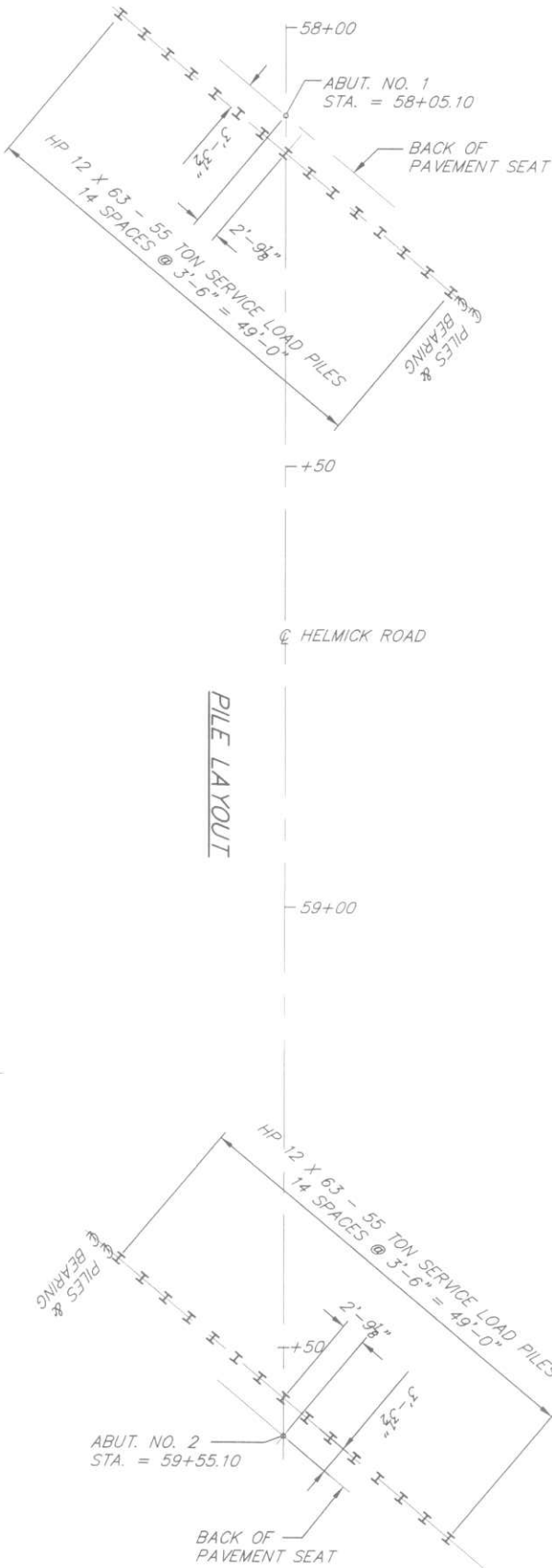
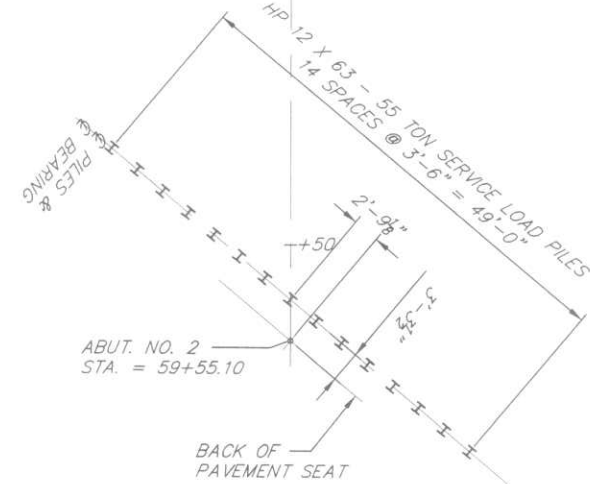


SUPERELEVATION TRANSITION



PILE LAYOUT



GENERAL NOTES

All materials and work shall be in accordance with the requirements of the State of Washington, Department of Transportation, Standard Specifications for Road, Bridge, and Municipal Construction, dated 2006.

This structure has been designed in accordance with the requirements of the 17th Edition AASHTO "Standard Specifications for Highway Bridges", dated 2002. The pre stressed girders have been designed by service load stresses and checked by load factor design. All other elements have been designed service load method.

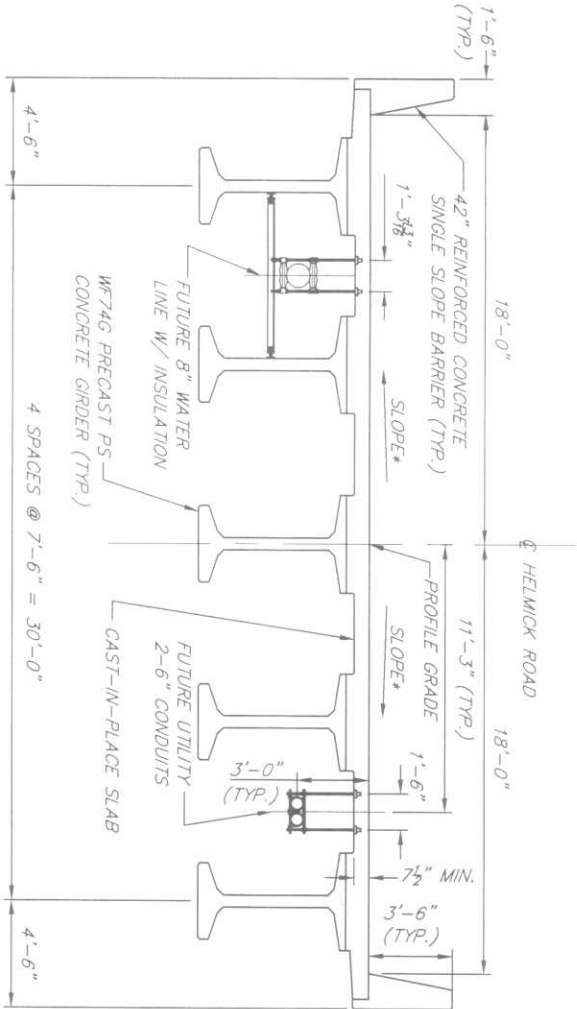
All cast-in-place concrete in the substructure shall be class 4000 mix. All cast-in-place concrete in the superstructure, except the deck, shall be class 4000 mix. Cast-in-place concrete for the deck shall be class 4000D. All exposed surfaces shall be given a Class 1 Surface Finish.

For Prestressed Concrete requirements, see notes on the girder sheets.

Unless otherwise shown on the plans, concrete cover shall be measured from the face of concrete to the face of any reinforcing bar. Cover shall be 2 1/2" at the top of the roadway slab and bottom of pile cap, 1" at the bottom of the roadway slab, and 1 1/2" at all other locations.

Piles for Abutment No. 1 & No. 2 shall be HP 12 x 63 steel piles. The piles shall be driven to a service load bearing capacity of 55 tons, except the test pile shall be driven to a service load bearing capacity of 64 tons. The driving equipment shall meet the requirements of Section 6-05 of the Standard Specifications. Piles to be driven to a minimum tip elevation of 210.00 unless rock is encountered.

All submittals shall be submitted to Skagit County and approved by the Engineer.



TYPICAL BRIDGE SECTION

FUTURE UTILITIES & HANGERS SHOWN, INSERTS ONLY
REQUIRED FOR THIS CONTRACT
* SLOPE VARIES SEE "SUPERELEVATION TRANSITION"

NICHOLLS ENGINEERING
CIVIL AND STRUCTURAL ENGINEERING
P.O. BOX 14706 SPOKANE VALLEY, WA 99214-0706
PHONE: 509-921-6747 FAX: 509-242-8777
E-MAIL: info@nichollsengineering.com

SKAGIT COUNTY PUBLIC WORKS
MOUNT VERNON, WASHINGTON

COUNTY ENGINEER
DATE

DESIGNED BY: SIN 04/05
DETAILS BY: SIN 04/05
C.R.P. No. _____
CHECKED BY: JIN 04/05
SCALE _____
ROAD No. _____

SHEET DESCRIPTION
BRIDGE SECTIONS

PROJECT
HELMICK ROAD IMPROVEMENT
RED CREEK BRIDGE

SHEET No.
B3
OF B11

[illegible]

Technical drawing of a bridge deck cross-section showing reinforcement details. The drawing includes labels for various reinforcement bars: 51 #6 @ 9" BOTTOM, 50 #6 @ 9" TOP, 52 #4 TOP, 53 #5, 54 #8 TOP ALONG EDGE W/ 3'-6" MIN SPLICE, 55 #6, 56 #6 @ 8", and 57 #5 @ 1'-4". It also shows dimensions like 4'-1", 8", 7 1/2" SLAB, 2 1/2" CLR., 1" CLR., 1'-6", 4 SPA @ 9 1/2" = 3'-2", 7 SPA @ 1'-0" = 7'-0", and 4 SPA @ 7'-6" = 30'-0". Other labels include CONCRETE INSERTS, FIELD BEND TYP., SLOPE VARIES, PROFILE GRADE, and ROADWAY.

NICHOLLS ENGINEERING
CIVIL AND STRUCTURAL ENGINEERING
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PHONE: 509-921-6747 FAX: 509-242-8777
E-MAIL: info@nichollsengineering.com

PUBLIC
WORKS
MOUNT VERNON, WASHINGTON

DATE _____

DESIGNED BY SMK 07/01
DATE
DETAILS BY SMK 07/01
DATE
C.R.P. No.

CHECKED BY JIN 08/05
SCALE _____ DATE _____
ROAD No. _____

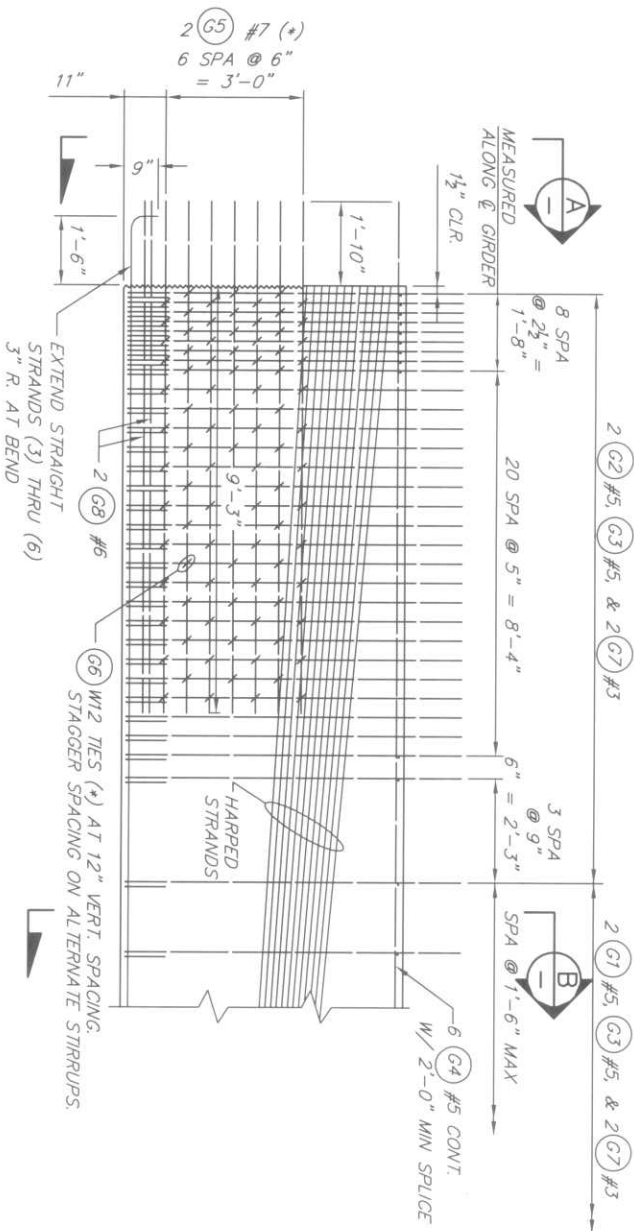
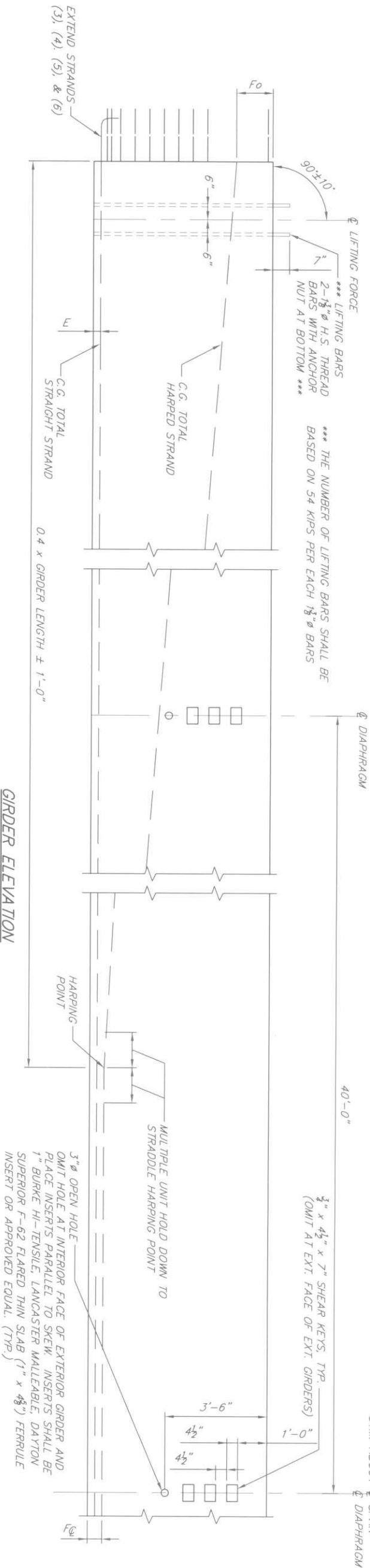
SHEET DESCRIPTION

PROJECT

HELMICK ROAD IMPROVEMENT
RED CREEK BRIDGE

SHEET No. B4
OF B11



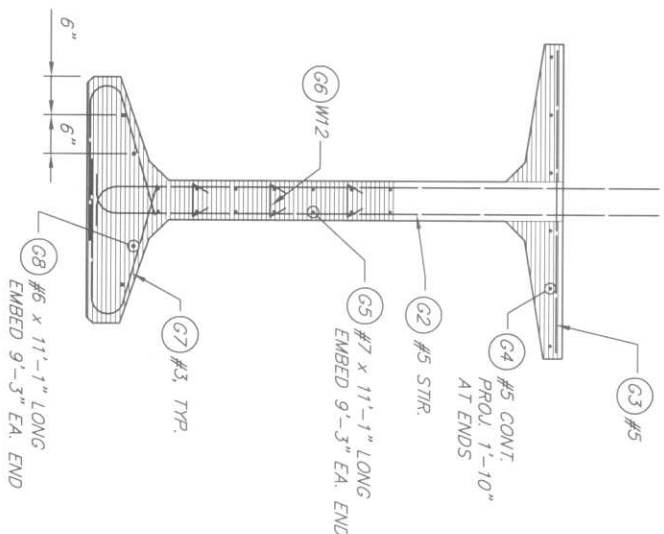
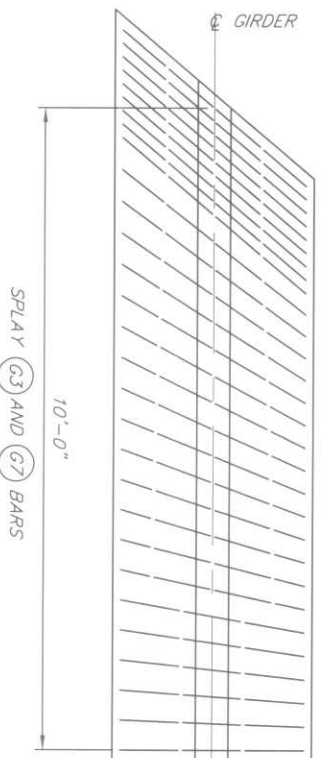
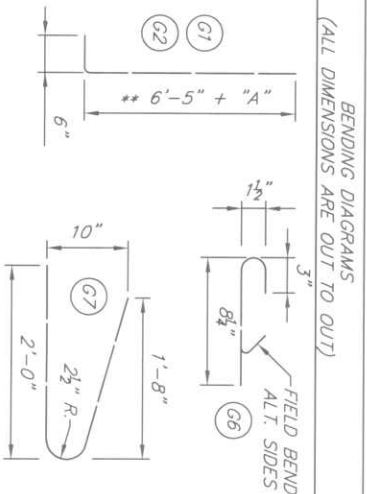


TYPICAL END ELEVATION
(*) ADJUST SPACING AS NECESSARY
TO CLEAR HARPED STRANDS

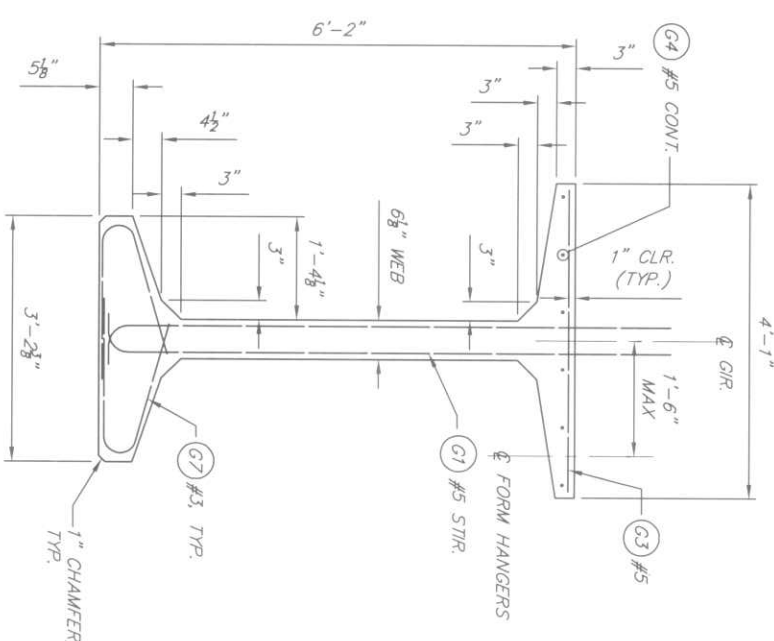
GIRDER BAR LIST
ALL REINFORCING SHALL BE AASHTO M 31, GR. 60.

MARK	LOCATION	SIZE
G1	GIRDER STIRRUPS	5
G2	GIRDER END STIRRUPS	5
G3	GIRDER TOP FLANGE	5 STR.
G4	GIRDER CONT. LONGIT.	5 STR.
G5	GIRDER END LONGIT.	7 STR.
G6	GIRDER END TIES	W12 ++
G7	GIRDER BOTTOM FLANGE TIES	3
G8	GIRDER END LONGIT.	6 STR.

++ #3 OR #4 MAY BE SUBSTITUTED. FIELD BEND IS OPTIONAL
** SHALL BE MODIFIED AS REQD FOR SUPERELEVATION



SECTION A
SAWTEETH SHOWN
BY SHADED AREA



SECTION B



NICHOLLS ENGINEERING
CIVIL AND STRUCTURAL ENGINEERING
P.O. BOX 14708 SPOKANE, WA 99214
PHONE/FAX 509-921-6747

SKAGIT COUNTY

PUBLIC
WORKS
BOBMY VERNON, WASHINGTON

COUNTY ENGINEER

DATE

DESIGNED BY: SWK 07/05
CHECKED BY: JLN 08/05
DETAILS BY: SWK 07/05
SCALE: 1" = 10'-0"
C.R.P. No. ROAD No.

SHEET DESCRIPTION

GIRDER DETAILS 1

PROJECT

HELMICK ROAD IMPROVEMENT
RED CREEK BRIDGE

SHEET No.
B5
OF B11

GIRDER NOTES

- Girder lengths shall be increased as necessary to compensate for shortening due to prestress and shrinkage.
- All strand for pre-tensioning shall be 0.6" diameter, low relaxation strands (AASHTO M203, Grade 270)
- Except for extended strands as shown, cut all remaining strands flush with the girder ends and point with an approved epoxy resin.
- The top surface of the girder flange shall be roughened in accordance with Section 6-02.3(23)H of the Standard Specifications.
- Lifting bars shall be $\frac{1}{8}$ " high strength threaded bars (AASHTO M275 Grade 150 Minimum). Lifting hardware that connects to the threaded bars shall be designed, detailed, and furnished by the contractor. Lifting forces on threaded bars shall be within 10 degrees of perpendicular to the top of the girder. Alternate lifting configurations may be submitted by the contractor in accordance with Section 6-02.3(23)L of the Standard Specifications.
- Extra caution must be exercised in handling and placing girders. All girders shall be checked by the contractor to ensure that they are braced adequately to prevent tipping and to control lateral bending during shipping. Once erected, all girders shall be braced to prevent tipping until the intermediate diaphragms are cast and cured.
- Forms for bearing pad recesses shall be constructed and fastened in such a manner as to not cause damage to the girder during the strand release operation.



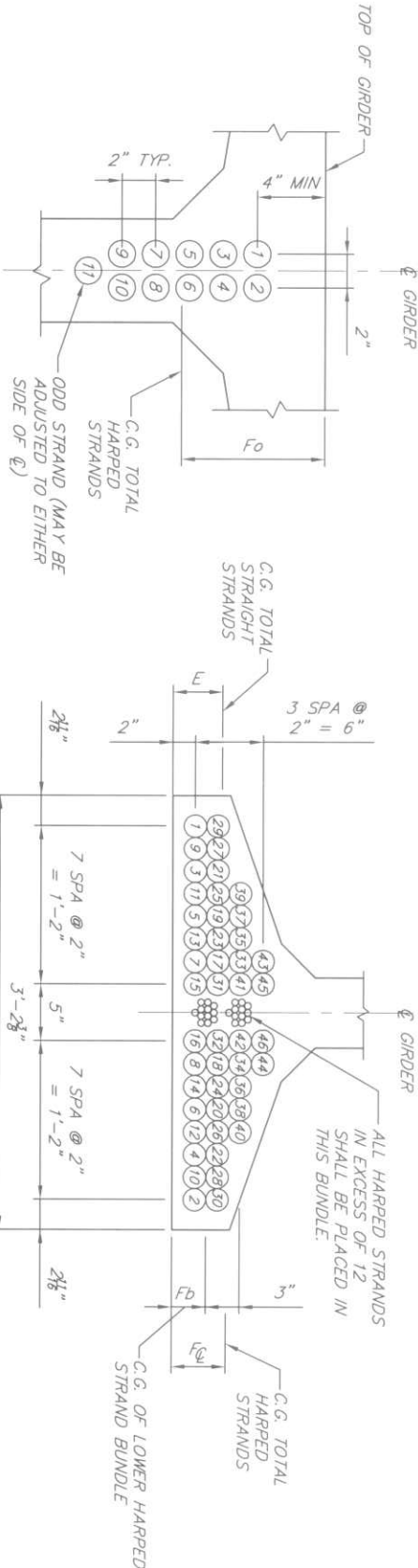
EXPIRES 03/27/08

GIRDER SCHEDULE

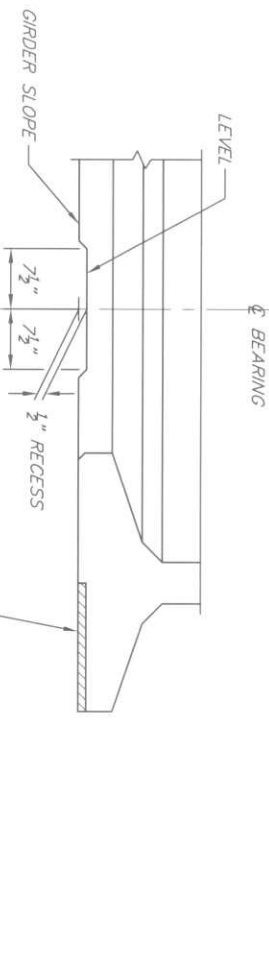
DIMENSION "A" AT ϕ BEARING = 11 $\frac{1}{2}$ "																
C = SCREED SETTING D = GIRDER CAMBER AT TIME OF SLAB POUR (120 DAYS) Ld = FINAL GIRDER CAMBER																
DIMENSIONS			MIN CONC. COMPR. STRENGTH		HARPED STRAND		STRAIGHT STRAND		STRAND LOCATION (IN.)			EST. CAMBER (IN.)				
LENGTH	θ	P1	P2	F'C (KSI) FINAL	F'C (KSI) RELEASE	NO. OF STRANDS	JACKING FORCE (KIPS)	NO. OF STRANDS	JACKING FORCE (KIPS)	E	F ϕ	Fb	Fo	C	D	Ld
14'7"-24"	50°	2'-9 $\frac{1}{8}$ "	2'-11 $\frac{1}{8}$ "	8.8	7.8	24	1055	36	1582	3 $\frac{7}{8}$ "	4 $\frac{1}{2}$ "	3"	15"	1 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	0

C = SCREED SETTING
D = GIRDER CAMBER AT TIME OF SLAB POUR (120 DAYS)
Ld = FINAL GIRDER CAMBER

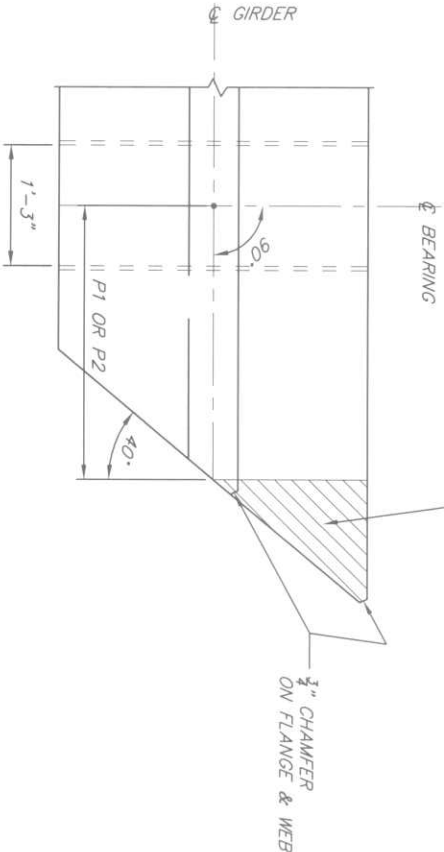
STRAND PATTERN AT GIRDER END
HARPED STRAND LOCATION SEQUENCE
SHALL BE AS SHOWN (1), (2), ETC.



STRAND PATTERN AT ϕ SPAN
STRAIGHT STRAND LOCATION SEQUENCE
SHALL BE AS SHOWN (1), (2), ETC.

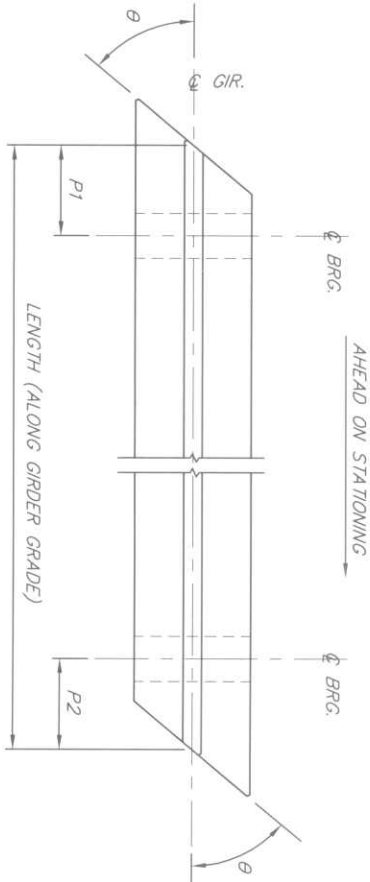
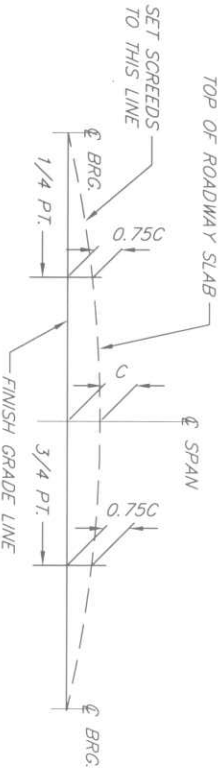


ELEVATION



PLAN - TYP. BEARING RECESS
AND FLANGE PROTECTION

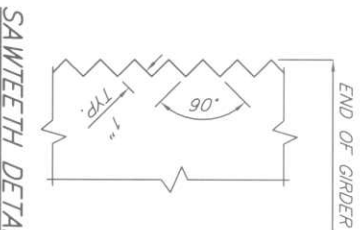
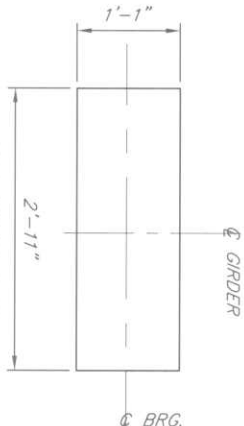
SCREED SETTING DIMENSIONS
FOR DIMENSION "C" SEE GIRDER SCHEDULE



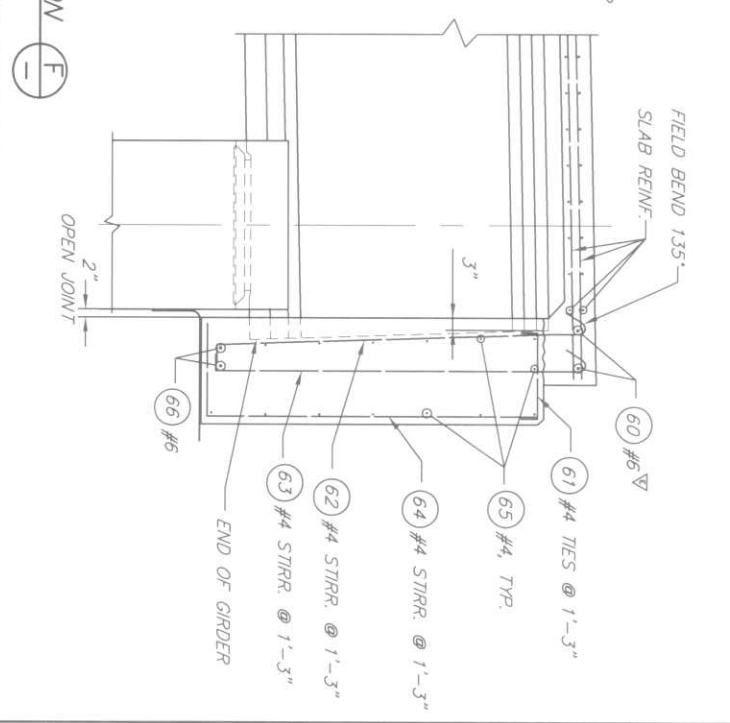
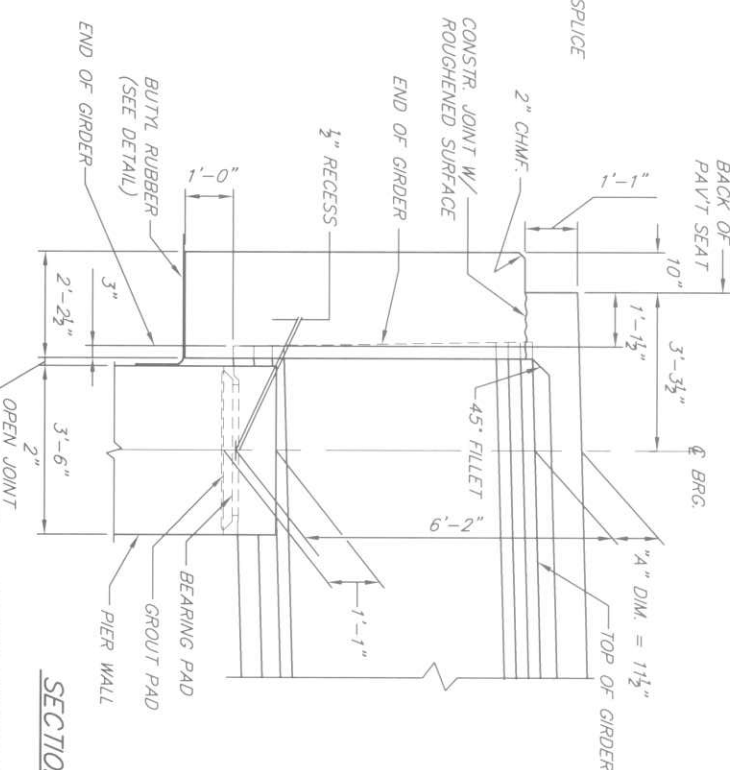
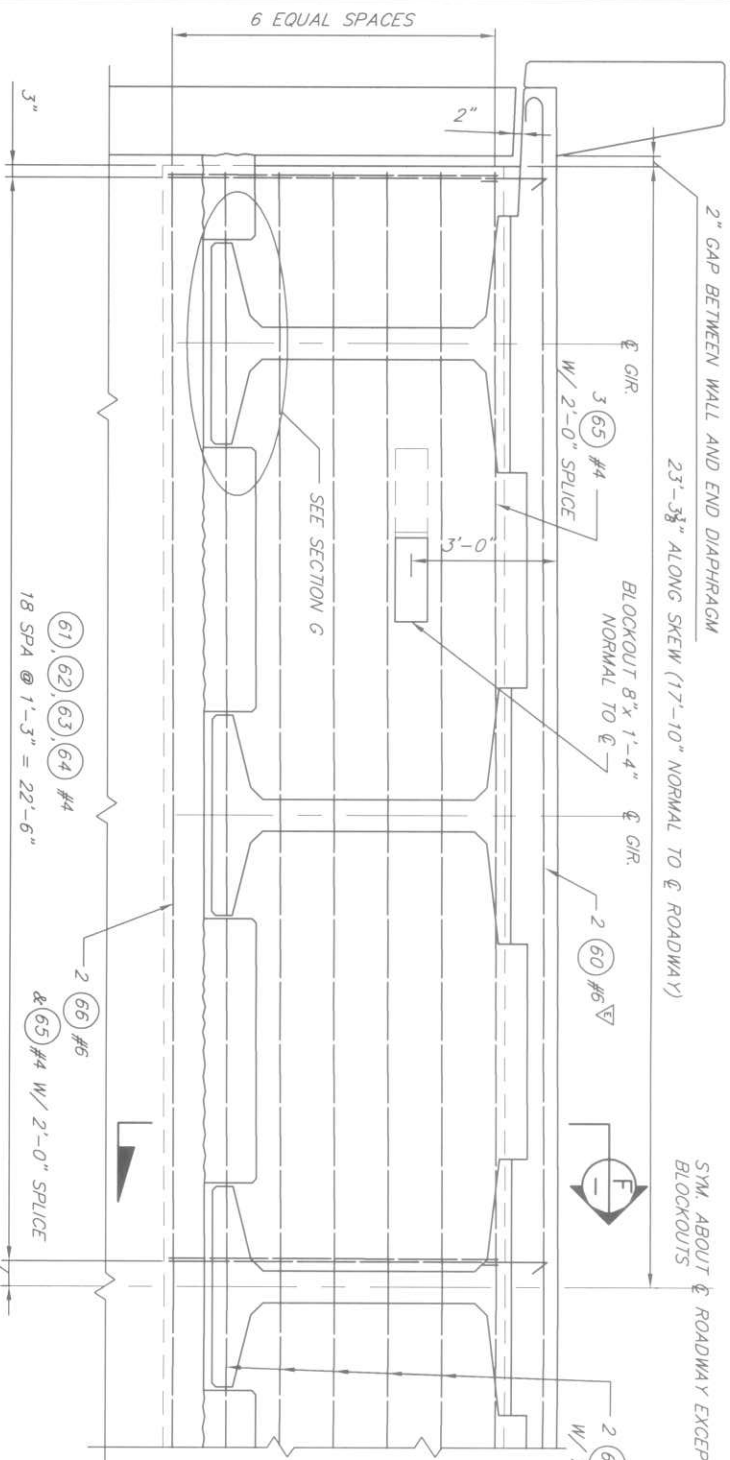
END 1

END 2

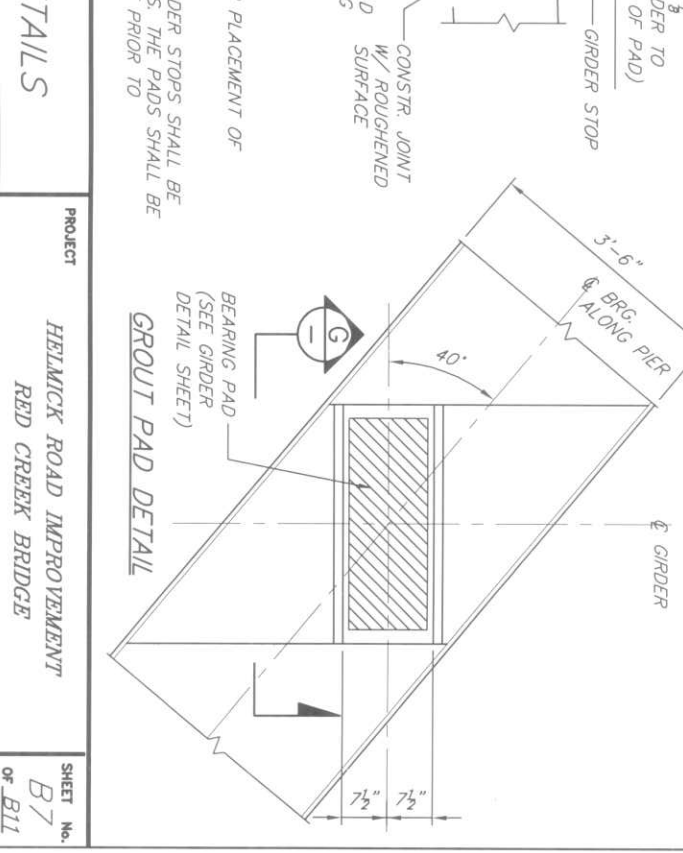
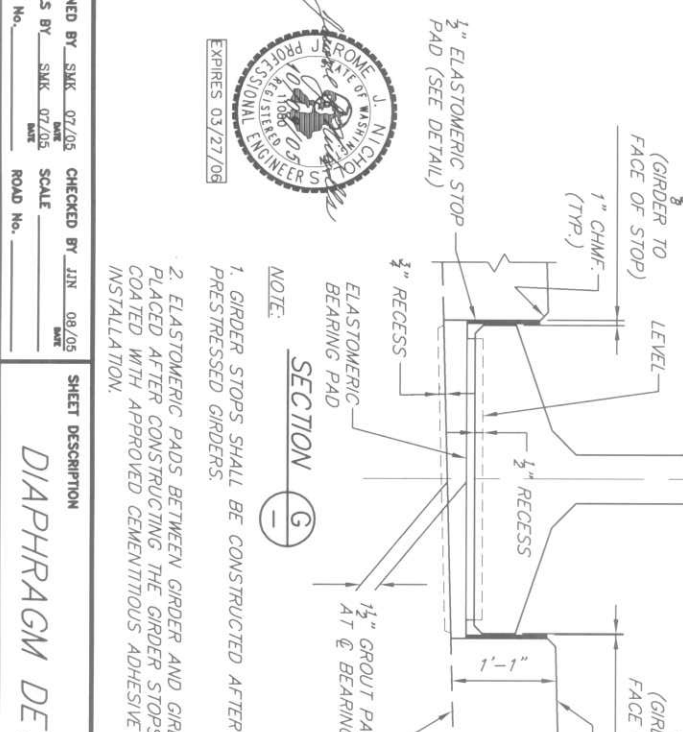
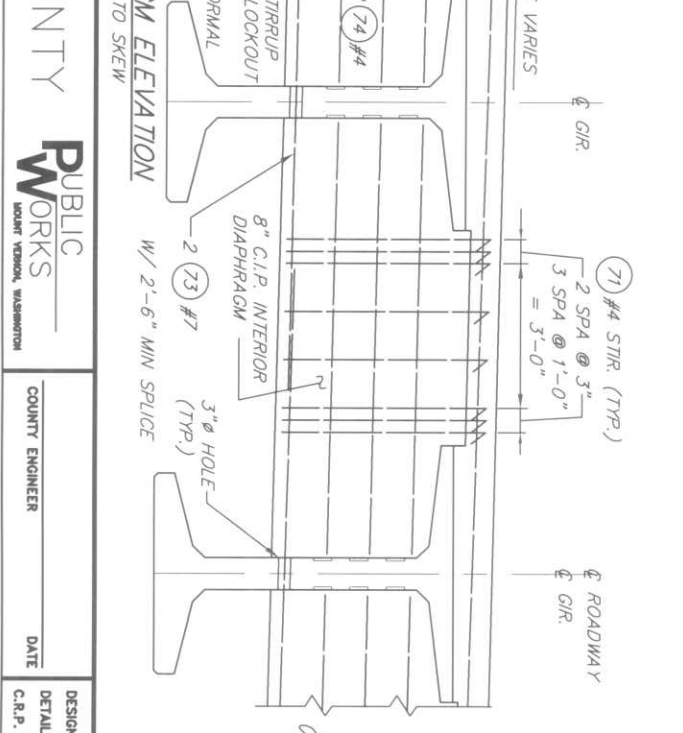
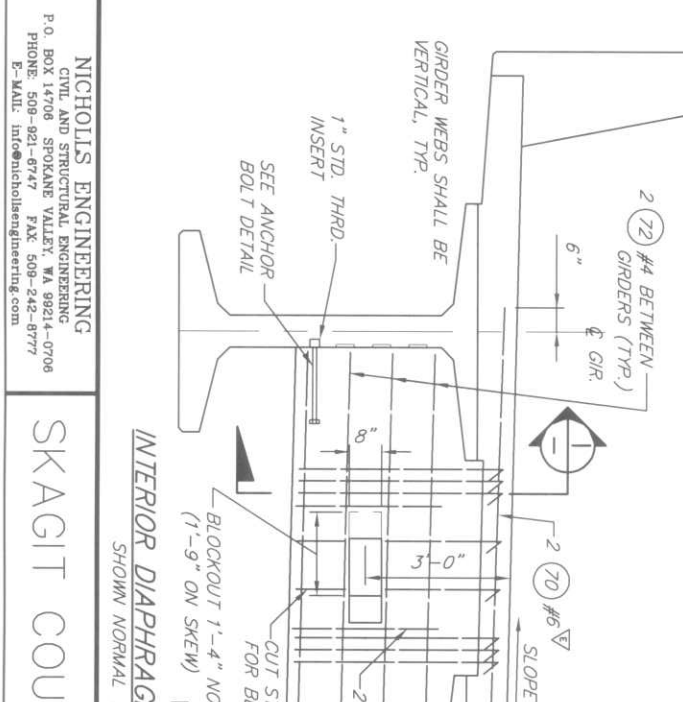
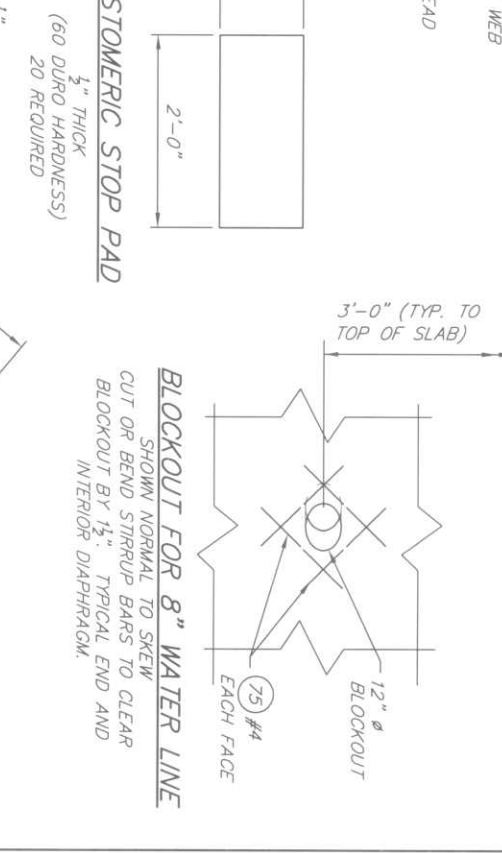
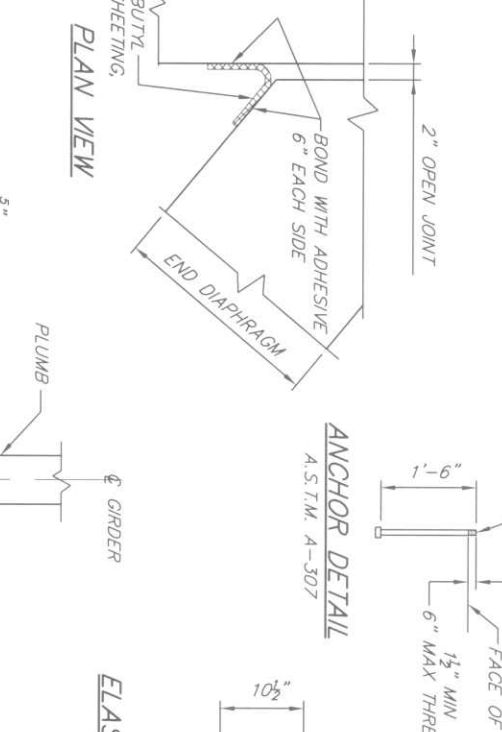
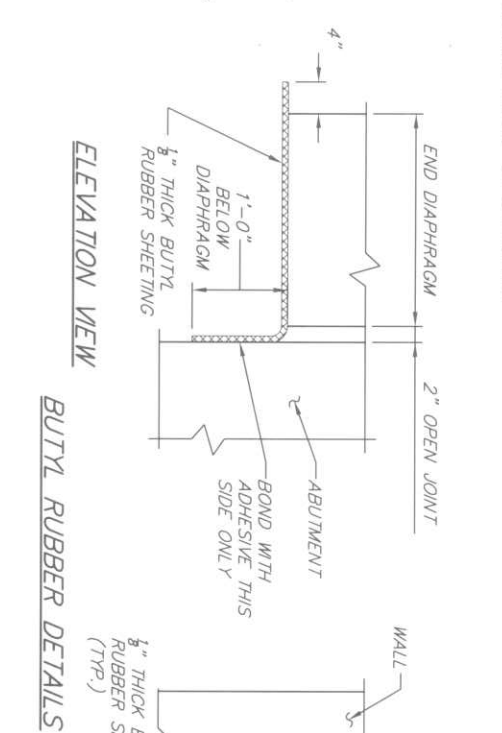
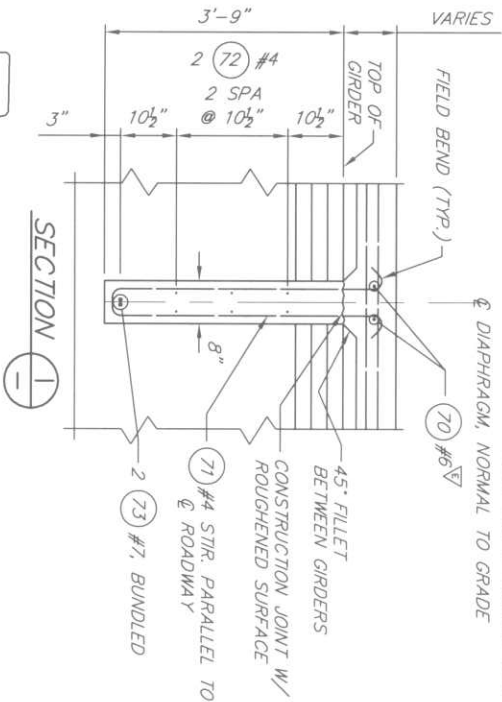
BEARING PAD
LAMINATED ELASTOMERIC BRG. PAD
1 1/2" THICK W/ 2 SHIMS
(60 DURO HARDNESS)

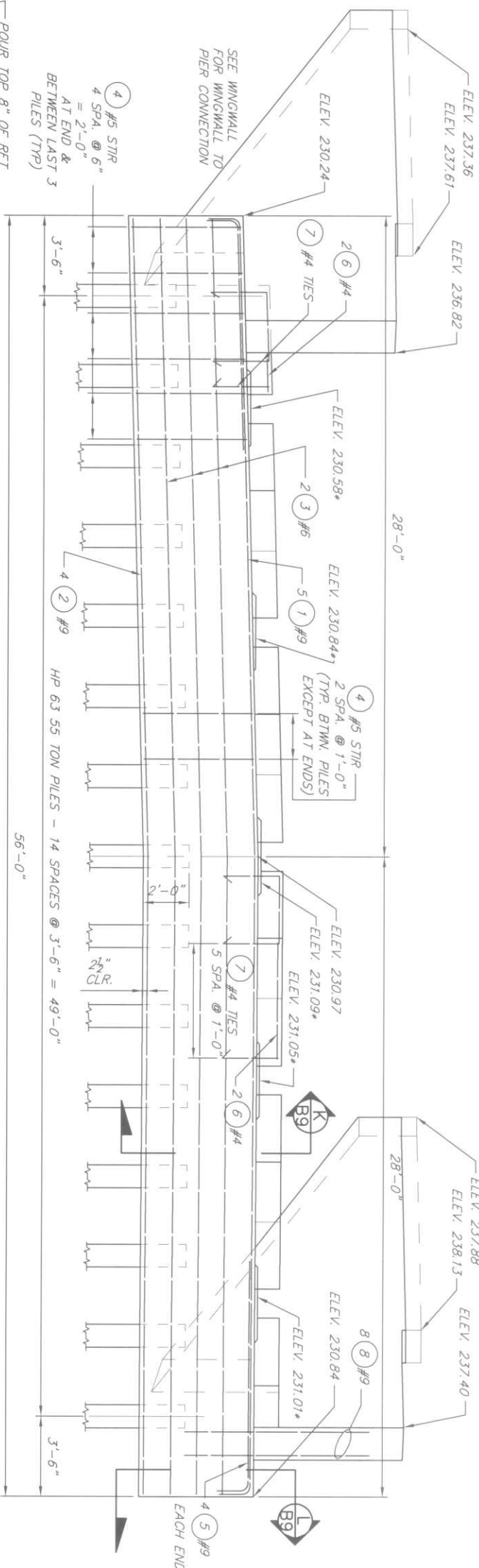


SAWTEETH DETAIL
SAWTEETH ARE FULL WIDTH. USE FROM BOTTOM OF BOTTOM FLANGE TO BOTTOM OF LOWEST HARPED STRANDS AS WELL AS TOP FLANGE ADJACENT TO HARPED STRANDS.



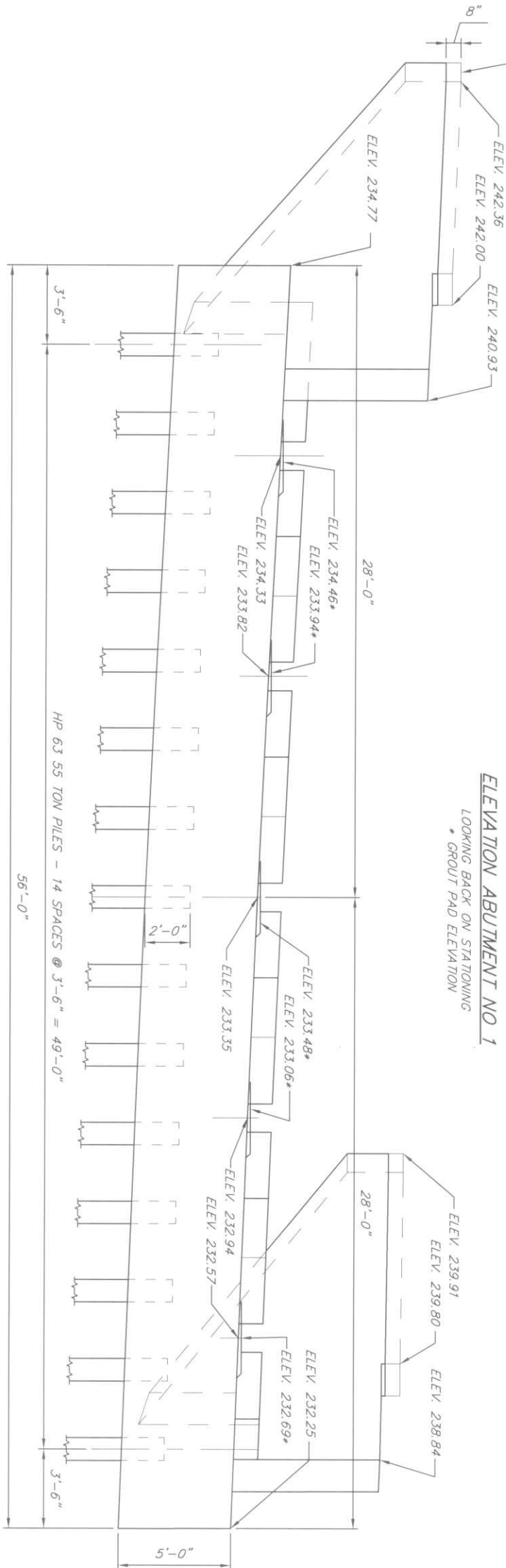
TYP. END DIAPHRAGM ELEVATION
LOOKING BACK ON STATIONING ABUT. NO. 1.
ABUT NO. 2 SIMILAR, BUT LOOKING AHEAD ON STATIONING





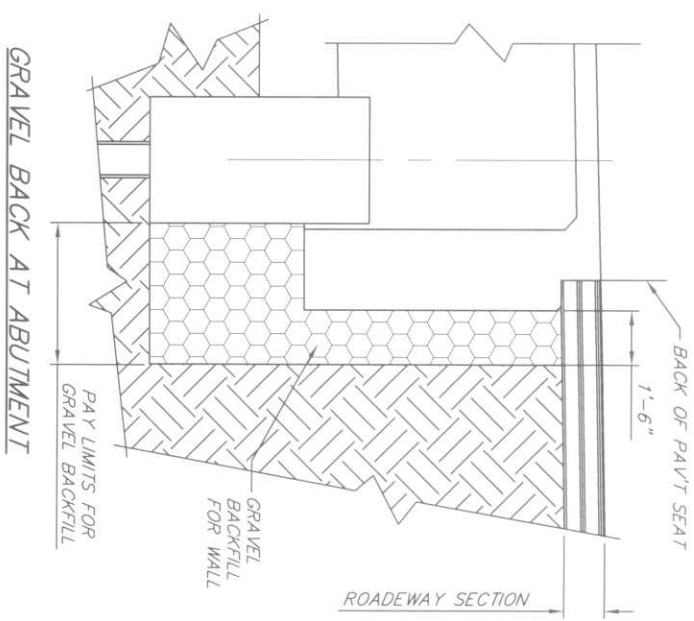
ELEVATION ABUTMENT NO. 1

LOOKING BACK ON STATIONING
* GROUT PAD ELEVATION

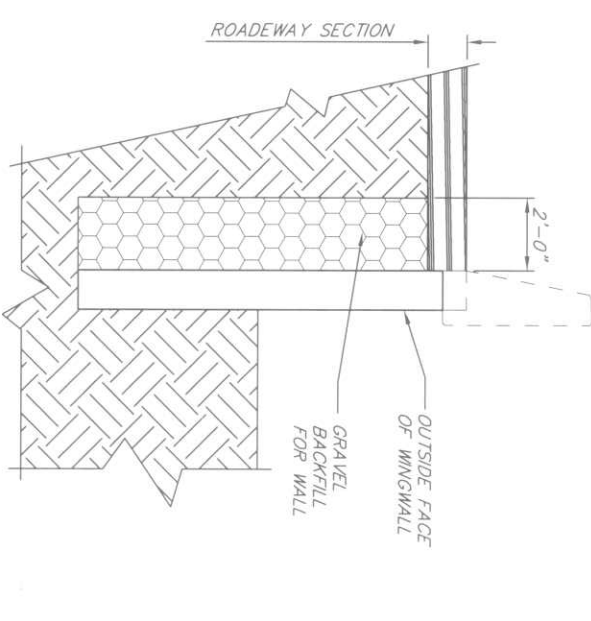


ELEVATION ABUTMENT NO. 2

FOR DETAILS NOT SHOWN SEE ABUTMENT NO. 1
LOOKING AHEAD ON STATIONING
* GROUT PAD ELEVATION



GRAVEL BACK AT ABUTMENT



GRAVEL BACK AT WINGWALL



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E-MAIL: info@nichollsengineering.com

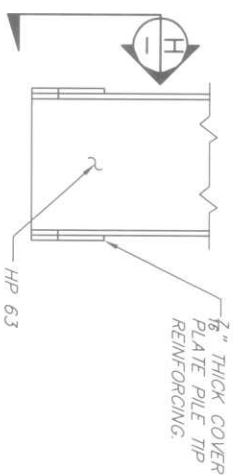
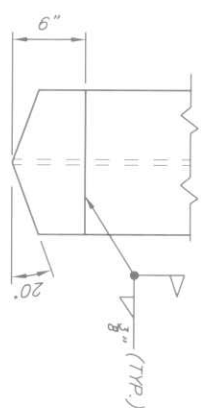
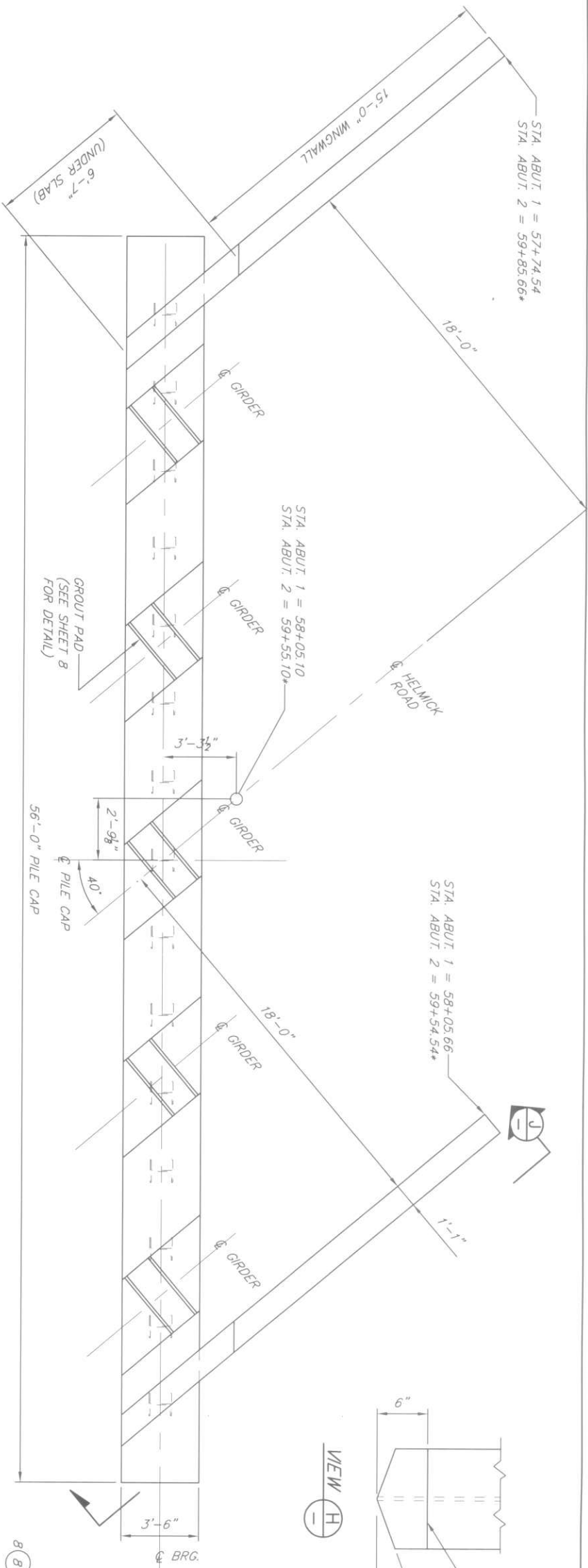
SKAGIT COUNTY
PUBLIC WORKS
WARRANT VERBOK, WASHINGTON

COUNTY ENGINEER
DATE
DESIGNED BY: JIN 08/05
CHECKED BY: SNK 08/05
SCALE
ROAD No.

SHEET DESCRIPTION
ABUTMENT DETAILS 1

PROJECT
HELMICK ROAD IMPROVEMENT
RED CREEK BRIDGE

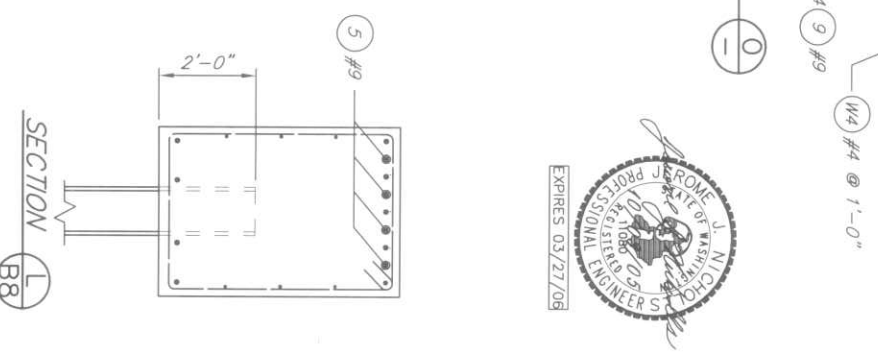
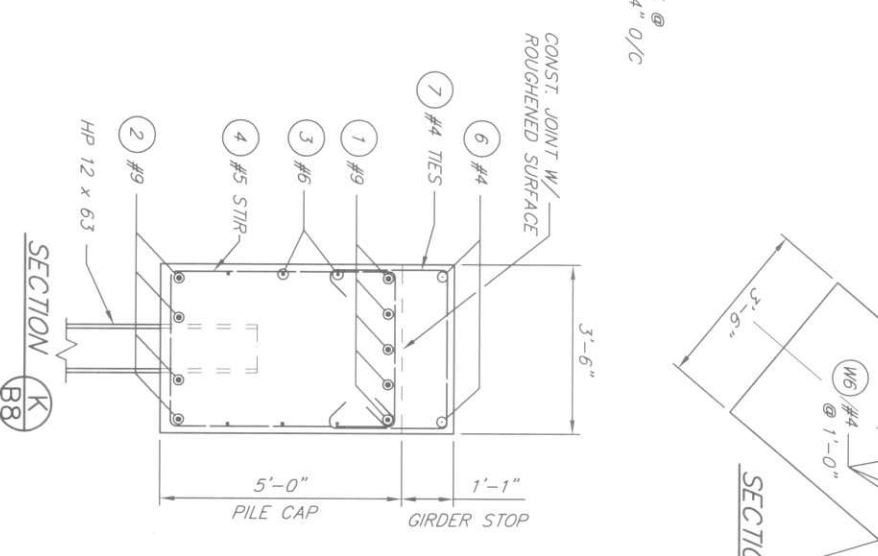
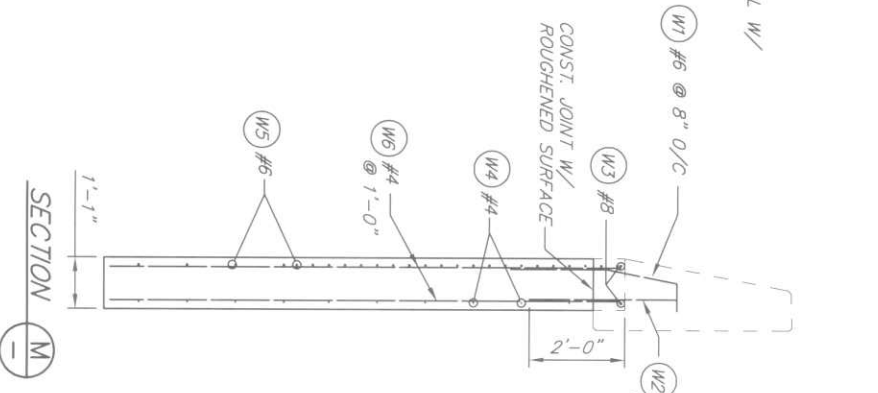
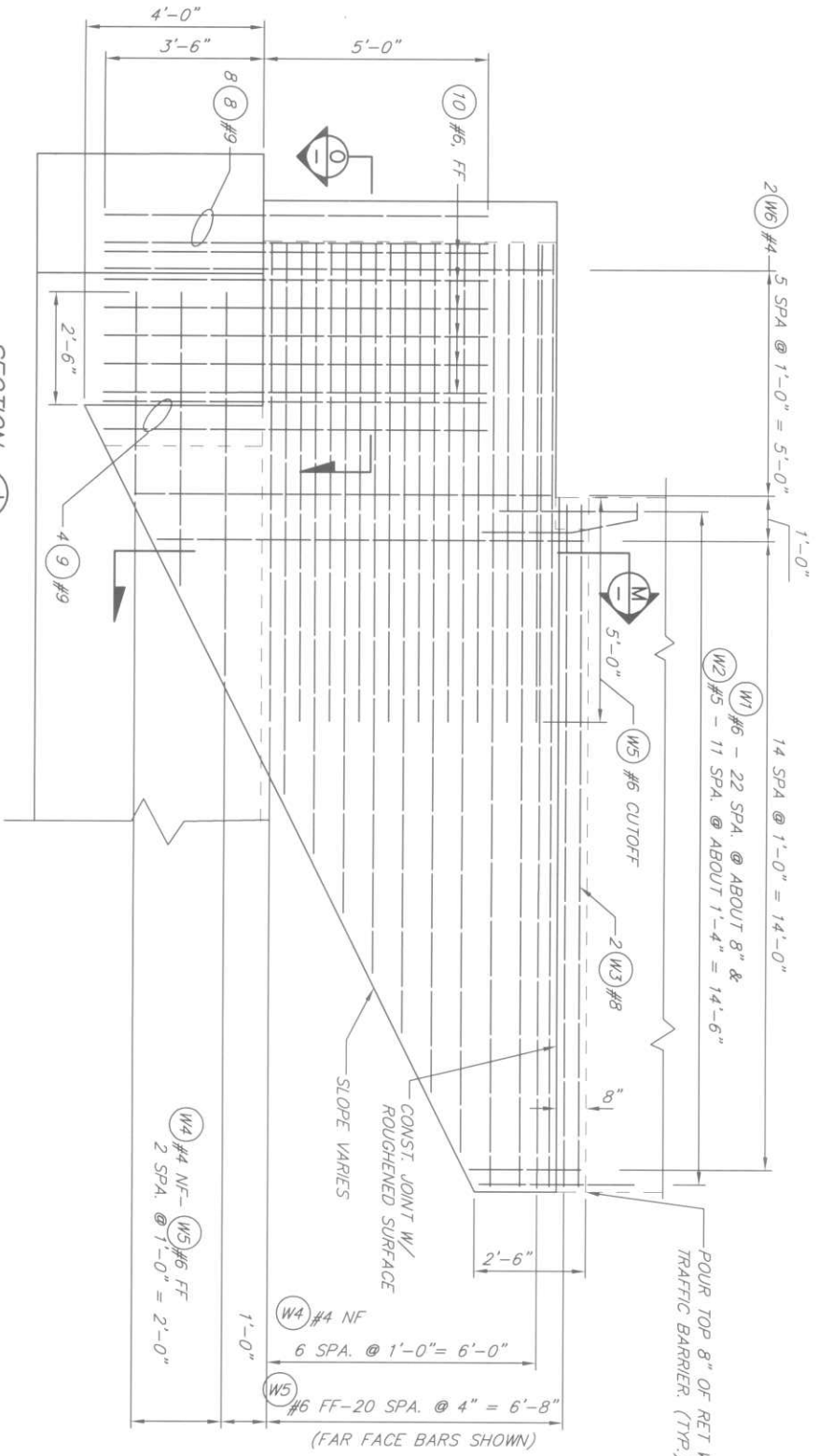
SHEET No.
B8
OF B11

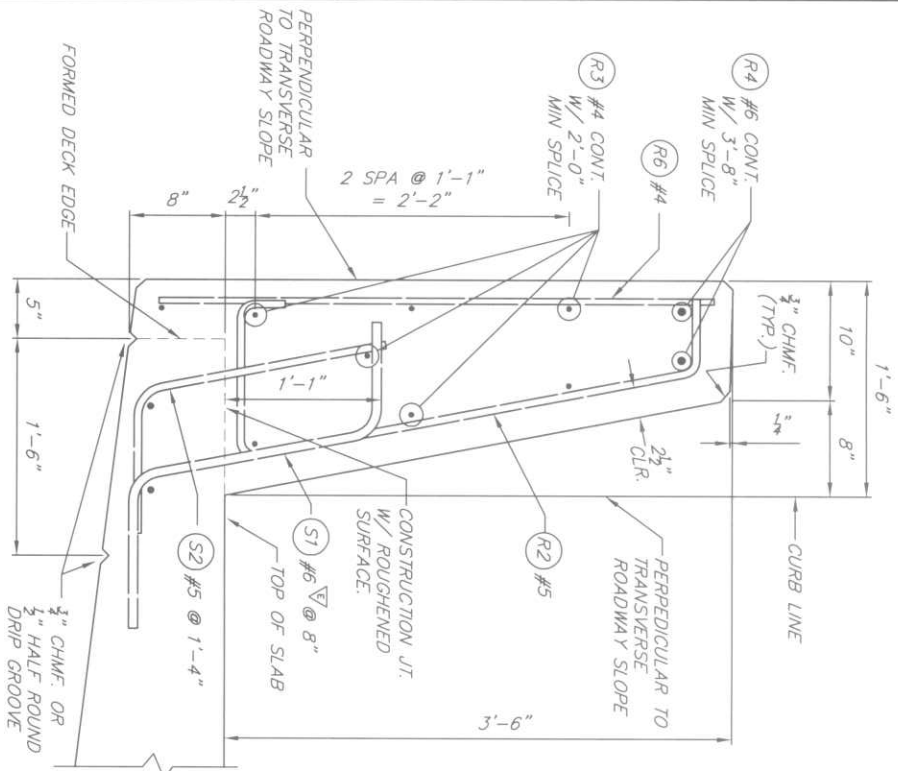


PILE TIP DETAIL
PILE TIP REINFORCING TO BE
CONSIDERED INCIDENTAL TO
DRAWING PILE PER EACH.

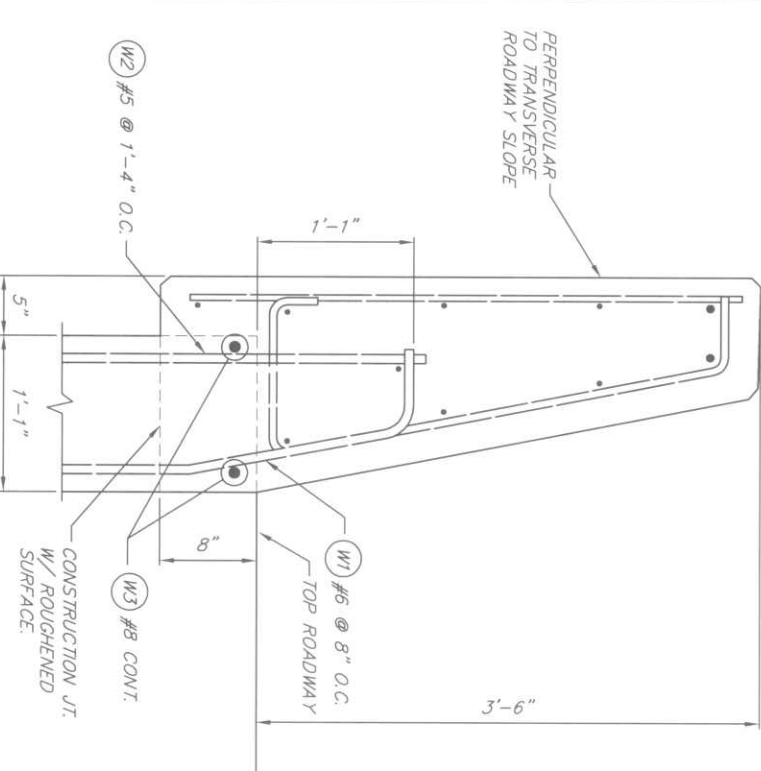
ABUTMENT PLAN

* STATIONING AT TANGENT EXTENDED

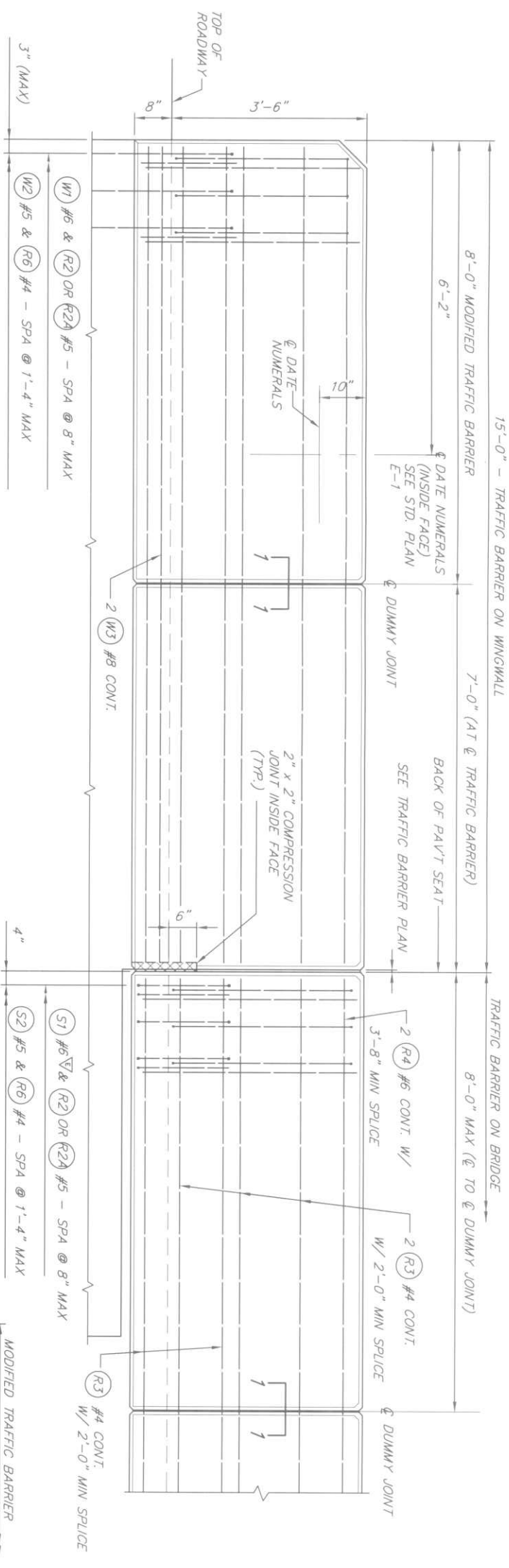




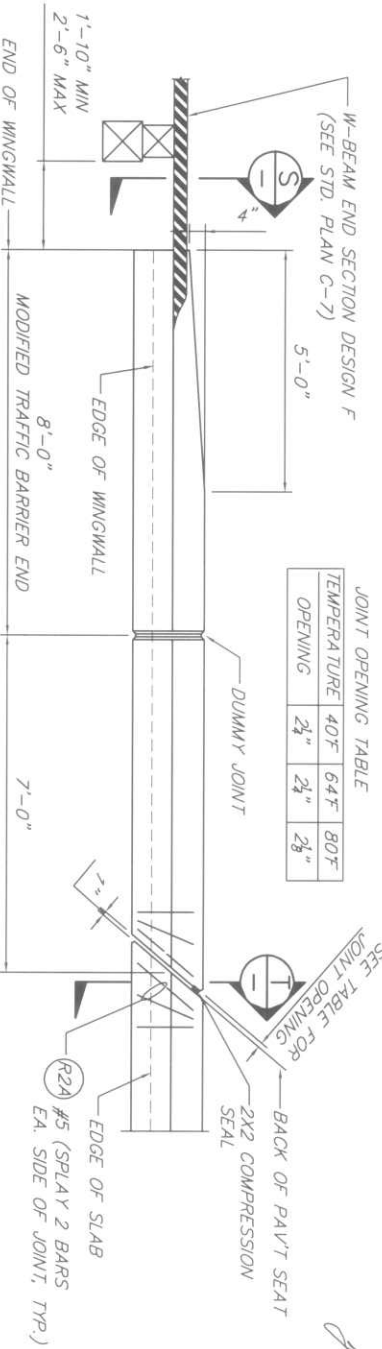
TYP. TRAFFIC BARRIER SECTION
SEE DECK REINFORCING FOR
ADDITIONAL BARS IN SLAB



TRAFFIC BARRIER AT WALL
SEE TYP. TRAFFIC BARRIER
SECTION FOR ADDITIONAL DETAILS



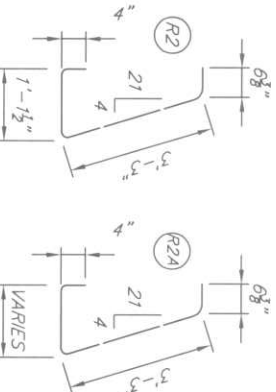
OUTSIDE ELEVATION - TRAFFIC BARRIER REINFORCING



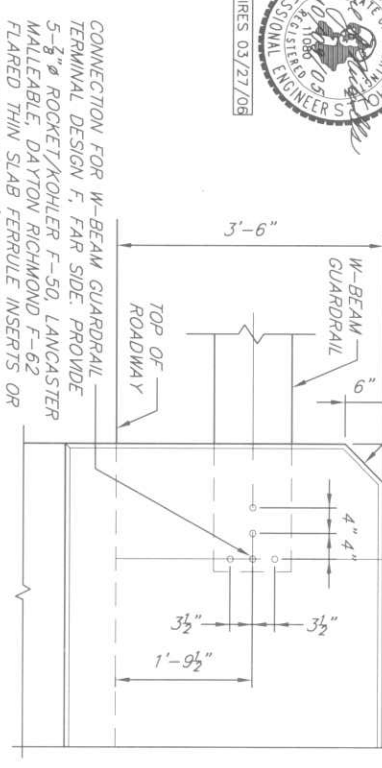
TRAFFIC BARRIER PLAN

BARRIER IS CONTINUOUS EXCEPT AT EXPANSION JOINTS AT BEGINNING & END OF BRIDGE.
CONSTRUCTION JOINTS WITH SHEAR KEYS ARE PERMISSIBLE AT DUMMY JOINT LOCATIONS.
FORM JOINTS BETWEEN DUMMY JOINTS SHALL NOT BE PERMITTED.

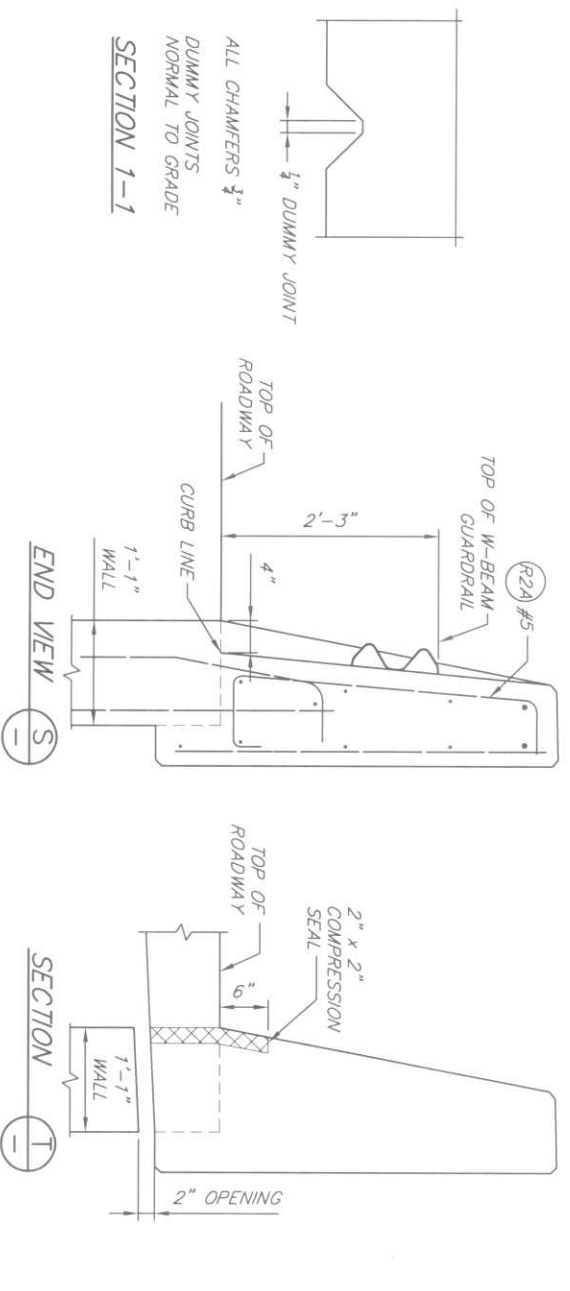
TRAFFIC BARRIER BAR LIST		
ALL REINFORCING SHALL BE AASHTO M 31, GR. 60.		
MARK	SIZE	LENGTH
R2	5	5'-1"
R2A	5	(A)
R3	4	(A)
R4	6	(A)
R6	4	3'-10"



FOR (S) & (W) BAR BENDS AND SIZES, SEE BRIDGE BAR LIST
(A) = DETERMINE FROM PLANS



OUTSIDE ELEVATION TRAFFIC BARRIER
DESIGN F GUARDRAIL CONNECTION



BAR LIST

MARK NO.	LOCATION	WEIGHT	SIZE	NO.	LENGTH	REMARKS
<i>SUBSTRUCTURE</i>						
1	ABUTMENT – TOP HORIZONTAL	1,986	9	10	58'-5"	
2	ABUTMENT – BOTTOM HORIZONTAL	1,516	9	8	55'-9"	STR.
3	ABUTMENT – SIDES HORIZONTAL	1,005	6	12	55'-9"	STR.
4	ABUTMENT – STIRRUPS	2,107	5	120	16'-10"	
5	ABUTMENT – HORIZONTAL AT ENDS	617	9	16	11'-4"	
6	ABUTMENT – GIRDER STOP	55	4	16	5'-2"	STR.
7	ABUTMENT – GIRDER STOP	8	4	8	1'-7"	STR.
8	ABUTMENT – GIRDER STOP TIE	380	4	56	10'-2"	
9	ABUTMENT – CAP TO WINGWALL	925	9	32	8'-6"	STR.
10	ABUTMENT – CAP TO WINGWALL	462	9	16	8'-6"	STR.
10	ABUTMENT – CAP TO WINGWALL	306	6	24	8'-6"	STR.
W1	WINGWALL – WW TO TRAFFIC BARRIER TIE	553	6	92	4'-0"	
W2	WINGWALL – WW TO TRAFFIC BARRIER TIE	154	5	48	3'-1"	STR.
W3	WINGWALL – TOP HORIZONTAL	315	8	8	14'-9" *	STR.
W4	WINGWALL – HORIZONTAL	414	4	44	14'-1" *	STR.
W5	WINGWALL – HORIZONTAL	2,015	6	100	13'-5" *	STR.
W6	WINGWALL – VERTICAL	795	4	168	7'-1" *	STR.
<i>SUPERSTRUCTURE</i>						
50	ROADWAY SLAB – TOP TRANSVERSE	9,275	6	157	39'-4"	EPOXY
50	ROADWAY SLAB – TOP TRANSVERSE	2,455	6	74	22'-1" *	EPOXY
51	ROADWAY SLAB – BOTTOM TRANSVERSE	8,863	6	157	37'-7"	STR.
51	ROADWAY SLAB – BOTTOM TRANSVERSE	2,380	6	74	22'-5" *	STR.
52	ROADWAY SLAB – TOP LONGITUDINAL	3,951	4	152	38'-1"	STR. EPOXY
53	ROADWAY SLAB – BOTTOM LONGITUDINAL	5,845	5	144	38'-1"	STR.
54	ROADWAY SLAB – LONGITUDINAL EDGE	641	8	4	60'-0"	STR. EPOXY
54	ROADWAY SLAB – LONGITUDINAL EDGE	198	8	2	37'-0"	STR. EPOXY
55	ROADWAY SLAB – TRANSVERSE EDGE	3,507	6	412	5'-8"	EPOXY
60	END DIAPHRAGM – TOP TRANSVERSE	306	6	4	50'-11"	EPOXY
62	END DIAPHRAGM – TOP TIE	123	4	76	2'-5"	
63	END DIAPHRAGM – STIRRUP	436	4	76	8'-7"	
63	END DIAPHRAGM – STIRRUP	436	4	76	8'-7"	
64	END DIAPHRAGM – STIRRUP	448	4	76	8'-10"	
65	END DIAPHRAGM – HORIZONTAL	904	4	56	24'-2"	STR.
66	END DIAPHRAGM – HORIZONTAL	278	6	4	46'-4"	STR.
70	INT. DIAPHRAGM – TOP TRANSVERSE	362	6	6	40'-2"	STR. EPOXY
71	INT. DIAPHRAGM – STIRRUP	582	4	96	9'-1" *	
72	INT. DIAPHRAGM – BETWEEN GIRDERS	433	4	72	9'-0"	STR.
73	INT. DIAPHRAGM – BOTTOM TRANSVERSE	382	7	12	15'-7"	STR.
74	INT. DIAPHRAGM – BOTTOM TRANSVERSE	151	7	6	12'-4"	STR.
74	INT. DIAPHRAGM – BLOCKOUTS	24	4	12	3'-0"	STR.
75	END & INT. DIAPHRAGM – BLOCKOUTS	87	4	40	3'-3"	STR.
<i>TRAFFIC BARRIER ON BRIDGE</i>						
S1	DECK – TRAFFIC BARRIER TO SLAB TIE	2,309	6	450	3'-5"	EPOXY
S2	DECK – TRAFFIC BARRIER TO SLAB TIE	629	5	226	2'-8"	
R2A	TRAFFIC BARRIER	2,354	5	444	5'-1"	
R2A	TRAFFIC BARRIER	45	5	8	5'-4" *	
R3	TRAFFIC BARRIER	1,664	4	64	38'-11"	STR.
R4	TRAFFIC BARRIER	721	6	8	60'-0"	STR.
R4	TRAFFIC BARRIER	222	6	4	37'-0"	STR.
R6	TRAFFIC BARRIER	579	4	226	3'-10"	STR.
<i>TRAFFIC BARRIER OFF BRIDGE</i>						
R2	TRAFFIC BARRIER	297	5	56	5'-1"	
R2A	TRAFFIC BARRIER	45	5	8	5'-4" *	
R3	TRAFFIC BARRIER	144	5	28	4'-11" *	
R4	TRAFFIC BARRIER	310	4	32	14'-6" *	STR.
R6	TRAFFIC BARRIER	169	6	8	14'-1" *	STR.
R6	TRAFFIC BARRIER	123	4	48	3'-10"	STR.
<i>SUBSTRUCTURE</i>						
	UNCOATED BARS	13,613	LBS			
<i>SUPERSTRUCTURE</i>						
	EPOXY COATED BARS	23,004	LBS			
	UNCOATED BARS	28,674	LBS			

ALL DIMENSIONS ARE
OUT TO OUT

* AVERAGE LENGTH

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SKAGIT COUNTY
PUBLIC
WORKS
MOUNT VERNON, WASHINGTON

DESIGNED BY <u>SMK</u>	DATE <u>07/05</u>	CHECKED BY <u>JIN</u>	DATE <u>08/05</u>
DETAILS BY <u>SMK</u>	DATE <u>07/05</u>	SCALE _____	
C.R.P. No. _____		ROAD No. _____	
COUNTY ENGINEER _____	DATE _____		

SHEET DESCRIPTION	PROJECT	SHEET No.
BAR LIST	HELMICK ROAD IMPROVEMENT RED CREEK BRIDGE	B11 OF B11