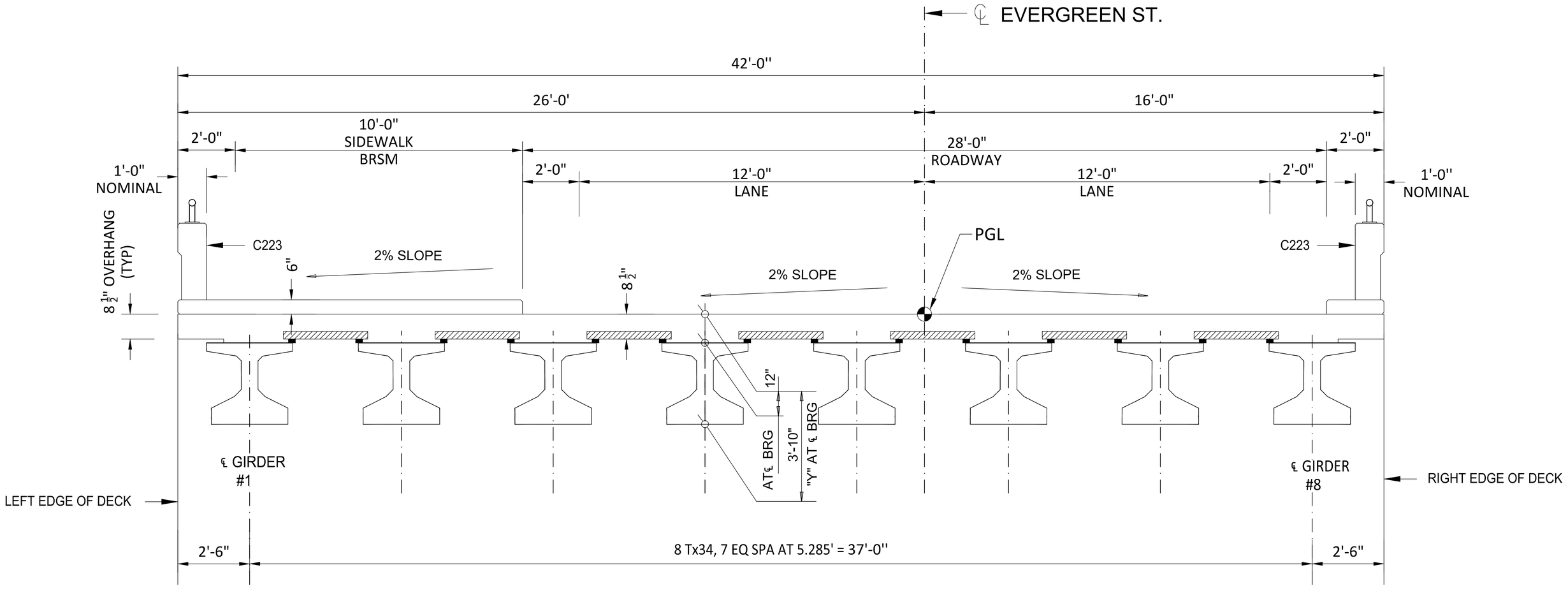
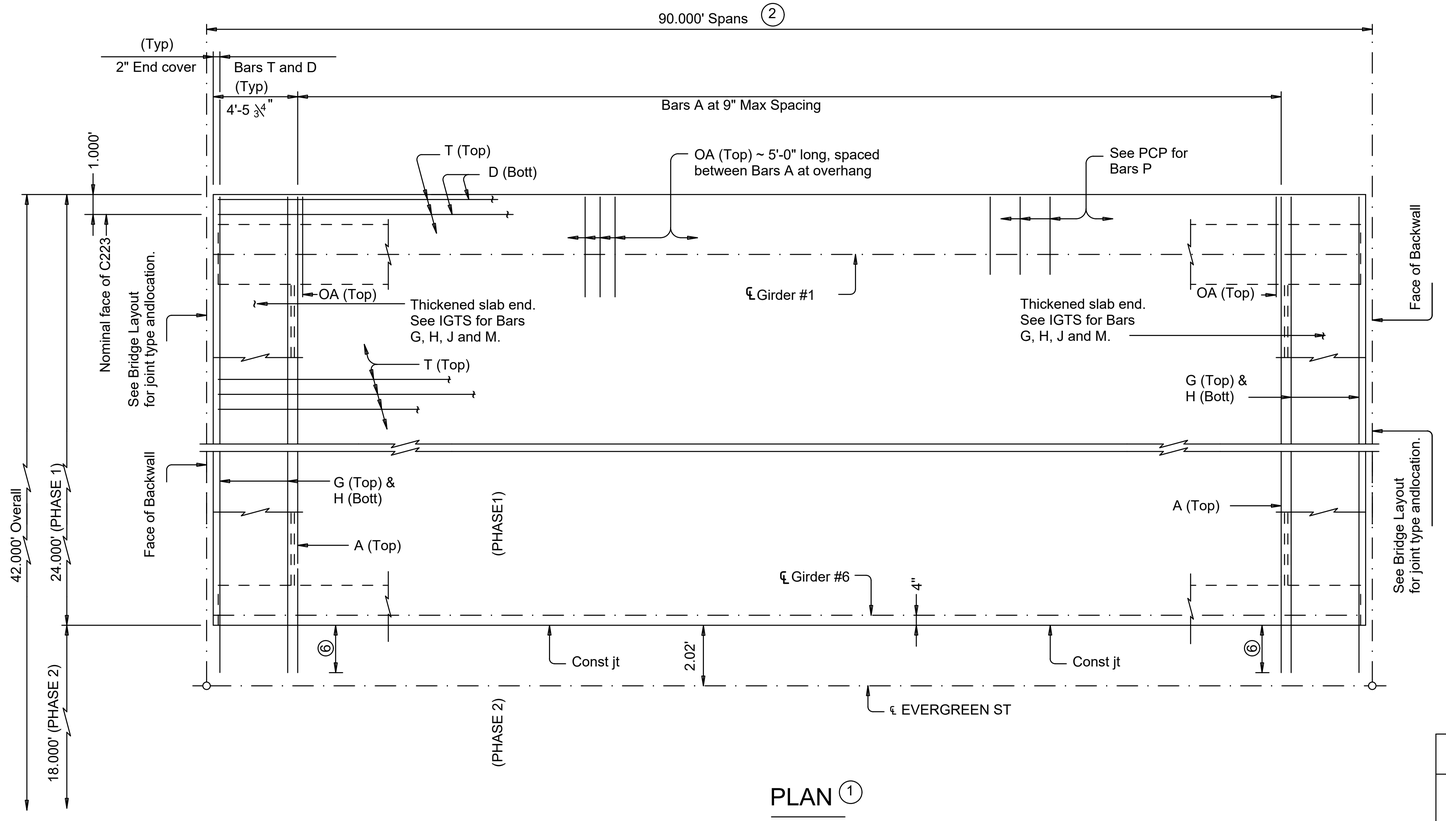
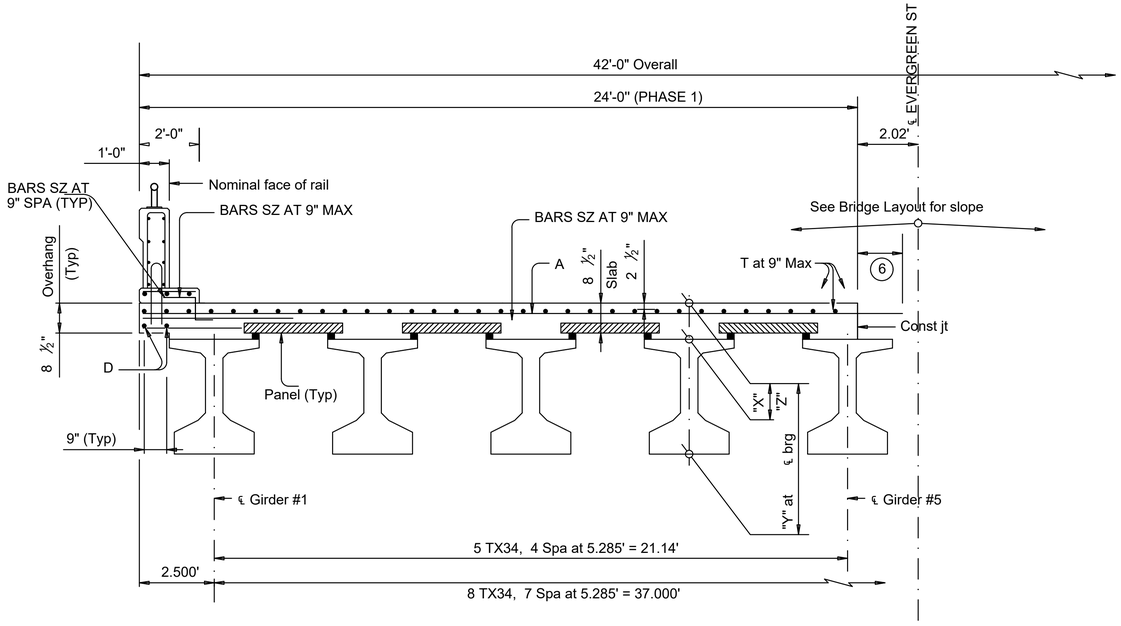


PROPOSED TYPICAL TRANSVERSE SECTION

SCALE: 1" = 5'

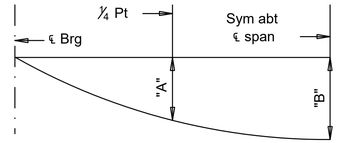


PLAN (1)



TYPICAL TRANSVERSE SECTION

PHASE 1



DEAD LOAD DEFLECTION DIAGRAM

Calculated deflections shown are due to the concrete slab on interior girders only (Ec = 5000 ksi). Adjust values as required for exterior girders and if optional slab forming is used. These values may require field verification.

BAR TABLE	
BAR	SIZE
A	#4
D	#4
G	#4
H	#4
J	#4
M	#4
OA	#5
P	#4
T	#4
ST	#4
SA	#4
SZ	#4

TABLE OF DEAD LOAD DEFLECTIONS

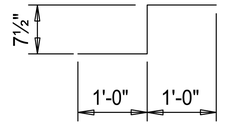
SPAN LENGTH	GIRDER NO.	"A"	"B"
90 Ft	1	0.103 Ft	0.147 Ft
	2-4	0.101 Ft	0.143 Ft
	5	0.08 Ft	0.114 Ft

TABLE OF ESTIMATED QUANTITIES

	REINF CONCRETE SLAB	Prestressed Concrete Girders ABUT TO ABUT (4)	TOTAL REINF STEEL (5)	SEALED EXPANSION JOINT (4 IN) (SEJ-M)
Ft	SF	LF	Lb	LF
90	2160	447.5	4968	48

TABLE OF SECTION DEPTHS

GIRDER TYPE	"X" AT ℄ BRG	"Y" AT ℄ BRG	"Z" AT ℄ SPAN
Tx34	12"	3'-10"	12"



BARS SZ

(1) If multi-span units (with slab continuous over interior bents) are indicated on the Bridge Layout, see standard IGCS for adjustment to slab reinforcement and quantities.

(2) Bars may be adjusted laterally 3" plus or minus to locate railing anchor bolts.

(4) Fabricator will adjust lengths for girder slopes as required.

(5) Reinforcing steel weight is calculated using an approximate factor of 2.3 lbs/SF.

(6) Extend bars A, G and H 1'-7" into Phase 2 Construction.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Multi-span units, with slab continuous over interior bents, may be formed with the details shown on this sheet and standard IGCS.
See IGTS standard for Thickened Slab End details and See PCP and PCP-FAB for panel details not shown.
See PCP(O) and PCP(O)-FAB for precast overhang panel details if this option is used.
See IGMS standard for miscellaneous details.
See applicable rail details for rail anchorage in slab.
See PMDF standard for details and quantity adjustments if this option is used.
This standard does not support the use of transition bents.

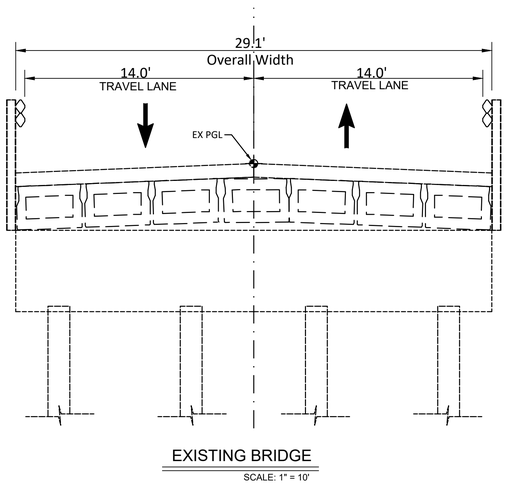
Cover dimensions are clear dimensions, unless noted otherwise.

MATERIAL NOTES:

Provide Class S concrete (f'c = 4,000 psi).
Provide Class S (HPC) concrete if shown elsewhere in the plans.
Provide Grade 60 reinforcing steel.
Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy coated ~ #4 = 2'-5"
Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars A, D, OA, P or T unless noted otherwise.

BRIDGE OVER MUSTANG BAYOU

PRESTRESSED CONCRETE I-GIRDER SPAN TYPE Tx34

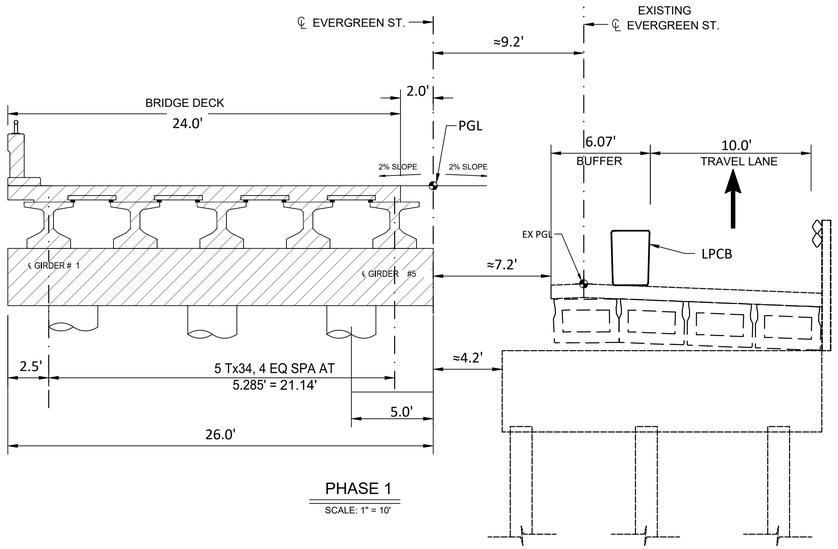


EXISTING BRIDGE

SCALE: 1" = 10'

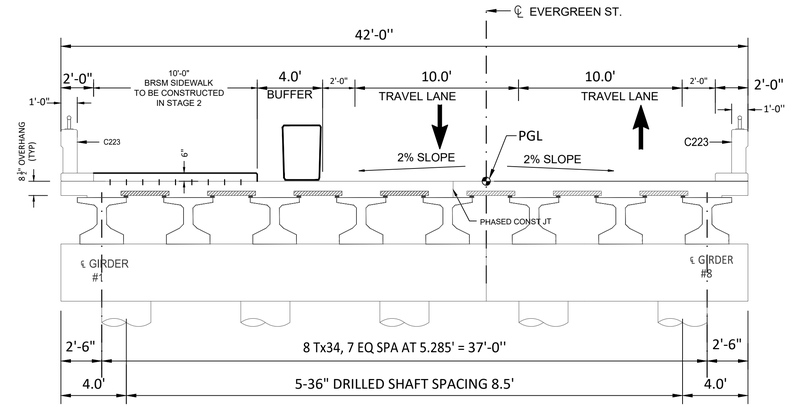
LEGEND:

- PERMANENT BRIDGE CONSTRUCTION
- PREVIOUS PHASE PERMANENT BRIDGE CONSTRUCTION
- CHANNELIZING DEVICE (DRUMS)
- LOW PROFILE CONCRETE BARRIER (LPCB)
- PROPOSED TRAFFIC FLOW



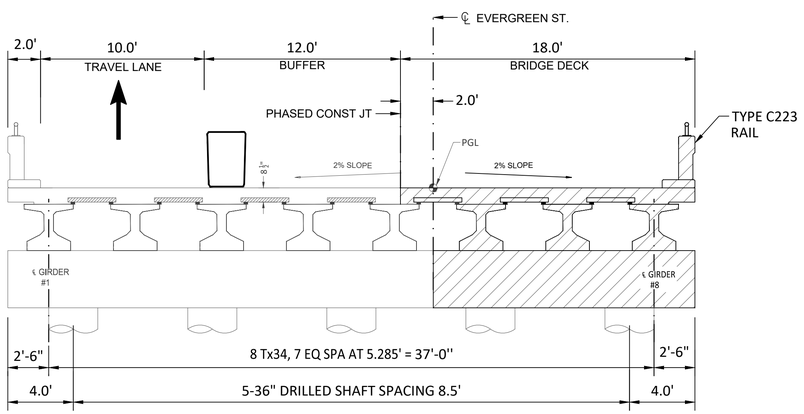
PHASE 1

SCALE: 1" = 10'



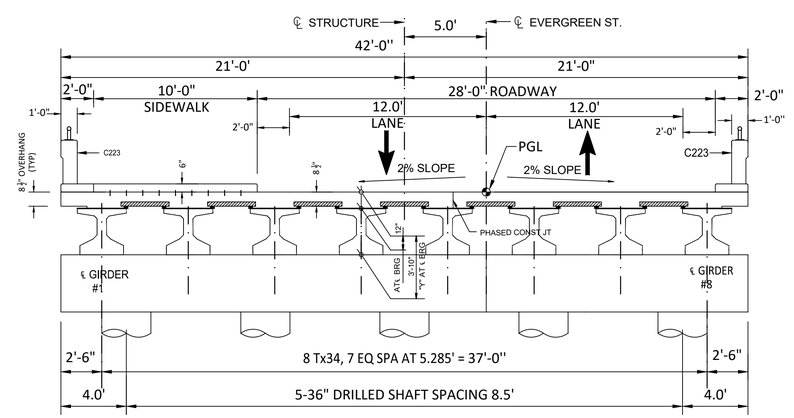
PHASE 2 STAGE 2

SCALE: 1" = 10'



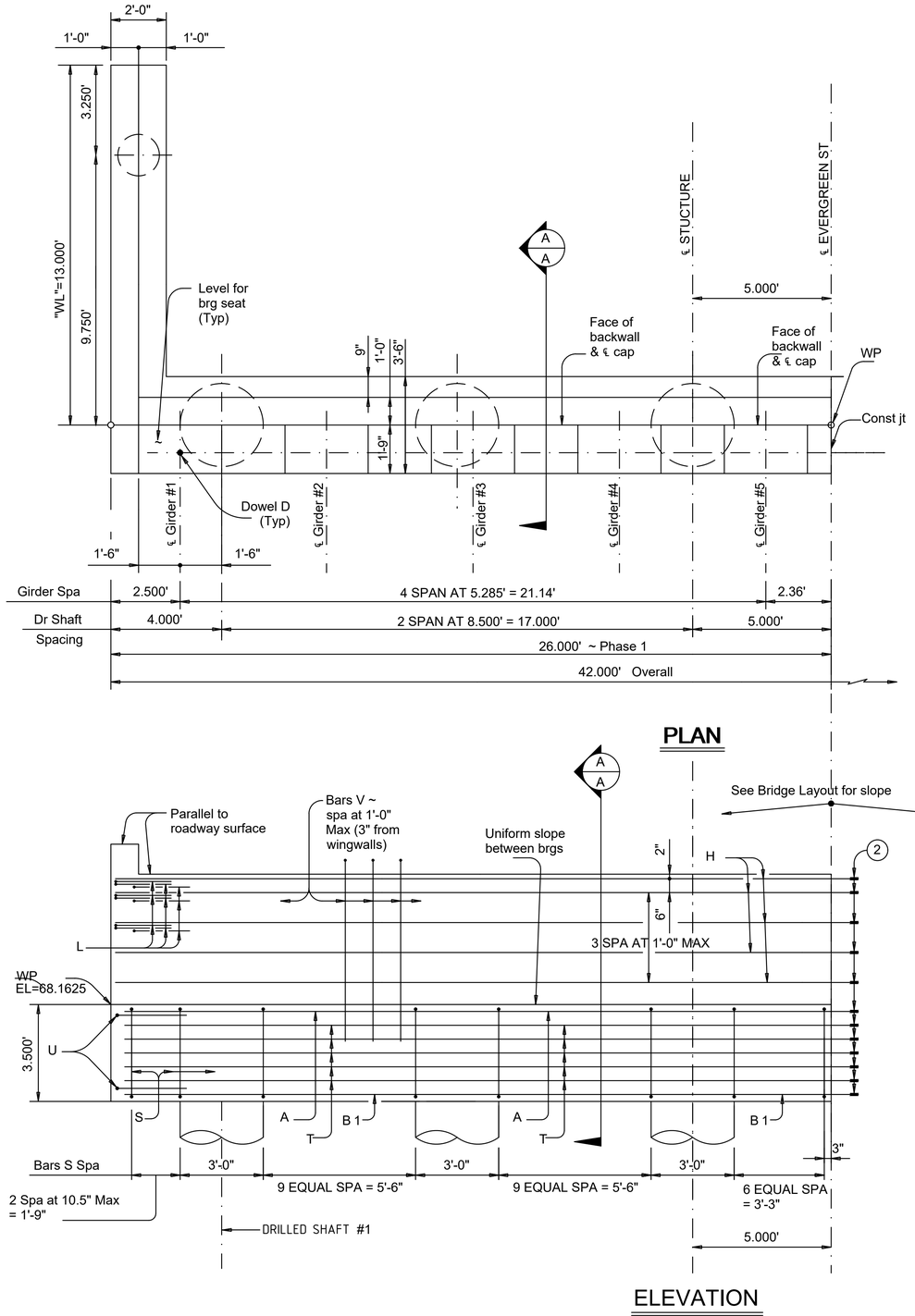
PHASE 2 STAGE 1

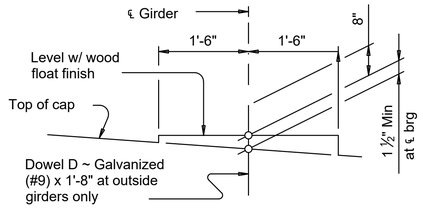
SCALE: 1" = 10'



FINAL TYPICAL SECTION

SCALE: 1" = 10'





BEARING SEAT DETAIL

(Bearing surface must be clean and free of all loose material before placing bearing pad.)

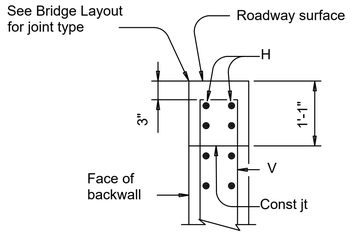
TABLES OF ESTIMATED QUANTITIES WITH 3:1 HEADER SLOPE

TYPE Tx34 Girders

Bar	No.	Size	Length	Weight
A	6	#11	26'-9"	852
B 1	6	#11	26'-9"	852
D	2	#9	1'-8"	11
H	8	#6	26'-9"	233
L	9	#6	4'-0"	54
S	30	#5	13'-6"	421
T	10	#5	26'-9"	279
U	2	#6	8'-1"	25
V	25	#5	12'-4"	321
wH1	9	#6	14'-5"	171
wH2	12	#6	12'-8"	228
wS	13	#4	9'-10"	86
wV	13	#5	12'-4"	167
Reinforcing Steel			Lb	3700
Class "C" Concrete			CY	19.60

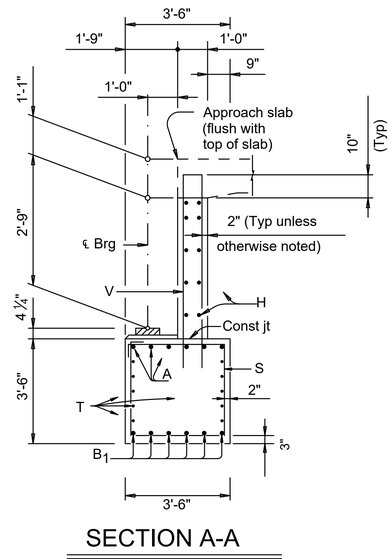
TOP OF DRILLED SHAFT ELEVATIONS

		DRILLED SHAFT 1	DRILLED SHAFT 2	DRILLED SHAFT 3	DRILLED SHAFT 4	DRILLED SHAFT 5
ABUT 1	(FWD)	64.7425	64.9125	65.0825	65.1125	64.9425
		DRILLED SHAFT 1	DRILLED SHAFT 2	DRILLED SHAFT 3	DRILLED SHAFT 3	DRILLED SHAFT 3
ABUT 2	(BK)	64.7425	64.9125	65.0825	65.1125	64.9425



BACKWALL DETAIL

(Without approach slab)



SECTION A-A

(With approach slab)

HL-93 LOADING

② Extend bars 1'-0" into Phase 2 Construction. Splice Bars A & H by welding in accordance with Item 448, "Structural Field Welding" or by using mechanical couplers in accordance with current special provisions to Item 440, "Reinforcing Steel."

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

See Bridge Layout for header slope and foundation type, size and length.

See Common Foundation Details (FD) standard sheet for all foundation details and notes.

See Concrete Riprap (CRR) standard sheet or Stone Riprap (SRR) standard sheet for riprap attachment details, if applicable.

See applicable rail details for rail anchorage in wingwalls.

These abutment details may be used with standard SIG-40 only.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

MATERIAL NOTES:

Provide Class C concrete (f'c = 3,600 psi).

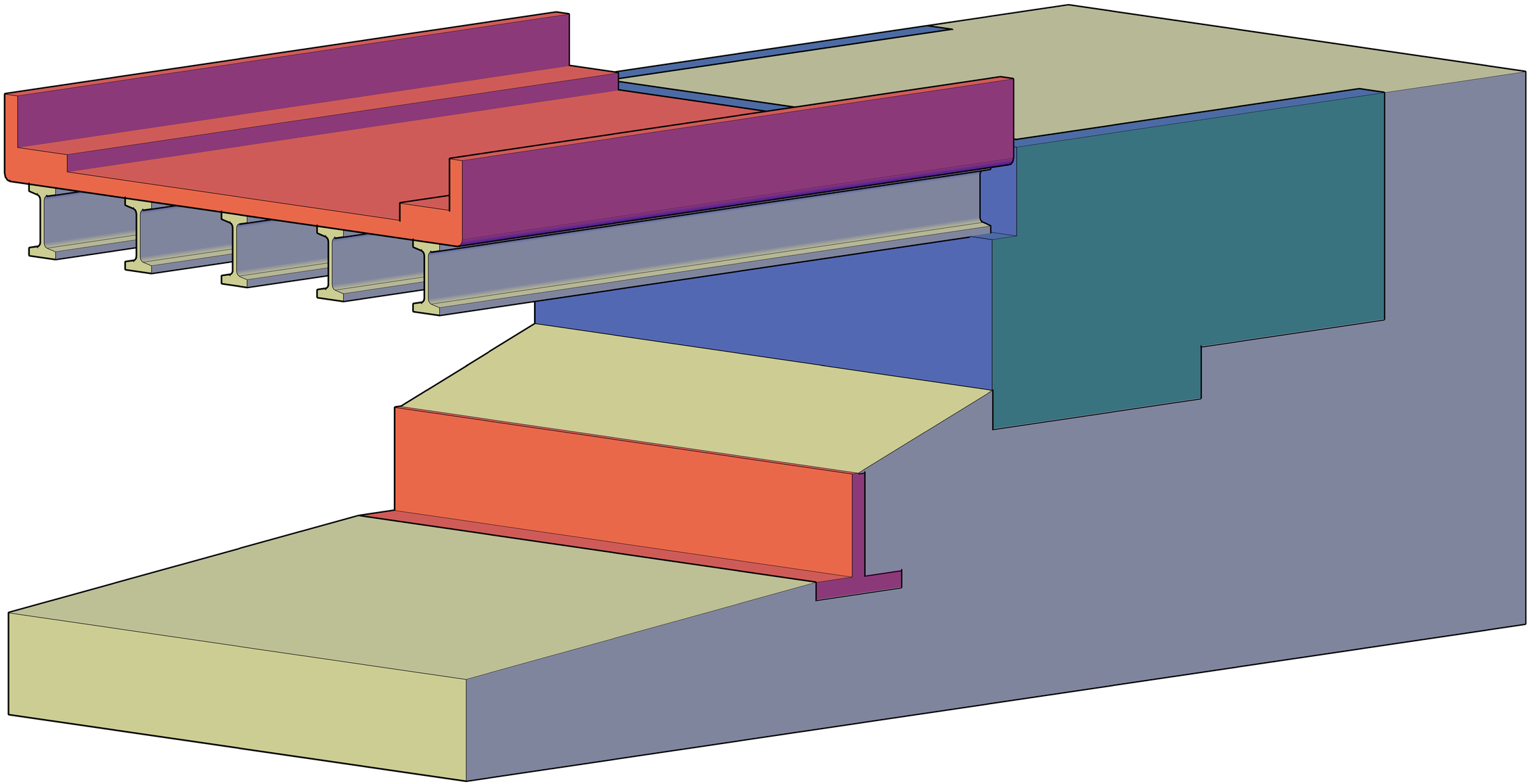
Provide Class C (HPC) concrete if shown elsewhere in the plans.

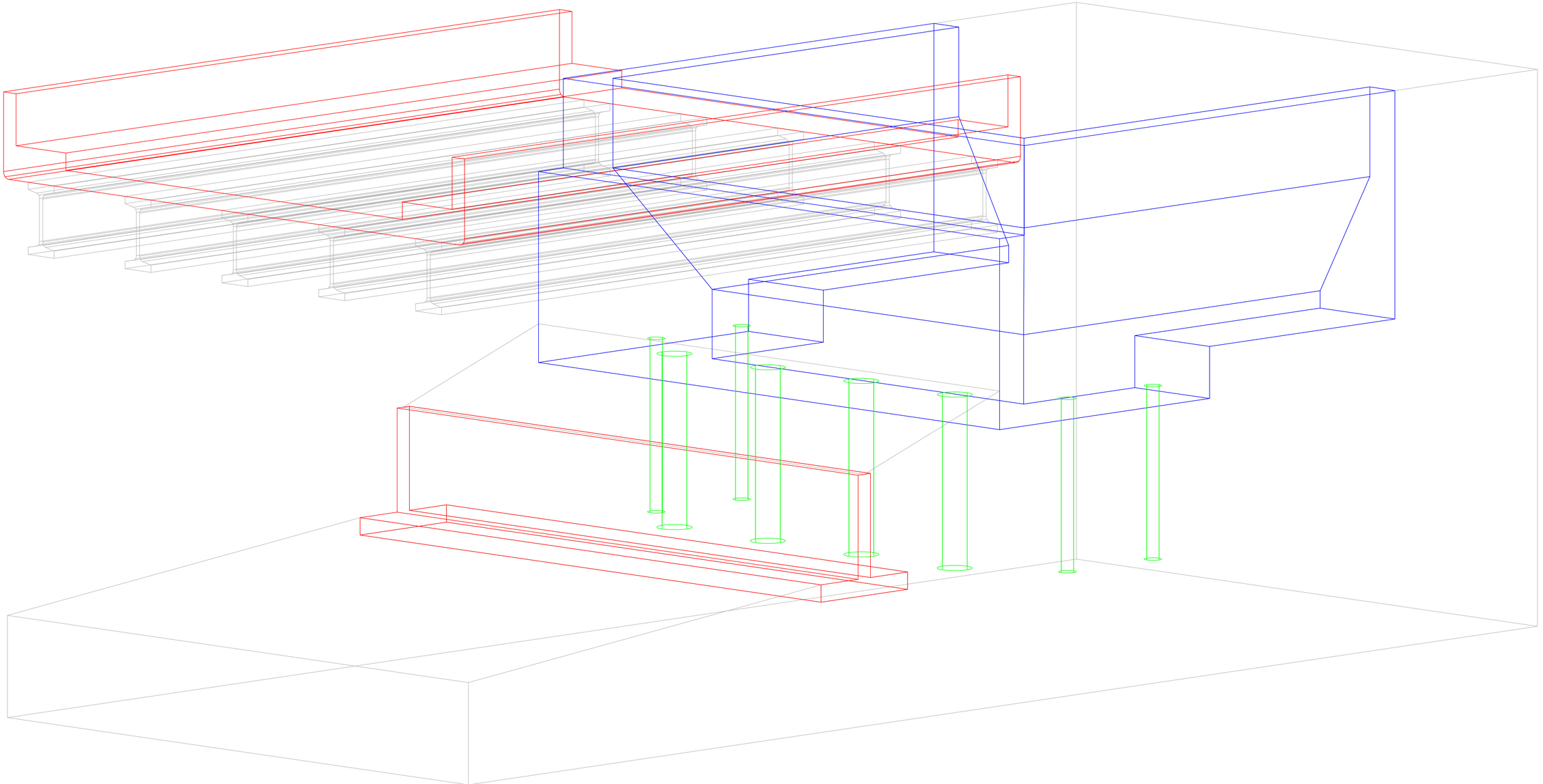
Provide Grade 60 reinforcing steel.

Galvanize dowel bars D.

BRIDGE OVER MUSTANG BAYOU

BRIDGE ABUTMENT NO. 1 OR 2
PHASE 1





TxDOT Summary Report (Long Form)

For Span 1 Girder C

April 27, 2023 11:15:09 am

PGSuper™ (x64)

Version 7.0.2 - Built on Nov 7 2022

Project Properties

Bridge Name	Evergreen_Mustang_7-Tx34
Bridge ID	
Company	
Engineer	OM
Job Number	
Comments	
File	C:\Users\iget_\Downloads\Evergreen_Mustang_7-Tx34.pgs

Configuration

Configuration Server: TxDOT
Configuration Name: TxDOT
Configuration Source: ftp://ftp.dot.state.tx.us/pub/txdot-info/brg/pgsuper/version_7.0.2/txdot.pgz
Configuration Date Stamp: January 6, 2021 3:35:03 pm

Library	Entry	Source
Girders	Tx34	Master Library
Traffic Barriers	C223	Master Library
Project Criteria	TxDOT 2020 based on AASHTO LRFD Bridge Design Specification, 9th Edition 2020	Master Library
Load Rating Criteria	MBE 2020 based on The Manual for Bridge Evaluation, Third Edition 2018, with 2020 interim provisions	Master Library
Haul Trucks	Old Haul Truck -0	Project Library

Analysis Controls

Structural Analysis Method: Simple Span
Section Properties: Gross
Losses: Refined estimate per TxDOT Research Report 0-6374-2

Notes

Symbol	Definition
L_r	Span Length of Girder at Release
L_l	Span Length of Girder during Lifting
L_{st}	Span Length of Girder during Storage
L_h	Span Length of Girder during Hauling
L_e	Span Length of Girder after Erection
L_s	Length of Span
Debond	Point where bond begins for a debonded strand
PSXFR	Point of prestress transfer
FoS	Face of Support in final bridge configuration
ST	Section Transitions
STLF	Section Transitions, Left Face
STRF	Section Transitions, Right Face
SDCR	Start of Deck Casting Region
EDCR	End of Deck Casting Region
Diaphragm	Location of a precast or cast in place diaphragm
Bar Cutoff	End of a reinforcing bar in the girder
Deck Bar Cutoff	End of a reinforcing bar in the deck
CS	Critical Section for Shear
SZB	Stirrup Zone Boundary
H	H from end of girder or face of support
1.5H	1.5H from end of girder or face of support
HP	Harp Point
Pick Point	Support point where girder is lifted from form
Bunk Point	Point where girder is supported during transportation

Status Items

Level	Description
Warning	Span 1, Girder C: Initial concrete strength (6.200 KSI) exceeds the normal value of 6.000 KSI

Specification Check Summary

The Specification Check Was Not Successful

Slab Offset ("A" Dimension) check failed

Girder Summary

TxDOT Girder Schedule

Span	**1**
Girder	**C**
Girder Type	Tx34
Prestressing Strands	**Total**
NO. (N_h + N_s)	36
Size	0.600 in Dia.
Strength	Grade 270 Low Relaxation
Eccentricity @ CL	11.345 in
Eccentricity @ End	7.345 in
Prestressing Strands	**Depressed**
NO. (# of Depressed Strands)	6
Y_b of Topmost Depressed Strand(s) @ End	30.500 in
Y_b of Topmost Depressed Strand(s) @ CL	6.500 in
Concrete	
Release Strength f'_{ci}	6.200 KSI
Minimum 28 day compressive strength f'_c	7.000 KSI
Optional Design	
Design Load Compressive Stress (Top CL)	4.036 KSI
Design Load Tensile Stress (Bottom CL)	-4.602 KSI
Required minimum ultimate moment capacity	4258.91 kip-ft
Live Load Distribution Factor for Moment (Strength and Service Limit States)	0.49903
Live Load Distribution Factor for Shear (Strength and Service Limit States)	0.67066
Live Load Distribution Factor for Moment (Fatigue Limit States)	0.30359

NOTE: Stresses show in the above table reflect the following sign convention:
Compressive Stress is positive. Tensile Stress is negative

Girder Line Geometry

Girder Type	Tx34
Span Length, CL Bearing to CL Bearing	88.000 ft
Girder Length	89.500 ft
Number of Girders	7
Girder Spacing Datum Start of Span	Measured normal to alignment at abutment line
Left Girder Spacing Start of Span	6.000 ft
Right Girder Spacing Start of Span	6.000 ft
Girder Spacing Datum End of Span	Measured normal to alignment at abutment line
Left Girder Spacing End of Span	6.000 ft
Right Girder Spacing End of Span	6.000 ft
Slab Thickness for Design	8.500 in
Slab Thickness for Construction	8.500 in
Slab Offset at Start ("A" Dimension)	14.000 in
Slab Offset at End ("A" Dimension)	14.000 in
Overlay	0.035 KSF
Left Traffic Barrier	C223
Right Traffic Barrier	C223
Traffic Barrier Weight (per girder)	0.123 kip/ft
Connection Geometry at Abutment 1	Bearing Offset: 1.000 ft Measured From Abutment Line and Along Girder Centerline End Distance: 0.250 ft Measured From Abutment Line and Along Girder Centerline
Connection Geometry at Abutment 2	Bearing Offset: 1.000 ft Measured From Abutment Line and Along Girder Centerline End Distance: 0.250 ft Measured From Abutment Line and Along Girder Centerline

Loading Details

Span 1, Girder C

Uniform Loads Applied Along the Entire Girder

Load Type	w (kip/ft)
Girder	0.675

Slab Load Applied Along Girder

Tributary width used to compute slab load is measured from top CL girder
Slab load is approximated with linear load segments applied along the length of the girder. Segments located outside of bearings are applied as point loads/moments at bearings.
Slabunit weight with reinforcement = 0.150 kip/ft^3
Haunch weight includes effects of roadway geometry and is measured along the centerline of the girder. Haunch depth used when computing haunch load is reduced for camber assuming that excess camber is a linear-piecewise parabola defined by the user-input assumed excess camber at mid-span.

Location From Left Bearing (ft)	Casting Region	Main Slab Weight (kip/ft)	Assumed Haunch Depth (in)	Haunch Weight (kip/ft)	Total Slab Weight (kip/ft)
-0.750	1	0.638	5.586	0.209	0.847
0.000	1	0.638	5.500	0.206	0.844
8.800	1	0.638	4.600	0.173	0.810
17.600	1	0.638	3.900	0.146	0.784
26.400	1	0.638	3.400	0.128	0.765
35.200	1	0.638	3.100	0.116	0.754
44.000	1	0.638	3.000	0.113	0.750
52.800	1	0.638	3.100	0.116	0.754
61.600	1	0.638	3.400	0.128	0.765
70.400	1	0.638	3.900	0.146	0.784
79.200	1	0.638	4.600	0.173	0.810
88.000	1	0.638	5.500	0.206	0.844
88.000	1	0.638	5.500	0.206	0.844
88.750	1	0.638	5.586	0.209	0.847

Slab Haunch Load Details

Location From Left Bearing (ft)	Station	Offset (ft)	Casting Region	Top Slab Elevation (ft)	Girder Chord Elevation (ft)	Top Girder Elevation (ft)	Slab Thickness (in)	*Assumed Excess Camber (in)	Assumed Haunch Depth (in)	Haunch Load (kip/ft)
-0.750	1+00.25	11.500 L	1	-0.230	-1.397	-1.404	8.500	-0.086	5.586	0.209
0.000	1+01.00	11.500 L	1	-0.230	-1.397	-1.397	8.500	0.000	5.500	0.206
8.800	1+09.80	11.500 L	1	-0.230	-1.397	-1.322	8.500	0.900	4.600	0.173
17.600	1+18.60	11.500 L	1	-0.230	-1.397	-1.263	8.500	1.600	3.900	0.146
26.400	1+27.40	11.500 L	1	-0.230	-1.397	-1.222	8.500	2.100	3.400	0.128
35.200	1+36.20	11.500 L	1	-0.230	-1.397	-1.197	8.500	2.400	3.100	0.116
44.000	1+45.00	11.500 L	1	-0.230	-1.397	-1.188	8.500	2.500	3.000	0.113
52.800	1+53.80	11.500 L	1	-0.230	-1.397	-1.197	8.500	2.400	3.100	0.116
61.600	1+62.60	11.500 L	1	-0.230	-1.397	-1.222	8.500	2.100	3.400	0.128
70.400	1+71.40	11.500 L	1	-0.230	-1.397	-1.263	8.500	1.600	3.900	0.146
79.200	1+80.20	11.500 L	1	-0.230	-1.397	-1.322	8.500	0.900	4.600	0.173
88.000	1+89.00	11.500 L	1	-0.230	-1.397	-1.397	8.500	0.000	5.500	0.206
88.000	1+89.00	11.500 L	1	-0.230	-1.397	-1.397	8.500	0.000	5.500	0.206
88.750	1+89.75	11.500 L	1	-0.230	-1.397	-1.404	8.500	-0.086	5.586	0.209

Haunch load calculation based on haunch depth at CL girder.
* Factor of 100% applied to assumed excess camber per project criteria.

Distribution of Uniform Barrier, Sidewalk, and Pedestrian Loads to Girder

Load Type	Total Weight (kip/ft)	Fraction to Girder	Girder Load (kip/ft)
Left Ext. Barrier	0.370	0.333	0.123
Left Sidewalk	0.768	0.333	0.256
Left Pedestrian Live	0.825	0.333	0.275
Right Sidewalk	0.143	0.000	0.000
Right Ext. Barrier	0.370	0.000	0.000

Pier Diaphragm Loads

Pier	Location	Unit Weight (kip/ft^3)	H (ft)	W (ft)	Trib. Width (ft)	Skew (deg)	P (kip)	Moment Arm (ft)	M (kip-ft)
1	Ahead Bearing	0.150	0.000	0.000	0.000	0.00	0.00	0.000	0.00
2	Back Bearing	0.150	0.000	0.000	0.000	0.00	0.00	0.000	0.00

Diaphragm weight, P = (Unit Weight)(H)(W)(Trib Width)/cos(Skew)

Live Load Details

Live Loads used for Design

The following live loads were applied to the design (Service and Strength I) limit states:
AASHTO LRFD 3.6.1.2: HL-93 Design Vehicular Live Load
Pedestrian live load response was enveloped with vehicular live loads.

Live Loads Used for Fatigue Limit States

The following live loads were applied to the Fatigue I limit state:
AASHTO LRFD 3.6.1.4: Fatigue Vehicular Live Load
Pedestrian live load response was enveloped with vehicular live loads.

Live Loads Used for Design Permit Limit State

No live loads were applied to the design permit (Strength II) limit state
Pedestrian live load response was enveloped with vehicular live loads.

User Defined Loads

Locations are measured from left support.
Point loads were not defined for this girder
Distributed loads were not defined for this girder
Moment loads were not defined for this girder

Camber and Deflections

Camber and Deflection for Span 1 Girder C

Unfactored Design Camber	4.204 in	0.350 ft
Factored Design Camber, Δ_4**	4.204 in	0.350 ft
Deflection (Prestressing)	5.158 in	0.430 ft
Deflection (Girder)	-2.238 in	-0.187 ft
Deflection (Deck and Diaphragms)*	-1.947 in	-0.162 ft
Deflection (Sidewalk)	-0.274 in	-0.023 ft
Deflection (Traffic Barrier)	-0.132 in	-0.011 ft
Deflection (Overlay)	0.000 in	0.000 ft
Deflection (User Defined DC)	0.000 in	0.000 ft
Deflection (User Defined DW)	0.000 in	0.000 ft
Screed Camber, C**	1.558 in	0.130 ft
Computed Excess Camber, Δ_4 - C	2.646 in	0.221 ft
Live Load Deflection (HL93 - Per Lane)	-2.432 in	-0.203 ft
Optional Live Load Deflection (LRFD 3.6.1.3.2)	-0.637 in	-0.053 ft

* Deflection due to haunch weight is not included in this value
** Refer to the Camber Details tables in the Details report for more information

TxDOT Haunch Summary

Span	1
Girder	C
X	1'-2"
Y	4'-0"
Z	$11\frac{3}{8}$"
DL Defl Deck @ Pt A {1/4 pt} (ft)	-0.114
DL Defl Deck @ Pt B {1/2 pt} (ft)	-0.162
Haunch Concrete (yd^3)	3.11

User-input Fillet and Slab Offset dimensions are used to define the geometry of the bottom of haunch for computing the haunch concrete volume.

Slab Offset ("A" Dimension)

This table compares the input slab offset to the rounded computed slab offset required to have the least haunch depth be equal to the Fillet dimension. A failed status indicates that the top of the girder will encroach into the deck slab and the Slab Offset dimension should be refined.

Span	Girder	Provided (in)	Required (in)	Status	Notes
1	C	14.000	14.250	Fail	

Minimum Haunch Depth at Bearing Centerlines

Span	Girder	Provided Haunch Depth (in)	Required Haunch Depth (in)	Status
1	C	5.500	2.000	Pass

Minimum Fillet Depth

This table compares the provided Fillet dimension to the minimum Fillet dimension specified in the girder library. A failed status indicates that the Fillet dimension is too small.

Span	Girder	Provided (in)	Required (in)	Status
1	C	2.500	0.500	Pass

Computed minimum haunch depth at edges of top flange along girder = 2.494 in. Refer to the Least Haunch Depth column in the Haunch Details chapter in the Details report for the location of the minimum haunch value.

Excess Camber Check

Haunch dead load is affected by variable haunch depth along the girder. Haunch depth along a girder is defined by the roadway geometry, slab offset ("A"), and the parabolic girder camber defined by the user input Assumed Excess Camber at mid-span. The table below compares the Assumed Excess Camber with the Computed Excess Camber. A failed status indicates the assumed value is not within tolerance of the computed value - meaning that results dependent on haunch dead load may be inaccurate. See the Haunch Details and Loading Details chapters in Details Report for more information.

Span	Girder	Computed Excess Camber (in)	Assumed Excess Camber (in)	Difference (in)	Allowable Difference (in)	Status	Notes
1	C	2.646	2.500	0.146	± 0.500	Pass	Assumed Excess Camber is within tolerance

Prestress Force and Strand Stresses

Effective Prestress at Mid-Span

Loss Stage	Permanent Strand			
	Effective Force (kip)	Time-Dependent Effects (KSI)	Instantaneous Effects (KSI)	f_{pe} (KSI)
At Jacking	1581.93	0.000	0.000	202.500
Before Prestress Transfer	1581.93	0.000	0.000	202.500
After Prestress Transfer	1414.59	0.000	21.421	181.079
At Lifting	1414.59	0.000	21.421	181.079
At Shipping	1295.47	15.248	21.421	165.831
After Erection	1295.47	15.248	21.421	165.831

Loss Stage	Permanent Strand			
	Effective Force (kip)	Time-Dependent Effects (KSI)	Instantaneous Effects (KSI)	f_{pe} (KSI)
After Deck Placement	1176.35	30.496	21.421	150.583
After Superimposed Dead Loads	1176.35	30.496	21.421	150.583
Final (permanent loads only)	1176.35	30.496	21.421	150.583
Final with Live Load (Service I)	1176.35	30.496	21.421	150.583
Final with Live Load (Service III)	1176.35	30.496	21.421	150.583
Final with Live Load (Fatigue I)	1176.35	30.496	21.421	150.583

Stress Checks

Specification = TxDOT 2020

Interval 2: Prestress Release : Service I Compression

Service I
For Temporary Stresses before Losses [5.9.2.3.1]
Compression Stresses [5.9.2.3.1a]

f'_{ci} = 6.200 KSI

Compression stress limit = -0.65f'_{ci} = -4.030 KSI

Concrete strength required to satisfy this requirement = 6.107 KSI

Location from Left Support (ft)	Location from End of Girder (ft)	Pre-tension		Service I		Demand		Precompressed Tensile Zone		Status (C/D)
		f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
(STRF) -0.750	(STRF, 0.0L_r) 0.000	0.000	0.000	0.000	0.000	0.000	0.000	No	Yes	Pass (∞)
(PSXFR) 2.250	(PSXFR) 3.000	0.008	-4.154	-0.220	0.185	-0.212	-3.969	No	Yes	Pass (1.02)
8.200	(0.1L_r) 8.950	0.186	-4.303	-0.611	0.513	-0.425	-3.790	No	Yes	Pass (1.06)
17.150	(0.2L_r) 17.900	0.452	-4.526	-1.087	0.912	-0.634	-3.615	No	Yes	Pass (1.11)
26.100	(0.3L_r) 26.850	0.719	-4.750	-1.426	1.196	-0.707	-3.554	No	Yes	Pass (1.13)
35.050	(0.4L_r) 35.800	0.985	-4.974	-1.630	1.367	-0.644	-3.606	No	Yes	Pass (1.12)
(HP) 39.000	(HP) 39.750	1.103	-5.072	-1.677	1.407	-0.573	-3.666	No	Yes	Pass (1.10)
(0.5L_s) 44.000	(0.5L_r) 44.750	1.103	-5.072	-1.698	1.424	-0.595	-3.648	No	Yes	Pass (1.10)
(HP) 49.000	(HP) 49.750	1.103	-5.072	-1.677	1.407	-0.573	-3.666	No	Yes	Pass (1.10)
52.950	(0.6L_r) 53.700	0.985	-4.974	-1.630	1.367	-0.644	-3.606	No	Yes	Pass (1.12)
61.900	(0.7L_r) 62.650	0.719	-4.750	-1.426	1.196	-0.707	-3.554	No	Yes	Pass (1.13)
70.850	(0.8L_r) 71.600	0.452	-4.526	-1.087	0.912	-0.634	-3.615	No	Yes	Pass (1.11)
79.800	(0.9L_r) 80.550	0.186	-4.303	-0.611	0.513	-0.425	-3.790	No	Yes	Pass (1.06)
(PSXFR) 85.750	(PSXFR) 86.500	0.008	-4.154	-0.220	0.185	-0.212	-3.969	No	Yes	Pass (1.02)
(STLF) 88.750	(STLF, 1.0L_r) 89.500	0.000	0.000	0.000	0.000	0.000	0.000	No	Yes	Pass (∞)

Interval 2: Prestress Release : Service I Tension

Service I

For Temporary Stresses before Losses [5.9.2.3.1]
Tension Stresses [5.9.2.3.1b]
f'_{ci} = 6.200 KSI
Tension stress limit in areas other than the precompressed tensile zone = $0.2400\lambda\sqrt{f'_{ci}}$ = 0.598 KSI
Tension stress limit in areas with sufficient bonded reinforcement = $0.2400\lambda\sqrt{f'_{ci}}$ = 0.598 KSI

Location from Left Support (ft)	Location from End of Girder (ft)	Pre-tension		Service I		Demand		Tension Limit		Precompressed Tensile Zone		Status (C/D)
		f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top (KSI)	Bottom (KSI)	Top	Bottom	
(STRF) -0.750	(STRF, 0.0L_r) 0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.598	-	No	Yes	Pass (∞)
(PSXFR) 2.250	(PSXFR) 3.000	0.008	-4.154	-0.220	0.185	-0.212	-3.969	0.598	-	No	Yes	Pass (-)
8.200	(0.1L_r) 8.950	0.186	-4.303	-0.611	0.513	-0.425	-3.790	0.598	-	No	Yes	Pass (-)
17.150	(0.2L_r) 17.900	0.452	-4.526	-1.087	0.912	-0.634	-3.615	0.598	-	No	Yes	Pass (-)
26.100	(0.3L_r) 26.850	0.719	-4.750	-1.426	1.196	-0.707	-3.554	0.598	-	No	Yes	Pass (-)
35.050	(0.4L_r) 35.800	0.985	-4.974	-1.630	1.367	-0.644	-3.606	0.598	-	No	Yes	Pass (-)
(HP) 39.000	(HP) 39.750	1.103	-5.072	-1.677	1.407	-0.573	-3.666	0.598	-	No	Yes	Pass (-)
(0.5L_s) 44.000	(0.5L_r) 44.750	1.103	-5.072	-1.698	1.424	-0.595	-3.648	0.598	-	No	Yes	Pass (-)
(HP) 49.000	(HP) 49.750	1.103	-5.072	-1.677	1.407	-0.573	-3.666	0.598	-	No	Yes	Pass (-)
52.950	(0.6L_r) 53.700	0.985	-4.974	-1.630	1.367	-0.644	-3.606	0.598	-	No	Yes	Pass (-)
61.900	(0.7L_r) 62.650	0.719	-4.750	-1.426	1.196	-0.707	-3.554	0.598	-	No	Yes	Pass (-)
70.850	(0.8L_r) 71.600	0.452	-4.526	-1.087	0.912	-0.634	-3.615	0.598	-	No	Yes	Pass (-)
79.800	(0.9L_r) 80.550	0.186	-4.303	-0.611	0.513	-0.425	-3.790	0.598	-	No	Yes	Pass (-)
(PSXFR) 85.750	(PSXFR) 86.500	0.008	-4.154	-0.220	0.185	-0.212	-3.969	0.598	-	No	Yes	Pass (-)
(STLF) 88.750	(STLF, 1.0L_r) 89.500	0.000	0.000	0.000	0.000	0.000	0.000	0.598	-	No	Yes	Pass (∞)

Interval 10: Cast Deck : Service I Compression

Service I
Stresses at Service Limit State after Losses [5.9.2.3.2]
Compression Stresses [5.9.2.3.2a]
f'_c = 7.000 KSI
Compression stress limit = $-0.6f'_c$ = -4.200 KSI
Concrete strength required to satisfy this requirement = 5.264 KSI

Location from Left Support (ft)	Pre-tension		Service I		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
(0.0L_s) 0.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (4.93)
(PSXFR) 2.250	0.007	-3.454	-0.353	0.296	-0.346	-3.159	No	Yes	Pass (1.33)
(0.1L_s) 8.800	0.169	-3.591	-1.270	1.066	-1.101	-2.525	No	Yes	Pass (1.66)

Location from Left Support (ft)	Pre-tension		Service I		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
($0.2L_s$) 17.600	0.387	-3.773	-2.251	1.889	-1.864	-1.885	No	Yes	Pass (2.23)
($0.3L_s$) 26.400	0.605	-3.956	-2.948	2.474	-2.343	-1.483	No	Yes	Pass (1.79)
($0.4L_s$) 35.200	0.823	-4.139	-3.365	2.823	-2.542	-1.316	No	Yes	Pass (1.65)
(HP) 39.000	0.917	-4.218	-3.459	2.902	-2.542	-1.316	No	Yes	Pass (1.65)
($0.5L_s$) 44.000	0.917	-4.218	-3.504	2.940	-2.586	-1.279	No	Yes	Pass (1.62)
(HP) 49.000	0.917	-4.218	-3.459	2.902	-2.542	-1.316	No	Yes	Pass (1.65)
($0.6L_s$) 52.800	0.823	-4.139	-3.365	2.823	-2.542	-1.316	No	Yes	Pass (1.65)
($0.7L_s$) 61.600	0.605	-3.956	-2.948	2.474	-2.343	-1.483	No	Yes	Pass (1.79)
($0.8L_s$) 70.400	0.387	-3.773	-2.251	1.889	-1.864	-1.885	No	Yes	Pass (2.23)
($0.9L_s$) 79.200	0.169	-3.591	-1.270	1.066	-1.101	-2.525	No	Yes	Pass (1.66)
(PSXFR) 85.750	0.007	-3.454	-0.353	0.296	-0.346	-3.159	No	Yes	Pass (1.33)
($1.0L_s$) 88.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (4.93)

Interval 10: Cast Deck : Service I Tension

Service I
Stresses at Service Limit State after Losses [5.9.2.3.2]
Tension Stresses [5.9.2.3.2b]

f'_c = 7.000 KSI

Tension stress limit in the precompressed tensile zone = $0.2400\lambda\sqrt{f'_c}$ = 0.635 KSI

Location from Left Support (ft)	Pre-tension		Service I		Demand		Tension Limit		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top (KSI)	Bottom (KSI)	Top	Bottom	
($0.0L_s$) 0.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	-	0.635	No	Yes	Pass (-)
(PSXFR) 2.250	0.007	-3.454	-0.353	0.296	-0.346	-3.159	-	0.635	No	Yes	Pass (-)
($0.1L_s$) 8.800	0.169	-3.591	-1.270	1.066	-1.101	-2.525	-	0.635	No	Yes	Pass (-)
($0.2L_s$) 17.600	0.387	-3.773	-2.251	1.889	-1.864	-1.885	-	0.635	No	Yes	Pass (-)
($0.3L_s$) 26.400	0.605	-3.956	-2.948	2.474	-2.343	-1.483	-	0.635	No	Yes	Pass (-)
($0.4L_s$) 35.200	0.823	-4.139	-3.365	2.823	-2.542	-1.316	-	0.635	No	Yes	Pass (-)
(HP) 39.000	0.917	-4.218	-3.459	2.902	-2.542	-1.316	-	0.635	No	Yes	Pass (-)
($0.5L_s$) 44.000	0.917	-4.218	-3.504	2.940	-2.586	-1.279	-	0.635	No	Yes	Pass (-)
(HP) 49.000	0.917	-4.218	-3.459	2.902	-2.542	-1.316	-	0.635	No	Yes	Pass (-)

Location from Left Support (ft)	Pre-tension		Service I		Demand		Tension Limit		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top (KSI)	Bottom (KSI)	Top	Bottom	
($0.6L_s$) 52.800	0.823	-4.139	-3.365	2.823	-2.542	-1.316	-	0.635	No	Yes	Pass (-)
($0.7L_s$) 61.600	0.605	-3.956	-2.948	2.474	-2.343	-1.483	-	0.635	No	Yes	Pass (-)
($0.8L_s$) 70.400	0.387	-3.773	-2.251	1.889	-1.864	-1.885	-	0.635	No	Yes	Pass (-)
($0.9L_s$) 79.200	0.169	-3.591	-1.270	1.066	-1.101	-2.525	-	0.635	No	Yes	Pass (-)
(PSXFR) 85.750	0.007	-3.454	-0.353	0.296	-0.346	-3.159	-	0.635	No	Yes	Pass (-)
($1.0L_s$) 88.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	-	0.635	No	Yes	Pass (-)

Interval 15: Open to Traffic : Service I Compression without live load

Service I
Stresses at Service Limit State after Losses [5.9.2.3.2]
Compression Stresses [5.9.2.3.2a]
f'_c = 7.000 KSI
Compression stress limit = $-0.45f'_c$ = -3.150 KSI
Concrete strength required to satisfy this requirement = 6.916 KSI

Location from Left Support (ft)	Pre-tension		Service I		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
($0.0L_s$) 0.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (3.70)
(PSXFR) 2.250	0.007	-3.454	-0.365	0.342	-0.358	-3.112	No	Yes	Pass (1.01)
($0.1L_s$) 8.800	0.169	-3.591	-1.316	1.234	-1.146	-2.357	No	Yes	Pass (1.34)
($0.2L_s$) 17.600	0.387	-3.773	-2.332	2.188	-1.945	-1.586	No	Yes	Pass (1.62)
($0.3L_s$) 26.400	0.605	-3.956	-3.055	2.866	-2.450	-1.090	No	Yes	Pass (1.29)
($0.4L_s$) 35.200	0.823	-4.139	-3.487	3.272	-2.664	-0.867	No	Yes	Pass (1.18)
(HP) 39.000	0.917	-4.218	-3.584	3.363	-2.667	-0.855	No	Yes	Pass (1.18)
($0.5L_s$) 44.000	0.917	-4.218	-3.631	3.407	-2.713	-0.811	No	Yes	Pass (1.16)
(HP) 49.000	0.917	-4.218	-3.584	3.363	-2.667	-0.855	No	Yes	Pass (1.18)
($0.6L_s$) 52.800	0.823	-4.139	-3.487	3.272	-2.664	-0.867	No	Yes	Pass (1.18)
($0.7L_s$) 61.600	0.605	-3.956	-3.055	2.866	-2.450	-1.090	No	Yes	Pass (1.29)
($0.8L_s$) 70.400	0.387	-3.773	-2.332	2.188	-1.945	-1.586	No	Yes	Pass (1.62)
($0.9L_s$) 79.200	0.169	-3.591	-1.316	1.234	-1.146	-2.357	No	Yes	Pass (1.34)
(PSXFR) 85.750	0.007	-3.454	-0.365	0.342	-0.358	-3.112	No	Yes	Pass (1.01)
($1.0L_s$) 88.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (3.70)

Interval 15: Open to Traffic : Service I Compression

Service I
Stresses at Service Limit State after Losses [5.9.2.3.2]
Compression Stresses [5.9.2.3.2a]
f'_c = 7.000 KSI
Compression stress limit = -0.6f'_c = -4.200 KSI
Concrete strength required to satisfy this requirement = 5.198 KSI

Location from Left Support (ft)	Pre-tension		Service I		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
($0.0L_s$) 0.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (4.93)
(PSXFR) 2.250	0.007	-3.454	-0.408	0.342	-0.401	-3.112	No	Yes	Pass (1.35)
($0.1L_s$) 8.800	0.169	-3.591	-1.470	1.234	-1.300	-2.357	No	Yes	Pass (1.78)
($0.2L_s$) 17.600	0.387	-3.773	-2.602	2.188	-2.215	-1.586	No	Yes	Pass (1.90)
($0.3L_s$) 26.400	0.605	-3.956	-3.403	2.866	-2.798	-1.090	No	Yes	Pass (1.50)
($0.4L_s$) 35.200	0.823	-4.139	-3.882	3.272	-3.058	-0.867	No	Yes	Pass (1.37)
(HP) 39.000	0.917	-4.218	-3.988	3.363	-3.071	-0.855	No	Yes	Pass (1.37)
($0.5L_s$) 44.000	0.917	-4.218	-4.036	3.407	-3.119	-0.811	No	Yes	Pass (1.35)
(HP) 49.000	0.917	-4.218	-3.988	3.363	-3.071	-0.855	No	Yes	Pass (1.37)
($0.6L_s$) 52.800	0.823	-4.139	-3.882	3.272	-3.058	-0.867	No	Yes	Pass (1.37)
($0.7L_s$) 61.600	0.605	-3.956	-3.403	2.866	-2.798	-1.090	No	Yes	Pass (1.50)
($0.8L_s$) 70.400	0.387	-3.773	-2.602	2.188	-2.215	-1.586	No	Yes	Pass (1.90)
($0.9L_s$) 79.200	0.169	-3.591	-1.470	1.234	-1.300	-2.357	No	Yes	Pass (1.78)
(PSXFR) 85.750	0.007	-3.454	-0.408	0.342	-0.401	-3.112	No	Yes	Pass (1.35)
($1.0L_s$) 88.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (4.93)

Interval 15: Open to Traffic : Service III Tension

Service III
Stresses at Service Limit State after Losses [5.9.2.3.2]
Tension Stresses [5.9.2.3.2b]
f'_c = 7.000 KSI
Tension stress limit in the precompressed tensile zone = $0.1900\lambda\sqrt{f'_c}$ but not more than 0.600 KSI = 0.503 KSI
Concrete strength required to satisfy this requirement = 4.091 KSI

Location from Left Support (ft)	Pre-tension		Service III		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
($0.0L_s$) 0.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (-)
(PSXFR) 2.250	0.007	-3.454	-0.365	0.469	-0.358	-2.986	No	Yes	Pass (-)

Location from Left Support (ft)	Pre-tension		Service III		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
($0.1L_s$) 8.800	0.169	-3.591	-1.316	1.687	-1.146	-1.904	No	Yes	Pass (-)
($0.2L_s$) 17.600	0.387	-3.773	-2.332	2.983	-1.945	-0.790	No	Yes	Pass (-)
($0.3L_s$) 26.400	0.605	-3.956	-3.055	3.893	-2.450	-0.063	No	Yes	Pass (-)
($0.4L_s$) 35.200	0.823	-4.139	-3.487	4.435	-2.664	0.296	No	Yes	Pass (1.70)
(HP) 39.000	0.917	-4.218	-3.584	4.554	-2.667	0.336	No	Yes	Pass (1.50)
($0.5L_s$) 44.000	0.917	-4.218	-3.631	4.602	-2.713	0.384	No	Yes	Pass (1.31)
(HP) 49.000	0.917	-4.218	-3.584	4.554	-2.667	0.336	No	Yes	Pass (1.50)
($0.6L_s$) 52.800	0.823	-4.139	-3.487	4.435	-2.664	0.296	No	Yes	Pass (1.70)
($0.7L_s$) 61.600	0.605	-3.956	-3.055	3.893	-2.450	-0.063	No	Yes	Pass (-)
($0.8L_s$) 70.400	0.387	-3.773	-2.332	2.983	-1.945	-0.790	No	Yes	Pass (-)
($0.9L_s$) 79.200	0.169	-3.591	-1.316	1.687	-1.146	-1.904	No	Yes	Pass (-)
(PSXFR) 85.750	0.007	-3.454	-0.365	0.469	-0.358	-2.986	No	Yes	Pass (-)
($1.0L_s$) 88.000	-0.012	-0.852	0.000	0.000	-0.012	-0.852	No	Yes	Pass (-)

Interval 15: Open to Traffic : Fatigue I Compression

Fatigue I
Stresses at Service Limit State after Losses [5.9.2.3.2]
Compression Stresses [5.9.2.3.2a]

f'_c = 7.000 KSI

Compression stress limit = $-0.4f'_c$ = -2.800 KSI

Concrete strength required to satisfy this requirement = 3.945 KSI

Location from Left Support (ft)	Pre-tension		Fatigue I		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
($0.0L_s$) 0.000	-0.012	-0.852	0.000	0.000	-0.006	-0.426	No	Yes	Pass (6.57)
(PSXFR) 2.250	0.007	-3.454	-0.209	0.171	-0.205	-1.556	No	Yes	Pass (1.80)
($0.1L_s$) 8.800	0.169	-3.591	-0.751	0.617	-0.666	-1.178	No	Yes	Pass (2.38)
($0.2L_s$) 17.600	0.387	-3.773	-1.325	1.094	-1.131	-0.793	No	Yes	Pass (2.48)
($0.3L_s$) 26.400	0.605	-3.956	-1.731	1.433	-1.428	-0.545	No	Yes	Pass (1.96)
($0.4L_s$) 35.200	0.823	-4.139	-1.969	1.636	-1.558	-0.434	No	Yes	Pass (1.80)
(HP) 39.000	0.917	-4.218	-2.019	1.682	-1.560	-0.427	No	Yes	Pass (1.79)
($0.5L_s$) 44.000	0.917	-4.218	-2.036	1.703	-1.578	-0.406	No	Yes	Pass (1.77)

Location from Left Support (ft)	Pre-tension		Fatigue I		Demand		Precompressed Tensile Zone		Status (C/D)
	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	f_t (KSI)	f_b (KSI)	Top	Bottom	
(HP) 49.000	0.917	-4.218	-2.019	1.682	-1.560	-0.427	No	Yes	Pass (1.79)
(0.6L_s) 52.800	0.823	-4.139	-1.969	1.636	-1.558	-0.434	No	Yes	Pass (1.80)
(0.7L_s) 61.600	0.605	-3.956	-1.731	1.433	-1.428	-0.545	No	Yes	Pass (1.96)
(0.8L_s) 70.400	0.387	-3.773	-1.325	1.094	-1.131	-0.793	No	Yes	Pass (2.48)
(0.9L_s) 79.200	0.169	-3.591	-0.751	0.617	-0.666	-1.178	No	Yes	Pass (2.38)
(PSXFR) 85.750	0.007	-3.454	-0.209	0.171	-0.205	-1.556	No	Yes	Pass (1.80)
(1.0L_s) 88.000	-0.012	-0.852	0.000	0.000	-0.006	-0.426	No	Yes	Pass (6.57)

Moment Capacity

Positive Moment Capacity for Strength I Limit State [5.6]

Location from Left Support (ft)	M_u (kip-ft)	ϕM_n (kip-ft)	ϕM_n Min (kip-ft)	Status	
				ϕM_n Min $\le \phi M_n$ ($\phi M_n/\phi M_n$ Min)	$M_u \le \phi M_n$ ($\phi M_n/M_u$)
(0.0L_s) 0.000	0.00	868.00	0.00	Pass (∞)	Pass (∞)
(0.1L_s) 8.800	1576.59	4658.28	2096.86	Pass (2.22)	Pass (2.95)
(0.2L_s) 17.600	2782.09	5407.55	3473.01	Pass (1.56)	Pass (1.94)
(0.3L_s) 26.400	3619.05	5565.53	3449.05	Pass (1.61)	Pass (1.54)
(0.4L_s) 35.200	4115.29	5721.45	3498.30	Pass (1.64)	Pass (1.39)
(0.5L_s) 44.000	4258.91	5788.64	3530.36	Pass (1.64)	Pass (1.36)
(0.6L_s) 52.800	4115.29	5721.45	3498.30	Pass (1.64)	Pass (1.39)
(0.7L_s) 61.600	3619.05	5565.53	3449.05	Pass (1.61)	Pass (1.54)
(0.8L_s) 70.400	2782.09	5407.55	3473.01	Pass (1.56)	Pass (1.94)
(0.9L_s) 79.200	1576.59	4658.28	2096.86	Pass (2.22)	Pass (2.95)
(1.0L_s) 88.000	0.00	868.00	0.00	Pass (∞)	Pass (∞)

Shear

Ultimate Shears for Strength I Limit State [5.8]

Location from Left Support (ft)	Stirrups Required	Stirrups Provided	$\|V_u\|$ (kip)	ϕV_n (kip)	Status ($\phi V_n/V_u$)
(CS) 3.214	Yes	Yes	220.45	389.93	Pass (1.77)
(1.5H) 4.583	Yes	Yes	214.50	389.93	Pass (1.82)

Location from Left Support (ft)	Stirrups Required	Stirrups Provided	$\|V_u\|$ (kip)	ϕV_n (kip)	Status ($\phi V_n/V_u$)
(SZB) 7.461	Yes	Yes	202.06	348.73	Pass (1.73)
($0.1L_s$) 8.800	Yes	Yes	196.31	340.39	Pass (1.73)
(SZB) 12.461	Yes	Yes	180.71	273.20	Pass (1.51)
($0.2L_s$) 17.600	Yes	Yes	159.09	263.06	Pass (1.65)
(SZB) 22.461	Yes	Yes	138.92	205.32	Pass (1.48)
($0.3L_s$) 26.400	Yes	Yes	122.77	203.92	Pass (1.66)
($0.4L_s$) 35.200	Yes	Yes	87.28	191.18	Pass (2.19)
(HP) 39.000	Yes	Yes	72.19	190.82	Pass (2.64)
($0.5L_s$) 44.000	Yes	Yes	52.54	181.13	Pass (3.45)
(HP) 49.000	Yes	Yes	72.19	190.82	Pass (2.64)
($0.6L_s$) 52.800	Yes	Yes	87.28	191.18	Pass (2.19)
($0.7L_s$) 61.600	Yes	Yes	122.77	203.92	Pass (1.66)
(SZB) 65.539	Yes	Yes	138.92	205.32	Pass (1.48)
($0.8L_s$) 70.400	Yes	Yes	159.09	263.06	Pass (1.65)
(SZB) 75.539	Yes	Yes	180.71	273.20	Pass (1.51)
($0.9L_s$) 79.200	Yes	Yes	196.31	340.39	Pass (1.73)
(SZB) 80.539	Yes	Yes	202.06	348.73	Pass (1.73)
(1.5H) 83.417	Yes	Yes	214.50	389.93	Pass (1.82)
(CS) 84.786	Yes	Yes	220.45	389.93	Pass (1.77)

[LRFD 5.8.3.2] The reaction introduces compression into the end of the girder. Load between the CSS and the support is transferred directly to the support by compressive arching action without causing additional stresses in the stirrups. Hence, A_V/S in this region must be equal or greater than A_V/S at the critical section.

Ultimate Shears for Strength II Limit State [5.8]

Location from Left Support (ft)	Stirrups Required	Stirrups Provided	$\|V_u\|$ (kip)	ϕV_n (kip)	Status ($\phi V_n/V_u$)
(CS) 3.214	Yes	Yes	108.57	389.93	Pass (3.59)
(1.5H) 4.583	Yes	Yes	104.86	389.93	Pass (3.72)
(SZB) 7.461	Yes	Yes	97.12	369.05	Pass (3.80)
($0.1L_s$) 8.800	Yes	Yes	93.54	362.35	Pass (3.87)
(SZB) 12.461	Yes	Yes	83.84	297.49	Pass

Location from Left Support (ft)	Stirrups Required	Stirrups Provided	$\|V_u\|$ (kip)	ϕV_n (kip)	Status ($\phi V_n/V_u$)
					(3.55)
(0.2L_s) 17.600	Yes	Yes	70.40	290.29	Pass (4.12)
(SZB) 22.461	No	Yes	57.87	231.73	Pass (4.00)
(0.3L_s) 26.400	No	Yes	47.83	230.88	Pass (4.83)
(0.4L_s) 35.200	No	Yes	25.75	232.36	Pass (9.02)
(HP) 39.000	No	Yes	16.35	234.28	Pass (10+)
(0.5L_s) 44.000	No	Yes	4.08	224.93	Pass (10+)
(HP) 49.000	No	Yes	16.35	234.28	Pass (10+)
(0.6L_s) 52.800	No	Yes	25.75	232.36	Pass (9.02)
(0.7L_s) 61.600	No	Yes	47.83	230.88	Pass (4.83)
(SZB) 65.539	No	Yes	57.87	231.73	Pass (4.00)
(0.8L_s) 70.400	Yes	Yes	70.40	290.29	Pass (4.12)
(SZB) 75.539	Yes	Yes	83.84	297.49	Pass (3.55)
(0.9L_s) 79.200	Yes	Yes	93.54	362.35	Pass (3.87)
(SZB) 80.539	Yes	Yes	97.12	369.05	Pass (3.80)
(1.5H) 83.417	Yes	Yes	104.86	389.93	Pass (3.72)
(CS) 84.786	Yes	Yes	108.57	389.93	Pass (3.59)

[LRFD 5.8.3.2] The reaction introduces compression into the end of the girder. Load between the CSS and the support is transferred directly to the support by compressive arching action without causing additional stresses in the stirrups. Hence, A_V/S in this region must be equal or greater than A_V/S at the critical section.

Horizontal Interface Shears/Length for Strength I Limit State [5.7.4]

Location from Left Support (ft)	5.7.4.5			5.7.4.2			5.7.4.1		
	s (in)	s_{max} (in)	Status	a_{vf} (in^2/ft)	$a_{vf\ min}$ (in^2/ft)	Status	$\|v_{ui}\|$ (kip/ft)	ϕv_{ni} (kip/ft)	Status ($\phi v_{ni}/\|v_{ui}\|$)
(0.0L_s) 0.000	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)
(FoS) 0.333	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)
(Bar Develop.) 1.518	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)
(Bar Cutoff) 2.375	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)
(SZB) 2.461	4.000	42.500	Pass	1.200	N/A	N/A	73.884	174.180	Pass (2.36)
(H) 3.167	4.000	42.500	Pass	1.200	N/A	N/A	73.884	174.180	Pass (2.36)
(CS) 3.214	4.000	42.500	Pass	1.200	N/A	N/A	73.884	174.180	Pass

Location from Left Support (ft)	5.7.4.5			5.7.4.2			5.7.4.1		
	s (in)	s_{max} (in)	Status	a_{vf} (in^2/ft)	$a_{vf\ min}$ (in^2/ft)	Status	$\|v_{ui}\|$ (kip/ft)	ϕv_{ni} (kip/ft)	Status ($\phi v_{ni}/\|v_{ui}\|$)
									(2.36)
(1.5H) 4.583	4.000	42.500	Pass	1.200	N/A	N/A	71.888	174.180	Pass (2.42)
(SZB) 7.461	6.000	42.500	Pass	0.800	N/A	N/A	67.720	152.580	Pass (2.25)
(0.1L_s) 8.800	6.000	42.500	Pass	0.800	N/A	N/A	65.794	152.580	Pass (2.32)
(SZB) 12.461	8.000	42.500	Pass	0.600	N/A	N/A	60.565	141.780	Pass (2.34)
(0.2L_s) 17.600	8.000	42.500	Pass	0.600	N/A	N/A	53.318	141.780	Pass (2.66)
(SZB) 22.461	12.000	42.500	Pass	0.400	N/A	N/A	46.559	130.980	Pass (2.81)
(0.3L_s) 26.400	12.000	42.500	Pass	0.400	N/A	N/A	41.147	130.980	Pass (3.18)
(0.4L_s) 35.200	12.000	42.500	Pass	0.400	N/A	N/A	29.253	130.980	Pass (4.48)
(HP) 39.000	12.000	42.500	Pass	0.400	N/A	N/A	24.195	130.980	Pass (5.41)
(0.5L_s) 44.000	12.000	42.500	Pass	0.400	N/A	N/A	17.608	130.980	Pass (7.44)
(HP) 49.000	12.000	42.500	Pass	0.400	N/A	N/A	24.195	130.980	Pass (5.41)
(0.6L_s) 52.800	12.000	42.500	Pass	0.400	N/A	N/A	29.253	130.980	Pass (4.48)
(0.7L_s) 61.600	12.000	42.500	Pass	0.400	N/A	N/A	41.147	130.980	Pass (3.18)
(SZB) 65.539	12.000	42.500	Pass	0.400	N/A	N/A	46.559	130.980	Pass (2.81)
(0.8L_s) 70.400	8.000	42.500	Pass	0.600	N/A	N/A	53.318	141.780	Pass (2.66)
(SZB) 75.539	8.000	42.500	Pass	0.600	N/A	N/A	60.565	141.780	Pass (2.34)
(0.9L_s) 79.200	6.000	42.500	Pass	0.800	N/A	N/A	65.794	152.580	Pass (2.32)
(SZB) 80.539	6.000	42.500	Pass	0.800	N/A	N/A	67.720	152.580	Pass (2.25)
(1.5H) 83.417	4.000	42.500	Pass	1.200	N/A	N/A	71.888	174.180	Pass (2.42)
(CS) 84.786	4.000	42.500	Pass	1.200	N/A	N/A	73.884	174.180	Pass (2.36)
(H) 84.833	4.000	42.500	Pass	1.200	N/A	N/A	73.884	174.180	Pass (2.36)
(SZB) 85.539	4.000	42.500	Pass	1.200	N/A	N/A	73.884	174.180	Pass (2.36)
(Bar Cutoff) 85.625	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)
(Bar Develop.) 86.482	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)
(FoS) 87.667	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)
(1.0L_s) 88.000	3.000	42.500	Pass	1.600	N/A	N/A	73.884	195.780	Pass (2.65)

Horizontal Interface Shears/Length for Strength II Limit State [5.7.4]

Location from Left Support (ft)	5.7.4.5			5.7.4.2			5.7.4.1		
	s (in)	s_{max} (in)	Status	a_{vf} (in^2/ft)	$a_{vf\ min}$ (in^2/ft)	Status	$\|v_{ui}\|$ (kip/ft)	ϕv_{ni} (kip/ft)	Status ($\phi v_{ni}/\|v_{ui}\|$)
($0.0L_s$) 0.000	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)
(FoS) 0.333	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)
(Bar Develop.) 1.518	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)
(Bar Cutoff) 2.375	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)
(SZB) 2.461	4.000	42.500	Pass	1.200	N/A	N/A	36.387	174.180	Pass (4.79)
(H) 3.167	4.000	42.500	Pass	1.200	N/A	N/A	36.387	174.180	Pass (4.79)
(CS) 3.214	4.000	42.500	Pass	1.200	N/A	N/A	36.387	174.180	Pass (4.79)
(1.5H) 4.583	4.000	42.500	Pass	1.200	N/A	N/A	35.144	174.180	Pass (4.96)
(SZB) 7.461	6.000	42.500	Pass	0.800	N/A	N/A	32.549	152.580	Pass (4.69)
($0.1L_s$) 8.800	6.000	42.500	Pass	0.800	N/A	N/A	31.351	152.580	Pass (4.87)
(SZB) 12.461	8.000	42.500	Pass	0.600	N/A	N/A	28.099	141.780	Pass (5.05)
($0.2L_s$) 17.600	8.000	42.500	Pass	0.600	N/A	N/A	23.594	141.780	Pass (6.01)
(SZB) 22.461	12.000	42.500	Pass	0.400	N/A	N/A	19.394	130.980	Pass (6.75)
($0.3L_s$) 26.400	12.000	42.500	Pass	0.400	N/A	N/A	16.030	130.980	Pass (8.17)
($0.4L_s$) 35.200	12.000	42.500	Pass	0.400	N/A	N/A	8.631	130.980	Pass (10+)
(HP) 39.000	12.000	42.500	Pass	0.400	N/A	N/A	5.480	130.980	Pass (10+)
($0.5L_s$) 44.000	12.000	42.500	Pass	0.400	N/A	N/A	1.369	130.980	Pass (10+)
(HP) 49.000	12.000	42.500	Pass	0.400	N/A	N/A	5.480	130.980	Pass (10+)
($0.6L_s$) 52.800	12.000	42.500	Pass	0.400	N/A	N/A	8.631	130.980	Pass (10+)
($0.7L_s$) 61.600	12.000	42.500	Pass	0.400	N/A	N/A	16.030	130.980	Pass (8.17)
(SZB) 65.539	12.000	42.500	Pass	0.400	N/A	N/A	19.394	130.980	Pass (6.75)
($0.8L_s$) 70.400	8.000	42.500	Pass	0.600	N/A	N/A	23.594	141.780	Pass (6.01)
(SZB) 75.539	8.000	42.500	Pass	0.600	N/A	N/A	28.099	141.780	Pass (5.05)
($0.9L_s$) 79.200	6.000	42.500	Pass	0.800	N/A	N/A	31.351	152.580	Pass (4.87)
(SZB) 80.539	6.000	42.500	Pass	0.800	N/A	N/A	32.549	152.580	Pass (4.69)
(1.5H) 83.417	4.000	42.500	Pass	1.200	N/A	N/A	35.144	174.180	Pass (4.96)
(CS) 84.786	4.000	42.500	Pass	1.200	N/A	N/A	36.387	174.180	Pass (4.79)
(H) 84.833	4.000	42.500	Pass	1.200	N/A	N/A	36.387	174.180	Pass

Location from Left Support (ft)	5.7.4.5			5.7.4.2			5.7.4.1		
	s (in)	s_{max} (in)	Status	a_{vf} (in^2/ft)	$a_{vf\ min}$ (in^2/ft)	Status	$\|v_{ui}\|$ (kip/ft)	ϕv_{ni} (kip/ft)	Status ($\phi v_{ni}/\|v_{ui}\|$)
									(4.79)
(SZB) 85.539	4.000	42.500	Pass	1.200	N/A	N/A	36.387	174.180	Pass (4.79)
(Bar Cutoff) 85.625	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)
(Bar Develop.) 86.482	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)
(FoS) 87.667	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)
(1.0L_s) 88.000	3.000	42.500	Pass	1.600	N/A	N/A	36.387	195.780	Pass (5.38)

Longitudinal Reinforcement for Shear Check - Strength I [5.7.3.5]

$$A_s f_y + A_{ps} f_{ps} \geq \left[\frac{M_u}{d_v \varphi_f} + 0.5 \frac{N_u}{\varphi_a} + \left(\left| \frac{V_u}{\varphi_v} - V_p \right| - 0.5 V_s \right) \cot\theta \right] \quad \text{5.7.3.5-1}$$

$$A_s f_y + A_{ps} f_{ps} \geq \left(\frac{V_u}{\varphi_v} - V_p - 0.5 V_s \right) \cot\theta \quad \text{5.7.3.5-2}$$

$$A_{ps} f_{ps} > A_s f_y$$

Location from Left Support (ft)	Capacity (kip)	Demand (kip)	Equation	Status (C/D)	$A_{ps}f_{ps}$ (kip)	$A_s f_y$ (kip)	Status
(FoS) 0.333	395.12	213.66	5.7.3.5-2	Pass (1.85)	369.97	25.15	Pass
(Bar Develop.) 1.518	789.77	213.66	5.7.3.5-2	Pass (3.70)	767.27	22.50	Pass
(Bar Cutoff) 2.375	1011.15	213.66	5.7.3.5-2	Pass (4.73)	1011.15	0.00	Pass
(SZB) 2.461	1017.08	213.66	5.7.3.5-2	Pass (4.76)	1017.08	0.00	Pass
(H) 3.167	1065.52	213.66	5.7.3.5-2	Pass (4.99)	1065.52	0.00	Pass
(CS) 3.214	1068.74	428.56	5.7.3.5-1	Pass (2.49)	1068.74	0.00	Pass
(1.5H) 4.583	1162.76	507.49	5.7.3.5-1	Pass (2.29)	1162.76	0.00	Pass
(SZB) 7.461	1360.27	663.93	5.7.3.5-1	Pass (2.05)	1360.27	0.00	Pass
(0.1L_s) 8.800	1548.78	747.46	5.7.3.5-1	Pass (2.07)	1548.78	0.00	Pass
(SZB) 12.461	1881.53	955.28	5.7.3.5-1	Pass (1.97)	1881.53	0.00	Pass
(0.2L_s) 17.600	2001.79	1167.22	5.7.3.5-1	Pass (1.72)	2001.79	0.00	Pass
(SZB) 22.461	2007.37	1348.36	5.7.3.5-1	Pass (1.49)	2007.37	0.00	Pass
(0.3L_s) 26.400	2010.38	1420.71	5.7.3.5-1	Pass (1.42)	2010.38	0.00	Pass
(0.4L_s) 35.200	2014.59	1513.27	5.7.3.5-1	Pass (1.33)	2014.59	0.00	Pass
(HP) 39.000	2015.88	1521.13	5.7.3.5-1	Pass (1.33)	2015.88	0.00	Pass
(0.5L_s) 44.000	2015.88	1531.97	5.7.3.5-1	Pass (1.32)	2015.88	0.00	Pass

Location from Left Support (ft)	Capacity (kip)	Demand (kip)	Equation	Status (C/D)	$A_{ps}f_{ps}$ (kip)	$A_s f_y$ (kip)	Status
(HP) 49.000	2015.88	1521.13	5.7.3.5-1	Pass (1.33)	2015.88	0.00	Pass
(0.6L_s) 52.800	2014.59	1513.27	5.7.3.5-1	Pass (1.33)	2014.59	0.00	Pass
(0.7L_s) 61.600	2010.38	1420.71	5.7.3.5-1	Pass (1.42)	2010.38	0.00	Pass
(SZB) 65.539	2007.37	1348.36	5.7.3.5-1	Pass (1.49)	2007.37	0.00	Pass
(0.8L_s) 70.400	2001.79	1167.22	5.7.3.5-1	Pass (1.72)	2001.79	0.00	Pass
(SZB) 75.539	1881.53	955.28	5.7.3.5-1	Pass (1.97)	1881.53	0.00	Pass
(0.9L_s) 79.200	1548.78	747.46	5.7.3.5-1	Pass (2.07)	1548.78	0.00	Pass
(SZB) 80.539	1360.27	663.93	5.7.3.5-1	Pass (2.05)	1360.27	0.00	Pass
(1.5H) 83.417	1162.76	507.49	5.7.3.5-1	Pass (2.29)	1162.76	0.00	Pass
(CS) 84.786	1068.74	428.56	5.7.3.5-1	Pass (2.49)	1068.74	0.00	Pass
(H) 84.833	1065.52	213.66	5.7.3.5-2	Pass (4.99)	1065.52	0.00	Pass
(SZB) 85.539	1017.08	213.66	5.7.3.5-2	Pass (4.76)	1017.08	0.00	Pass
(Bar Cutoff) 85.625	1011.15	213.66	5.7.3.5-2	Pass (4.73)	1011.15	0.00	Pass
(Bar Develop.) 86.482	789.77	213.66	5.7.3.5-2	Pass (3.70)	767.27	22.50	Pass
(FoS) 87.667	395.12	213.66	5.7.3.5-2	Pass (1.85)	369.97	25.15	Pass

Longitudinal Reinforcement for Shear Check - Strength II [5.7.3.5]

$$A_s f_y + A_{ps} f_{ps} \geq \left[\frac{M_u}{d_v \varphi_f} + 0.5 \frac{N_u}{\varphi_a} + \left(\left| \frac{V_u}{\varphi_v} - V_p \right| - 0.5 V_s \right) \cot\theta \right] \quad \text{5.7.3.5-1}$$

$$A_s f_y + A_{ps} f_{ps} \geq \left(\frac{V_u}{\varphi_v} - V_p - 0.5 V_s \right) \cot\theta \quad \text{5.7.3.5-2}$$

$$A_{ps} f_{ps} > A_s f_y$$

Location from Left Support (ft)	Capacity (kip)	Demand (kip)	Equation	Status (C/D)	$A_{ps}f_{ps}$ (kip)	$A_s f_y$ (kip)	Status
(FoS) 0.333	395.12	96.53	5.7.3.5-2	Pass (4.09)	369.97	25.15	Pass
(Bar Develop.) 1.518	789.77	96.53	5.7.3.5-2	Pass (8.18)	767.27	22.50	Pass
(Bar Cutoff) 2.375	1011.15	96.53	5.7.3.5-2	Pass (10+)	1011.15	0.00	Pass
(SZB) 2.461	1017.08	96.53	5.7.3.5-2	Pass (10+)	1017.08	0.00	Pass
(H) 3.167	1065.52	96.53	5.7.3.5-2	Pass (10+)	1065.52	0.00	Pass
(CS) 3.214	1068.74	222.54	5.7.3.5-1	Pass (4.80)	1068.74	0.00	Pass
(1.5H) 4.583	1162.76	269.33	5.7.3.5-1	Pass (4.32)	1162.76	0.00	Pass

Location from Left Support (ft)	Capacity (kip)	Demand (kip)	Equation	Status (C/D)	$A_{ps}f_{ps}$ (kip)	$A_s f_y$ (kip)	Status
(SZB) 7.461	1360.27	361.73	5.7.3.5-1	Pass (3.76)	1360.27	0.00	Pass
($0.1L_s$) 8.800	1548.78	410.89	5.7.3.5-1	Pass (3.77)	1548.78	0.00	Pass
(SZB) 12.461	1881.53	524.67	5.7.3.5-1	Pass (3.59)	1881.53	0.00	Pass
($0.2L_s$) 17.600	2001.79	660.18	5.7.3.5-1	Pass (3.03)	2001.79	0.00	Pass
(SZB) 22.461	2007.37	751.07	5.7.3.5-1	Pass (2.67)	2007.37	0.00	Pass
($0.3L_s$) 26.400	2010.38	806.25	5.7.3.5-1	Pass (2.49)	2010.38	0.00	Pass
($0.4L_s$) 35.200	2014.59	872.81	5.7.3.5-1	Pass (2.31)	2014.59	0.00	Pass
(HP) 39.000	2015.88	878.40	5.7.3.5-1	Pass (2.29)	2015.88	0.00	Pass
($0.5L_s$) 44.000	2015.88	895.52	5.7.3.5-1	Pass (2.25)	2015.88	0.00	Pass
(HP) 49.000	2015.88	878.40	5.7.3.5-1	Pass (2.29)	2015.88	0.00	Pass
($0.6L_s$) 52.800	2014.59	872.81	5.7.3.5-1	Pass (2.31)	2014.59	0.00	Pass
($0.7L_s$) 61.600	2010.38	806.25	5.7.3.5-1	Pass (2.49)	2010.38	0.00	Pass
(SZB) 65.539	2007.37	751.07	5.7.3.5-1	Pass (2.67)	2007.37	0.00	Pass
($0.8L_s$) 70.400	2001.79	660.18	5.7.3.5-1	Pass (3.03)	2001.79	0.00	Pass
(SZB) 75.539	1881.53	524.67	5.7.3.5-1	Pass (3.59)	1881.53	0.00	Pass
($0.9L_s$) 79.200	1548.78	410.89	5.7.3.5-1	Pass (3.77)	1548.78	0.00	Pass
(SZB) 80.539	1360.27	361.73	5.7.3.5-1	Pass (3.76)	1360.27	0.00	Pass
(1.5H) 83.417	1162.76	269.33	5.7.3.5-1	Pass (4.32)	1162.76	0.00	Pass
(CS) 84.786	1068.74	222.54	5.7.3.5-1	Pass (4.80)	1068.74	0.00	Pass
(H) 84.833	1065.52	96.53	5.7.3.5-2	Pass (10+)	1065.52	0.00	Pass
(SZB) 85.539	1017.08	96.53	5.7.3.5-2	Pass (10+)	1017.08	0.00	Pass
(Bar Cutoff) 85.625	1011.15	96.53	5.7.3.5-2	Pass (10+)	1011.15	0.00	Pass
(Bar Develop.) 86.482	789.77	96.53	5.7.3.5-2	Pass (8.18)	767.27	22.50	Pass
(FoS) 87.667	395.12	96.53	5.7.3.5-2	Pass (4.09)	369.97	25.15	Pass

Stirrup Detailing Check: Strength I [5.7.2.5, 5.7.2.6, 5.10.3.1.2]

Location from Left Support (ft)	Bar Size	S (in)	S_{max} (in)	S_{min} (in)	A_v/S (in^2/ft)	A_v/S_{min} (in^2/ft)	Status
($0.0L_s$) 0.000	#4	3.000	12.000	2.495	1.600	0.117	Pass
(FoS) 0.333	#4	3.000	12.000	2.495	1.600	0.117	Pass
(Bar Develop.) 1.518	#4	3.000	12.000	2.495	1.600	0.117	Pass

Location from Left Support (ft)	Bar Size	S (in)	S_{max} (in)	S_{min} (in)	A_v/S (in^2/ft)	A_v/S_{min} (in^2/ft)	Status
(Bar Cutoff) 2.375	#4	3.000	12.000	2.495	1.600	0.117	Pass
(SZB) 2.461	#4	4.000	12.000	2.495	1.200	0.117	Pass
(H) 3.167	#4	4.000	12.000	2.495	1.200	0.117	Pass
(CS) 3.214	#4	4.000	12.000	2.495	1.200	0.117	Pass
(1.5H) 4.583	#4	4.000	12.000	2.495	1.200	0.117	Pass
(SZB) 7.461	#4	6.000	12.000	2.495	0.800	0.117	Pass
($0.1L_s$) 8.800	#4	6.000	12.000	2.495	0.800	0.117	Pass
(SZB) 12.461	#4	8.000	24.000	2.495	0.600	0.117	Pass
($0.2L_s$) 17.600	#4	8.000	24.000	2.495	0.600	0.117	Pass
(SZB) 22.461	#4	12.000	24.000	2.495	0.400	0.117	Pass
($0.3L_s$) 26.400	#4	12.000	24.000	2.495	0.400	0.117	Pass
($0.4L_s$) 35.200	#4	12.000	24.000	2.495	0.400	0.117	Pass
(HP) 39.000	#4	12.000	24.000	2.495	0.400	0.117	Pass
($0.5L_s$) 44.000	#4	12.000	24.000	2.495	0.400	0.117	Pass
(HP) 49.000	#4	12.000	24.000	2.495	0.400	0.117	Pass
($0.6L_s$) 52.800	#4	12.000	24.000	2.495	0.400	0.117	Pass
($0.7L_s$) 61.600	#4	12.000	24.000	2.495	0.400	0.117	Pass
(SZB) 65.539	#4	12.000	24.000	2.495	0.400	0.117	Pass
($0.8L_s$) 70.400	#4	8.000	24.000	2.495	0.600	0.117	Pass
(SZB) 75.539	#4	8.000	24.000	2.495	0.600	0.117	Pass
($0.9L_s$) 79.200	#4	6.000	12.000	2.495	0.800	0.117	Pass
(SZB) 80.539	#4	6.000	12.000	2.495	0.800	0.117	Pass
(1.5H) 83.417	#4	4.000	12.000	2.495	1.200	0.117	Pass
(CS) 84.786	#4	4.000	12.000	2.495	1.200	0.117	Pass
(H) 84.833	#4	4.000	12.000	2.495	1.200	0.117	Pass
(SZB) 85.539	#4	4.000	12.000	2.495	1.200	0.117	Pass
(Bar Cutoff) 85.625	#4	3.000	12.000	2.495	1.600	0.117	Pass
(Bar Develop.) 86.482	#4	3.000	12.000	2.495	1.600	0.117	Pass
(FoS) 87.667	#4	3.000	12.000	2.495	1.600	0.117	Pass
($1.0L_s$) 88.000	#4	3.000	12.000	2.495	1.600	0.117	Pass

Stirrup Detailing Check: Strength II [5.7.2.5, 5.7.2.6, 5.10.3.1.2]

Location from Left Support (ft)	Bar Size	S (in)	S_{max} (in)	S_{min} (in)	A_v/S (in^2/ft)	A_v/S_{min} (in^2/ft)*	Status
($0.0L_s$) 0.000	#4	3.000	24.000	2.495	1.600	0.117	Pass
(FoS) 0.333	#4	3.000	24.000	2.495	1.600	0.117	Pass
(Bar Develop.) 1.518	#4	3.000	24.000	2.495	1.600	0.117	Pass
(Bar Cutoff) 2.375	#4	3.000	24.000	2.495	1.600	0.117	Pass
(SZB) 2.461	#4	4.000	24.000	2.495	1.200	0.117	Pass
(H) 3.167	#4	4.000	24.000	2.495	1.200	0.117	Pass
(CS) 3.214	#4	4.000	24.000	2.495	1.200	0.117	Pass
(1.5H) 4.583	#4	4.000	24.000	2.495	1.200	0.117	Pass
(SZB) 7.461	#4	6.000	24.000	2.495	0.800	0.117	Pass
($0.1L_s$) 8.800	#4	6.000	24.000	2.495	0.800	0.117	Pass
(SZB) 12.461	#4	8.000	24.000	2.495	0.600	0.117	Pass
	#4	8.000	24.000	2.495	0.600	0.117	Pass

Location from Left Support (ft)	Bar Size	S (in)	S_{max} (in)	S_{min} (in)	A_v/S (in^2/ft)	A_v/S_{min} (in^2/ft)*	Status
($0.2L_s$) 17.600							
(SZB) 22.461	#4	12.000	24.000	2.495	0.400	0.000	Pass
($0.3L_s$) 26.400	#4	12.000	24.000	2.495	0.400	0.000	Pass
($0.4L_s$) 35.200	#4	12.000	24.000	2.495	0.400	0.000	Pass
(HP) 39.000	#4	12.000	24.000	2.495	0.400	0.000	Pass
($0.5L_s$) 44.000	#4	12.000	24.000	2.495	0.400	0.000	Pass
(HP) 49.000	#4	12.000	24.000	2.495	0.400	0.000	Pass
($0.6L_s$) 52.800	#4	12.000	24.000	2.495	0.400	0.000	Pass
($0.7L_s$) 61.600	#4	12.000	24.000	2.495	0.400	0.000	Pass
(SZB) 65.539	#4	12.000	24.000	2.495	0.400	0.000	Pass
($0.8L_s$) 70.400	#4	8.000	24.000	2.495	0.600	0.117	Pass
(SZB) 75.539	#4	8.000	24.000	2.495	0.600	0.117	Pass
($0.9L_s$) 79.200	#4	6.000	24.000	2.495	0.800	0.117	Pass
(SZB) 80.539	#4	6.000	24.000	2.495	0.800	0.117	Pass
(1.5H) 83.417	#4	4.000	24.000	2.495	1.200	0.117	Pass
(CS) 84.786	#4	4.000	24.000	2.495	1.200	0.117	Pass
(H) 84.833	#4	4.000	24.000	2.495	1.200	0.117	Pass
(SZB) 85.539	#4	4.000	24.000	2.495	1.200	0.117	Pass
(Bar Cutoff) 85.625	#4	3.000	24.000	2.495	1.600	0.117	Pass
(Bar Develop.) 86.482	#4	3.000	24.000	2.495	1.600	0.117	Pass
(FoS) 87.667	#4	3.000	24.000	2.495	1.600	0.117	Pass
($1.0L_s$) 88.000	#4	3.000	24.000	2.495	1.600	0.117	Pass

* - Transverse reinforcement required if $V_u > 0.5\phi(V_c + V_p)$ [Eqn 5.7.2.3-1]