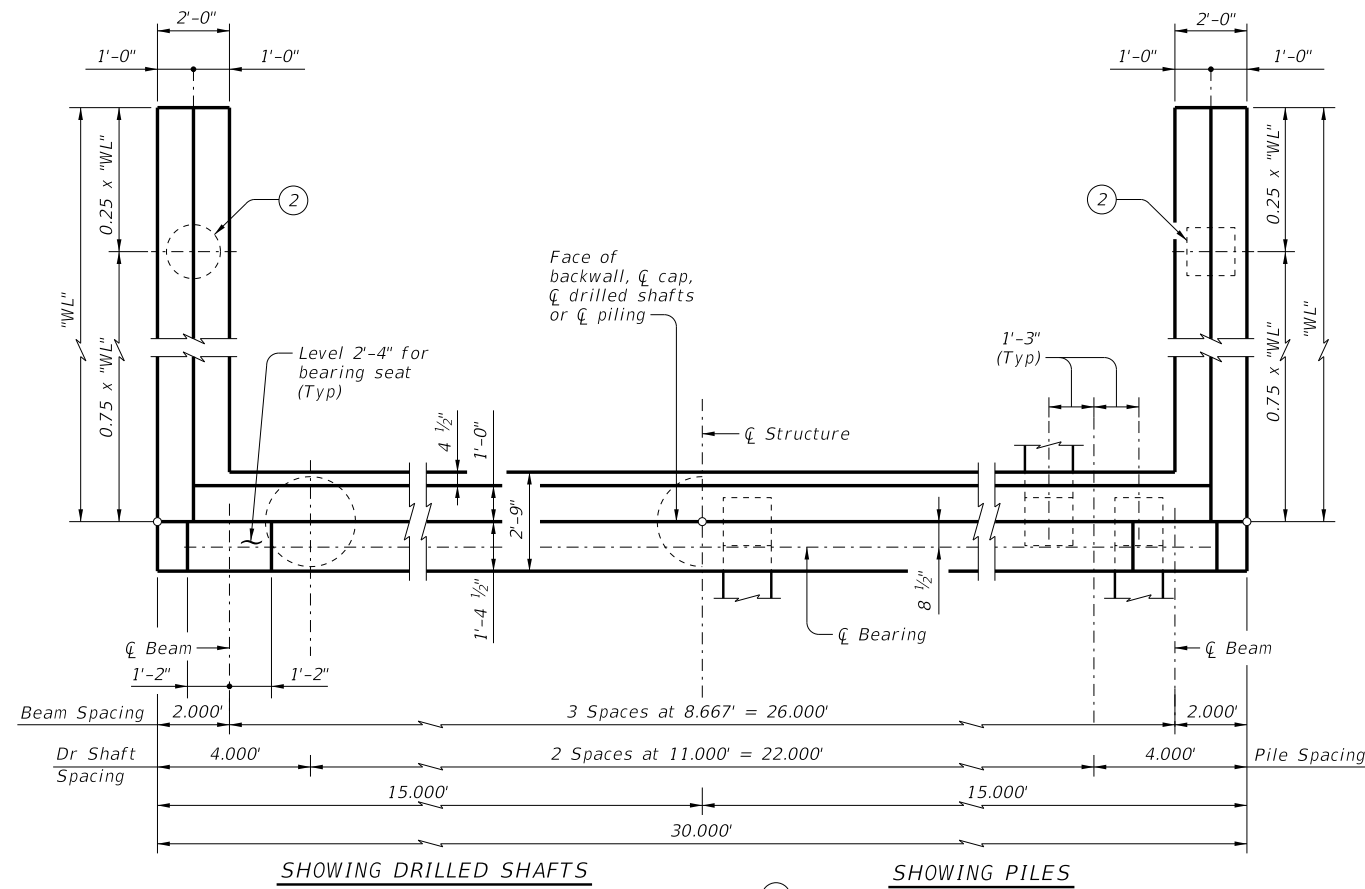
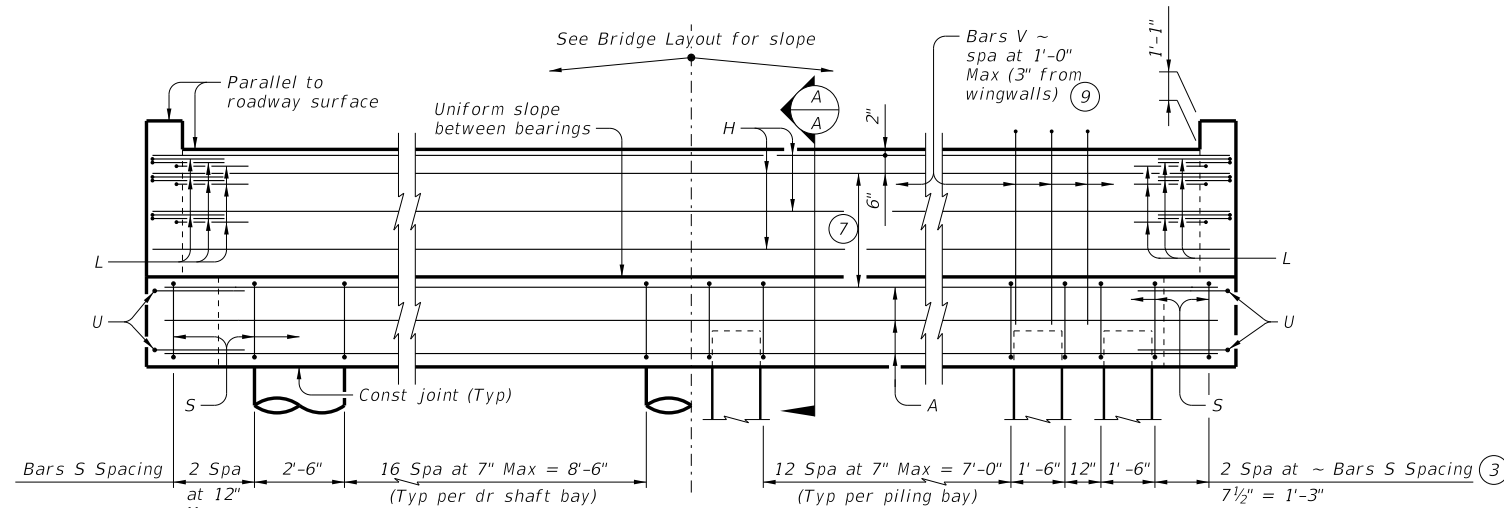


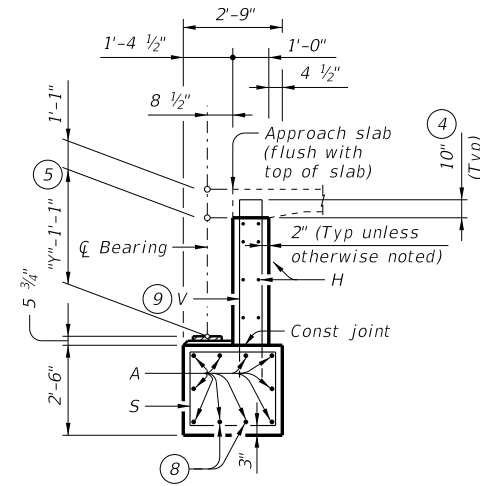
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PLAN ①

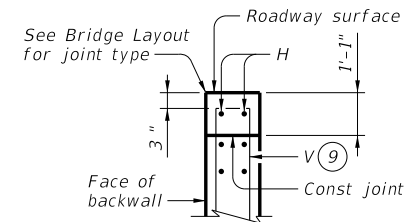


ELEVATION



SECTION A-A

(With approach slab) ⑥



BACKWALL DETAIL

(Without approach slab) ⑥

TABLE A			
Header Slope	Beam Type	Wingwall Type	Wingwall Length "WL"
2:1	W18	Cantilevered	7.000'
	W21	Cantilevered	7.000'
	W24	Cantilevered	8.000'
	W27	Cantilevered	8.000'
	W30	Cantilevered	8.000'
	W33	Cantilevered	9.000'
3:1	W36	Cantilevered	9.000'
	W40	Cantilevered	10.000'
	W18	Cantilevered	10.000'
	W21	Cantilevered	10.000'
	W24	Cantilevered	11.000'
	W27	Cantilevered	12.000'
	W30	Founded	13.000'
	W33	Founded	13.000'
W36	Founded	14.000'	
W40	Founded	15.000'	

**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.

**GENERAL NOTES:**

- Designed according to AASHTO LRFD Bridge Design Specifications. See Bridge Layout for beam type, 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 Standard Erection and Bracing Requirements (SBBR) standard sheet for location and size of anchor bolt required for erection bracing. See applicable rail details for rail anchorage in wingwalls. These abutment details may be used with standard SSB-28 only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

- See Table A for variable dimensions based on header slope and beam type.
- See Table A to determine if wingwall foundations are required.
- For piling larger than 16", adjust Bars S spacing as required to avoid piling.
- Increase as required to maintain 3" from finished grade.
- See Steel Beam Standard Design (SBSD-28) standard for "y" value.
- See Bridge Layout to determine if approach slab is present.
- Use 2 spaces at 12" Max for W18 through W24 beams and 3 spaces at 12" Max for W27 beams and larger.
- With pile foundations, replace Bars A located at bottom centerline of cap with 2 ~ #11 x 7'-0" (per bay) placed between piling groups. Deduct 159 lbs total from reinforcing steel total.
- Field bend as needed to clear piles.

HL93 LOADING

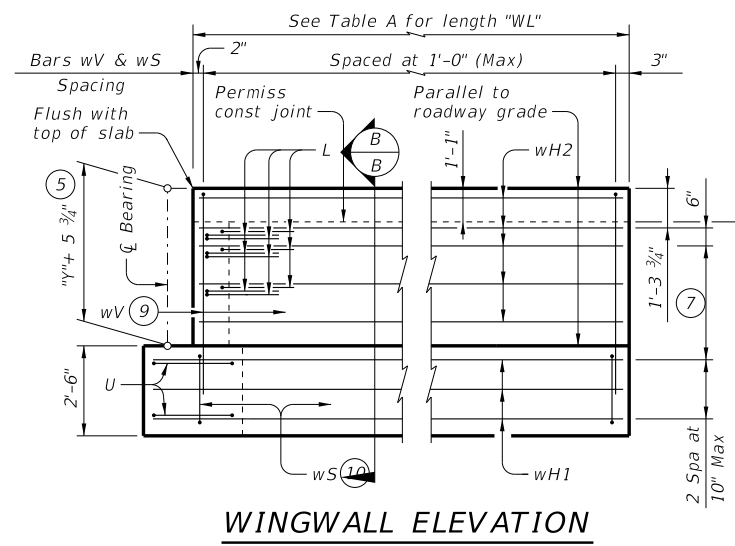
SHEET 1 OF 3

		<b>Bridge Division Standard</b>	
<h2>ABUTMENTS</h2> <h3>STEEL BEAM SPANS</h3> <h3>28' ROADWAY</h3> <h2>ASB-28</h2>			
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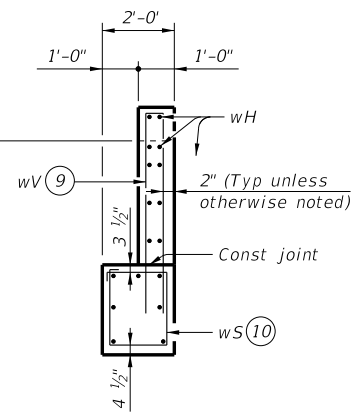
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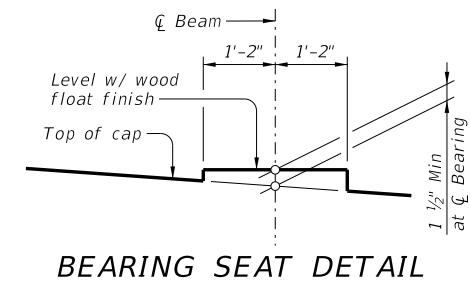
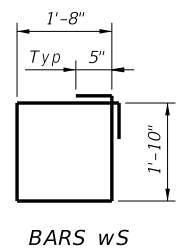
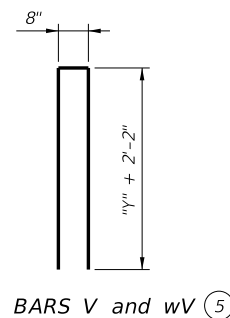
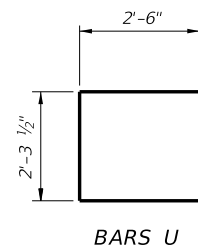
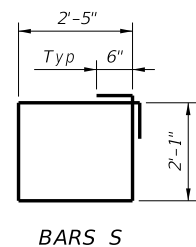
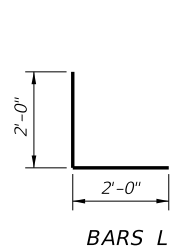
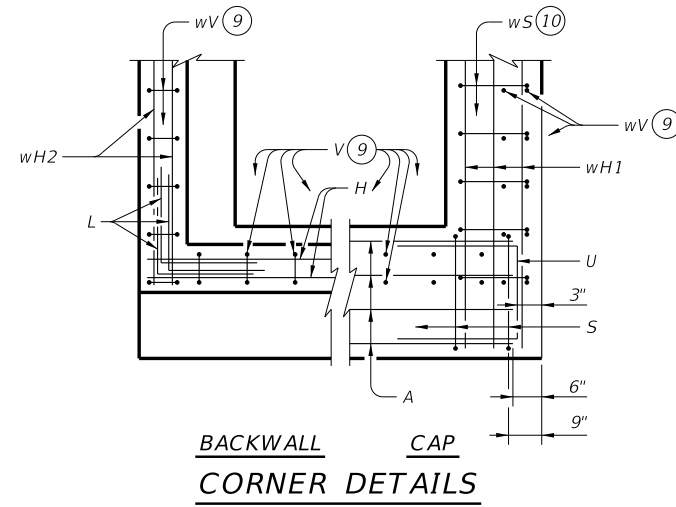
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**WINGWALL ELEVATION**



**SECTION B-B**



**TABLE OF FOUNDATION LOADS**

Span Length	Shaft Load	Pile Load
Ft	Tons/Shaft	Tons/Pile
30	48	49
35	51	50
40	54	52
45	58	54
50	61	55
55	64	57
60	67	59
65	70	60
70	73	62
75	77	64
80	80	65
85	83	67
90	88	69
95	90	71
100	94	73
105	97	74
110	102	77
115	105	78
120	110	81

- (5) See Steel Beam Standard Design (SBSD-28) standard for "Y" value.
- (7) Use 2 spaces at 12" max for W18 through W24 beams and 3 spaces at 12" max for W27 beams and larger.
- (9) Field bend as needed to clear piles.
- (10) Adjust as required to avoid piling.



**ABUTMENTS  
STEEL BEAM SPANS  
28' ROADWAY**

**ASB-28**

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## 2:1 HEADER SLOPE

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W18 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	6	#6	29' - 8"	267
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	10' - 1"	305
wH1	14	#6	8' - 1"	170
wH2	16	#6	6' - 8"	160
wS	16	#4	7' - 10"	84
wV	16	#5	10' - 1"	168
Reinforcing Steel				Lb 3,243
Class C Concrete (Abut)				CY 13.4

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W21 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	6	#6	29' - 8"	267
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	10' - 6"	318
wH1	14	#6	8' - 1"	170
wH2	16	#6	6' - 8"	160
wS	16	#4	7' - 10"	84
wV	16	#5	10' - 6"	175
Reinforcing Steel				Lb 3,263
Class C Concrete (Abut)				CY 13.7

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W24 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	6	#6	29' - 8"	267
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	11' - 1"	335
wH1	14	#6	9' - 1"	191
wH2	16	#6	7' - 8"	184
wS	18	#4	7' - 10"	94
wV	18	#5	11' - 1"	208
Reinforcing Steel				Lb 3,368
Class C Concrete (Abut)				CY 14.8

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W27 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	11' - 7"	350
wH1	14	#6	9' - 1"	191
wH2	20	#6	7' - 8"	230
wS	18	#4	7' - 10"	94
wV	18	#5	11' - 7"	217
Reinforcing Steel				Lb 3,527
Class C Concrete (Abut)				CY 15.2

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W30 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	12' - 1"	365
wH1	14	#6	10' - 1"	212
wH2	20	#6	8' - 8"	260
wS	20	#4	7' - 10"	105
wV	20	#5	12' - 1"	252
Reinforcing Steel				Lb 3,639
Class C Concrete (Abut)				CY 16.2

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W33 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	12' - 7"	381
wH1	14	#6	10' - 1"	212
wH2	20	#6	8' - 8"	260
wS	20	#4	7' - 10"	105
wV	20	#5	12' - 7"	262
Reinforcing Steel				Lb 3,665
Class C Concrete (Abut)				CY 16.7

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W36 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	13' - 0"	393
wH1	14	#6	10' - 1"	212
wH2	20	#6	8' - 8"	260
wS	20	#4	7' - 10"	105
wV	20	#5	13' - 0"	271
Reinforcing Steel				Lb 3,686
Class C Concrete (Abut)				CY 17.0

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W40 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	13' - 7"	411
wH1	14	#6	11' - 1"	233
wH2	20	#6	9' - 8"	290
wS	22	#4	7' - 10"	115
wV	22	#5	13' - 7"	312
Reinforcing Steel				Lb 3,806
Class C Concrete (Abut)				CY 18.3

## 3:1 HEADER SLOPE

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W18 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	6	#6	29' - 8"	267
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	10' - 1"	305
wH1	14	#6	11' - 1"	233
wH2	16	#6	9' - 8"	232
wS	22	#4	7' - 10"	115
wV	22	#5	10' - 1"	231
Reinforcing Steel				Lb 3,472
Class C Concrete (Abut)				CY 15.1

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W21 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	6	#6	29' - 8"	267
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	10' - 6"	318
wH1	14	#6	11' - 1"	233
wH2	16	#6	9' - 8"	232
wS	22	#4	7' - 10"	115
wV	22	#5	10' - 6"	241
Reinforcing Steel				Lb 3,495
Class C Concrete (Abut)				CY 15.5

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W24 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	6	#6	29' - 8"	267
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	11' - 1"	335
wH1	14	#6	12' - 1"	254
wH2	16	#6	10' - 8"	256
wS	24	#4	7' - 10"	126
wV	24	#5	11' - 1"	277
Reinforcing Steel				Lb 3,604
Class C Concrete (Abut)				CY 16.7

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W27 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	11' - 7"	350
wH1	14	#6	13' - 1"	275
wH2	20	#6	11' - 8"	350
wS	26	#4	7' - 10"	136
wV	26	#5	11' - 7"	314
Reinforcing Steel				Lb 3,870
Class C Concrete (Abut)				CY 17.8

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W30 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	12' - 1"	365
wH1	14	#6	14' - 1"	296
wH2	20	#6	12' - 8"	381
wS	28	#4	7' - 10"	147
wV	28	#5	12' - 1"	353
Reinforcing Steel				Lb 3,987
Class C Concrete (Abut)				CY 18.9

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W33 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	12' - 7"	381
wH1	14	#6	14' - 1"	296
wH2	20	#6	12' - 8"	381
wS	28	#4	7' - 10"	147
wV	28	#5	12' - 7"	367
Reinforcing Steel				Lb 4,017
Class C Concrete (Abut)				CY 19.4

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W36 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	13' - 0"	393
wH1	14	#6	15' - 1"	317
wH2	20	#6	13' - 8"	411
wS	30	#4	7' - 10"	157
wV	30	#5	13' - 0"	407
Reinforcing Steel				Lb 4,130
Class C Concrete (Abut)				CY 20.5

TABLE OF ESTIMATED QUANTITIES <sup>(1)</sup> (W40 BEAMS)				
Bar	No.	Size	Length	Weight
A <sup>(8)</sup>	10	#11	29' - 0"	1,541
H	8	#6	29' - 8"	356
L	18	#6	4' - 0"	108
S	38	#5	10' - 0"	396
U	4	#6	7' - 3"	44
V	29	#5	13' - 7"	411
wH1	14	#6	16' - 1"	338
wH2	20	#6	14' - 8"	441
wS	32	#4	7' - 10"	167
wV	32	#5	13' - 7"	453
Reinforcing Steel				Lb 4,255
Class C Concrete (Abut)				CY 21.9

<sup>(8)</sup> With pile foundations, replace Bar A located at bottom centerline of cap with 2 - #11 x 7'-0" (per bay) placed between piling groups. Deduct 159 lbs total from reinforcing steel total.

<sup>(1)</sup> Quantities shown are for one abutment only (with approach slab). With no approach slab, add 1.1 CY Class C concrete and 89 Lb reinforcing steel for 2 additional H bars.

HL93 LOADING

SHEET 3 OF 3



### ABUTMENTS STEEL BEAM SPANS 28' ROADWAY

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