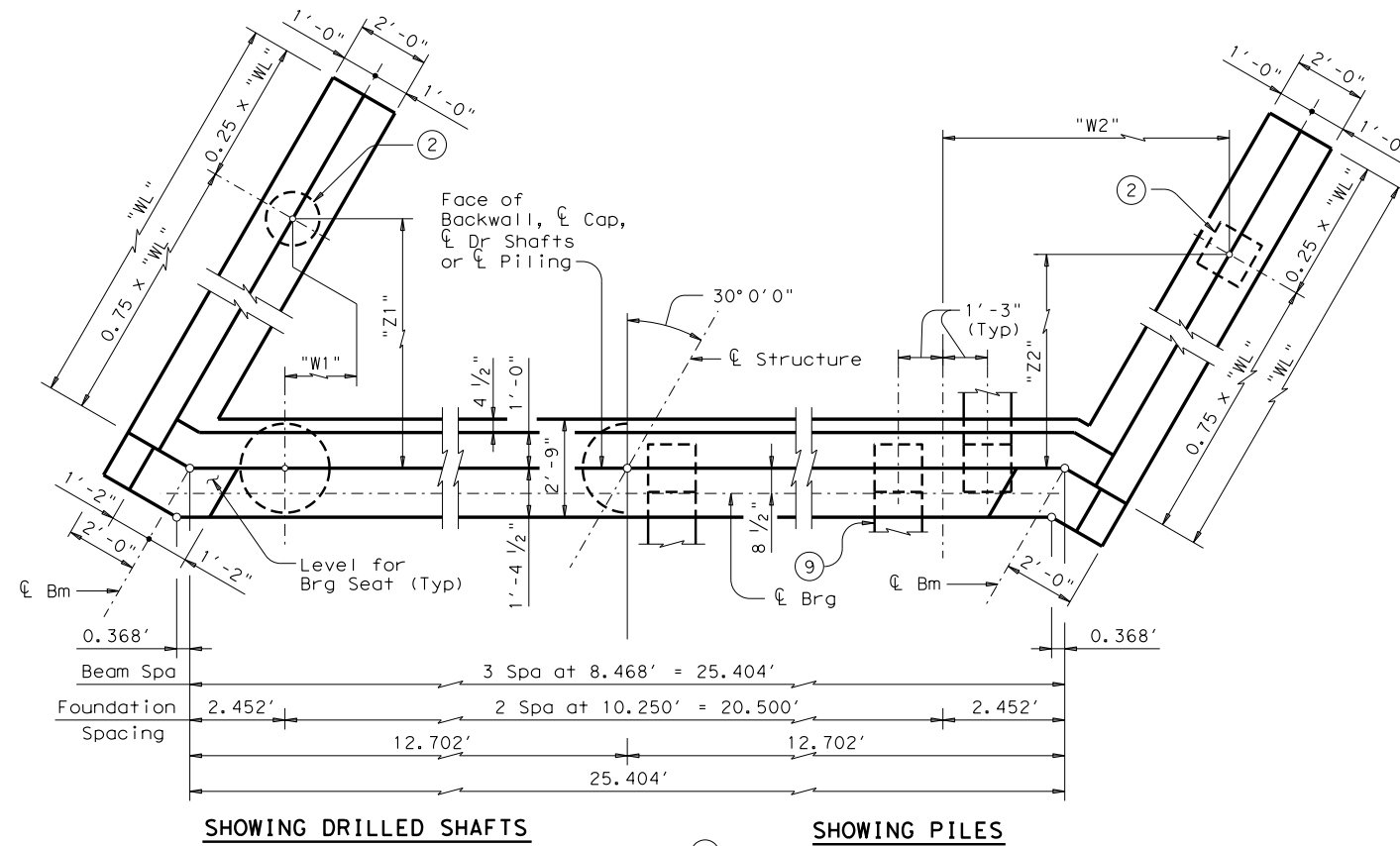


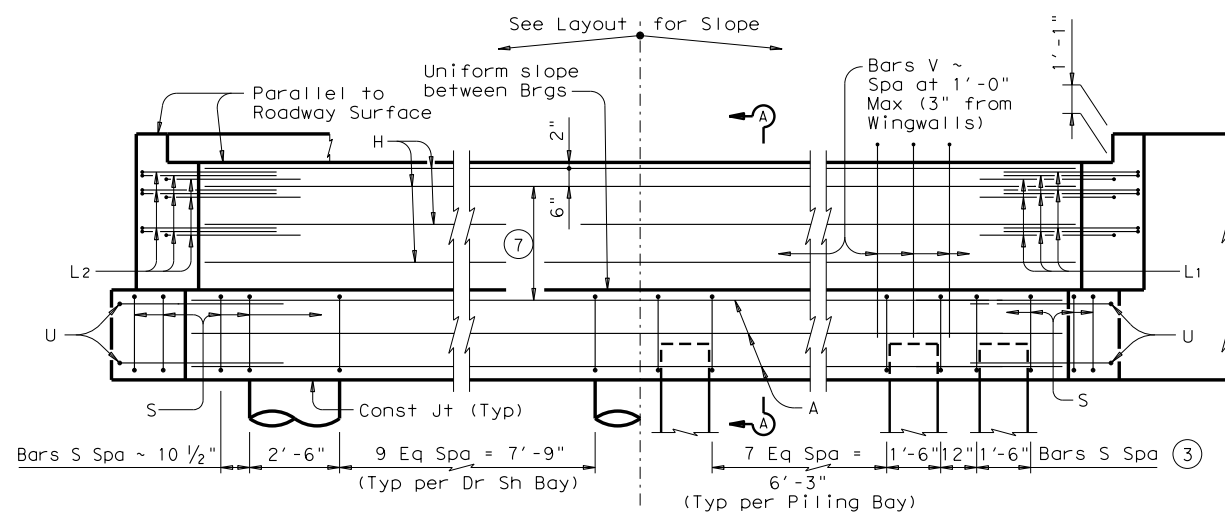
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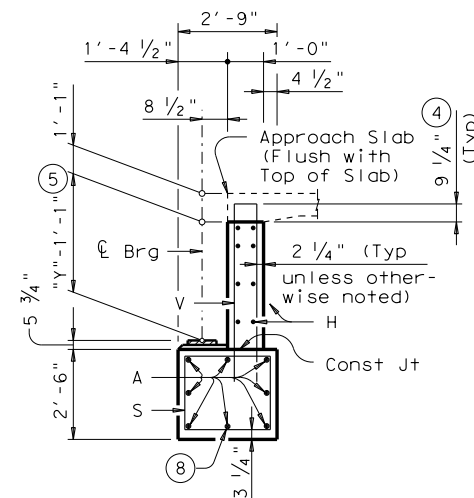
SHOWING DRILLED SHAFTS      SHOWING PILES

**PLAN ①**



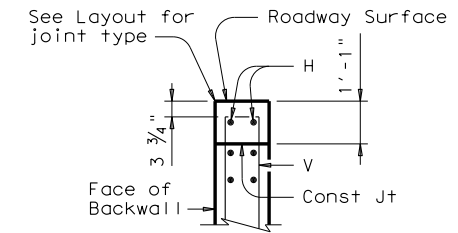
SHOWING DRILLED SHAFTS      SHOWING PILES

**ELEVATION ③**



**SECTION A-A**

(With Approach Slab) ④



**BACKWALL DETAIL**

(Without Approach Slab) ⑥

**GENERAL NOTES:**  
 Designed according to AASHTO LRFD Specifications. Concrete compressive strength  $f'_c = 3,600$  psi. All cap and wall reinforcing shall be Grade 60. See Bridge Layout for beam type, header slope, and foundation type, size and length. See standard FD for foundation details and notes. See standard CRR for riprap attachment details, if applicable. See standard SBBR for location and size of anchor bolt required for erection bracing. See applicable rail details for rail anchorage in wingwalls. Details are drawn showing Right Forward skew. See Bridge Layout for actual skew direction. These abutment details may be used with standard SSB-24-30 only.

- 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 3/4" from Finished Grade.
- ⑤ See SSSD-24 standard for "Y" value.
- ⑥ See Layout to determine if Approach Slab is present.
- ⑦ Use 2 Eq Spa for W18 thru W27 beams and 3 Eq Spa for W30 beams and larger.
- ⑧ With pile foundations, replace Bar A located at bottom centerline of cap with 2 ~ #11 x 6'-3" placed between piling groups. Deduct 69 Lbs from reinforcing steel total.
- ⑨ See Detail "A" on FD standard.

Header Slope	Beam Type	Wingwall Type	Wingwall Lgth "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'				
	W33	Cantilevered	11.000'				
	W36	Cantilevered	12.000'				
3:1	W18	Cantilevered	12.000'	Not Applicable			
	W21	Founded	13.000'	1.557'	8.944'	8.193'	7.944'
	W24	Founded	14.000'	1.932'	9.593'	8.568'	8.593'
	W27	Founded	15.000'	2.307'	10.243'	8.943'	9.243'
	W30	Founded	15.000'	2.307'	10.243'	8.943'	9.243'
	W33	Founded	16.000'	2.682'	10.892'	9.318'	9.892'
	W36	Founded	17.000'	3.057'	11.542'	9.693'	10.542'
W40	Founded	18.000'	3.432'	12.191'	10.068'	11.191'	



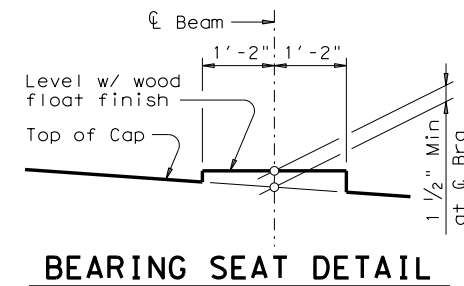
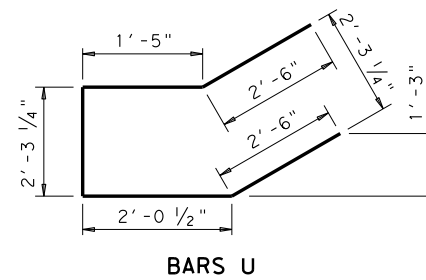
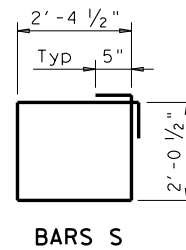
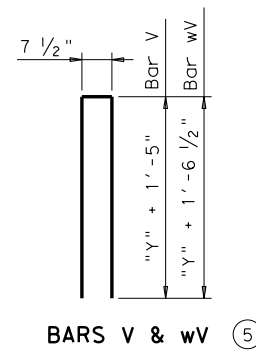
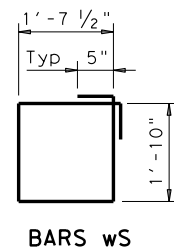
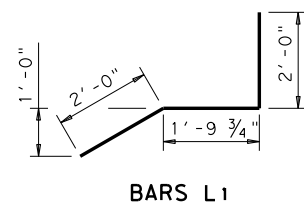
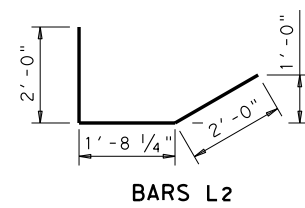
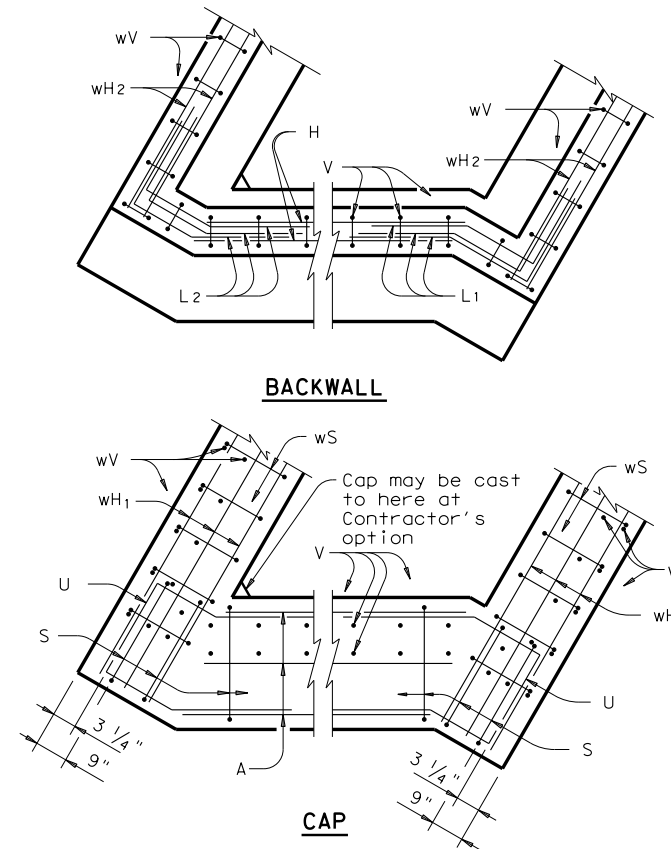
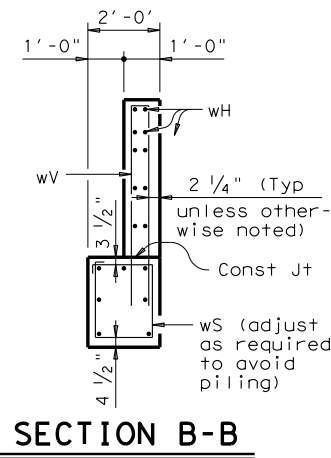
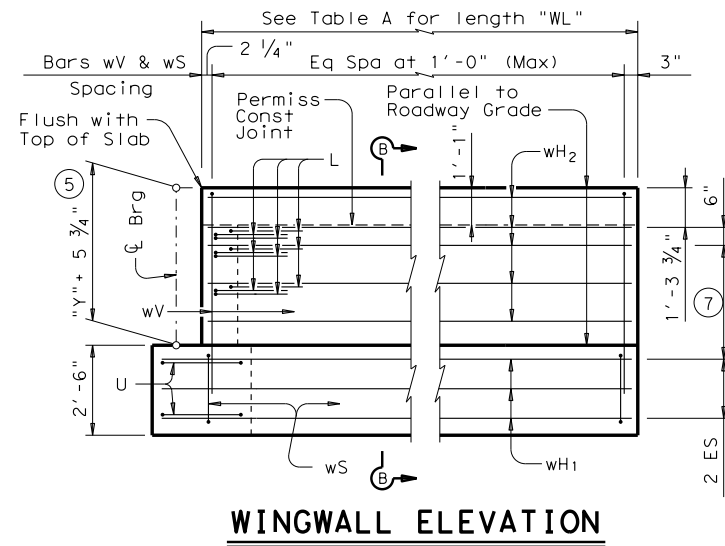
**ABUTMENTS**  
**STEEL BEAM SPANS**  
 24' ROADWAY      30° SKEW

**ASB-24-30**

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

TABLE OF FOUNDATION LOADS

Span Length	Shaft Load	Pile Load
	Tons/Shaft	Tons/Pile
30	47	40
35	50	41
40	54	43
45	57	45
50	60	47
55	63	48
60	66	50
65	69	51
70	72	53
75	74	54
80	77	55
85	81	57
90	84	59
95	87	60
100	90	62
105	96	65
110	98	66
115	103	69
120	106	70

⑤ See SBSD-24 standard for "y" value.

⑦ Use 2 Eq Spa for W18 thru W27 beams and 3 Eq Spa for W30 beams and larger.

HL93 LOADING

SHEET 2 OF 3



ABUTMENTS  
STEEL BEAM SPANS  
24' ROADWAY 30° SKEW

ASB-24-30

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## 2:1 HEADER SLOPE

## 3:1 HEADER SLOPE

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TABLE OF ESTIMATED QUANTITIES (W18 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	8'-4"	243
wH1	14	#6	9'-0"	189
wH2	16	#6	7'-8"	184
wS	18	#4	7'-9"	93
wV	18	#5	8'-7"	161
Reinforcing Steel				Lb 2,581
Class "C" Concrete				CY 13.6

TABLE OF ESTIMATED QUANTITIES (W21 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	8'-11"	260
wH1	14	#6	10'-0"	210
wH2	16	#6	8'-8"	208
wS	20	#4	7'-9"	104
wV	20	#5	9'-2"	191
Reinforcing Steel				Lb 2,684
Class "C" Concrete				CY 14.6

TABLE OF ESTIMATED QUANTITIES (W24 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	9'-5"	275
wH1	14	#6	11'-0"	231
wH2	16	#6	9'-8"	232
wS	22	#4	7'-9"	114
wV	22	#5	9'-8"	222
Reinforcing Steel				Lb 2,785
Class "C" Concrete				CY 15.7

TABLE OF ESTIMATED QUANTITIES (W18 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	8'-4"	243
wH1	14	#6	13'-0"	273
wH2	16	#6	11'-8"	280
wS	26	#4	7'-9"	135
wV	26	#5	8'-7"	233
Reinforcing Steel				Lb 2,875
Class "C" Concrete				CY 15.9

TABLE OF ESTIMATED QUANTITIES (W21 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	8'-11"	260
wH1	14	#6	14'-0"	294
wH2	16	#6	12'-8"	304
wS	28	#4	7'-9"	145
wV	28	#5	9'-2"	268
Reinforcing Steel				Lb 2,982
Class "C" Concrete				CY 17.1

TABLE OF ESTIMATED QUANTITIES (W24 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	9'-5"	275
wH1	14	#6	15'-0"	315
wH2	16	#6	13'-8"	329
wS	30	#4	7'-9"	155
wV	30	#5	9'-8"	303
Reinforcing Steel				Lb 3,088
Class "C" Concrete				CY 18.2

TABLE OF ESTIMATED QUANTITIES (W27 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	9'-11"	290
wH1	14	#6	11'-0"	231
wH2	16	#6	9'-8"	232
wS	22	#4	7'-9"	114
wV	22	#5	10'-2"	233
Reinforcing Steel				Lb 2,811
Class "C" Concrete				CY 16.1

TABLE OF ESTIMATED QUANTITIES (W30 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	10'-5"	304
wH1	14	#6	12'-0"	252
wH2	20	#6	10'-8"	321
wS	24	#4	7'-9"	124
wV	24	#5	10'-8"	267
Reinforcing Steel				Lb 3,055
Class "C" Concrete				CY 17.2

TABLE OF ESTIMATED QUANTITIES (W33 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	10'-11"	319
wH1	14	#6	12'-0"	252
wH2	20	#6	10'-8"	321
wS	24	#4	7'-9"	124
wV	24	#5	11'-2"	280
Reinforcing Steel				Lb 3,083
Class "C" Concrete				CY 17.7

TABLE OF ESTIMATED QUANTITIES (W27 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	6	#6	25'-5"	229
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	9'-11"	290
wH1	14	#6	16'-0"	336
wH2	16	#6	14'-8"	353
wS	32	#4	7'-9"	166
wV	32	#5	10'-2"	339
Reinforcing Steel				Lb 3,195
Class "C" Concrete				CY 19.4

TABLE OF ESTIMATED QUANTITIES (W30 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	10'-5"	304
wH1	14	#6	16'-0"	336
wH2	20	#6	14'-8"	441
wS	32	#4	7'-9"	166
wV	32	#5	10'-8"	356
Reinforcing Steel				Lb 3,390
Class "C" Concrete				CY 19.9

TABLE OF ESTIMATED QUANTITIES (W33 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	10'-11"	319
wH1	14	#6	17'-0"	357
wH2	20	#6	15'-8"	471
wS	34	#4	7'-9"	176
wV	34	#5	11'-2"	396
Reinforcing Steel				Lb 3,506
Class "C" Concrete				CY 21.1

TABLE OF ESTIMATED QUANTITIES (W36 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	11'-5"	334
wH1	14	#6	13'-0"	273
wH2	20	#6	11'-8"	351
wS	26	#4	7'-9"	135
wV	26	#5	11'-8"	316
Reinforcing Steel				Lb 3,196
Class "C" Concrete				CY 18.9

TABLE OF ESTIMATED QUANTITIES (W40 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	11'-11"	348
wH1	14	#6	13'-0"	273
wH2	20	#6	11'-8"	351
wS	26	#4	7'-9"	135
wV	26	#5	12'-2"	330
Reinforcing Steel				Lb 3,224
Class "C" Concrete				CY 19.3

TABLE OF ESTIMATED QUANTITIES (W36 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	11'-5"	334
wH1	14	#6	18'-0"	379
wH2	20	#6	16'-8"	501
wS	36	#4	7'-9"	186
wV	36	#5	11'-8"	438
Reinforcing Steel				Lb 3,625
Class "C" Concrete				CY 22.4

TABLE OF ESTIMATED QUANTITIES (W40 BEAMS) <sup>(10)</sup>				
Bar	No.	Size	Length	Weight
A (8)	8	#11	25'-5"	1,080
H	8	#6	25'-5"	305
L1	9	#6	5'-10"	79
L2	9	#6	5'-8"	77
S	28	#4	9'-8"	181
U	4	#6	10'-9"	65
V	28	#5	11'-11"	348
wH1	14	#6	19'-0"	400
wH2	20	#6	17'-8"	531
wS	38	#4	7'-9"	197
wV	38	#5	12'-2"	482
Reinforcing Steel				Lb 3,745
Class "C" Concrete				CY 23.6

<sup>(8)</sup> With pile foundations, replace Bars A located at bottom centerline of cap with 2 - #11 x 6'-3" placed between piling groups. Deduct 69 Lbs from reinforcing steel total.

<sup>(10)</sup> Quantities shown are for one Abutment only (with Approach Slab). With no Approach Slab, add 1.1 CY Class "C" Concrete and 76 Lb Reinforcing Steel for 2 additional H bars.

HL93 LOADING SHEET 3 OF 3

<b>Texas Department of Transportation</b>		<b>Bridge Division Standard</b>
<b>ABUTMENTS</b>		
<b>STEEL BEAM SPANS</b>		
<b>24' ROADWAY</b>		<b>30° SKEW</b>
<b>ASB-24-30</b>		
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