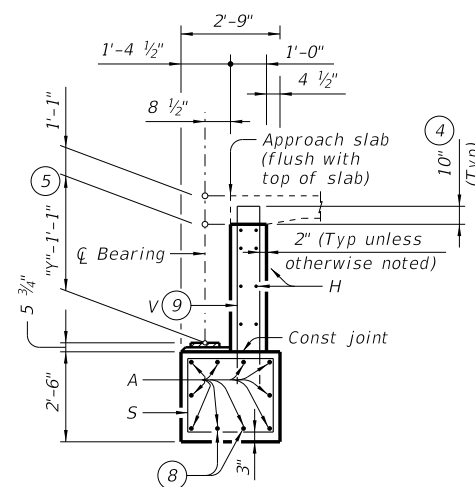
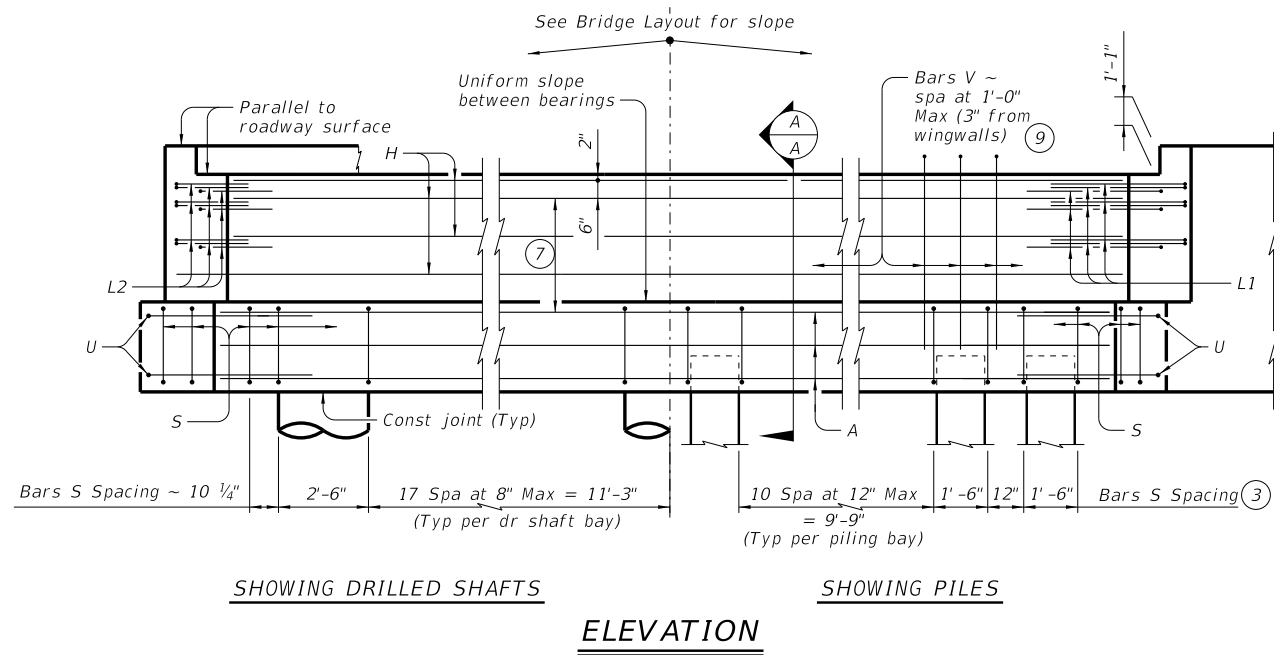
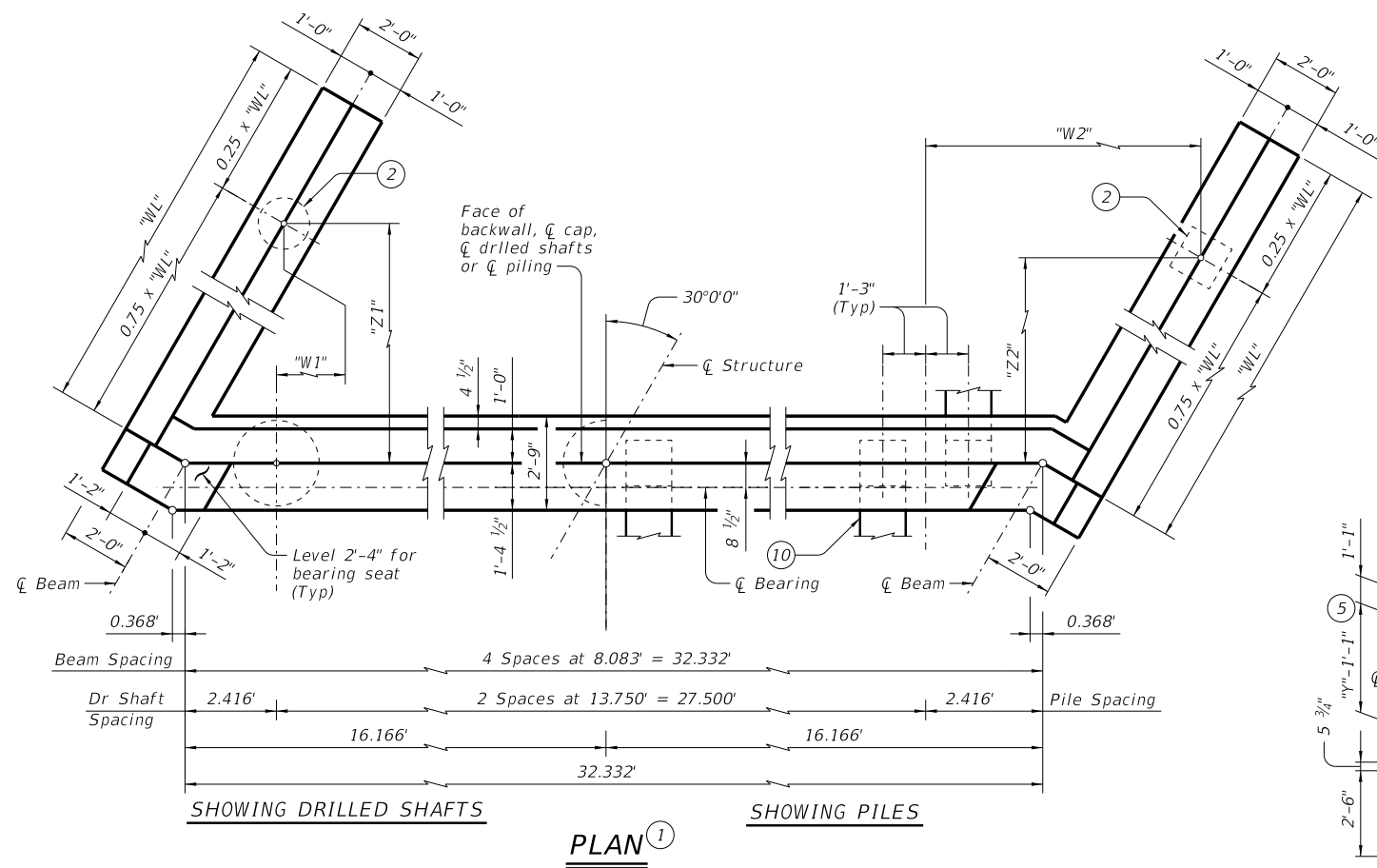


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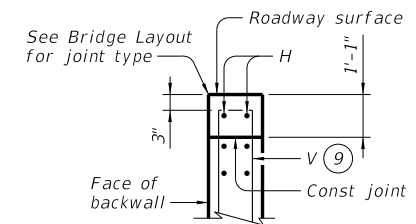
**SECTION A-A**

(With approach slab) ④

- ① See Table A for variable dimensions based on header slope and beam type.
- ② See Table A to determine if wingwall foundations are required.
- ③ For piling larger than 16", adjust Bars S spacing as required to avoid piling.
- ④ Increase as required to maintain 3" from finished grade.
- ⑤ See Steel Beam Standard Design (SBSD-30) standard for "Y" value.
- ⑥ See Bridge Layout to determine if approach slab is present.
- ⑦ Use 2 spaces at 12" Max for W18 through W24 beams and 3 spaces at 12" Max for W27 beams and larger.
- ⑧ With pile foundations, replace Bars A located at bottom centerline of cap with 2 ~ #11 x 9'-9" (per bay) placed between piling groups. Deduct 137 lbs total from reinforcing steel total.
- ⑨ Field bend as needed to clear piles.
- ⑩ See Detail "A" on FD standard.

**TABLE A**

Header Slope	Beam Type	Wingwall Type	Wingwall length "WL"	"W1"	"Z1"	"W2"	"Z2"
2:1	W18	Cantilevered	8.000'	Not Applicable			
	W21	Cantilevered	9.000'				
	W24	Cantilevered	10.000'				
	W27	Cantilevered	10.000'				
	W30	Cantilevered	11.000'				
	W33	Cantilevered	12.000'				
	W36	Cantilevered	12.000'				
3:1	W40	Founded	13.000'	1.593'	8.944'	8.157'	7.944'
	W18	Cantilevered	12.000'	Not Applicable			
	W21	Founded	13.000'	1.593'	8.944'	8.157'	7.944'
	W24	Founded	14.000'	1.968'	9.593'	8.532'	8.593'
	W27	Founded	15.000'	2.343'	10.243'	8.907'	9.243'
	W30	Founded	15.000'	2.343'	10.243'	8.907'	9.243'
	W33	Founded	16.000'	2.718'	10.892'	9.282'	9.892'
	W36	Founded	17.000'	3.093'	11.542'	9.657'	10.542'
W40	Founded	18.000'	3.468'	12.191'	10.032'	11.191'	



**BACKWALL DETAIL**

(Without approach slab) ⑥

**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. Details are drawn showing right forward skew. See Bridge Layout for actual skew direction. 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-30-30 only.

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

HL93 LOADING

SHEET 1 OF 3



Bridge Division Standard

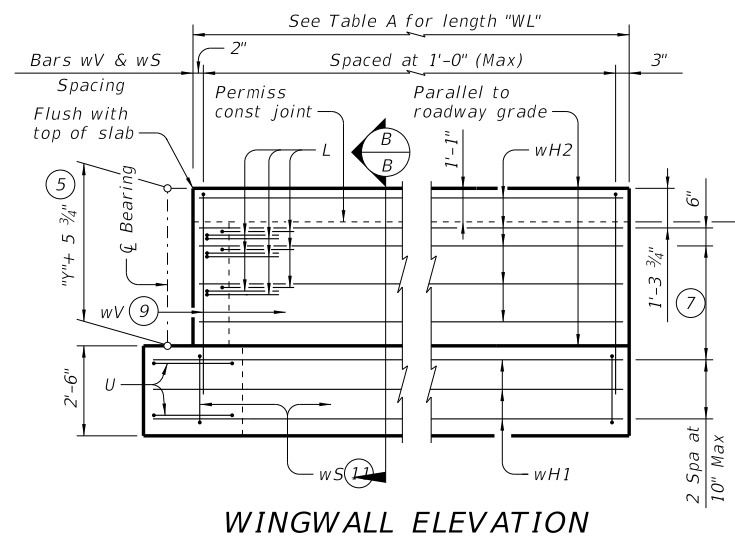
**ABUTMENTS**  
**STEEL BEAM SPANS**  
**30' ROADWAY      30° SKEW**

**ASB-30-30**

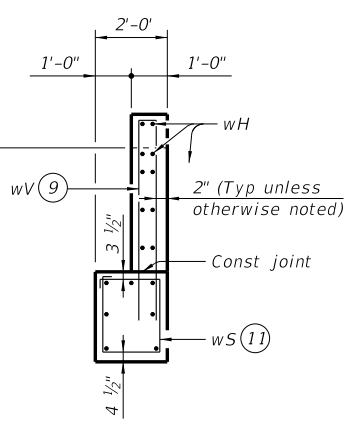
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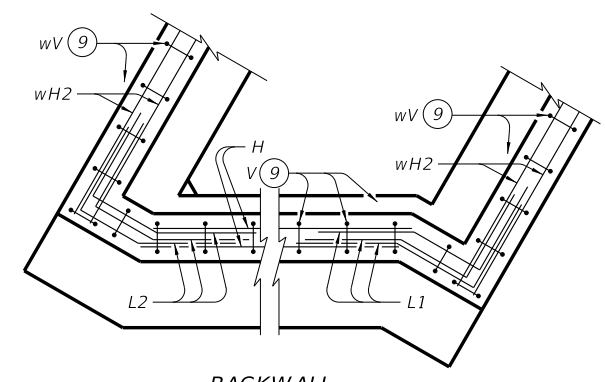
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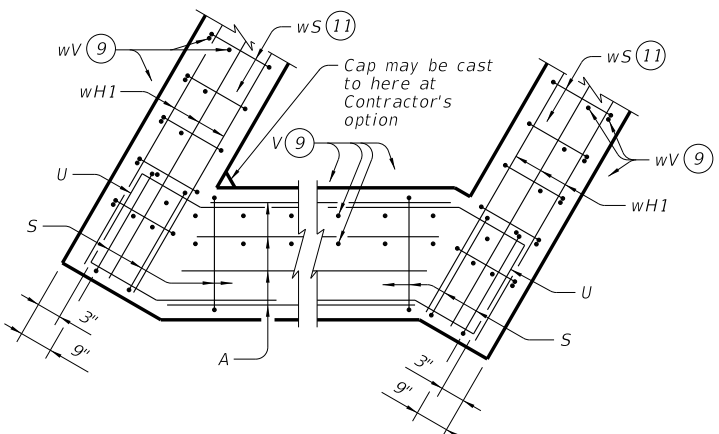
**WINGWALL ELEVATION**



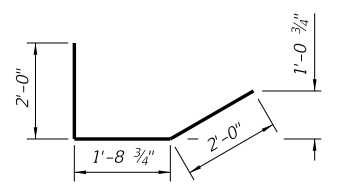
**SECTION B-B**



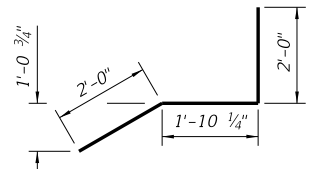
**BACKWALL**



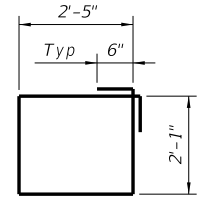
**CAP CORNER DETAILS**



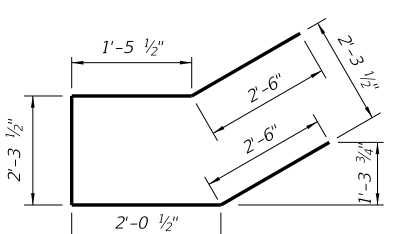
**BARS L2**



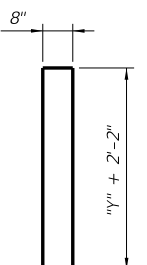
**BARS L1**



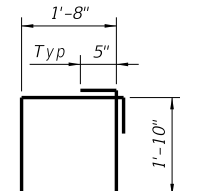
**BARS S**



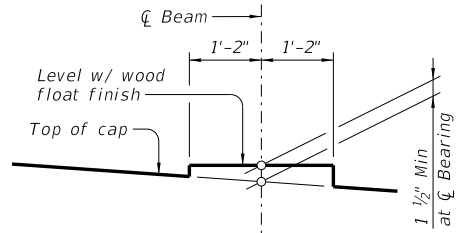
**BARS U**



**BARS V and wV (5)**



**BARS wS**



**BEARING SEAT DETAIL**

(Remove all loose material and clean bearing surface before placing bearing pad.)

**TABLE OF FOUNDATION LOADS**

Span Length	Shaft Load	Pile Load
Ft	Tons/Shaft	Tons/Pile
30	50	51
35	54	53
40	58	55
45	61	57
50	64	59
55	68	61
60	71	62
65	74	64
70	77	65
75	80	67
80	84	69
85	87	71
90	91	73
95	95	75
100	100	77
105	103	79
110	107	81
115	112	83
120	116	85

- (5) See Steel Beam Standard Design (SBSD-30) 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.
- (11) Adjust as required to avoid piling.



**ABUTMENTS  
STEEL BEAM SPANS  
30' ROADWAY 30° SKEW**

**ASB-30-30**

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## 2:1 HEADER SLOPE

## 3:1 HEADER SLOPE

**TABLE OF ESTIMATED QUANTITIES (12) (W18 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	6	#6	32' - 4"	291
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	9' - 11"	372
wH1	14	#6	9' - 1"	191
wH2	16	#6	7' - 8"	184
wS	18	#4	7' - 10"	94
wV	18	#5	9' - 11"	186
Reinforcing Steel	Lb	3,717		
Class C Concrete (Abut)	CY	15.9		

**TABLE OF ESTIMATED QUANTITIES (12) (W21 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	6	#6	32' - 4"	291
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	10' - 7"	397
wH1	14	#6	10' - 1"	212
wH2	16	#6	8' - 8"	208
wS	20	#4	7' - 10"	105
wV	20	#5	10' - 7"	221
Reinforcing Steel	Lb	3,833		
Class C Concrete (Abut)	CY	17.1		

**TABLE OF ESTIMATED QUANTITIES (12) (W24 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	6	#6	32' - 4"	291
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	11' - 2"	419
wH1	14	#6	11' - 1"	233
wH2	16	#6	9' - 8"	232
wS	22	#4	7' - 10"	115
wV	22	#5	11' - 2"	256
Reinforcing Steel	Lb	3,945		
Class C Concrete (Abut)	CY	18.4		

**TABLE OF ESTIMATED QUANTITIES (12) (W18 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	6	#6	32' - 4"	291
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	9' - 11"	372
wH1	14	#6	13' - 1"	275
wH2	16	#6	11' - 8"	280
wS	26	#4	7' - 10"	136
wV	26	#5	9' - 11"	269
Reinforcing Steel	Lb	4,022		
Class C Concrete (Abut)	CY	18.3		

**TABLE OF ESTIMATED QUANTITIES (12) (W21 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	6	#6	32' - 4"	291
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	10' - 7"	397
wH1	14	#6	14' - 1"	296
wH2	16	#6	12' - 8"	304
wS	28	#4	7' - 10"	147
wV	28	#5	10' - 7"	309
Reinforcing Steel	Lb	4,143		
Class C Concrete (Abut)	CY	19.6		

**TABLE OF ESTIMATED QUANTITIES (12) (W24 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	6	#6	32' - 4"	291
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	11' - 2"	419
wH1	14	#6	15' - 1"	317
wH2	16	#6	13' - 8"	328
wS	30	#4	7' - 10"	157
wV	30	#5	11' - 2"	349
Reinforcing Steel	Lb	4,260		
Class C Concrete (Abut)	CY	20.9		

**TABLE OF ESTIMATED QUANTITIES (12) (W27 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	11' - 7"	435
wH1	14	#6	11' - 1"	233
wH2	20	#6	9' - 8"	290
wS	22	#4	7' - 10"	115
wV	22	#5	11' - 7"	266
Reinforcing Steel	Lb	4,127		
Class C Concrete (Abut)	CY	18.7		

**TABLE OF ESTIMATED QUANTITIES (12) (W30 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	12' - 0"	451
wH1	14	#6	12' - 1"	254
wH2	20	#6	10' - 8"	320
wS	24	#4	7' - 10"	126
wV	24	#5	12' - 0"	300
Reinforcing Steel	Lb	4,239		
Class C Concrete (Abut)	CY	19.8		

**TABLE OF ESTIMATED QUANTITIES (12) (W33 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	12' - 7"	472
wH1	14	#6	13' - 1"	275
wH2	20	#6	11' - 8"	350
wS	26	#4	7' - 10"	136
wV	26	#5	12' - 7"	341
Reinforcing Steel	Lb	4,362		
Class C Concrete (Abut)	CY	21.1		

**TABLE OF ESTIMATED QUANTITIES (12) (W27 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	11' - 7"	435
wH1	14	#6	16' - 1"	338
wH2	20	#6	14' - 8"	441
wS	32	#4	7' - 10"	167
wV	32	#5	11' - 7"	384
Reinforcing Steel	Lb	4,556		
Class C Concrete (Abut)	CY	22.0		

**TABLE OF ESTIMATED QUANTITIES (12) (W30 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	12' - 0"	451
wH1	14	#6	16' - 1"	338
wH2	20	#6	14' - 8"	441
wS	32	#4	7' - 10"	167
wV	32	#5	12' - 0"	401
Reinforcing Steel	Lb	4,586		
Class C Concrete (Abut)	CY	22.5		

**TABLE OF ESTIMATED QUANTITIES (12) (W33 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	12' - 7"	472
wH1	14	#6	17' - 1"	359
wH2	20	#6	15' - 8"	471
wS	34	#4	7' - 10"	178
wV	34	#5	12' - 7"	446
Reinforcing Steel	Lb	4,714		
Class C Concrete (Abut)	CY	23.9		

**TABLE OF ESTIMATED QUANTITIES (12) (W36 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	13' - 0"	488
wH1	14	#6	13' - 1"	275
wH2	20	#6	11' - 8"	350
wS	26	#4	7' - 10"	136
wV	26	#5	13' - 0"	353
Reinforcing Steel	Lb	4,390		
Class C Concrete (Abut)	CY	21.6		

**TABLE OF ESTIMATED QUANTITIES (12) (W40 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	13' - 5"	504
wH1	14	#6	14' - 1"	296
wH2	20	#6	12' - 8"	381
wS	28	#4	7' - 10"	147
wV	28	#5	13' - 5"	392
Reinforcing Steel	Lb	4,508		
Class C Concrete (Abut)	CY	22.8		

**TABLE OF ESTIMATED QUANTITIES (12) (W36 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	13' - 0"	488
wH1	14	#6	18' - 1"	380
wH2	20	#6	16' - 8"	501
wS	36	#4	7' - 10"	188
wV	36	#5	13' - 0"	488
Reinforcing Steel	Lb	4,833		
Class C Concrete (Abut)	CY	25.1		

**TABLE OF ESTIMATED QUANTITIES (12) (W40 BEAMS)**

Bar	No.	Size	Length	Weight
A (8)	10	#11	32' - 4"	1,718
H	8	#6	32' - 4"	389
L1	9	#6	5' - 10"	79
L2	9	#6	5' - 9"	78
S (13)	44	#5	10' - 0"	459
U	4	#6	10' - 9"	65
V	36	#5	13' - 5"	504
wH1	14	#6	19' - 1"	401
wH2	20	#6	17' - 8"	531
wS	38	#4	7' - 10"	199
wV	38	#5	13' - 5"	532
Reinforcing Steel	Lb	4,955		
Class C Concrete (Abut)	CY	26.3		

(8) With pile foundations, replace Bars A located at bottom centerline of cap with 2 ~ #11 x 9'-9" (per bay) placed between piling groups. Deduct 137 lbs total from reinforcing steel total.

(12) Quantities shown are for one abutment only (with approach slab). With no approach slab, add 1.4 CY Class C concrete and 97 Lb reinforcing steel for 2 additional H bars.

(13) With pile foundation, subtract 10 Bars S and 105 Lbs from reinforcing steel total.

HL93 LOADING SHEET 3 OF 3



### ABUTMENTS STEEL BEAM SPANS 30' ROADWAY 30° SKEW

### ASB-30-30

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