S = Bar is included in substructure quantities.
F = Bar to be field welded.
T = Tie or Stirrup.
H = A-615, Grade 60
V = Bar dimensions vary between dimensions shown on this line and the following line.

NORTH BRIDGE

MARK NO.	LOCATION	SIZE	NO. REQ'D.	BEND TYPE	TIE OR STIR.	FLD. WELD	SUBSTR.	H	VARIES	NO. EACH	U Ft.	U In.	W Ft.	W In.	X Ft.	X In	Y Ft.	Y In.	Z Ft.	Z In.	θ_1 Deg.	θ_2 Deg.	LENGTH Ft.	LENGTH In.	WEIGHT Lbs.
1	FOOTING PIERS 1&2 N. BRIDGE	7	180	50			S				8	6.0											8	6.	3127
2	FOOTING PIERS 1&2 N. BRIDGE	6	44	50			S				27	0.0											27	0.	1784
3	FOOTING PIERS 1&2 N. BRIDGE	5	106	50			S				8	6.0											8	6.	940
4	FOOTING PIERS 1&2 N. BRIDGE	5	40	50			S				27	0.0											27	0.	1126
5	ABUTMENT WALL PIERS 1&2 N BR	4	96	50			S				27	0.0											27	0.	1731
6	ABUTMENT WALL PIERS 1&2 N BR	5	16	50			S				27	0.0											27	0.	451
7	ABUTMENT WALL PIERS 1&2 N BR	4	48	50			S				5	8.0											5	8.	182
8	ABUTMENT WALL PIERS 1&2 N BR	4	16	50			S					11.5											1	0.	11
9	ABUTMENT WALL PIER 1 N. BR.	6	87	50			S				10	6.0											10	6.	1372
9	ABUTMENT WALL PIER 2 N. BR.	6	87	50			S				10	4.0											10	4.	1350
10	ABUTMENT WALL PIER 1 N. BR.	6	87	54			S		V	1	7	6.0											8	5.	
											10	8.0											11	7.	1307
10	ABUTMENT WALL PIER 2 N. BR.	6	87	54			S		V	1	6	8.0											7	7.	
											9	10.0											10	9.	1198
11	ABUTMENT WALL PIER 1 N. BR.	10	87	54			S		V	1	13	4.0											14	11.	
											16	3.0											17	10.	6130
11	ABUTMENT WALL PIER 2 N. BR.	10	87	54			S		V	1	12	3.0											13	10.	
											15	2.0											16	9.	5725
12	ABUTMENT WALL PIER 1 N. BR.	4	87	80	T		S				3	4.2		6.0		6.0		1.0		1.0	90	76	4	2.	242
12	ABUTMENT WALL PIER 2 N. BR.	4	87	80	T		S				3	3.5		6.0		6.0		1.0		1.0	90	76	4	2.	242
13	ABUTMENT WALL PIER 1 N. BR.	5	66	82	T		S				3	9.0	2	10.0	2	10.0		1.3		1.3	90	76	10	5.	717
13	ABUTMENT WALL PIER 2 N. BR.	5	66	82	T		S				3	8.3	2	10.0	2	10.0		1.3		1.3	90	76	10	5.	717
21	ALL CURTAIN WALLS N. BRIDGE	5	8	80			S				4	8.0		6.0		0.0		1.3		0.0	166	0	6	9.	56
22	ALL CURTAIN WALLS N. BRIDGE	5	48	50			S				6	8.0											6	8.	334
23	NW CURTAIN WALL N. BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
23	SW CURTAIN WALL N. BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
23	NE CURTAIN WALL N. BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
23	SE CURTAIN WALL N. BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
24	NW & SW CURTAIN WALL N. BR.	5	4	80			S				17	6.0	10	0.0		0.0		1.3		0.0	76	0	27	8.	115
24	NE & SE CURTAIN WALL N. BR.	5	4	80			S				17	6.0	10	0.0		0.0		1.3		0.0	76	0	27	8.	115
25	NW CURTAIN WALL N BRIDGE	4	10	50			S				17	3.5											17	4.	116
25	SW CURTAIN WALL N BRIDGE	4	10	50			S				20	5.0											20	5.	136
25	NE CURTAIN WALL N BRIDGE	4	10	50			S				16	3.5											16	4.	109
25	SE CURTAIN WALL N BRIDGE	4	10	50			S				19	5.0											19	5.	130
26	NW & SW CURTAIN WALL N. BR.	4	4	50			S		V	2	10	0.0											10	0.	
											6	0.0											6	0.	21
26	NE & SE CURTAIN WALL N. BR.	4	4	50			S		V	2	10	0.0											10	0.	
											6	0.0											6	0.	21
30	SLAB TRANSVERSE TOP N. BR.	6	208	51							32	0.0											32	8.	10206
31	SLAB TRANSVERSE TOP N. BR.	6	208	51							24	0.0											24	8.	7706
32	SLAB LONGITUDIONAL TOP N.BR.	5	224	50							32	5.0											32	5.	7574
33	SLAB TRANSVERSE BOTTOM N.BR.	6	416	50							26	0.0											26	0.	16246
34	SLAB LONGITUDIONAL BOT. N.BR	6	126	50							42	6.0											42	6.	8043
50	END DIAPHRAGM N BRIDGE	6	8	50							27	1.0											27	1.	325
51	END DIAPHRAGM N BRIDGE	6	8	50							27	1.0											27	1.	325
52	END DIAPHRAGM N BRIDGE	4	48	50							27	1.0											27	1.	868
53	END DIAPH. PAV'T SEAT N BR.	4	4	50							26	2.0											26	2.	70
54	END DIAPH. STIRRUPS N BR.	4	84	64	T							9.0	7	6.0		9.0		0.0					8	10.	496
55	END DIAPH. STIRRUPS N BR.	4	84	65	T							9.0	7	6.0		9.0							8	10.	496
56	END DIAPH. TIES N. BR.	4	164	56	T						1	3.0											1	11.	210
60	INTERMED. DIAPH. N BR.	4	48	50							7	4.0											7	4.	235
61	INTERMED. DIAPH. N BR.	8	2	50							28	6.0											28	6.	152
61	INTERMED. DIAPH. N BR.	8	2	50							21	6.0											21	6.	115
62	INTERMED. DIAPH. N BR.	11	2	50				H			30	3.0											30	3.	321
62	INTERMED. DIAPH. N BR.	11	2	50				H			21	4.0											21	4.	227
63	INTERMED. DIAPH. N BR. STIRR	4	120	71								5.0	4	5.5	4	5.5							9	1.	728
64	INTERMED. DIAPH. N BR. TOP	7	8	50							49	0.0											49	0.	801
70	T.R. DISTRIBUTION N BRIDGE	4	20	50							26	4.0											26	4.	352
71	T.R. TO SLAB TIE N BRIDGE	5	372	69	T							8.0		8.0	1	5.0		8.0		0.0			2	9.	1067
72	T.R. TIE N BRIDGE	5	372	80							2	6.0		0.0		10.0		0.0		2.0		66	3	2.	1229
73	T.R. TIE N BRIDGE	4	186	80							2	4.0		9.0		0.0		2.0		0.0	90	0	3	0.	373
74	T.R. TIE N BRIDGE	4	186	80							2	4.0		9.0		6.0		2.0		2.0	95	85	3	5.	425
75	T.R. LONGITUDIONAL N BRIDGE	6	60	50							8	0.0											8	0.	721
76	T.R. LONGITUDIONAL N BRIDGE	4	150	50							8	0.0											8	0.	802
77	T.R. TO SLAB TIE N BRIDGE	4	186	80							1	5.0	1	5.0		0.0		1.5		0.0	90	0	2	9.	342
80	T.R. TO RETAIN WALL TIE N BR	5	4	80			S					6.0		6.0		7.0		1.5		1.5	101	173	5	9.	24
81	T.R. TO RETAIN WALL TIE N BR	5	4	80			S				1	6.0		6.0		7.0		1.5		1.5	101	173	6	9.	28
82	T.R. TO RETAIN WALL TIE N BR	5	164	80			S				2	6.0		6.0		7.0		1.5		1.5	101	173	7	9.	1326
83	T.R. LONGITUDIONAL RET. WALL	6	8	80			S				9	6.0	2	4.0		0.0		2.0		0.0	125	0	12	4.	148
83	T.R. LONGITUDIONAL RET. WALL	6	16	50			S				8	0.0											8	0.	192
84	T.R. LONGITUDIONAL RET. WALL	8	40	50			S				8	0.0											8	0.	854
84	T.R. LONGITUDIONAL RET. WALL	8	8	50			S				10	10.0											10	10.	231
84	T.R. LONGITUDIONAL RET. WALL	8	8	50			S				11	2.0											11	2.	239
85	T.R. LONGITUDIONAL RET. WALL	8	4	54			S				11	2.0											12	4.	132
86	T.R. TIE N.BR. RET. WALL	4	84	80			S				2	4.0		9.0		6.0		2.0		2.0	95	85	3	5.	192
87	T.R. TIES RETAINING WALL	4	88	91			S																3	3.	191

Note: T.R. = Traffic Railing

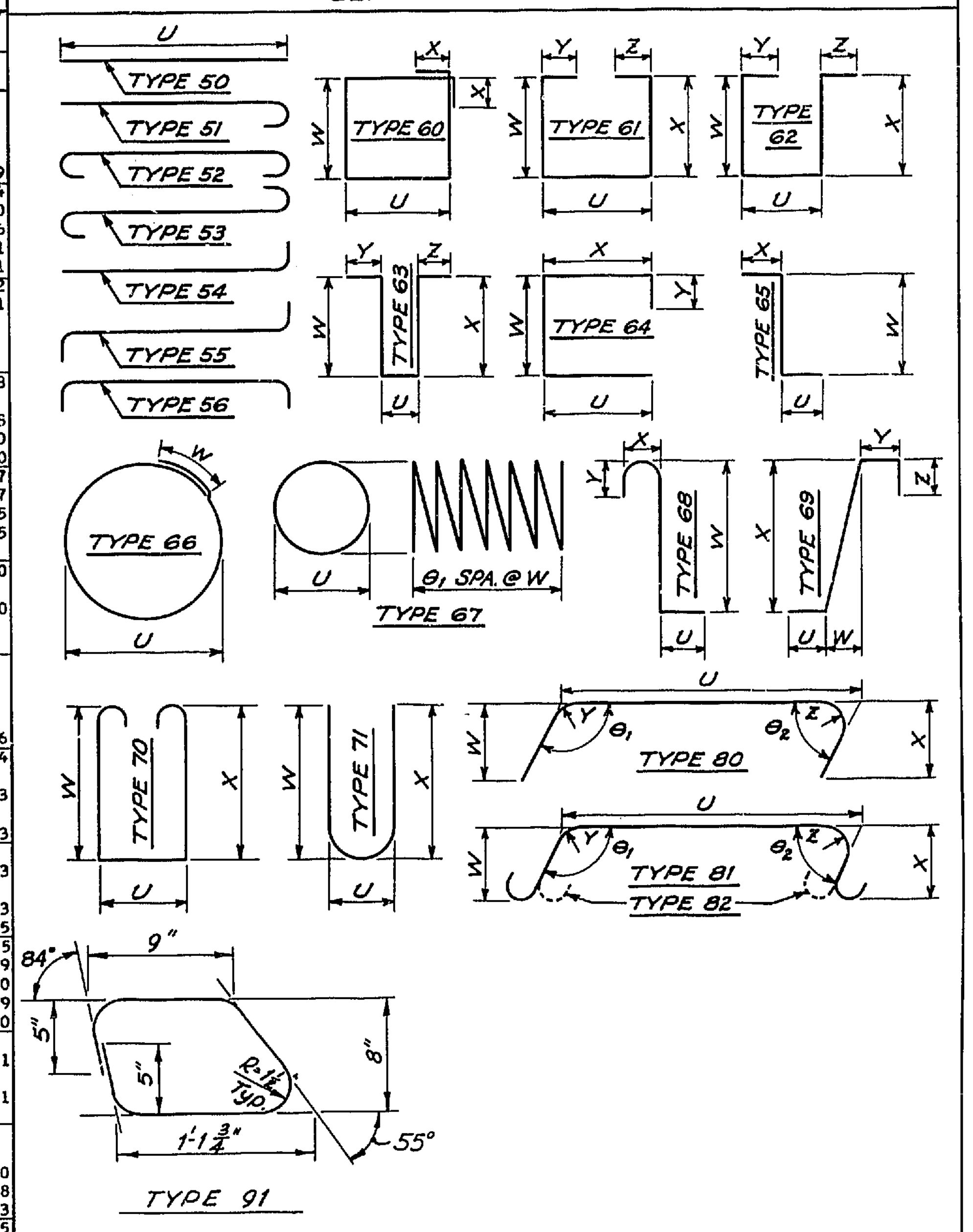
S = Bar is included in substructure quantities.
F = Bar to be field welded.
T = Tie or Stirrup
A-615, Grade 60.
V = Bar dimensions vary between dimensions shown on this line and the following line.

SOUTH BRIDGE

MARK NO.	LOCATION	SIZE	NO. REQ'D.	BEND TYPE	TIE OR STIR.	FLD. WELD	SUBSTR.	H	VARIES	NO. EACH	U Ft.	U In	W Ft.	W In.	X Ft.	X In	Y Ft.	Y In.	Z Ft.	Z In.	θ_1 Deg.	θ_2 Deg.	LENGTH Ft.	LENGTH In.	WEIGHT Lbs.
1	FOOTING PIERS 1&2 S. BRIDGE	7	168	50			S				8	6.0											8	6.	2919
2	FOOTING PIERS 1&2 S. BRIDGE	6	44	50			S				27	0.0											27	0.	1784
3	FOOTING PIERS 1&2 S. BRIDGE	5	106	50			S				8	6.0											8	6.	940
4	FOOTING PIERS 1&2 S. BRIDGE	5	40	50			S				27	0.0											27	0.	1126
5	ABUTMENT WALL PIERS 1&2 S.BR	4	96	50			S				27	0.0											27	0.	1731
6	ABUTMENT WALL PIERS 1&2 S.BR	5	16	50			S				27	0.0											27	0.	451
7	ABUTMENT WALL PIERS 1&2 S.BR	4	48	50			S				5	8.0											5	8.	182
8	ABUTMENT WALL PIERS 1&2 S.BR	4	16	50			S					11.5											1	0.	11
11	ABUTMENT WALL PIER 1 S BR	10	79	54			S		V	1	12	3.5											13	10.	
											15	2.5											16	9.	5198
11	ABUTMENT WALL PIER 2 S BR	10	79	54			S		V	1	12	3.5											13	10.	
											15	2.5											16	9.	5196
12	ABUTMENT WALL PIER 1 S BR	4	79	80	T		S				3	4.2		6.0		6.0		1.0		1.0	90	76	4	2.	220
12	ABUTMENT WALL PIER 2 S BR	4	79	80	T		S				3	4.2		6.0		6.0		1.0		1.0	90	76	4	2.	220
13	ABUTMENT WALL PIER 1 S BR	5	66	82	T		S				3	9.0	2	10.0	2	10.0		1.3		1.3	90	76	10	5.	717
13	ABUTMENT WALL PIER 2 S BR	5	66	82	T		S				3	9.0	2	10.0	2	10.0		1.3		1.3	90	76	10	5.	717
14	ABUTMENT WALL PIER 1 S BR	7	79	50			S				10	0.0											10	0.	1615
14	ABUTMENT WALL PIER 2 S BR	7	79	50			S				10	0.0											10	0.	1615
15	ABUTMENT WALL PIER 1 S BR	7	79	54			S		V	1	6	3.0											7	4.	
											9	5.0											10	6.	1440
15	ABUTMENT WALL PIER 2 S BR	7	79	54			S		V	1	6	3.0											7	4.	
											9	5.0											10	6.	1440
21	ALL CURTAIN WALLS S BRIDGE	5	8	80			S				4	8.0		6.0		0.0		1.3		0.0	166	0	6	9.	56
22	ALL CURTAIN WALLS S BRIDGE	5	48	50			S				6	8.0											6	8.	334
23	NW CURTAIN WALL S BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
23	SW CURTAIN WALL S BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
23	NE CURTAIN WALL S BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
23	SE CURTAIN WALL S BRIDGE	5	26	50			S		V	2	6	10.0											6	10.	
											10	4.0											10	4.	233
24	NW & SW CURTAIN WALL S. BR.	5	4	80			S				17	6.0	10	0.0		0.0		1.3		0.0	76	0	27	8.	115
24	NE & SE CURTAIN WALL S. BR.	5	4	80			S				17	6.0	10	0.0		0.0		1.3		0.0	76	0	27	8.	115
25	NW CURTAIN WALL S BRIDGE	4	10	50			S				16	3.5											16	4.	109
25	SW CURTAIN WALL S BRIDGE	4	10	50			S				19	5.0											19	5.	130
25	NE CURTAIN WALL S BRIDGE	4	10	50			S				16	3.5											16	4.	109
25	SE CURTAIN WALL S BRIDGE	4	10	50			S				19	5.0											19	5.	130
26	NW & SW CURTAIN WALL S. BR.	4	4	50			S		V	2	10	0.0											10	0.	
											6	0.0											6	0.	21
26	NE & SE CURTAIN WALL S. BR.	4	4	50			S		V	2	10	0.0											10	0.	
											6	0.0											6	0.	21
40	SLAB TRANSVERSE TOP S. BR.	6	187	51							37	0.0											37	8.	10580
41	SLAB TRANSVERSE TOP S. BR.	6	187	51							24	0.0											24	8.	6928
42	LONGITUDIONAL TOP S.BR.	5	224	50							29	5.0											29	5.	6873
43	TRANSVERSE BOTTOM S.BR.	6	374	50							26	0.0											26	0.	14605
44	LONGITUDIONAL BOT S.BR.	6	126	50							38	6.0											38	6.	7286
50	END DIAPHRAGM S BRIDGE	6	8	50							27	1.0											27	1.	325
51	END DIAPHRAGM S BRIDGE	6	8	50							27	1.0											27	1.	325
52	END DIAPHRAGM S BRIDGE	4	48	50							27	1.0											27	1.	868
53	END DIAPH. PAV'T SEAT S BR.	4	4	50							26	2.0											26	2.	70
54	END DIAPH. STIRRUPS S BR.	4	84	64	T							9.0	7	6.0		9.0		0.0					8	10.	496
55	END DIAPH. STIRRUPS S BR.	4	84	65	T							9.0	7	6.0		9.0							8	10.	496
56	END DIAPH. TIES S BR.	4	164	56	T						1	3.0											1	11.	210
60	INTERMED. DIAPH. S.BR	4	48	50							7	4.0											7	4.	235
61	INTERMED. DIAPH. S.BR	8	2	50							28	6.0											28	6.	152
61	INTERMED. DIAPH. S.BR.	8	2	50							21	6.0											21	6.	115
62	INTERMED. DIAPH. S.BR	11	2	50				H			30	3.0											30	3.	321
62	INTERMED. DIAPH. S.BR	11	2	50				H			21	4.0											21	4.	227
63	INTERMED. DIAPH. S.BR.STIRR	4	120	71								5.0	4	5.5	4	5.5							9	1.	728
64	INTERMED DIAPH. S.BR TOP	7	8	50							49	0.0											49	0.	801
70	T.R. DISTRIBUTION S BRIDGE	4	16	50							29	6.0											29	6.	315
71	T.R. TO SLAB TIE S BRIDGE	5	386	69	T							8.0		8.0	1	5.0		8.0		0.0			2	9.	964
72	T.R. TIE S BRIDGE	5	336	80							2	6.0		0.0		10.0		0.0		2.0		66	3	2.	1110
73	T.R. TIE S BRIDGE	4	168	80							2	4.0		9.0		0.0		2.0		0.0	90	0	3	0.	337
74	T.R. TIE S BRIDGE	4	168	80							2	4.0		9.0		6.0		2.0		2.0	95	85	3	5.	384
75	T.R. LONGITUDIONAL S BRIDGE	6	52	50							8	4.0											8	4.	651
76	T.R. LONGITUDIONAL S BRIDGE	4	130	50							8	4.0											8	4.	724
77	T.R. TO SLAB TIE S BRIDGE	4	168	80							1	5.0	1	5.0		0.0		1.5		0.0	90	0	2	9.	309
80	T.R. TO RETAINING WALL TIE	5	4	80			S					6.0		6.0		7.0		1.5		1.5	101	173	5	9.	24
81	T.R. TO RETAINING WALL TIE	5	4	80			S				1	6.0		6.0		7.0		1.5		1.5	101	173	6	9.	28
82	T.R. TO RETAINING WALL TIE	5	160	80			S				2	6.0		6.0		7.0		1.5		1.5	101	173	7	9.	1293
83	T.R. LONGITUDIONAL RET.WALL	6	16	50			S				8	3.0											8	3.	198
83	T.R. LONGITUDIONAL RET.WALL	6	8	80			S				8	10.0	2	4.0		0.0		2.0		0.0	125	0	11	8.	140
84	T.R. LONGITUDIONAL RET.WALL	8	40	50			S				8	3.0											8	3.	881
84	T.R. LONGITUDIONAL RET.WALL	8	8	50			S				10	2.0											10	2.	217
84	T.R. LONGITUDIONAL RET.WALL	8	8	50			S				10	6.0											10	6.	224
85	T.R. LONGITUDIONAL RET.WALL	8	4	54			S				10	6.0											11	8.	125
86	T.R. TIES N.BR. RET. WALL	4	84	80			S				2	4.0		9.0		6.0		2.0		2.0	95	85	3	5.	192
87	T.R. TIES RET.WALL S BRIDGE	4	82	91			S																3	3.	178

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.		SHEET NO.	TOTAL SHEETS
8	WASH.	I-90-1(73)38		149	170

BENDING DIAGRAMS



SR 90 MP 41.24 TO MP 46.98

NATIONAL FOREST BOUNDARY TO ASAHEL CURTIS INTERCHANGE

KING COUNTY

BANDERA INTERCHANGE OVERCROSSING

BAR LIST

WASHINGTON STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS
OLYMPIA, WASHINGTON
BAKER FERGUSON, Chairman
HAROLD WALSH JOHN N. RUPP

BRIDGE ENGINEER
CONTRACT NUMBER 9217

APPROVED Sept. 24, 1971
SHEET 149 OF 170 SHEETS

Bridge Design Engineer / Supervising Bridge Engr. / Designed T.A. LARSON 4-71 / Design Checked (R.L.B.) C.E. NELSON 6-71

SR 90 JOB NO. 1573 SHT. 11

SR 90/292

80/144