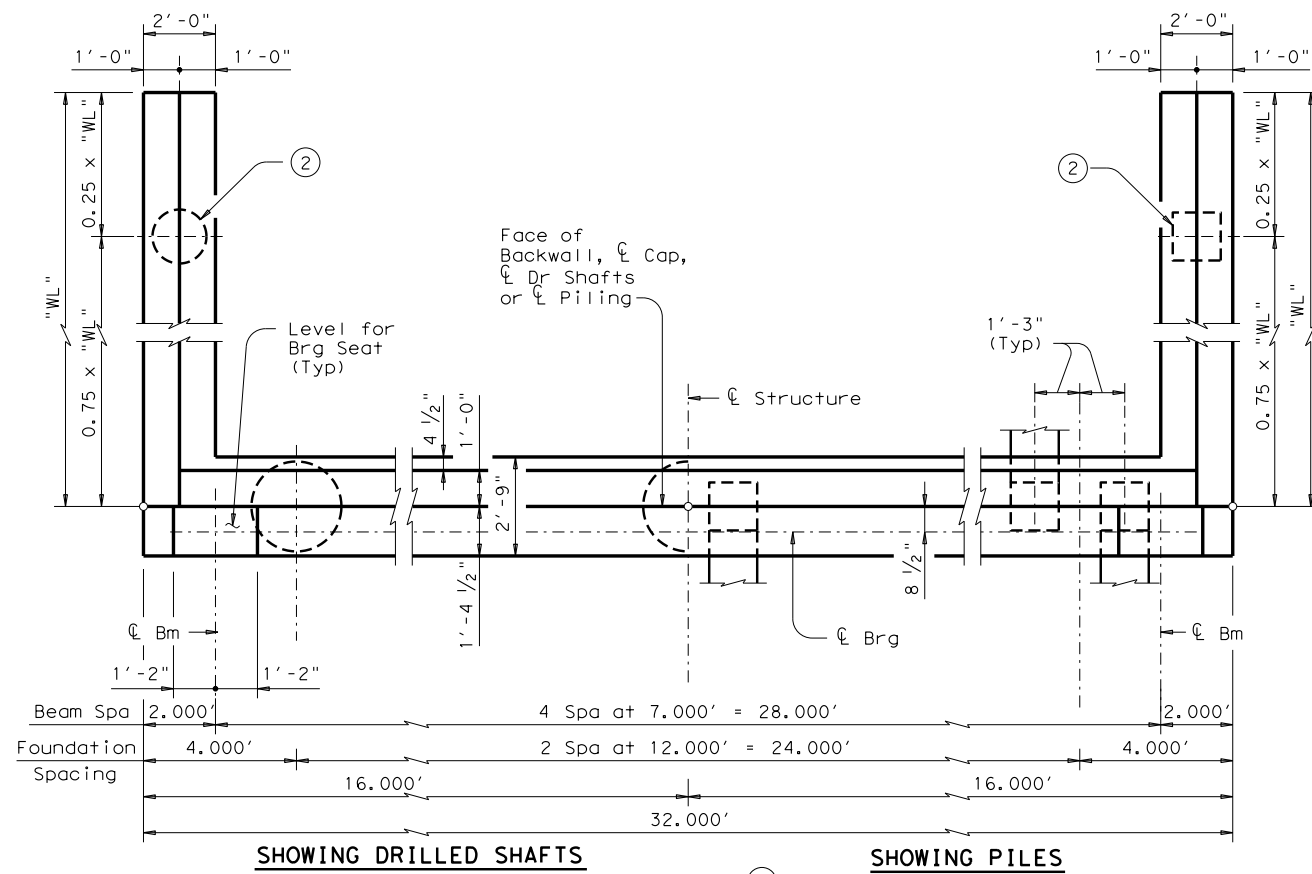


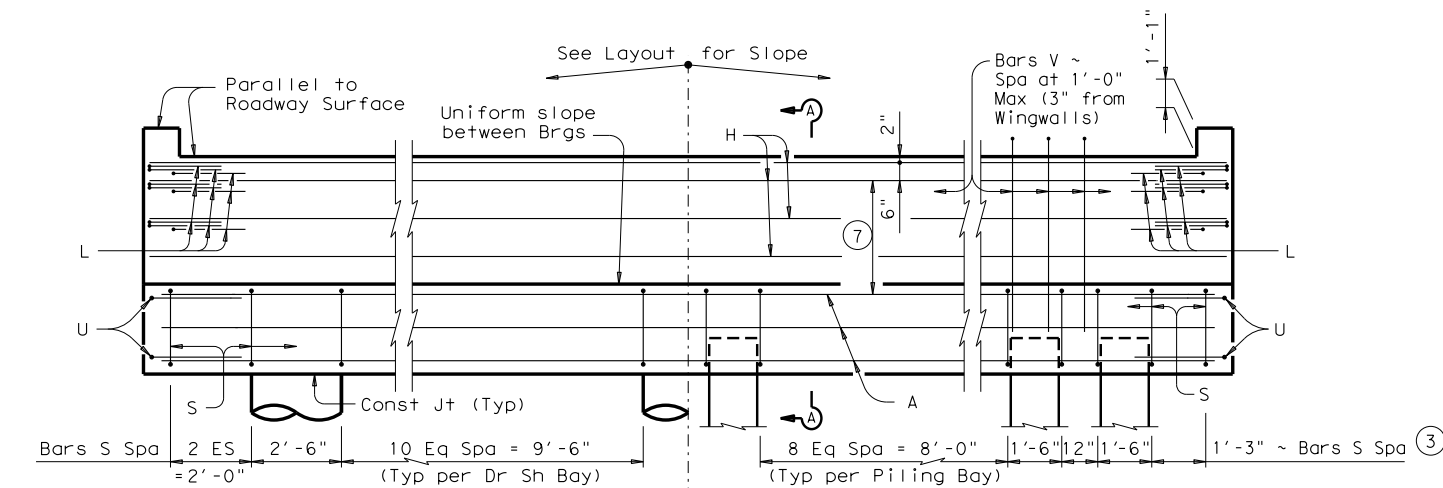
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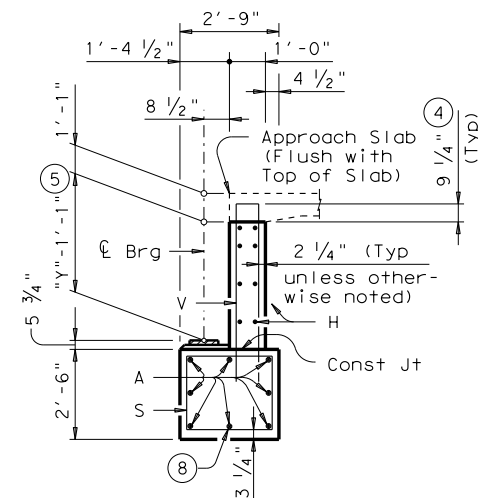
SHOWING DRILLED SHAFTS      SHOWING PILES

PLAN ①

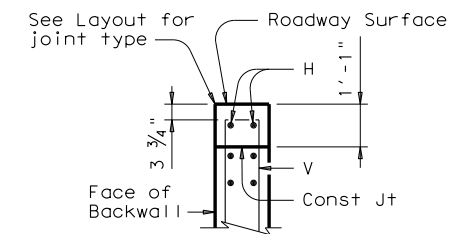


SHOWING DRILLED SHAFTS      SHOWING PILES

ELEVATION ③



SECTION A-A  
(With Approach Slab) ⑥



BACKWALL DETAIL  
(Without Approach Slab) ⑥

TABLE A			
Header Slope	Beam Type	Wingwall Type	Wingwall Lgth "WL"
2:1	W18	Cantilevered	6.000'
	W21	Cantilevered	7.000'
	W24	Cantilevered	7.000'
	W27	Cantilevered	8.000'
	W33	Cantilevered	9.000'
	W36	Cantilevered	9.000'
3:1	W40	Cantilevered	10.000'
	W18	Cantilevered	9.000'
	W21	Cantilevered	10.000'
	W24	Cantilevered	11.000'
	W27	Cantilevered	12.000'
	W30	Cantilevered	12.000'
	W33	Founded	13.000'
	W36	Founded	14.000'
W40	Founded	14.000'	

**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.  
 These abutment details may be used with standard ASB-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 SBSD-30 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 8'-0" placed between piling groups. Deduct 80 Lbs from reinforcing steel total.

HL93 LOADING      SHEET 1 OF 3

**ABUTMENTS  
STEEL BEAM SPANS  
30' ROADWAY**

**ASB-30**

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Bridge Division Standard

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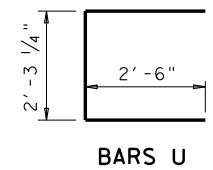
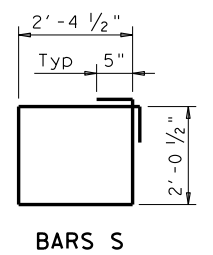
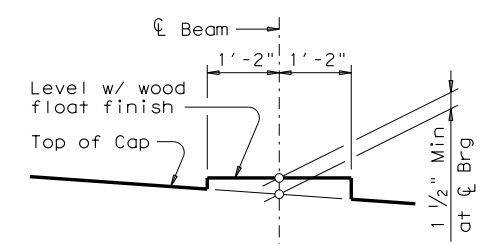
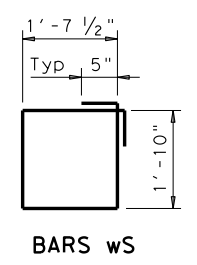
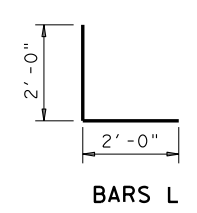
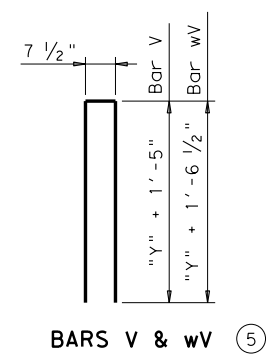
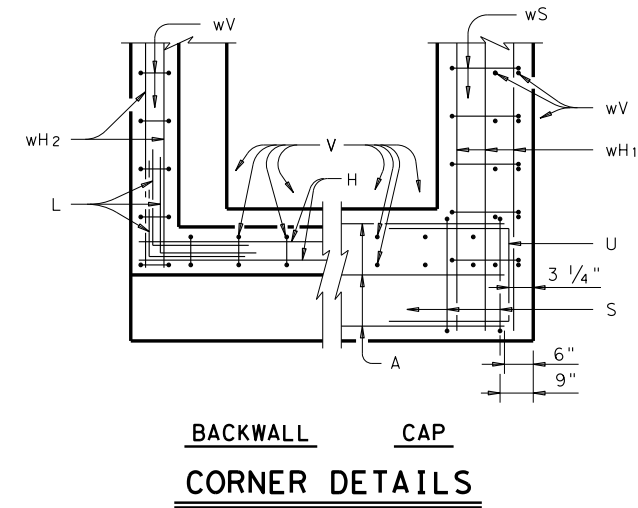
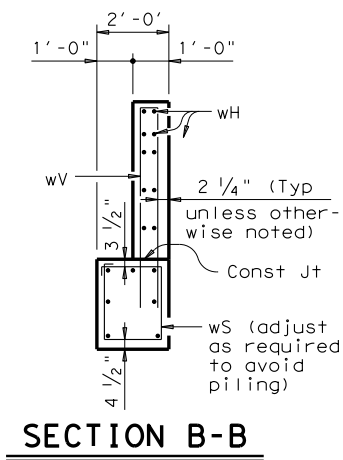
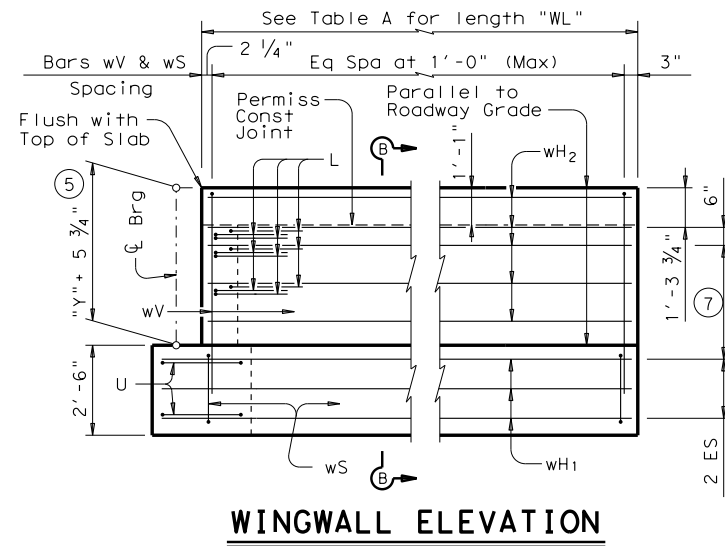


TABLE OF FOUNDATION LOADS		
Span Length	Shaft Load	Pile Load
Ft	Tons/Shaft	Tons/Pile
30	49	42
35	50	43
40	56	46
45	60	48
50	63	50
55	66	51
60	70	53
65	73	55
70	76	56
75	79	58
80	82	59
85	85	61
90	89	63
95	93	65
100	96	67
105	99	68
110	103	70
115	106	72
120	109	73

- ⑤ See SBSB-30 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  
30' ROADWAY**

**ASB-30**

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### 2:1 HEADER SLOPE

### 3:1 HEADER SLOPE

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#### TABLE OF ESTIMATED QUANTITIES (W18 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	8'-4"	269
wH1	14	#6	7'-0"	147
wH2	16	#6	5'-8"	136
wS	14	#4	7'-9"	72
wV	14	#5	8'-7"	125
Reinforcing Steel				Lb 2,685
Class "C" Concrete				CY 13.3

#### TABLE OF ESTIMATED QUANTITIES (W21 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	8'-11"	288
wH1	14	#6	8'-0"	168
wH2	16	#6	6'-8"	160
wS	16	#4	7'-9"	83
wV	16	#5	9'-2"	153
Reinforcing Steel				Lb 2,788
Class "C" Concrete				CY 14.3

#### TABLE OF ESTIMATED QUANTITIES (W24 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	9'-5"	305
wH1	14	#6	8'-0"	168
wH2	16	#6	6'-8"	160
wS	16	#4	7'-9"	83
wV	16	#5	9'-8"	161
Reinforcing Steel				Lb 2,813
Class "C" Concrete				CY 14.8

#### TABLE OF ESTIMATED QUANTITIES (W27 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	9'-11"	321
wH1	14	#6	9'-0"	189
wH2	16	#6	7'-8"	184
wS	18	#4	7'-9"	93
wV	18	#5	10'-2"	191
Reinforcing Steel				Lb 2,914
Class "C" Concrete				CY 15.8

#### TABLE OF ESTIMATED QUANTITIES (W30 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	10'-5"	337
wH1	14	#6	9'-0"	189
wH2	20	#6	7'-8"	230
wS	18	#4	7'-9"	93
wV	18	#5	10'-8"	200
Reinforcing Steel				Lb 3,081
Class "C" Concrete				CY 16.1

#### TABLE OF ESTIMATED QUANTITIES (W33 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	10'-11"	353
wH1	14	#6	10'-0"	210
wH2	20	#6	8'-8"	260
wS	20	#4	7'-9"	104
wV	20	#5	11'-2"	233
Reinforcing Steel				Lb 3,192
Class "C" Concrete				CY 17.3

#### TABLE OF ESTIMATED QUANTITIES (W36 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	11'-5"	369
wH1	14	#6	10'-0"	210
wH2	20	#6	8'-8"	260
wS	20	#4	7'-9"	104
wV	20	#5	11'-8"	243
Reinforcing Steel				Lb 3,218
Class "C" Concrete				CY 17.6

#### TABLE OF ESTIMATED QUANTITIES (W40 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	11'-11"	385
wH1	14	#6	11'-0"	231
wH2	20	#6	9'-8"	290
wS	22	#4	7'-9"	114
wV	22	#5	12'-2"	279
Reinforcing Steel				Lb 3,331
Class "C" Concrete				CY 18.8

#### TABLE OF ESTIMATED QUANTITIES (W18 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	8'-4"	269
wH1	14	#6	10'-0"	210
wH2	16	#6	8'-8"	208
wS	20	#4	7'-9"	104
wV	20	#5	8'-7"	179
Reinforcing Steel				Lb 2,906
Class "C" Concrete				CY 15.0

#### TABLE OF ESTIMATED QUANTITIES (W21 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	8'-11"	288
wH1	14	#6	11'-0"	231
wH2	16	#6	9'-8"	232
wS	22	#4	7'-9"	114
wV	22	#5	9'-2"	210
Reinforcing Steel				Lb 3,011
Class "C" Concrete				CY 16.1

#### TABLE OF ESTIMATED QUANTITIES (W24 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	9'-5"	305
wH1	14	#6	12'-0"	252
wH2	16	#6	10'-8"	256
wS	24	#4	7'-9"	124
wV	24	#5	9'-8"	242
Reinforcing Steel				Lb 3,115
Class "C" Concrete				CY 17.3

#### TABLE OF ESTIMATED QUANTITIES (W27 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	6	#6	31'-8"	285
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	9'-11"	321
wH1	14	#6	13'-0"	273
wH2	16	#6	11'-8"	280
wS	26	#4	7'-9"	135
wV	26	#5	10'-2"	276
Reinforcing Steel				Lb 3,221
Class "C" Concrete				CY 18.4

#### TABLE OF ESTIMATED QUANTITIES (W30 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	10'-5"	337
wH1	14	#6	13'-0"	273
wH2	20	#6	11'-8"	351
wS	26	#4	7'-9"	135
wV	26	#5	10'-8"	289
Reinforcing Steel				Lb 3,417
Class "C" Concrete				CY 18.8

#### TABLE OF ESTIMATED QUANTITIES (W33 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	10'-11"	353
wH1	14	#6	14'-0"	294
wH2	20	#6	12'-8"	381
wS	28	#4	7'-9"	145
wV	28	#5	11'-2"	326
Reinforcing Steel				Lb 3,531
Class "C" Concrete				CY 20.1

#### TABLE OF ESTIMATED QUANTITIES (W36 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	11'-5"	369
wH1	14	#6	15'-0"	315
wH2	20	#6	13'-8"	411
wS	30	#4	7'-9"	155
wV	30	#5	11'-8"	365
Reinforcing Steel				Lb 3,647
Class "C" Concrete				CY 21.1

#### TABLE OF ESTIMATED QUANTITIES (W40 BEAMS) <sup>(9)</sup>

Bar	No.	Size	Length	Weight
A (8)	8	#11	31'-0"	1,318
H	8	#6	31'-8"	381
L	18	#6	4'-0"	108
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	31	#5	11'-11"	385
wH1	14	#6	15'-0"	315
wH2	20	#6	13'-8"	411
wS	30	#4	7'-9"	155
wV	30	#5	12'-2"	381
Reinforcing Steel				Lb 3,679
Class "C" Concrete				CY 21.6

- ⑧ With pile foundations, replace Bars A located at bottom centerline of cap with 2 - #11 x 8'-0" placed between piling groups. Deduct 80 Lbs from reinforcing steel total.
- ⑨ Quantities shown are for one Abutment only (with Approach Slab). With no Approach Slab, add 1.2 CY Class "C" Concrete and 93 Lb Reinforcing Steel for 2 additional H bars.

**HL93 LOADING**      SHEET 3 OF 3

 Texas Department of Transportation		Bridge Division Standard
<h2>ABUTMENTS</h2> <h2>STEEL BEAM SPANS</h2> <h3>30' ROADWAY</h3>		
<b>ASB-30</b>		
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