2	534.0
	V	38.6	32.7	36.5	26.8	19.5	12.2	6.1	6.3
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	42.6	39.0	41.3	35.4	28.3	21.2	14.1	7.8
	M	14.4	108.8	48.6	192.6	339.1	435.1	481.6	495.8



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	61.2	53.6	40.9	23.1	6.5	13.4	2.6
DW(Max)	V	0.9	1.8	2.8	3.7	4.4	4.1	4.5
LL + I :	M+	231.1	205.9	162.1	93.7	25.3	54.0	8.9
	V	1.6	3.3	6.1	9.0	15.1	12.7	16.4
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	9.7	12.2	14.9	17.6	19.7	18.9	20.1
	M	194.5	184.7	150.0	89.2	25.7	52.6	10.3
Total :	M+	518.2	456.3	351.2	197.0	48.2	110.2	13.0
	V	6.1	12.2	19.5	26.8	36.3	32.5	38.3
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	14.1	21.2	28.3	35.4	40.9	38.7	42.0
	M	481.6	435.1	339.1	192.6	48.6	108.8	14.4

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 11, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	43.8	15.8	83.3	155.3	206.7	237.6	247.9
(Max)	V	18.4	16.7	17.8	15.0	11.2	7.5	3.7	0.0
Self wt. :	M	0.0	31.5	11.4	60.0	111.8	148.9	171.1	178.5
(Min)	V	13.2	12.0	12.8	10.8	8.1	5.4	2.7	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.9	9.8	4.8	17.0	30.0	39.3	44.9	46.8
DC(Max)	V	3.3	3.0	3.2	2.7	2.0	1.4	0.7	0.0
DL-Comp :	M	1.4	7.1	3.4	12.2	21.6	28.3	32.3	33.7
DC(Min)	V	2.4	2.2	2.3	2.0	1.5	1.0	0.5	0.0
DL-Comp :	M	3.9	20.1	9.7	34.7	61.3	80.3	91.8	95.6
DW(Max)	V	6.8	6.2	6.6	5.5	4.2	2.8	1.4	0.0
DL-Comp :	M	1.7	8.7	4.2	15.0	26.6	34.8	39.8	41.4
DW(Min)	V	2.9	2.7	2.8	2.4	1.8	1.2	0.6	0.0
LL + I :	M+	19.5	118.1	55.3	204.9	354.5	450.4	505.4	513.1
	V	36.6	28.1	33.6	19.6	13.4	7.2	3.5	13.8
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	45.3	41.9	44.1	38.5	32.6	26.8	21.2	17.1
	M	22.5	115.0	56.3	195.2	328.2	404.1	425.4	429.6
Total :	M+	25.3	191.7	85.6	339.8	601.2	776.8	879.7	903.3
	V	65.1	54.0	61.2	42.8	30.8	18.8	9.3	13.8



Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	73.7	67.7	71.6	61.7	50.0	38.4	27.0	17.1
	M	28.3	188.6	86.5	330.1	574.8	730.5	799.6	819.8



Sheet #	16				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	237.6	206.7	155.3	83.3	15.8	43.8	0.0
(Max)	V	3.7	7.5	11.2	15.0	17.8	16.7	18.4
Self wt. :	M	171.1	148.9	111.8	60.0	11.4	31.5	0.0
(Min)	V	2.7	5.4	8.1	10.8	12.8	12.0	13.2
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	44.9	39.3	30.0	17.0	4.8	9.8	1.9
DC(Max)	V	0.7	1.4	2.0	2.7	3.2	3.0	3.3
DL-Comp :	M	32.3	28.3	21.6	12.2	3.4	7.1	1.4
DC(Min)	V	0.5	1.0	1.5	2.0	2.3	2.2	2.4
DL-Comp :	M	91.8	80.3	61.3	34.7	9.7	20.1	3.9
DW(Max)	V	1.4	2.8	4.2	5.5	6.6	6.2	6.8
DL-Comp :	M	39.8	34.8	26.6	15.0	4.2	8.7	1.7
DW(Min)	V	0.6	1.2	1.8	2.4	2.8	2.7	2.9
LL + I :	M+	505.4	450.4	354.5	204.9	55.3	118.1	19.5
	V	3.5	7.2	13.4	19.6	33.0	27.7	35.8
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	21.2	26.8	32.6	38.5	43.1	41.3	44.0
	M	425.4	404.1	328.2	195.2	56.3	115.0	22.5
Total :	M+	879.7	776.8	601.2	339.8	85.6	191.7	25.3
	V	9.3	18.8	30.8	42.8	60.6	53.6	64.3



Sheet #	17				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	27.0	38.4	50.0	61.7	70.6	67.1	72.5
	M	799.6	730.5	574.8	330.1	86.5	188.6	28.3

**REACTIONS (kips), STRENGTH I**

Load Type		Left Support	Right Support
Self Wt.		18.4	18.4
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		36.9	36.9
DL-Comp.(DW)		113.2	113.2
Live		133.3	133.3
	Truck	103.0	103.0
	Lane	30.3	30.3
Pedestrian		0.0	0.0

Upward reactions are positive.  
 Live Load reactions are per lane with no distribution factor and no impact.  
 Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
 Non-composite load types are per beam.  
 Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 2, Beam : 11, FATIGUE I**  
**Shears: kips, Moments: kft**





Sheet #	18				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	5.00	10.50	16.00	21.50	27.00
Self wt. :	M	0.0	35.0	12.6	66.6	124.3	165.4	190.1	198.3
(Max)	V	14.7	13.3	14.2	12.0	9.0	6.0	3.0	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.5	7.9	3.8	13.6	24.0	31.5	35.9	37.4
DC(Max)	V	2.7	2.4	2.6	2.2	1.6	1.1	0.5	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	2.6	13.4	6.5	23.1	40.9	53.6	61.2	63.7
DW(Max)	V	4.5	4.1	4.4	3.7	2.8	1.8	0.9	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	11.0	55.8	27.5	93.9	154.0	192.9	207.0	204.6
	V	21.5	20.0	21.0	18.5	0.8	2.3	5.5	8.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	21.5	20.0	21.0	18.5	15.3	11.4	9.3	8.2
	M	11.0	55.8	27.5	93.9	153.9	171.2	187.1	204.6
Total :	M+	15.1	112.1	50.4	197.3	343.1	443.3	494.2	504.0
	V	43.4	39.9	42.2	36.4	14.2	11.2	10.0	8.2



Sheet #	19				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	43.4	39.9	42.2	36.4	28.6	20.3	13.8	8.2
	M	15.1	112.1	50.4	197.3	343.0	421.6	474.2	504.0



Sheet #	20				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	32.50	38.00	43.50	49.00	53.13	51.50	54.00
Self wt. :	M	190.1	165.4	124.3	66.6	12.6	35.0	0.0
(Max)	V	3.0	6.0	9.0	12.0	14.2	13.3	14.7
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	35.9	31.5	24.0	13.6	3.8	7.9	1.5
DC(Max)	V	0.5	1.1	1.6	2.2	2.6	2.4	2.7
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	61.2	53.6	40.9	23.1	6.5	13.4	2.6
DW(Max)	V	0.9	1.8	2.8	3.7	4.4	4.1	4.5
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	207.0	192.9	154.0	93.9	27.5	55.8	11.0
	V	5.5	2.3	0.8	18.5	21.0	20.0	21.5
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	9.8	12.1	15.3	18.5	21.0	20.0	21.5
	M	196.9	183.0	153.9	93.9	27.5	55.8	11.0
Total :	M+	494.2	443.3	343.1	197.3	50.4	112.1	15.1
	V	10.0	11.2	14.2	36.4	42.1	39.9	43.4



Sheet #	21				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	14.3	21.0	28.6	36.4	42.1	39.9	43.4
	M	484.0	433.4	343.0	197.3	50.4	112.1	15.1



Sheet #	22				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:2, Beam:11

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.25	1.80	64.87	0.5L	27.00	0.27	5.92	213.00	Critical	1.45
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.25	1.43	-	0.5L	27.00	0.27	4.79	-	Critical	1.45
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.25	2.34	84.09	0.5L	27.00	0.27	7.71	277.67	Critical	1.45
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.25	1.86	-	0.5L	27.00	0.27	6.25	-	Critical	1.45
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.38	85.55	0.5L	27.00	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.89	-	0.5L	27.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.38	85.55	0.5L	27.00	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.89	-	0.5L	27.00	-	-	-	-	-



Sheet #	23				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.25	4.76	64.25	0.5L	27.00	0.27	17.32	233.84	Critical	1.45
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.25	3.68	73.63	0.5L	27.00	0.27	12.45	249.02	Critical	1.45
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.25	3.55	78.02	0.5L	27.00	0.27	11.62	255.55	Critical	1.45
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.25	2.37	64.64	0.5L	27.00	0.27	8.52	232.26	Critical	1.45
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.25	2.03	71.02	0.5L	27.00	0.27	7.17	250.35	Critical	1.45
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.25	1.99	70.57	0.5L	27.00	0.27	7.30	259.42	Critical	1.45
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.25	1.84	73.64	0.5L	27.00	0.27	6.66	266.23	Critical	1.45
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.25	1.76	73.77	0.5L	27.00	0.27	6.61	277.59	Critical	1.45
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.25	5.02	67.79	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.25	3.88	77.69	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.25	3.74	82.32	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.25	2.50	68.20	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.25	2.15	74.93	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.25	2.09	74.46	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.25	1.94	77.70	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.25	1.85	77.83	0.5L	27.00	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	24				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80



Sheet #	25				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	-
Permit	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No





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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**RATING RESULTS**

**Span:2, Beam:11**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.44	1.00	7.44	6.25	-	12.00	6.33
Critical : 1.4	-	-	-	5.92	-	-	-
0.1L : 5.0	5.13	1.00	5.13	6.60	-	6.40	4.04
0.2L : 10.5	3.07	1.00	3.07	6.54	-	4.21	4.28
0.3L : 16.0	2.16	1.00	2.16	7.90	-	2.97	2.93
0.4L : 21.5	1.86	1.00	1.86	10.17	-	2.46	2.47
0.5L : 27.0	1.80	1.00	1.80	12.10	-	2.38	2.39
0.6L : 32.5	1.86	1.00	1.86	10.17	-	2.46	2.47
0.7L : 38.0	2.16	1.00	2.16	7.90	-	2.97	2.93
0.8L : 43.5	3.07	1.00	3.07	6.47	-	4.21	4.28
0.9L : 49.0	5.13	1.00	5.13	8.61	-	6.40	4.04
Critical : 52.6	-	-	-	6.15	-	-	-
Transfer : 51.5	7.44	1.00	7.44	6.43	-	12.00	6.33
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	27				
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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.14	1.00	6.14	5.03	-	9.91	5.88
Critical : 1.4	-	-	-	4.79	-	-	-
0.1L : 5.0	4.18	1.00	4.18	5.26	-	5.21	3.70
0.2L : 10.5	2.49	1.00	2.49	5.23	-	3.42	3.66
0.3L : 16.0	1.73	1.00	1.73	6.36	-	2.39	2.54
0.4L : 21.5	1.49	1.00	1.49	8.23	-	1.97	2.16
0.5L : 27.0	1.43	1.00	1.43	10.50	-	1.89	2.08
0.6L : 32.5	1.49	1.00	1.49	8.23	-	1.97	2.16
0.7L : 38.0	1.73	1.00	1.73	6.36	-	2.39	2.54
0.8L : 43.5	2.49	1.00	2.49	5.23	-	3.42	3.66
0.9L : 49.0	4.18	1.00	4.18	6.94	-	5.21	3.70
Critical : 52.6	-	-	-	4.89	-	-	-
Transfer : 51.5	6.14	1.00	6.14	5.11	-	9.91	5.88
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.65	1.00	9.65	8.17
Critical : 1.4	-	-	-	7.71
0.1L : 5.0	6.65	1.00	6.65	8.65
0.2L : 10.5	3.98	1.00	3.98	8.64
0.3L : 16.0	2.79	1.00	2.79	10.45
0.4L : 21.5	2.41	1.00	2.41	13.44
0.5L : 27.0	2.34	1.00	2.34	15.99
0.6L : 32.5	2.41	1.00	2.41	13.44
0.7L : 38.0	2.79	1.00	2.79	10.45
0.8L : 43.5	3.98	1.00	3.98	8.55
0.9L : 49.0	6.65	1.00	6.65	11.16
Critical : 52.6	-	-	-	8.02
Transfer : 51.5	9.65	1.00	9.65	8.40
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.



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Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.96	1.00	7.96	6.59
Critical : 1.4	-	-	-	6.25
0.1L : 5.0	5.42	1.00	5.42	6.91
0.2L : 10.5	3.23	1.00	3.23	6.93
0.3L : 16.0	2.25	1.00	2.25	8.44
0.4L : 21.5	1.93	1.00	1.93	10.91
0.5L : 27.0	1.86	1.00	1.86	13.91
0.6L : 32.5	1.93	1.00	1.93	10.91
0.7L : 38.0	2.25	1.00	2.25	8.44
0.8L : 43.5	3.23	1.00	3.23	6.93
0.9L : 49.0	5.42	1.00	5.42	8.99
Critical : 52.6	-	-	-	6.38
Transfer : 51.5	7.96	1.00	7.96	6.69
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.

Span:2, Beam:11

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



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File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	21.52	1.00	21.52	18.34	-	27.76
Critical : 1.4	-	-	-	17.32	-	-
0.1L : 5.0	14.70	1.00	14.70	19.27	-	14.66
0.2L : 10.5	8.59	1.00	8.59	19.01	-	9.43
0.3L : 16.0	5.84	1.00	5.84	22.25	-	6.45
0.4L : 21.5	4.98	1.00	4.98	27.12	-	5.28
0.5L : 27.0	4.76	1.00	4.76	31.12	-	5.02
0.6L : 32.5	4.98	1.00	4.98	27.12	-	5.28
0.7L : 38.0	5.84	1.00	5.84	22.25	-	6.45
0.8L : 43.5	8.59	1.00	8.59	19.01	-	9.43
0.9L : 49.0	14.70	1.00	14.70	24.34	-	14.66
Critical : 52.6	-	-	-	17.91	-	-
Transfer : 51.5	21.52	1.00	21.52	18.79	-	27.76
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
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File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	15.48	1.00	15.48	13.19	-	19.98
Critical : 1.4	-	-	-	12.45	-	-
0.1L : 5.0	10.62	1.00	10.62	13.91	-	10.59
0.2L : 10.5	6.27	1.00	6.27	13.81	-	6.88
0.3L : 16.0	4.33	1.00	4.33	16.40	-	4.77
0.4L : 21.5	3.75	1.00	3.75	20.42	-	3.98
0.5L : 27.0	3.68	1.00	3.68	23.80	-	3.88
0.6L : 32.5	3.75	1.00	3.75	20.42	-	3.98
0.7L : 38.0	4.33	1.00	4.33	16.40	-	4.77
0.8L : 43.5	6.27	1.00	6.27	13.81	-	6.88
0.9L : 49.0	10.62	1.00	10.62	17.70	-	10.59
Critical : 52.6	-	-	-	12.90	-	-
Transfer : 51.5	15.48	1.00	15.48	13.54	-	19.98
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	14.44	1.00	14.44	12.31	-	18.63
Critical : 1.4	-	-	-	11.62	-	-
0.1L : 5.0	9.92	1.00	9.92	13.01	-	9.90
0.2L : 10.5	5.89	1.00	5.89	12.97	-	6.46
0.3L : 16.0	4.08	1.00	4.08	15.49	-	4.51
0.4L : 21.5	3.57	1.00	3.57	19.49	-	3.79
0.5L : 27.0	3.55	1.00	3.55	22.89	-	3.74
0.6L : 32.5	3.57	1.00	3.57	19.49	-	3.79
0.7L : 38.0	4.08	1.00	4.08	15.49	-	4.51
0.8L : 43.5	5.89	1.00	5.89	12.97	-	6.46
0.9L : 49.0	9.92	1.00	9.92	16.58	-	9.90
Critical : 52.6	-	-	-	12.05	-	-
Transfer : 51.5	14.44	1.00	14.44	12.65	-	18.63
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	10.72	1.00	10.72	8.95	-	13.82
Critical : 1.4	-	-	-	8.52	-	-
0.1L : 5.0	7.33	1.00	7.33	9.26	-	7.31
0.2L : 10.5	4.30	1.00	4.30	8.99	-	4.72
0.3L : 16.0	2.93	1.00	2.93	10.46	-	3.23
0.4L : 21.5	2.51	1.00	2.51	12.69	-	2.66
0.5L : 27.0	2.37	1.00	2.37	15.15	-	2.50
0.6L : 32.5	2.51	1.00	2.51	12.69	-	2.66
0.7L : 38.0	2.93	1.00	2.93	10.46	-	3.23
0.8L : 43.5	4.30	1.00	4.30	8.99	-	4.72
0.9L : 49.0	7.33	1.00	7.33	11.91	-	7.31
Critical : 52.6	-	-	-	8.69	-	-
Transfer : 51.5	10.72	1.00	10.72	9.08	-	13.82
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	34				
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**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.03	1.00	9.03	7.54	-	11.65
Critical : 1.4	-	-	-	7.17	-	-
0.1L : 5.0	6.21	1.00	6.21	7.83	-	6.19
0.2L : 10.5	3.69	1.00	3.69	7.67	-	4.04
0.3L : 16.0	2.53	1.00	2.53	9.08	-	2.79
0.4L : 21.5	2.13	1.00	2.13	11.30	-	2.26
0.5L : 27.0	2.03	1.00	2.03	13.86	-	2.15
0.6L : 32.5	2.13	1.00	2.13	11.30	-	2.26
0.7L : 38.0	2.53	1.00	2.53	9.08	-	2.79
0.8L : 43.5	3.69	1.00	3.69	7.67	-	4.04
0.9L : 49.0	6.21	1.00	6.21	10.13	-	6.19
Critical : 52.6	-	-	-	7.32	-	-
Transfer : 51.5	9.03	1.00	9.03	7.65	-	11.65
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	35				
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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.36	1.00	9.36	7.66	-	12.08
Critical : 1.4	-	-	-	7.30	-	-
0.1L : 5.0	6.35	1.00	6.35	7.94	-	6.33
0.2L : 10.5	3.64	1.00	3.64	7.83	-	3.99
0.3L : 16.0	2.46	1.00	2.46	9.33	-	2.71
0.4L : 21.5	2.11	1.00	2.11	11.75	-	2.24
0.5L : 27.0	1.99	1.00	1.99	14.76	-	2.09
0.6L : 32.5	2.11	1.00	2.11	11.75	-	2.24
0.7L : 38.0	2.46	1.00	2.46	9.33	-	2.71
0.8L : 43.5	3.64	1.00	3.64	7.83	-	3.99
0.9L : 49.0	6.35	1.00	6.35	10.28	-	6.33
Critical : 52.6	-	-	-	7.41	-	-
Transfer : 51.5	9.36	1.00	9.36	7.75	-	12.08
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	36				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.63	1.00	8.63	6.98	-	11.14
Critical : 1.4	-	-	-	6.66	-	-
0.1L : 5.0	5.85	1.00	5.85	7.20	-	5.83
0.2L : 10.5	3.34	1.00	3.34	7.11	-	3.67
0.3L : 16.0	2.28	1.00	2.28	8.51	-	2.51
0.4L : 21.5	1.95	1.00	1.95	10.80	-	2.07
0.5L : 27.0	1.84	1.00	1.84	13.81	-	1.94
0.6L : 32.5	1.95	1.00	1.95	10.80	-	2.07
0.7L : 38.0	2.28	1.00	2.28	8.51	-	2.51
0.8L : 43.5	3.34	1.00	3.34	7.11	-	3.67
0.9L : 49.0	5.85	1.00	5.85	9.35	-	5.83
Critical : 52.6	-	-	-	6.72	-	-
Transfer : 51.5	8.63	1.00	8.63	7.02	-	11.14
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	37				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.59	1.00	8.59	6.93	-	11.08
Critical : 1.4	-	-	-	6.61	-	-
0.1L : 5.0	5.82	1.00	5.82	7.17	-	5.80
0.2L : 10.5	3.33	1.00	3.33	7.14	-	3.65
0.3L : 16.0	2.20	1.00	2.20	8.65	-	2.42
0.4L : 21.5	1.86	1.00	1.86	11.02	-	1.97
0.5L : 27.0	1.76	1.00	1.76	14.12	-	1.85
0.6L : 32.5	1.86	1.00	1.86	11.02	-	1.97
0.7L : 38.0	2.20	1.00	2.20	8.65	-	2.42
0.8L : 43.5	3.33	1.00	3.33	7.14	-	3.65
0.9L : 49.0	5.82	1.00	5.82	9.32	-	5.80
Critical : 52.6	-	-	-	6.67	-	-
Transfer : 51.5	8.59	1.00	8.59	6.98	-	11.08
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
 CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
 PSStT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:2, Beam:11

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.25	1.80	64.87	0.5L	27.00	0.27	5.92	213.00	Critical	1.45
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.25	1.43	-	0.5L	27.00	0.27	4.79	-	Critical	1.45
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.25	2.34	84.09	0.5L	27.00	0.27	7.71	277.67	Critical	1.45
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.25	1.86	-	0.5L	27.00	0.27	6.25	-	Critical	1.45
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.38	85.55	0.5L	27.00	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.89	-	0.5L	27.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.25	2.38	85.55	0.5L	27.00	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.25	1.89	-	0.5L	27.00	-	-	-	-	-



Sheet #	2				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.25	2.25	74.40	0.5L	27.00	0.27	8.02	264.72	Critical	1.45
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.25	2.27	75.10	0.5L	27.00	0.27	7.63	252.45	Critical	1.45
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.25	1.88	78.15	0.5L	27.00	0.27	7.20	299.45	Critical	1.45
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.25	1.90	79.79	0.5L	27.00	0.27	6.85	287.69	Critical	1.45
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.25	1.98	83.30	0.5L	27.00	0.27	6.43	270.16	Critical	1.45
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.25	1.88	80.67	0.5L	27.00	0.27	6.15	264.50	Critical	1.45
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.25	1.76	79.13	0.5L	27.00	0.27	6.18	278.30	Critical	1.45
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.25	1.73	77.77	0.5L	27.00	0.27	5.91	265.96	Critical	1.45
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.25	2.38	78.50	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.25	2.40	79.24	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.25	1.98	82.45	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.25	2.00	84.19	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.25	2.09	87.89	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.25	1.98	85.11	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.25	1.86	83.49	0.5L	27.00	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.25	1.82	82.05	0.5L	27.00	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	3				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.lbcx			Date	Mar/7/2022

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80



Sheet #	4				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	-
Permit	$0.60 \times f_c = 3.90$	$0.19 \times \sqrt{f_c} = 0.48$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No





Sheet #	5				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**RATING RESULTS**

**Span:2, Beam:11**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.44	1.00	7.44	6.25	-	12.00	6.33
Critical : 1.4	-	-	-	5.92	-	-	-
0.1L : 5.0	5.13	1.00	5.13	6.60	-	6.40	4.04
0.2L : 10.5	3.07	1.00	3.07	6.54	-	4.21	4.28
0.3L : 16.0	2.16	1.00	2.16	7.90	-	2.97	2.93
0.4L : 21.5	1.86	1.00	1.86	10.17	-	2.46	2.47
0.5L : 27.0	1.80	1.00	1.80	12.10	-	2.38	2.39
0.6L : 32.5	1.86	1.00	1.86	10.17	-	2.46	2.47
0.7L : 38.0	2.16	1.00	2.16	7.90	-	2.97	2.93
0.8L : 43.5	3.07	1.00	3.07	6.47	-	4.21	4.28
0.9L : 49.0	5.13	1.00	5.13	8.61	-	6.40	4.04
Critical : 52.6	-	-	-	6.15	-	-	-
Transfer : 51.5	7.44	1.00	7.44	6.43	-	12.00	6.33
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	6				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSt
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.14	1.00	6.14	5.03	-	9.91	5.88
Critical : 1.4	-	-	-	4.79	-	-	-
0.1L : 5.0	4.18	1.00	4.18	5.26	-	5.21	3.70
0.2L : 10.5	2.49	1.00	2.49	5.23	-	3.42	3.66
0.3L : 16.0	1.73	1.00	1.73	6.36	-	2.39	2.54
0.4L : 21.5	1.49	1.00	1.49	8.23	-	1.97	2.16
0.5L : 27.0	1.43	1.00	1.43	10.50	-	1.89	2.08
0.6L : 32.5	1.49	1.00	1.49	8.23	-	1.97	2.16
0.7L : 38.0	1.73	1.00	1.73	6.36	-	2.39	2.54
0.8L : 43.5	2.49	1.00	2.49	5.23	-	3.42	3.66
0.9L : 49.0	4.18	1.00	4.18	6.94	-	5.21	3.70
Critical : 52.6	-	-	-	4.89	-	-	-
Transfer : 51.5	6.14	1.00	6.14	5.11	-	9.91	5.88
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



Sheet #	7				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.65	1.00	9.65	8.17
Critical : 1.4	-	-	-	7.71
0.1L : 5.0	6.65	1.00	6.65	8.65
0.2L : 10.5	3.98	1.00	3.98	8.64
0.3L : 16.0	2.79	1.00	2.79	10.45
0.4L : 21.5	2.41	1.00	2.41	13.44
0.5L : 27.0	2.34	1.00	2.34	15.99
0.6L : 32.5	2.41	1.00	2.41	13.44
0.7L : 38.0	2.79	1.00	2.79	10.45
0.8L : 43.5	3.98	1.00	3.98	8.55
0.9L : 49.0	6.65	1.00	6.65	11.16
Critical : 52.6	-	-	-	8.02
Transfer : 51.5	9.65	1.00	9.65	8.40
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.



Sheet #	8				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.96	1.00	7.96	6.59
Critical : 1.4	-	-	-	6.25
0.1L : 5.0	5.42	1.00	5.42	6.91
0.2L : 10.5	3.23	1.00	3.23	6.93
0.3L : 16.0	2.25	1.00	2.25	8.44
0.4L : 21.5	1.93	1.00	1.93	10.91
0.5L : 27.0	1.86	1.00	1.86	13.91
0.6L : 32.5	1.93	1.00	1.93	10.91
0.7L : 38.0	2.25	1.00	2.25	8.44
0.8L : 43.5	3.23	1.00	3.23	6.93
0.9L : 49.0	5.42	1.00	5.42	8.99
Critical : 52.6	-	-	-	6.38
Transfer : 51.5	7.96	1.00	7.96	6.69
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.

Span:2, Beam:11

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	9				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	10.05	1.00	10.05	8.48	-	12.97
Critical : 1.4	-	-	-	8.02	-	-
0.1L : 5.0	6.93	1.00	6.93	8.91	-	6.91
0.2L : 10.5	4.15	1.00	4.15	8.87	-	4.55
0.3L : 16.0	2.91	1.00	2.91	10.67	-	3.21
0.4L : 21.5	2.43	1.00	2.43	13.60	-	2.58
0.5L : 27.0	2.25	1.00	2.25	16.61	-	2.38
0.6L : 32.5	2.43	1.00	2.43	13.60	-	2.58
0.7L : 38.0	2.91	1.00	2.91	10.67	-	3.21
0.8L : 43.5	4.15	1.00	4.15	8.87	-	4.55
0.9L : 49.0	6.93	1.00	6.93	11.48	-	6.91
Critical : 52.6	-	-	-	8.27	-	-
Transfer : 51.5	10.05	1.00	10.05	8.66	-	12.97
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.69	1.00	9.69	7.98	-	12.50
Critical : 1.4	-	-	-	7.63	-	-
0.1L : 5.0	6.67	1.00	6.67	8.16	-	6.66
0.2L : 10.5	3.98	1.00	3.98	7.99	-	4.37
0.3L : 16.0	2.77	1.00	2.77	9.42	-	3.06
0.4L : 21.5	2.36	1.00	2.36	11.68	-	2.51
0.5L : 27.0	2.27	1.00	2.27	15.38	-	2.40
0.6L : 32.5	2.36	1.00	2.36	11.68	-	2.51
0.7L : 38.0	2.77	1.00	2.77	9.42	-	3.06
0.8L : 43.5	3.98	1.00	3.98	7.99	-	4.37
0.9L : 49.0	6.67	1.00	6.67	10.55	-	6.66
Critical : 52.6	-	-	-	7.64	-	-
Transfer : 51.5	9.69	1.00	9.69	7.98	-	12.50
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	11				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	9.31	1.00	9.31	7.59	-	12.01
Critical : 1.4	-	-	-	7.20	-	-
0.1L : 5.0	6.35	1.00	6.35	7.95	-	6.33
0.2L : 10.5	3.69	1.00	3.69	7.97	-	4.04
0.3L : 16.0	2.39	1.00	2.39	9.54	-	2.64
0.4L : 21.5	1.98	1.00	1.98	12.07	-	2.10
0.5L : 27.0	1.88	1.00	1.88	14.83	-	1.98
0.6L : 32.5	1.98	1.00	1.98	12.07	-	2.10
0.7L : 38.0	2.39	1.00	2.39	9.54	-	2.64
0.8L : 43.5	3.69	1.00	3.69	7.97	-	4.04
0.9L : 49.0	6.35	1.00	6.35	10.32	-	6.33
Critical : 52.6	-	-	-	7.34	-	-
Transfer : 51.5	9.31	1.00	9.31	7.70	-	12.01
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.60	1.00	8.60	7.19	-	11.10
Critical : 1.4	-	-	-	6.85	-	-
0.1L : 5.0	5.88	1.00	5.88	7.45	-	5.86
0.2L : 10.5	3.43	1.00	3.43	7.34	-	3.77
0.3L : 16.0	2.34	1.00	2.34	8.75	-	2.59
0.4L : 21.5	1.99	1.00	1.99	11.02	-	2.11
0.5L : 27.0	1.90	1.00	1.90	14.05	-	2.00
0.6L : 32.5	1.99	1.00	1.99	11.02	-	2.11
0.7L : 38.0	2.34	1.00	2.34	8.75	-	2.59
0.8L : 43.5	3.43	1.00	3.43	7.34	-	3.77
0.9L : 49.0	5.86	1.00	5.86	9.66	-	5.84
Critical : 52.6	-	-	-	6.91	-	-
Transfer : 51.5	8.57	1.00	8.57	7.24	-	11.06
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	13				
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File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.16	1.00	8.16	6.76	-	10.53
Critical : 1.4	-	-	-	6.43	-	-
0.1L : 5.0	5.64	1.00	5.64	7.02	-	5.62
0.2L : 10.5	3.39	1.00	3.39	6.95	-	3.73
0.3L : 16.0	2.34	1.00	2.34	8.38	-	2.59
0.4L : 21.5	2.02	1.00	2.02	10.68	-	2.14
0.5L : 27.0	1.98	1.00	1.98	13.70	-	2.09
0.6L : 32.5	2.02	1.00	2.02	10.68	-	2.14
0.7L : 38.0	2.34	1.00	2.34	8.38	-	2.59
0.8L : 43.5	3.39	1.00	3.39	6.95	-	3.73
0.9L : 49.0	5.64	1.00	5.64	9.13	-	5.62
Critical : 52.6	-	-	-	6.54	-	-
Transfer : 51.5	8.16	1.00	8.16	6.84	-	10.53
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.86	1.00	7.86	6.42	-	10.14
Critical : 1.4	-	-	-	6.15	-	-
0.1L : 5.0	5.43	1.00	5.43	6.58	-	5.41
0.2L : 10.5	3.27	1.00	3.27	6.46	-	3.59
0.3L : 16.0	2.24	1.00	2.24	7.71	-	2.48
0.4L : 21.5	1.93	1.00	1.93	9.74	-	2.05
0.5L : 27.0	1.88	1.00	1.88	13.21	-	1.98
0.6L : 32.5	1.93	1.00	1.93	9.74	-	2.05
0.7L : 38.0	2.24	1.00	2.24	7.71	-	2.48
0.8L : 43.5	3.27	1.00	3.27	6.46	-	3.59
0.9L : 49.0	5.43	1.00	5.43	8.58	-	5.41
Critical : 52.6	-	-	-	6.16	-	-
Transfer : 51.5	7.86	1.00	7.86	6.43	-	10.14
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	15				
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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.91	1.00	7.91	6.47	-	10.20
Critical : 1.4	-	-	-	6.18	-	-
0.1L : 5.0	5.48	1.00	5.48	6.65	-	5.47
0.2L : 10.5	3.33	1.00	3.33	6.59	-	3.66
0.3L : 16.0	2.24	1.00	2.24	7.98	-	2.47
0.4L : 21.5	1.86	1.00	1.86	10.30	-	1.97
0.5L : 27.0	1.76	1.00	1.76	14.39	-	1.86
0.6L : 32.5	1.86	1.00	1.86	10.30	-	1.97
0.7L : 38.0	2.24	1.00	2.24	7.98	-	2.47
0.8L : 43.5	3.33	1.00	3.33	6.59	-	3.66
0.9L : 49.0	5.48	1.00	5.48	8.66	-	5.47
Critical : 52.6	-	-	-	6.19	-	-
Transfer : 51.5	7.91	1.00	7.91	6.47	-	10.20
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	16				
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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Span 2_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.48	1.00	7.48	6.21	-	9.65
Critical : 1.4	-	-	-	5.91	-	-
0.1L : 5.0	5.16	1.00	5.16	6.48	-	5.15
0.2L : 10.5	3.10	1.00	3.10	6.39	-	3.40
0.3L : 16.0	2.11	1.00	2.11	7.68	-	2.33
0.4L : 21.5	1.80	1.00	1.80	9.82	-	1.91
0.5L : 27.0	1.73	1.00	1.73	12.38	-	1.82
0.6L : 32.5	1.80	1.00	1.80	9.82	-	1.91
0.7L : 38.0	2.11	1.00	2.11	7.68	-	2.33
0.8L : 43.5	3.10	1.00	3.10	6.39	-	3.40
0.9L : 49.0	5.16	1.00	5.16	8.45	-	5.15
Critical : 52.6	-	-	-	6.05	-	-
Transfer : 51.5	7.48	1.00	7.48	6.32	-	9.65
Bearing : 54.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
 CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
 PSSiT - Prestress Steel Tension.



Sheet #	1				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**PROPERTIES**

**Span:3, Beam:1**  
**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Fing width	Top	36.000	in	Bot	36.000	in
thick	Top	4.500	in	Bot	4.500*	in
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	1.50/ 3.00	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Exterior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**

Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:				
	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)



		Sheet # 2		
		Job # 171002272		
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**GENERAL LOAD DATA:**

**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	25.000	ft
Release length	25.000	ft
Design length	24.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**

Type g

Live Moment	(2+ lanes loaded)	0.288	(Calculated)
Live Moment	(1 lane loaded)	0.367	(Calculated)
Live Shear	(2+ lanes loaded)	0.300	(Calculated)
Live Shear	(1 lane loaded)	0.404	(Calculated)

The LL distribution computation is using the effective slab depth ( $t_s = 0.00\text{in}$ ).

Include sacrificial deck thick in  $t_s$ : NO

Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.060	(Manual input)



Sheet #	3				
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Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90

**SECTION PROPERTIES:**

	PRECAST		COMPOSITE		
Area	522.3	in2	522.3	in2	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (Ixx)	25390	in4	25390	in4	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (Iyy)	62796.0	in4			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using  $E_c/E_c = 1.0000$

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only



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Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 2.00	0.20L 4.50	0.30L 7.00	0.40L 9.50	Midspan 12.00
Precast:(At Release, using	Ec =	4266.2ksi)							
Area,	in2	523.7	531.8	526.3	529.9	533.4	533.4	533.4	533.4
Yb,	in	10.39	10.33	10.38	10.35	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25410	25546	25443	25507	25634	25634	25634	25634
Composite:(At Final, using	Ec =	4592.2ksi)							
Area,	in2	523.6	531.0	525.9	529.3	532.5	532.5	532.5	532.5
Yb,	in	10.39	10.34	10.38	10.35	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25408	25533	25439	25497	25614	25614	25614	25614

Span:3, Beam:1

STRESS LIMITS (Art. 5.9.2):

STRESS LIMITS AT RELEASE BEFORE LOSSES:

	PRECAST	
Strength	4.00	ksi
Elasticity	4266.2	ksi
Max comp	2.60	ksi
Max tens	-0.19	ksi
Max tens, w/reinf	-0.48	ksi

STRESS LIMITS AT FINAL AFTER LOSSES:

	PRECAST		DECK	
Strength	5.00	ksi	5.00	ksi
Elasticity	4592.23	ksi	4592.23	ksi

STRESS LIMITS AT FINAL 1 (P/S + DL + LL):

	PRECAST		DECK	
Max comp	3.00	ksi	3.00	ksi





Sheet #	5				
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**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.25	ksi	2.25	ksi

**FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.00	ksi	-	ksi

**SERVICE III (Tension):**

	<b>PRECAST</b>		<b>DECK</b>	
Max tens	-0.42	ksi	-0.42	ksi

**Span:3, Beam:1**

**PRESTRESSED STEEL:**

9 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 5.67 in):**

7 @ 2.000 in	2 @ 18.500 in		
--------------	---------------	--	--

**SHIELDING AND REDUCED INITIAL PULLS:**

Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	2.000	in	2.000	in	2.00	ft	0.00	ft	6.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK



Sheet #	6				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	1.953	in <sup>2</sup>
Trans. Len, bonded	3.000	ft
Trans. Len, debonded	3.000	ft
Dev. Len, bonded	6.503	ft
Dev. Len, debonded	13.006	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	395.5	kips
Beam Shrtng (PL/AE)	0.053	in

**Span:3, Beam:1**  
**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
225.000	740	166.500	3.358	13601.591	148.175	34.032

**Span:3, Beam:1**  
**REINFORCING STEEL:**

Tension	steel:	
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**

# legs	Size	fy (ksi)	Area (in <sup>2</sup> )	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.2083	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	19.5000	No
4	US#4[M13]	60.0	0.80	9.00	19.5000	24.9167	No
4	US#5[M16]	60.0	1.24	1.00	24.9167	25.0000	No



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File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	25.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	1.9530	in2
Ycg	5.67	in
P_init	395.5	kips
Ecc	4.74	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4266	ksi

**AASHTO LOSSES**

Elastic Shortening \*\* 6.38 ksi (Eq 5.9.5.2.3a-1), (fcgp= 0.954 ksi)

Elastic Gains		Gains	Adjustment
due to Precast Loads		-0.00 ksi	0.00 ksi
due to Composite Loads		-0.28 ksi	0.00 ksi
due to Live Loads		-1.57 ksi	0.00 ksi

**Time Dependent Losses (Approximate Method (Art.5.9.3.3))**



		Sheet # 8		
		Job # 171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022

		Initial		Final		
Steel relaxation	0.00	ksi		2.40	ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00	ksi		11.40	ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00	ksi		7.19	ksi	(Eq 5.9.3.3-1)
Sub-total	6.38	ksi	( 3.15 %)	19.15	ksi	( 9.46 %)
Total Prestress Losses				25.52	ksi	(12.60 %)

Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK

initial fpe = 177.0 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.



Sheet #	9				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 1, SERVICE I**  
**Shears: kips, Moments: kft**

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	1.1	5.6	2.8	4.8	8.4	10.9	12.4	12.9
DW(Max)	V	2.0	1.6	1.8	1.7	1.2	0.8	0.4	0.0
LL + I :	M+	13.7	66.5	33.6	57.0	99.5	128.3	143.4	145.2
	V	23.4	10.5	18.0	11.1	7.8	4.5	1.1	0.6
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	26.0	22.9	24.9	23.6	20.3	17.1	14.0	12.1
	M	13.4	63.8	32.7	54.9	93.6	118.0	128.7	134.4
Total :	M+	15.5	90.0	43.6	76.5	136.6	178.0	200.6	204.9
	V	33.1	18.1	27.0	19.2	13.8	8.5	3.1	0.6
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	35.7	30.6	33.9	31.6	26.4	21.2	16.0	12.1
	M	15.2	87.3	42.7	74.5	130.8	167.8	185.9	194.0



Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	12.3	10.7	8.0	4.3	2.2	5.1	0.5
DW(Max)	V	0.4	0.9	1.3	1.7	1.9	1.6	2.0
LL + I :	M+	140.9	124.6	94.6	51.0	26.9	60.8	6.2
	V	14.6	18.0	21.3	24.6	26.3	24.0	27.6
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	15.1	18.2	21.4	24.6	26.3	24.0	27.5
	M	133.9	120.0	92.3	51.0	27.1	60.5	6.3
Total :	M+	197.9	173.9	131.2	69.7	35.9	83.5	7.0
	V	16.7	22.1	27.4	32.8	35.3	31.7	37.3
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	17.2	22.3	27.5	32.8	35.3	31.7	37.3
	M	190.9	169.3	128.9	69.7	36.2	83.2	7.1

**REACTIONS (kips), SERVICE I**



		Sheet # 11			
				Job # 171002272	
Program: LEAP® Bridge Concrete CONNECT Edition		Stantec Consulting Ltd		Designed: JFK	
Module: Precast/Prestressed Girder		Copyright © Bentley Systems, Inc. 2019 - 2019		Date: Feb/2/2022	
Version: 19.01.00.11		<a href="http://www.bentley.com">www.bentley.com</a>		Phone: 1-800-778-4277	
File Name: 270017_Spans 1+3_SV.lbcx				Checked: MBI	
				Date: Mar/7/2022	

Load Type		Left Support	Right Support
Self Wt.		6.5	6.5
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		13.0	13.3
DL-Comp.(DW)		33.1	34.0
Live		53.2	53.2
	Truck	45.4	45.4
	Lane	7.8	7.8
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 1, SERVICE III**

**Shears: kips, Moments: kft**



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	1.1	5.6	2.8	4.8	8.4	10.9	12.4	12.9
DW(Max)	V	2.0	1.6	1.8	1.7	1.2	0.8	0.4	0.0
LL + I :	M+	10.9	53.2	26.9	45.6	79.6	102.6	114.7	116.2
	V	18.7	8.4	14.4	8.9	6.2	3.6	0.9	0.4
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	20.8	18.3	19.9	18.8	16.3	13.7	11.2	9.7
	M	10.7	51.0	26.2	43.9	74.9	94.4	102.9	107.5
Total :	M+	12.8	76.7	36.9	65.1	116.7	152.3	171.9	175.8
	V	28.4	16.0	23.4	17.0	12.3	7.6	2.9	0.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	30.5	26.0	28.9	26.9	22.3	17.7	13.2	9.7
	M	12.5	74.5	36.1	63.5	112.0	144.2	160.2	167.2





Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	12.3	10.7	8.0	4.3	2.2	5.1	0.5
DW(Max)	V	0.4	0.9	1.3	1.7	1.9	1.6	2.0
LL + I :	M+	112.7	99.7	75.7	40.8	21.5	48.7	5.0
	V	11.7	14.4	17.0	19.7	21.0	19.2	22.0
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	12.1	14.6	17.1	19.7	21.0	19.2	22.0
	M	107.1	96.0	73.8	40.8	21.7	48.4	5.0
Total :	M+	169.8	149.0	112.3	59.5	30.6	71.3	5.8
	V	13.8	18.5	23.2	27.9	30.1	26.9	31.8
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	14.2	18.7	23.2	27.9	30.1	26.9	31.8
	M	164.1	145.3	110.4	59.5	30.8	71.1	5.9

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 1, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	18.3	6.9	15.0	29.8	40.5	46.8	49.0
(Max)	V	8.2	6.5	7.6	6.8	5.1	3.4	1.7	0.0
Self wt. :	M	0.0	13.2	5.0	10.8	21.5	29.1	33.7	35.3
(Min)	V	5.9	4.7	5.4	4.9	3.7	2.4	1.2	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.8	4.1	2.1	3.5	6.2	8.0	9.1	9.5
DC(Max)	V	1.5	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.6	3.0	1.5	2.5	4.4	5.8	6.6	6.8
DC(Min)	V	1.0	0.8	1.0	0.9	0.7	0.4	0.2	0.0
DL-Comp :	M	1.7	8.4	4.2	7.2	12.6	16.4	18.7	19.4
DW(Max)	V	3.0	2.4	2.8	2.5	1.8	1.2	0.6	0.0
DL-Comp :	M	0.7	3.6	1.8	3.1	5.4	7.1	8.1	8.4
DW(Min)	V	1.3	1.0	1.2	1.1	0.8	0.5	0.3	0.0
LL + I :	M+	23.9	116.4	58.9	99.7	174.1	224.5	250.9	254.1
	V	41.0	18.3	31.6	19.5	13.6	7.8	2.0	1.0
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	45.5	40.1	43.6	41.2	35.6	30.0	24.6	21.1
	M	23.4	111.7	57.2	96.1	163.8	206.5	225.1	235.2
Total :	M+	26.5	147.2	72.0	125.4	222.6	289.4	325.6	331.9



Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Total :	V	53.6	28.3	43.2	30.0	21.5	13.0	4.6	1.0
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	58.1	50.0	55.3	51.7	43.4	35.2	27.1	21.2
	M	26.0	142.4	70.4	121.7	212.3	271.4	299.8	313.0



Sheet #	16				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	46.8	40.5	29.8	15.0	6.9	18.3	0.0
(Max)	V	1.7	3.4	5.1	6.8	7.6	6.5	8.2
Self wt. :	M	33.7	29.1	21.5	10.8	5.0	13.2	0.0
(Min)	V	1.2	2.4	3.7	4.9	5.4	4.7	5.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	9.0	7.8	5.9	3.1	1.6	3.7	0.4
DC(Max)	V	0.3	0.6	0.9	1.3	1.4	1.2	1.5
DL-Comp :	M	6.5	5.6	4.2	2.2	1.2	2.7	0.3
DC(Min)	V	0.2	0.5	0.7	0.9	1.0	0.9	1.1
DL-Comp :	M	18.5	16.0	12.0	6.4	3.4	7.6	0.8
DW(Max)	V	0.7	1.3	1.9	2.6	2.8	2.4	3.1
DL-Comp :	M	8.0	6.9	5.2	2.8	1.5	3.3	0.3
DW(Min)	V	0.3	0.6	0.8	1.1	1.2	1.1	1.3
LL + I :	M+	246.6	218.1	165.6	89.2	47.0	106.4	10.9
	V	25.6	31.5	37.3	43.1	46.0	42.0	48.2
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	26.4	31.9	37.4	43.1	46.0	42.0	48.2
	M	234.3	210.0	161.5	89.2	47.5	105.9	11.0
Total :	M+	321.0	282.4	213.3	113.7	58.9	136.1	12.0



		Sheet #	17		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Total :	V	28.3	36.8	45.3	53.7	57.8	52.0	60.9
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	29.1	37.2	45.4	53.7	57.8	52.1	60.9
	M	308.7	274.4	209.2	113.7	59.3	135.6	12.2

**REACTIONS (kips), STRENGTH I**

Load Type		Left Support	Right Support
Self Wt.		8.2	8.2
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		16.2	16.6
DL-Comp.(DW)		49.7	51.0
Live		93.0	93.0
	Truck	79.4	79.4
	Lane	13.6	13.6
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 1, FATIGUE I**

**Shears: kips, Moments: kft**



Sheet #	18				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.1	5.6	2.8	4.8	8.4	10.9	12.4	12.9
DW(Max)	V	2.0	1.6	1.8	1.7	1.2	0.8	0.4	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	11.6	56.1	28.4	48.1	83.7	107.0	118.0	120.7
	V	18.1	0.9	10.3	0.3	3.1	5.8	8.5	10.8
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	22.5	19.8	21.6	20.4	17.7	15.4	12.2	10.8
	M	11.5	55.2	28.2	47.4	81.2	105.6	111.9	120.7
Total :	M+	13.4	79.6	38.4	67.6	120.9	156.8	175.3	180.4



Sheet #	19				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Total :	V	27.8	8.5	19.3	8.4	9.1	9.8	10.5	10.9
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	32.2	27.5	30.5	28.4	23.7	19.4	14.2	10.9
	M	13.3	78.7	38.2	67.0	118.4	155.3	169.1	180.4



Sheet #	20				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	12.3	10.7	8.0	4.3	2.2	5.1	0.5
DW(Max)	V	0.4	0.9	1.3	1.7	1.9	1.6	2.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	117.0	104.9	80.4	43.6	23.1	52.0	5.3
	V	13.2	15.9	18.6	21.3	22.7	20.8	23.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	13.2	15.9	18.6	21.3	22.7	20.8	23.7
	M	117.0	104.9	80.4	43.6	23.1	52.0	5.3
Total :	M+	174.0	154.2	117.0	62.4	32.1	74.7	6.2





Sheet #	21				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Total :	V	15.3	20.0	24.7	29.5	31.7	28.5	33.5
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	15.3	20.0	24.7	29.5	31.7	28.5	33.5
	M	174.0	154.2	117.0	62.4	32.1	74.7	6.2



Sheet #	22				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

**Span:3, Beam:1**

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.37	2.96	106.66	0.4L	9.50	0.40	5.70	205.02	Critical	22.47
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.37	2.02	-	0.4L	9.50	0.40	4.96	-	Critical	22.47
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.37	3.84	138.27	0.4L	9.50	0.40	7.42	267.18	Critical	22.47
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.37	2.62	-	0.4L	9.50	0.40	6.47	-	Critical	22.47
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.90	140.34	0.4L	9.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.61	-	0.5L	12.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.90	140.34	0.4L	9.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.61	-	0.5L	12.00	-	-	-	-	-



Sheet #	23				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.37	5.59	75.40	0.5L	12.00	0.40	13.49	182.05	Critical	22.47
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.37	5.13	102.62	0.4L	9.50	0.40	10.77	215.44	Critical	22.47
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.37	5.39	118.52	0.4L	9.50	0.40	10.55	232.03	Critical	22.47
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.37	2.87	78.08	0.5L	12.00	0.40	6.75	183.82	Critical	22.47
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.37	2.84	99.18	0.4L	9.50	0.40	6.51	227.33	Critical	22.47
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.37	2.74	97.57	0.4L	9.50	0.40	6.81	242.09	Critical	22.47
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.37	2.58	103.11	0.5L	12.00	0.40	6.52	260.56	Critical	22.47
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.37	2.55	107.13	0.4L	9.50	0.40	6.57	276.02	Critical	22.47
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.37	5.75	77.61	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.37	5.38	107.64	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.37	5.67	124.75	0.4L	9.50	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.37	2.95	80.38	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.37	2.95	102.87	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.37	2.83	100.69	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.37	2.66	106.14	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.37	2.63	110.29	0.5L	12.00	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	24				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
 For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	0.90 x fy = 218.70
Design Operating	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	0.90 x fy = 218.70
Legal	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	-
Permit	0.60 x f'c = 3.00	0.19 x sqrt(f'c) = 0.42	0.90 x fy = 218.70



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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Consider shear reinf. across plane (FDOT alternative): No



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**RATING RESULTS**

**Span:3, Beam:1**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.43	1.00	3.43	6.42	-	6.32	-
Critical : 1.5	-	-	-	5.97	-	-	-
0.1L : 2.0	3.20	1.00	3.20	5.98	-	6.23	13.45
0.2L : 4.5	3.26	1.00	3.26	7.51	-	5.06	-
0.3L : 7.0	2.99	1.00	2.99	7.76	-	4.03	-
0.4L : 9.5	2.96	1.00	2.96	10.67	-	3.90	118.85
0.5L : 12.0	3.07	1.00	3.07	12.16	-	3.95	108.51
0.6L : 14.5	2.99	1.00	2.99	9.43	-	3.94	182.93
0.7L : 17.0	3.06	1.00	3.06	7.08	-	4.13	-
0.8L : 19.5	3.41	1.00	3.41	6.98	-	5.30	-
0.9L : 22.0	3.53	1.00	3.53	5.73	-	6.87	16.31
Critical : 22.5	-	-	-	5.70	-	-	-
Transfer : 21.5	3.71	1.00	3.71	6.12	-	6.82	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	2.88	1.00	2.88	5.51	-	5.30	345.48
Critical : 1.5	-	-	-	5.21	-	-	-
0.1L : 2.0	2.71	1.00	2.71	5.20	-	5.27	10.36
0.2L : 4.5	2.63	1.00	2.63	6.08	-	4.09	-
0.3L : 7.0	2.26	1.00	2.26	5.88	-	3.05	15.04
0.4L : 9.5	2.02	1.00	2.02	7.25	-	2.66	8.08
0.5L : 12.0	2.02	1.00	2.02	8.53	-	2.61	7.43
0.6L : 14.5	2.06	1.00	2.06	6.71	-	2.71	8.55
0.7L : 17.0	2.33	1.00	2.33	5.52	-	3.14	17.78
0.8L : 19.5	2.77	1.00	2.77	5.77	-	4.30	-
0.9L : 22.0	3.04	1.00	3.04	4.97	-	5.91	12.62
Critical : 22.5	-	-	-	4.96	-	-	-
Transfer : 21.5	3.16	1.00	3.16	5.27	-	5.81	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



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**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.45	1.00	4.45	8.38
Critical : 1.5	-	-	-	7.79
0.1L : 2.0	4.15	1.00	4.15	7.80
0.2L : 4.5	4.22	1.00	4.22	9.81
0.3L : 7.0	3.87	1.00	3.87	10.16
0.4L : 9.5	3.84	1.00	3.84	13.95
0.5L : 12.0	3.98	1.00	3.98	15.92
0.6L : 14.5	3.88	1.00	3.88	12.34
0.7L : 17.0	3.97	1.00	3.97	9.27
0.8L : 19.5	4.42	1.00	4.42	9.12
0.9L : 22.0	4.58	1.00	4.58	7.47
Critical : 22.5	-	-	-	7.42
Transfer : 21.5	4.81	1.00	4.81	7.99
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.





		Sheet #	29		
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.74	1.00	3.74	7.20
Critical : 1.5	-	-	-	6.79
0.1L : 2.0	3.51	1.00	3.51	6.79
0.2L : 4.5	3.41	1.00	3.41	7.96
0.3L : 7.0	2.93	1.00	2.93	7.71
0.4L : 9.5	2.62	1.00	2.62	9.52
0.5L : 12.0	2.62	1.00	2.62	11.19
0.6L : 14.5	2.67	1.00	2.67	8.82
0.7L : 17.0	3.01	1.00	3.01	7.25
0.8L : 19.5	3.59	1.00	3.59	7.56
0.9L : 22.0	3.94	1.00	3.94	6.49
Critical : 22.5	-	-	-	6.47
Transfer : 21.5	4.10	1.00	4.10	6.88
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.

**Span:3, Beam:1**

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



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**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.90	1.00	7.90	15.03	-	11.62
Critical : 1.5	-	-	-	14.15	-	-
0.1L : 2.0	7.42	1.00	7.42	14.15	-	11.55
0.2L : 4.5	7.22	1.00	7.22	16.57	-	8.96
0.3L : 7.0	6.23	1.00	6.23	16.05	-	6.72
0.4L : 9.5	5.64	1.00	5.64	19.75	-	5.93
0.5L : 12.0	5.59	1.00	5.59	22.54	-	5.75
0.6L : 14.5	5.69	1.00	5.69	18.29	-	5.99
0.7L : 17.0	6.36	1.00	6.36	15.07	-	6.87
0.8L : 19.5	7.53	1.00	7.53	15.71	-	9.35
0.9L : 22.0	8.21	1.00	8.21	13.52	-	12.77
Critical : 22.5	-	-	-	13.49	-	-
Transfer : 21.5	8.55	1.00	8.55	14.34	-	12.57
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.36	1.00	6.36	12.24	-	9.35
Critical : 1.5	-	-	-	11.41	-	-
0.1L : 2.0	5.94	1.00	5.94	11.46	-	9.25
0.2L : 4.5	5.96	1.00	5.96	13.84	-	7.40
0.3L : 7.0	5.35	1.00	5.35	14.01	-	5.77
0.4L : 9.5	5.13	1.00	5.13	18.46	-	5.40
0.5L : 12.0	5.23	1.00	5.23	21.06	-	5.38
0.6L : 14.5	5.18	1.00	5.18	16.62	-	5.46
0.7L : 17.0	5.47	1.00	5.47	12.92	-	5.91
0.8L : 19.5	6.23	1.00	6.23	12.96	-	7.74
0.9L : 22.0	6.61	1.00	6.61	10.85	-	10.28
Critical : 22.5	-	-	-	10.77	-	-
Transfer : 21.5	6.92	1.00	6.92	11.56	-	10.17
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.25	1.00	6.25	12.10	-	9.19
Critical : 1.5	-	-	-	11.22	-	-
0.1L : 2.0	5.82	1.00	5.82	11.30	-	9.06
0.2L : 4.5	5.92	1.00	5.92	13.87	-	7.35
0.3L : 7.0	5.43	1.00	5.43	14.39	-	5.86
0.4L : 9.5	5.39	1.00	5.39	19.75	-	5.67
0.5L : 12.0	5.59	1.00	5.59	22.54	-	5.75
0.6L : 14.5	5.44	1.00	5.44	17.48	-	5.73
0.7L : 17.0	5.56	1.00	5.56	13.14	-	6.01
0.8L : 19.5	6.20	1.00	6.20	12.90	-	7.70
0.9L : 22.0	6.49	1.00	6.49	10.65	-	10.09
Critical : 22.5	-	-	-	10.55	-	-
Transfer : 21.5	6.81	1.00	6.81	11.38	-	10.01
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.96	1.00	3.96	7.58	-	5.82
Critical : 1.5	-	-	-	7.14	-	-
0.1L : 2.0	3.72	1.00	3.72	7.15	-	5.78
0.2L : 4.5	3.64	1.00	3.64	8.32	-	4.52
0.3L : 7.0	3.16	1.00	3.16	8.12	-	3.41
0.4L : 9.5	2.88	1.00	2.88	9.99	-	3.03
0.5L : 12.0	2.87	1.00	2.87	11.58	-	2.95
0.6L : 14.5	2.91	1.00	2.91	9.14	-	3.06
0.7L : 17.0	3.23	1.00	3.23	7.49	-	3.49
0.8L : 19.5	3.81	1.00	3.81	7.82	-	4.73
0.9L : 22.0	4.15	1.00	4.15	6.75	-	6.45
Critical : 22.5	-	-	-	6.75	-	-
Transfer : 21.5	4.32	1.00	4.32	7.15	-	6.35
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.84	1.00	3.84	7.17	-	5.64
Critical : 1.5	-	-	-	6.68	-	-
0.1L : 2.0	3.58	1.00	3.58	6.72	-	5.57
0.2L : 4.5	3.64	1.00	3.64	8.13	-	4.52
0.3L : 7.0	3.22	1.00	3.22	8.28	-	3.48
0.4L : 9.5	2.84	1.00	2.84	10.93	-	2.99
0.5L : 12.0	2.86	1.00	2.86	13.01	-	2.95
0.6L : 14.5	2.86	1.00	2.86	9.95	-	3.02
0.7L : 17.0	3.30	1.00	3.30	7.99	-	3.56
0.8L : 19.5	3.83	1.00	3.83	7.90	-	4.75
0.9L : 22.0	4.03	1.00	4.03	6.56	-	6.27
Critical : 22.5	-	-	-	6.51	-	-
Transfer : 21.5	4.23	1.00	4.23	7.00	-	6.21
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.98	1.00	3.98	7.46	-	5.85
Critical : 1.5	-	-	-	6.98	-	-
0.1L : 2.0	3.74	1.00	3.74	7.00	-	5.82
0.2L : 4.5	3.62	1.00	3.62	8.36	-	4.50
0.3L : 7.0	3.08	1.00	3.08	8.36	-	3.33
0.4L : 9.5	2.74	1.00	2.74	10.84	-	2.89
0.5L : 12.0	2.75	1.00	2.75	12.74	-	2.83
0.6L : 14.5	2.79	1.00	2.79	9.94	-	2.93
0.7L : 17.0	3.17	1.00	3.17	8.09	-	3.43
0.8L : 19.5	3.82	1.00	3.82	8.15	-	4.74
0.9L : 22.0	4.21	1.00	4.21	6.85	-	6.54
Critical : 22.5	-	-	-	6.81	-	-
Transfer : 21.5	4.37	1.00	4.37	7.29	-	6.43
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.82	1.00	3.82	7.19	-	5.62
Critical : 1.5	-	-	-	6.72	-	-
0.1L : 2.0	3.59	1.00	3.59	6.76	-	5.59
0.2L : 4.5	3.49	1.00	3.49	8.04	-	4.33
0.3L : 7.0	2.92	1.00	2.92	7.88	-	3.16
0.4L : 9.5	2.64	1.00	2.64	9.91	-	2.78
0.5L : 12.0	2.58	1.00	2.58	12.64	-	2.66
0.6L : 14.5	2.66	1.00	2.66	9.51	-	2.80
0.7L : 17.0	3.01	1.00	3.01	7.63	-	3.25
0.8L : 19.5	3.68	1.00	3.68	7.84	-	4.56
0.9L : 22.0	4.04	1.00	4.04	6.58	-	6.29
Critical : 22.5	-	-	-	6.52	-	-
Transfer : 21.5	4.21	1.00	4.21	7.01	-	6.18
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	37				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022	

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.84	1.00	3.84	7.22	-	5.64
Critical : 1.5	-	-	-	6.76	-	-
0.1L : 2.0	3.61	1.00	3.61	6.79	-	5.62
0.2L : 4.5	3.49	1.00	3.49	8.04	-	4.33
0.3L : 7.0	2.92	1.00	2.92	7.88	-	3.16
0.4L : 9.5	2.55	1.00	2.55	9.91	-	2.68
0.5L : 12.0	2.55	1.00	2.55	12.64	-	2.63
0.6L : 14.5	2.59	1.00	2.59	9.51	-	2.73
0.7L : 17.0	3.01	1.00	3.01	7.63	-	3.25
0.8L : 19.5	3.68	1.00	3.68	7.84	-	4.56
0.9L : 22.0	4.07	1.00	4.07	6.62	-	6.33
Critical : 22.5	-	-	-	6.57	-	-
Transfer : 21.5	4.22	1.00	4.22	7.04	-	6.21
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:3, Beam:1

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.37	2.96	106.66	0.4L	9.50	0.40	5.70	205.02	Critical	22.47
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.37	2.02	-	0.4L	9.50	0.40	4.96	-	Critical	22.47
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.37	3.84	138.27	0.4L	9.50	0.40	7.42	267.18	Critical	22.47
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.37	2.62	-	0.4L	9.50	0.40	6.47	-	Critical	22.47
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.90	140.34	0.4L	9.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.61	-	0.5L	12.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.90	140.34	0.4L	9.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.61	-	0.5L	12.00	-	-	-	-	-



Sheet #	2				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.37	3.59	118.44	0.5L	12.00	0.40	8.01	264.49	Critical	22.47
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.37	3.15	104.27	0.5L	12.00	0.40	7.28	240.79	Critical	22.47
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.37	2.93	121.75	0.4L	9.50	0.40	6.84	284.49	Critical	22.47
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.37	3.06	128.53	0.5L	12.00	0.40	6.80	285.67	Critical	22.47
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.37	2.77	116.44	0.5L	12.00	0.40	6.56	275.64	Critical	22.47
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.37	2.94	126.48	0.5L	12.00	0.40	6.57	282.53	Critical	22.47
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.37	2.95	132.81	0.5L	12.00	0.40	6.68	300.81	Critical	22.47
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.37	2.81	126.42	0.4L	9.50	0.40	6.05	272.06	Critical	22.47
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.37	3.69	121.92	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.37	3.25	107.33	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.37	3.05	126.84	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.37	3.15	132.30	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.37	2.85	119.86	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.37	3.03	130.20	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.37	3.04	136.71	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.37	2.96	133.07	0.4L	9.50	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.



Sheet #	3				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
 For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80



Sheet #	4				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	-
Permit	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No



Sheet #	5				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**RATING RESULTS**

Span:3, Beam:1

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.43	1.00	3.43	6.42	-	6.32	-
Critical : 1.5	-	-	-	5.97	-	-	-
0.1L : 2.0	3.20	1.00	3.20	5.98	-	6.23	13.45
0.2L : 4.5	3.26	1.00	3.26	7.51	-	5.06	-
0.3L : 7.0	2.99	1.00	2.99	7.76	-	4.03	-
0.4L : 9.5	2.96	1.00	2.96	10.67	-	3.90	118.85
0.5L : 12.0	3.07	1.00	3.07	12.16	-	3.95	108.51
0.6L : 14.5	2.99	1.00	2.99	9.43	-	3.94	182.93
0.7L : 17.0	3.06	1.00	3.06	7.08	-	4.13	-
0.8L : 19.5	3.41	1.00	3.41	6.98	-	5.30	-
0.9L : 22.0	3.53	1.00	3.53	5.73	-	6.87	16.31
Critical : 22.5	-	-	-	5.70	-	-	-
Transfer : 21.5	3.71	1.00	3.71	6.12	-	6.82	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	6				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSSIT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	2.88	1.00	2.88	5.51	-	5.30	345.48
Critical : 1.5	-	-	-	5.21	-	-	-
0.1L : 2.0	2.71	1.00	2.71	5.20	-	5.27	10.36
0.2L : 4.5	2.63	1.00	2.63	6.08	-	4.09	-
0.3L : 7.0	2.26	1.00	2.26	5.88	-	3.05	15.04
0.4L : 9.5	2.02	1.00	2.02	7.25	-	2.66	8.08
0.5L : 12.0	2.02	1.00	2.02	8.53	-	2.61	7.43
0.6L : 14.5	2.06	1.00	2.06	6.71	-	2.71	8.55
0.7L : 17.0	2.33	1.00	2.33	5.52	-	3.14	17.78
0.8L : 19.5	2.77	1.00	2.77	5.77	-	4.30	-
0.9L : 22.0	3.04	1.00	3.04	4.97	-	5.91	12.62
Critical : 22.5	-	-	-	4.96	-	-	-
Transfer : 21.5	3.16	1.00	3.16	5.27	-	5.81	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



Sheet #	7				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.45	1.00	4.45	8.38
Critical : 1.5	-	-	-	7.79
0.1L : 2.0	4.15	1.00	4.15	7.80
0.2L : 4.5	4.22	1.00	4.22	9.81
0.3L : 7.0	3.87	1.00	3.87	10.16
0.4L : 9.5	3.84	1.00	3.84	13.95
0.5L : 12.0	3.98	1.00	3.98	15.92
0.6L : 14.5	3.88	1.00	3.88	12.34
0.7L : 17.0	3.97	1.00	3.97	9.27
0.8L : 19.5	4.42	1.00	4.42	9.12
0.9L : 22.0	4.58	1.00	4.58	7.47
Critical : 22.5	-	-	-	7.42
Transfer : 21.5	4.81	1.00	4.81	7.99
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.





Sheet #	8				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.74	1.00	3.74	7.20
Critical : 1.5	-	-	-	6.79
0.1L : 2.0	3.51	1.00	3.51	6.79
0.2L : 4.5	3.41	1.00	3.41	7.96
0.3L : 7.0	2.93	1.00	2.93	7.71
0.4L : 9.5	2.62	1.00	2.62	9.52
0.5L : 12.0	2.62	1.00	2.62	11.19
0.6L : 14.5	2.67	1.00	2.67	8.82
0.7L : 17.0	3.01	1.00	3.01	7.25
0.8L : 19.5	3.59	1.00	3.59	7.56
0.9L : 22.0	3.94	1.00	3.94	6.49
Critical : 22.5	-	-	-	6.47
Transfer : 21.5	4.10	1.00	4.10	6.88
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.

Span:3, Beam:1

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	9				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.78	1.00	4.78	9.40	-	7.04
Critical : 1.5	-	-	-	8.63	-	-
0.1L : 2.0	4.44	1.00	4.44	8.74	-	6.91
0.2L : 4.5	4.66	1.00	4.66	11.09	-	5.78
0.3L : 7.0	4.36	1.00	4.36	11.35	-	4.71
0.4L : 9.5	3.82	1.00	3.82	14.50	-	4.02
0.5L : 12.0	3.59	1.00	3.59	17.39	-	3.69
0.6L : 14.5	3.87	1.00	3.87	13.17	-	4.07
0.7L : 17.0	4.48	1.00	4.48	10.52	-	4.84
0.8L : 19.5	4.90	1.00	4.90	10.13	-	6.08
0.9L : 22.0	4.97	1.00	4.97	8.13	-	7.74
Critical : 22.5	-	-	-	8.01	-	-
Transfer : 21.5	5.24	1.00	5.24	8.72	-	7.71
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.29	1.00	4.29	8.05	-	6.31
Critical : 1.5	-	-	-	7.47	-	-
0.1L : 2.0	4.01	1.00	4.01	7.52	-	6.24
0.2L : 4.5	4.00	1.00	4.00	9.27	-	4.96
0.3L : 7.0	3.52	1.00	3.52	9.17	-	3.80
0.4L : 9.5	3.24	1.00	3.24	11.71	-	3.41
0.5L : 12.0	3.15	1.00	3.15	13.88	-	3.25
0.6L : 14.5	3.28	1.00	3.28	10.59	-	3.45
0.7L : 17.0	3.62	1.00	3.62	8.47	-	3.91
0.8L : 19.5	4.21	1.00	4.21	8.68	-	5.23
0.9L : 22.0	4.51	1.00	4.51	7.36	-	7.02
Critical : 22.5	-	-	-	7.28	-	-
Transfer : 21.5	4.71	1.00	4.71	7.82	-	6.93
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	11				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.02	1.00	4.02	7.49	-	5.91
Critical : 1.5	-	-	-	7.01	-	-
0.1L : 2.0	3.75	1.00	3.75	7.03	-	5.84
0.2L : 4.5	3.77	1.00	3.77	8.40	-	4.68
0.3L : 7.0	3.23	1.00	3.23	8.39	-	3.49
0.4L : 9.5	2.93	1.00	2.93	10.88	-	3.08
0.5L : 12.0	2.96	1.00	2.96	12.78	-	3.05
0.6L : 14.5	2.96	1.00	2.96	9.97	-	3.12
0.7L : 17.0	3.32	1.00	3.32	8.12	-	3.59
0.8L : 19.5	3.97	1.00	3.97	8.18	-	4.92
0.9L : 22.0	4.22	1.00	4.22	6.88	-	6.57
Critical : 22.5	-	-	-	6.84	-	-
Transfer : 21.5	4.42	1.00	4.42	7.32	-	6.50
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.03	1.00	4.03	7.56	-	5.92
Critical : 1.5	-	-	-	7.01	-	-
0.1L : 2.0	3.76	1.00	3.76	7.08	-	5.85
0.2L : 4.5	3.80	1.00	3.80	8.64	-	4.72
0.3L : 7.0	3.36	1.00	3.36	8.76	-	3.63
0.4L : 9.5	3.10	1.00	3.10	11.42	-	3.26
0.5L : 12.0	3.06	1.00	3.06	13.32	-	3.15
0.6L : 14.5	3.12	1.00	3.12	10.50	-	3.29
0.7L : 17.0	3.45	1.00	3.45	8.46	-	3.72
0.8L : 19.5	4.01	1.00	4.01	8.40	-	4.97
0.9L : 22.0	4.23	1.00	4.23	6.89	-	6.58
Critical : 22.5	-	-	-	6.80	-	-
Transfer : 21.5	4.43	1.00	4.43	7.36	-	6.51
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	13				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.86	1.00	3.86	7.23	-	5.68
Critical : 1.5	-	-	-	6.75	-	-
0.1L : 2.0	3.61	1.00	3.61	6.79	-	5.62
0.2L : 4.5	3.63	1.00	3.63	8.07	-	4.50
0.3L : 7.0	3.19	1.00	3.19	7.90	-	3.45
0.4L : 9.5	2.87	1.00	2.87	9.93	-	3.02
0.5L : 12.0	2.77	1.00	2.77	12.66	-	2.85
0.6L : 14.5	2.88	1.00	2.88	9.54	-	3.04
0.7L : 17.0	3.27	1.00	3.27	7.59	-	3.53
0.8L : 19.5	3.83	1.00	3.83	7.86	-	4.75
0.9L : 22.0	4.07	1.00	4.07	6.62	-	6.32
Critical : 22.5	-	-	-	6.56	-	-
Transfer : 21.5	4.25	1.00	4.25	7.04	-	6.26
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.91	1.00	3.91	7.36	-	5.75
Critical : 1.5	-	-	-	6.77	-	-
0.1L : 2.0	3.64	1.00	3.64	6.86	-	5.67
0.2L : 4.5	3.69	1.00	3.69	8.60	-	4.58
0.3L : 7.0	3.31	1.00	3.31	8.70	-	3.58
0.4L : 9.5	2.96	1.00	2.96	11.49	-	3.12
0.5L : 12.0	2.94	1.00	2.94	13.88	-	3.03
0.6L : 14.5	2.98	1.00	2.98	10.24	-	3.13
0.7L : 17.0	3.38	1.00	3.38	7.95	-	3.65
0.8L : 19.5	3.90	1.00	3.90	8.00	-	4.84
0.9L : 22.0	4.10	1.00	4.10	6.68	-	6.38
Critical : 22.5	-	-	-	6.57	-	-
Transfer : 21.5	4.30	1.00	4.30	7.12	-	6.32
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.93	1.00	3.93	7.46	-	5.78
Critical : 1.5	-	-	-	6.95	-	-
0.1L : 2.0	3.67	1.00	3.67	6.99	-	5.71
0.2L : 4.5	3.69	1.00	3.69	8.48	-	4.58
0.3L : 7.0	3.31	1.00	3.31	8.67	-	3.58
0.4L : 9.5	2.96	1.00	2.96	11.49	-	3.12
0.5L : 12.0	2.95	1.00	2.95	13.88	-	3.04
0.6L : 14.5	2.98	1.00	2.98	10.24	-	3.13
0.7L : 17.0	3.38	1.00	3.38	7.95	-	3.65
0.8L : 19.5	3.90	1.00	3.90	8.00	-	4.84
0.9L : 22.0	4.13	1.00	4.13	6.73	-	6.43
Critical : 22.5	-	-	-	6.68	-	-
Transfer : 21.5	4.32	1.00	4.32	7.16	-	6.36
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	16				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.60	1.00	3.60	6.73	-	5.29
Critical : 1.5	-	-	-	6.23	-	-
0.1L : 2.0	3.34	1.00	3.34	6.28	-	5.20
0.2L : 4.5	3.48	1.00	3.48	7.80	-	4.32
0.3L : 7.0	3.07	1.00	3.07	8.27	-	3.32
0.4L : 9.5	2.81	1.00	2.81	11.51	-	2.96
0.5L : 12.0	2.97	1.00	2.97	13.88	-	3.06
0.6L : 14.5	2.83	1.00	2.83	10.17	-	2.98
0.7L : 17.0	3.14	1.00	3.14	7.92	-	3.40
0.8L : 19.5	3.65	1.00	3.65	7.54	-	4.53
0.9L : 22.0	3.77	1.00	3.77	6.12	-	5.86
Critical : 22.5	-	-	-	6.05	-	-
Transfer : 21.5	3.96	1.00	3.96	6.55	-	5.82
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

- CComp-T/ CComp-B - Concrete Compression at Top/Bottom;
- CTens-T/ CTens-B - Concrete Tension at Top/Bottom;
- PSSiT - Prestress Steel Tension.



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File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**PROPERTIES**

**Span:3, Beam:2**  
**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Fing width	Top	36.000	in	Bot	36.000	in
thick	Top	4.500	in	Bot	4.500*	in
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	3.00/ 3.00	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Interior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**

Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)



			Sheet #	2
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**GENERAL LOAD DATA:**

**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	25.000	ft
Release length	25.000	ft
Design length	24.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**

Type g

Live Moment	(2+ lanes loaded)	0.287	(Calculated)
Live Moment	(1 lane loaded)	0.336	(Calculated)
Live Shear	(2+ lanes loaded)	0.287	(Calculated) (!)
Live Shear	(1 lane loaded)	0.336	(Calculated) (!)

(!) Taken as for moment (4.6.2.2.3a)

The LL distribution computation is using the effective slab depth ( $t_s = 0.00\text{in}$ ).

Include sacrificial deck thick in  $t_s$ : NO

Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.100	(Manual input)



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Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90

**SECTION PROPERTIES:**

	PRECAST		COMPOSITE		
Area	522.3	in2	522.3	in2	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (Ixx)	25390	in4	25390	in4	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (Iyy)	62796.0	in4			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using  $E_c/E_c = 1.0000$

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only



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Location,	ft	Bearing 0.00	Trans 2.50	H/2 0.88	0.10L 2.00	0.20L 4.50	0.30L 7.00	0.40L 9.50	Midspan 12.00
Precast:(At Release, using	Ec =	4266.2ksi)							
Area,	in2	523.7	531.8	526.3	529.9	533.4	533.4	533.4	533.4
Yb,	in	10.39	10.33	10.38	10.35	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25410	25546	25443	25507	25634	25634	25634	25634
Composite:(At Final, using	Ec =	4592.2ksi)							
Area,	in2	523.6	531.0	525.9	529.3	532.5	532.5	532.5	532.5
Yb,	in	10.39	10.34	10.38	10.35	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25408	25533	25439	25497	25614	25614	25614	25614

Span:3, Beam:2

STRESS LIMITS (Art. 5.9.2):

STRESS LIMITS AT RELEASE BEFORE LOSSES:

	PRECAST	
Strength	4.00	ksi
Elasticity	4266.2	ksi
Max comp	2.60	ksi
Max tens	-0.19	ksi
Max tens, w/reinf	-0.48	ksi

STRESS LIMITS AT FINAL AFTER LOSSES:

	PRECAST		DECK	
Strength	5.00	ksi	5.00	ksi
Elasticity	4592.23	ksi	4592.23	ksi

STRESS LIMITS AT FINAL 1 (P/S + DL + LL):

	PRECAST		DECK	
Max comp	3.00	ksi	3.00	ksi



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**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.25	ksi	2.25	ksi

**FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**

	<b>PRECAST</b>		<b>DECK</b>	
Max comp	2.00	ksi	-	ksi

**SERVICE III (Tension):**

	<b>PRECAST</b>		<b>DECK</b>	
Max tens	-0.42	ksi	-0.42	ksi

**Span:3, Beam:2**

**PRESTRESSED STEEL:**

9 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 5.67 in):**

7 @ 2.000 in	2 @ 18.500 in		
--------------	---------------	--	--

**SHIELDING AND REDUCED INITIAL PULLS:**

Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	2.000	in	2.000	in	2.00	ft	0.00	ft	6.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK



Sheet #	6				
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Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	1.953	in <sup>2</sup>
Trans. Len,bonded	3.000	ft
Trans. Len,debonded	3.000	ft
Dev. Len, bonded	6.503	ft
Dev. Len, debonded	13.006	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	395.5	kips
Beam Shrtng (PL/AE)	0.053	in

**Span:3, Beam:2**  
**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
225.000	740	166.500	3.358	13601.591	148.175	34.032

**Span:3, Beam:2**  
**REINFORCING STEEL:**

Tension	steel:	
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**

# legs	Size	fy (ksi)	Area (in <sup>2</sup> )	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.2083	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	19.5000	No
4	US#4[M13]	60.0	0.80	9.00	19.5000	24.9167	No
4	US#5[M16]	60.0	1.24	1.00	24.9167	25.0000	No



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	25.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	1.9530	in2
Ycg	5.67	in
P_init	395.5	kips
Ecc	4.74	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4266	ksi

**AASHTO LOSSES**

Elastic Shortening \*\* 6.38 ksi (Eq 5.9.5.2.3a-1), (fcgp= 0.954 ksi)

Elastic Gains		Gains	Adjustment
due to Precast Loads	-0.00	ksi	0.00 ksi
due to Composite Loads	-0.39	ksi	0.00 ksi
due to Live Loads	-1.43	ksi	0.00 ksi

**Time Dependent Losses (Approximate Method (Art.5.9.3.3))**





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		Initial		Final		
Steel relaxation	0.00	ksi		2.40	ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00	ksi		11.40	ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00	ksi		7.19	ksi	(Eq 5.9.3.3-1)
Sub-total	6.38	ksi	( 3.15 %)	19.17	ksi	( 9.46 %)
Total Prestress Losses				25.54	ksi	(12.61 %)

Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK

initial fpe = 177.0 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.



Sheet #	9				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 2, SERVICE I**  
**Shears: kips, Moments: kft**

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	1.9	9.3	4.7	8.0	14.0	18.2	20.7	21.5
DW(Max)	V	3.3	2.6	3.1	2.8	2.1	1.4	0.7	0.0
LL + I :	M+	12.5	60.8	30.7	52.1	90.9	117.2	131.0	132.7
	V	19.4	8.7	15.0	9.2	6.5	3.7	0.9	0.5
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	21.6	19.0	20.7	19.6	16.9	14.2	11.7	10.0
	M	12.2	58.3	29.9	50.2	85.5	107.9	117.6	122.8
Total :	M+	15.1	88.0	42.6	74.8	133.7	174.2	196.6	201.0
	V	30.5	17.4	25.2	18.4	13.3	8.3	3.2	0.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	32.6	27.7	30.9	28.7	23.7	18.8	13.9	10.1
	M	14.8	85.5	41.7	72.9	128.3	164.9	183.1	191.1



Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	20.5	17.8	13.3	7.1	3.7	8.5	0.9
DW(Max)	V	0.7	1.4	2.1	2.8	3.2	2.7	3.4
LL + I :	M+	128.8	113.9	86.5	46.6	24.6	55.6	5.7
	V	12.2	14.9	17.7	20.5	21.8	19.9	22.9
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	12.5	15.1	17.8	20.5	21.8	19.9	22.9
	M	122.4	109.7	84.4	46.6	24.8	55.3	5.8
Total :	M+	194.0	170.3	128.4	68.2	35.1	81.7	6.8
	V	14.5	19.6	24.7	29.7	32.1	28.7	34.0
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	14.9	19.8	24.7	29.7	32.1	28.7	34.0
	M	187.6	166.1	126.2	68.2	35.3	81.4	6.9

**REACTIONS (kips), SERVICE I**



			Sheet #	11
			Job #	171002272
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022

Load Type		Left Support	Right Support
Self Wt.		6.5	6.5
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		13.0	13.3
DL-Comp.(DW)		33.1	34.0
Live		53.2	53.2
	Truck	45.4	45.4
	Lane	7.8	7.8
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 2, SERVICE III**

**Shears: kips, Moments: kft**



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	1.9	9.3	4.7	8.0	14.0	18.2	20.7	21.5
DW(Max)	V	3.3	2.6	3.1	2.8	2.1	1.4	0.7	0.0
LL + I :	M+	10.0	48.6	24.6	41.7	72.7	93.8	104.8	106.2
	V	15.6	7.0	12.0	7.4	5.2	3.0	0.7	0.4
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	17.3	15.2	16.6	15.6	13.5	11.4	9.3	8.0
	M	9.8	46.6	23.9	40.1	68.4	86.3	94.1	98.2
Total :	M+	12.6	75.8	36.4	64.4	115.5	150.8	170.4	174.4
	V	26.6	15.7	22.2	16.6	12.0	7.5	3.0	0.4
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	28.3	23.9	26.8	24.8	20.4	15.9	11.6	8.1
	M	12.4	73.9	35.8	62.9	111.2	143.3	159.6	166.5



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	20.5	17.8	13.3	7.1	3.7	8.5	0.9
DW(Max)	V	0.7	1.4	2.1	2.8	3.2	2.7	3.4
LL + I :	M+	103.0	91.1	69.2	37.3	19.6	44.5	4.5
	V	9.7	11.9	14.2	16.4	17.5	15.9	18.3
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	10.0	12.1	14.2	16.4	17.5	15.9	18.3
	M	97.9	87.7	67.5	37.3	19.8	44.3	4.6
Total :	M+	168.3	147.5	111.1	58.8	30.2	70.5	5.7
	V	12.1	16.6	21.1	25.7	27.8	24.7	29.4
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	12.4	16.8	21.2	25.7	27.8	24.8	29.4
	M	163.1	144.2	109.4	58.8	30.4	70.3	5.8

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 2, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	18.3	6.9	15.0	29.8	40.5	46.8	49.0
(Max)	V	8.2	6.5	7.6	6.8	5.1	3.4	1.7	0.0
Self wt. :	M	0.0	13.2	5.0	10.8	21.5	29.1	33.7	35.3
(Min)	V	5.9	4.7	5.4	4.9	3.7	2.4	1.2	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.8	4.1	2.1	3.5	6.2	8.0	9.1	9.5
DC(Max)	V	1.5	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.6	3.0	1.5	2.5	4.4	5.8	6.6	6.8
DC(Min)	V	1.0	0.8	1.0	0.9	0.7	0.4	0.2	0.0
DL-Comp :	M	2.9	14.0	7.0	12.0	21.0	27.3	31.1	32.3
DW(Max)	V	5.0	3.9	4.6	4.1	3.1	2.0	1.0	0.1
DL-Comp :	M	1.2	6.1	3.1	5.2	9.1	11.9	13.5	14.0
DW(Min)	V	2.2	1.7	2.0	1.8	1.3	0.9	0.4	0.0
LL + I :	M+	21.9	106.4	53.8	91.1	159.1	205.1	229.3	232.2
	V	34.0	15.2	26.2	16.2	11.3	6.5	1.6	0.8
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	37.8	33.3	36.2	34.2	29.5	24.9	20.4	17.5
	M	21.4	102.0	52.3	87.8	149.7	188.7	205.7	214.9
Total :	M+	25.6	142.7	69.8	121.5	216.0	281.0	316.4	322.9
	V	48.6	26.7	39.7	28.3	20.4	12.5	4.6	0.9



Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	52.4	44.8	49.7	46.4	38.6	30.9	23.4	17.6
	M	25.1	138.4	68.3	118.2	206.6	264.6	292.8	305.6





Sheet #	16				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	46.8	40.5	29.8	15.0	6.9	18.3	0.0
(Max)	V	1.7	3.4	5.1	6.8	7.6	6.5	8.2
Self wt. :	M	33.7	29.1	21.5	10.8	5.0	13.2	0.0
(Min)	V	1.2	2.4	3.7	4.9	5.4	4.7	5.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	9.0	7.8	5.9	3.1	1.6	3.7	0.4
DC(Max)	V	0.3	0.6	0.9	1.3	1.4	1.2	1.5
DL-Comp :	M	6.5	5.6	4.2	2.2	1.2	2.7	0.3
DC(Min)	V	0.2	0.5	0.7	0.9	1.0	0.9	1.1
DL-Comp :	M	30.8	26.7	20.0	10.6	5.6	12.7	1.3
DW(Max)	V	1.1	2.2	3.2	4.3	4.7	4.0	5.1
DL-Comp :	M	13.3	11.6	8.7	4.6	2.4	5.5	0.6
DW(Min)	V	0.5	0.9	1.4	1.8	2.0	1.8	2.2
LL + I :	M+	225.4	199.3	151.4	81.5	43.0	97.3	9.9
	V	21.3	26.1	31.0	35.8	38.2	34.8	40.0
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	22.0	26.5	31.1	35.8	38.2	34.9	40.0
	M	214.1	191.9	147.6	81.5	43.4	96.8	10.1
Total :	M+	312.0	274.3	207.0	110.3	57.1	132.0	11.6
	V	24.4	32.3	40.2	48.1	51.9	46.5	54.8



Sheet #	17				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	25.1	32.7	40.3	48.1	51.9	46.6	54.8
	M	300.8	266.9	203.3	110.3	57.5	131.5	11.8

**REACTIONS (kips), STRENGTH I**

Load Type		Left Support	Right Support
Self Wt.		8.2	8.2
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		16.2	16.6
DL-Comp.(DW)		49.7	51.0
Live		93.0	93.0
	Truck	79.4	79.4
	Lane	13.6	13.6
Pedestrian		0.0	0.0

Upward reactions are positive.

Live Load reactions are per lane with no distribution factor and no impact.

Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).

Non-composite load types are per beam.

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 2, FATIGUE I**

Shears: kips, Moments: kft



Sheet #	18				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.9	9.3	4.7	8.0	14.0	18.2	20.7	21.5
DW(Max)	V	3.3	2.6	3.1	2.8	2.1	1.4	0.7	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	10.6	51.3	26.0	43.9	76.5	97.8	107.9	110.3
	V	15.0	0.7	8.6	0.3	2.5	4.8	7.0	9.0
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	18.7	16.5	17.9	16.9	14.7	12.8	10.2	9.0
	M	10.5	50.4	25.8	43.3	74.2	96.5	102.2	110.3
Total :	M+	13.1	78.5	37.8	66.7	119.3	154.8	173.4	178.6
	V	26.0	9.4	18.8	9.5	9.4	9.3	9.3	9.1



Sheet #	19				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	29.7	25.2	28.1	26.1	21.5	17.3	12.4	9.1
	M	13.1	77.6	37.6	66.1	117.0	153.5	167.8	178.6



Sheet #	20				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	20.5	17.8	13.3	7.1	3.7	8.5	0.9
DW(Max)	V	0.7	1.4	2.1	2.8	3.2	2.7	3.4
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	106.9	95.8	73.5	39.9	21.1	47.5	4.9
	V	11.0	13.2	15.5	17.7	18.8	17.3	19.7
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	11.0	13.2	15.5	17.7	18.8	17.3	19.7
	M	106.9	95.8	73.5	39.9	21.1	47.5	4.9
Total :	M+	172.2	152.3	115.4	61.4	31.6	73.6	6.0
	V	13.3	17.9	22.4	27.0	29.2	26.1	30.8



Sheet #	21				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	13.3	17.9	22.4	27.0	29.2	26.1	30.8
	M	172.2	152.3	115.4	61.4	31.6	73.6	6.0



Sheet #	22				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.Ibcx		Date	Mar/7/2022	

## LOAD RATING SUMMARY

### Load Rating Summary for Prestressed Concrete Bridges

Span:3, Beam:2

#### Design Load Rating

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.34	3.16	113.86	0.4L	9.50	0.34	6.81	245.33	Critical	22.47
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.34	2.16	-	0.4L	9.50	0.34	5.94	-	Critical	22.47
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.34	4.10	147.60	0.4L	9.50	0.34	8.88	319.52	Critical	22.47
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.34	2.80	-	0.4L	9.50	0.34	7.74	-	Critical	22.47
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	4.15	149.40	0.4L	9.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.77	-	0.5L	12.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	4.15	149.40	0.4L	9.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.77	-	0.5L	12.00	-	-	-	-	-



Sheet #	23				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.Ibcx			Date	Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.34	5.96	80.44	0.5L	12.00	0.34	16.11	217.50	Critical	22.47
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.34	5.48	109.54	0.4L	9.50	0.34	12.87	257.47	Critical	22.47
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.34	5.75	126.51	0.4L	9.50	0.34	12.60	277.30	Critical	22.47
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.34	3.06	83.30	0.5L	12.00	0.34	8.07	219.87	Critical	22.47
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.34	3.03	105.87	0.4L	9.50	0.34	7.79	271.94	Critical	22.47
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.34	2.93	104.16	0.4L	9.50	0.34	8.15	289.56	Critical	22.47
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.34	2.75	110.01	0.5L	12.00	0.34	7.80	311.68	Critical	22.47
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.34	2.72	114.31	0.5L	12.00	0.34	7.86	330.17	Critical	22.47
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.34	6.11	82.52	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.34	5.72	114.45	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.34	6.04	132.80	0.4L	9.50	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.34	3.14	85.46	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.34	3.13	109.37	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.34	3.01	107.05	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.34	2.82	112.85	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.34	2.79	117.26	0.5L	12.00	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.





Sheet #	24				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK  
For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80



Sheet #	25				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	-
Permit	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No



Sheet #	26				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**RATING RESULTS**

Span:3, Beam:2

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.70	1.00	3.70	7.69	-	6.82	-
Critical : 1.5	-	-	-	7.15	-	-	-
0.1L : 2.0	3.44	1.00	3.44	7.16	-	6.73	13.90
0.2L : 4.5	3.50	1.00	3.50	9.00	-	5.44	-
0.3L : 7.0	3.20	1.00	3.20	9.32	-	4.31	-
0.4L : 9.5	3.16	1.00	3.16	12.83	-	4.15	123.85
0.5L : 12.0	3.28	1.00	3.28	14.66	-	4.20	98.91
0.6L : 14.5	3.20	1.00	3.20	11.34	-	4.20	195.52
0.7L : 17.0	3.28	1.00	3.28	8.50	-	4.42	-
0.8L : 19.5	3.67	1.00	3.67	8.37	-	5.70	-
0.9L : 22.0	3.80	1.00	3.80	6.86	-	7.43	16.97
Critical : 22.5	-	-	-	6.81	-	-	-
Transfer : 21.5	4.00	1.00	4.00	7.33	-	7.38	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	27				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.10	1.00	3.10	6.61	-	5.72	-
Critical : 1.5	-	-	-	6.23	-	-	-
0.1L : 2.0	2.91	1.00	2.91	6.23	-	5.69	10.85
0.2L : 4.5	2.83	1.00	2.83	7.30	-	4.39	-
0.3L : 7.0	2.42	1.00	2.42	7.06	-	3.26	17.55
0.4L : 9.5	2.16	1.00	2.16	8.73	-	2.83	8.81
0.5L : 12.0	2.16	1.00	2.16	10.29	-	2.77	8.03
0.6L : 14.5	2.20	1.00	2.20	8.08	-	2.88	9.34
0.7L : 17.0	2.49	1.00	2.49	6.63	-	3.36	21.25
0.8L : 19.5	2.98	1.00	2.98	6.93	-	4.63	-
0.9L : 22.0	3.28	1.00	3.28	5.95	-	6.39	13.28
Critical : 22.5	-	-	-	5.94	-	-	-
Transfer : 21.5	3.41	1.00	3.41	6.31	-	6.29	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



Sheet #	28				
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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.79	1.00	4.79	10.03
Critical : 1.5	-	-	-	9.31
0.1L : 2.0	4.46	1.00	4.46	9.33
0.2L : 4.5	4.54	1.00	4.54	11.76
0.3L : 7.0	4.14	1.00	4.14	12.19
0.4L : 9.5	4.10	1.00	4.10	16.77
0.5L : 12.0	4.25	1.00	4.25	19.17
0.6L : 14.5	4.14	1.00	4.14	14.83
0.7L : 17.0	4.25	1.00	4.25	11.12
0.8L : 19.5	4.76	1.00	4.76	10.93
0.9L : 22.0	4.93	1.00	4.93	8.94
Critical : 22.5	-	-	-	8.88
Transfer : 21.5	5.19	1.00	5.19	9.56
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.



Sheet #	29
Job #	171002272

Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277
File Name:	270017_Spans 1+3_SV.lbcx	

Designed	JFK
Date	Feb/2/2022
Checked	MBI
Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.02	1.00	4.02	8.63
Critical : 1.5	-	-	-	8.12
0.1L : 2.0	3.78	1.00	3.78	8.12
0.2L : 4.5	3.67	1.00	3.67	9.54
0.3L : 7.0	3.13	1.00	3.13	9.26
0.4L : 9.5	2.80	1.00	2.80	11.45
0.5L : 12.0	2.80	1.00	2.80	13.50
0.6L : 14.5	2.85	1.00	2.85	10.61
0.7L : 17.0	3.23	1.00	3.23	8.70
0.8L : 19.5	3.86	1.00	3.86	9.06
0.9L : 22.0	4.25	1.00	4.25	7.76
Critical : 22.5	-	-	-	7.74
Transfer : 21.5	4.42	1.00	4.42	8.24
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.

Span:3, Beam:2

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	30				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	8.50	1.00	8.50	17.98	-	12.54
Critical : 1.5	-	-	-	16.91	-	-
0.1L : 2.0	7.98	1.00	7.98	16.92	-	12.47
0.2L : 4.5	7.75	1.00	7.75	19.84	-	9.64
0.3L : 7.0	6.67	1.00	6.67	19.23	-	7.19
0.4L : 9.5	6.02	1.00	6.02	23.71	-	6.32
0.5L : 12.0	5.96	1.00	5.96	27.12	-	6.11
0.6L : 14.5	6.08	1.00	6.08	21.96	-	6.38
0.7L : 17.0	6.82	1.00	6.82	18.05	-	7.35
0.8L : 19.5	8.09	1.00	8.09	18.80	-	10.06
0.9L : 22.0	8.85	1.00	8.85	16.15	-	13.81
Critical : 22.5	-	-	-	16.11	-	-
Transfer : 21.5	9.22	1.00	9.22	17.15	-	13.59
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	31				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.84	1.00	6.84	14.64	-	10.10
Critical : 1.5	-	-	-	13.63	-	-
0.1L : 2.0	6.39	1.00	6.39	13.70	-	9.99
0.2L : 4.5	6.40	1.00	6.40	16.57	-	7.95
0.3L : 7.0	5.72	1.00	5.72	16.79	-	6.17
0.4L : 9.5	5.48	1.00	5.48	22.17	-	5.75
0.5L : 12.0	5.58	1.00	5.58	25.35	-	5.72
0.6L : 14.5	5.53	1.00	5.53	19.96	-	5.81
0.7L : 17.0	5.86	1.00	5.86	15.48	-	6.32
0.8L : 19.5	6.70	1.00	6.70	15.51	-	8.33
0.9L : 22.0	7.12	1.00	7.12	12.97	-	11.12
Critical : 22.5	-	-	-	12.87	-	-
Transfer : 21.5	7.45	1.00	7.45	13.83	-	10.99
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	32				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.72	1.00	6.72	14.48	-	9.92
Critical : 1.5	-	-	-	13.41	-	-
0.1L : 2.0	6.26	1.00	6.26	13.51	-	9.79
0.2L : 4.5	6.36	1.00	6.36	16.61	-	7.91
0.3L : 7.0	5.81	1.00	5.81	17.25	-	6.27
0.4L : 9.5	5.75	1.00	5.75	23.71	-	6.04
0.5L : 12.0	5.96	1.00	5.96	27.12	-	6.11
0.6L : 14.5	5.81	1.00	5.81	20.99	-	6.10
0.7L : 17.0	5.96	1.00	5.96	15.74	-	6.43
0.8L : 19.5	6.67	1.00	6.67	15.45	-	8.29
0.9L : 22.0	6.99	1.00	6.99	12.73	-	10.91
Critical : 22.5	-	-	-	12.60	-	-
Transfer : 21.5	7.34	1.00	7.34	13.61	-	10.82
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	33				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.26	1.00	4.26	9.07	-	6.29
Critical : 1.5	-	-	-	8.55	-	-
0.1L : 2.0	3.99	1.00	3.99	8.55	-	6.25
0.2L : 4.5	3.91	1.00	3.91	9.98	-	4.86
0.3L : 7.0	3.38	1.00	3.38	9.75	-	3.65
0.4L : 9.5	3.07	1.00	3.07	12.02	-	3.22
0.5L : 12.0	3.06	1.00	3.06	13.96	-	3.14
0.6L : 14.5	3.10	1.00	3.10	10.99	-	3.26
0.7L : 17.0	3.46	1.00	3.46	9.00	-	3.73
0.8L : 19.5	4.10	1.00	4.10	9.38	-	5.09
0.9L : 22.0	4.47	1.00	4.47	8.08	-	6.97
Critical : 22.5	-	-	-	8.07	-	-
Transfer : 21.5	4.66	1.00	4.66	8.56	-	6.87
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.13	1.00	4.13	8.59	-	6.09
Critical : 1.5	-	-	-	8.00	-	-
0.1L : 2.0	3.84	1.00	3.84	8.04	-	6.01
0.2L : 4.5	3.91	1.00	3.91	9.75	-	4.86
0.3L : 7.0	3.45	1.00	3.45	9.94	-	3.72
0.4L : 9.5	3.03	1.00	3.03	13.15	-	3.18
0.5L : 12.0	3.05	1.00	3.05	15.68	-	3.13
0.6L : 14.5	3.06	1.00	3.06	11.97	-	3.21
0.7L : 17.0	3.53	1.00	3.53	9.59	-	3.81
0.8L : 19.5	4.12	1.00	4.12	9.47	-	5.12
0.9L : 22.0	4.34	1.00	4.34	7.85	-	6.78
Critical : 22.5	-	-	-	7.79	-	-
Transfer : 21.5	4.55	1.00	4.55	8.38	-	6.72
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	35				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.28	1.00	4.28	8.93	-	6.31
Critical : 1.5	-	-	-	8.35	-	-
0.1L : 2.0	4.02	1.00	4.02	8.38	-	6.28
0.2L : 4.5	3.89	1.00	3.89	10.03	-	4.84
0.3L : 7.0	3.30	1.00	3.30	10.03	-	3.56
0.4L : 9.5	2.93	1.00	2.93	13.04	-	3.08
0.5L : 12.0	2.94	1.00	2.94	15.36	-	3.01
0.6L : 14.5	2.97	1.00	2.97	11.95	-	3.12
0.7L : 17.0	3.40	1.00	3.40	9.71	-	3.66
0.8L : 19.5	4.10	1.00	4.10	9.77	-	5.10
0.9L : 22.0	4.53	1.00	4.53	8.20	-	7.08
Critical : 22.5	-	-	-	8.15	-	-
Transfer : 21.5	4.71	1.00	4.71	8.73	-	6.95
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.11	1.00	4.11	8.61	-	6.07
Critical : 1.5	-	-	-	8.04	-	-
0.1L : 2.0	3.86	1.00	3.86	8.09	-	6.04
0.2L : 4.5	3.75	1.00	3.75	9.65	-	4.66
0.3L : 7.0	3.13	1.00	3.13	9.45	-	3.37
0.4L : 9.5	2.82	1.00	2.82	11.92	-	2.96
0.5L : 12.0	2.75	1.00	2.75	15.23	-	2.82
0.6L : 14.5	2.84	1.00	2.84	11.45	-	2.99
0.7L : 17.0	3.22	1.00	3.22	9.15	-	3.47
0.8L : 19.5	3.95	1.00	3.95	9.39	-	4.91
0.9L : 22.0	4.36	1.00	4.36	7.88	-	6.80
Critical : 22.5	-	-	-	7.80	-	-
Transfer : 21.5	4.53	1.00	4.53	8.39	-	6.68
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	37				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.13	1.00	4.13	8.64	-	6.09
Critical : 1.5	-	-	-	8.08	-	-
0.1L : 2.0	3.88	1.00	3.88	8.12	-	6.07
0.2L : 4.5	3.75	1.00	3.75	9.65	-	4.66
0.3L : 7.0	3.13	1.00	3.13	9.45	-	3.37
0.4L : 9.5	2.72	1.00	2.72	11.92	-	2.86
0.5L : 12.0	2.72	1.00	2.72	15.23	-	2.79
0.6L : 14.5	2.76	1.00	2.76	11.45	-	2.90
0.7L : 17.0	3.22	1.00	3.22	9.15	-	3.47
0.8L : 19.5	3.95	1.00	3.95	9.39	-	4.91
0.9L : 22.0	4.38	1.00	4.38	7.92	-	6.84
Critical : 22.5	-	-	-	7.86	-	-
Transfer : 21.5	4.55	1.00	4.55	8.43	-	6.72
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
 CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
 PSStT - Prestress Steel Tension.



		Sheet # 1	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date Feb/2/2022
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File Name:	270017_Spans 1+3_TTST.lbcx		Date Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:3, Beam:2

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.34	3.16	113.86	0.4L	9.50	0.34	6.81	245.33	Critical	22.47
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.34	2.16	-	0.4L	9.50	0.34	5.94	-	Critical	22.47
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.34	4.10	147.60	0.4L	9.50	0.34	8.88	319.52	Critical	22.47
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.34	2.80	-	0.4L	9.50	0.34	7.74	-	Critical	22.47
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	4.15	149.40	0.4L	9.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.77	-	0.5L	12.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.34	4.15	149.40	0.4L	9.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.34	2.77	-	0.5L	12.00	-	-	-	-	-



		Sheet # 2	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed: JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date: Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked: MBI
File Name:	270017_Spans 1+3_TTST.lbcx		Date: Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.34	3.83	126.36	0.5L	12.00	0.34	9.58	316.24	Critical	22.47
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.34	3.36	111.24	0.5L	12.00	0.34	8.71	287.97	Critical	22.47
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.34	3.12	129.96	0.4L	9.50	0.34	8.18	340.27	Critical	22.47
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.34	3.26	137.12	0.5L	12.00	0.34	8.14	341.68	Critical	22.47
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.34	2.96	124.23	0.5L	12.00	0.34	7.85	329.72	Critical	22.47
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.34	3.14	134.94	0.5L	12.00	0.34	7.86	337.96	Critical	22.47
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.34	3.15	141.69	0.5L	12.00	0.34	8.00	359.81	Critical	22.47
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.34	3.00	134.95	0.4L	9.50	0.34	7.23	325.50	Critical	22.47
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.34	3.93	129.63	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.34	3.45	114.12	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.34	3.24	134.86	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.34	3.35	140.67	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.34	3.03	127.44	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.34	3.22	138.43	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.34	3.23	145.35	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.34	3.15	141.66	0.4L	9.50	-	-	-	-	-





		Sheet #	3		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-



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**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Design Operating	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$
Legal	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	-
Permit	$0.60 \times f_c = 3.00$	$0.19 \times \sqrt{f_c} = 0.42$	$0.90 \times f_y = 218.70$

Consider shear reinf. across plane (FDOT alternative): No



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File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**RATING RESULTS**

**Span:3, Beam:2**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.70	1.00	3.70	7.69	-	6.82	-
Critical : 1.5	-	-	-	7.15	-	-	-
0.1L : 2.0	3.44	1.00	3.44	7.16	-	6.73	13.90
0.2L : 4.5	3.50	1.00	3.50	9.00	-	5.44	-
0.3L : 7.0	3.20	1.00	3.20	9.32	-	4.31	-
0.4L : 9.5	3.16	1.00	3.16	12.83	-	4.15	123.85
0.5L : 12.0	3.28	1.00	3.28	14.66	-	4.20	98.91
0.6L : 14.5	3.20	1.00	3.20	11.34	-	4.20	195.52
0.7L : 17.0	3.28	1.00	3.28	8.50	-	4.42	-
0.8L : 19.5	3.67	1.00	3.67	8.37	-	5.70	-
0.9L : 22.0	3.80	1.00	3.80	6.86	-	7.43	16.97
Critical : 22.5	-	-	-	6.81	-	-	-
Transfer : 21.5	4.00	1.00	4.00	7.33	-	7.38	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet # 6			
				Job # 171002272	
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File Name:	270017_Spans 1+3_TTST.lbcx		Date	Mar/7/2022	

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.10	1.00	3.10	6.61	-	5.72	-
Critical : 1.5	-	-	-	6.23	-	-	-
0.1L : 2.0	2.91	1.00	2.91	6.23	-	5.69	10.85
0.2L : 4.5	2.83	1.00	2.83	7.30	-	4.39	-
0.3L : 7.0	2.42	1.00	2.42	7.06	-	3.26	17.55
0.4L : 9.5	2.16	1.00	2.16	8.73	-	2.83	8.81
0.5L : 12.0	2.16	1.00	2.16	10.29	-	2.77	8.03
0.6L : 14.5	2.20	1.00	2.20	8.08	-	2.88	9.34
0.7L : 17.0	2.49	1.00	2.49	6.63	-	3.36	21.25
0.8L : 19.5	2.98	1.00	2.98	6.93	-	4.63	-
0.9L : 22.0	3.28	1.00	3.28	5.95	-	6.39	13.28
Critical : 22.5	-	-	-	5.94	-	-	-
Transfer : 21.5	3.41	1.00	3.41	6.31	-	6.29	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



		Sheet #	7		
		Job #	171002272		
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File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.79	1.00	4.79	10.03
Critical : 1.5	-	-	-	9.31
0.1L : 2.0	4.46	1.00	4.46	9.33
0.2L : 4.5	4.54	1.00	4.54	11.76
0.3L : 7.0	4.14	1.00	4.14	12.19
0.4L : 9.5	4.10	1.00	4.10	16.77
0.5L : 12.0	4.25	1.00	4.25	19.17
0.6L : 14.5	4.14	1.00	4.14	14.83
0.7L : 17.0	4.25	1.00	4.25	11.12
0.8L : 19.5	4.76	1.00	4.76	10.93
0.9L : 22.0	4.93	1.00	4.93	8.94
Critical : 22.5	-	-	-	8.88
Transfer : 21.5	5.19	1.00	5.19	9.56
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.



		Sheet # 8			
				Job # 171002272	
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### HL93 Design Load Positive Live Load

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.02	1.00	4.02	8.63
Critical : 1.5	-	-	-	8.12
0.1L : 2.0	3.78	1.00	3.78	8.12
0.2L : 4.5	3.67	1.00	3.67	9.54
0.3L : 7.0	3.13	1.00	3.13	9.26
0.4L : 9.5	2.80	1.00	2.80	11.45
0.5L : 12.0	2.80	1.00	2.80	13.50
0.6L : 14.5	2.85	1.00	2.85	10.61
0.7L : 17.0	3.23	1.00	3.23	8.70
0.8L : 19.5	3.86	1.00	3.86	9.06
0.9L : 22.0	4.25	1.00	4.25	7.76
Critical : 22.5	-	-	-	7.74
Transfer : 21.5	4.42	1.00	4.42	8.24
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.

Span:3, Beam:2

#### B) Legal Live Load Rating

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



		Sheet #	9		
		Job #	171002272		
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**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	5.15	1.00	5.15	11.26	-	7.60
Critical : 1.5	-	-	-	10.32	-	-
0.1L : 2.0	4.77	1.00	4.77	10.45	-	7.46
0.2L : 4.5	5.00	1.00	5.00	13.29	-	6.22
0.3L : 7.0	4.67	1.00	4.67	13.62	-	5.03
0.4L : 9.5	4.07	1.00	4.07	17.42	-	4.28
0.5L : 12.0	3.83	1.00	3.83	20.93	-	3.93
0.6L : 14.5	4.13	1.00	4.13	15.82	-	4.34
0.7L : 17.0	4.80	1.00	4.80	12.61	-	5.18
0.8L : 19.5	5.27	1.00	5.27	12.14	-	6.55
0.9L : 22.0	5.36	1.00	5.36	9.72	-	8.37
Critical : 22.5	-	-	-	9.58	-	-
Transfer : 21.5	5.65	1.00	5.65	10.44	-	8.34
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	10		
		Job #	171002272		
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**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.61	1.00	4.61	9.64	-	6.81
Critical : 1.5	-	-	-	8.93	-	-
0.1L : 2.0	4.31	1.00	4.31	9.00	-	6.74
0.2L : 4.5	4.29	1.00	4.29	11.11	-	5.34
0.3L : 7.0	3.77	1.00	3.77	11.01	-	4.07
0.4L : 9.5	3.46	1.00	3.46	14.08	-	3.64
0.5L : 12.0	3.36	1.00	3.36	16.72	-	3.45
0.6L : 14.5	3.50	1.00	3.50	12.74	-	3.68
0.7L : 17.0	3.88	1.00	3.88	10.16	-	4.18
0.8L : 19.5	4.53	1.00	4.53	10.40	-	5.63
0.9L : 22.0	4.86	1.00	4.86	8.80	-	7.59
Critical : 22.5	-	-	-	8.71	-	-
Transfer : 21.5	5.08	1.00	5.08	9.36	-	7.49
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





		Sheet #	11		
		Job #	171002272		
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**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.32	1.00	4.32	8.97	-	6.38
Critical : 1.5	-	-	-	8.39	-	-
0.1L : 2.0	4.03	1.00	4.03	8.42	-	6.31
0.2L : 4.5	4.05	1.00	4.05	10.07	-	5.03
0.3L : 7.0	3.46	1.00	3.46	10.07	-	3.73
0.4L : 9.5	3.12	1.00	3.12	13.09	-	3.28
0.5L : 12.0	3.16	1.00	3.16	15.40	-	3.24
0.6L : 14.5	3.17	1.00	3.17	11.99	-	3.32
0.7L : 17.0	3.56	1.00	3.56	9.75	-	3.84
0.8L : 19.5	4.26	1.00	4.26	9.81	-	5.30
0.9L : 22.0	4.55	1.00	4.55	8.23	-	7.11
Critical : 22.5	-	-	-	8.18	-	-
Transfer : 21.5	4.76	1.00	4.76	8.77	-	7.02
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	12		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.33	1.00	4.33	9.06	-	6.40
Critical : 1.5	-	-	-	8.39	-	-
0.1L : 2.0	4.04	1.00	4.04	8.47	-	6.32
0.2L : 4.5	4.08	1.00	4.08	10.35	-	5.08
0.3L : 7.0	3.60	1.00	3.60	10.52	-	3.88
0.4L : 9.5	3.31	1.00	3.31	13.73	-	3.47
0.5L : 12.0	3.26	1.00	3.26	16.05	-	3.35
0.6L : 14.5	3.34	1.00	3.34	12.63	-	3.50
0.7L : 17.0	3.69	1.00	3.69	10.15	-	3.98
0.8L : 19.5	4.31	1.00	4.31	10.07	-	5.35
0.9L : 22.0	4.56	1.00	4.56	8.24	-	7.12
Critical : 22.5	-	-	-	8.14	-	-
Transfer : 21.5	4.78	1.00	4.78	8.82	-	7.04
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	13		
		Job #	171002272		
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx		Date	Mar/7/2022	

**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.16	1.00	4.16	8.65	-	6.14
Critical : 1.5	-	-	-	8.08	-	-
0.1L : 2.0	3.88	1.00	3.88	8.13	-	6.07
0.2L : 4.5	3.90	1.00	3.90	9.68	-	4.84
0.3L : 7.0	3.42	1.00	3.42	9.48	-	3.68
0.4L : 9.5	3.06	1.00	3.06	11.95	-	3.21
0.5L : 12.0	2.96	1.00	2.96	15.25	-	3.03
0.6L : 14.5	3.08	1.00	3.08	11.47	-	3.23
0.7L : 17.0	3.50	1.00	3.50	9.11	-	3.77
0.8L : 19.5	4.12	1.00	4.12	9.43	-	5.12
0.9L : 22.0	4.38	1.00	4.38	7.92	-	6.84
Critical : 22.5	-	-	-	7.85	-	-
Transfer : 21.5	4.59	1.00	4.59	8.43	-	6.76
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	14		
		Job #	171002272		
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File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.20	1.00	4.20	8.82	-	6.20
Critical : 1.5	-	-	-	8.10	-	-
0.1L : 2.0	3.92	1.00	3.92	8.21	-	6.13
0.2L : 4.5	3.96	1.00	3.96	10.31	-	4.93
0.3L : 7.0	3.55	1.00	3.55	10.44	-	3.83
0.4L : 9.5	3.16	1.00	3.16	13.82	-	3.32
0.5L : 12.0	3.14	1.00	3.14	16.72	-	3.22
0.6L : 14.5	3.18	1.00	3.18	12.31	-	3.34
0.7L : 17.0	3.62	1.00	3.62	9.55	-	3.91
0.8L : 19.5	4.19	1.00	4.19	9.60	-	5.21
0.9L : 22.0	4.42	1.00	4.42	7.99	-	6.90
Critical : 22.5	-	-	-	7.86	-	-
Transfer : 21.5	4.63	1.00	4.63	8.52	-	6.84
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet #	15		
		Job #	171002272		
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**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.23	1.00	4.23	8.93	-	6.24
Critical : 1.5	-	-	-	8.31	-	-
0.1L : 2.0	3.94	1.00	3.94	8.36	-	6.17
0.2L : 4.5	3.96	1.00	3.96	10.16	-	4.93
0.3L : 7.0	3.55	1.00	3.55	10.41	-	3.82
0.4L : 9.5	3.16	1.00	3.16	13.82	-	3.32
0.5L : 12.0	3.15	1.00	3.15	16.72	-	3.23
0.6L : 14.5	3.18	1.00	3.18	12.31	-	3.34
0.7L : 17.0	3.62	1.00	3.62	9.55	-	3.91
0.8L : 19.5	4.19	1.00	4.19	9.60	-	5.21
0.9L : 22.0	4.45	1.00	4.45	8.05	-	6.95
Critical : 22.5	-	-	-	8.00	-	-
Transfer : 21.5	4.66	1.00	4.66	8.57	-	6.87
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

				Sheet #	16
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File Name:	270017_Spans 1+3_TTST.Ibcx			Date	Mar/7/2022

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.87	1.00	3.87	8.06	-	5.72
Critical : 1.5	-	-	-	7.45	-	-
0.1L : 2.0	3.59	1.00	3.59	7.52	-	5.62
0.2L : 4.5	3.74	1.00	3.74	9.35	-	4.65
0.3L : 7.0	3.29	1.00	3.29	9.92	-	3.55
0.4L : 9.5	3.00	1.00	3.00	13.85	-	3.15
0.5L : 12.0	3.17	1.00	3.17	16.72	-	3.25
0.6L : 14.5	3.02	1.00	3.02	12.23	-	3.17
0.7L : 17.0	3.37	1.00	3.37	9.50	-	3.63
0.8L : 19.5	3.92	1.00	3.92	9.05	-	4.88
0.9L : 22.0	4.06	1.00	4.06	7.33	-	6.34
Critical : 22.5	-	-	-	7.23	-	-
Transfer : 21.5	4.27	1.00	4.27	7.85	-	6.30
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.



Sheet #	1				
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**PROPERTIES**

**Span:3, Beam:11**

**PRECAST DATA:**

Section Id	NCDOT 21in CSU					
Type	Rect. Beams w/ Circular Voids					
Flng width	Top	36.000	in	Bot	36.000	in
thick	Top	4.500	in	Bot	4.500*	in
Stems	No	0				
	Top	N/A				
	Bot	N/A				
Shear width		12.000	in			

\*Minimum Thickness Criteria, Article 5.14.1.2.2 checked: NG. Please check beam dimensions.

**GENERAL BRIDGE DATA:**

Bridge Width	33.00	ft
Curb-to-curb	30.67	ft
Beam Spac. Lt./Rt	3.00/ 1.50	ft
Lane width	12.00	ft
Number of lanes	2	
Interior/Exterior	Exterior	
Start Skew Angle	0.00	degrees
End Skew Angle	0.00	degrees

**TOPPING DATA:**



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Effective Deck	Thickness	0.000	in	
Sacrificial Deck	Thickness	0.000	in	
Haunch:				
	Thickness	0.000	in	
	Width	0.000	in	
Effective	width	36.000	in	(Art. 4.6.2.6.1)

**GENERAL LOAD DATA:**  
**DEAD LOADS ON PRECAST - NONE**

Dead loads on composite: See Project info for composite loads

**GENERAL SPAN DATA:**

Overall length	25.000	ft
Release length	25.000	ft
Design length	24.000	ft

**KERN POINTS:**

Upper	15.08	in
Lower	5.82	in

**DISTRIBUTION FACTORS (Art. 4.6.2.2):**  
**Type g**





Sheet #	3				
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Live Moment	(2+ lanes loaded)	0.287	(Calculated)
Live Moment	(1 lane loaded)	0.365	(Calculated)
Live Shear	(2+ lanes loaded)	0.287	(Calculated)
Live Shear	(1 lane loaded)	0.401	(Calculated)

The LL distribution computation is using the effective slab depth (ts = 0.00in).  
Include sacrificial deck thick in ts: NO

Pedestrian	0.091	(Calculated)
Comp. DC	0.090	(Manual input)
Comp. DW	0.060	(Manual input)

Pedestrian Load distributed equally to all beams (Art. 4.6.2.2.1)

**RESISTANCE FACTORS (Art. 5.5.4.2):**

Flexure Reinforced	
Compression controlled sections	0.75
Tension controlled sections	0.90
Flexure Prestressed	
Compression controlled sections	0.75
Tension controlled sections	1.00
Shear	0.90

**SECTION PROPERTIES:**



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	PRECAST		COMPOSITE		
Area	522.3	in2	522.3	in2	#
Total Height	21.00	in	21.00	in	
Mom. of Inertia (Ixx)	25390	in4	25390	in4	#
Ht. of c.g.	10.40	in	10.40	in	#
Density	150.00	pcf	150.00	pcf	
Lambda	1.00		1.00		
Self-weight	544.1	plf	544.1	plf	
Mom. of Inertia (Iyy)	62796.0	in4			
Poisson's Ratio	0.2				
Thermal Coeff.	0.000006000	1/°F			

(#) Of Total Section using Ect/Ec = 1.0000

NOTE: Poisson's ratio may be assumed as 0.2 for lightweight concrete with specified compressive strengths up to 10.0 ksi and for normal weight concrete with specified compressive strengths up to 15.0 ksi.

Use transformed strand and rebar: Strand Only

Location,	ft	Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
		0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Precast:(At Release, using	Ec =	4266.2ksi)							
Area,	in2	523.7	531.8	526.3	529.9	533.4	533.4	533.4	533.4
Yb,	in	10.39	10.33	10.38	10.35	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25410	25546	25443	25507	25634	25634	25634	25634
Composite:(At Final, using	Ec =	4592.2ksi)							
Area,	in2	523.6	531.0	525.9	529.3	532.5	532.5	532.5	532.5
Yb,	in	10.39	10.34	10.38	10.35	10.31	10.31	10.31	10.31
MI(Ixx),	in4	25408	25533	25439	25497	25614	25614	25614	25614



Sheet #	5				
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**Span:3, Beam:11**

**STRESS LIMITS (Art. 5.9.2):**

**STRESS LIMITS AT RELEASE BEFORE LOSSES:**

	PRECAST	
Strength	4.00	ksi
Elasticity	4266.2	ksi
Max comp	2.60	ksi
Max tens	-0.19	ksi
Max tens, w/reinf	-0.48	ksi

**STRESS LIMITS AT FINAL AFTER LOSSES:**

	PRECAST		DECK	
Strength	5.00	ksi	5.00	ksi
Elasticity	4592.23	ksi	4592.23	ksi

**STRESS LIMITS AT FINAL 1 (P/S + DL + LL):**

	PRECAST		DECK	
Max comp	3.00	ksi	3.00	ksi

**STRESS LIMITS AT FINAL 2 (P/S + DL):**

	PRECAST		DECK	
Max comp	2.25	ksi	2.25	ksi

**FATIGUE I STRESS LIMITS AT FINAL 3 ( 50% P/S + 50% DL + F\_LL ) (Art. 5.5.3.1):**



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Max comp	<b>PRECAST</b>	2.00	ksi	<b>DECK</b>	-	ksi
----------	----------------	------	-----	-------------	---	-----

**SERVICE III (Tension):**

Max tens	<b>PRECAST</b>	-0.42	ksi	<b>DECK</b>	-0.42	ksi
----------	----------------	-------	-----	-------------	-------	-----

**Span:3, Beam:11**

**PRESTRESSED STEEL:**

9 strands, 6/10-270K-LL, Low relaxation strands  
Straight Pattern

**END PATTERN (Ycg = 5.67 in):**

7 @ 2.000 in	2 @ 18.500 in		
--------------	---------------	--	--

**SHIELDING AND REDUCED INITIAL PULLS:**

Group	Strands	End	Heights	Mid	End	Shielding	Mid	Distance to center	Initial Frac	Pull Pull/Str				
3	2	2.000	in	2.000	in	2.00	ft	0.00	ft	6.000	in	75.0 %	43.9	kips

Check for Art. 5.11.4.3 (debond termination distances): OK



Sheet #	7				
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Strand Diameter	0.600	in
Strand Area	0.217	in <sup>2</sup>
Total Strand Area	1.953	in <sup>2</sup>
Trans. Len,bonded	3.000	ft
Trans. Len,debonded	3.000	ft
Dev. Len, bonded	6.503	ft
Dev. Len, debonded	13.006	ft
Holddown Force	0.000	kips
Tensile Strength(fpu)	270.0	ksi
Initial Prestress = 0.75fpu	202.5	ksi
Initial Pull	395.5	kips
Beam Shrtng (PL/AE)	0.053	in

Span:3, Beam:11

**ESTIMATED QUANTITIES**

Prestressing (linear ft)	Strands (LB/1000ft)	(LB)	Beam Vol(C.Y.)	Concrete Wt(LB)	Stirrups (LB)	Longitudinal Bars (LB)
225.000	740	166.500	3.358	13601.591	148.175	34.032

Span:3, Beam:11

**REINFORCING STEEL:**

Tension	steel:	
fy	60.0	ksi
Es	29000	ksi

**Stirrups:**



Sheet #	8				
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# legs	Size	fy (ksi)	Area (in2)	Spacing (in)	Start (ft)	End (ft)	Extends into Deck
4	US#5[M16]	60.0	1.24	1.00	0.0000	0.0833	No
4	US#4[M13]	60.0	0.80	9.00	0.2083	5.5000	No
4	US#4[M13]	60.0	0.80	12.00	5.5000	19.5000	No
4	US#4[M13]	60.0	0.80	9.00	19.5000	24.9167	No
4	US#5[M16]	60.0	1.24	1.00	24.9167	25.0000	No

**Top Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)
2	US#4[M13]	2.50	0.400	0.0000	25.0000	3.00

**Bottom Steel:**

#bars	Size	Dist. from Top (in)	Area (in2)	Start (ft)	End (ft)	Side Cover (in)

**LOSSES**

Note: Values are calculated at Midspan

Str. area	1.9530	in2
Ycg	5.67	in
P_init	395.5	kip
Ecc	4.74	in
Days to release	0.75	
Rel. Humid.(RH)	75.0	%
Es	28500.0	ksi
Eci	4266	ksi



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### AASHTO LOSSES

Elastic Shortening \*\* 6.38 ksi (Eq 5.9.5.2.3a-1), (fcgp= 0.954 ksi)

Elastic Gains		Gains	Adjustment
due to Precast Loads		-0.00 ksi	0.00 ksi
due to Composite Loads		-0.28 ksi	0.00 ksi
due to Live Loads		-1.56 ksi	0.00 ksi

### Time Dependent Losses (Approximate Method (Art.5.9.3.3))

	Initial	Final	
Steel relaxation	0.00 ksi	2.40 ksi	(Eq 5.9.3.3-1)
Concrete shrinkage	0.00 ksi	11.40 ksi	(Eq 5.9.3.3-1)
Concrete creep	0.00 ksi	7.19 ksi	(Eq 5.9.3.3-1)
Sub-total	6.38 ksi	19.15 ksi	( 9.46 %)
Total Prestress Losses		25.53 ksi	(12.61 %)

### Prestressing Stress Limit Check (Table 5.9.3.1)

initial fpi = 202.5 ksi < 0.75 fpu, OK  
 initial fpe = 177.0 ksi < 0.80 fpy, OK

\*\* Since the transformed section properties option has been selected, even though ES losses have been calculated explicitly here, they are not included as a part of stress calculations. Please see theory section for complete explanation.



Sheet #	10			
Job #	171002272			
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File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022

**SHEAR/MOMENT ENVELOPE (&REACTIONS)**

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 11, SERVICE I**  
**Shears: kips, Moments: kft**





Sheet #	11				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	1.1	5.6	2.8	4.8	8.4	10.9	12.4	12.9
DW(Max)	V	2.0	1.6	1.8	1.7	1.2	0.8	0.4	0.0
LL + I :	M+	13.6	66.2	33.5	56.7	99.0	127.6	142.7	144.5
	V	23.3	10.4	17.9	11.1	7.7	4.4	1.1	0.6
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	25.8	22.7	24.8	23.4	20.2	17.0	13.9	12.0
	M	13.3	63.5	32.5	54.6	93.1	117.4	128.0	133.7
Total :	M+	15.4	89.7	43.4	76.2	136.1	177.3	199.9	204.1
	V	32.9	18.0	26.9	19.1	13.8	8.4	3.1	0.6
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	35.5	30.4	33.7	31.5	26.2	21.0	15.9	12.0
	M	15.1	87.0	42.5	74.2	130.3	167.2	185.2	193.4



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	12.3	10.7	8.0	4.3	2.2	5.1	0.5
DW(Max)	V	0.4	0.9	1.3	1.7	1.9	1.6	2.0
LL + I :	M+	140.2	124.0	94.2	50.7	26.7	60.5	6.2
	V	14.5	17.9	21.2	24.5	26.1	23.8	27.4
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	15.0	18.1	21.2	24.5	26.1	23.8	27.3
	M	133.2	119.4	91.8	50.7	27.0	60.2	6.3
Total :	M+	197.2	173.3	130.7	69.5	35.8	83.2	7.0
	V	16.6	21.9	27.3	32.6	35.2	31.6	37.1
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	17.1	22.2	27.4	32.6	35.1	31.6	37.1
	M	190.2	168.7	128.4	69.5	36.0	82.9	7.1

REACTIONS (kips), SERVICE I



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Load Type		Left Support	Right Support
Self Wt.		6.5	6.5
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		13.0	13.3
DL-Comp.(DW)		33.1	34.0
Live		53.2	53.2
	Truck	45.4	45.4
	Lane	7.8	7.8
Pedestrian		0.0	0.0

Upward reactions are positive.  
Live Load reactions are per lane with no distribution factor and no impact.  
Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
Non-composite load types are per beam.  
Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 11, SERVICE III**  
**Shears: kips, Moments: kft**



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	1.1	5.6	2.8	4.8	8.4	10.9	12.4	12.9
DW(Max)	V	2.0	1.6	1.8	1.7	1.2	0.8	0.4	0.0
LL + I :	M+	10.9	52.9	26.8	45.4	79.2	102.1	114.1	115.6
	V	18.6	8.3	14.3	8.8	6.2	3.5	0.9	0.4
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	20.6	18.2	19.8	18.7	16.1	13.6	11.1	9.6
	M	10.6	50.8	26.0	43.7	74.5	93.9	102.4	107.0
Total :	M+	12.7	76.4	36.8	64.9	116.3	151.8	171.4	175.2
	V	28.3	16.0	23.3	16.9	12.2	7.6	2.9	0.5
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	30.3	25.9	28.8	26.8	22.2	17.6	13.1	9.6
	M	12.5	74.3	36.0	63.3	111.7	143.7	159.6	166.6



Sheet #	15				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	12.3	10.7	8.0	4.3	2.2	5.1	0.5
DW(Max)	V	0.4	0.9	1.3	1.7	1.9	1.6	2.0
LL + I :	M+	112.2	99.2	75.3	40.6	21.4	48.4	4.9
	V	11.6	14.3	16.9	19.6	20.9	19.1	21.9
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	Vmx	12.0	14.5	17.0	19.6	20.9	19.1	21.9
	M	106.6	95.5	73.5	40.6	21.6	48.2	5.0
Total :	M+	169.2	148.5	111.9	59.3	30.4	71.1	5.8
	V	13.7	18.4	23.1	27.7	29.9	26.8	31.7
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	14.1	18.6	23.1	27.7	29.9	26.8	31.6
	M	163.6	144.8	110.0	59.3	30.6	70.9	5.8



Sheet #	16			
Job #	171002272			
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 11, STRENGTH I**  
**Shears: kips, Moments: kft**



Sheet #	17				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	18.3	6.9	15.0	29.8	40.5	46.8	49.0
(Max)	V	8.2	6.5	7.6	6.8	5.1	3.4	1.7	0.0
Self wt. :	M	0.0	13.2	5.0	10.8	21.5	29.1	33.7	35.3
(Min)	V	5.9	4.7	5.4	4.9	3.7	2.4	1.2	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.8	4.1	2.1	3.5	6.2	8.0	9.1	9.5
DC(Max)	V	1.5	1.2	1.4	1.2	0.9	0.6	0.3	0.0
DL-Comp :	M	0.6	3.0	1.5	2.5	4.4	5.8	6.6	6.8
DC(Min)	V	1.0	0.8	1.0	0.9	0.7	0.4	0.2	0.0
DL-Comp :	M	1.7	8.4	4.2	7.2	12.6	16.4	18.7	19.4
DW(Max)	V	3.0	2.4	2.8	2.5	1.8	1.2	0.6	0.0
DL-Comp :	M	0.7	3.6	1.8	3.1	5.4	7.1	8.1	8.4
DW(Min)	V	1.3	1.0	1.2	1.1	0.8	0.5	0.3	0.0
LL + I :	M+	23.8	115.8	58.6	99.2	173.2	223.3	249.7	252.8
	V	40.7	18.2	31.4	19.3	13.5	7.8	2.0	1.0
LL + I :	M-	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	18				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	45.2	39.8	43.3	40.9	35.3	29.8	24.4	21.0
	M	23.3	111.1	56.9	95.6	162.9	205.5	224.0	234.0
Total :	M+	26.4	146.6	71.7	124.9	221.7	288.2	324.3	330.6
	V	53.3	28.1	43.0	29.8	21.4	13.0	4.5	1.0
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	57.8	49.8	55.0	51.4	43.2	35.0	27.0	21.0
	M	25.8	141.9	70.1	121.2	211.5	270.4	298.6	311.8





Sheet #	19				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	46.8	40.5	29.8	15.0	6.9	18.3	0.0
(Max)	V	1.7	3.4	5.1	6.8	7.6	6.5	8.2
Self wt. :	M	33.7	29.1	21.5	10.8	5.0	13.2	0.0
(Min)	V	1.2	2.4	3.7	4.9	5.4	4.7	5.9
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	9.0	7.8	5.9	3.1	1.6	3.7	0.4
DC(Max)	V	0.3	0.6	0.9	1.3	1.4	1.2	1.5
DL-Comp :	M	6.5	5.6	4.2	2.2	1.2	2.7	0.3
DC(Min)	V	0.2	0.5	0.7	0.9	1.0	0.9	1.1
DL-Comp :	M	18.5	16.0	12.0	6.4	3.4	7.6	0.8
DW(Max)	V	0.7	1.3	1.9	2.6	2.8	2.4	3.1
DL-Comp :	M	8.0	6.9	5.2	2.8	1.5	3.3	0.3
DW(Min)	V	0.3	0.6	0.8	1.1	1.2	1.1	1.3
LL + I :	M+	245.4	217.0	164.8	88.8	46.8	105.9	10.8
	V	25.5	31.2	37.0	42.8	45.7	41.7	47.9
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	20				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	26.3	31.7	37.2	42.8	45.7	41.7	47.9
	M	233.1	209.0	160.7	88.8	47.2	105.4	11.0
Total :	M+	319.7	281.3	212.5	113.2	58.7	135.5	12.0
	V	28.1	36.6	45.0	53.4	57.5	51.8	60.6
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	29.0	37.0	45.1	53.4	57.5	51.8	60.6
	M	307.5	273.3	208.4	113.2	59.1	135.1	12.1

**REACTIONS (kips), STRENGTH I**

Load Type		Left Support	Right Support
Self Wt.		8.2	8.2
Deck+Haunch		0.0	0.0
Diaphragm		0.0	0.0
DL-Prec.(DC)		0.0	0.0
DL-Prec.(DW)		0.0	0.0
DL-Comp.(DC)		16.2	16.6
DL-Comp.(DW)		49.7	51.0
Live		93.0	93.0
	Truck	79.4	79.4
	Lane	13.6	13.6
Pedestrian		0.0	0.0

Upward reactions are positive.  
 Live Load reactions are per lane with no distribution factor and no impact.  
 Reactions are not multiplied by Load Modifiers (ductility, redundancy and operational importance).  
 Non-composite load types are per beam.



Sheet #	21			
Job #	171002272			
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx		Date	Mar/7/2022

Composite and Pedestrian load types are per total bridge width.

**SHEAR AND MOMENT ENVELOPE : Span : 3, Beam : 11, FATIGUE I**  
**Shears: kips, Moments: kft**



Sheet #	22				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
Location,	ft	0.00	2.50	0.88	2.00	4.50	7.00	9.50	12.00
Self wt. :	M	0.0	14.6	5.5	12.0	23.9	32.4	37.5	39.2
(Max)	V	6.5	5.2	6.1	5.4	4.1	2.7	1.4	0.0
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	0.7	3.3	1.7	2.8	4.9	6.4	7.3	7.6
DC(Max)	V	1.2	0.9	1.1	1.0	0.7	0.5	0.2	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	1.1	5.6	2.8	4.8	8.4	10.9	12.4	12.9
DW(Max)	V	2.0	1.6	1.8	1.7	1.2	0.8	0.4	0.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	11.5	55.8	28.3	47.8	83.3	106.5	117.4	120.1
	V	18.0	0.9	10.3	0.3	3.0	5.7	8.4	10.8
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	23				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		Bearing	Trans	H/2	0.10L	0.20L	0.30L	0.40L	Midspan
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	22.3	19.7	21.4	20.2	17.5	15.3	12.2	10.8
	M	11.5	54.9	28.1	47.2	80.8	105.0	111.3	120.1
Total :	M+	13.3	79.3	38.2	67.4	120.5	156.2	174.7	179.7
	V	27.6	8.5	19.2	8.4	9.1	9.7	10.4	10.8
Total :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	Vmx	32.0	27.3	30.4	28.3	23.6	19.3	14.1	10.8
	M	13.3	78.4	38.0	66.7	118.0	154.8	168.5	179.7



Sheet #	24				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
Location,	ft	14.50	17.00	19.50	22.00	23.13	21.50	24.00
Self wt. :	M	37.5	32.4	23.9	12.0	5.5	14.6	0.0
(Max)	V	1.4	2.7	4.1	5.4	6.1	5.2	6.5
Self wt. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Prec. :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deck + :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haunch (Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Max)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diaphragm :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	7.2	6.3	4.7	2.5	1.3	3.0	0.3
DC(Max)	V	0.3	0.5	0.8	1.0	1.1	1.0	1.2
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DC(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DL-Comp :	M	12.3	10.7	8.0	4.3	2.2	5.1	0.5
DW(Max)	V	0.4	0.9	1.3	1.7	1.9	1.6	2.0
DL-Comp :	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DW(Min)	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LL + I :	M+	116.4	104.3	80.0	43.4	22.9	51.7	5.3
	V	13.1	15.8	18.5	21.2	22.5	20.7	23.6
LL + I :	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Sheet #	25				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

		0.60L	0.70L	0.80L	0.90L	H/2	Trans	Bearing
LL + I :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	13.1	15.8	18.5	21.2	22.5	20.7	23.6
Total :	M	116.4	104.3	80.0	43.4	22.9	51.7	5.3
	M+	173.4	153.6	116.5	62.1	32.0	74.4	6.1
Total :	V	15.2	19.9	24.6	29.3	31.6	28.4	33.3
	M-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total :	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vmx	15.2	19.9	24.6	29.3	31.6	28.4	33.3
Total :	M	173.4	153.6	116.5	62.1	32.0	74.4	6.1



Sheet #	26				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:3, Beam:11

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.37	2.98	107.21	0.4L	9.50	0.40	5.74	206.48	Critical	22.47
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.37	2.03	-	0.4L	9.50	0.40	5.00	-	Critical	22.47
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.37	3.86	138.98	0.4L	9.50	0.40	7.47	269.08	Critical	22.47
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.37	2.63	-	0.4L	9.50	0.40	6.52	-	Critical	22.47
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.92	141.06	0.4L	9.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.62	-	0.5L	12.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.92	141.06	0.4L	9.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.62	-	0.5L	12.00	-	-	-	-	-





Sheet #	27
Job #	171002272
Designed	JFK
Date	Feb/2/2022
Checked	MBI
Date	Mar/7/2022

Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a> Phone: 1-800-778-4277
File Name:	270017_Spans 1+3_SV.lbcx	

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-SNSH	13.50	1.40	1.25	1.50	0.37	5.61	75.79	0.5L	12.00	0.40	13.58	183.33	Critical	22.47
Strength I	NCDOT-SNGARBS2	20.00	1.40	1.25	1.50	0.37	5.16	103.15	0.4L	9.50	0.40	10.85	216.96	Critical	22.47
Strength I	NCDOT-SNAGRIS2	22.00	1.40	1.25	1.50	0.37	5.41	119.12	0.4L	9.50	0.40	10.62	233.67	Critical	22.47
Strength I	NCDOT-SNCOTTS3	27.25	1.40	1.25	1.50	0.37	2.88	78.48	0.5L	12.00	0.40	6.79	185.12	Critical	22.47
Strength I	NCDOT-SNAGGRS4	34.92	1.40	1.25	1.50	0.37	2.85	99.69	0.4L	9.50	0.40	6.56	228.95	Critical	22.47
Strength I	NCDOT-SNS5A	35.55	1.40	1.25	1.50	0.37	2.76	98.08	0.4L	9.50	0.40	6.86	243.80	Critical	22.47
Strength I	NCDOT-SNS6A	39.95	1.40	1.25	1.50	0.37	2.59	103.64	0.5L	12.00	0.40	6.57	262.41	Critical	22.47
Strength I	NCDOT-SNS7B	42.00	1.40	1.25	1.50	0.37	2.56	107.69	0.4L	9.50	0.40	6.62	277.98	Critical	22.47
Service III	NCDOT-SNSH	13.50	0.80	1.00	1.00	0.37	5.78	78.01	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNGARBS2	20.00	0.80	1.00	1.00	0.37	5.41	108.20	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNAGRIS2	22.00	0.80	1.00	1.00	0.37	5.70	125.39	0.4L	9.50	-	-	-	-	-
Service III	NCDOT-SNCOTTS3	27.25	0.80	1.00	1.00	0.37	2.96	80.79	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNAGGRS4	34.92	0.80	1.00	1.00	0.37	2.96	103.40	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS5A	35.55	0.80	1.00	1.00	0.37	2.85	101.21	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS6A	39.95	0.80	1.00	1.00	0.37	2.67	106.69	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-SNS7B	42.00	0.80	1.00	1.00	0.37	2.64	110.86	0.5L	12.00	-	-	-	-	-



Sheet #	28				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK

For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

#### Dead Load Factors (Table 6A.4.2.2-1)

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

#### Design Live Load Factors (Table 6A.4.3.2.2-1)

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-



Sheet #	29			
Job #	171002272			
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx	Phone: 1-800-778-4277	Date	Mar/7/2022

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Design Operating	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Legal	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	-
Permit	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70

Consider shear reinf. across plane (FDOT alternative): No



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File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

## RATING RESULTS

Span:3, Beam:11

### A) Design Live Load Rating

#### Inventory Rating Level

Shear and Moment RF's are for Strength I Limit State

Tension Stress RF's are for Service III Limit State

Prestress tendon RF is for Service I Limit State

#### HS20 Truck Positive Live Load

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.45	1.00	3.45	6.46	-	6.35	-
Critical : 1.5	-	-	-	6.02	-	-	-
0.1L : 2.0	3.22	1.00	3.22	6.02	-	6.26	13.56
0.2L : 4.5	3.27	1.00	3.27	7.56	-	5.08	-
0.3L : 7.0	3.00	1.00	3.00	7.82	-	4.05	-
0.4L : 9.5	2.98	1.00	2.98	10.74	-	3.92	139.91
0.5L : 12.0	3.09	1.00	3.09	12.25	-	3.97	125.36
0.6L : 14.5	3.01	1.00	3.01	9.49	-	3.96	237.37
0.7L : 17.0	3.08	1.00	3.08	7.13	-	4.15	-
0.8L : 19.5	3.43	1.00	3.43	7.03	-	5.32	-
0.9L : 22.0	3.55	1.00	3.55	5.77	-	6.90	16.46
Critical : 22.5	-	-	-	5.74	-	-	-
Transfer : 21.5	3.73	1.00	3.73	6.16	-	6.86	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	31				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	2.90	1.00	2.90	5.55	-	5.33	491.69
Critical : 1.5	-	-	-	5.24	-	-	-
0.1L : 2.0	2.72	1.00	2.72	5.24	-	5.30	10.44
0.2L : 4.5	2.65	1.00	2.65	6.12	-	4.11	-
0.3L : 7.0	2.27	1.00	2.27	5.92	-	3.06	15.42
0.4L : 9.5	2.03	1.00	2.03	7.30	-	2.67	8.20
0.5L : 12.0	2.04	1.00	2.04	8.59	-	2.62	7.54
0.6L : 14.5	2.07	1.00	2.07	6.76	-	2.72	8.68
0.7L : 17.0	2.34	1.00	2.34	5.56	-	3.16	18.31
0.8L : 19.5	2.79	1.00	2.79	5.81	-	4.32	-
0.9L : 22.0	3.06	1.00	3.06	5.01	-	5.94	12.72
Critical : 22.5	-	-	-	5.00	-	-	-
Transfer : 21.5	3.18	1.00	3.18	5.30	-	5.84	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



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File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.48	1.00	4.48	8.44
Critical : 1.5	-	-	-	7.84
0.1L : 2.0	4.17	1.00	4.17	7.85
0.2L : 4.5	4.24	1.00	4.24	9.88
0.3L : 7.0	3.89	1.00	3.89	10.24
0.4L : 9.5	3.86	1.00	3.86	14.05
0.5L : 12.0	4.00	1.00	4.00	16.03
0.6L : 14.5	3.90	1.00	3.90	12.43
0.7L : 17.0	3.99	1.00	3.99	9.34
0.8L : 19.5	4.45	1.00	4.45	9.19
0.9L : 22.0	4.60	1.00	4.60	7.53
Critical : 22.5	-	-	-	7.47
Transfer : 21.5	4.84	1.00	4.84	8.05
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.



Sheet #	33				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.76	1.00	3.76	7.26
Critical : 1.5	-	-	-	6.84
0.1L : 2.0	3.53	1.00	3.53	6.84
0.2L : 4.5	3.43	1.00	3.43	8.01
0.3L : 7.0	2.94	1.00	2.94	7.77
0.4L : 9.5	2.63	1.00	2.63	9.59
0.5L : 12.0	2.64	1.00	2.64	11.28
0.6L : 14.5	2.68	1.00	2.68	8.88
0.7L : 17.0	3.03	1.00	3.03	7.30
0.8L : 19.5	3.61	1.00	3.61	7.61
0.9L : 22.0	3.96	1.00	3.96	6.54
Critical : 22.5	-	-	-	6.52
Transfer : 21.5	4.12	1.00	4.12	6.93
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.

**Span:3, Beam:11**

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



Sheet #	34				
Job #	171002272				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNSH Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	7.94	1.00	7.94	15.14	-	11.68
Critical : 1.5	-	-	-	14.25	-	-
0.1L : 2.0	7.46	1.00	7.46	14.25	-	11.61
0.2L : 4.5	7.25	1.00	7.25	16.69	-	9.01
0.3L : 7.0	6.26	1.00	6.26	16.17	-	6.76
0.4L : 9.5	5.67	1.00	5.67	19.89	-	5.96
0.5L : 12.0	5.61	1.00	5.61	22.70	-	5.78
0.6L : 14.5	5.72	1.00	5.72	18.42	-	6.02
0.7L : 17.0	6.39	1.00	6.39	15.18	-	6.91
0.8L : 19.5	7.57	1.00	7.57	15.82	-	9.40
0.9L : 22.0	8.25	1.00	8.25	13.61	-	12.84
Critical : 22.5	-	-	-	13.58	-	-
Transfer : 21.5	8.60	1.00	8.60	14.44	-	12.64
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	35				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNGARBS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.39	1.00	6.39	12.33	-	9.40
Critical : 1.5	-	-	-	11.49	-	-
0.1L : 2.0	5.97	1.00	5.97	11.55	-	9.30
0.2L : 4.5	5.99	1.00	5.99	13.94	-	7.43
0.3L : 7.0	5.37	1.00	5.37	14.11	-	5.80
0.4L : 9.5	5.16	1.00	5.16	18.59	-	5.43
0.5L : 12.0	5.26	1.00	5.26	21.21	-	5.41
0.6L : 14.5	5.21	1.00	5.21	16.74	-	5.48
0.7L : 17.0	5.50	1.00	5.50	13.01	-	5.94
0.8L : 19.5	6.26	1.00	6.26	13.05	-	7.78
0.9L : 22.0	6.64	1.00	6.64	10.93	-	10.33
Critical : 22.5	-	-	-	10.85	-	-
Transfer : 21.5	6.95	1.00	6.95	11.64	-	10.22
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	36				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNAGRIS2 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	6.28	1.00	6.28	12.19	-	9.23
Critical : 1.5	-	-	-	11.30	-	-
0.1L : 2.0	5.85	1.00	5.85	11.38	-	9.11
0.2L : 4.5	5.95	1.00	5.95	13.97	-	7.39
0.3L : 7.0	5.46	1.00	5.46	14.50	-	5.89
0.4L : 9.5	5.41	1.00	5.41	19.89	-	5.70
0.5L : 12.0	5.61	1.00	5.61	22.70	-	5.78
0.6L : 14.5	5.47	1.00	5.47	17.60	-	5.76
0.7L : 17.0	5.59	1.00	5.59	13.23	-	6.04
0.8L : 19.5	6.24	1.00	6.24	12.99	-	7.74
0.9L : 22.0	6.52	1.00	6.52	10.72	-	10.14
Critical : 22.5	-	-	-	10.62	-	-
Transfer : 21.5	6.84	1.00	6.84	11.46	-	10.06
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	37				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**NCDOT-SNCOTTS3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.98	1.00	3.98	7.63	-	5.85
Critical : 1.5	-	-	-	7.20	-	-
0.1L : 2.0	3.73	1.00	3.73	7.20	-	5.81
0.2L : 4.5	3.66	1.00	3.66	8.38	-	4.54
0.3L : 7.0	3.18	1.00	3.18	8.18	-	3.43
0.4L : 9.5	2.89	1.00	2.89	10.07	-	3.04
0.5L : 12.0	2.88	1.00	2.88	11.66	-	2.96
0.6L : 14.5	2.92	1.00	2.92	9.20	-	3.08
0.7L : 17.0	3.25	1.00	3.25	7.55	-	3.51
0.8L : 19.5	3.83	1.00	3.83	7.88	-	4.76
0.9L : 22.0	4.17	1.00	4.17	6.80	-	6.48
Critical : 22.5	-	-	-	6.79	-	-
Transfer : 21.5	4.34	1.00	4.34	7.20	-	6.38
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	38				
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**NCDOT-SNAGGRS4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.86	1.00	3.86	7.22	-	5.67
Critical : 1.5	-	-	-	6.73	-	-
0.1L : 2.0	3.59	1.00	3.59	6.77	-	5.60
0.2L : 4.5	3.66	1.00	3.66	8.19	-	4.54
0.3L : 7.0	3.24	1.00	3.24	8.34	-	3.50
0.4L : 9.5	2.85	1.00	2.85	11.01	-	3.00
0.5L : 12.0	2.88	1.00	2.88	13.10	-	2.96
0.6L : 14.5	2.88	1.00	2.88	10.02	-	3.03
0.7L : 17.0	3.31	1.00	3.31	8.05	-	3.58
0.8L : 19.5	3.85	1.00	3.85	7.96	-	4.78
0.9L : 22.0	4.05	1.00	4.05	6.61	-	6.31
Critical : 22.5	-	-	-	6.56	-	-
Transfer : 21.5	4.25	1.00	4.25	7.05	-	6.25
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	39				
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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.00	1.00	4.00	7.51	-	5.88
Critical : 1.5	-	-	-	7.03	-	-
0.1L : 2.0	3.76	1.00	3.76	7.05	-	5.85
0.2L : 4.5	3.64	1.00	3.64	8.42	-	4.52
0.3L : 7.0	3.10	1.00	3.10	8.42	-	3.35
0.4L : 9.5	2.76	1.00	2.76	10.92	-	2.90
0.5L : 12.0	2.77	1.00	2.77	12.84	-	2.85
0.6L : 14.5	2.80	1.00	2.80	10.01	-	2.95
0.7L : 17.0	3.19	1.00	3.19	8.15	-	3.44
0.8L : 19.5	3.83	1.00	3.83	8.21	-	4.76
0.9L : 22.0	4.23	1.00	4.23	6.90	-	6.58
Critical : 22.5	-	-	-	6.86	-	-
Transfer : 21.5	4.40	1.00	4.40	7.34	-	6.46
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.84	1.00	3.84	7.24	-	5.65
Critical : 1.5	-	-	-	6.77	-	-
0.1L : 2.0	3.61	1.00	3.61	6.81	-	5.62
0.2L : 4.5	3.51	1.00	3.51	8.10	-	4.36
0.3L : 7.0	2.94	1.00	2.94	7.93	-	3.17
0.4L : 9.5	2.65	1.00	2.65	9.98	-	2.79
0.5L : 12.0	2.59	1.00	2.59	12.73	-	2.67
0.6L : 14.5	2.68	1.00	2.68	9.58	-	2.82
0.7L : 17.0	3.02	1.00	3.02	7.68	-	3.27
0.8L : 19.5	3.70	1.00	3.70	7.89	-	4.59
0.9L : 22.0	4.07	1.00	4.07	6.63	-	6.32
Critical : 22.5	-	-	-	6.57	-	-
Transfer : 21.5	4.23	1.00	4.23	7.06	-	6.21
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	41				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_SV.lbcx			Date	Mar/7/2022

**NCDOT-SNS7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.86	1.00	3.86	7.27	-	5.67
Critical : 1.5	-	-	-	6.80	-	-
0.1L : 2.0	3.63	1.00	3.63	6.83	-	5.65
0.2L : 4.5	3.51	1.00	3.51	8.10	-	4.36
0.3L : 7.0	2.94	1.00	2.94	7.93	-	3.17
0.4L : 9.5	2.56	1.00	2.56	9.98	-	2.70
0.5L : 12.0	2.56	1.00	2.56	12.73	-	2.64
0.6L : 14.5	2.60	1.00	2.60	9.58	-	2.74
0.7L : 17.0	3.02	1.00	3.02	7.68	-	3.27
0.8L : 19.5	3.70	1.00	3.70	7.89	-	4.59
0.9L : 22.0	4.09	1.00	4.09	6.67	-	6.36
Critical : 22.5	-	-	-	6.62	-	-
Transfer : 21.5	4.25	1.00	4.25	7.09	-	6.24
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSSiT - Prestress Steel Tension.



Sheet #	1				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**LOAD RATING SUMMARY**

**Load Rating Summary for Prestressed Concrete Bridges**

Span:3, Beam:11

**Design Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I (Inv)	HS20 Truck	36.00	1.75	1.25	1.50	0.37	2.98	107.21	0.4L	9.50	0.40	5.74	206.48	Critical	22.47
Strength I (Inv)	HL93 Design Load	-	1.75	1.25	1.50	0.37	2.03	-	0.4L	9.50	0.40	5.00	-	Critical	22.47
Strength I (Op)	HS20 Truck	36.00	1.35	1.25	1.50	0.37	3.86	138.98	0.4L	9.50	0.40	7.47	269.08	Critical	22.47
Strength I (Op)	HL93 Design Load	-	1.35	1.25	1.50	0.37	2.63	-	0.4L	9.50	0.40	6.52	-	Critical	22.47
Service III (Inv)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.92	141.06	0.4L	9.50	-	-	-	-	-
Service III (Inv)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.62	-	0.5L	12.00	-	-	-	-	-
Service III (Op)	HS20 Truck	36.00	0.80	1.00	1.00	0.37	3.92	141.06	0.4L	9.50	-	-	-	-	-
Service III (Op)	HL93 Design Load	-	0.80	1.00	1.00	0.37	2.62	-	0.5L	12.00	-	-	-	-	-





		Sheet # 2	
		Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed JFK
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File Name:	270017_Spans 1+3_TTST.lbcx		Date Mar/7/2022

**Legal Load Rating**

Limit State	Vehicle	Weight (tons)	LF LL	LF DC	LF DW	Moment DF	Mom or Str RF	Mom or Str Tons	Mom or Str Location	Mom or Str Dim	Shear DF	Shear RF	Shear Tons	Shear Location	Shear Dim
Strength I	NCDOT-TNAGRIT3	33.00	1.40	1.25	1.50	0.37	3.61	119.05	0.5L	12.00	0.40	8.07	266.36	Critical	22.47
Strength I	NCDOT-TNT4A	33.08	1.40	1.25	1.50	0.37	3.17	104.80	0.5L	12.00	0.40	7.33	242.50	Critical	22.47
Strength I	NCDOT-TNT6A	41.60	1.40	1.25	1.50	0.37	2.94	122.37	0.4L	9.50	0.40	6.89	286.51	Critical	22.47
Strength I	NCDOT-TNT7A	42.00	1.40	1.25	1.50	0.37	3.08	129.19	0.5L	12.00	0.40	6.85	287.69	Critical	22.47
Strength I	NCDOT-TNT7B	42.00	1.40	1.25	1.50	0.37	2.79	117.04	0.5L	12.00	0.40	6.61	277.60	Critical	22.47
Strength I	NCDOT-TNAGRIT4	43.00	1.40	1.25	1.50	0.37	2.96	127.13	0.5L	12.00	0.40	6.62	284.54	Critical	22.47
Strength I	NCDOT-TNAGT5A	45.00	1.40	1.25	1.50	0.37	2.97	133.49	0.5L	12.00	0.40	6.73	302.94	Critical	22.47
Strength I	NCDOT-TNAGT5B	45.00	1.40	1.25	1.50	0.37	2.82	127.07	0.4L	9.50	0.40	6.09	273.99	Critical	22.47
Service III	NCDOT-TNAGRIT3	33.00	0.80	1.00	1.00	0.37	3.71	122.55	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT4A	33.08	0.80	1.00	1.00	0.37	3.26	107.88	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT6A	41.60	0.80	1.00	1.00	0.37	3.06	127.49	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT7A	42.00	0.80	1.00	1.00	0.37	3.17	132.98	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNT7B	42.00	0.80	1.00	1.00	0.37	2.87	120.48	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGRIT4	43.00	0.80	1.00	1.00	0.37	3.04	130.87	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGT5A	45.00	0.80	1.00	1.00	0.37	3.05	137.42	0.5L	12.00	-	-	-	-	-
Service III	NCDOT-TNAGT5B	45.00	0.80	1.00	1.00	0.37	2.97	133.75	0.4L	9.50	-	-	-	-	-

Design Load Inventory Ratings are greater than 1.0. Legal Load Rating is not required in this case, but is being reported for reference.

Rating Factors	References	Values
Condition Factor	Table 6A.4.2.3-1	1.00
System Factor for Flexural Effect	Table 6A.4.2.4-1	1.00
System Factor for Shear Effect	Art. 6A.4.2.4	1.00
ADTT	Section C3.6.1.1.2	5000
Dynamic Load Factor for Design Level	Art. 6A.4.3.3	0.33
Dynamic Load Factor for Legal and Permit Level	Table C6A.4.4.3-1	0.33

For Flexural Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1) OK



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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For Shear Effect: Condition Factor \* System Factor = 1.00 >= 0.85 (Art. 6A.4.2.1 and 6A.4.2.4) OK

**Dead Load Factors (Table 6A.4.2.2-1)**

Limit State	DC	DW
Strength I	1.25	1.50
Strength II	1.25	1.50
Service I	1.00	1.00
Service III	1.00	1.00

**Design Live Load Factors (Table 6A.4.3.2.2-1)**

Limit State	Inventory	Operating
Strength I	1.75	1.35
Service I	-	-
Service III	0.80	-

**Legal Live Load Factors (Table 6A.4.4.2.3a-1)**

Limit State	Values
Strength I	1.40
Service I	-
Service III	0.80

**Allowable Stresses (ksi)**

Rating Level	Concrete Compression	Concrete Tension	Steel
Design Inventory	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Design Operating	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70
Legal	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	-
Permit	0.60 x f <sub>c</sub> = 3.00	0.19 x sqrt(f <sub>c</sub> ) = 0.42	0.90 x f <sub>y</sub> = 218.70

Consider shear reinf. across plane (FDOT alternative): No



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Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
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**RATING RESULTS**

**Span:3, Beam:11**

**A) Design Live Load Rating**

**Inventory Rating Level**

Shear and Moment RF's are for Strength I Limit State  
 Tension Stress RF's are for Service III Limit State  
 Prestress tendon RF is for Service I Limit State

**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.45	1.00	3.45	6.46	-	6.35	-
Critical : 1.5	-	-	-	6.02	-	-	-
0.1L : 2.0	3.22	1.00	3.22	6.02	-	6.26	13.56
0.2L : 4.5	3.27	1.00	3.27	7.56	-	5.08	-
0.3L : 7.0	3.00	1.00	3.00	7.82	-	4.05	-
0.4L : 9.5	2.98	1.00	2.98	10.74	-	3.92	139.91
0.5L : 12.0	3.09	1.00	3.09	12.25	-	3.97	125.36
0.6L : 14.5	3.01	1.00	3.01	9.49	-	3.96	237.37
0.7L : 17.0	3.08	1.00	3.08	7.13	-	4.15	-
0.8L : 19.5	3.43	1.00	3.43	7.03	-	5.32	-
0.9L : 22.0	3.55	1.00	3.55	5.77	-	6.90	16.46
Critical : 22.5	-	-	-	5.74	-	-	-
Transfer : 21.5	3.73	1.00	3.73	6.16	-	6.86	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	5				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B	PSStT
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	2.90	1.00	2.90	5.55	-	5.33	491.69
Critical : 1.5	-	-	-	5.24	-	-	-
0.1L : 2.0	2.72	1.00	2.72	5.24	-	5.30	10.44
0.2L : 4.5	2.65	1.00	2.65	6.12	-	4.11	-
0.3L : 7.0	2.27	1.00	2.27	5.92	-	3.06	15.42
0.4L : 9.5	2.03	1.00	2.03	7.30	-	2.67	8.20
0.5L : 12.0	2.04	1.00	2.04	8.59	-	2.62	7.54
0.6L : 14.5	2.07	1.00	2.07	6.76	-	2.72	8.68
0.7L : 17.0	2.34	1.00	2.34	5.56	-	3.16	18.31
0.8L : 19.5	2.79	1.00	2.79	5.81	-	4.32	-
0.9L : 22.0	3.06	1.00	3.06	5.01	-	5.94	12.72
Critical : 22.5	-	-	-	5.00	-	-	-
Transfer : 21.5	3.18	1.00	3.18	5.30	-	5.84	-
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

**Operating Rating Level**

Shear and Moment RF's are for Strength I Limit State



		Sheet #	6		
		Job #	171002272		
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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**HS20 Truck Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.48	1.00	4.48	8.44
Critical : 1.5	-	-	-	7.84
0.1L : 2.0	4.17	1.00	4.17	7.85
0.2L : 4.5	4.24	1.00	4.24	9.88
0.3L : 7.0	3.89	1.00	3.89	10.24
0.4L : 9.5	3.86	1.00	3.86	14.05
0.5L : 12.0	4.00	1.00	4.00	16.03
0.6L : 14.5	3.90	1.00	3.90	12.43
0.7L : 17.0	3.99	1.00	3.99	9.34
0.8L : 19.5	4.45	1.00	4.45	9.19
0.9L : 22.0	4.60	1.00	4.60	7.53
Critical : 22.5	-	-	-	7.47
Transfer : 21.5	4.84	1.00	4.84	8.05
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.



		Sheet #	7		
		Job #	171002272		
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**HL93 Design Load Positive Live Load**

Location	Moment	K	Mom-K	Shear
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.76	1.00	3.76	7.26
Critical : 1.5	-	-	-	6.84
0.1L : 2.0	3.53	1.00	3.53	6.84
0.2L : 4.5	3.43	1.00	3.43	8.01
0.3L : 7.0	2.94	1.00	2.94	7.77
0.4L : 9.5	2.63	1.00	2.63	9.59
0.5L : 12.0	2.64	1.00	2.64	11.28
0.6L : 14.5	2.68	1.00	2.68	8.88
0.7L : 17.0	3.03	1.00	3.03	7.30
0.8L : 19.5	3.61	1.00	3.61	7.61
0.9L : 22.0	3.96	1.00	3.96	6.54
Critical : 22.5	-	-	-	6.52
Transfer : 21.5	4.12	1.00	4.12	6.93
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.

**Span:3, Beam:11**

**B) Legal Live Load Rating**

Shear and Moment RF's are for Strength I Limit State  
Tension Stress RF's are for Service III Limit State



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Job #	171002272				
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**NCDOT-TNAGRIT3 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.81	1.00	4.81	9.47	-	7.07
Critical : 1.5	-	-	-	8.69	-	-
0.1L : 2.0	4.46	1.00	4.46	8.80	-	6.94
0.2L : 4.5	4.68	1.00	4.68	11.17	-	5.81
0.3L : 7.0	4.38	1.00	4.38	11.44	-	4.73
0.4L : 9.5	3.84	1.00	3.84	14.60	-	4.04
0.5L : 12.0	3.61	1.00	3.61	17.51	-	3.71
0.6L : 14.5	3.89	1.00	3.89	13.26	-	4.09
0.7L : 17.0	4.51	1.00	4.51	10.59	-	4.87
0.8L : 19.5	4.92	1.00	4.92	10.20	-	6.11
0.9L : 22.0	5.00	1.00	5.00	8.19	-	7.78
Critical : 22.5	-	-	-	8.07	-	-
Transfer : 21.5	5.27	1.00	5.27	8.78	-	7.75
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	9				
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Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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**NCDOT-TNT4A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.31	1.00	4.31	8.11	-	6.34
Critical : 1.5	-	-	-	7.52	-	-
0.1L : 2.0	4.03	1.00	4.03	7.58	-	6.28
0.2L : 4.5	4.02	1.00	4.02	9.33	-	4.99
0.3L : 7.0	3.54	1.00	3.54	9.24	-	3.82
0.4L : 9.5	3.26	1.00	3.26	11.79	-	3.43
0.5L : 12.0	3.17	1.00	3.17	13.98	-	3.26
0.6L : 14.5	3.30	1.00	3.30	10.67	-	3.47
0.7L : 17.0	3.64	1.00	3.64	8.53	-	3.93
0.8L : 19.5	4.24	1.00	4.24	8.74	-	5.26
0.9L : 22.0	4.53	1.00	4.53	7.41	-	7.05
Critical : 22.5	-	-	-	7.33	-	-
Transfer : 21.5	4.74	1.00	4.74	7.88	-	6.96
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.





Sheet #	10				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
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**NCDOT-TNT6A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.04	1.00	4.04	7.54	-	5.94
Critical : 1.5	-	-	-	7.06	-	-
0.1L : 2.0	3.77	1.00	3.77	7.08	-	5.87
0.2L : 4.5	3.79	1.00	3.79	8.46	-	4.70
0.3L : 7.0	3.25	1.00	3.25	8.45	-	3.51
0.4L : 9.5	2.94	1.00	2.94	10.96	-	3.10
0.5L : 12.0	2.98	1.00	2.98	12.87	-	3.06
0.6L : 14.5	2.98	1.00	2.98	10.04	-	3.14
0.7L : 17.0	3.34	1.00	3.34	8.18	-	3.61
0.8L : 19.5	3.99	1.00	3.99	8.24	-	4.95
0.9L : 22.0	4.25	1.00	4.25	6.93	-	6.61
Critical : 22.5	-	-	-	6.89	-	-
Transfer : 21.5	4.44	1.00	4.44	7.38	-	6.53
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	11				
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Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNT7A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	4.05	1.00	4.05	7.62	-	5.96
Critical : 1.5	-	-	-	7.06	-	-
0.1L : 2.0	3.78	1.00	3.78	7.13	-	5.88
0.2L : 4.5	3.82	1.00	3.82	8.70	-	4.74
0.3L : 7.0	3.38	1.00	3.38	8.82	-	3.65
0.4L : 9.5	3.12	1.00	3.12	11.50	-	3.28
0.5L : 12.0	3.08	1.00	3.08	13.42	-	3.17
0.6L : 14.5	3.14	1.00	3.14	10.58	-	3.30
0.7L : 17.0	3.47	1.00	3.47	8.52	-	3.74
0.8L : 19.5	4.03	1.00	4.03	8.46	-	5.00
0.9L : 22.0	4.25	1.00	4.25	6.94	-	6.61
Critical : 22.5	-	-	-	6.85	-	-
Transfer : 21.5	4.45	1.00	4.45	7.42	-	6.55
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	12				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNT7B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.88	1.00	3.88	7.28	-	5.71
Critical : 1.5	-	-	-	6.80	-	-
0.1L : 2.0	3.63	1.00	3.63	6.84	-	5.65
0.2L : 4.5	3.64	1.00	3.64	8.13	-	4.53
0.3L : 7.0	3.21	1.00	3.21	7.95	-	3.46
0.4L : 9.5	2.88	1.00	2.88	10.00	-	3.03
0.5L : 12.0	2.79	1.00	2.79	12.75	-	2.87
0.6L : 14.5	2.90	1.00	2.90	9.61	-	3.05
0.7L : 17.0	3.28	1.00	3.28	7.65	-	3.55
0.8L : 19.5	3.85	1.00	3.85	7.92	-	4.78
0.9L : 22.0	4.09	1.00	4.09	6.67	-	6.36
Critical : 22.5	-	-	-	6.61	-	-
Transfer : 21.5	4.28	1.00	4.28	7.09	-	6.29
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	13				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNAGRIT4 Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.93	1.00	3.93	7.42	-	5.78
Critical : 1.5	-	-	-	6.82	-	-
0.1L : 2.0	3.66	1.00	3.66	6.91	-	5.70
0.2L : 4.5	3.71	1.00	3.71	8.66	-	4.61
0.3L : 7.0	3.33	1.00	3.33	8.76	-	3.60
0.4L : 9.5	2.98	1.00	2.98	11.58	-	3.13
0.5L : 12.0	2.96	1.00	2.96	13.98	-	3.04
0.6L : 14.5	2.99	1.00	2.99	10.31	-	3.15
0.7L : 17.0	3.40	1.00	3.40	8.01	-	3.67
0.8L : 19.5	3.92	1.00	3.92	8.06	-	4.86
0.9L : 22.0	4.12	1.00	4.12	6.73	-	6.42
Critical : 22.5	-	-	-	6.62	-	-
Transfer : 21.5	4.32	1.00	4.32	7.17	-	6.35
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



Sheet #	14				
Job #	171002272				
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNAGT5A Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.95	1.00	3.95	7.51	-	5.81
Critical : 1.5	-	-	-	7.00	-	-
0.1L : 2.0	3.69	1.00	3.69	7.04	-	5.74
0.2L : 4.5	3.71	1.00	3.71	8.54	-	4.61
0.3L : 7.0	3.33	1.00	3.33	8.73	-	3.60
0.4L : 9.5	2.98	1.00	2.98	11.58	-	3.13
0.5L : 12.0	2.97	1.00	2.97	13.98	-	3.05
0.6L : 14.5	2.99	1.00	2.99	10.31	-	3.15
0.7L : 17.0	3.40	1.00	3.40	8.01	-	3.67
0.8L : 19.5	3.92	1.00	3.92	8.06	-	4.86
0.9L : 22.0	4.15	1.00	4.15	6.78	-	6.46
Critical : 22.5	-	-	-	6.73	-	-
Transfer : 21.5	4.35	1.00	4.35	7.21	-	6.39
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.



		Sheet # 15			
				Job # 171002272	
Program:	LEAP® Bridge Concrete CONNECT Edition	Stantec Consulting Ltd	Designed	JFK	
Module:	Precast/Prestressed Girder	Copyright © Bentley Systems, Inc. 2019 - 2019	Date	Feb/2/2022	
Version:	19.01.00.11	<a href="http://www.bentley.com">www.bentley.com</a>	Phone: 1-800-778-4277	Checked	MBI
File Name:	270017_Spans 1+3_TTST.lbcx			Date	Mar/7/2022

**NCDOT-TNAGT5B Positive Live Load**

Location	Moment	K	Mom-K	Shear	CTens-T	CTens-B
Bearing : 0.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Transfer : 2.5	3.62	1.00	3.62	6.78	-	5.32
Critical : 1.5	-	-	-	6.27	-	-
0.1L : 2.0	3.36	1.00	3.36	6.33	-	5.23
0.2L : 4.5	3.50	1.00	3.50	7.85	-	4.35
0.3L : 7.0	3.09	1.00	3.09	8.33	-	3.33
0.4L : 9.5	2.82	1.00	2.82	11.60	-	2.97
0.5L : 12.0	2.99	1.00	2.99	13.98	-	3.07
0.6L : 14.5	2.84	1.00	2.84	10.25	-	2.99
0.7L : 17.0	3.16	1.00	3.16	7.97	-	3.41
0.8L : 19.5	3.67	1.00	3.67	7.60	-	4.55
0.9L : 22.0	3.79	1.00	3.79	6.17	-	5.89
Critical : 22.5	-	-	-	6.09	-	-
Transfer : 21.5	3.98	1.00	3.98	6.60	-	5.85
Bearing : 24.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Notation:

CComp-T/ CComp-B - Concrete Compression at Top/Bottom;  
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;  
PSStT - Prestress Steel Tension.