AECOM

JEF-7-33.44

Structure Calculations

Prepared for:
ODOT District 11
2201 Reiser Avenue SE,
New Philadelphia, OH 44663

Project reference: PID 108510

August 28, 2026

Delivering a better world

Table of Contents

Structure SFN 4101626:
1 – Estimated Quantities
2 – Jacking Loads
3 – Bridge Elevation Tables
4 – Thermal Calculations & Joint Setting Table

Structure SFN 4101626:
1 – Estimated Quantities
2 – Jacking Loads
3 – Bridge Elevation Tables
4 – Thermal Calculations & Joint Setting Table

1. Estimated Quantities – SFN 4101626

Bridge No: JEF-7-33.46
Proj. No.: 60684672

564 White Pond Dr.
Akron, Ohio 44320

						QUANTITIES			CALC BY:	JC	4/13/2026
									CHECK BY:	JM	4/15/2026
ITEM	EXT.	PARTICIPATION	TOTAL	UNIT	DESCRIPTION	JEF-7-07.460					REF. SHEET
						ABUTMENTS		SUPER.	GENERAL		
		01/NHS				REAR	FWD.				
201	11001	LS	LS		CLEARING AND GRUBBING, AS PER PLAN				LS		
202	11203	LS	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LS		
202	22900	282	282	SY	APPROACH SLAB REMOVED	141	141				
202	23500	282	282	SY	WEARING COURSE REMOVED	141	141				
503	11101	LS	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN				LS		
503	21101	312	312	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	156	155				
509	10000	20,482	20,482	LB	EPOXY COATED STEEL REINFORCEMENT	10181	6614	3687			
509	20001	400	400	LB	CONCRETE REINFORCEMENT, REPLACEMENT OF EXISTING CONCRETE REINFORCEMENT, AS PER PLAN				400		
510	10000	733	733	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	376	357				
511	34444	27	27	CY	CLASS QC2 CONCRETE, BRIDGE DECK			27			
511	34448	32	32	CY	CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)	16	16				
511	45710	92	92	CY	CLASS QC1 CONCRETE, ABUTMENT	46	46				
512	10100	2,394	2,394	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	1332	757	305			
512	10600	360	360	FT	CONCRETE REPAIR BY EPOXY INJECTION	180	180				
512	33000	104	104	SY	TYPE 2 WATERPROOFING	52	52				
512	74000	685	685	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	303	175	207			
513	21001	24	24	EACH	TRIMMING OF BEAM END, AS PER PLAN	12	12				
513	90000	400	400	LB	STRUCTURAL STEEL, MISC.:, AS PER PLAN			400			
514	00050	11,433	11,433	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL			11433			
514	00056	11,433	11,433	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT			11433			
514	00060	11,433	11,433	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT			11433			
514	00066	11,433	11,433	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			11433			
514	00504	154	154	MNHR	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL			154			
514	10000	8	8	EACH	FINAL INSPECTION REPAIR			8			
516	10000	300	300	FT	PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL	150	150				
516	11211	300	300	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN			300			
516	13600	11	11	SF	1" PREFORMED EXPANSION JOINT FILLER	5	5				
516	13900	150	150	SF	2" PREFORMED EXPANSION JOINT FILLER	75	75				
516	31001	170	170	FT	JOINT SEALER, AS PER PLAN	80	90				
516	45305	24	24	EACH	REFURBISH BEARING DEVICE, AS PER PLAN	12	12				
516	46700	24	24	EACH	RESET BEARING	12	12				
516	47001	LS	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				LS		

ITEM	EXT.	PARTICIPATION	TOTAL	UNIT	DESCRIPTION	JEF-7-07.460				REF. SHEET
						ABUTMENTS		SUPER.	GENERAL	
		01/NHS				REAR	FWD.			
518	21200	147	147	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	66	81			
518	40000	441	441	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	198	243			
518	40010	40	40	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	20	20			
519	11101	210	210	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	50	150	10		
526	25001	417	417	SY	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	208	208			
601	21060	62	62	SY	TIED CONCRETE BLOCK MAT WITH TYPE 2 UNDERLAYMENT				62	
844	20000	420	420	EACH	GALVANIC ANODE PROTECTION			420		
848	10000	643	643	SY	MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION (2.75'' THICKNESS)			643		
848	20001	643	643	SY	SURFACE PREPARATION USING HYDRODEMOLITION, AS PER PLAN			643		
848	30000	13	13	CY	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY			13		
848	50000	36	36	SY	HAND CHIPPING			36		
848	50100	LS	LS		TEST SLAB				LS	
848	50200	5	5	CY	FULL-DEPTH REPAIR			5		
848	50300	643	643	SY	WEARING COURSE REMOVED, ASPHALT (3'' THICKNESS)			643		
848	50320	643	643	SY	EXISTING CONCRETE OVERLAY REMOVED (2.25'' THICKNESS)			643		
848	50340	121	121	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY			121		

ITEM 202

APPROACH SLAB REMOVED (202E22900)					
		JEF-7-33.46		JEF-7-33.80	
		Rear Abut	Fwd. Abut	Rear Abut	Fwd. Abut
A1	sq ft	637.5	637.5	847	882
A2	sq ft	630	630	878	874
Sum Measured Area	sq ft	1268	1268	1725	1756
Total Deck Area	**sq yd**	**141**	**141**	**192**	**195**

WEARING SURFACE REMOVAL (202E23501)					
*Asphalt on Approach Slabs Only. Deck removal under Section 848.					
		JEF-7-33.46		JEF-7-33.80	
		Rear Abut	Fwd. Abut	Rear Abut	Fwd. Abut
		1268	1268	1725	1756
Total Deck Area	**sq yd**	**141**	**141**	**192**	**195**

ITEM 503

UNCLASSIFIED EXCAVATION (503E21100)				
		JEF-7-33.46		
		Rear Abut	Fwd. Abut	
Excavation length	ft	146.00	145.00	
Backwall replacement Height	ft	4.75	4.75	
Profile Excavation area	ft	28.91	28.91	Assume 1.5ft below backwall height and 1.5ft off backwall face.
Total Volume	**cu yd**	**156**	**155**	

COFFERDAMS AND EXCAVATION BRACING				
Total height above ground	ft	6.25	10.42	Assume 1.5' below backwall
Total height below ground	ft	4.17		
Total wall length	ft	34.50	8.625	
Cost per area	$/sq ft.	$ 50.00		
Total estimate cost		**$ 17,968.750**		
		$ 8,984.375		=> Assume 10 each

ITEM 509

EPOXY COATED REINFORCING STEEL (509E10000)

JEF-7-33.46 - Stage 2 Estimate by Volume

		Backwall & Wingwall		Parapet		
		Rear Abut	Fwd. Abut	Rear Abut	Fwd. Abut	
Concrete Volume	cu. yd.	46.18	46.18	15.48	15.48	
Reinforcing	lbs/cy	185	185	200	200	
Total	lbs	8543	8543	3095	3095	23277

509 Items

JEF-7-33.46 Final Bar Lists

		Abut. & Wingwall		Deck		Parapet		
		Left	Right	Left	Right	Left	Right	
Schedule		7578	9217	1057	1158	713	759	<-From Plan Sheet
Total Sub (Rear)	lbs	10181						
Total Sub (Forward)	lbs	6614						
Total Superstructure	lbs	3687						

LEFT BRIDGE

	REAR	FORWARD	TOTAL #	WEIGHT	REAR WT.	FWD WT.
A501	20	20	40	1252	626	626
A512	8		8	35	35	0
A513	1		1	38	38	0
A514	6		6	47	47	0
A515	2		2	16	16	0
A516	1		1	10	10	0
A517	1		1	28	28	0
A518	10		10	157	157	0
A519	1		1	5	5	0
A520		5	5	43	0	43
A521		6	6	30	0	30
A522		5	5	35	0	35
A523		10	10	108	0	108
A524		1	1	5	0	5
A601	66		66	446	446	0
A603	65	64	129	1340	675	665
A612		143	143	805	0	805
A624	17		17	162	162	0
A625	2		2	374	374	0
A626	2		2	335	335	0
A627	6		6	85	85	0
A628	1		1	14	14	0
A629	1		1	16	16	0
A630	1		1	11	11	0
A631	1		1	93	93	0
A632	66		66	430	430	0
A633		1	1	35	0	35
A634		1	1	34	0	34
A635		2	2	27	0	27
A636		2	2	37	0	37
A637		1	1	11	0	11
A638		1	1	12	0	12
A639		1	1	17	0	17
A640		1	1	137	0	137
A641		4	4	592	0	592
A802	25	25	50	756	378	378
					3981	**3597** LBS.
				Total Check:	7578	

RIGHT BRIDGE

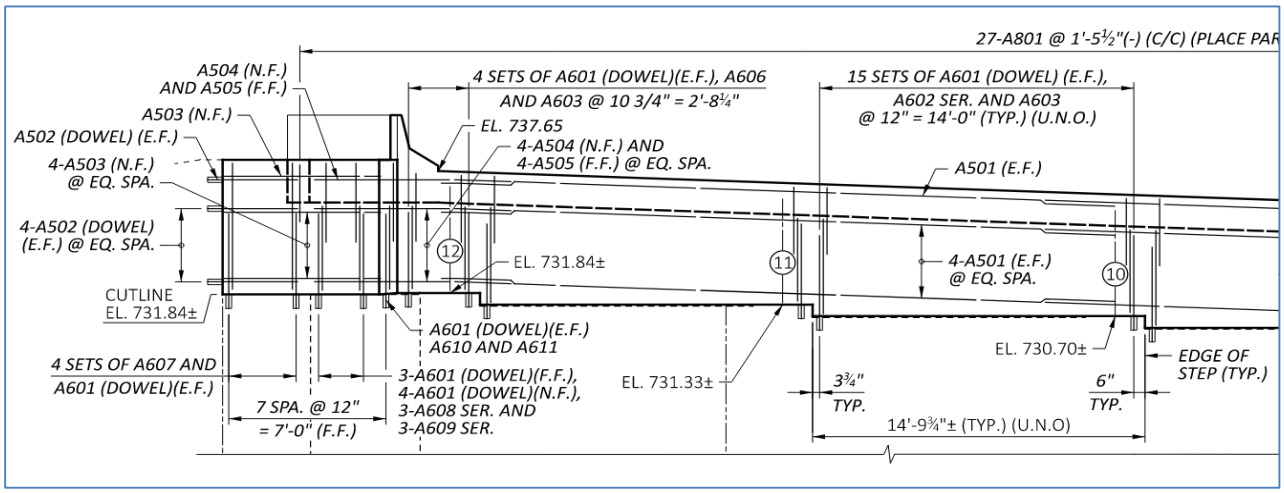
	REAR	FORWARD	TOTAL #	WEIGHT	REAR WT.	FWD WT.
A501	20	30	50	1565	626	939
A502	10		10	42	42	0
A503	5		5	38	38	0
A504	5		5	51	51	0
A505	5		5	66	66	0
A506	10		10	282	282	0
A507		10	10	78	0	78
A508		5	5	21	0	21
A509		5	5	26	0	26
A510		1	1	5	0	5
A511		1	1	5	0	5
A601	173		173	1244	1244	0
A602	4		4	841	841	0
A603	81		81	1693	1693	0
A604	1		1	203	203	0
A605	2		2	30	30	0
A606	4		4	53	53	0
A607	4		4	79	79	0
A608	1		1	44	44	0
A609	1		1	39	39	0
A610	1		1	14	14	0
A611	1		1	14	14	0
A612		165	165	929	0	929
A613		4	4	661	0	661
A614		1	1	142	0	142
A615		1	1	16	0	16
A616		1	1	19	0	19
A617		3	3	51	0	51
A618		1	1	100	0	100
A619		1	1	13	0	13
A620		1	1	12	0	12
A621	1		1	19	19	0
A622	1		1	17	17	0
A623	1		1	12	12	0
A801	27		27	793	793	0
					6200	**3017** LBS.
			Total Check:	9217		

ITEM 510

510	10000	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	EACH

Abutments:

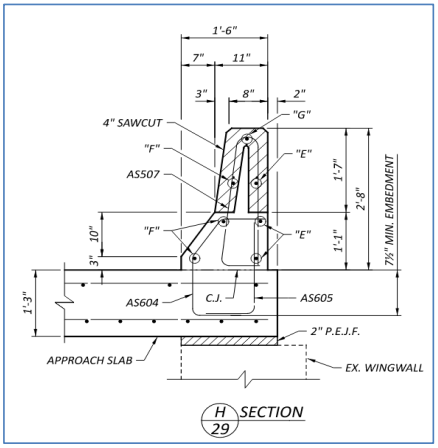
NB Rear	SB Rear	NB Fwd	SB Fwd	
8	4	2	2	
3	12	18	2	
4	104	120	8	
3	14	26	13	
3	2	2	104	
4	34	2	24	
1	8	6	4	
8	6	8	14	
150		2		
8				
192	184	186	171	<-Sum Total



Example dowel schematic, typical all abutments

ITEM 511

CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)				
Barriers on Wingwalls				
		JEF-7-33.46		
		Rear Abut	Fwd. Abut	
Barrier Area	sq ft	4.75	4.75	
Median Area	sq ft	5.40	5.40	
Barrier Length	ft	55	55.00	
Median Length	ft	29	29	
Volume	**cu ft**	**417.85**	**417.85**	
Volume	**cu yd**	**16**	**16**	



CLASS QC1 CONCRETE, ABUTMENT				
Abutment Backwall and Wingwall				
		JEF-7-33.46		
		Rear Abut	Fwd. Abut	
Backwall Repacement Height	ft	4.75	4.75	
Wingwall Repacement Height	ft	0.00	0.00	
Backwall Length	ft	150.00	150.00	
Wingwall Length	ft	0.00	0.00	
Backwall Width	ft	1.75	1.75	
Wingwall Width	ft	0.00	0.00	
Total Abutment Volume	cu yd	**46**	**46**	

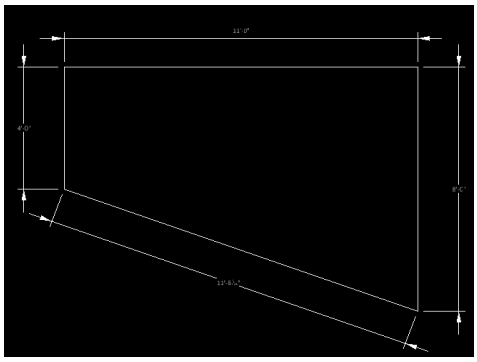
CLASS QC2 CONCRETE, BRIDGE DECK				
Width	ft	3.00	3.00	
Thickness	ft	0.81	0.81	
Length	ft	149.00	149.00	(CAD measured)
		13.45	**13.45**	
		SUM =	27	CY

ITEM 512

SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (51210100)

Existing and New Barrier, Backwall and New Wingwalls

		JEF-7-33.46			
		Super	Rear Abut	Fwd. Abut	Piers
Barrier Length	ft	171.12	110.00	55.00	*0.00*
Median Length	ft	171.12	29.00	29.00	*0.00*
Barrier Perimeter	ft	8.80	8.80	8.80	*0.00*
Median Perimeter	ft	7.22	7.22	7.22	*0.00*
Backwall Height	ft	*0.00*	4.75	4.75	*0.00*
Backwall Length	ft	*0.00*	150.00	150.00	*0.00*
Abutment Length	ft	*0.00*	158.17	133.00	*0.00*
Abutment Height	ft	*0.00*	31.24	30.61	*0.00*
Bearing Seat width	ft	*0.00*	4.25	4.25	*0.00*
Wingwall Area (S)	ft	*0.00*	5023	*0.00*	*0.00*
Wingwall Area (N)	ft	*0.00*	*0.00*	1210	*0.00*
Outside Pier Cap Face area	sq ft	*0.00*	*0.00*	*0.00*	4.75
Side Pier Cap Face area	sq ft	*0.00*	*0.00*	*0.00*	48.00
Top Pier Cap Face area	sq ft	*0.00*	*0.00*	*0.00*	15.00
No. Pier cap ends to seal	no.	*0.00*	*0.00*	*0.00*	14.00
Total Abutment Area	**sq yd**	**305**	**1332**	**757**	**113**



REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN (51274001)

		JEF-7-33.46			Superstructure			
		Rear Abut	Fwd. Abut		Left Ext.	Right Ext.	Median	
Abutment Length	ft	390.00	225.00		8.50	8.50	7.08	*Perimeter*
Abutment Graffiti Height	ft	7.00	7.00		77.00	77.00	77.00	*Length*
Pier Length	ft	*0.00*	*0.00*					
Pier Width	ft	*0.00*	*0.00*					
Pier Graffiti Height	ft	*0.00*	*0.00*					
Number of Piers	ft	*0.00*	*0.00*					
Total Abutment Area	**sq yd**	**303**	**175**		**73**	**73**	**61**	**sq yd**

CONCRETE REPAIR BY EPOXY INJECTION (51210600)

		JEF-7-33.46			
		Rear Abut	Fwd. Abut	<-Ea. Include wingwalls	
Estimate Measured Length	ft	150.00	150.00		From Inspection Notes
Contingency		0.20	0.20		
		180	**180**		

512E33000 - TYPE 2 WATERPROOFING, SY (BEHIND BACKWALL)

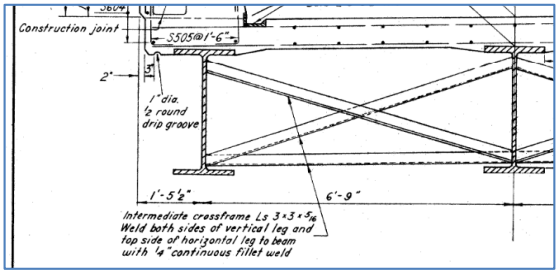
		JEF-7-33.46		
		Rear Abut	Fwd. Abut	
Backwall Replacement Length	ft	150.00	150.00	
Height	ft	3.00	3.00	
		50	**50**	(sf)
Phased construction joint, height	ft	4.00	4.00	
Width	ft	3.00	3.00	
		2	**2**	(sf)
	SUM:	**52**	**52**	(sf)

ITEM 514

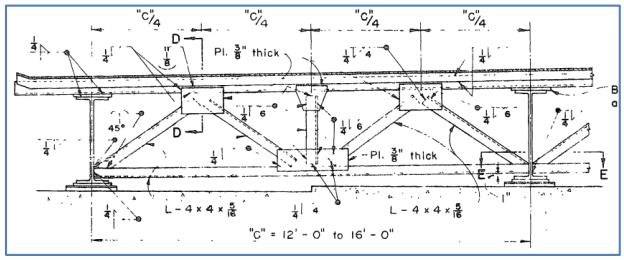
FIELD PAINTING AND PREPERATION OF EXISTING STRUCTURAL STEEL
(51400056, 51400060, 51400066 & 51400050)

		JEF-7-33.46
		Super (W36x280)
Beam Height	in	37.13
Web Thickness	in	0.88
Beam Flange Width	in	16.63
Flange Thickness	in	1.57
Beam Length/Location	ft	77.00
No. of Beams	no.	12
Total Beams	**sq ft**	**9423**

Int. Crossframe		(L3x3x0.3125)
Perimeter	in	12.00
Horiz. Length	in	81.00
Diag. Length	in	85.38
No. Bays		10
No. XF/bay		5
Sub-Total	**sq ft**	**1049**



End Crossframe		(L3x3x0.3125)
Perimeter	in	16.00
Horiz. Length	in	171.00
Vert. Length	in	32.00
Diag. Length	in	52.23
No. Bays		10
No. XF/bay		2
% Contingency / Conn. Plates		5%
Sub-Total	**sq ft**	**961**



TOTAL= 11433 (SF)

514 10000 FINAL INSPECTION REPAIR EACH

514.21 Final Inspection

A. The Engineer will select locations for coating removal for inspection of surface preparation and dry film thickness. For all structures in which the supporting members are rolled beams or girders, remove a minimum of one location per 150 linear feet (46 m) of beam line for webs and flanges and 5 percent of all cross frame assemblies and other secondary structural members shall be selected for destructive testing. For all other bridge types with structural steel, remove one location for every 1,200 square feet (108 m²) of steel surface for destructive testing. Do not perform destructive testing on areas that have been painted with an inorganic zinc prime coat.

Length	77.00	ft
No. of Beams	12	
Total Beams Length	924	ft
Insp. Repairs Beams =	7	
Insp. Repairs Crossframes =	1	
Total=	**8**	Each

514 00504 GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL MNHR

Assume=	10	min/lf (for heavy cleaning)
Total (12) Beams Length	924	ft
Total=	**154**	Hours

ITEM 516

PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL (51610000)			
		JEF-7-33.46	
		Rear Abut	Fwd. Abut
Backwall Replacement Length	ft	150.00	150.00
Wingwall Replacement Length	ft	0.00	0.00
		150	**150**

STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (51611210)		
		JEF-7-33.46
		Super
Expansion Joint Length	ft	300.00
Total Length	**ft**	**300**

2" PREFORMED EXPANSION JOINT FILLER (516E13900)			SF
		AS on WW interface	
		App Slab	Width
Expansion Joint Length	ft	50.00	1.5
Total	**sf**	**75**	(per abutment)

1" PREFORMED EXPANSION JOINT FILLER (516E13600)		SF
Median end face	5.4 sf	

ITEM 518

POROUS BACKFILL WITH FILTER FABRIC (51821200)				
		JEF-7-33.46		
		Rear Abut	Fwd. Abut	
Backfill width	ft	2.00	2.00	
Approach Slab Depth	ft	1.25	1.25	
Backfill height	ft	4.50	4.50	Assume 1ft below backwall less app. Slab
Backwall Length	ft	150.00	150.00	
Wingwall Length	ft	48.00	93.00	
Total Backfill Volume	**cu yd**	**66**	**81**	

6" PERFORATED CORRUGATED PLASTIC PIPE (51840000)				
		JEF-7-33.46		
		Rear Abut	Fwd. Abut	
Abutment & Wingwall length	ft	198	243	
Total Pipe Length	**ft**	**198**	**243**	ft

6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS (51840010)				
		JEF-7-33.46		
		Rear Abut	Fwd. Abut	
Daylight length	ft	20.00	20.00	
Total Pipe Length	**ft**	**20.00**	**20.00**	ft

ITEM 519

519 PATCHING CONCRETE STRUCTURE				
		JEF-7-33.46		
		Super	Rear Abut	Fwd. Abut
Patch Area from Inspection	sq ft	10.00	50.00	150.00
Total Abutment Area	**sq ft**	**10**	**50**	**150**

844	20000	GALVANIC ANODE PROTECTION	EACH

Spec assumed 12" spa. For 30 year, high corrosive, and select rebar density

Total Patch Area	210	sf
12" spacing is approx.	2	per sf, on grid
Total	420	Each

ITEM 526

REINFORCED CONCRETE APPROACH SLABS (T=15") (52625000)			
		JEF-7-33.46	
		Rear Abut	Fwd. Abut
Approach Slab width	ft	75.00	75.00
Approach Slab length	ft	25.00	25.00
Total Approach Slab Area	**sq yd**	**208**	**208**

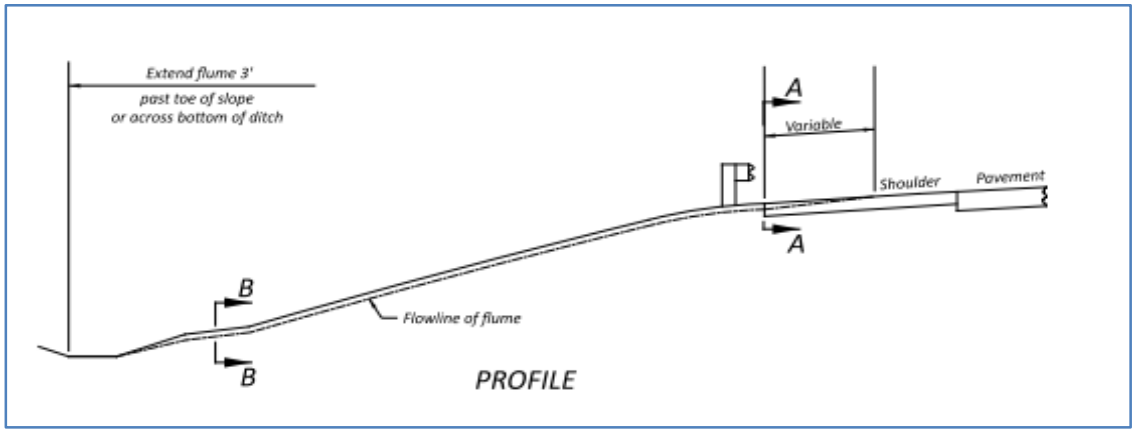
TYPE A INSTALLATION (52690010)			
		JEF-7-33.46	
		Rear Abut	Fwd. Abut
Installation Length	ft	145.00	145.00
Total Type A Length	**ft**	**145**	**145**

ITEM 601

601E21060 - TIED CONCRETE BLOCK MAT WITH TYPE 2 UNDERLAYMENT

JEF-7-33.46

		Rear Right	Rear Left	Fwd. Right	Fwd. Left
Horiz. Length	ft	18	0	51	22
Total Area	**sq yd**	**12**	**0**	**35**	**15**



*Assuming 2:1 typical approach embankment

ITEM 848

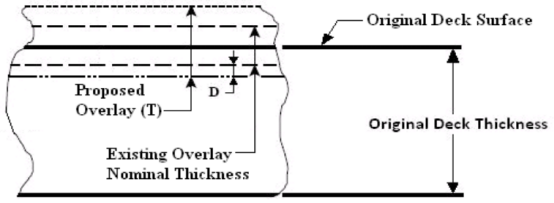
MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION (2.75" THICKNESS)			
SURFACE PREPARATION USING HYDRODEMOLITION (84830000)			
WEARING COURSE REMOVED, ASPHALT (3"± THICKNESS) (84850030)			
EXISTING CONCRETE OVERLAY REMOVED (2.25"± THICKNESS) (84850320)			
		JEF-7-33.46	
		Super	
Roadway Width	ft	67.67	
Deck length	ft	85.56	
Total Overlay with constant thickness (2.75") & Prep area (0.5")	**sq yd**	**643**	

MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY			
		JEF-7-33.46	
		Super	
GPR Repair Area Estimate	sq yd	121	
Total overlay below constant 2.75"	**cu yd**	**13**	Estimated from GPR

HAND CHIPPING (84850000)			
		JEF-7-33.46	
		Super	
30% of Variable Thickness Overlay	sq yd	36	
Total Nominal Hand Chipping	**sq yd**	**36**	

FULL-DEPTH REPAIR (84850200)			
		JEF-7-33.46	
		Super	
Assumed nominal full depth repair	ft	5.00	Non noted in GPR
Total Paint Area	**cu yd**	**5**	Assumed

REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE			
		JEF-7-33.46	
		Super	
GPR Repair Area Estimate	sq yd	121	
Total overlay below constant 2.75"	**sq yd**	**121**	



BRIDGE NO. JEF-7-33.46

REHABILITATION SUMMARY		ROADWAY		LEGEND
ITEM	UNIT	QUANT.	%	PARTIAL DEPTH REPAIR (TOPSIDE)
TOTAL AREA	ft^2	5517		
PARTIAL DEPTH REPAIR	ft^2	1089	19.7	FULL DEPTH REPAIR
FULL DEPTH REPAIR	ft^2	0	0	

BRIDGE NO. JEF-7-33.80

REHABILITATION SUMMARY		ROADWAY		LEGEND
ITEM	UNIT	QUANT.	%	PARTIAL DEPTH REPAIR (TOPSIDE)
TOTAL AREA	ft^2	42097		
PARTIAL DEPTH REPAIR	ft^2	8159	19.4	FULL DEPTH REPAIR
FULL DEPTH REPAIR	ft^2	0	0	

2. Jacking Loads – SFN 4101626

Project	60684672	Date	5/16/2023
Structure SFN	4101626	Designed by	GAD
Bridge number	JEF-7-33.46	Reviewed by	HER

Jacking Load per bearing (Abutment):

Assumptions and Objective:

1 Objective is to determine jacking loads per beam required for the replacement of bearings.
2 Bearings will be referbished and reset during phase 1 and phase 2 respectively.
3 No live load traffic will be allowed on bridge. Based on MOT traffic will be located on opposite bridge per phase.
4 Jacking load will include beams, cross-frames, concrete deck, barrier and median and approach slab.

Exterior Beam Jacking Load

- Superstructure:
  - DL = 46.0 kip (SW, SDL and MSM Included)

- Approach Slab:
  - Approach Slab Width 5.8 ft (Tributary between beams and overhang)
  - Approach Slab Depth 1.3 ft
  - Approach Slab Length 25.0 ft
  - Total Abutment Load 27.0 kip

- Total Dead Load to be Jacked 73.0 kip

- AASHTO Total Dead Load Factor for jacking loads 1.5
  - Jacking force at exterior beam = 109 kip

Interior Beam Jacking Load

- Superstructure:
  - DL = 50.0 kip (SW, SDL and MSM Included)

- Approach Slab:
  - Approach Slab Width 6.8 ft (Tributary between beams)
  - Approach Slab Depth 1.3 ft
  - Approach Slab Length 25.0 ft
  - Total Abutment Load 63.3 kip

- Total Dead Load to be Jacked 113.3 kip
- AASHTO Total Dead Load Factor for jacking loads 1.5
  - Jacking force at Interior beam = 170 kip

Project	60684672	Date	5/16/2023
Structure SFN	4101626	Designed by	GAD
Bridge number	JEF-7-33.46	Reviewed by	HER

Controlling Jacking Load

- Jacking force at Exterior beam 109 kip
- Jacking force at Interior beam 170 kip
- Jacking force at Abutments 170 kip (At each beam/bearing location)

- Add 50% to the total factored Dead Load 255 kip

  * The assumption is to allow for redundancy should any of the adjacent jacks fail.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

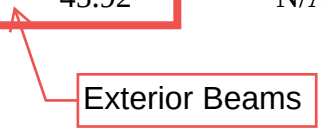
Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Right)
Member Name: Member 1
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	45.98	N/A	33.32(T)	0.00(L)	25.000	0.000
2	45.92	N/A	33.32(T)	0.00(L)	25.000	0.000



Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:

Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Right)
Member Name: Member 2
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	49.97	N/A	46.45(T)	0.00(L)	25.000	0.000
2	50.00	N/A	46.45(T)	0.00(L)	25.000	0.000

Interior Beams

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:

(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Right)
Member Name: Member 3
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	49.98	N/A	59.83(T)	0.00(L)	25.000	0.000
2	49.99	N/A	59.83(T)	0.00(L)	25.000	0.000

Note:

"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Right)
Member Name: Member 4
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)

1	49.99	N/A	59.83(T)	0.00(L)	25.000	0.000
2	49.98	N/A	59.83(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Right)
Member Name: Member 5
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Interior Beams

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)
1	50.00	N/A	43.78(T)	0.00(L)	25.000	0.000
2	49.97	N/A	43.78(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Right)
Member Name: Member 6

Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)
1	40.17	N/A	22.62(T)	0.00(L)	25.000	0.000
2	40.23	N/A	22.62(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge

Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Left)
Member Name: Member 1
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)
1	40.21	N/A	22.62(T)	0.00(L)	25.000	0.000
2	40.15	N/A	22.62(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31

Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Left)
Member Name: Member 2
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)
1	49.95	N/A	43.78(T)	0.00(L)	25.000	0.000
2	49.92	N/A	43.78(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460

Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Left)
Member Name: Member 3
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	49.91	N/A	59.83(T)	0.00(L)	25.000	0.000
2	49.88	N/A	59.83(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Left)
Member Name: Member 4
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	49.88	N/A	59.83(T)	0.00(L)	25.000	0.000
2	49.91	N/A	59.83(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Left)
Member Name: Member 5
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	49.92	N/A	46.45(T)	0.00(L)	25.000	0.000
2	49.96	N/A	46.45(T)	0.00(L)	25.000	0.000

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33460
NBI Structure ID: JEF-00007-33460
Bridge ID: 4101626

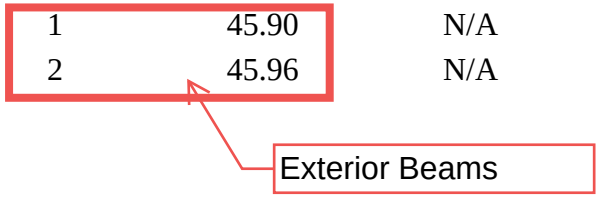
Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:17:31
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:20:07

Structure Definition Name: Span 1 (Left)
Member Name: Member 6
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	45.90	N/A	33.32(T)	0.00(L)	25.000	0.000
2	45.96	N/A	33.32(T)	0.00(L)	25.000	0.000



Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

3. Elevation Tables – SFN 4101626

AECOM

Bridge File	JEF-7-33.46-33.80
Designation	JEF-7

GeopakChain	
Geopak/Profile	

Calculated By: NDT Date: 5/11/2023
Checked By: HER Date: 6/8/2023

hide->> hide->>

Span 1	75.0000

SPAN	GIRDER / LOCATION	GIRDER POINT	hide	STATION	PROFILE GRADE	OFFSET (FROM PROFILE GRADE LINE - N.B. LANES)	DECK X-SLOPE	FINISHED DECK ELEVATION	BEAM GRADE	ELEVATION ALONG BEAM (STRAIGHT GRADE)	DELTA (VERTICAL) [INCHES]	DEAD STEEL ONLY		DEFLECTION DUE TO REMAINING DL [INCHES]	SCREED ELEVATION	DECK THICKNESS (INCHES)	TOP OF HAUNCH ELEVATION	BLOCKING DIMENSION [FEET]
AS South Bridge (Rear)					PROFILE GRADE			TOP APP	TOP SS									0.0000
1A*	RA		1A*RA		739.9593	32.8300	-0.016	739.43	738.18									
1B	RA		1BRA		739.4945	32.8300	-0.016	738.97										
1C*	RA		1C*RA		739.0297	32.8300	-0.016	738.50	737.25									
1D	RA		1DRA		738.1707	32.8300	-0.016	737.65										
2A*	RA		2A*RA		736.5591	1.5000	0.016	736.58	735.33									
2B	RA		2BRA		736.1262	1.5000	0.016	736.15										
2C*	RA		2C*RA		735.6934	1.5000	0.016	735.72	734.47									
2D	RA		2DRA		734.8935	1.5000	0.016	734.92										
3A*	RA		3A*RA		736.2701	1.5000	0.016	736.29	735.04									
3B	RA		3BRA		735.8372	1.5000	0.016	735.86										
3C*	RA		3C*RA		735.4628	1.5000	0.016	735.49	734.24									
3D	RA		3DRA		734.6045	1.5000	0.016	734.63										
4A*	RA		4A*RA		733.5047	34.5000	-0.016	732.95	731.70									
4B	RA		4BRA		733.2699	32.8300	-0.016	732.74										
4C*	RA		4C*RA		732.9092	32.8300	-0.016	732.38	731.13									
4D	RA		4DRA		732.0371	32.8300	-0.016	731.51										
AS South Bridge (Forward)					PROFILE GRADE			TOP APP	TOP SS									#VALUE!
1E	FA		1EFA		733.9131	32.8300	-0.016	733.39										
1F*	FA		1F*FA		733.1132	32.8300	-0.016	732.59	731.34									
1G	FA		1GFA		732.6803	32.8300	-0.016	732.16										
1H*	FA		1H*FA		732.2475	32.8300	-0.016	731.72	730.47									
2E	FA		2EFA		730.6680	1.5000	-0.016	730.64										
2F*	FA		2F*FA		729.8542	1.5000	-0.016	729.83	728.58									
2G	FA		2GFA		729.4353	1.5000	-0.016	729.41										
2H*	FA		2H*FA		729.0747	1.5000	-0.016	729.05	727.80									
3E	FA		3EFA		730.4416	1.5000	-0.016	730.42										
3F*	FA		3F*FA		729.5695	1.5000	-0.016	729.55	728.30									
3G	FA		3GFA		729.2089	1.5000	-0.016	729.18										
3H*	FA		3H*FA		728.8482	1.5000	-0.016	728.82	727.57									
4E	FA		4EFA		727.9034	32.8300	-0.016	727.38										
4F*	FA		4F*FA		727.1177	32.8300	-0.016	726.59	725.34									
4G	FA		4GFA		726.7928	32.8300	-0.016	726.27										
4H*	FA		4H*FA		726.4741	32.8300	-0.016	725.95	724.70									

4. Thermal Calculations – SFN 4101626

Expansion Joint Calculations - Thermal SFN 4101626

Span Arrangement (ft)

75

Rear and Forward Abutment - Left

alpha=	0.0000065	in./in./degF
delta T=	10	deg increment
EL=	75	ft
delta L=	0.059	in.
Skew =	56.84	deg

For information only, Assume:			A	
Set temp=	70	deg F =	1.61	in.

JOINT SETTING TABLE			*Requires a 3" seal
TEMP	Along Span A*	A	
30˚F	3.18 in.	1.74 in.	
40˚F	3.12 in.	1.71 in.	
50˚F	3.06 in.	1.67 in.	
60˚F	3.00 in.	1.64 in.	
70˚F	2.94 in.	1.61 in.	(Min required joint opening Dim. A is 1.61" say at 70 degrees)
80˚F	2.89 in.	1.58 in.	
90˚F	2.83 in.	1.55 in.	(Per SCD min installation dim A = 1.5")

Rear and Forward Abutment - Right

EL=	75	ft
delta T=	10	deg increment
delta L=	0.059	in.
Skew =	62.89	deg

For information only, Assume:			A	
Set temp=	70	deg F =	1.61	in.

JOINT SETTING TABLE			*Requires a 3" seal
TEMP	Along Span A*	A	
30˚F	3.77 in.	1.72 in.	
40˚F	3.71 in.	1.69 in.	
50˚F	3.65 in.	1.66 in.	
60˚F	3.59 in.	1.64 in.	
70˚F	3.53 in.	1.61 in.	(Min required joint opening Dim. A is 1.61" say at 70 degrees)
80˚F	3.47 in.	1.58 in.	
90˚F	3.42 in.	1.56 in.	(Per SCD min installation dim A = 1.5")

Joint opening at Installation

Joint Opening	1.61 in.	
Retainer Width	1.50 in.	
Total opening	4.61 in.	4 5/8

5. Estimated Quantities – SFN 4101650

Bridge No: JEF-7-33.80
Proj. No.: 60684672

564 White Pond Dr.
Akron, Ohio 44320

						QUANTITIES				CALC BY:	JC	4/13/2026
										CHECK BY:	JM	4/15/2026
ITEM	EXT.	PARTICIPATION	TOTAL	UNIT	DESCRIPTION	JEF-7-33.80						REF. SHEET
		01/NHS				ABUTMENTS		PIERS	SUPER.	GENERAL		
						REAR	FWD.					
201	11001	LS	LS		CLEARING AND GRUBBING, AS PER PLAN					LS		
202	11203	LS	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN					LS		
202	22900	387	387	SY	APPROACH SLAB REMOVED	192	195					
202	23500	387	387	SY	WEARING COURSE REMOVED	192	195					
503	11101	LS	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN					LS		
503	21101	238	238	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	96	141					
509	10000	52,694	52,694	LB	EPOXY COATED STEEL REINFORCEMENT	6374	6900		39420			
509	30030	8,871	8,871	FT	NO. 5 DEFORMED GFRP REINFORCEMENT				8871			
509	20001	1,000		LB	CONCRETE REINFORCEMENT, REPLACEMENT OF EXISTING CONCRETE REINFORCEMENT, AS PER PLAN					1000		
510	10000	700	700	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	248	452					
511	34444	113	113	CY	CLASS QC2 CONCRETE, BRIDGE DECK	55	58					
511	34450	149	149	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	11	24		114			
511	45710	95	95	CY	CLASS QC1 CONCRETE, ABUTMENT	36	59					
512	10100	3,356	3,356	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	224	982	17	2132			
512	10600	84	84	FT	CONCRETE REPAIR BY EPOXY INJECTION	24	60					
512	33000	77	77	SY	TYPE 2 WATERPROOFING	32	45					
512	74001	1,876	1,876	SY	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN	105	194	404	1172			
513	21001	24	24	EACH	TRIMMING OF BEAM END, AS PER PLAN	12	12					
513	90000	500	500	LB	STRUCTURAL STEEL, MISC.:, AS PER PLAN				500			
514	00050	2,576	2,576	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL				2576			
514	00056	2,576	2,576	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT				2576			
514	00060	2,576	2,576	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT				2576			
514	00066	2,576	2,576	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT				2576			
514	00504	40	40	MNHR	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL				40			
514	10000	4	4	EACH	FINAL INSPECTION REPAIR				4			
516	10000	391	391	FT	PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL	144	248					
516	11211	216	216	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN				216			
516	13600	16	16	SF	1" PREFORMED EXPANSION JOINT FILLER	8	8					
516	13900	150	150	SF	2" PREFORMED EXPANSION JOINT FILLER	75	75					
516	31001	120	120	FT	JOINT SEALER, AS PER PLAN	15	105					
516	45305	24	24	EACH	REFURBISH BEARING DEVICE, AS PER PLAN	12	12					
516	46700	24	24	EACH	RESET BEARING	12	12					
516	47001	LS	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN					LS		
518	12500	95	95	EACH	SCUPPER, MISC.: CLEAN OUT				95			
518	21200	130	130	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	48	83					

ITEM	EXT.	PARTICIPATION	TOTAL	UNIT	DESCRIPTION	JEF-7-33.80					REF. SHEET
						ABUTMENTS		PIERS	SUPER.	GENERAL	
		01/NHS				REAR	FWD.				
518	40000	391	391	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	144	248				
518	40010	40	40	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	20	20				
519	11101	1,354	1,354	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	60	200	115	979		
526	25001	417	417	SY	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN	208	208				
526	90010	217	217	FT	TYPE A INSTALLATION	87	130				
SPECIAL	53000200	LS	LS		STRUCTURES: WORK PLATFORM						
SPECIAL	53000200	LS	LS		STRUCTURES: WORK PLATFORM: CONSTRUCTION ACCESS TO BRIDGE						
601	32104	2,698		CY	ROCK CHANNEL PROTECTION, TYPE B WITH GEOTEXTILE FABRIC					2698	
601	32110	1,213		CY	ROCK CHANNEL PROTECTION, TYPE B WITH AGGREGATE FILTER					1213	
SPECIAL	69098400	LS	LS		PRE AND POST CONSTRUCTION RIVER BOTTOM SURVEYS					LS	
844	20000	750		EACH	GALVANIC ANODE PROTECTION					750	
848	10000	4,674	4,674	SY	MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION (2.75'' THICKNESS)				4674		
848	20001	4,674	4,674	SY	SURFACE PREPARATION USING HYDRODEMOLITION, AS PER PLAN				4674		
848	30000	101	101	CY	MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY				101		
848	50000	272	272	SY	HAND CHIPPING				272		
848	50100	LS	LS		TEST SLAB					LS	
848	50200	10	10	CY	FULL-DEPTH REPAIR				10		
848	50300	4,674	4,674	SY	WEARING COURSE REMOVED, ASPHALT (3'' THICKNESS)				4674		
848	50320	4,674	4,674	SY	EXISTING CONCRETE OVERLAY REMOVED (2.25'' THICKNESS)				4674		
848	50340	907	907	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY				907		

ITEM 202

APPROACH SLAB REMOVED (202E22900)			
		JEF-7-33.80	
		Rear Abut	Fwd. Abut
A1	sq ft	847	882
A2	sq ft	878	874
Sum Measured Area	sq ft	1725	1756
Total Deck Area	**sq yd**	**192**	**195**

WEARING SURFACE REMOVAL (202E23501)			
*Asphalt on Approach Slabs Only. Deck removal under Section 848.			
		JEF-7-33.80	
		Rear Abut	Fwd. Abut
		1725	1756
Total Deck Area	**sq yd**	**192**	**195**

ITEM 503

UNCLASSIFIED EXCAVATION (503E21100)				
		JEF-7-33.80		
		Rear Abut	Fwd. Abut	
Excavation length	ft	90.00	132.00	
Backwall replacement Height	ft	4.75	4.75	
Profile Excavation area	ft	28.91	28.91	Assume 1.5ft below backwall height and 1.5ft off backwall face.
Total Volume	**cu yd**	**96**	**141**	

COFFERDAMS AND EXCAVATION BRACING				
Total height above ground	ft	6.25	Assume 1.5' below backwall	10.42
Total height below ground	ft	4.17		
Total wall length	ft	34.50	8.625	
Cost per area	$/sq ft.	$ 50.00		
Total estimate cost		**$ 17,968.750**		
		$ 8,984.375	=> Assume 10 each	

ITEM 509

EPOXY COATED REINFORCING STEEL (509E10000)

JEF-7-33.80 Stage 2 Estimate by Volume

		Backwall & Wingwall		Ext. Parapet		
		Rear Abut	Fwd. Abut	Rear Abut	Fwd. Abut	
Concrete Volume	cu. yd.	36.22	58.88	11.04	23.56	
Reinforcing	lbs/cy	185	185	200	200	
Total	lbs	6700	10893	2208	4713	24514

JEF-7-33.80 Final Bar Lists

		Abut. & Wingwall		Deck		Parapet		
		Left	Right	Left	Right	Left	Right	
Schedule		6068	7206	10413	10510	9252	9245	<-From Plan Sheet
Total Sub (Rear)	lbs	6374						
Total Sub (Forward)	lbs	6900						
Total Superstructure	lbs	39420						

LEFT BRIDGE

	REAR	FORWARD	TOTAL #	WEIGHT	REAR WT.	FWD WT.	
A501	10	10	20	626	313	313	
A512		4	4	34	0	34	
A513		4	4	28	0	28	
A514		4	4	56	0	56	
A515		4	4	32	0	32	
A516	10		10	177	177	0	
A517	8		8	46	46	0	
A518		10	10	304	0	304	
A601	97	133	230	1411	595	816	
A602	1		1	12	12	0	
A603	47	58	105	1091	488	603	
A607	2		2	25	25	0	
A608	2		2	21	21	0	
A609	3		3	321	321	0	
A610	1		1	105	105	0	
A611	1		1	121	121	0	
A617		1	1	15	0	15	
A618		1	1	12	0	12	
A622		4	4	573	0	573	
A623		3	3	39	0	39	
A624		1	1	88	0	88	
A625		1	1	62	0	62	
A626		8	8	101	0	101	
A801	25		25	384	384	0	
A803		24	24	384	0	384	
					2608	**3460**	LBS.
				Total Check:	6068		

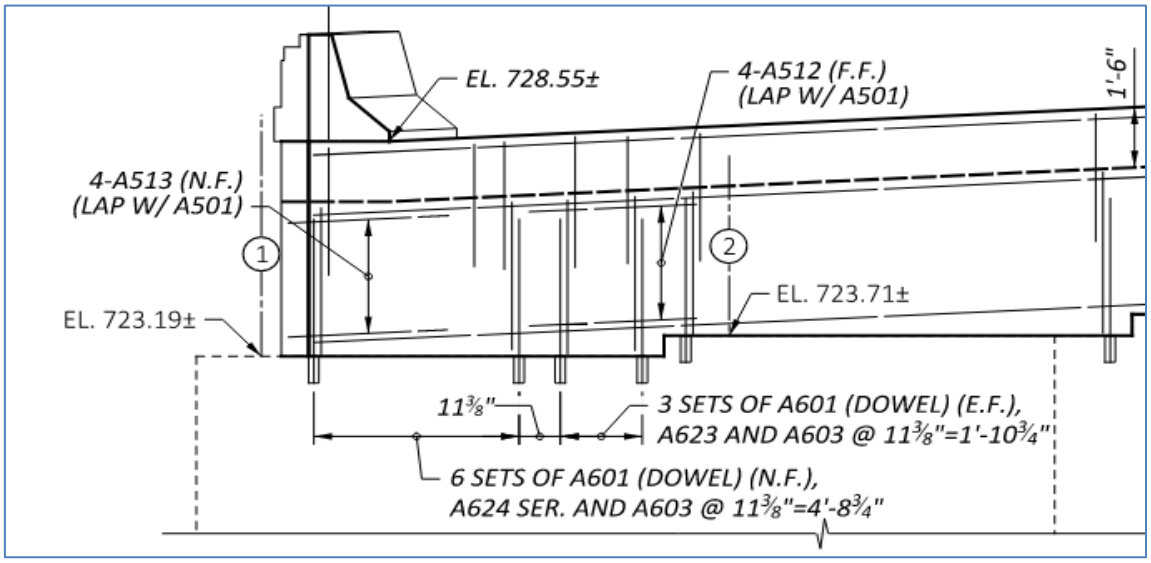
RIGHT BRIDGE

	REAR	FORWARD	TOTAL #	WEIGHT	REAR WT.	FWD WT.	
A501	10	20	30	939	313	626	
A502	10		10	193	193	0	
A503	4		4	38	38	0	
A504	4		4	16	16	0	
A505	4		4	29	29	0	
A506	2		2	11	11	0	
A507		10	10	245	0	245	
A508		4	4	28	0	28	
A509		4	4	26	0	26	
A510		4	4	22	0	22	
A511		1	1	5	0	5	
			0				
A601	107		107	767	767	0	
A602	46		46	547	547	0	
A603	50		50	1319	1319	0	
A604	1		1	48	48	0	
A605	1		1	15	15	0	
A606	3		3	32	32	0	
A607	1		1	12	12	0	
A608	1		1	11	11	0	
A612		146	146	950	0	950	
A613		5	5	911	0	911	
A614		1	1	13	0	13	
A615		1	1	13	0	13	
A616		1	1	17	0	17	
A617		1	1	15	0	15	
A618		1	1	12	0	12	
A619		1	1	71	0	71	
A620		1	1	51	0	51	
A621		1	1	32	0	32	
A801	27		27	415	415	0	
A802		27	27	403	0	403	
					3766	**3440**	LBS.
				Total Check:	7206		

ITEM 510

510	10000	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	EACH

NB Rear	SB Rear	SB Fwd	NB Fwd
8	2	12	8
4	72	6	140
16	20	88	10
4	4	10	16
90	8	2	8
10	10		
		App Slab	
		24	40
		24	40
			24
132	**116**	**166**	**286** <-Sum Total



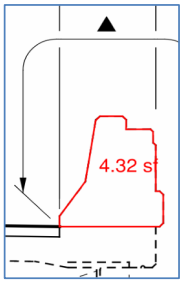
Example dowel schematic, typical all abutments

ITEM 511

CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)

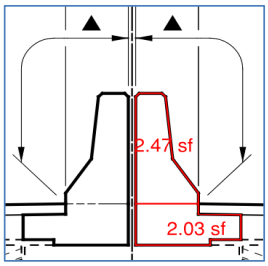
Barriers on Wingwalls+Abutment

		JEF-7-33.80		
		Rear Abut	Fwd. Abut	
Barrier Area	sq ft	2.85	2.85	<-- 3' exterior railing ends &on wingwalls
Median Area	sq ft	2.47	2.47	
Barrier Length	ft	56.00	119.50	
Median Length	ft	56	120	
Volume	**cu ft**	**298.13**	**636.22**	
Volume	**cu yd**	**11**	**24**	



Median on Bridge Deck

		JEF-7-33.80		
		Left	Right	
Barrier Area	sq ft			
Median Area	sq ft	2.47	2.47	<--Entire length bridge deck median
Barrier Length	ft			
Median Length	ft	620	620	
Volume	**cu ft**	**1531.40**	**1531.40**	
Volume	**cu yd**	**57**	**57**	



CLASS QC1 CONCRETE, ABUTMENT

Abutment Backwall and Wingwall

		JEF-7-33.80	
		Rear Abut	Fwd. Abut
Backwall Repacement Height	ft	4.75	4.75
Wingwall Repacement Height	ft	2.00	2.00
Backwall Length	ft	88.00	128.00
Wingwall Length	ft	56.00	119.50
Backwall Width	ft	1.75	1.75
Wingwall Width	ft	2.20	2.20
Total Abutment Volume	cu yd	**36**	**59**

CLASS QC2 CONCRETE, BRIDGE DECK <--This is summed and quantified for "Bridge Deck" including only the 3' deck end

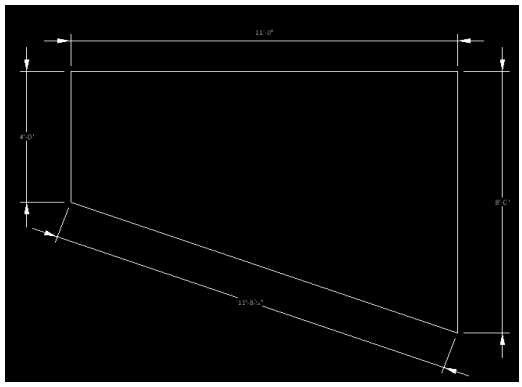
		Rear Abut	Fwd. Abut	
Width	ft	3.00	3.00	
Thickness	ft	0.81	0.81	
Length	ft	92.00	134.15	(CAD measured)
	(CY)	**8.31**	**12.11**	
		Left	Right	
Area	sf	2.03	2.03	<--Median portion "overhang" deck
Length	ft	614.00	614.00	
	(CY)	**46.16**	**46.16**	
	SUM TOTAL=	**55**	**58**	(CY)

ITEM 512

SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (51210100)

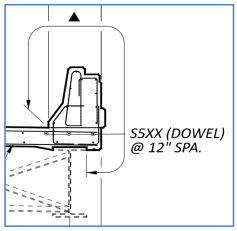
Existing and New Barrier, Backwall and New Wingwalls

		JEF-7-33.80			
		Super	Rear Abut	Fwd. Abut	Piers
Barrier Length	ft	1244.64	111.99	239.00	*0.00*
Median Length	ft	1244.64	56.00	119.50	*0.00*
Barrier Perimeter	ft	8.20	8.20	8.20	*0.00*
Median Perimeter	ft	7.22	7.22	7.22	*0.00*
Backwall Height	ft	*0.00*	4.75	4.75	*0.00*
Backwall Length	ft	*0.00*	88.00	128.00	*0.00*
Abutment Length	ft	*0.00*	92.00	133.00	*0.00*
Abutment Height	ft	*0.00*	2.00	30.61	*0.00*
Bearing Seat width	ft	*0.00*	4.25	4.25	*0.00*
Wingwall Area (S)	ft	*0.00*	*0.00*	*0.00*	*0.00*
Wingwall Area (N)	ft	*0.00*	86	1210	*0.00*
Outside Pier Cap Face width	sq ft	*0.00*	*0.00*	*0.00*	3.00
Outside Pier Cap Face depth	sq ft	*0.00*	*0.00*	*0.00*	5.00
Top Pier Cap Face area	sq ft	*0.00*	*0.00*	*0.00*	0.00
No. Pier cap ends to seal	no.	*0.00*	*0.00*	*0.00*	14.00
Total Abutment Area	**sq yd**	**2132**	**224**	**982**	**17**



REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN (51274001)

		Substructure				Superstructure		
		Rear Abut	Fwd. Abut	Piers		Left Ext.	Right Ext.	
Abutment Length	ft	135.00	250.00	*0.00*		8.50	8.50	*Perimeter*
Abutment Graffiti Height	ft	7.00	7.00	*0.00*		620.00	620.00	*Length*
Pier Length	ft	*0.00*	*0.00*	28.00				
Pier Width	ft	*0.00*	*0.00*	4.50				
Pier Graffiti Height	ft	*0.00*	*0.00*	7.00				
Number of Piers	ft	*0.00*	*0.00*	8.00	*			
Total Abutment Area	**sq yd**	**105**	**194**	**404**		**586**	**586**	**sq yd**



* - 5, 6, 7 were scoped. Added 1 for Pier 1

CONCRETE REPAIR BY EPOXY INJECTION (51210600)

		JEF-7-33.80		
		Rear Abut	Fwd. Abut	
Estimate Measured Length	ft	20.00	50.00	From Inspection Notes
Contingency		0.20	0.20	
		24	**60**	

512E33000 - TYPE 2 WATERPROOFING, SY (BEHIND BACKWALL)

		JEF-7-33.80	
		Rear Abut	Fwd. Abut
Backwall Replacement Length	ft	88.00	128.00
Backwall Replacement Height	ft	3.00	3.00
		30	**43**

ITEM 514

FIELD PAINTING AND PREPERATION OF EXISTING STRUCTURAL STEEL
(51400056, 51400060, 51400066 & 51400050)

		JEF-7-33.80		
		Super (W36x182)	Super (W36x280)	
Beam Height	in	36.38	37.13	
Web Thickness	in	0.73	0.88	
Beam Flange Width	in	12.10	16.63	
Flange Thickness	in	1.18	1.57	
Beam Length/Location	ft	10.00	10.00	
No. of Locations	no.	12	12	
Total Paint Area	**sq ft**	**1205**	**1371**	Add 12% for Cross-frame painting
			2576	

514	**10000**	**FINAL INSPECTION REPAIR**	**EACH**
Length	10	ft	
No. of Locations	24		
Total Length	240	ft	
Insp. Repairs Beams=	2		
Insp. Repairs Xframes=	2		
Total=	**4**		

514	**00504**	**GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL**	**MNHR**
Assume=	10	min/lf (for heavy cleaning)	
Total Length=	240		
Total=	**40**		

ITEM 516

PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL (51610000)		JEF-7-33.80	
		Rear Abut	Fwd. Abut
Backwall Replacement Length	ft	88.00	128.00
Wingwall Replacement Length	ft	56.00	119.50
		144	**248**

STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP		JEF-7-33.80
		Super
Expansion Joint Length	ft	216.00
Length	**ft**	**216**

1" PREFORMED EXPANSION JOINT FILLER (516E13600)			SF
End face of Median barrier	5.4	sf	(each abutment)
End face of railings	2.7	sf	
Total	8.1	sf	

2" PREFORMED EXPANSION JOINT FILLER (516E13900)			SF
App slab length, interface to Wingwall	50	ft	(each abutment)
Width	1.5	ft	
Total	75	sf	

ITEM 518

POROUS BACKFILL WITH FILTER FABRIC (51821200)				
		JEF-7-33.80		
		Rear Abut	Fwd. Abut	
Backfill width	ft	2.00	2.00	
Approach Slab Depth	ft	1.25	1.25	
Backfill height	ft	4.50	4.50	Assume 1ft below backwall less app. Slab
Backwall Length	ft	88.00	128.00	
Wingwall Length	ft	56.00	119.50	
Total Backfill Volume	**cu yd**	**48**	**83**	

6" PERFORATED CORRUGATED PLASTIC PIPE (51840000)				
		JEF-7-33.80		
		Rear Abut	Fwd. Abut	
Abutment & Wingwall length	ft	144	248	
Total Pipe Length	**ft**	**144**	**248**	ft

" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS (51840010				
		JEF-7-33.80		
		Rear Abut	Fwd. Abut	
Daylight length	ft	20.00	20.00	
Total Pipe Length	**ft**	**20.00**	**20.00**	ft

ITEM 519

519 PATCHING CONCRETE STRUCTURE					
		JEF-7-33.80			
		Super	Rear Abut	Fwd. Abut	Piers
Patch Area from Inspection	sq ft	979.48	60.00	200.00	115.00
Total Abutment Area	**sq ft**	**979**	**60**	**200**	**115**

1354

844	20000	GALVANIC ANODE PROTECTION	EACH

Spec assumed 12" spa. For 30 year, high corrosive, and select rebar density

Total patch area, sub.	375	sf
12" spacing is approx.	2	per sf, on grid
Total	**750**	

ITEM 526

REINFORCED CONCRETE APPROACH SLABS (T=15") (52625000)			
		JEF-7-33.80	
		Rear Abut	Fwd. Abut
Approach Slab width	ft	75.00	75.00
Approach Slab length	ft	25.00	25.00
Total Approach Slab Area	**sq yd**	**208**	**208**

TYPE A INSTALLATION (52690010)			
		JEF-7-33.80	
		Rear Abut	Fwd. Abut
Installation Length	ft	87.00	130.00
Total Type A Length	**ft**	**87**	**130**

ITEM 848

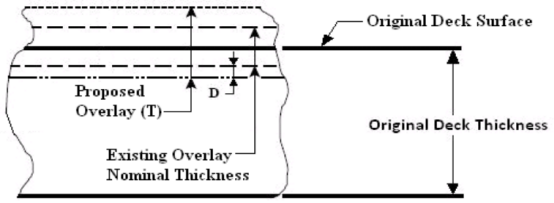
MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION (2.75" THICKNESS)			
SURFACE PREPARATION USING HYDRODEMOLITION (84830000)			
WEARING COURSE REMOVED, ASPHALT (3"± THICKNESS) (84850030)			
EXISTING CONCRETE OVERLAY REMOVED (2.25"± THICKNESS) (84850320)			
		JEF-7-33.80	
		Super	
Roadway Width	ft	67.60	
Deck length	ft	622.32	
Total Overlay with constant thickness (2.75") & Prep area (0.5")	**sq yd**	**4674**	

MICRO SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY			
		JEF-7-33.80	
		Super	
GPR Repair Area Estimate	sq yd	907	
Total overlay below constant 2.75"	**cu yd**	**101**	Estimated from GPR

HAND CHIPPING (84850000)			
		JEF-7-33.80	
		Super	
30% of Variable Thickness Overlay	sq yd	272	
Total Nominal Hand Chipping	**sq yd**	**272**	

FULL-DEPTH REPAIR (84850200)			
		JEF-7-33.80	
		Super	
Assumed nominal full depth repair	ft	10.00	Non noted in GPR
Total Paint Area	**cu yd**	**10**	Assumed

REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE			
		JEF-7-33.80	
		Super	
GPR Repair Area Estimate	sq yd	907	
Total overlay below constant 2.75"	**sq yd**	**907**	



BRIDGE NO. JEF-7-33.46

REHABILITATION SUMMARY		ROADWAY		LEGEND
ITEM	UNIT	QUANT.	%	PARTIAL DEPTH REPAIR (TOPSIDE)
TOTAL AREA	ft^2	5517		
PARTIAL DEPTH REPAIR	ft^2	1089	19.7	FULL DEPTH REPAIR
FULL DEPTH REPAIR	ft^2	0	0	

BRIDGE NO. JEF-7-33.80

REHABILITATION SUMMARY		ROADWAY		LEGEND
ITEM	UNIT	QUANT.	%	PARTIAL DEPTH REPAIR (TOPSIDE)
TOTAL AREA	ft^2	42097		
PARTIAL DEPTH REPAIR	ft^2	8159	19.4	FULL DEPTH REPAIR
FULL DEPTH REPAIR	ft^2	0	0	

6. Jacking Loads – SFN 4101650

Project	60684672	Date	5/17/2023
Structure SFN	4101650	Designed by	GAD
Bridge number	JEF-7-33.80	Reviewed by	

Jacking Load per bearing (Abutment):

Assumptions and Objective:

1 Objective is to determine jacking loads per beam required for the replacement of bearings.
2 Bearings will be referbished and reset during phase 1 and phase 2 respectively.
3 No live load traffic will be allowed on bridge. Based on MOT traffic will be located on opposite bridge per phase.
4 Jacking load will include beams, cross-frames, concrete deck, barrier and median and approach slab.

Maximum Beam Jacking Loads

	Left Bridge			Right Bridge		
	Ext.	Interior	Max	Ext.	Interior	Max
Rear Abutment	25.65	28.23	28.23	25.64	28.24	28.24
Fwd. Abutment	35.37	43.8	43.8	42.38	50.76	50.76

Left Bridge Jacking Loads

- Superstructure:
  - Rear Abut. DL = 28.2 kip (SW, SDL and MSM Included)
  - Fwd. Abut. DL = 43.8 kip (SW, SDL and MSM Included)

- Approach Slab:
  - Approach Slab Width 5.8 ft (Tributary between beams and overhang)
  - Approach Slab Depth 1.3 ft
  - Approach Slab Length 25.0 ft
  - Total Abutment Load 27.0 kip

- Rear Abut. Total Dead Load to be Jacked 55.2 kip
- Fwd. Abut. Total Dead Load to be Jacked 70.8 kip

- AASHTO Total Dead Load Factor for jacking loads 1.5
  - Rear Abut. Jacking force at exterior beam = 83 kip
  - Fwd. Abut. Jacking force at exterior beam = 106 kip

Left Bridge Jacking Loads

- Superstructure:
  - Rear Abut. DL = 28.2 kip (SW, SDL and MSM Included)
  - Fwd. Abut. DL = 50.8 kip (SW, SDL and MSM Included)

Project	60684672	Date	5/17/2023
Structure SFN	4101650	Designed by	GAD
Bridge number	JEF-7-33.80	Reviewed by	

- Approach Slab:
  - Approach Slab Width 5.8 ft (Tributary between beams and overhang)
  - Approach Slab Depth 1.3 ft
  - Approach Slab Length 25.0 ft
  - Total Abutment Load 27.0 kip

- Rear Abut. Total Dead Load to be Jacked 55.2 kip
- Fwd. Abut. Total Dead Load to be Jacked 77.7 kip

- AASHTO Total Dead Load Factor for jacking loads 1.5
  - Rear Abut. Jacking force at exterior beam = 83 kip
  - Fwd. Abut. Jacking force at exterior beam = 117 kip

Controlling Jacking Load

Rear Abutment

- Jacking force Left Rear 83 kip
- Jacking force Right Rear 83 kip
- Jacking force at Rear Abutments 83 kip (At each beam/bearing location)

  - Add 50% to the total factored Dead Load 124 kip

    * The assumption is to allow for redundancy should any of the adjacent jacks fail.

Forward Abutment

- Jacking force Left Forward 106 kip
- Jacking force Right Forward 117 kip
- Jacking force at Fwd. Abutments 117 kip (At each beam/bearing location)

  - Add 50% to the total factored Dead Load 175 kip

    * The assumption is to allow for redundancy should any of the adjacent jacks fail.

Project	60684672	Date	5/17/2023
Structure SFN	4101650	Designed by	GAD
Bridge number	JEF-7-33.80	Reviewed by	

AECOM

Jacking Load per bearing (Piers):

Assumptions and Objective:

1. Objective is to determine jacking loads per beam required for the reset of bearings.
2. Bearings will be reset during phase 1 and phase 2 respectively.
3. No live load traffic will be allowed on bridge. Based on MOT traffic will be located on opposite bridge per phase.
4. Jacking load will include beams, cross-frames, concrete deck & sidewalk, barrier and median, diaphragms and approach slab. See AASHTO 3.4.3.1
5. Because deck replacement is similar to existing, with thicker deck, assume new design loading as a conservative approach.

Maximum Beam Jacking Loads

	Left Bridge			Right Bridge		
	Ext.	Interior	Max	Ext.	Interior	Max
Pier 1	91.08	99.72	99.72	91.13	99.67	99.67
Pier 2	89.81	98.32	98.32	89.93	98.43	98.43
Pier 3 thru Pier 5	93.08	103.67	103.67	91.79	98.59	98.59
Pier 6	78.24	83.61	83.61	84.81	110.98	110.98
Pier 7	97.25	106.79	106.79	118.82	140.77	140.77

Factored Beam Jacking Loads

- AASHTO Total Dead Load Factor for jacking loads 1.5

- Factored Jacking Loads

	Left	Right	Max	Factor		(SW, SDL and MSM Included)
- Pier 1	99.72	99.67	99.72	150	kip	
- Pier 2	98.32	98.43	98.43	148	kip	
- Pier 3 thru Pier 5	103.67	98.59	103.67	156	kip	
- Pier 6	83.61	110.98	110.98	166	kip	
- Pier 7	106.79	140.77	140.77	211	kip	

Controlling Jacking Load

- Add 50% to the total factored Dead Load * The assumption is to allow for redundancy should any of the adjacent jacks fail.

	Jacking Load/BM	
- Pier 1	224	kip
- Pier 2	221	kip
- Pier 3 thru Pier 5	233	kip
- Pier 6	250	kip
- Pier 7	317	kip

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Right)
Member Name: Member 1
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Exterior Beams

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)
1	25.64	N/A	31.49(T)	-4.35(T)	26.455	26.455
2	91.13	N/A	62.53(L)	-8.05(T)	26.455	26.455
3	89.93	N/A	63.74(L)	-9.88(L)	26.455	26.455
4	90.22	N/A	64.59(L)	-10.58(L)	26.455	26.455
5	89.51	N/A	64.38(L)	-10.71(L)	26.455	26.455
6	91.79	N/A	64.17(L)	-9.51(L)	26.455	26.455
7	84.81	N/A	63.29(L)	-12.44(L)	26.455	26.455
8	108.44	N/A	65.80(L)	-9.88(T)	26.455	26.455
9	40.72	N/A	32.39(T)	-2.76(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Right)
Member Name: Member 2
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
	Stage 1 DL	**Stage 2 DL**	**+(LL+I)**	**-(LL+I)**	**+IF**	**-IF**
Support	**(kip)**	**(kip)**	**(kip)**	**(kip)**	**(%)**	**(%)**
1	28.16	N/A	43.90(T)	-6.08(T)	26.455	26.455
2	99.65	N/A	64.66(L)	-8.34(T)	26.455	26.455
3	98.38	N/A	65.92(L)	-10.22(L)	26.455	26.455
4	98.65	N/A	66.81(L)	-10.97(L)	26.455	26.455
5	98.01	N/A	66.67(L)	-11.13(L)	26.455	26.455
6	100.04	N/A	66.54(L)	-10.15(L)	26.455	26.455
7	94.49	N/A	65.90(L)	-12.82(L)	26.455	26.455
8	123.44	N/A	69.65(L)	-9.44(T)	26.455	26.455
9	45.87	N/A	45.32(T)	-3.90(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Right)
Member Name: Member 3
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
	Stage 1 DL	**Stage 2 DL**	**+(LL+I)**	**-(LL+I)**	**+IF**	**-IF**
Support	**(kip)**	**(kip)**	**(kip)**	**(kip)**	**(%)**	**(%)**
1	28.13	N/A	56.53(T)	-7.83(T)	26.455	26.455
2	99.66	N/A	64.66(L)	-8.34(T)	26.455	26.455
3	98.40	N/A	65.93(L)	-10.22(L)	26.455	26.455
4	98.61	N/A	66.83(L)	-11.00(L)	26.455	26.455
5	98.16	N/A	66.78(L)	-11.19(L)	26.455	26.455
6	99.55	N/A	66.68(L)	-10.48(L)	26.455	26.455
7	96.77	N/A	66.52(L)	-12.82(L)	26.455	26.455
8	129.23	N/A	71.25(L)	-8.91(T)	26.455	26.455
9	47.49	N/A	58.55(T)	-5.06(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Right)
Member Name: Member 4
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
	Stage 1 DL	**Stage 2 DL**	**+(LL+I)**	**-(LL+I)**	**+IF**	**-IF**
Support	**(kip)**	**(kip)**	**(kip)**	**(kip)**	**(%)**	**(%)**
1	28.18	N/A	56.54(T)	-7.76(T)	26.455	26.455
2	99.67	N/A	64.67(L)	-8.27(T)	26.455	26.455
3	98.41	N/A	65.94(L)	-10.23(L)	26.455	26.455
4	98.57	N/A	66.85(L)	-11.04(L)	26.455	26.455
5	98.29	N/A	66.89(L)	-11.25(L)	26.455	26.455
6	99.13	N/A	66.87(L)	-10.81(L)	26.455	26.455
7	98.73	N/A	67.20(L)	-12.81(L)	26.455	26.455
8	135.04	N/A	72.84(L)	-8.32(T)	26.455	26.455
9	49.12	N/A	58.70(T)	-5.13(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Right)
Member Name: Member 5
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
	Stage 1 DL	**Stage 2 DL**	**+(LL+I)**	**-(LL+I)**	**+IF**	**-IF**
Support	**(kip)**	**(kip)**	**(kip)**	**(kip)**	**(%)**	**(%)**
1	28.24	N/A	41.37(T)	-5.74(T)	26.455	26.455
2	99.67	N/A	64.66(L)	-8.36(T)	26.455	26.455
3	98.43	N/A	65.95(L)	-10.23(L)	26.455	26.455
4	98.53	N/A	66.87(L)	-11.08(L)	26.455	26.455
5	98.46	N/A	67.02(L)	-11.32(L)	26.455	26.455
6	98.59	N/A	67.06(L)	-11.19(L)	26.455	26.455
7	100.98	N/A	68.19(L)	-12.96(L)	26.455	26.455
8	140.77	N/A	74.45(L)	-7.77(T)	26.455	26.455
9	50.76	N/A	43.05(T)	-3.75(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Right)
Member Name: Member 6
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)
1	22.27	N/A	21.37(T)	-2.96(T)	26.455	26.455
2	79.03	N/A	62.54(L)	-8.06(T)	26.455	26.455
3	78.06	N/A	63.79(L)	-9.91(L)	26.455	26.455
4	78.07	N/A	64.69(L)	-10.76(L)	26.455	26.455
5	78.23	N/A	64.94(L)	-11.01(L)	26.455	26.455
6	77.63	N/A	65.03(L)	-11.21(L)	26.455	26.455
7	82.64	N/A	66.88(L)	-12.68(L)	26.455	26.455
8	118.82	N/A	73.54(L)	-7.07(T)	26.455	26.455
9	42.38	N/A	22.29(T)	-1.97(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Left)
Member Name: Member 1
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	22.18	N/A	21.37(T)	-2.96(T)	26.455	26.455
2	79.09	N/A	62.53(L)	-8.06(T)	26.455	26.455
3	77.94	N/A	63.71(L)	-9.88(L)	26.455	26.455
4	78.53	N/A	64.61(L)	-10.49(L)	26.455	26.455
5	76.79	N/A	64.07(L)	-10.78(L)	26.455	26.455
6	82.49	N/A	64.35(L)	-8.46(L)	26.455	26.455
7	57.16	N/A	61.45(L)	-16.61(L)	26.455	26.455
8	79.00	N/A	64.37(L)	-13.40(T)	26.455	26.455
9	35.37	N/A	21.87(T)	-1.24(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Left)
Member Name: Member 2
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
Support	**Stage 1 DL (kip)**	**Stage 2 DL (kip)**	**+(LL+I) (kip)**	**-(LL+I) (kip)**	**+IF (%)**	**-IF (%)**
1	28.17	N/A	41.37(T)	-5.71(T)	26.455	26.455
2	99.72	N/A	64.66(L)	-8.32(T)	26.455	26.455
3	98.28	N/A	65.89(L)	-10.22(L)	26.455	26.455
4	98.99	N/A	66.82(L)	-10.87(L)	26.455	26.455
5	96.93	N/A	66.33(L)	-11.18(L)	26.455	26.455
6	103.67	N/A	66.64(L)	-8.96(L)	26.455	26.455
7	75.11	N/A	63.38(L)	-16.01(L)	26.455	26.455
8	100.12	N/A	66.26(L)	-12.82(T)	26.455	26.455
9	43.80	N/A	42.38(T)	-2.72(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Left)
Member Name: Member 3
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
	Stage 1 DL	**Stage 2 DL**	**+(LL+I)**	**-(LL+I)**	**+IF**	**-IF**
Support	**(kip)**	**(kip)**	**(kip)**	**(kip)**	**(%)**	**(%)**
1	28.23	N/A	56.54(T)	-7.84(T)	26.455	26.455
2	99.72	N/A	64.66(L)	-8.36(T)	26.455	26.455
3	98.29	N/A	65.89(L)	-10.22(L)	26.455	26.455
4	98.95	N/A	66.84(L)	-10.89(L)	26.455	26.455
5	97.04	N/A	66.42(L)	-11.22(L)	26.455	26.455
6	103.29	N/A	66.73(L)	-9.20(L)	26.455	26.455
7	77.93	N/A	63.41(L)	-15.01(L)	26.455	26.455
8	102.24	N/A	66.27(L)	-11.76(T)	26.455	26.455
9	43.67	N/A	57.98(T)	-4.17(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Left)
Member Name: Member 4
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
	Stage 1 DL	**Stage 2 DL**	**+(LL+I)**	**-(LL+I)**	**+IF**	**-IF**
Support	**(kip)**	**(kip)**	**(kip)**	**(kip)**	**(%)**	**(%)**
1	28.21	N/A	56.53(T)	-7.81(T)	26.455	26.455
2	99.71	N/A	64.67(L)	-8.32(T)	26.455	26.455
3	98.31	N/A	65.91(L)	-10.23(L)	26.455	26.455
4	98.91	N/A	66.86(L)	-10.93(L)	26.455	26.455
5	97.18	N/A	66.51(L)	-11.26(L)	26.455	26.455
6	102.83	N/A	66.82(L)	-9.46(L)	26.455	26.455
7	80.76	N/A	63.57(L)	-14.12(L)	26.455	26.455
8	104.47	N/A	66.37(L)	-11.04(T)	26.455	26.455
9	43.39	N/A	58.05(T)	-4.62(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Left)
Member Name: Member 5
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

					Reaction	
	Stage 1 DL	**Stage 2 DL**	**+(LL+I)**	**-(LL+I)**	**+IF**	**-IF**
Support	**(kip)**	**(kip)**	**(kip)**	**(kip)**	**(%)**	**(%)**
1	28.18	N/A	43.90(T)	-6.04(T)	26.455	26.455
2	99.72	N/A	64.66(L)	-8.30(T)	26.455	26.455
3	98.32	N/A	65.91(L)	-10.23(L)	26.455	26.455
4	98.86	N/A	66.86(L)	-10.96(L)	26.455	26.455
5	97.34	N/A	66.61(L)	-11.29(L)	26.455	26.455
6	102.30	N/A	66.90(L)	-9.74(L)	26.455	26.455
7	83.61	N/A	63.82(L)	-13.34(L)	26.455	26.455
8	106.79	N/A	66.58(L)	-10.31(T)	26.455	26.455
9	43.07	N/A	45.12(T)	-3.90(T)	26.455	26.455

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

Bridge Name: JEF-00007-33800
NBI Structure ID: JEF-00007-33800
Bridge ID: 4101650

Analyzed By: Bridge
Analyze Date: Wednesday, May 17, 2023 13:31:58
Analysis Engine: AASHTO LFR Engine Version 7.2.0.3001
Analysis Preference Setting: None

Report By: Bridge
Report Date: Wednesday, May 17, 2023 13:35:04

Structure Definition Name: Spans 1-8 (Left)
Member Name: Member 6
Member Alternative Name: Alternative

Reactions
Live Load: HS 20-44

Support	Stage 1 DL (kip)	Stage 2 DL (kip)	+(LL+I) (kip)	-(LL+I) (kip)	Reaction +IF (%)	Reaction -IF (%)
1	25.65	N/A	31.49(T)	-4.37(T)	26.455	26.455
2	91.08	N/A	62.53(L)	-8.09(T)	26.455	26.455
3	89.81	N/A	63.76(L)	-9.91(L)	26.455	26.455
4	90.27	N/A	64.71(L)	-10.66(L)	26.455	26.455
5	89.02	N/A	64.58(L)	-11.07(L)	26.455	26.455
6	93.08	N/A	65.13(L)	-9.91(L)	26.455	26.455
7	78.24	N/A	62.47(L)	-14.30(L)	26.455	26.455
8	97.25	N/A	65.74(L)	-8.38(T)	26.455	26.455
9	34.87	N/A	32.10(T)	-2.37(T)	26.455	26.455

Exterior Beams

Note:
"N/A" indicates not applicable
"**" indicates not available

LL Codes:
(T) Truck load controls
(L) Lane load controls

Note:
Impact and distribution factors included in above live load reactions.

7. Elevation Tables – SFN 4101650

AECOM

Bridge File	JEF-7-33.46-33.80
Designation	JEF-7

GeopakChain	
Geopak/Profile	

Calculated By: GAD Date: 5/12/2023
Checked By: HER Date: 6/2/2023

hide->>

Span 1	64.0000
Span 2	80.0000
Span 3	80.0000
Span 4	80.0000
Span 5	80.0000
Span 6	80.0000
Span 7	71.2500
Span 8	79.7500

hide->>

SPAN	GIRDER / LOCATION	GIRDER POINT	hide	STATION	PROFILE GRADE	OFFSET (FROM PROFILE GRADE LINE - N.B. LANES)	DECK X-SLOPE	FINISHED DECK ELEVATION	BEAM GRADE	ELEVATION ALONG BEAM (STRAIGHT GRADE)	DELTA (VERTICAL) [INCHES]	DEAD STEEL ONLY		DEFLECTION DUE TO REMAINING DL [INCHES]	SCREED ELEVATION	DECK THICKNESS (INCHES)	TOP OF HAUNCH ELEVATION	BLOCKING DIMENSION [FEET]
AS North Bridge (Rear)					**PROFILE GRADE**			TOP APP	TOP SS									#VALUE!
1A*	RA		1A*RA		**705.8914**	32.8300	-0.016	705.37	***704.12***									
1B	RA		1BRA		**705.9801**	32.8300	-0.016	***705.45***										
1C*	RA		1C*RA		**706.0709**	32.8300	-0.016	705.55	***704.30***									
1D	RA		1DRA		**706.4664**	32.8300	-0.016	***705.94***										
2A*	RA		2A*RA		**705.5016**	1.0000	0.016	705.52	***704.27***									
2B	RA		2BRA		**705.5835**	1.0000	0.016	***705.60***										
2C*	RA		2C*RA		**705.6641**	1.0000	0.016	705.68	***704.43***									
2D	RA		2DRA		**706.0182**	1.0000	0.016	***706.03***										
3A*	RA		3A*RA		**705.4485**	1.0000	0.016	705.46	***704.21***									
3B	RA		3BRA		**705.5375**	1.0000	0.016	***705.55***										
3C*	RA		3C*RA		**705.6170**	1.0000	0.016	705.63	***704.38***									
3D	RA		3DRA		**705.9667**	1.0000	0.016	***705.98***										
4A*	RA		4A*RA		**705.0128**	33.0300	-0.016	704.48	***703.23***									
4B	RA		4BRA		**705.1032**	33.0300	-0.016	***704.57***										
4C*	RA		4C*RA		**705.1936**	33.0300	-0.016	704.67	***703.42***									
4D	RA		4DRA		**705.5608**	33.0300	-0.016	***705.03***										
AS North Bridge (Forward)					**PROFILE GRADE**			TOP APP	TOP SS									#VALUE!
1E	FA		1EFA		**734.4179**	32.8300	-0.016	***733.89***										
1F*	FA		1F*FA		**735.3138**	32.8300	-0.016	734.79	***733.54***									
1G	FA		1GFA		**735.7305**	32.8300	-0.016	***735.21***										
1H*	FA		1H*FA		**736.1471**	32.8300	-0.016	735.62	***734.37***									
2E	FA		2EFA		**731.5184**	1.5000	-0.016	***731.49***										
2F*	FA		2F*FA		**732.3717**	1.1300	-0.016	732.35	***731.10***									
2G	FA		2GFA		**732.7684**	1.0000	-0.016	***732.75***										
2H*	FA		2H*FA		**733.1637**	1.0000	-0.016	733.15	***731.90***									
3E	FA		3EFA		**731.2665**	1.5000	-0.016	***731.24***										
3F*	FA		3F*FA		**732.1791**	1.1600	-0.016	732.16	***730.91***									
3G	FA		3GFA		**732.5116**	1.0300	-0.016	***732.50***										
3H*	FA		3H*FA		**732.9082**	1.0000	-0.016	732.89	***731.64***									
4E	FA		4EFA		**729.1454**	32.8300	-0.016	***728.62***										
4F*	FA		4F*FA		**730.0761**	32.8300	-0.016	729.55	***728.30***									
4G	FA		4GFA		**730.3951**	32.8300	-0.016	***729.87***										
4H*	FA		4H*FA		**730.7142**	32.8300	-0.016	730.19	***728.94***									

8. Thermal Calculations – SFN 4101650

Expansion Joint Calculations - Thermal SFN 4101650

Span Arrangement (ft)

Span 1	64	R.A.	Exp.	P1	Exp.
Span 2	80	P1	Exp.	P2	Exp.
Span 3	80	P2	Exp.	P3	Exp.
Span 4	80	P3	Exp.	P4	Fix.
Span 5	80	P4	Fix.	P5	Fix.
Span 6	80	P5	Fix.	P6	Exp.
Span 7	71.25	P6	Exp.	P7	Exp.
Span 8	79.75	P7	Exp.	F.A.	Exp.
	615				

Rear Abutment - Left & Right

alpha=	0.0000065	in./in./degF
delta T=	10	deg increment
EL=	344	ft
delta L=	0.268	in.
Skew =	35.00	deg

For information only, Assume:			A	
Set temp=	70	deg F =	2.08	in.

JOINT SETTING TABLE			*Requires a 5" seal
TEMP	Along Span A*	A	
30˚F	3.61 in.	2.96 in.	
40˚F	3.34 in.	2.74 in.	
50˚F	3.08 in.	2.52 in.	
60˚F	2.81 in.	2.30 in.	
70˚F	2.54 in.	2.08 in.	(Min required joint opening Dim. A is 2.1" say at 70 degrees)
80˚F	2.27 in.	1.86 in.	
90˚F	2.00 in.	1.64 in.	(Per SCD min installation dim A = 1.5")

Forward Abutment - Left

EL=	271	ft
delta T=	10	deg increment
delta L=	0.211	in.
Skew =	51.19	deg

For information only, Assume:			A	
Set temp=	70	deg F =	2.08	in.

JOINT SETTING TABLE			*Requires a 5" seal
TEMP	Along Span A*	A	
30˚F	4.16 in.	2.61 in.	
40˚F	3.95 in.	2.48 in.	
50˚F	3.74 in.	2.34 in.	
60˚F	3.53 in.	2.21 in.	
70˚F	3.32 in.	2.08 in.	(Min required joint opening Dim. A is 2.1" say at 70 degrees)
80˚F	3.11 in.	1.95 in.	
90˚F	2.90 in.	1.82 in.	(Per SCD min installation dim A = 1.5")

Forward Abutment - Right

EL=	271	ft
delta T=	10	deg increment
delta L=	0.211	in.
Skew =	59.73	deg

For information only, Assume:			A	
Set temp=	70	deg F =	2.08	in.

JOINT SETTING TABLE			*Requires a 5" seal
TEMP	Along Span A*	A	
30˚F	4.97 in.	3.12 in.	
40˚F	4.76 in.	2.98 in.	
50˚F	4.55 in.	2.85 in.	
60˚F	4.34 in.	2.72 in.	
70˚F	4.13 in.	2.08 in.	(Min required joint opening Dim. A is 2.1" say at 70 degrees)
80˚F	3.92 in.	2.45 in.	
90˚F	3.70 in.	2.32 in.	(Per SCD min installation dim A = 1.5")

Joint opening at Installation

Joint Opening	2.08 in.
Retainer Width	1.50 in.
Total opening	5.08 in.