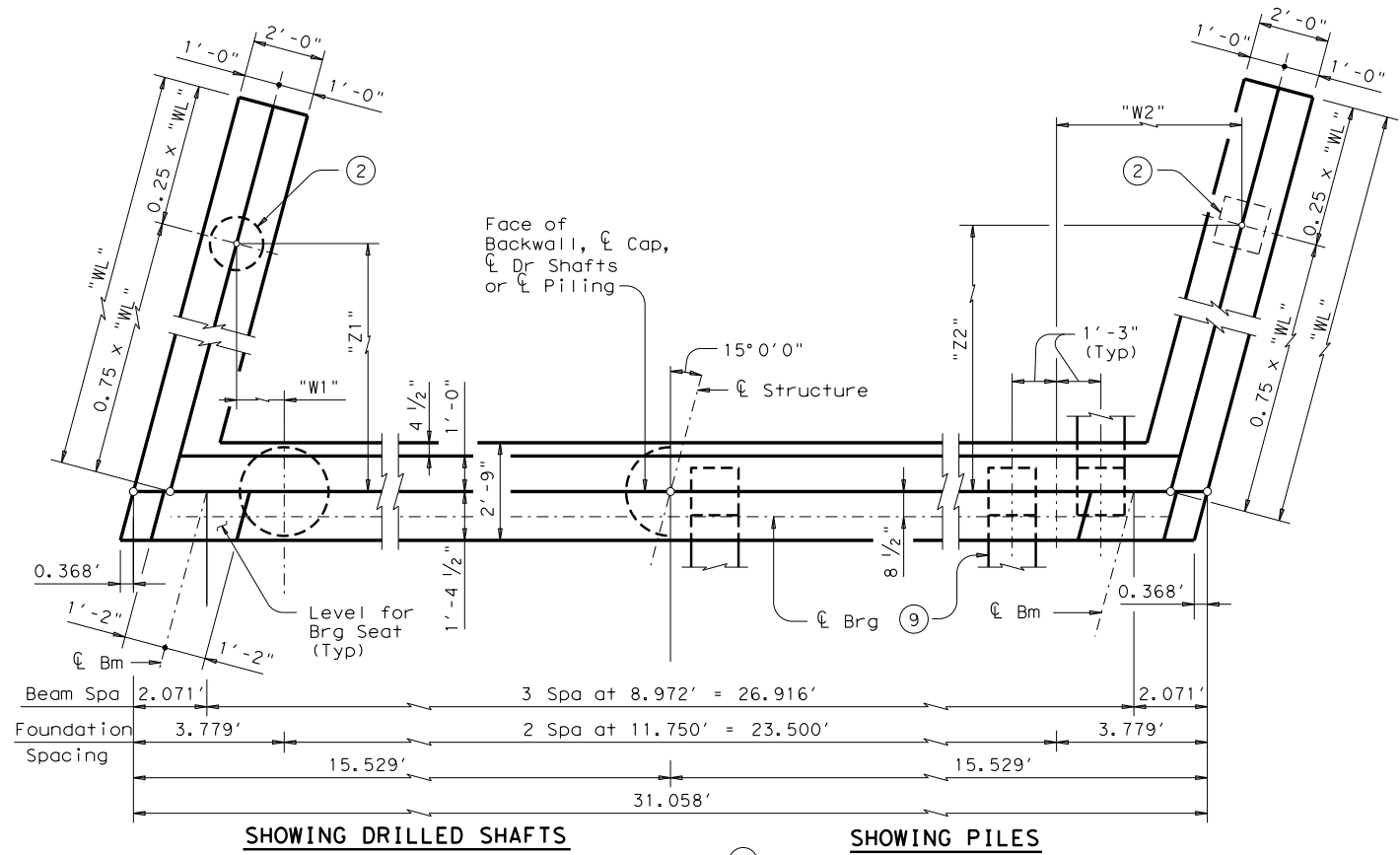
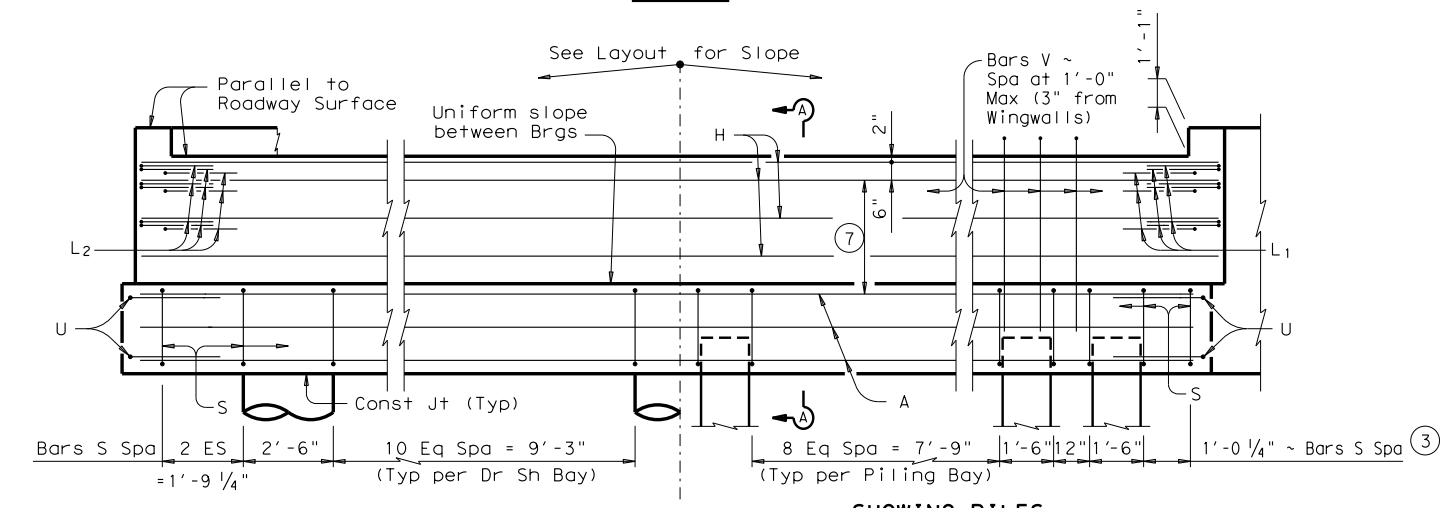


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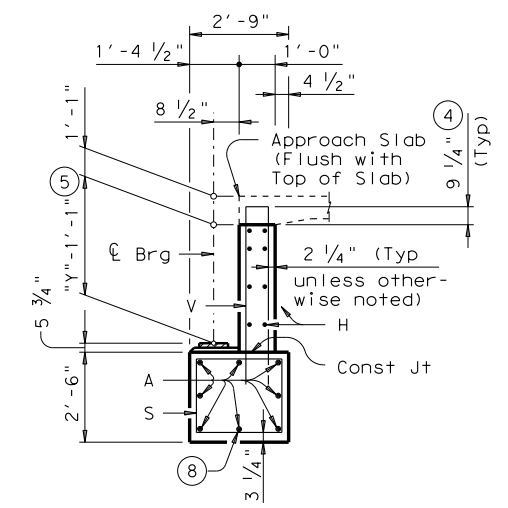
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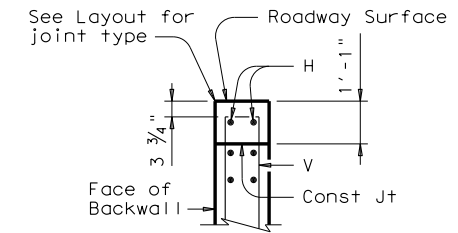
SHOWING DRILLED SHAFTS PLAN 1 SHOWING PILES



SHOWING DRILLED SHAFTS ELEVATION SHOWING PILES



SECTION A-A (With Approach Slab) 6



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-28-15 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-28 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 7'-9" placed between piling groups. Deduct 77 Lbs from reinforcing steel total.
- 9 See Detail "A" on FD standard.

TABLE A

Header Slope	Beam Type	Wingwall Type	Wingwall Lgth "WL"	"W1"	"Z1"	"W2"	"Z2"				
2:1	W18	Cantilevered	7.000'	Not Applicable							
	W21	Cantilevered	7.000'								
	W24	Cantilevered	8.000'								
	W27	Cantilevered	8.000'								
	W30	Cantilevered	9.000'								
	W33	Cantilevered	9.000'								
3:1	W36	Cantilevered	10.000'	Not Applicable							
	W40	Cantilevered	10.000'								
	W18	Cantilevered	10.000'								
	W21	Cantilevered	10.000'								
	W24	Cantilevered	11.000'								
	W27	Cantilevered	12.000'								
	W30	Founded	13.000'					0.220'	9.418'	5.267'	9.418'
	W33	Founded	14.000'					0.026'	10.142'	5.461'	10.142'
W36	Founded	14.000'	0.026'	10.142'	5.461'	10.142'					
W40	Founded	15.000'	-0.168'	10.867'	5.655'	10.867'					

Negative values for the "W1" dimension indicates a wingwall foundation on the other side of the cap foundation from what is shown in plan view.



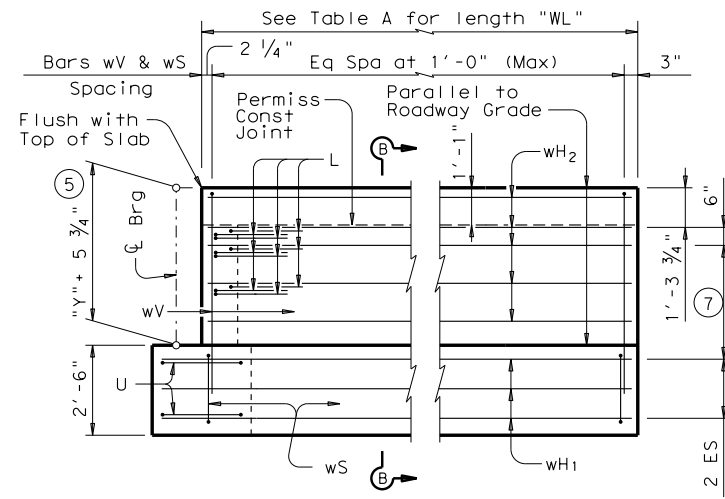
ABUTMENTS
STEEL BEAM SPANS
 28' ROADWAY 15° SKEW

ASB-28-15

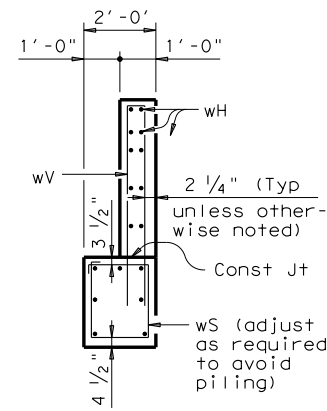
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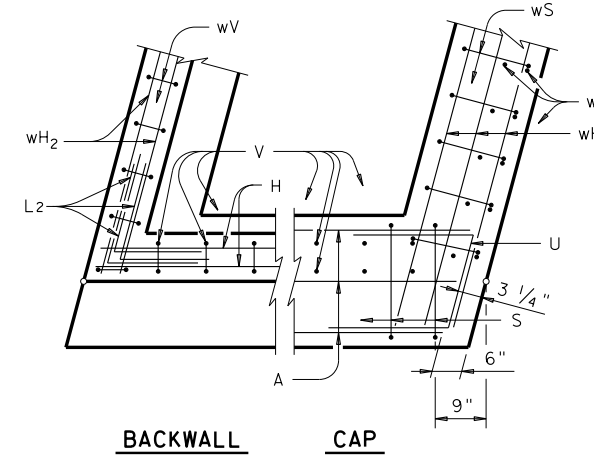
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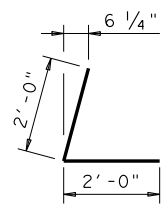
WINGWALL ELEVATION



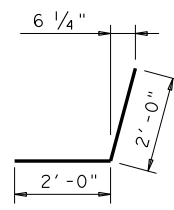
SECTION B-B



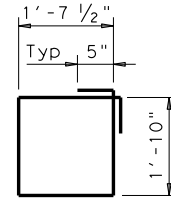
BACKWALL CAP CORNER DETAILS



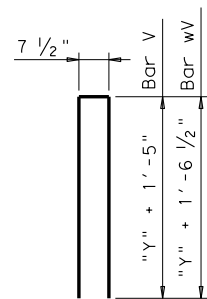
BARS L2



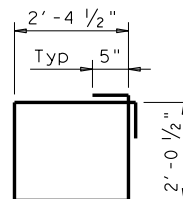
BARS L1



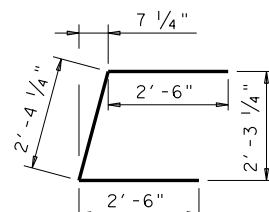
BARS wS



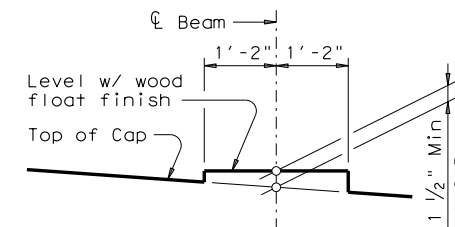
BARS V & wV ⑤



BARS S



BARS U



BEARING SEAT DETAIL

(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
Ft	Tons/Shaft	Tons/Pile
30	48	41
35	52	43
40	55	45
45	58	46
50	62	48
55	65	50
60	68	52
65	71	53
70	74	55
75	77	56
80	80	58
85	84	60
90	87	61
95	90	63
100	94	65
105	99	68
110	102	69
115	105	71
120	108	72

⑤ See SBSD-28 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
28' ROADWAY 15° SKEW

ASB-28-15

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2:1 HEADER SLOPE

3:1 HEADER SLOPE

TABLE OF ESTIMATED QUANTITIES (W18 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	8'-4"	261
wH1	14	#6	8'-0"	168
wH2	16	#6	6'-8"	160
wS	16	#4	7'-9"	83
wV	16	#5	8'-7"	143
Reinforcing Steel		Lb		2,704
Class "C" Concrete		CY		13.5

TABLE OF ESTIMATED QUANTITIES (W21 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	8'-11"	279
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		2,732
Class "C" Concrete		CY		13.9

TABLE OF ESTIMATED QUANTITIES (W24 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	9'-5"	295
wH1	14	#6	9'-0"	189
wH2	16	#6	7'-8"	184
wS	18	#4	7'-9"	93
wV	18	#5	9'-8"	182
Reinforcing Steel		Lb		2,832
Class "C" Concrete		CY		15.0

TABLE OF ESTIMATED QUANTITIES (W18 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	8'-4"	261
wH1	14	#6	11'-0"	231
wH2	16	#6	9'-8"	232
wS	22	#4	7'-9"	114
wV	22	#5	8'-7"	197
Reinforcing Steel		Lb		2,924
Class "C" Concrete		CY		15.3

TABLE OF ESTIMATED QUANTITIES (W21 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	8'-11"	279
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		2,955
Class "C" Concrete		CY		15.8

TABLE OF ESTIMATED QUANTITIES (W24 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	9'-5"	295
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		3,058
Class "C" Concrete		CY		16.9

TABLE OF ESTIMATED QUANTITIES (W27 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	9'-11"	310
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		2,856
Class "C" Concrete		CY		15.4

TABLE OF ESTIMATED QUANTITIES (W30 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	10'-5"	326
wH1	14	#6	10'-0"	210
wH2	20	#6	8'-8"	260
wS	20	#4	7'-9"	104
wV	20	#5	10'-8"	223
Reinforcing Steel		Lb		3,104
Class "C" Concrete		CY		16.5

TABLE OF ESTIMATED QUANTITIES (W33 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	10'-11"	342
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		3,130
Class "C" Concrete		CY		16.9

TABLE OF ESTIMATED QUANTITIES (W27 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	6	#6	30'-9"	277
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	9'-11"	310
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		3,163
Class "C" Concrete		CY		18.0

TABLE OF ESTIMATED QUANTITIES (W30 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	10'-5"	326
wH1	14	#6	14'-0"	294
wH2	20	#6	12'-8"	381
wS	28	#4	7'-9"	145
wV	28	#5	10'-8"	312
Reinforcing Steel		Lb		3,439
Class "C" Concrete		CY		19.1

TABLE OF ESTIMATED QUANTITIES (W33 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	10'-11"	342
wH1	14	#6	15'-0"	315
wH2	20	#6	13'-8"	411
wS	30	#4	7'-9"	155
wV	30	#5	11'-2"	350
Reinforcing Steel		Lb		3,554
Class "C" Concrete		CY		20.4

TABLE OF ESTIMATED QUANTITIES (W36 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	11'-5"	357
wH1	14	#6	11'-0"	231
wH2	20	#6	9'-8"	290
wS	22	#4	7'-9"	114
wV	22	#5	11'-8"	268
Reinforcing Steel		Lb		3,241
Class "C" Concrete		CY		17.9

TABLE OF ESTIMATED QUANTITIES (W40 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-3"	44
V	30	#5	11'-11"	373
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		3,268
Class "C" Concrete		CY		18.4

TABLE OF ESTIMATED QUANTITIES (W36 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	11'-5"	357
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		3,584
Class "C" Concrete		CY		20.6

TABLE OF ESTIMATED QUANTITIES (W40 BEAMS)⁽¹⁰⁾

Bar	No.	Size	Length	Weight
A (8)	8	#11	30'-1"	1,279
H	8	#6	30'-9"	369
L1	9	#6	4'-0"	54
L2	9	#6	4'-0"	54
S	28	#4	9'-8"	181
U	4	#6	7'-4"	44
V	30	#5	11'-11"	373
wH1	14	#6	16'-0"	336
wH2	20	#6	14'-8"	441
wS	32	#4	7'-9"	166
wV	32	#5	12'-2"	406
Reinforcing Steel		Lb		3,703
Class "C" Concrete		CY		22.0

- (8) With pile foundations, replace Bars A located at bottom centerline of cap with 2 - #11 x 7'-9" placed between piling groups. Deduct 77 Lbs from reinforcing steel total.
- (10) Quantities shown are for one Abutment only (with Approach Slab). With no Approach Slab, add 1.2 CY Class "C" Concrete and 92 Lb Reinforcing Steel for 2 additional H bars.

HL93 LOADING SHEET 3 OF 3



**ABUTMENTS
STEEL BEAM SPANS
28' ROADWAY 15° SKEW**

ASB-28-15

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