

**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of concrete only.)

**Notes:**

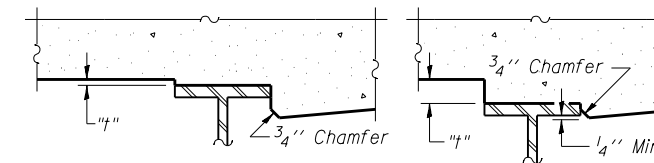
The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below and on sheets S10 & S11 of S49.

See S8 of S49 for Screed Dimension Layout.

Dead load deflection assumes a continuous West to East deck pour sequence. Contractor's structural Engineer shall evaluate need for retarder in concrete to complete entire pour prior to concrete set.

**DEAD LOAD DEFLECTIONS**

Location	Girder						
	1	2	3	4	5	6	7
a	1 3/8"	1 1/2"	1 5/8"	1 1/8"	1 1/2"	2 1/8"	2 7/8"
b	1 7/8"	1 7/8"	2"	1 1/2"	2 1/8"	2 7/8"	3 5/8"
c	1 1/8"	1 1/8"	1 1/8"	7/8"	1 1/4"	1 5/8"	2"
d	-1/8"	-1/4"	-1/4"	-1/8"	-1/4"	-3/8"	-1/2"
e	-1/4"	-1/4"	-1/4"	-1/4"	-3/8"	-1/2"	-5/8"
f	-1/8"	-1/8"	-1/4"	-1/8"	-1/4"	-3/8"	-1/2"
g	1/2"	1/2"	1/2"	1/2"	3/4"	1"	1 1/4"
h	3/4"	5/8"	7/8"	3/4"	1 1/8"	1 5/8"	2 1/8"
j	1/2"	5/8"	5/8"	5/8"	7/8"	1 1/4"	1 5/8"



To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown on sheet S8 of S49. These elevations subtracted from the "Theoretical Grade Elevations Adjusted For Dead Load Deflection" shown below and on sheets S10 & S11 of S49, minus slab thickness, equals the fillet heights "t" above top flange of beams.

**FILLET HEIGHTS**

**GIRDER 1**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+05.32	-29.00	600.34	600.34
☉ BRG. E. ABUT.	107+11.68	-29.00	600.43	600.43
A	107+22.47	-29.00	600.57	600.60
B	107+33.27	-29.00	600.71	600.78
C	107+44.06	-29.00	600.85	600.95
D	107+54.86	-29.00	601.00	601.12
E	107+65.65	-29.00	601.14	601.29
F	107+76.45	-29.00	601.28	601.43
G	107+87.24	-29.00	601.42	601.58
H	107+98.03	-29.00	601.56	601.71
I	108+08.83	-29.00	601.71	601.83
J	108+19.62	-29.00	601.85	601.95
K	108+30.42	-29.00	601.98	602.05
L	108+41.21	-29.00	602.10	602.14
L'	108+52.00	-29.00	602.22	602.24
☉ PIER 1	108+59.39	-29.00	602.30	602.30
M	108+70.18	-29.00	602.40	602.39
N	108+80.98	-29.00	602.50	602.49
O	108+91.77	-29.00	602.59	602.58
P	109+02.57	-29.00	602.68	602.66
Q	109+13.36	-29.00	602.75	602.74
☉ PIER 2	109+26.10	-29.00	602.84	602.84
R	109+36.89	-29.00	602.90	602.91
S	109+47.69	-29.00	602.95	602.99
T	109+58.48	-29.00	603.00	603.05
U	109+69.28	-29.00	603.04	603.10
V	109+80.07	-29.00	603.07	603.14
W	109+90.87	-29.00	603.10	603.16
X	110+01.66	-29.00	603.11	603.17
Y	110+12.45	-29.00	603.13	603.16
Z	110+23.25	-29.00	603.13	603.14
☉ BRG. W. ABUT.	110+33.10	-29.00	603.13	603.13
BK. W. ABUT.	110+37.10	-29.00	603.12	603.12

**GIRDER 2**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+13.45	-23.67	600.77	600.77
☉ BRG. E. ABUT.	107+19.54	-23.67	600.85	600.85
A	107+30.18	-23.67	600.99	601.03
B	107+40.82	-23.67	601.13	601.21
C	107+51.46	-23.67	601.27	601.39
D	107+62.10	-23.67	601.41	601.55
E	107+72.73	-23.67	601.55	601.71
F	107+83.37	-23.67	601.69	601.85
G	107+94.01	-23.67	601.83	601.99
H	108+04.65	-23.67	601.97	602.11
I	108+15.29	-23.67	602.11	602.23
J	108+25.93	-23.67	602.24	602.34
K	108+36.57	-23.67	602.37	602.44
L	108+47.21	-23.67	602.49	602.53
L'	108+57.84	-23.67	602.60	602.62
☉ PIER 1	108+63.46	-23.67	602.66	602.66
M	108+74.10	-23.67	602.76	602.75
N	108+84.74	-23.67	602.85	602.84
O	108+95.38	-23.67	602.94	602.92
P	109+06.02	-23.67	603.02	603.01
Q	109+16.65	-23.67	603.10	603.09
☉ PIER 2	109+28.72	-23.67	603.17	603.17
R	109+39.36	-23.67	603.23	603.25
S	109+50.00	-23.67	603.28	603.32
T	109+60.64	-23.67	603.33	603.38
U	109+71.28	-23.67	603.36	603.43
V	109+81.91	-23.67	603.40	603.50
W	109+92.55	-23.67	603.42	603.53
X	110+03.19	-23.67	603.44	603.50
Y	110+13.83	-23.67	603.45	603.49
Z	110+24.47	-23.67	603.45	603.47
☉ BRG. W. ABUT.	110+35.72	-23.67	603.45	603.45
BK. W. ABUT.	110+39.66	-23.67	603.44	603.44

**GIRDER 3**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+21.13	-18.33	601.19	601.19
☉ BRG. E. ABUT.	107+26.98	-18.33	601.27	601.27
A	107+37.47	-18.33	601.41	601.46
B	107+47.96	-18.33	601.55	601.64
C	107+58.44	-18.33	601.68	601.81
D	107+68.93	-18.33	601.82	601.97
E	107+79.42	-18.33	601.96	602.12
F	107+89.91	-18.33	602.10	602.26
G	108+00.40	-18.33	602.24	602.40
H	108+10.89	-18.33	602.37	602.52
I	108+21.37	-18.33	602.51	602.63
J	108+31.86	-18.33	602.64	602.73
K	108+42.35	-18.33	602.76	602.82
L	108+52.84	-18.33	602.87	602.91
☉ PIER 1	108+67.38	-18.33	603.02	603.02
M	108+77.87	-18.33	603.11	603.10
N	108+88.36	-18.33	603.20	603.18
O	108+98.84	-18.33	603.29	603.27
P	109+09.33	-18.33	603.37	603.35
Q	109+19.82	-18.33	603.44	603.42
☉ PIER 2	109+31.26	-18.33	603.51	603.51
R	109+41.75	-18.33	603.56	603.58
S	109+52.24	-18.33	603.61	603.65
T	109+62.72	-18.33	603.65	603.71
U	109+73.21	-18.33	603.69	603.76
V	109+83.70	-18.33	603.72	603.80
W	109+94.19	-18.33	603.74	603.82
X	110+04.68	-18.33	603.76	603.83
Y	110+15.17	-18.33	603.77	603.82
Z	110+25.65	-18.33	603.77	603.80
☉ BRG. W. ABUT.	110+38.26	-18.33	603.76	603.76
BK. W. ABUT.	110+42.13	-18.33	603.76	603.76

(Sheet 1 of 3)

**STAGE CONSTRUCTION JOINT**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+25.72	-15.00	601.45	601.45
☉ BRG. E. ABUT.	107+31.44	-15.00	601.53	601.53
A	107+41.84	-15.00	601.66	601.70
B	107+52.23	-15.00	601.80	601.88
C	107+62.63	-15.00	601.94	602.04
D	107+73.02	-15.00	602.08	602.20
E	107+83.42	-15.00	602.21	602.35
F	107+93.81	-15.00	602.35	602.49
G	108+04.21	-15.00	602.49	602.62
H	108+14.60	-15.00	602.62	602.74
I	108+25.00	-15.00	602.75	602.85
J	108+35.39	-15.00	602.88	602.96
K	108+45.79	-15.00	602.99	603.05
L	108+56.18	-15.00	603.10	603.13
☉ PIER 1	108+69.77	-15.00	603.24	603.24
M	108+80.17	-15.00	603.33	603.32
N	108+90.56	-15.00	603.42	603.40
O	109+00.96	-15.00	603.50	603.48
P	109+11.35	-15.00	603.58	603.56
Q	109+21.75	-15.00	603.65	603.64
☉ PIER 2	109+32.81	-15.00	603.71	603.71
R	109+43.21	-15.00	603.77	603.79
S	109+53.60	-15.00	603.82	603.85
T	109+64.00	-15.00	603.86	603.91
U	109+74.39	-15.00	603.89	603.95
V	109+84.79	-15.00	603.92	603.99
W	109+95.18	-15.00	603.94	604.01
X	110+05.58	-15.00	603.96	604.02
Y	110+15.97	-15.00	603.97	604.01
Z	110+26.37	-15.00	603.97	604.00
☉ BRG. W. ABUT.	110+39.81	-15.00	603.96	603.96
BK. W. ABUT.	110+43.64	-15.00	603.96	603.96

**GIRDER 4**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+28.41	-13.00	601.61	601.61
☉ BRG. E. ABUT.	107+34.04	-13.00	601.68	601.68
A	107+44.38	-13.00	601.82	601.85
B	107+54.72	-13.00	601.95	602.02
C	107+65.06	-13.00	602.09	602.18
D	107+75.40	-13.00	602.23	602.34
E	107+85.75	-13.00	602.36	602.48
F	107+96.09	-13.00	602.50	602.62
G	108+06.43	-13.00	602.64	602.75
H	108+16.77	-13.00	602.77	602.88
I	108+27.11	-13.00	602.90	602.99
J	108+37.45	-13.00	603.02	603.09
K	108+47.79	-13.00	603.14	603.18
L	108+58.13	-13.00	603.24	603.27
☉ PIER 1	108+71.17	-13.00	603.37	603.37
M	108+81.51	-13.00	603.47	603.45
N	108+91.85	-13.00	603.55	603.54
O	109+02.19	-13.00	603.63	603.62
P	109+12.53	-13.00	603.71	603.69
Q	109+22.88	-13.00	603.78	603.77
☉ PIER 2	109+33.72	-13.00	603.84	603.84
R	109+44.06	-13.00	603.89	603.91
S	109+54.40	-13.00	603.94	603.97
T	109+64.74	-13.00	603.98	604.03
U	109+75.08	-13.00	604.02	604.07
V	109+85.43	-13.00	604.04	604.11
W	109+95.77	-13.00	604.07	604.13
X	110+06.11	-13.00	604.08	604.14
Y	110+16.45	-13.00	604.09	604.13
Z	110+26.79	-13.00	604.09	604.12
☉ BRG. W. ABUT.	110+40.72	-13.00	604.08	604.08
BK. W. ABUT.	110+44.53	-13.00	604.08	604.08

**GIRDER 5**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+35.32	-7.67	602.02	602.02
☉ BRG. E. ABUT.	107+40.76	-7.67	602.09	602.09
A	107+50.96	-7.67	602.22	602.27
B	107+61.16	-7.67	602.36	602.44
C	107+71.36	-7.67	602.49	602.61
D	107+81.55	-7.67	602.63	602.78
E	107+91.75	-7.67	602.76	602.93
F	108+01.95	-7.67	602.90	603.07
G	108+12.15	-7.67	603.03	603.20
H	108+22.35	-7.67	603.16	603.32
I	108+32.55	-7.67	603.28	603.42
J	108+42.75	-7.67	603.40	603.50
K	108+52.95	-7.67	603.51	603.58
L	108+63.14	-7.67	603.61	603.65
☉ PIER 1	108+74.83	-7.67	603.73	603.73
M	108+85.03	-7.67	603.82	603.80
N	108+95.23	-7.67	603.90	603.87
O	109+05.43	-7.67	603.98	603.95
P	109+15.62	-7.67	604.05	604.03
Q	109+25.82	-7.67	604.11	604.10
☉ PIER 2	109+36.11	-7.67	604.17	604.17
R	109+46.31	-7.67	604.22	604.25
S	109+56.51	-7.67	604.27	604.31
T	109+66.71	-7.67	604.31	604.38
U	109+76.90	-7.67	604.34	604.43
V	109+87.10	-7.67	604.37	604.46
W	109+97.30	-7.67	604.39	604.49
X	110+07.50	-7.67	604.40	604.49
Y	110+17.70	-7.67	604.41	604.48
Z	110+27.90	-7.67	604.41	604.46
☉ BRG. W. ABUT.	110+43.11	-7.67	604.40	604.40
BK. W. ABUT.	110+46.85	-7.67	604.39	604.39

(Sheet 2 of 3)



USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 016-1322**

SHEET NO. S10 OF S49 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	202
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	

**GIRDER 6**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+41.91	-2.33	602.43	602.43
☉ BRG. E. ABUT.	107+47.17	-2.33	602.49	602.49
A	107+57.23	-2.33	602.63	602.69
B	107+67.29	-2.33	602.76	602.88
C	107+77.35	-2.33	602.89	603.06
D	107+87.41	-2.33	603.02	603.23
E	107+97.47	-2.33	603.16	603.39
F	108+07.53	-2.33	603.29	603.53
G	108+17.59	-2.33	603.42	603.65
H	108+27.65	-2.33	603.55	603.75
I	108+37.71	-2.33	603.66	603.83
J	108+47.77	-2.33	603.78	603.90
K	108+57.83	-2.33	603.88	603.96
L	108+67.89	-2.33	603.98	604.02
☉ PIER 1	108+78.37	-2.33	604.08	604.08
M	108+88.43	-2.33	604.17	604.14
N	108+98.49	-2.33	604.25	604.21
O	109+08.55	-2.33	604.32	604.28
P	109+18.61	-2.33	604.39	604.36
Q	109+28.67	-2.33	604.45	604.43
☉ PIER 2	109+38.43	-2.33	604.51	604.51
R	109+48.49	-2.33	604.56	604.58
S	109+58.55	-2.33	604.60	604.66
T	109+68.61	-2.33	604.64	604.73
U	109+78.67	-2.33	604.67	604.78
V	109+88.73	-2.33	604.69	604.82
W	109+98.79	-2.33	604.71	604.85
X	110+08.85	-2.33	604.72	604.85
Y	110+18.91	-2.33	604.73	604.83
Z	110+28.97	-2.33	604.73	604.80
Z'	110+39.03	-2.33	604.72	604.75
☉ BRG. W. ABUT.	110+45.43	-2.33	604.72	604.72
BK. W. ABUT.	110+49.11	-2.33	604.71	604.71

**PGL**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+44.69	0.00	602.60	602.60
☉ BRG. E. ABUT.	107+49.88	0.00	602.67	602.67
A	107+59.88	0.00	602.80	602.88
B	107+69.88	0.00	602.93	603.07
C	107+79.88	0.00	603.07	603.26
D	107+89.88	0.00	603.20	603.43
E	107+99.88	0.00	603.33	603.59
F	108+09.88	0.00	603.46	603.72
G	108+19.88	0.00	603.59	603.84
H	108+29.88	0.00	603.71	603.94
I	108+39.88	0.00	603.83	604.01
J	108+49.88	0.00	603.94	604.07
K	108+59.88	0.00	604.04	604.13
L	108+69.88	0.00	604.14	604.18
☉ PIER 1	108+79.88	0.00	604.23	604.23
M	108+89.88	0.00	604.32	604.29
N	108+99.88	0.00	604.40	604.36
O	109+09.88	0.00	604.47	604.43
P	109+19.88	0.00	604.54	604.50
Q	109+29.88	0.00	604.60	604.58
☉ PIER 2	109+39.42	0.00	604.65	604.65
R	109+49.42	0.00	604.70	604.73
S	109+59.42	0.00	604.74	604.81
T	109+69.42	0.00	604.78	604.88
U	109+79.42	0.00	604.81	604.94
V	109+89.42	0.00	604.83	604.98
W	109+99.42	0.00	604.85	605.00
X	110+09.42	0.00	604.86	605.01
Y	110+19.42	0.00	604.87	604.99
Z	110+29.42	0.00	604.87	604.95
Z'	110+39.42	0.00	604.86	604.90
☉ BRG. W. ABUT.	110+46.42	0.00	604.85	604.85
BK. W. ABUT.	110+50.08	0.00	604.85	604.85

**GIRDER 7**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	107+48.19	3.00	602.83	602.83
☉ BRG. E. ABUT.	107+53.29	3.00	602.90	602.90
A	107+63.22	3.00	603.03	603.12
B	107+73.14	3.00	603.16	603.32
C	107+83.07	3.00	603.29	603.51
D	107+92.99	3.00	603.42	603.69
E	108+02.92	3.00	603.55	603.85
F	108+12.84	3.00	603.68	603.98
G	108+22.77	3.00	603.81	604.09
H	108+32.70	3.00	603.93	604.17
I	108+42.62	3.00	604.04	604.24
J	108+52.55	3.00	604.15	604.29
K	108+62.47	3.00	604.25	604.34
L	108+72.40	3.00	604.34	604.38
☉ PIER 1	108+81.79	3.00	604.43	604.43
M	108+91.72	3.00	604.51	604.48
N	109+01.64	3.00	604.59	604.54
O	109+11.57	3.00	604.66	604.61
P	109+21.49	3.00	604.73	604.68
Q	109+31.42	3.00	604.79	604.76
☉ PIER 2	109+40.68	3.00	604.84	604.84
R	109+50.61	3.00	604.88	604.92
S	109+60.53	3.00	604.93	605.01
T	109+70.46	3.00	604.96	605.08
U	109+80.38	3.00	604.99	605.14
V	109+90.31	3.00	605.02	605.19
W	110+00.23	3.00	605.03	605.21
X	110+10.16	3.00	605.04	605.21
Y	110+20.09	3.00	605.05	605.19
Z	110+30.01	3.00	605.05	605.14
Z'	110+39.94	3.00	605.04	605.09
☉ BRG. W. ABUT.	110+47.68	3.00	605.03	605.03
BK. W. ABUT.	110+51.30	3.00	605.03	605.03

(Sheet 3 of 3)

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	203
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	

**SOUTH EDGE OF SLAB**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	106+70.26	-28.03	599.94
A1	106+80.08	-29.66	599.97
A2	106+90.33	-31.10	600.02
W. End East Appr. Pav't	107+00.97	-32.33	600.09

**SOUTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	106+72.55	-26.82	600.04
A1	106+82.35	-28.40	600.08
A2	106+92.56	-29.79	600.13
W. End East Appr. Pav't	107+03.18	-30.96	600.20

**STAGE CONSTRUCTION JOINT**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	106+93.12	-15.00	601.02
A1	107+04+36	-15.00	601.17
A2	107+15.51	-15.00	601.32
W. End East Appr. Pav't	107+26.58	-15.00	601.46

**PGL RAMP C**

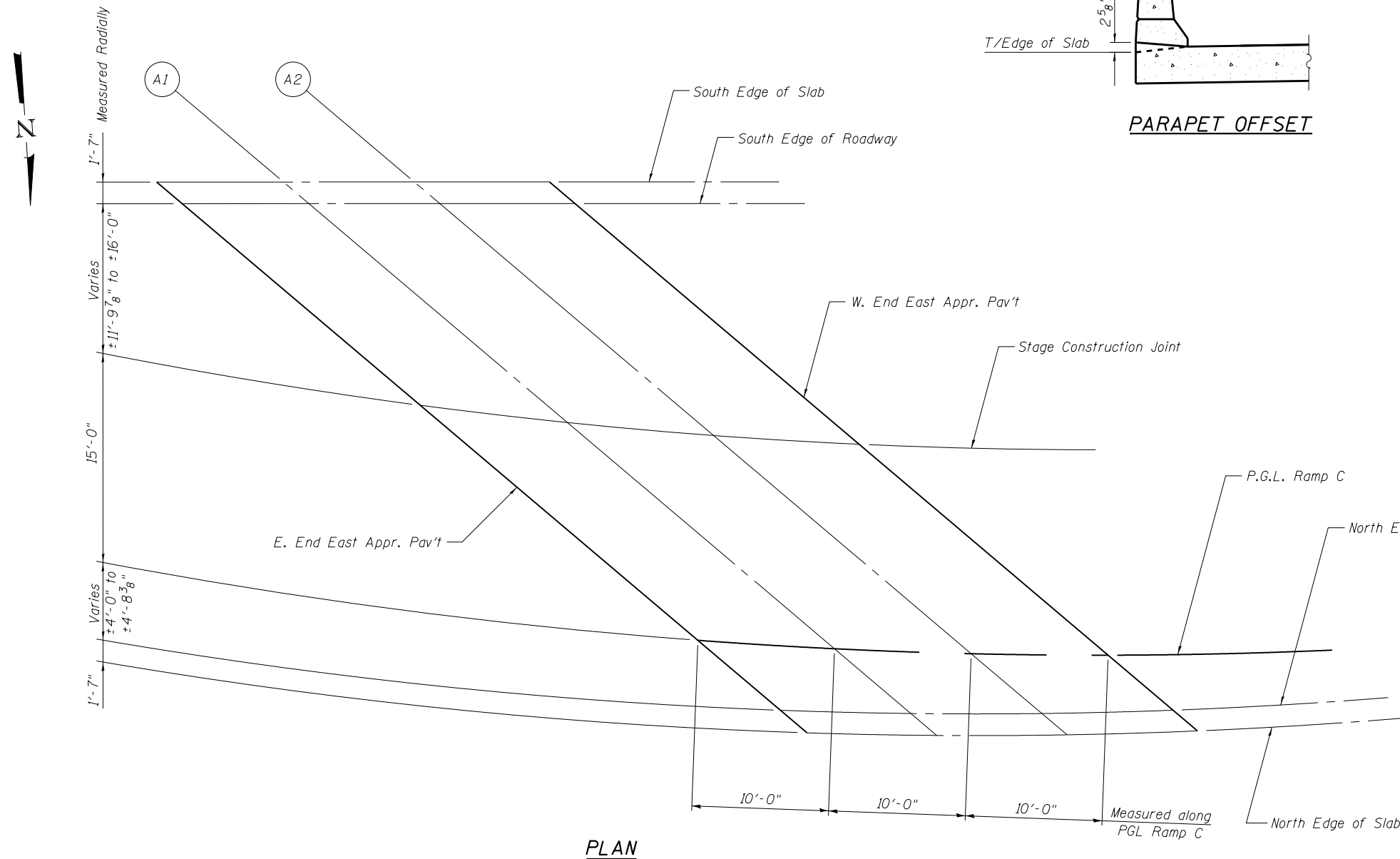
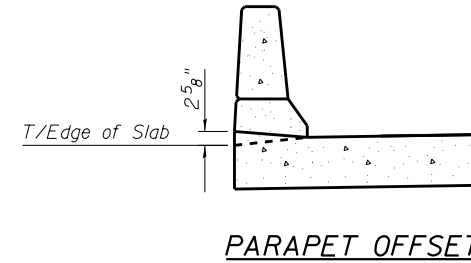
Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	107+15.47	0.00	602.22
A1	107+25.47	0.00	602.35
A2	107+35.47	0.00	602.48
W. End East Appr. Pav't	107+45.47	0.00	602.60

**NORTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	107+21.79	4.70	602.58
A1	107+31.22	4.49	602.69
A2	107+40.67	4.28	602.81
W. End East Appr. Pav't	107+49.42	4.07	602.91

**NORTH EDGE OF SLAB**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	107+23.80	6.24	602.70
A1	107+33.13	6.03	602.81
A2	107+42.50	5.82	602.92
W. End East Appr. Pav't	107+51.90	5.59	603.03



**PLAN**

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	204
				CONTRACT NO. 60F63
ILLINOIS FED. AID PROJECT				



**SOUTH EDGE OF SLAB**

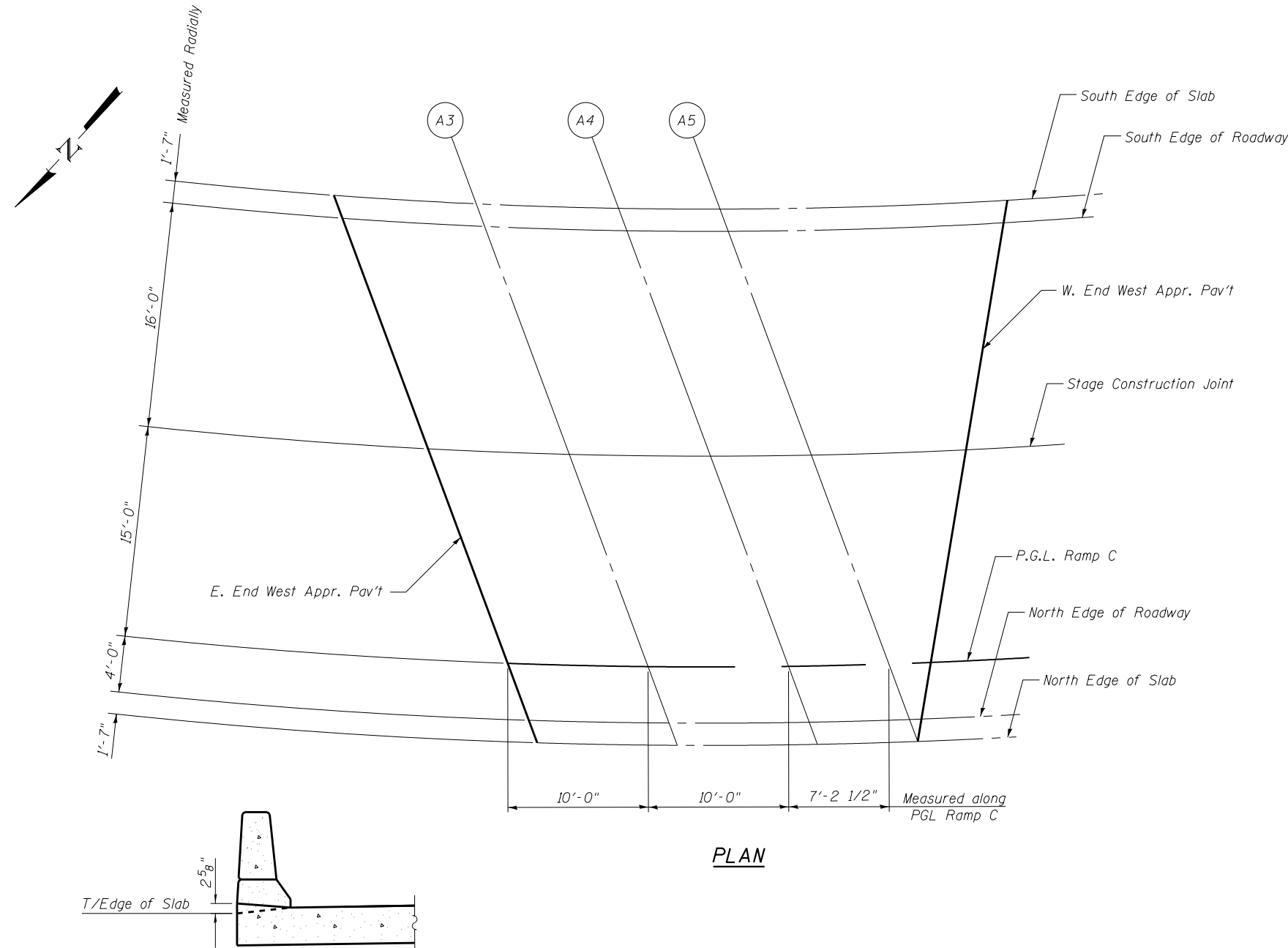
Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	110+34.74	-32.58	602.91
A3	110+45.81	-32.58	602.90
A4	110+56.86	-32.58	602.88
A5	110+64.80	-32.58	602.86
W. End West Appr. Pav't	110+82.29	-32.58	602.81

**SOUTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	110+35.53	-31.00	603.01
A3	110+46.54	-31.00	602.99
A4	110+57.53	-31.00	602.98
A5	110+65.44	-31.00	602.96
W. End West Appr. Pav't	110+82.12	-31.00	602.91

**STAGE CONSTRUCTION JOINT**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	110+43.07	-15.0	603.96
A3	110+53.53	-15.0	603.94
A4	110+63.99	-15.0	603.92
A5	110+71.52	-15.0	603.90
W. End West Appr. Pav't	110+80.49	-15.0	603.87



**PLAN**

**PARAPET OFFSET**

**PGL RAMP C**

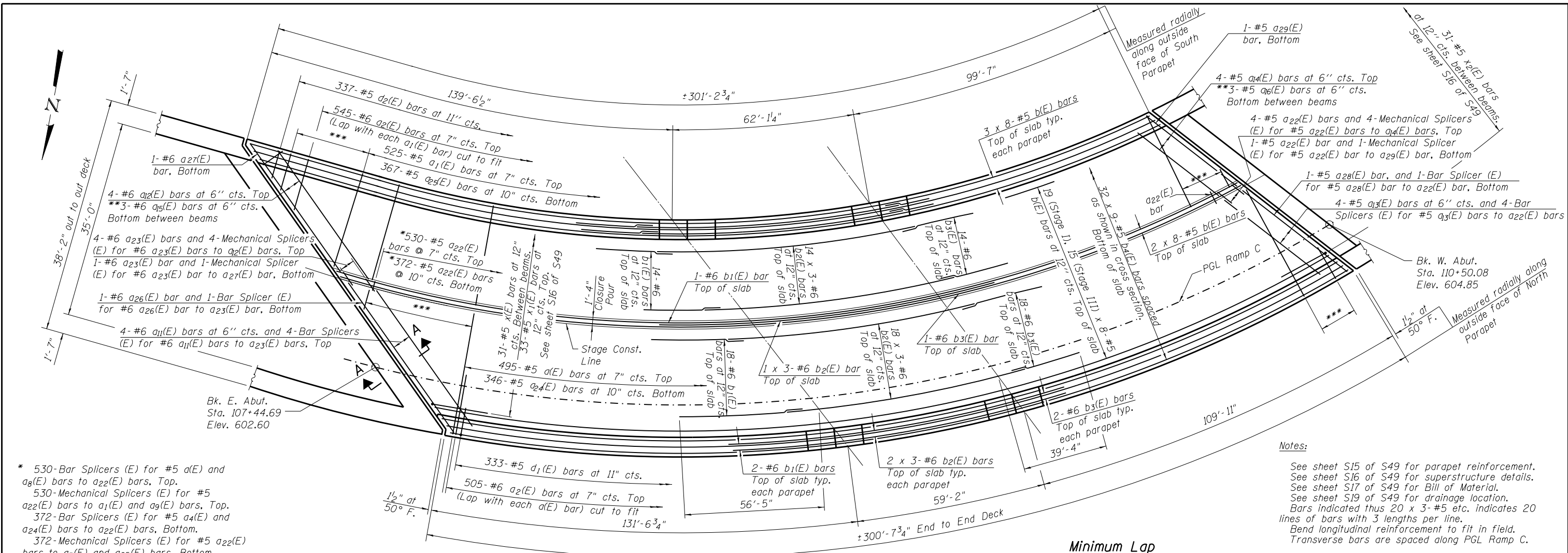
Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	110+49.54	0.00	604.85
A3	110+59.54	0.00	604.83
A4	110+69.54	0.00	604.81
A5	110+76.75	0.00	604.78
W. End West Appr. Pav't	110+79.08	0.00	604.78

**NORTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	110+51.17	4.00	605.09
A3	110+61.05	4.00	605.07
A4	110+70.94	4.00	605.04
A5	110+78.07	4.00	605.02
W. End West Appr. Pav't	110+78.72	4.00	605.02

**NORTH EDGE OF SLAB**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	110+51.81	5.58	605.18
A3	110+61.65	5.58	605.16
A4	110+71.49	5.58	605.14
W. End West Appr. Pav't/A5	110+78.59	5.58	605.11



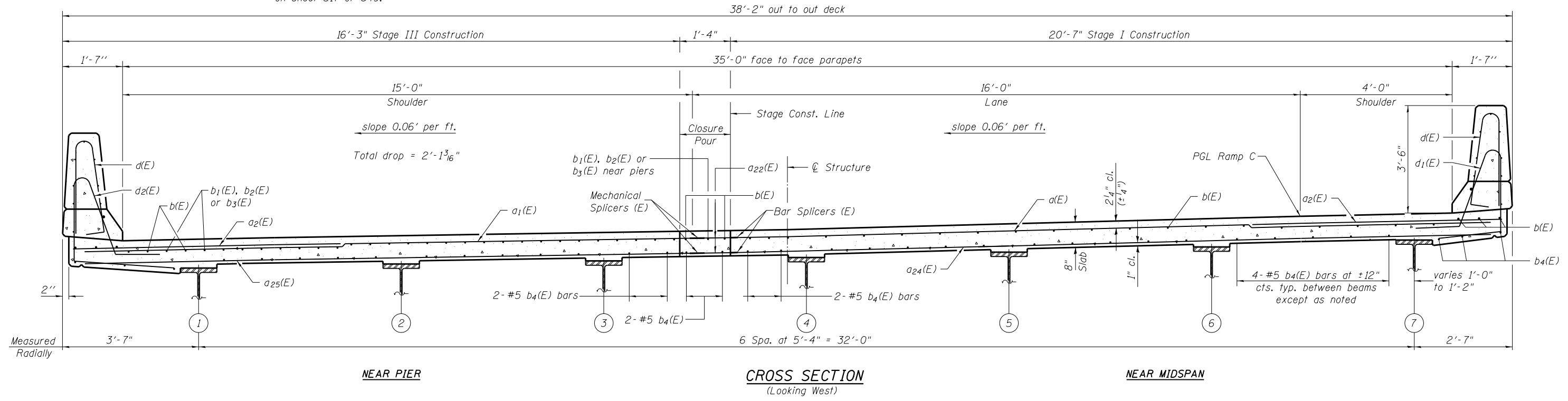
\* 530-Bar Splicers (E) for #5 a(E) and a<sub>8</sub>(E) bars to a<sub>22</sub>(E) bars, Top.  
 530-Mechanical Splicers (E) for #5 a<sub>22</sub>(E) bars to a<sub>1</sub>(E) and a<sub>9</sub>(E) bars, Top.  
 372-Bar Splicers (E) for #5 a<sub>4</sub>(E) and a<sub>24</sub>(E) bars to a<sub>22</sub>(E) bars, Bottom.  
 372-Mechanical Splicers (E) for #5 a<sub>22</sub>(E) bars to a<sub>5</sub>(E) and a<sub>25</sub>(E) bars, Bottom.  
 See sheet S43 of S49 for Bar Splicer and Mechanical Splicer details.

\*\* Except between Beams 3 & 4. See Section A-A on sheet S16 of S49.  
 \*\*\*For bars in this area see Cutting Diagrams on sheet S17 of S49.

Notes:  
 See sheet S15 of S49 for parapet reinforcement.  
 See sheet S16 of S49 for superstructure details.  
 See sheet S17 of S49 for Bill of Material.  
 See sheet S19 of S49 for drainage location.  
 Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.  
 Bend longitudinal reinforcement to fit in field.  
 Transverse bars are spaced along PGL Ramp C.

**Minimum Lap**  
 #5 bar = 3'-3"  
 #6 bar = 3'-10"

**PLAN**



**NEAR PIER**

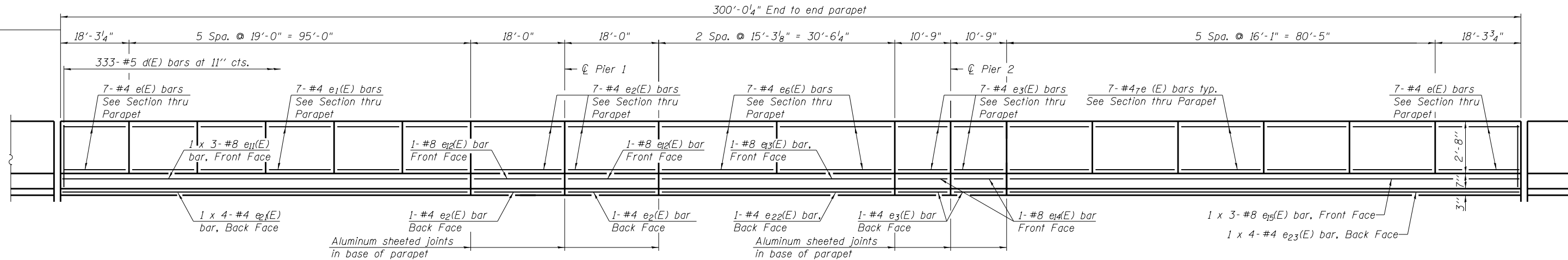
**CROSS SECTION**  
 (Looking West)

**NEAR MIDSPAN**

USER NAME =	DESIGNED - MAH	REVISED
PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - DR	REVISED
	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	206
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

Measured On Curve Along  
Inside Face of North Parapet

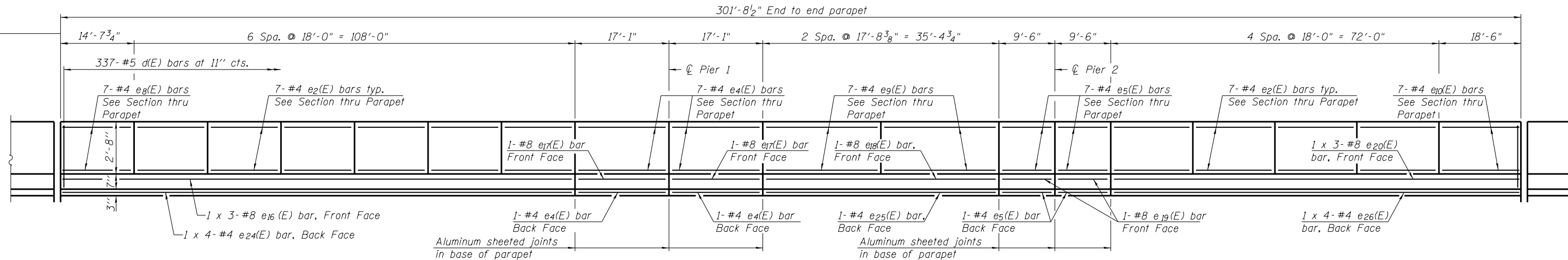


**INSIDE ELEVATION OF NORTH PARAPET**

(Looking South)

Dimensions given along inside face of parapet

Measured On Curve Along  
Inside Face of South Parapet



**INSIDE ELEVATION OF SOUTH PARAPET**

(Looking South)

Dimensions given along inside face of parapet

**Notes:**

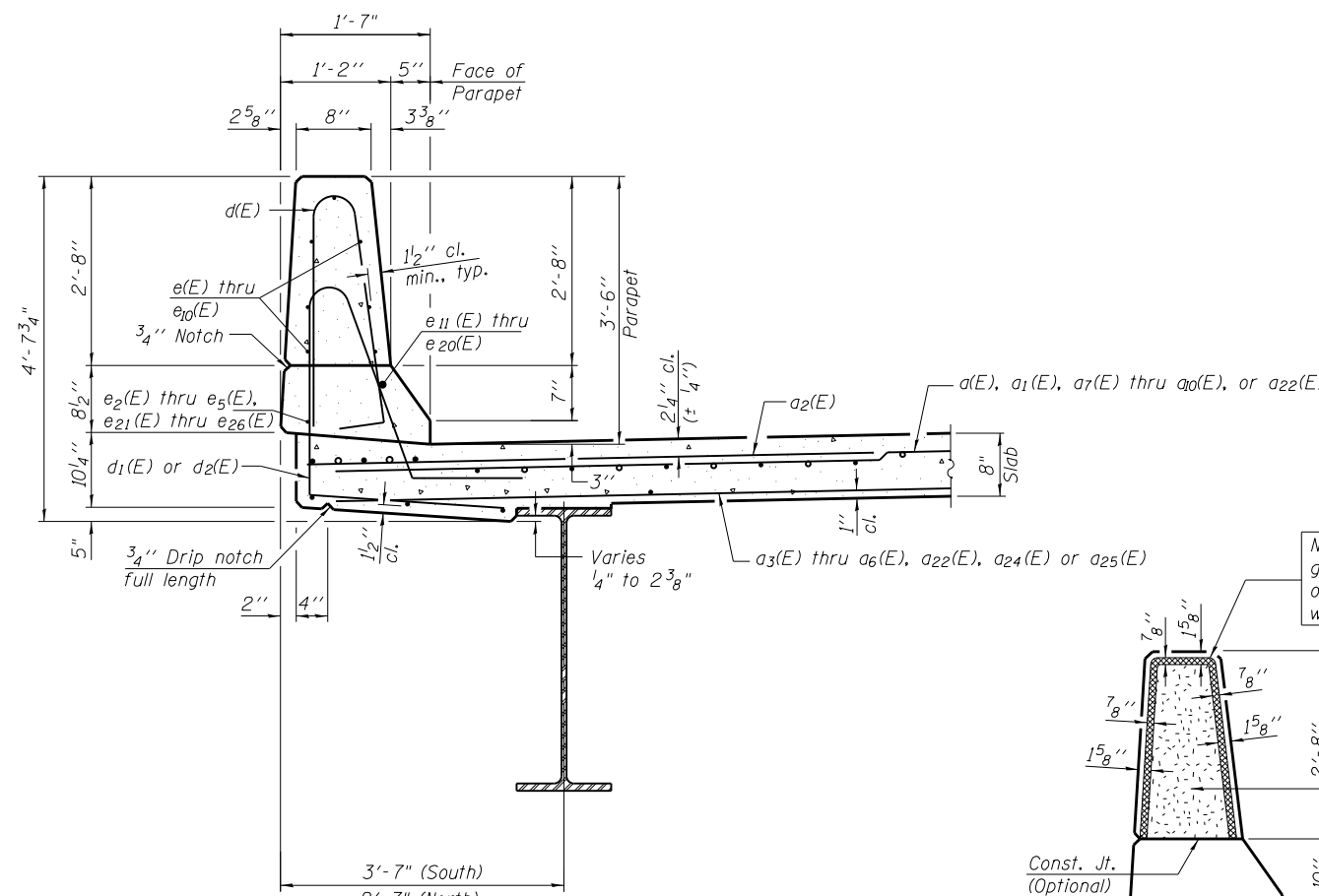
See Sheet S16 of S49 for Section Thru Parapet.  
Bars indicated thus 1 x 3-#4 etc. indicates 1 line of bars with 3 lengths per line.  
Bend longitudinal reinforcement to fit in field.

**MINIMUM BAR LAP**

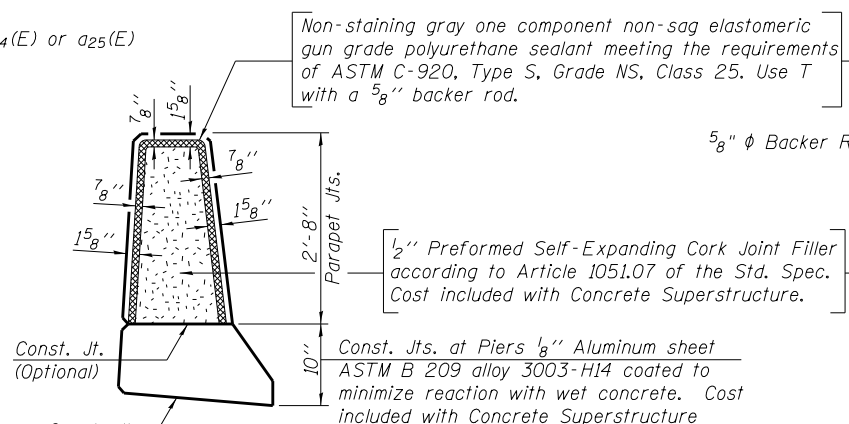
(Parapet)  
#4 bar = 2'-0"  
#8 bar = 5'-2"

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

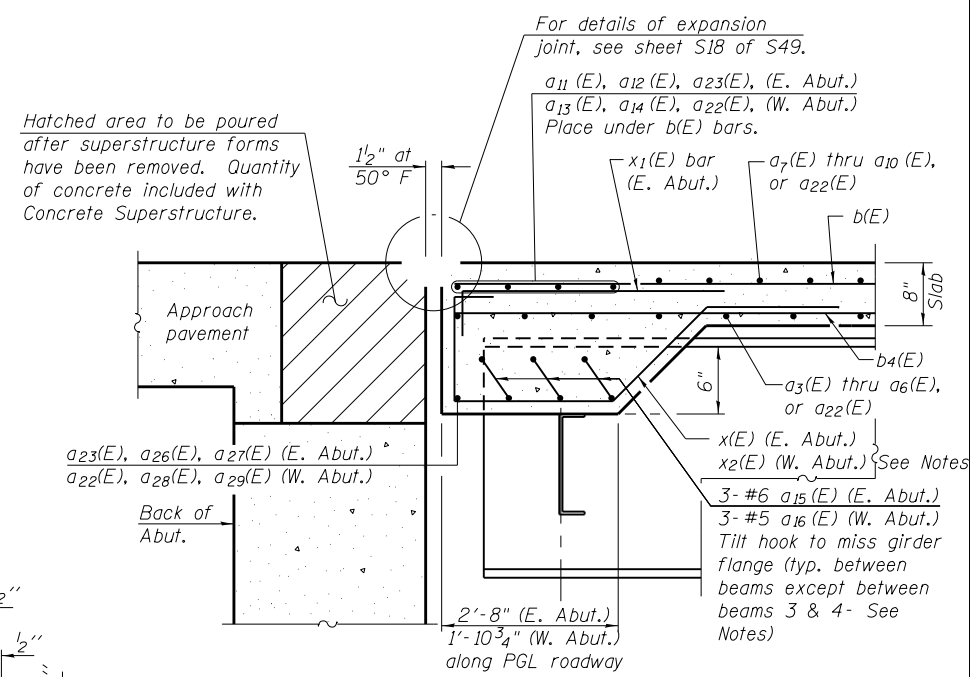
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	207
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



**SECTION THRU PARAPET**

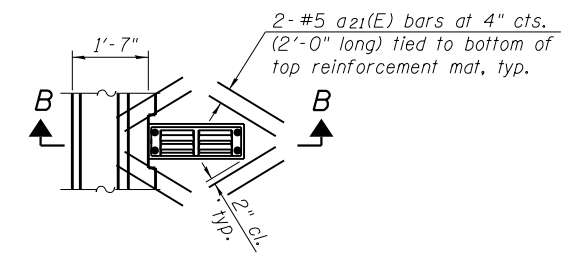


**PARAPET JOINT DETAILS**



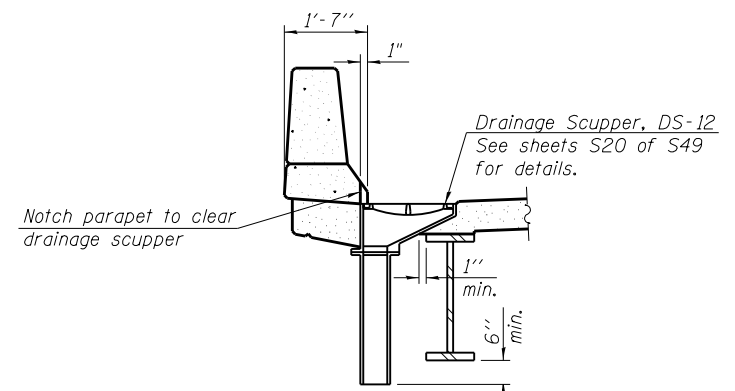
**SECTION A-A**

**Notes:**  
 For location of Section A-A see Sheet S14 of S49.  
 See sheet S19 of S49 for drainage details.  
 For Bottom rebar between beams 3 & 4 use:  
 3-#6 a17(E) bars and 3-Bar Splicers (E) for #6 a17(E) bars (Stage I) to 3-#6 a23(E) bars and 3-Mechanical Splicers (E) for #6 a23(E) bars (Closure Pour) to 3-#6 a18(E) (Stage III) at the East Abutment, 3-#5 a19(E) and 3-Bar Splicers (E) for #5 a19(E) bars (Stage I) to 3-#5 a22(E) bars and 3-Mechanical Splicers (E) (Closure Pour) for #5 a22(E) bars to 3-#5 a20(E) (Stage III) at the West Abutment. Tilt hooks to miss girder flange.  
 5-#5 x(E) or x2(E) bars, typ. between beams except 6 bars between Beams 3 & 4 (2 Stage I, 2 Stage III, 2 Closure Pour).



**PLAN**

**Note:**  
 Cut longitudinal reinforcement to clear drainage scupper.



**SECTION B-B**

**COLLINS ENGINEERS**  
 133 N. Rocker Dr.  
 Suite 900  
 Chicago, IL 60646  
 Tel: (312) 704-9300  
 Fax: (312) 704-9320  
 www.collinsengr.com  
 ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**SUPERSTRUCTURE DETAILS  
 STRUCTURE NO. 016-1322**

SHEET NO. S16 OF S49 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	208
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

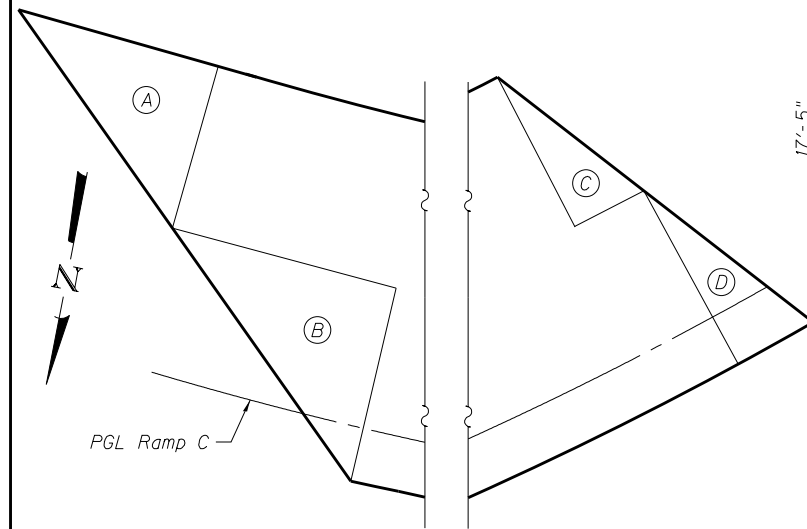
**SUPERSTRUCTURE  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	495	#5	20'-1"	—
a1(E)	525	#5	16'-5"	—
a2(E)	1050	#6	6'-6"	—
a3(E)	13	#5	17'-5"	—
a4(E)	14	#5	20'-9"	—
a5(E)	4	#5	18'-3"	—
a6(E)	5	#5	20'-5"	—
a7(E)	19	#5	16'-0"	—
a8(E)	19	#5	21'-4"	—
a9(E)	6	#5	19'-0"	—
a10(E)	7	#5	20'-7"	—
a11(E)	4	#6	31'-0"	—
a12(E)	4	#6	25'-3"	—
a13(E)	4	#5	22'-0"	—
a14(E)	4	#5	17'-11"	—
a15(E)	15	#6	9'-2"	—
a16(E)	15	#5	6'-8"	—
a17(E)	3	#6	3'-8"	—
a18(E)	3	#6	4'-4"	—
a19(E)	3	#5	2'-6"	—
a20(E)	3	#5	3'-0"	—
a21(E)	8	#5	2'-0"	—
a22(E)	910	#5	1'-2"	—
a23(E)	8	#6	1'-10"	—
a24(E)	346	#5	19'-9"	—
a25(E)	367	#5	16'-1"	—
a26(E)	1	#6	27'-1"	—
a27(E)	1	#6	19'-9"	—
a28(E)	1	#5	19'-2"	—
a29(E)	1	#5	14'-1"	—

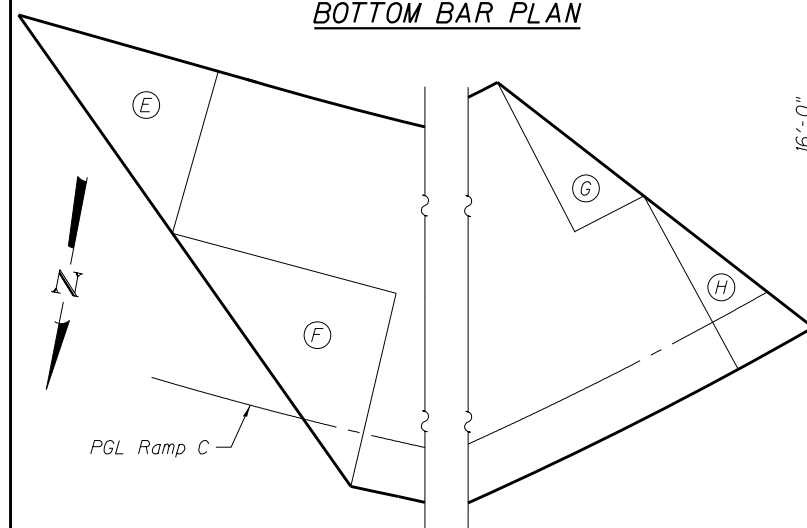
**SUPERSTRUCTURE BILL  
OF MATERIAL CONTINUED**

Bar	No.	Size	Length	Shape
b(E)	336	#5	40'-10"	—
b1(E)	37	#6	43'-4"	—
b2(E)	111	#6	37'-1"	—
b3(E)	37	#6	26'-3"	—
b4(E)	288	#5	36'-8"	—
d(E)	670	#5	6'-10"	—
d1(E)	333	#5	7'-1"	—
d2(E)	337	#5	8'-1"	—
e(E)	14	#4	17'-11"	—
e1(E)	35	#4	18'-8"	—
e2(E)	86	#4	17'-8"	—
e3(E)	16	#4	10'-5"	—
e4(E)	16	#4	16'-9"	—
e5(E)	16	#4	9'-2"	—
e6(E)	14	#4	14'-11"	—
e7(E)	35	#4	15'-9"	—
e8(E)	7	#4	14'-3"	—
e9(E)	14	#4	17'-4"	—
e10(E)	7	#4	18'-2"	—
e11(E)	3	#8	41'-3"	—
e12(E)	2	#8	17'-8"	—
e13(E)	1	#8	30'-2"	—
e14(E)	2	#8	10'-5"	—
e15(E)	3	#8	36'-5"	—
e16(E)	3	#8	44'-4"	—
e17(E)	2	#8	16'-9"	—
e18(E)	1	#8	35'-0"	—
e19(E)	2	#8	9'-2"	—
e20(E)	3	#8	33'-8"	—
e21(E)	4	#4	29'-10"	—
e22(E)	1	#4	30'-2"	—
e23(E)	4	#4	26'-3"	—
e24(E)	4	#4	32'-2"	—
e25(E)	1	#4	35'-0"	—
e26(E)	4	#4	24'-2"	—
x(E)	31	#5	7'-4"	—
x1(E)	33	#5	4'-1"	—
x2(E)	31	#5	6'-6"	—
Bridge Deck Grooving	Sq. Yd.	1102		
Protective Coat	Sq. Yd.	1854		
Concrete Superstructure	Cu. Yd.	420.2		
Reinforcement Bars, Epoxy Coated	Pound	97,740		

\* Extends 6" into closure pour.  
\*\* Extends 8" into closure pour.

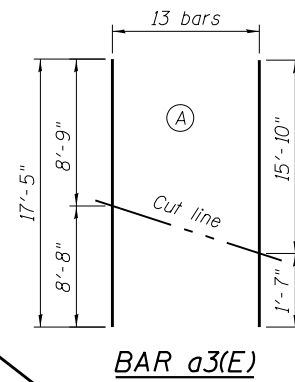


**BOTTOM BAR PLAN**

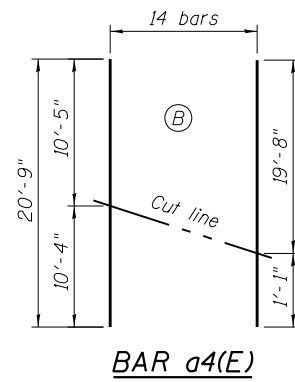


**TOP BAR PLAN**

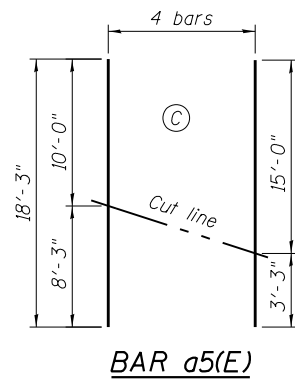
**BRIDGE CUT BAR LOCATION PLAN**



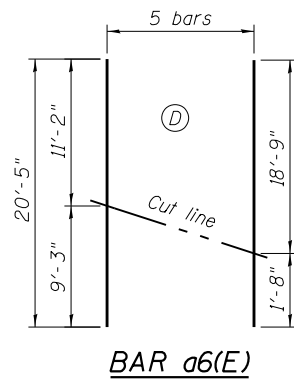
**BAR a3(E)**



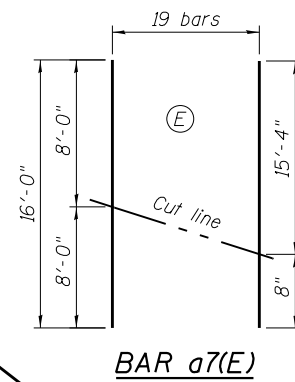
**BAR a4(E)**



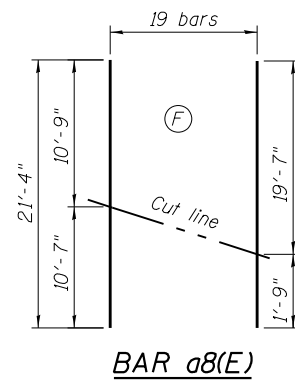
**BAR a5(E)**



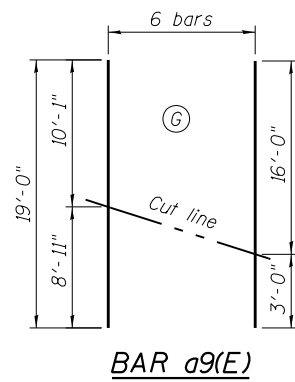
**BAR a6(E)**



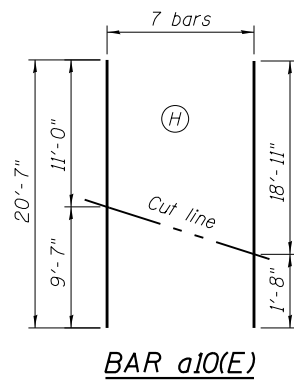
**BAR a7(E)**



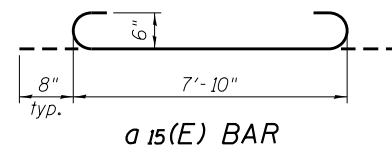
**BAR a8(E)**



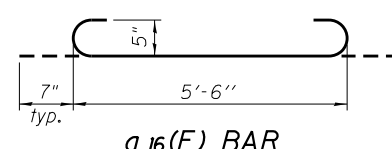
**BAR a9(E)**



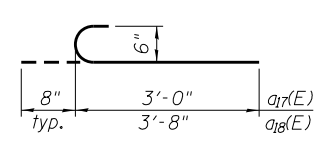
**BAR a10(E)**



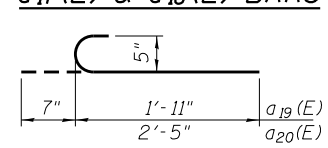
**a15(E) BAR**



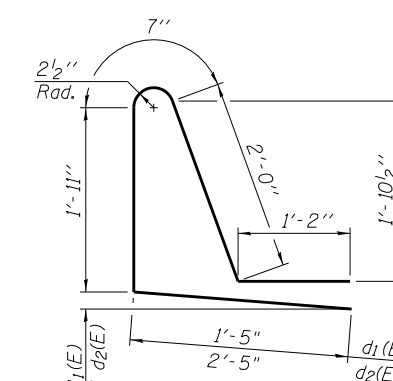
**a16(E) BAR**



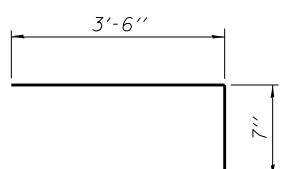
**a17(E) & a18(E) BARS**



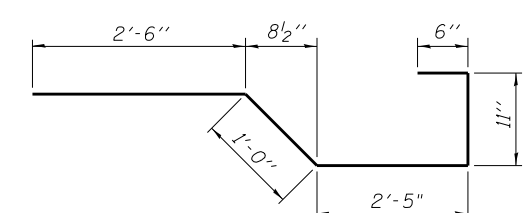
**a19(E) & a20(E) BARS**



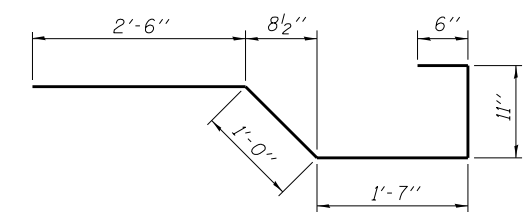
**BARS d1(E) & d2(E)**



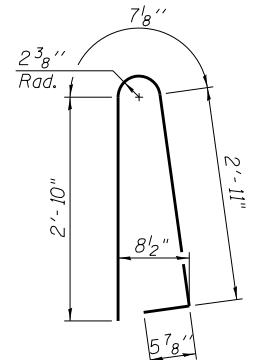
**BAR x1(E)**



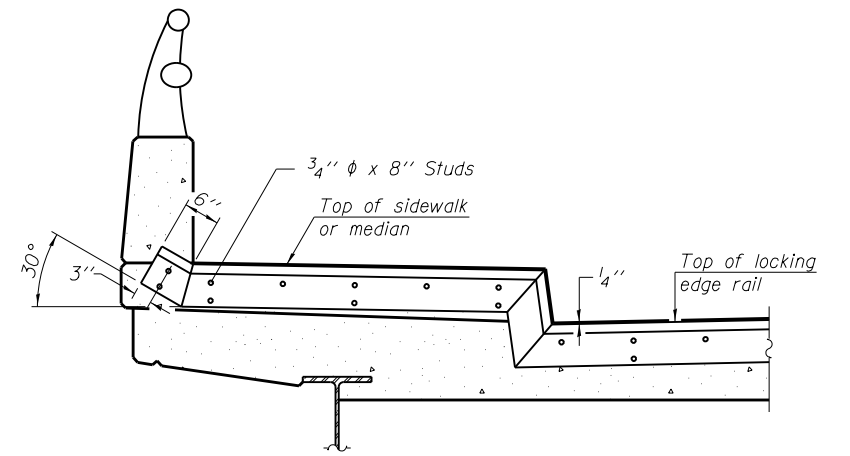
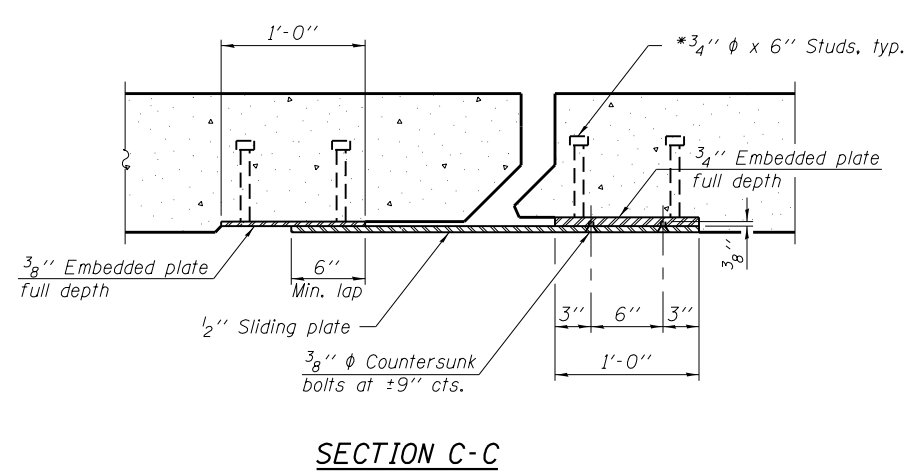
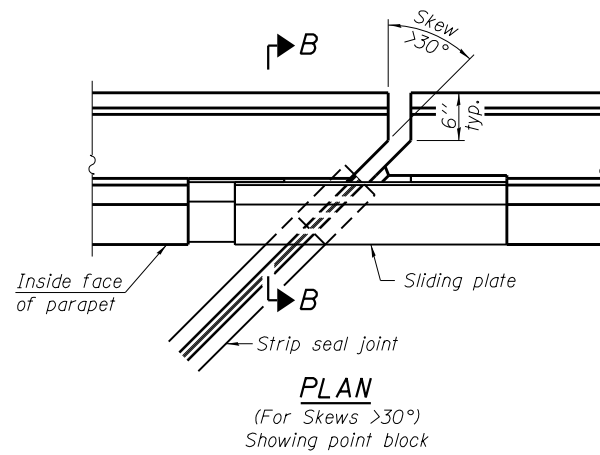
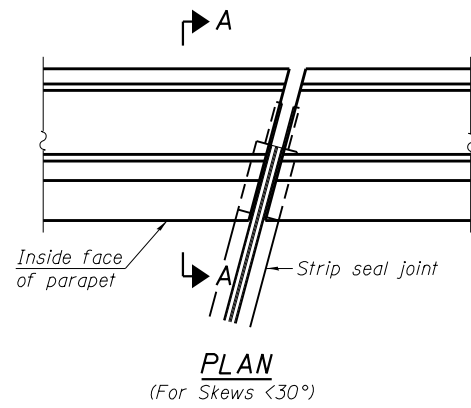
**BAR x(E)**



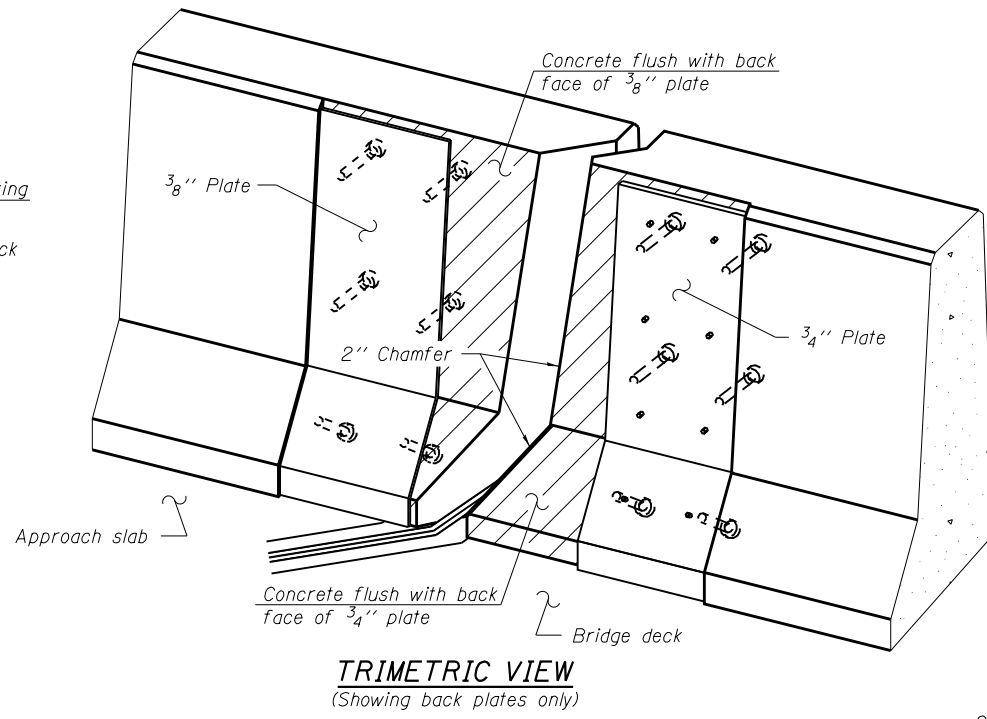
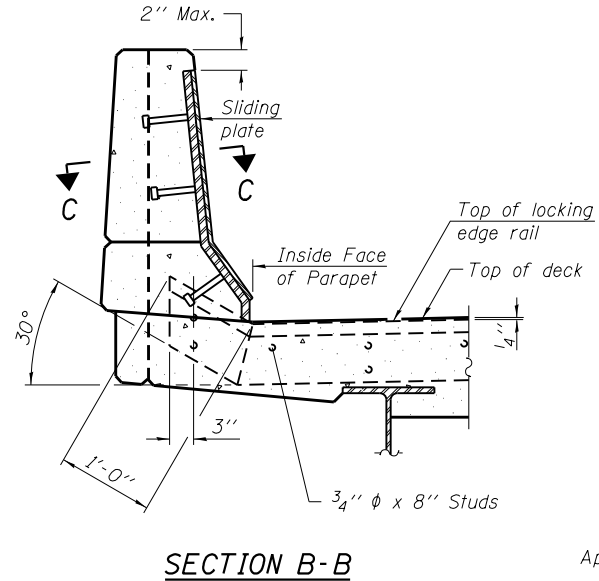
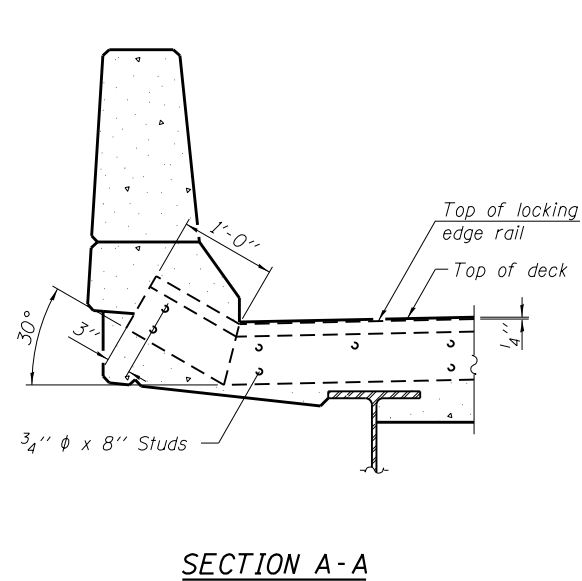
**BAR x2(E)**



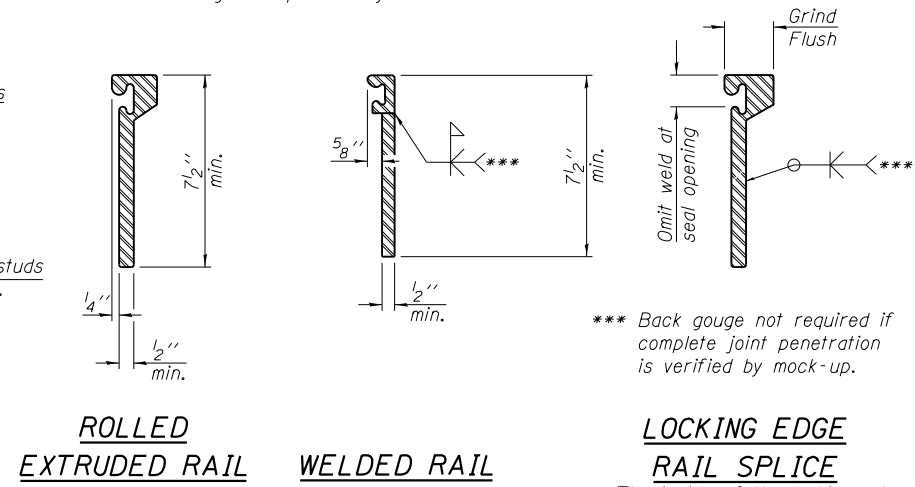
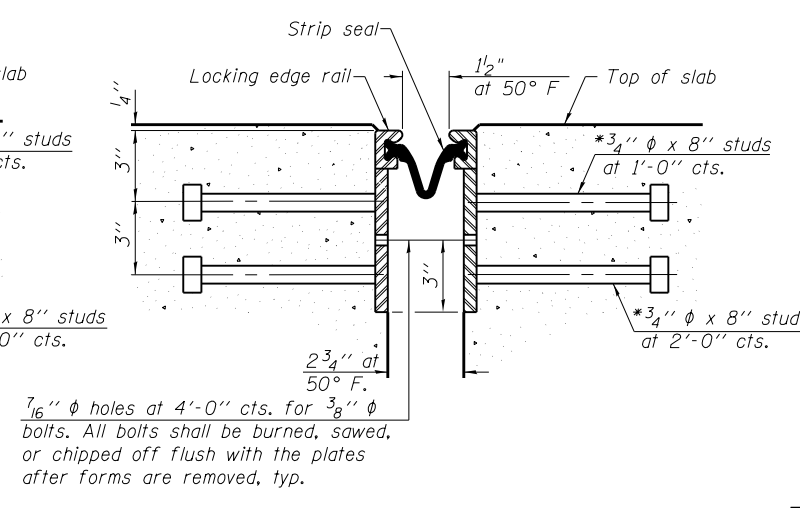
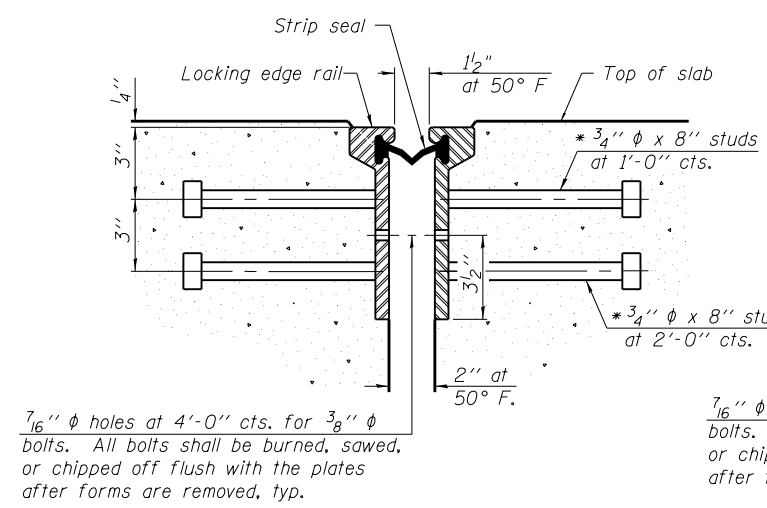
**BAR d(E)**



**TYPICAL END TREATMENT AT SIDEWALK OR MEDIAN**  
Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.



**Notes:**  
The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.  
The Locking Edge Rails depicted are conceptual only, except for the minimum dimensions shown. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities.  
The manufacturer's recommended installation methods shall be followed.  
The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.  
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.  
Maximum space between rail segments shall be 3/16", sealed with a suitable sealant. Joints in rails within 10 ft. of curbs shall be welded.  
Parapet plates and anchorage studs for skews  $>30^\circ$  included in the cost of Preformed Joint Strip Seal.



\*\*\* Back gouge not required if complete joint penetration is verified by mock-up.

**SECTION THRU ROLLED RAIL JOINT**

**SECTION THRU WELDED RAIL JOINT**

**LOCKING EDGE RAILS**

**BILL OF MATERIAL**

Item	Unit	Total
Preformed Joint Strip Seal	Foot	104.0

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

EJ-SSJ

1-27-12

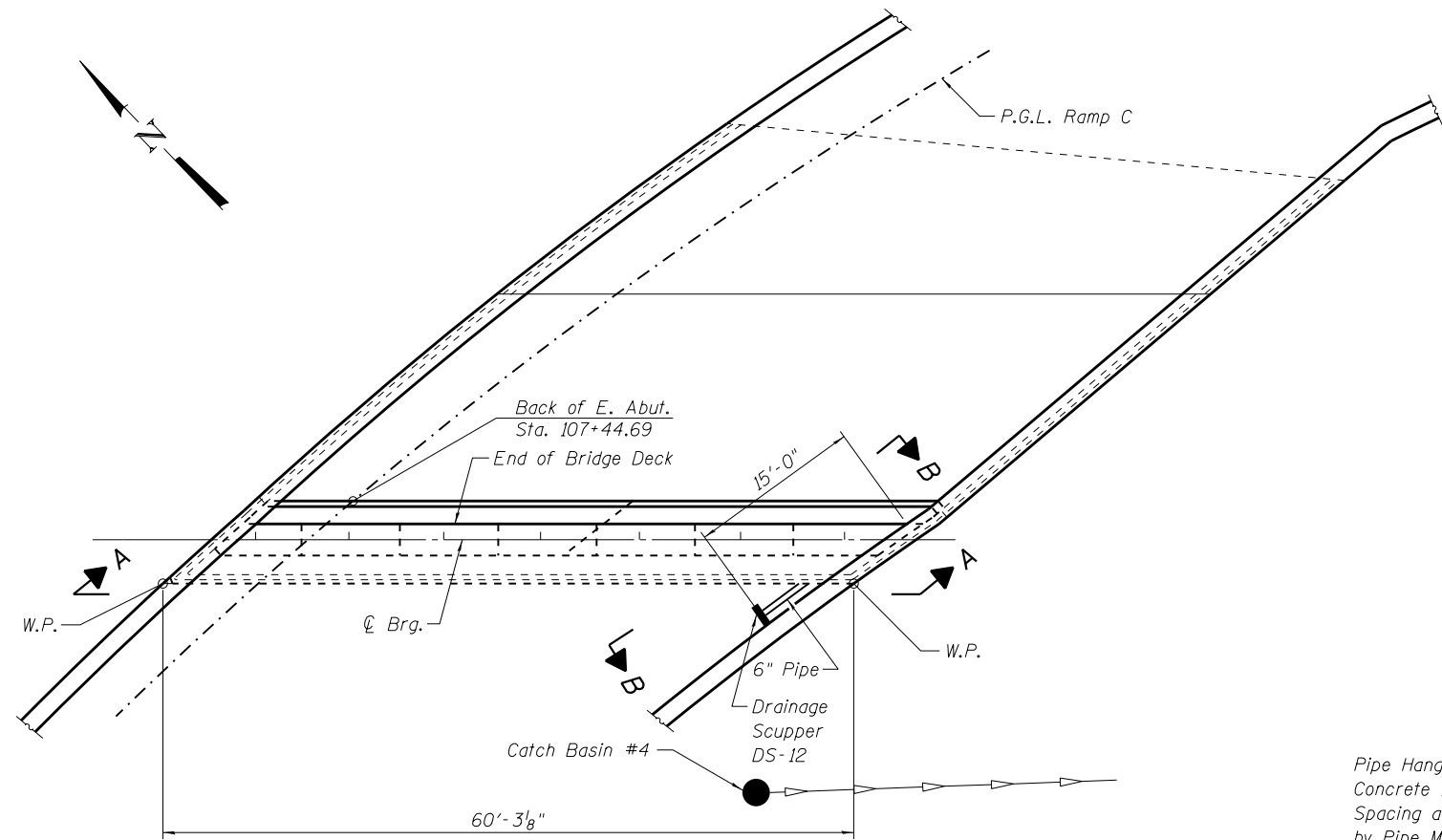
**COLLINS ENGINEERS**  
133 N. Wacker Dr.  
Suite 900  
Chicago, IL 60606  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

USER NAME =	DESIGNED - MAH	REVISED
PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - DR	REVISED
	CHECKED - JMH	REVISED

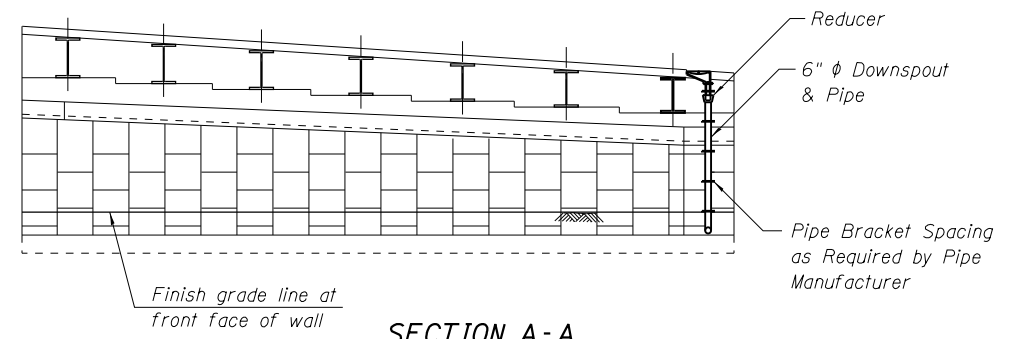
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**PREFORMED JOINT STRIP SEAL**  
**STRUCTURE NO. 016-1322**  
SHEET NO. S18 OF S49 SHEETS

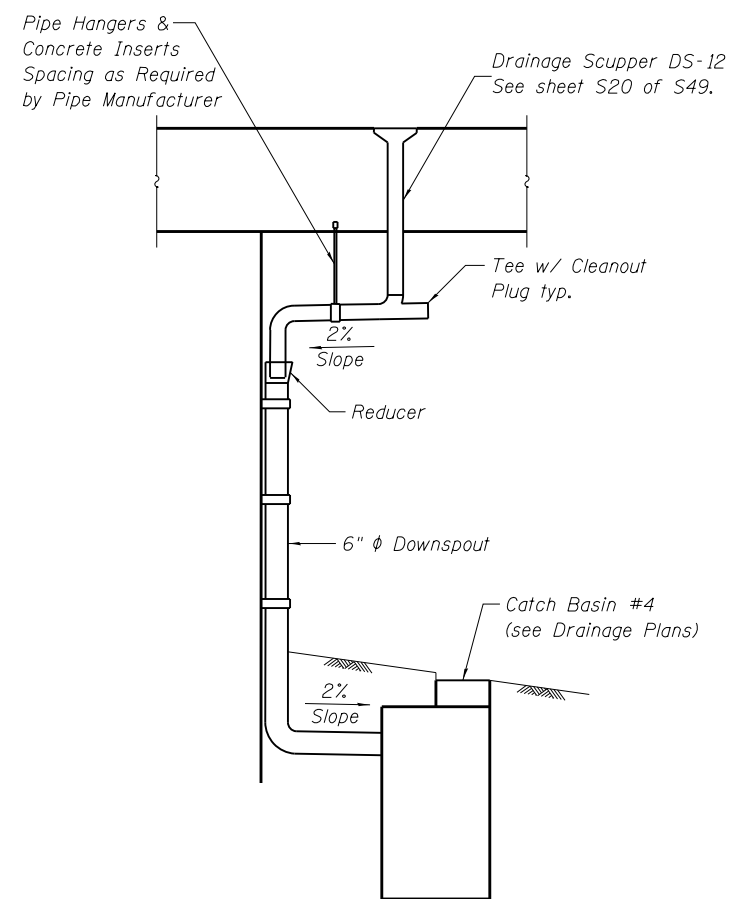
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	210
				CONTRACT NO. 60F63
ILLINOIS FED. AID PROJECT				



**PLAN**

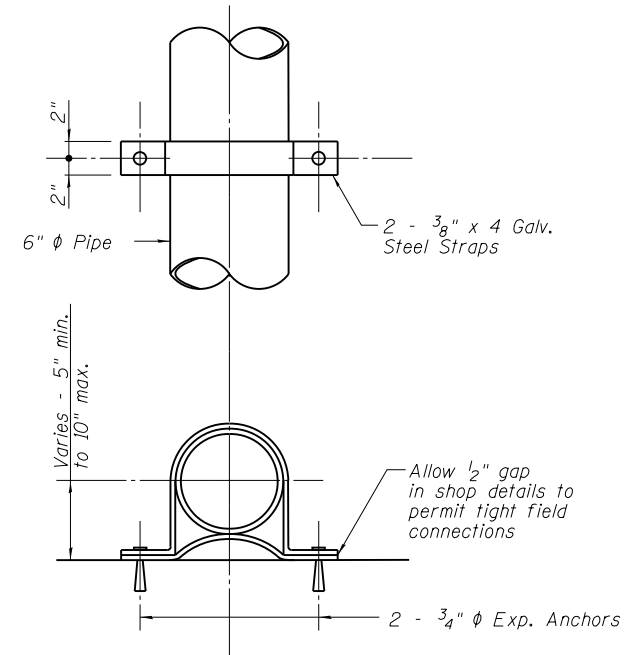


**SECTION A-A**



**SECTION B-B**

**Notes:**  
 All drain pipes and fittings shall be reinforced fiberglass conforming to the requirements of ASTM D 2996, with short time rupture strength hoop tensile stress of 200 MPa minimum.  
 All pipe hangers, supports and hardware shall be galvanized by the Hot-Dip process. The zinc coating shall conform to requirements of AASHTO M232.  
 Pipe brackets shall be provided on all horizontal pipes at each tee, elbow or change in direction and at spacings required by the pipe manufacturer. There shall be a minimum of three brackets per abutment.  
 The surface of the fiberglass pipe shall be free of bond inhibiting agents.



**PIPE BRACKET DETAIL**  
(To M.S.E. Wall)

ITEM	UNIT	QUANTITY
Drainage System	L Sum	0.5

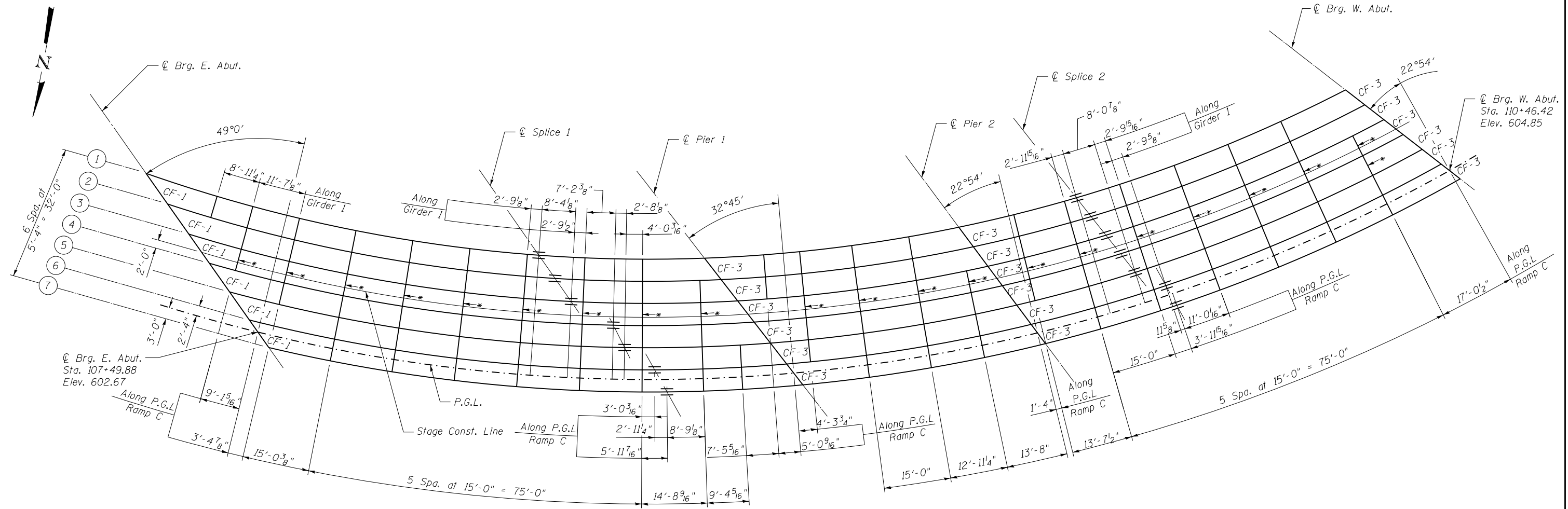
See SNO16-1323 plans for remainder of Drainage System quantity.

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	211
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	







Note:  
All cross frames are CF-2  
unless otherwise noted.

**PLAN**

Notes:  
Cross frames indicated with \* to be installed after completion of the Stage III deck pour. See sheet S28 of S49 for temporary bracing details during Stage III deck pour.  
See sheet S23 of S49 for girder dimensions.

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	213
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

INTERIOR GIRDER MOMENT TABLE (GIRDER 4)						
	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3	
$I_s$	(in <sup>4</sup> )	35974	48218	48218	48218	31575
$I_c(n)$	(in <sup>4</sup> )	76419	---	---	---	68143
$I_c(3n)$	(in <sup>4</sup> )	54747	---	---	---	48917
$I_c(cr)$	(in <sup>4</sup> )	---	54186	54186	54186	---
$S_s$	(in <sup>3</sup> )	1511	1757	1757	1757	1282
$S_c(n)$	(in <sup>3</sup> )	1950	---	---	---	1688
$S_c(3n)$	(in <sup>3</sup> )	1769	---	---	---	1523
$S_c(cr)$	(in <sup>3</sup> )	---	1836	1836	1836	---
$S_{xc}$	(in <sup>3</sup> )	83	83	83	83	67
DC1	(k/')	0.77	0.81	0.81	0.81	0.74
M <sub>DC1</sub>	('k)	1034	1326	603	686	710
DC2	(k/')	0.15	0.15	0.15	0.15	0.15
M <sub>DC2</sub>	('k)	141	151	100	43	83
DW	(k/')	0.267	0.267	0.267	0.267	0.267
M <sub>DW</sub>	('k)	351	403	183	216	254
$M_{\xi} + IM$	('k)	1113	1029	593	888	948
$f_i$ (Strength I)	(ksi)	8	9	5	6	8
$M_u + \frac{1}{2}f_i S_{xc}$	('k)	4165	4501	2330	2956	3210
$\phi_r M_n$	('k)	7298	7454	7489	7515	6337
$f_s$ DC1	(ksi)	8	9	4	5	7
$f_s$ DC2	(ksi)	1	1	1	0	1
$f_s$ DW	(ksi)	2	3	1	1	2
$f_s$ ( $\xi + IM$ )	(ksi)	9	9	5	8	9
$f_i$ (Service II)	(ksi)	10	7	4	4	6
$f_s + \frac{1}{2}$ (Service II)	(ksi)	27	29	15	19	26
$0.95R_n F_{yf}$	(ksi)	47.5	47.5	47.5	47.5	47.5
$f_s + \frac{1}{3}$ (Total)(Strength I)	(ksi)	33	36	18	24	31
$\phi_r F_n$	(ksi)	50	50	50	50	50
$V_r$	(k)	15	20	10	19	13

INTERIOR GIRDER REACTION TABLE					
Location of Max. Reaction	E. Abut.	Pier 1	Pier 2	W. Abut.	
	Girder 4	Girder 6	Girder 6	Girder 6	
R <sub>DC1</sub>	(k)	44.4	123.2	70.8	39.5
R <sub>DC2</sub>	(k)	4.0	31.2	18.1	9.2
R <sub>DW</sub>	(k)	14.8	39.7	25.3	13.3
R $\xi + I$	(k)	73.1	145.0	96.8	52.4
R <sub>Total</sub>	(k)	136.3	339.0	211.0	114.3

EXTERIOR GIRDER MOMENT TABLE (GIRDER 7)						
	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3	
$I_s$	(in <sup>4</sup> )	35974	48218	48218	48218	31575
$I_c(n)$	(in <sup>4</sup> )	76051	---	---	---	67823
$I_c(3n)$	(in <sup>4</sup> )	54510	---	---	---	48703
$I_c(cr)$	(in <sup>4</sup> )	---	54186	54186	54186	---
$S_s$	(in <sup>3</sup> )	1511	1757	1757	1757	1282
$S_c(n)$	(in <sup>3</sup> )	1948	---	---	---	1686
$S_c(3n)$	(in <sup>3</sup> )	1766	---	---	---	1521
$S_c(cr)$	(in <sup>3</sup> )	---	1836	1836	1836	---
$S_{xc}$	(in <sup>3</sup> )	83	83	83	83	67
DC1	(k/')	0.76	0.80	0.80	0.80	0.74
M <sub>DC1</sub>	('k)	1459	1484	1021	861	1000
DC2	(k/')	0.15	0.15	0.15	0.15	0.15
M <sub>DC2</sub>	('k)	375	345	231	284	264
DW	(k/')	0.267	0.267	0.267	0.267	0.267
M <sub>DW</sub>	('k)	566	445	338	329	351
$M_{\xi} + IM$	('k)	1791	1503	929	1390	1393
$f_i$ (Strength I)	(ksi)	10	11	7	8	11
$M_u + \frac{1}{2}f_i S_{xc}$	('k)	6553	5889	3892	4579	4790
$\phi_r M_n$	('k)	7341	7468	7479	7537	6346
$f_s$ DC1	(ksi)	12	10	7	6	9
$f_s$ DC2	(ksi)	3	2	2	2	2
$f_s$ DW	(ksi)	4	3	2	2	3
$f_s$ ( $\xi + IM$ )	(ksi)	11	10	6	9	10
$f_i$ (Service II)	(ksi)	10	8	6	6	8
$f_s + \frac{1}{2}$ (Service II)	(ksi)	35	34	22	26	33
$0.95R_n F_{yf}$	(ksi)	47.5	47.5	47.5	47.5	47.5
$f_s + \frac{1}{3}$ (Total)(Strength I)	(ksi)	47	41	27	31	39
$\phi_r F_n$	(ksi)	50	50	50	50	50
$V_r$	(k)	25	36	21	33	25

EXTERIOR GIRDER REACTION TABLE					
Location of Max. Reaction	E. Abut.	Pier 1	Pier 2	W. Abut.	
	Girder 7	Girder 1	Girder 1	Girder 7	
R <sub>DC1</sub>	(k)	61.4	111.8	74.1	41.7
R <sub>DC2</sub>	(k)	18.2	31.5	19.4	11.9
R <sub>DW</sub>	(k)	24.1	38.2	18.8	14.9
R $\xi + I$	(k)	98.2	139.9	113.2	73.4
R <sub>Total</sub>	(k)	201.9	321.4	225.5	141.9

$I_s, S_s$ : Non-composite moment of inertia and section modulus of the steel section used for computing  $f_s$  (Total-Strength I, and Service II) due to non-composite dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(n), S_c(n)$ : Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections due to short term composite live loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(3n), S_c(3n)$ : Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(cr), S_c(cr)$ : Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing  $f_s$  (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

$S_{xc}$ : Section modulus about the major axis of section to the controlling flange, tension or compression, taken as yield moment with respect to the controlling flange over the yield strength of the controlling flange (in<sup>3</sup>).

DC1: Un-factored non-composite dead load (kips/ft.).

M<sub>DC1</sub>: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M<sub>DC2</sub>: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M<sub>DW</sub>: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

$M_{\xi} + IM$ : Un-factored live load moment plus dynamic load allowance (impact)(kip-ft.).

$f_i$ : Factored calculated normal stress at edge of flange for controlling flange plate due to lateral bending, Strength I or Service II as applicable (kip-ft.).

$M_u + \frac{1}{2}f_i S_{xc}$ : Factored design moment (kip-ft.).

$1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{\xi} + IM$

$\phi_r M_n$ : Factored resistance available according to A6.1.1 (kips).

$f_s$  DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi):

$M_{DC1} / S_{nc}$

$f_s$  DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi):

$M_{DC2} / S_c(3n)$  or  $M_{DC2} / S_c(cr)$  as applicable.

$f_s$  DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi):

$M_{DW} / S_c(3n)$  or  $M_{DW} / S_c(cr)$  as applicable.

$f_s$  ( $\xi + IM$ ): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi):

$M_{\xi} + IM / S_c(n)$  or  $M_{\xi} + IM / S_c(cr)$  as applicable.

$f_s + \frac{1}{2}$  (Service II): Sum of stresses as computed below (ksi):

$f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s (\xi + IM) + \frac{1}{2}$

$0.95R_n F_{yf}$ : Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

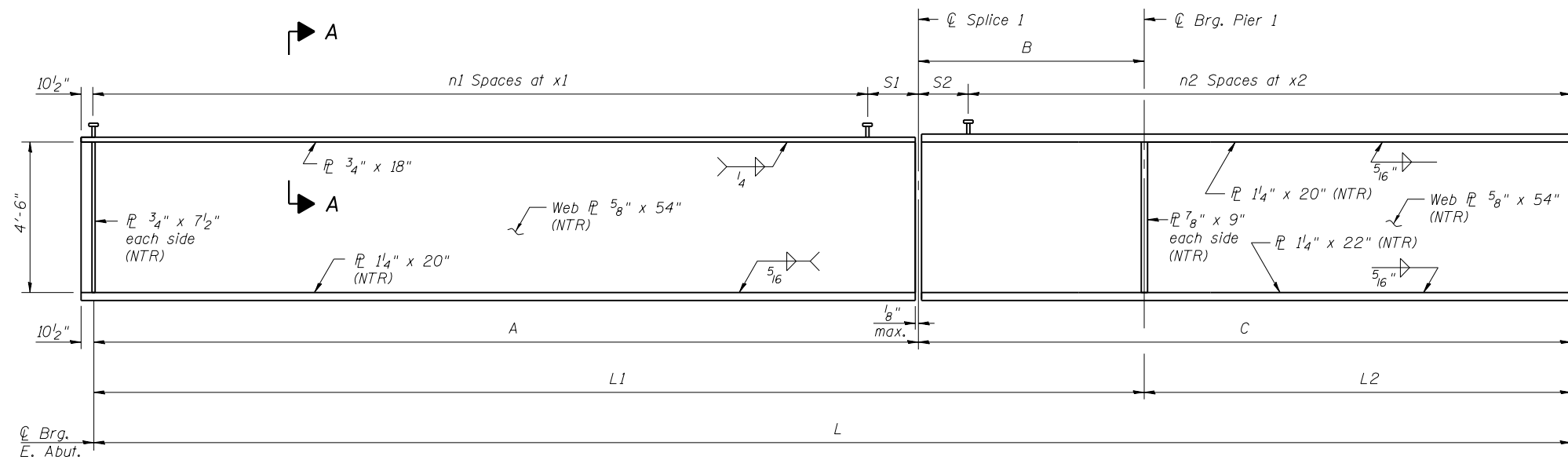
$f_s + \frac{1}{3}$  (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

$1.25 (f_s DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s (\xi + IM) + \frac{1}{3}$

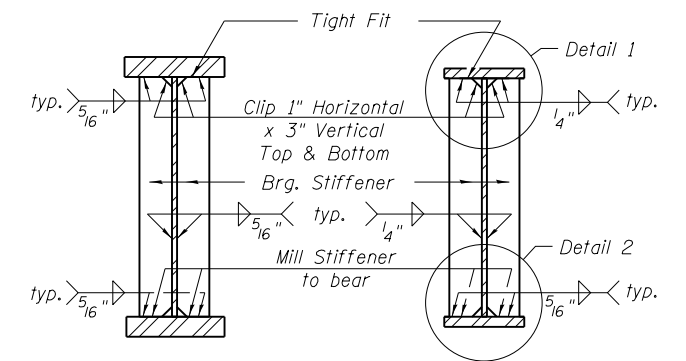
$\phi_r F_n$ : Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

$V_r$ : Maximum factored shear range in span computed according to Article 6.10.10.

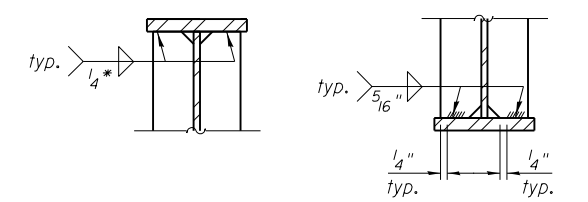
Note:  
 $M_{\xi}$  and  $R_{\xi}$  include the effects of centrifugal force and superelevation.



**GIRDER ELEVATION**  
 "NTR" denotes plates to which notch toughness requirements are applicable.

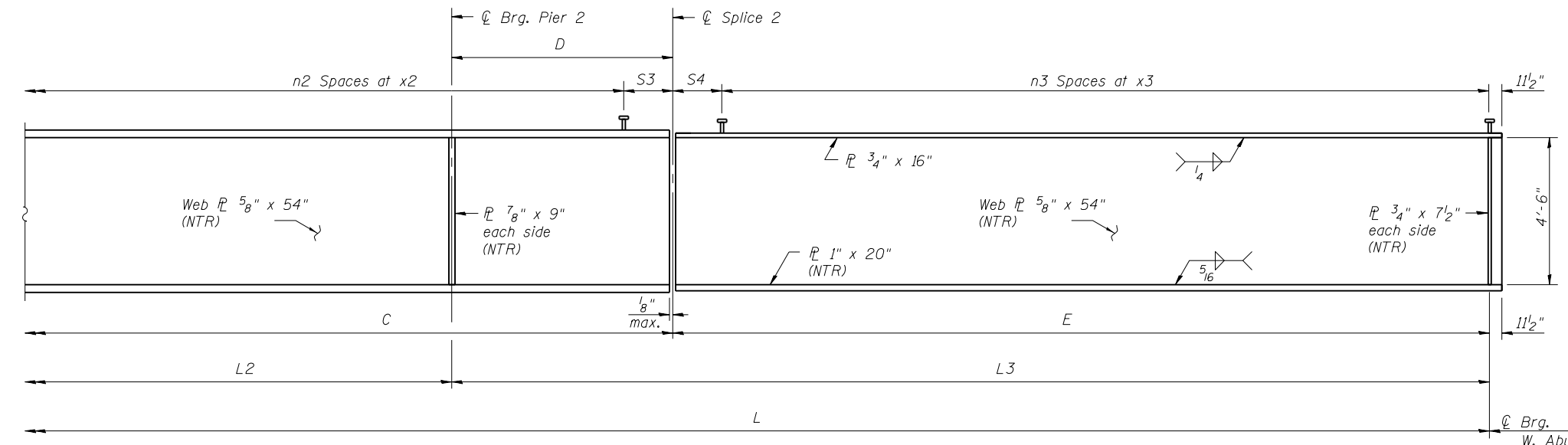


**SECTION AT PIER**      **SECTION AT ABUTMENT**

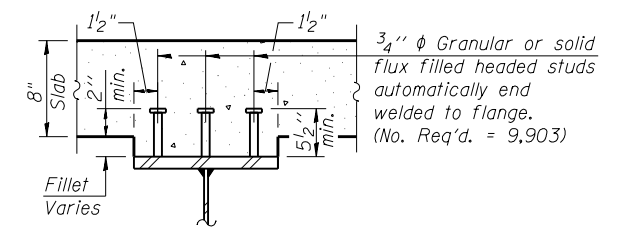


**DETAIL 1**      **DETAIL 2**

\* or 5/16" (between Splice 1 & 2)



**GIRDER ELEVATION**  
 "NTR" denotes plates to which notch toughness requirements are applicable.



**SECTION A-A**

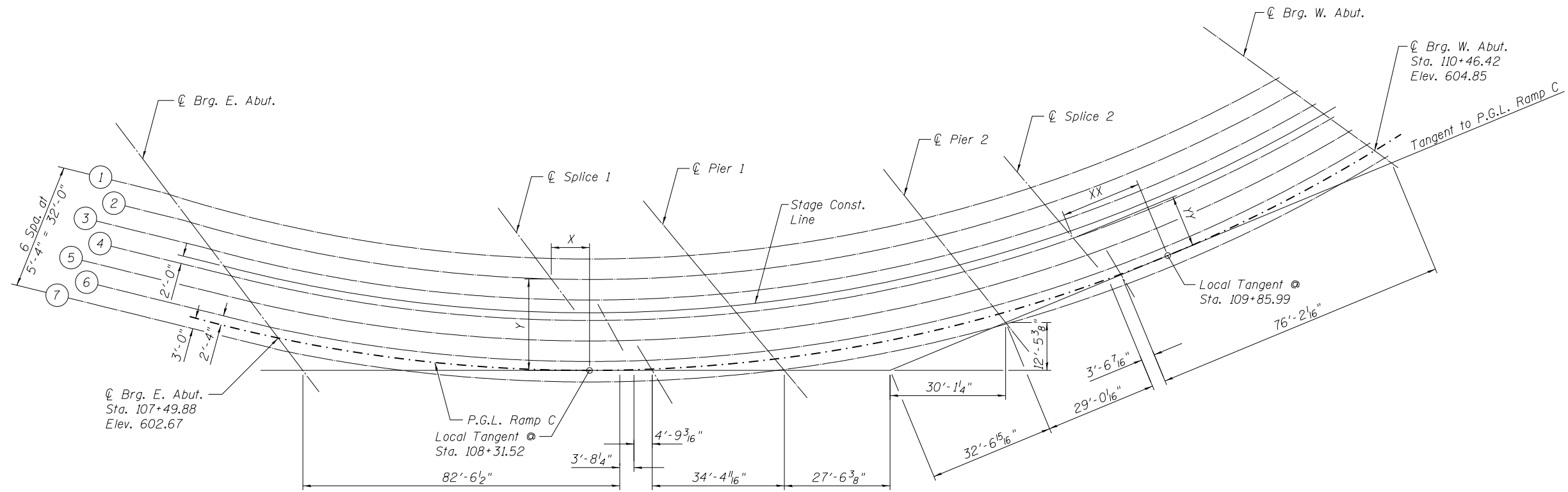
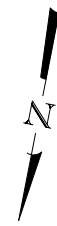
**SHEAR CONNECTOR SPACING**

GIRDER	n1	x1 (in.)	S1 (ft.)	S2 (ft.)	n2	x2 (in.)	S3 (ft.)	S4 (ft.)	n3	x3 (in.)
1	190	6	1.920	1.870	218	7	1.870	1.935	136	6
2	160	7	1.926	1.950	169	9	1.950	1.862	119	7
3	157	7	2.166	1.880	152	10	1.880	2.036	121	7
4	166	7	1.844	1.964	144	10	1.964	2.208	123	7
5	162	7	1.813	2.010	145	10	2.010	1.802	126	7
6	166	7	1.771	1.901	162	9	1.901	2.010	121	7
7	189	6	2.219	1.854	208	7	1.854	1.875	146	6

**GIRDER DIMENSIONS**

GIRDER	RADIUS	L	L1	L2	L3	A	B	C	D	E
1	365'-0"	297'-9 9/8"	136'-10 1/4"	61'-9 3/4"	99'-1 1/2"	96'-11 9/8"	39'-11 9/8"	130'-11 9/8"	29'-2 1/4"	69'-11 1/4"
2	370'-4"	297'-2 1/4"	135'-3 3/8"	61'-4 1/8"	100'-6 7/8"	95'-3 1/8"	40'-0 1/4"	130'-7 7/8"	29'-3 1/2"	71'-3 3/8"
3	375'-8"	296'-9 1/2"	133'-10 1/2"	60'-10 7/8"	102'-0 1/4"	93'-9"	40'-1 1/2"	130'-5 1/4"	29'-4 7/8"	72'-7 1/2"
4	381'-0"	296'-6 3/4"	132'-7 1/4"	60'-5 7/8"	103'-5 5/8"	98'-8 1/8"	33'-11 1/8"	123'-11 1/8"	29'-6 1/2"	73'-11 1/2"
5	386'-4"	296'-5 5/8"	131'-5 1/2"	60'-1 1/8"	104'-11"	96'-3 3/4"	35'-1 7/8"	124'-10 1/2"	29'-7 1/2"	75'-3 5/8"
6	391'-8"	296'-6"	130'-5 1/8"	59'-8 1/2"	106'-4 3/8"	98'-7 1/4"	31'-9 7/8"	125'-3 5/8"	33'-9 1/4"	72'-7 1/8"
7	397'-0"	296'-7 5/8"	129'-5 7/8"	59'-4"	107'-9 3/4"	96'-8 5/8"	32'-9 1/4"	125'-0 5/8"	32'-11 3/8"	74'-10 1/2"

**Notes:**  
 All structural steel shall be AASHTO M270 Grade 50.  
 All splice plates shall comply with NTR.  
 All bearing stiffeners, connection plates and gusset plates shall comply with NTR.  
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

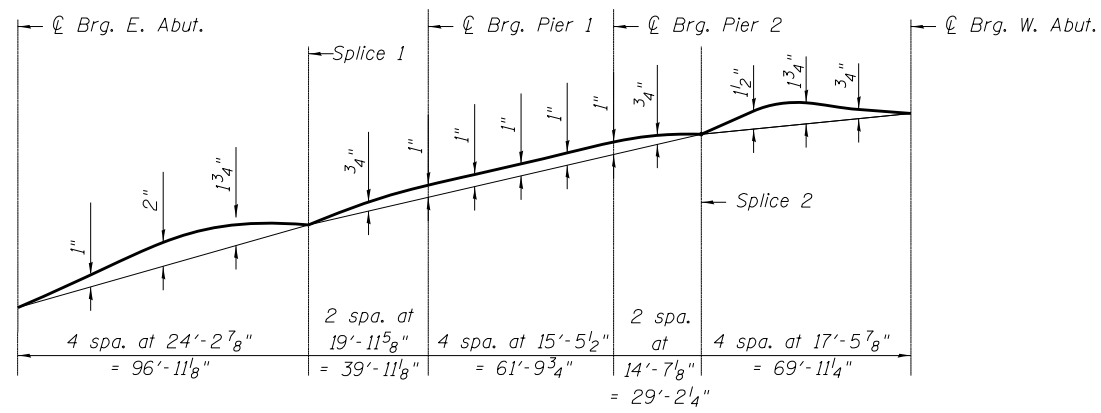


PLAN

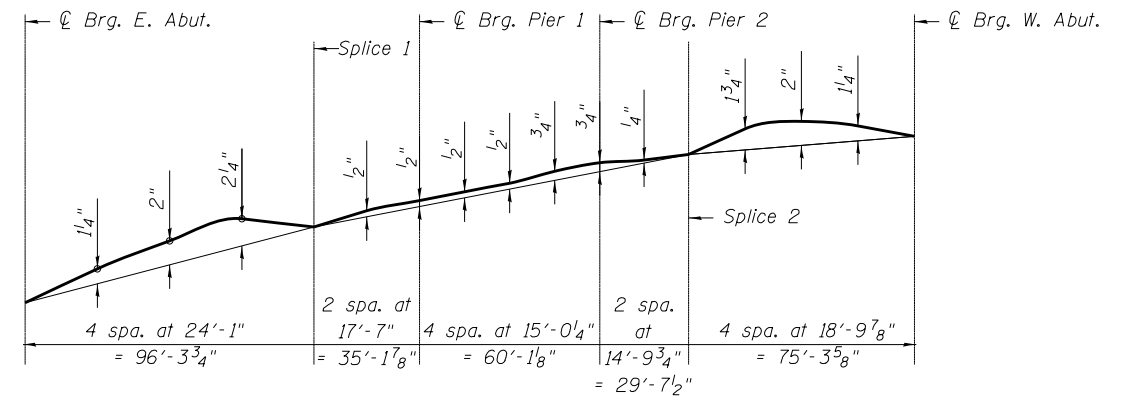
Note:  
For Steel Framing Plan, see Sheet No. S21 of S49.

LAYOUT DIMENSIONS (in feet-inches)

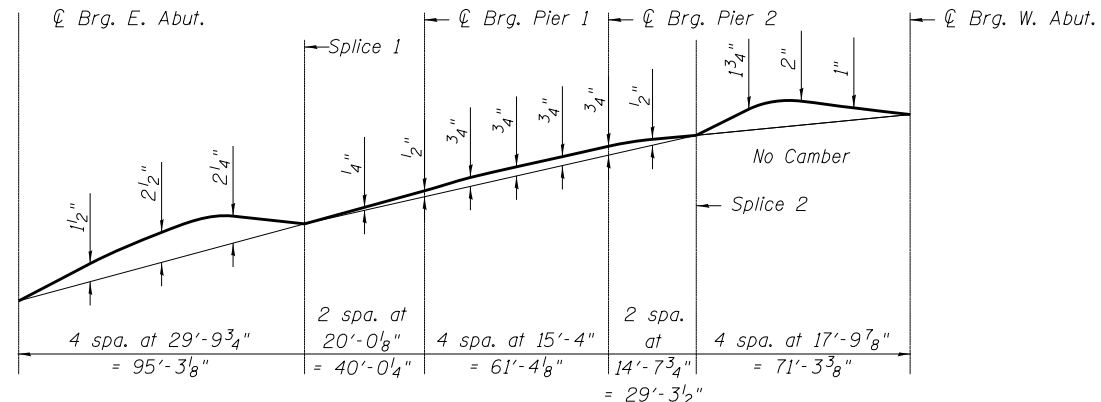
GIRDER	RADIUS	C Brg. E. Abut.		Splice 1		Pier 1		Pier 2		Splice 2		C Brg W. Abut.	
		x	y	x	y	x	y	xx	yy	xx	yy	xx	yy
1	365'-0"	-109'-3 3/4"	45'-9 1/16"	-14'-1 1/8"	29'-3 1/4"	25'-9 5/8"	29'-10 15/16"	-55'-3 3/16"	33'-2 1/2"	-26'-3 3/16"	29'-11 3/8"	43'-6 1/2"	31'-7 1/4"
2	370'-4"	-103'-10 1/16"	38'-6 1/4"	-9'-11 7/8"	23'-9 5/8"	29'-11 7/8"	24'-10 5/8"	-53'-7 5/8"	27'-6 7/8"	-24'-6 1/2"	24'-5 3/4"	46'-7 1/2"	26'-7 3/8"
3	375'-8"	-98'-6 1/16"	31'-5 3/4"	-5'-11 1/16"	18'-4 9/16"	34'-1 13/16"	19'-10 1/16"	-52'-0 1/8"	21'-11 7/16"	-22'-9 1/8"	19'-0 5/16"	49'-8 3/8"	21'-7 5/8"
4	381'-0"	-93'-3 9/16"	24'-7 3/16"	4'-5 1/16"	13'-0 5/16"	38'-3 3/8"	14'-11 1/8"	-50'-4 1/16"	16'-4 3/16"	-21'-0 3/16"	13'-6 15/16"	52'-9 1/8"	16'-8 1/16"
5	386'-4"	-88'-2 7/16"	17'-10 7/16"	7'-3 13/16"	7'-8 13/16"	42'-4 5/8"	10'-0"	-48'-9 1/4"	10'-9 1/16"	-19'-3 1/4"	8'-1 3/4"	55'-9 13/16"	11'-8 5/8"
6	391'-8"	-83'-2 1/2"	11'-3 5/16"	14'-8 15/16"	2'-7 5/16"	46'-5 9/16"	5'-1 3/16"	-47'-1 15/16"	5'-2 3/16"	-13'-6"	2'-6 13/16"	58'-10 3/8"	6'-9 3/8"
7	397'-0"	-78'-3 1/16"	4'-9 5/8"	17'-10 5/8"	-2'-7 3/16"	50'-6 1/4"	2 3/4"	-45'-6 5/8"	-4 9/16"	-12'-8 1/2"	-2'-9 9/16"	61'-10 7/8"	1'-10 1/4"



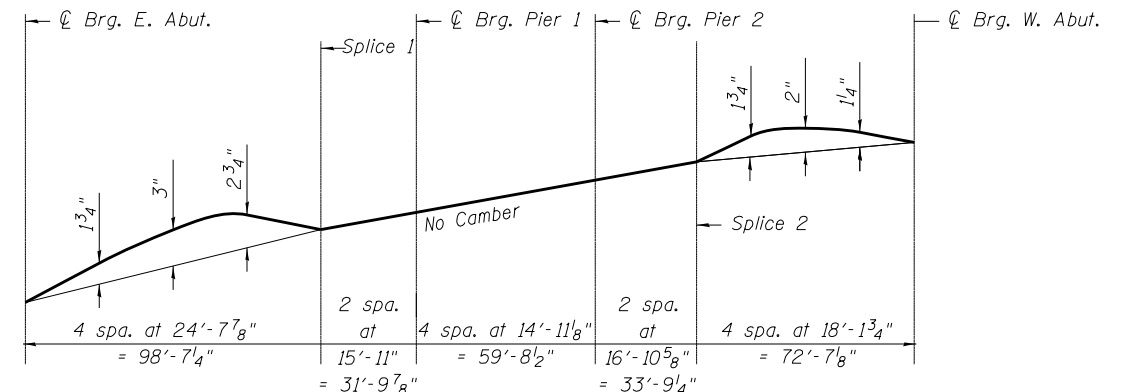
**GIRDER 1 CAMBER DIAGRAM**



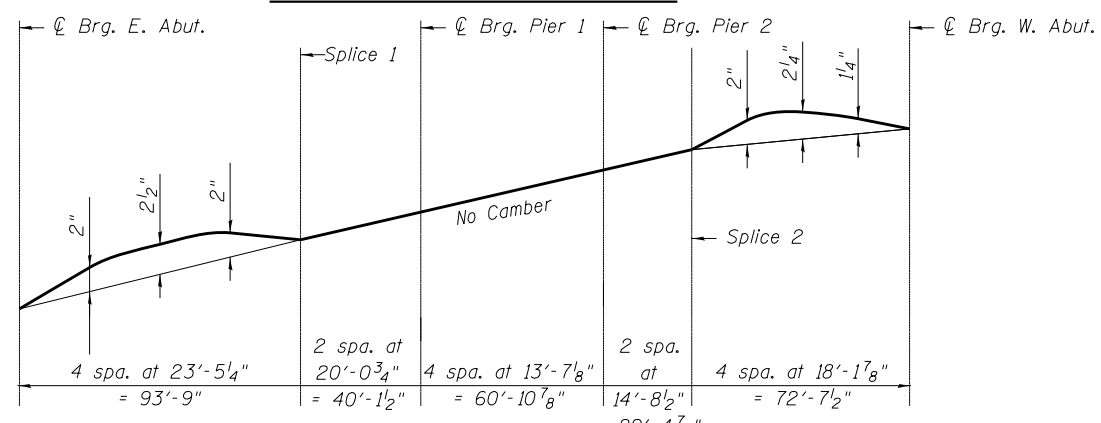
**GIRDER 5 CAMBER DIAGRAM**



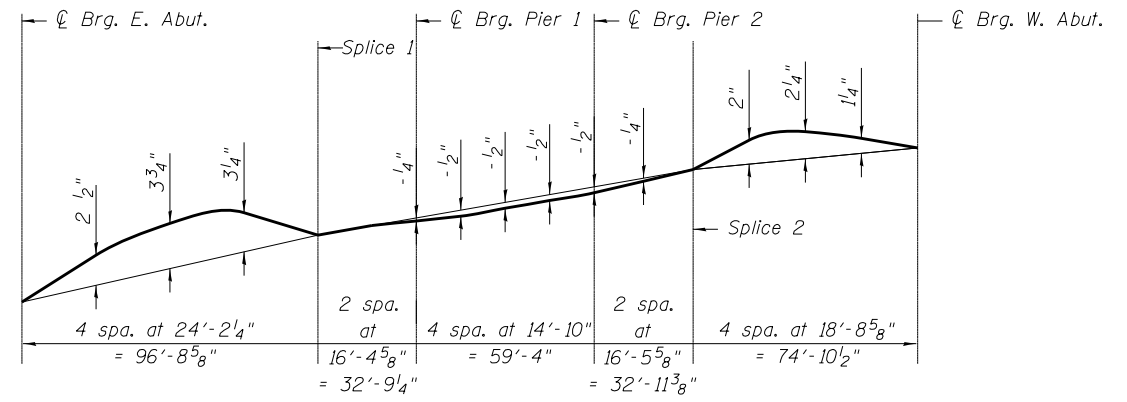
**GIRDER 2 CAMBER DIAGRAM**



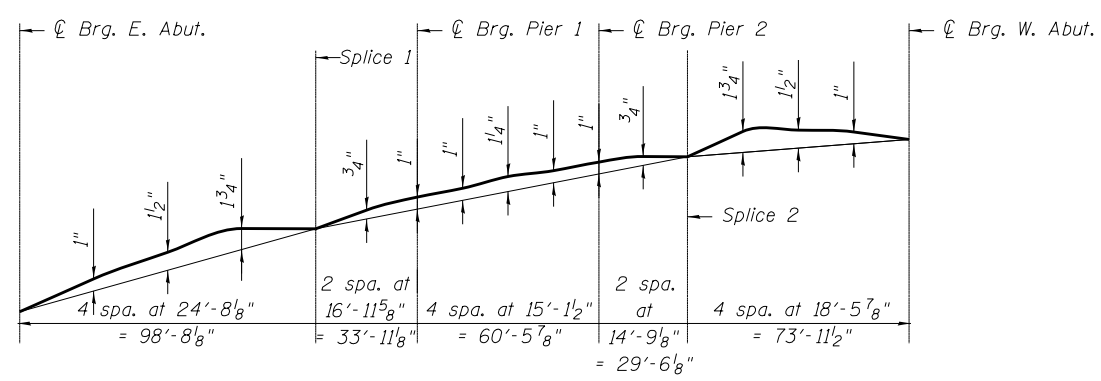
**GIRDER 6 CAMBER DIAGRAM**



**GIRDER 3 CAMBER DIAGRAM**



**GIRDER 7 CAMBER DIAGRAM**

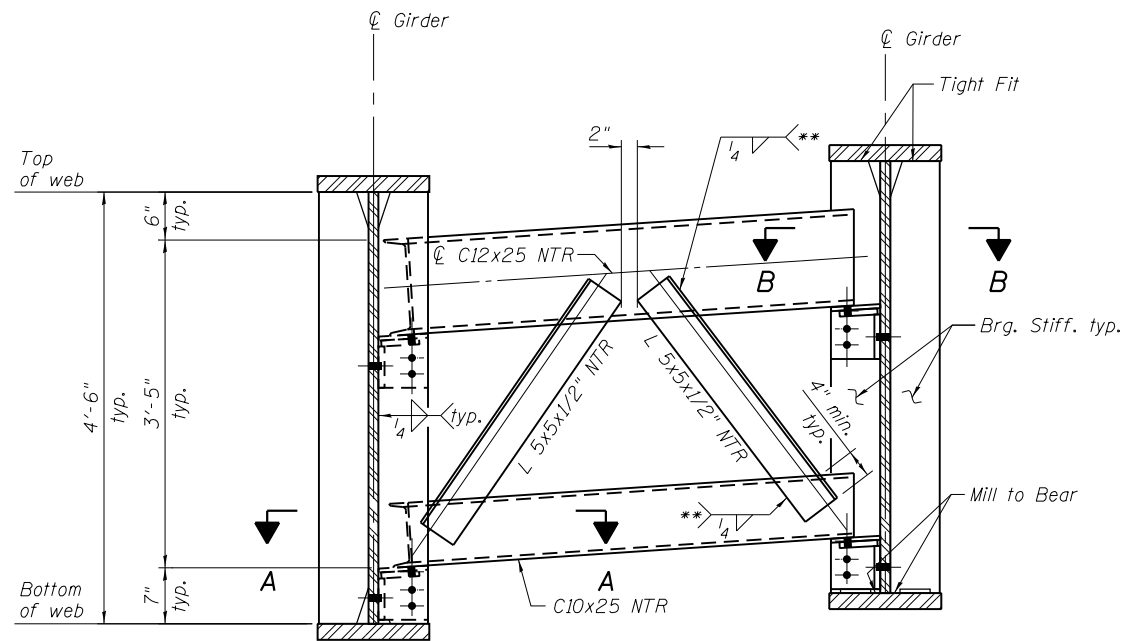


**GIRDER 4 CAMBER DIAGRAM**

**TOP OF WEB ELEVATIONS**

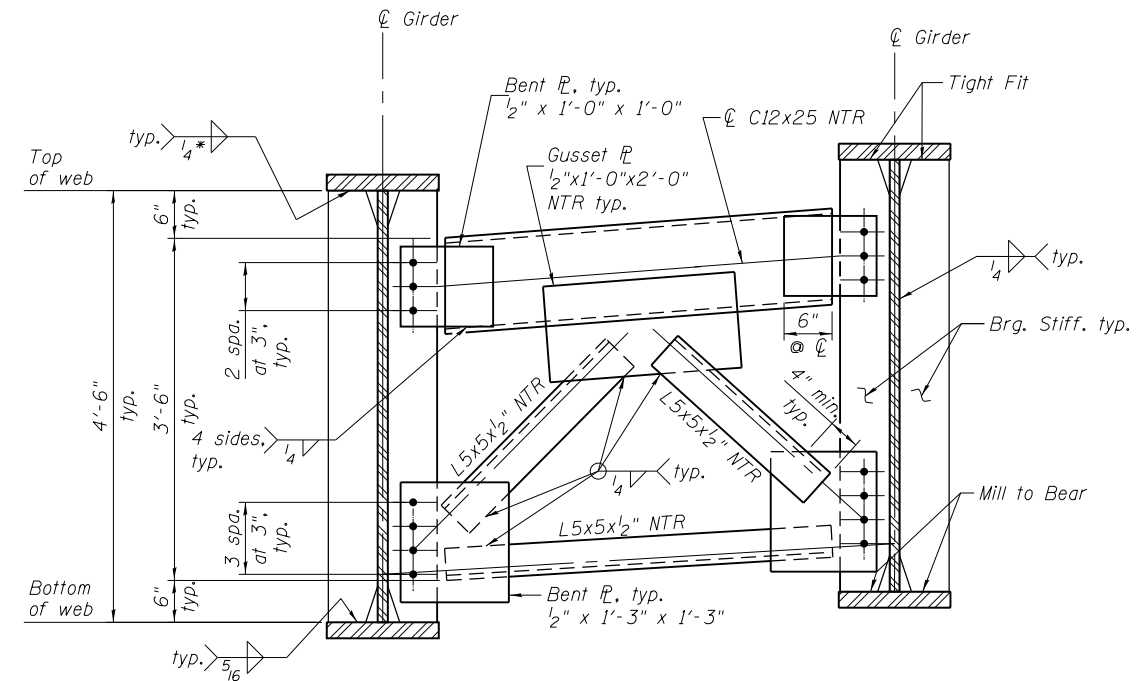
GIRDER	℄ Brg. E. Abut.	℄ Splice 1	℄ Pier 1	℄ Pier 2	℄ Splice 2	℄ Brg. W. Abut.
1	599.58	600.98	601.41	601.95	602.12	602.28
2	600.00	601.39	601.77	602.28	602.47	602.60
3	600.42	601.81	602.13	602.62	602.85	602.92
4	600.84	602.14	602.48	602.95	603.10	603.23
5	601.24	602.54	602.84	603.28	603.44	603.55
6	601.65	602.96	603.19	603.62	603.86	603.87
7	602.05	602.34	603.54	603.95	604.20	604.19

" Top of web elevations for fabrication only "



**TYPICAL END CROSS FRAME CF1**

\*\* Three sides, to back face of channel only, typ.

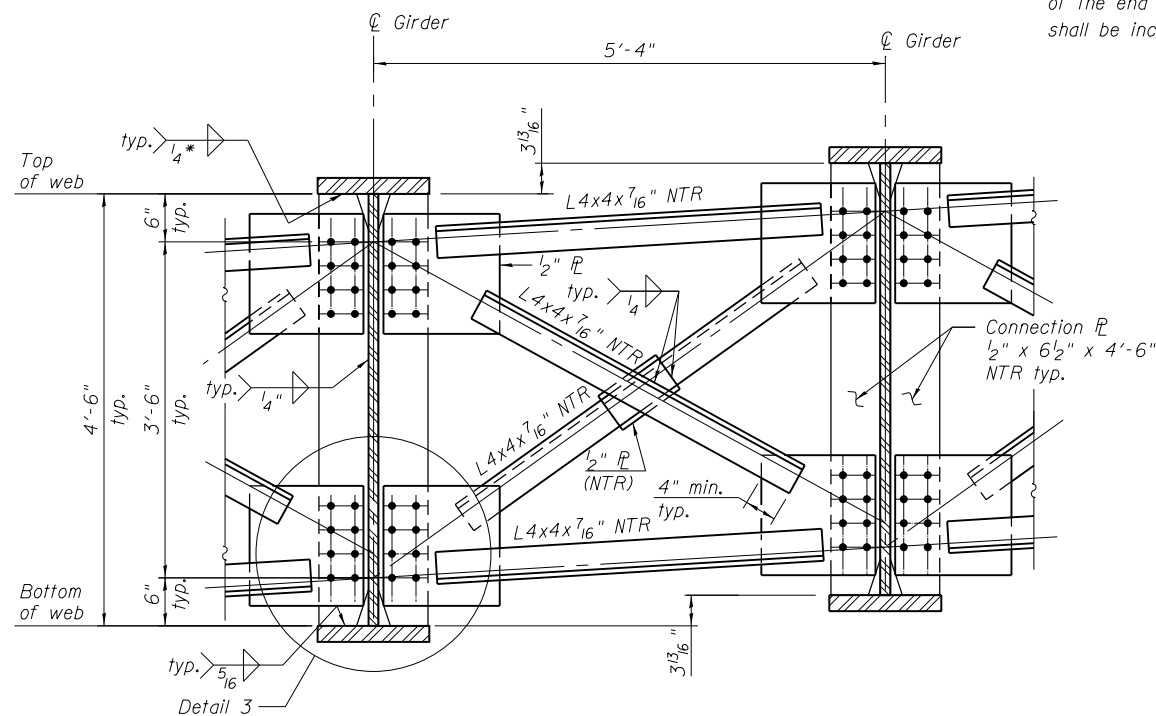


**TYPICAL INTERIOR/END CROSS FRAME CF3**

\* 5/16" (between Splice 1 & 2)

Note:

End Cross frames at the Stage Line shall be installed after Stage I deck pour. See Stage III Deck Pour and Closure Sequencing on sheet S28 of S49. Timber block posts shall be used to support Stage I concrete formwork at the Abutments. Contractor shall apply grout to the top of the top channel of the end cross frames to ensure full contact between the Stage I concrete deck and the top of the channel of the end cross frames. Cost of timber block posts and grout shall be included in Furnishing and Erecting Structural Steel.

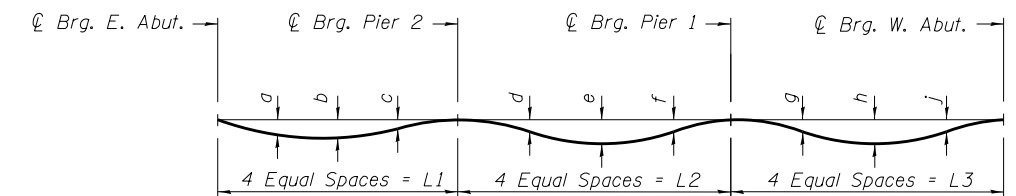


**TYPICAL INTERIOR CROSS FRAME CF2**

\* 5/16" (between Splice 1 & 2)

Notes:

See framing plan on sheet S21 of S49 for location of girder cross frames.  
 For Detail 3 and Sections A-A and B-B, see sheet S28 of S49. AASHTO M270 Grade 50 steel shall be used for all cross frames, connection plates, and bearing stiffeners, unless otherwise noted.  
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.  
 All cross frames between girders shall be installed with erection pins and bolts in accordance with erection plan submitted to and approved by the Engineer. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.  
 The calculated deflections of the primary girders under steel self-weight shall be used to detail the cross frame connections, and to erect the structural steel such that girders will be plumb within a tolerance of ± 1/8" per vertical foot throughout the length of the girder system when supporting their own weight.  
 No connection plate on exterior side of exterior girders.



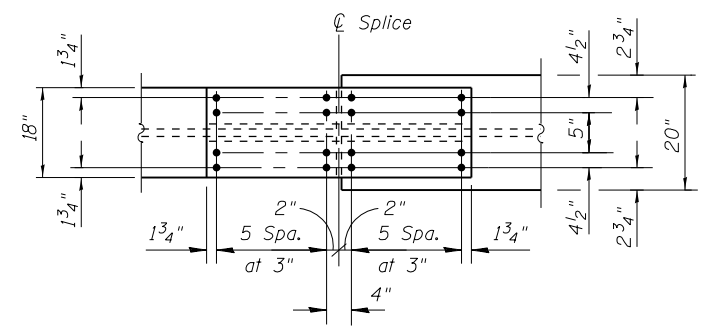
**GIRDER SELF-WEIGHT DEFLECTION DIAGRAM**

See Screenshot Dimension Layout Table on sheet S8 of S49 for span lengths.

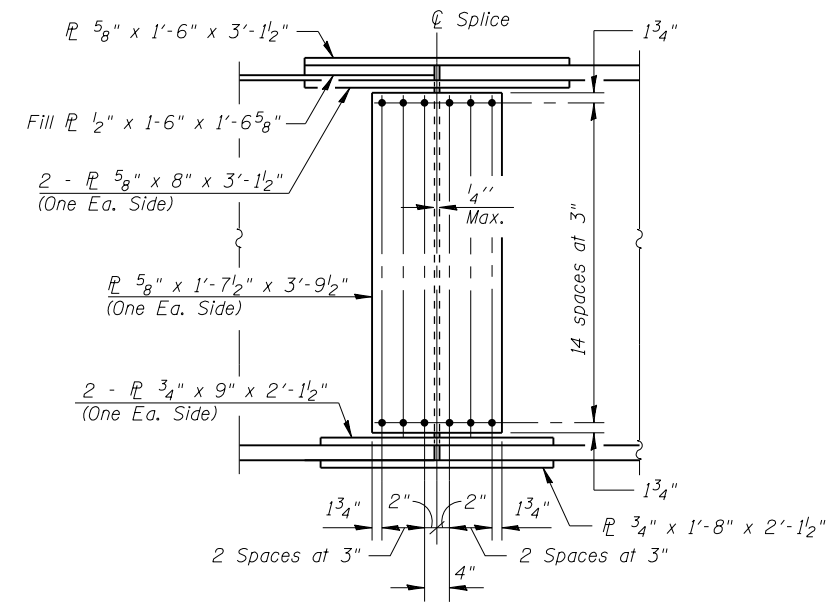
**GIRDER SELF WEIGHT DEFLECTIONS**

Location	Girder						
	1	2	3	4	5	6	7
a	1/2"	7/8"	1 3/8"	3/8"	3/8"	7/8"	1/8"
b	5/8"	1 1/4"	1 5/8"	1/2"	3/4"	1 1/8"	1 3/8"
c	3/8"	3/4"	1 1/2"	3/8"	5/8"	5/8"	3/4"
d	-1/8"	-1/8"	-1/4"	-1/8"	-1/8"	-1/8"	-1/8"
e	-1/8"	-1/8"	-1/4"	0"	-1/8"	-1/8"	-1/4"
f	0"	-1/8"	-1/4"	0"	-1/8"	-1/8"	-1/8"
g	1/8"	1/4"	3/8"	1/8"	1/8"	3/8"	1/2"
h	1/4"	1/2"	5/8"	1/4"	3/8"	5/8"	3/4"
j	1/8"	3/8"	1/2"	1/4"	3/8"	1/2"	5/8"

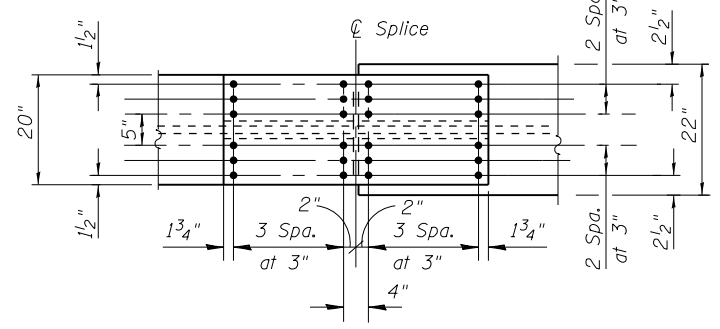
(Sheet 1 of 3)



PLAN - TOP FLANGE

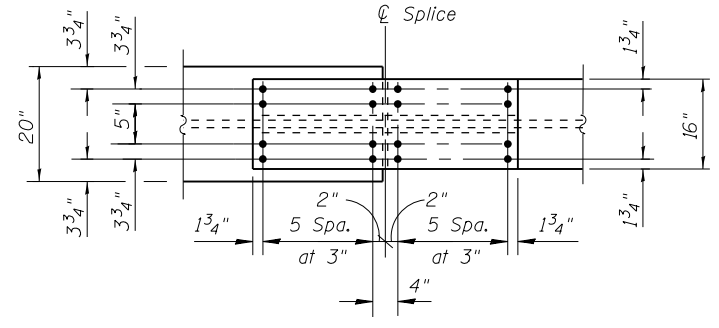


ELEVATION

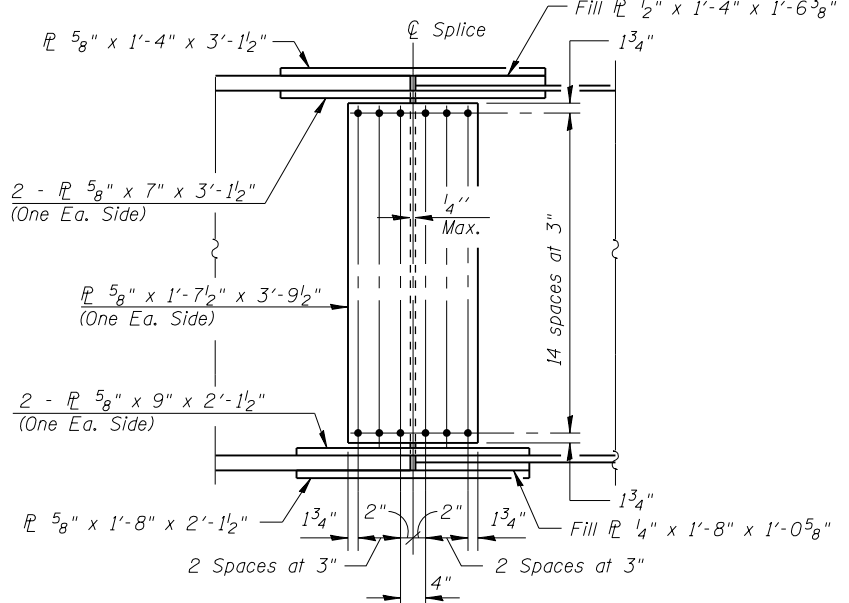


PLAN - BOTTOM FLANGE

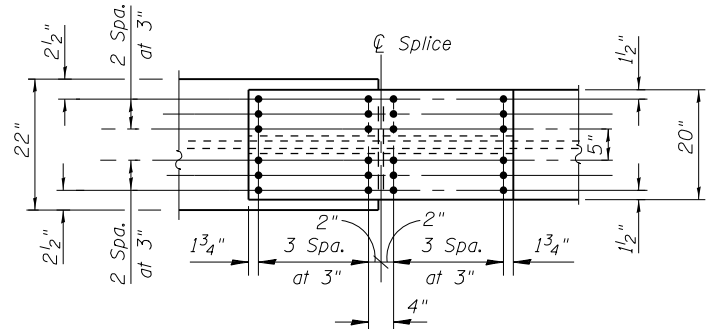
FIELD SPLICE 1 DETAIL



PLAN - TOP FLANGE



ELEVATION



PLAN - BOTTOM FLANGE

FIELD SPLICE 2 DETAIL

Notes:  
 All splice plates shall comply with NTR.  
 All structural steel, except fill plates shall be AASHTO M270, Grade 50.

(Sheet 2 of 3)



USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

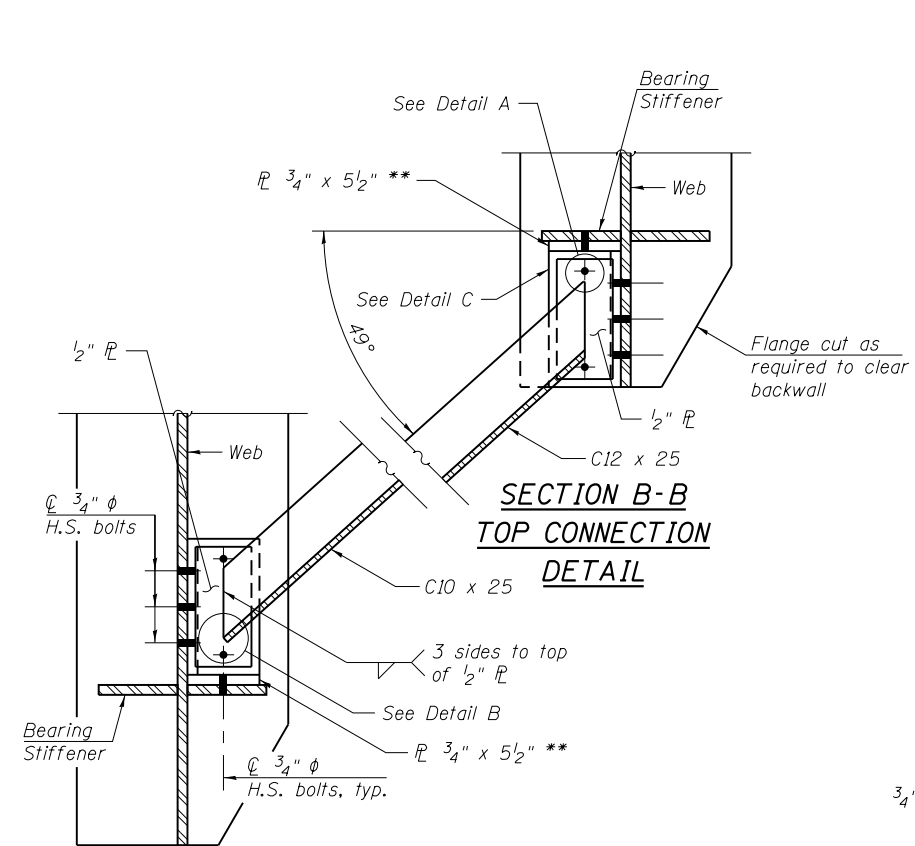
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

STEEL DETAILS  
 STRUCTURE NO. 016-1322

SHEET NO. S27 OF S49 SHEETS

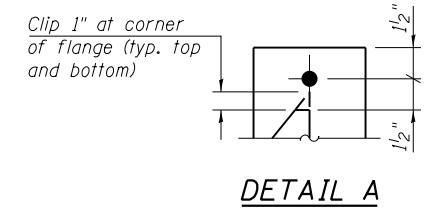
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	219
CONTRACT NO. 60F63				

ILLINOIS FED. AID PROJECT

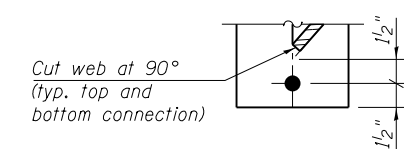


**SECTION A-A  
BOTTOM CONNECTION  
DETAIL**

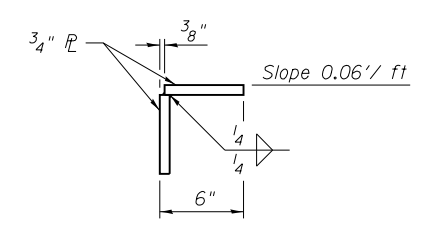
\*\* Weld 3/4" x 5 1/2" plate to seat as shown in Detail D and Detail E.



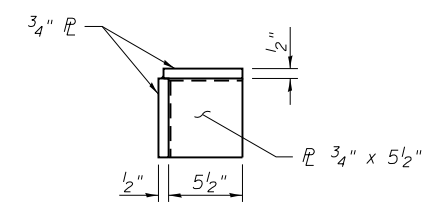
**DETAIL A**



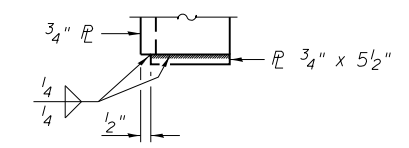
**DETAIL B**



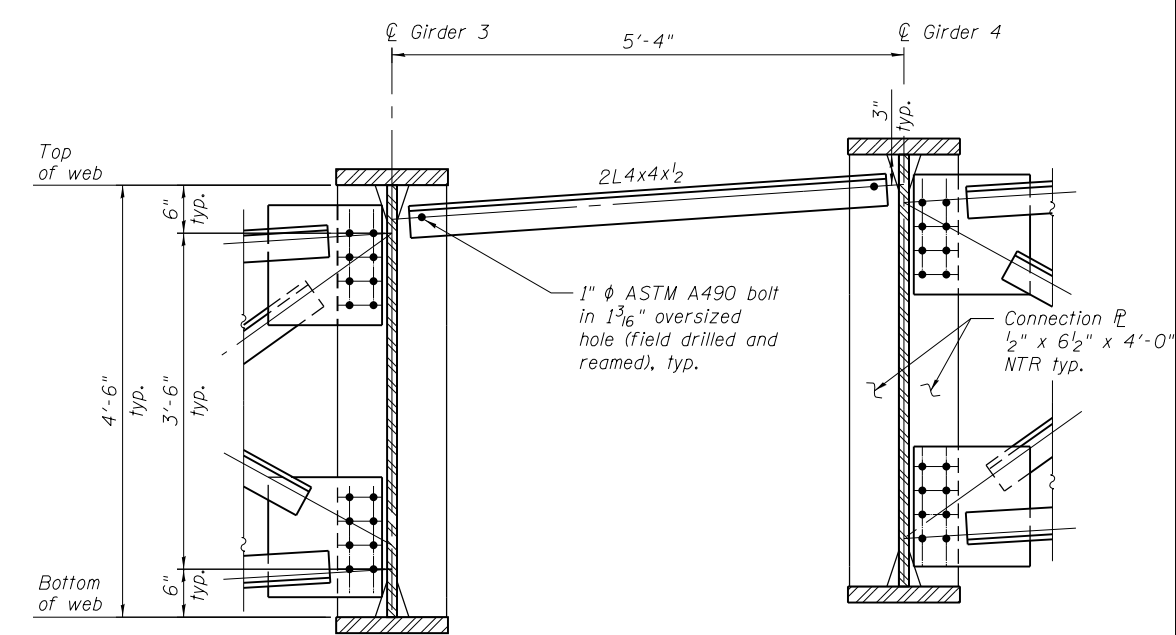
**DETAIL C**



**DETAIL D**

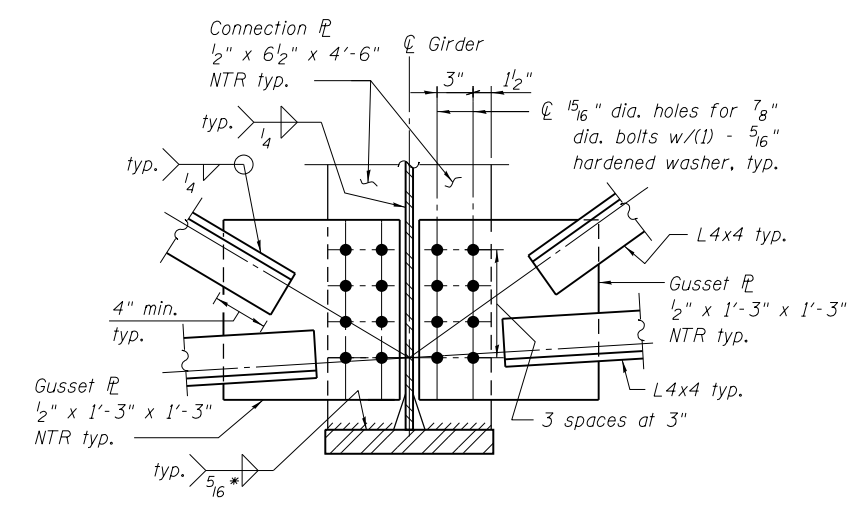


**DETAIL E**



**TEMPORARY BRACE FOR STAGE III DECK POUR**

**Notes:**  
 Cost of temporary brace included in pay item "Furnishing and Erecting Structural Steel".  
 All structural steel shall be AASHTO M270 Grade 50.  
 NTR indicates Notch Toughness Requirements.



**DETAIL 3  
(Top Connection similar)**

\* 1/4 on top flange except between Splice 1 & 2

**STAGE III DECK POUR AND CLOSURE POUR SEQUENCING**

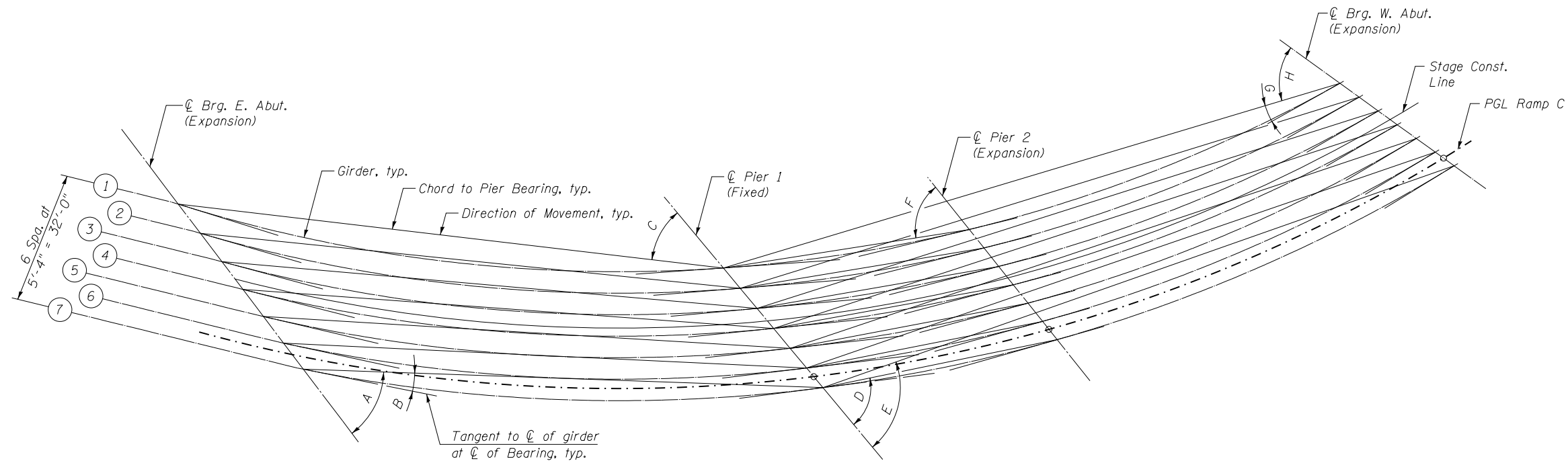
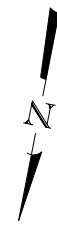
1. Erect girder lines 1 thru 3 with cross frames between girders 1-2 and 2-3. Abutment and Pier cross frames between girders 3 and 4 to be erected.
2. Erect temporary brace between girder lines 3 and 4 at each cross frame location by field drilling and reaming holes in connection plates.
3. Pour Stage III deck.
4. Install bottom cross frame angle by field drilling and reaming holes in connection plates.
5. Remove temporary brace.
6. Install top and diagonal angles of cross frames by field drilling and reaming.
7. Pour closure pour.

(Sheet 3 of 3)

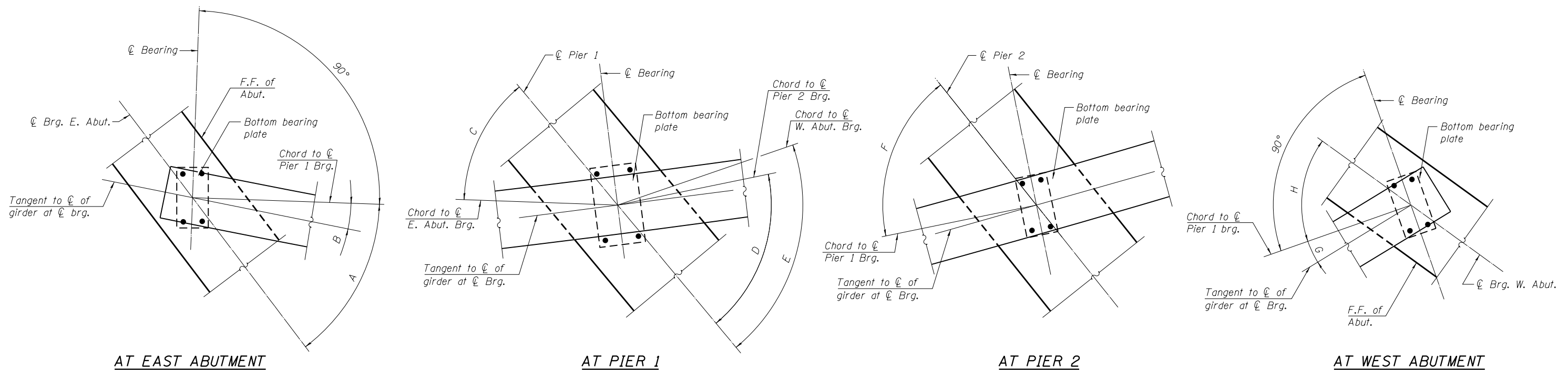
USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	220
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				





PLAN

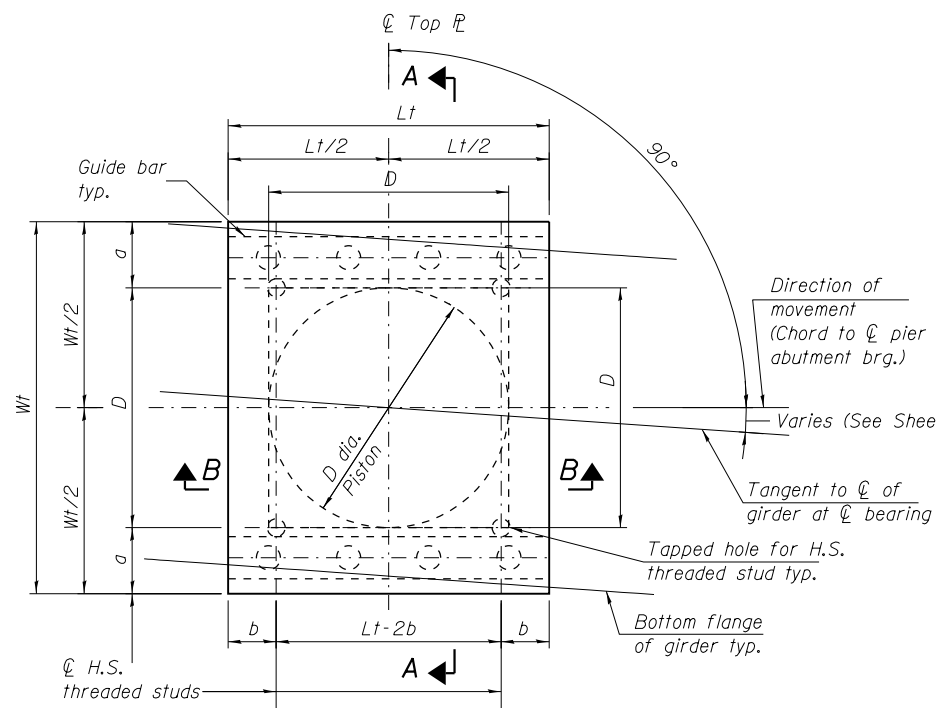


ENLARGED PARTIAL PLAN

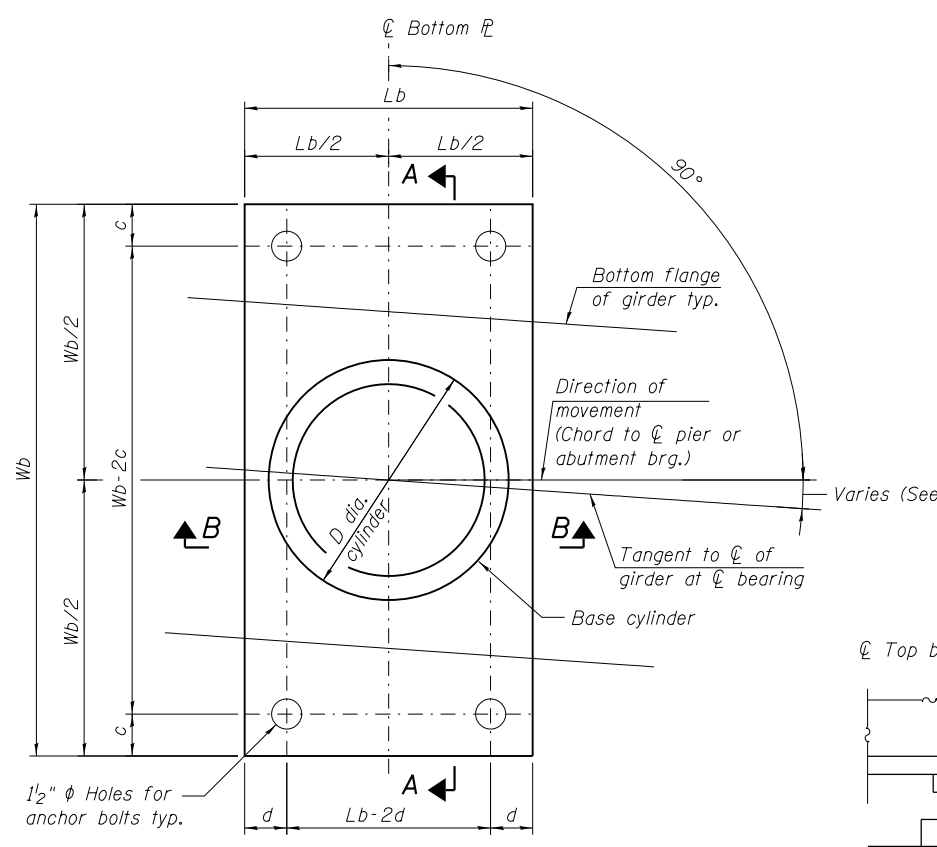
LAYOUT ANGLES

GIRDER	WEST ABUTMENT		PIER 1			PIER 2		EAST ABUTMENT	
	A	B	C	D	E	F	G	H	
1	46.17°	10.74°	43.55°	59.14°	66.92°	60.33°	12.63°	52.53°	
2	47.05°	10.46°	44.42°	59.63°	67.41°	60.82°	12.52°	53.02°	
3	47.88°	10.21°	45.24°	60.1°	67.88°	61.29°	12.42°	53.49°	
4	48.67°	9.97°	46.03°	60.55°	68.33°	61.74°	12.33°	53.94°	
5	49.42°	9.75°	46.79°	60.99°	68.77°	62.18°	12.24°	54.38°	
6	50.15°	9.54°	47.51°	61.42°	69.19°	62.6°	12.15°	54.81°	
7	50.84°	9.34°	48.2°	61.83°	69.61°	63.02°	12.06°	55.22°	

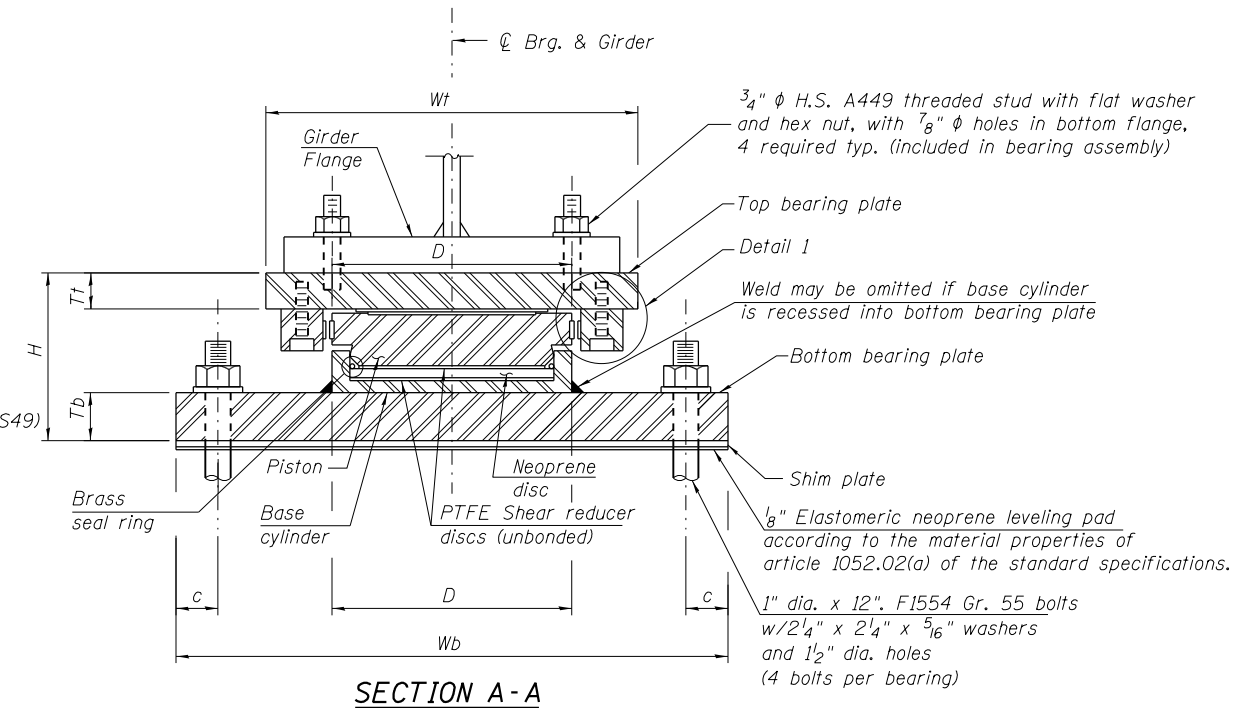
Notes:  
 For Bearing Details, see sheets S30 & S31 of S49.  
 Coordinate Anchor Bolt locations with Abutment and Pier Detail plans.



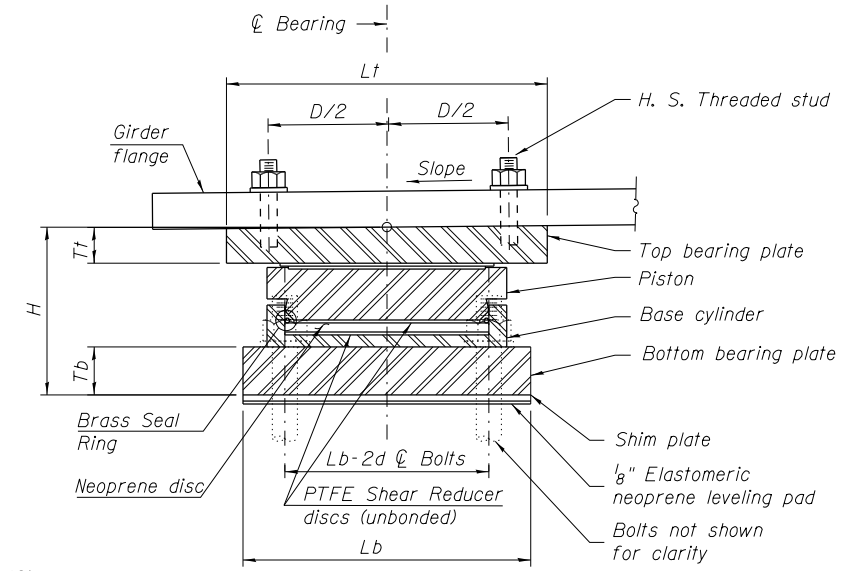
**TOP BEARING PLATE AND PISTON PLAN**



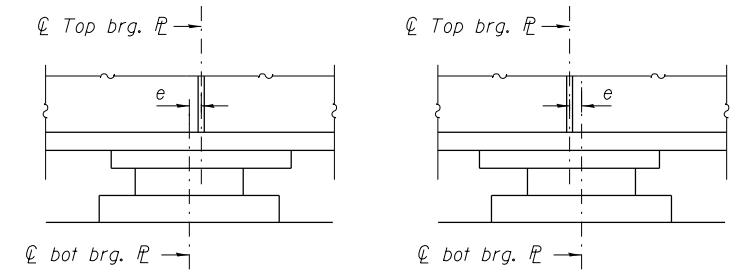
**BOTTOM BEARING PLATE AND BASE CYLINDER PLAN**



**SECTION A-A**



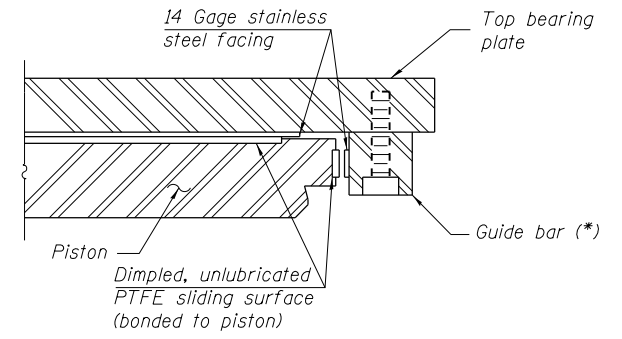
**SECTION B-B**  
(E. Abut. Looking South)  
(Pier 2 & W. Abut. Similar)



**BELOW 50°F** (Move bott. brg away from fixed brg.)  
**ABOVE 50°F** (Move bott. brg toward fixed brg.)

**SETTING ANCHOR BOLTS AT EXPANSION BEARINGS**

NOTE: e=1/8" per each 100' of expansion for every 15° temperature change from the normal temperature of 50°F.



**DETAIL 1**

(\*) As alternates to the bolted connection shown, The guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece.

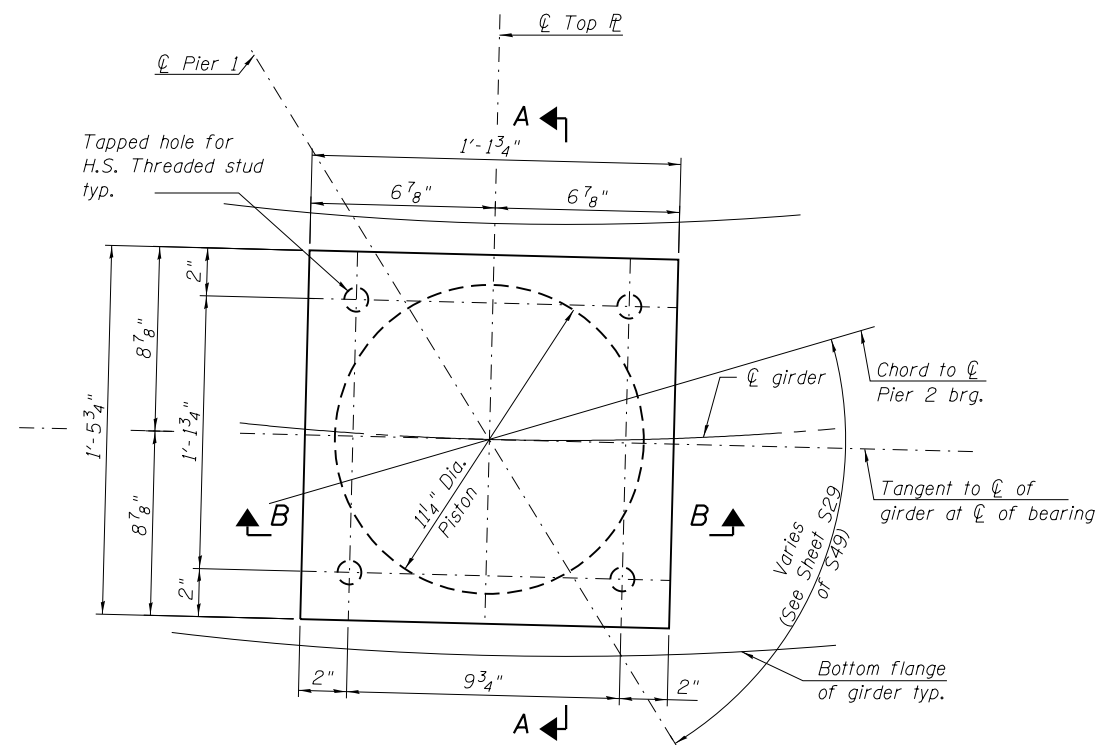
**Notes:**  
All steel for bearings shall conform to the requirements of AASHTO M270 Grade 50, unless otherwise noted.  
Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.  
Anchor bolts shall be ASTM F1554 all threads (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
PTFE and stainless steel materials shall conform to AASHTO requirements and the Special Provisions for High Load Multi-Rotational Bearings.  
Total bearing height (H) is estimated based on manufacturer data. Actual bearing height may differ from contract plans. The Contractor shall be responsible for verifying bearing heights and adjusting seat elevations, if required, prior to placing pier or abutment concrete. Modifications to the Wt dimension for bearings at abutments shall take into account the location of the backwall and required expansion length if exceeding the end of the girder.  
All (embedded and separate) bearing plates, side retainers, anchor bolts, nuts, washers and pintles shall be galvanized according to AASHTO M111 or M232 as applicable.  
H.S. bolts in bearing assembly shall be galvanized according to AASHTO M298 Class 50.  
See Sheet S31 of S49 for Bearing Schedule.

**BILL OF MATERIAL**

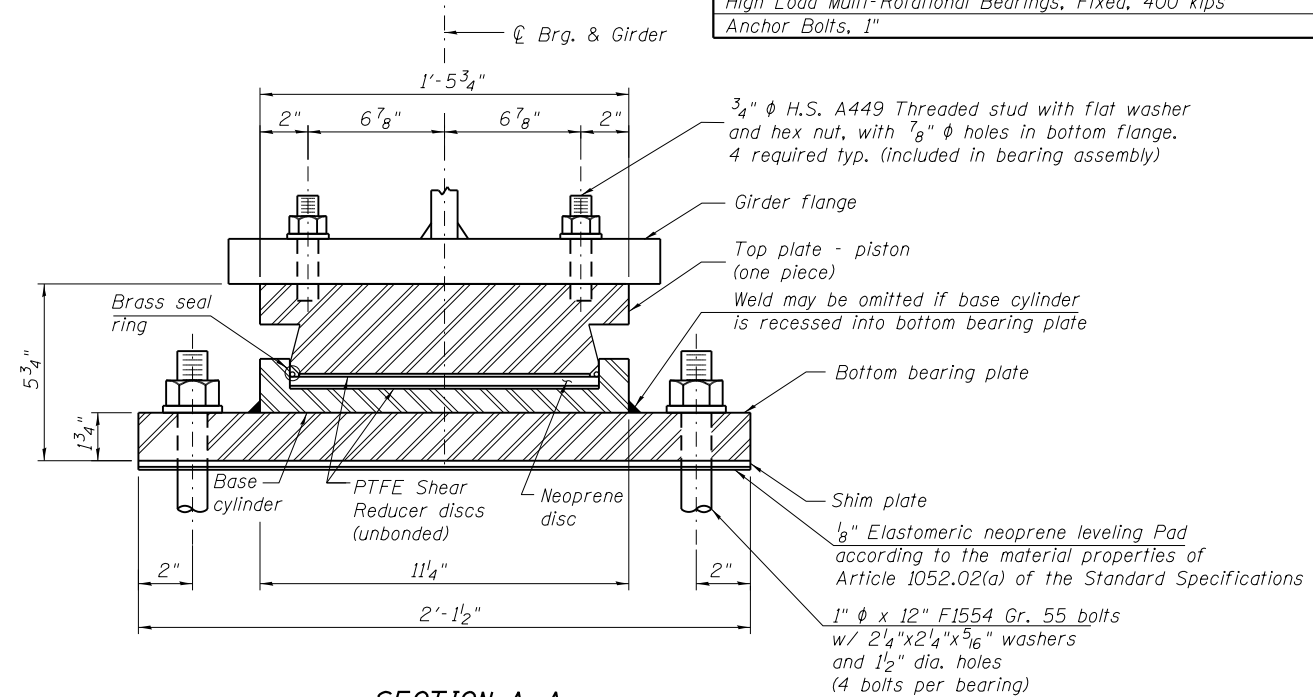
Item	Unit	Total
High Load Multi-Rotational Bearings, Guided Expansion, 150 kips	Each	7
High Load Multi-Rotational Bearings, Guided Expansion, 250 kips	Each	14
Anchor Bolts, 1"	Each	84

**BILL OF MATERIAL**

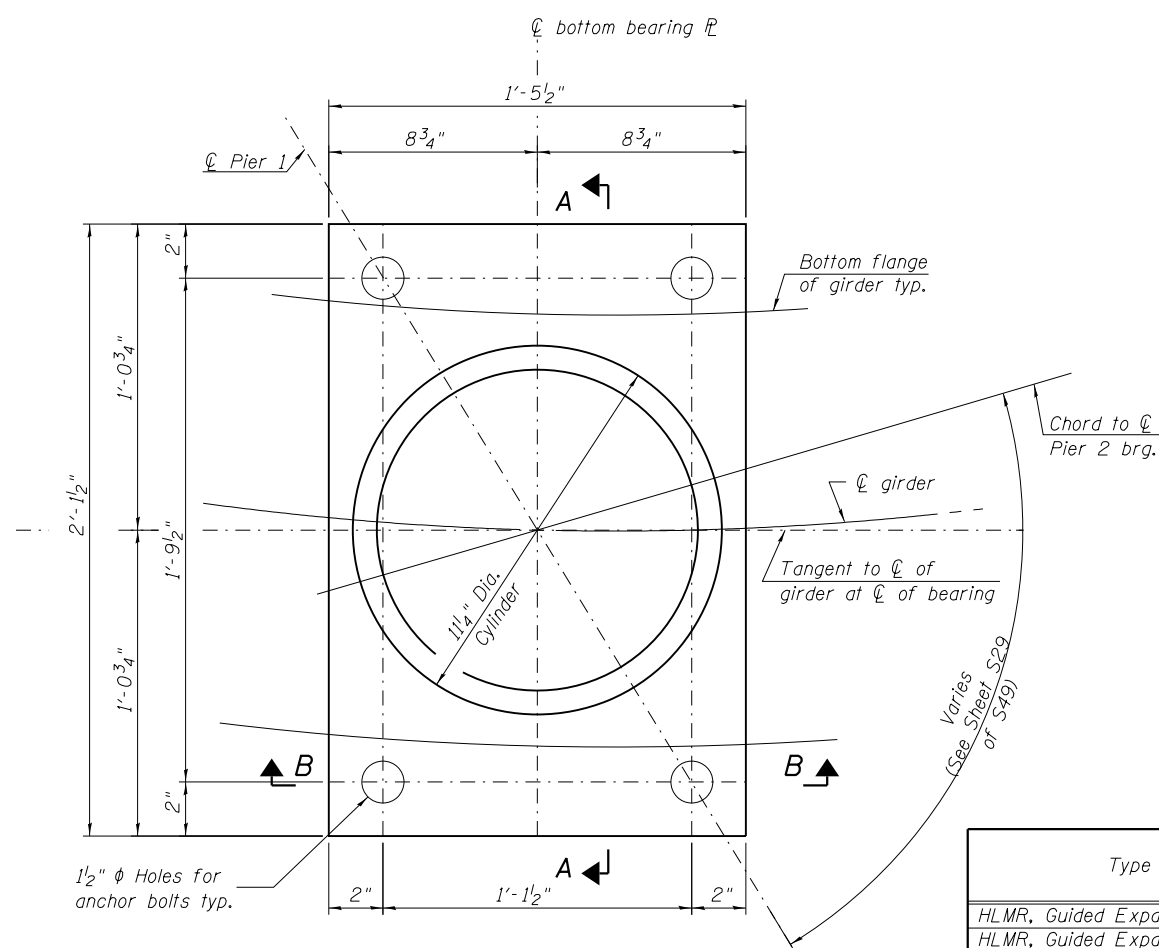
Item	Unit	Total
High Load Multi-Rotational Bearings, Fixed, 400 kips	Each	7
Anchor Bolts, 1"	Each	28



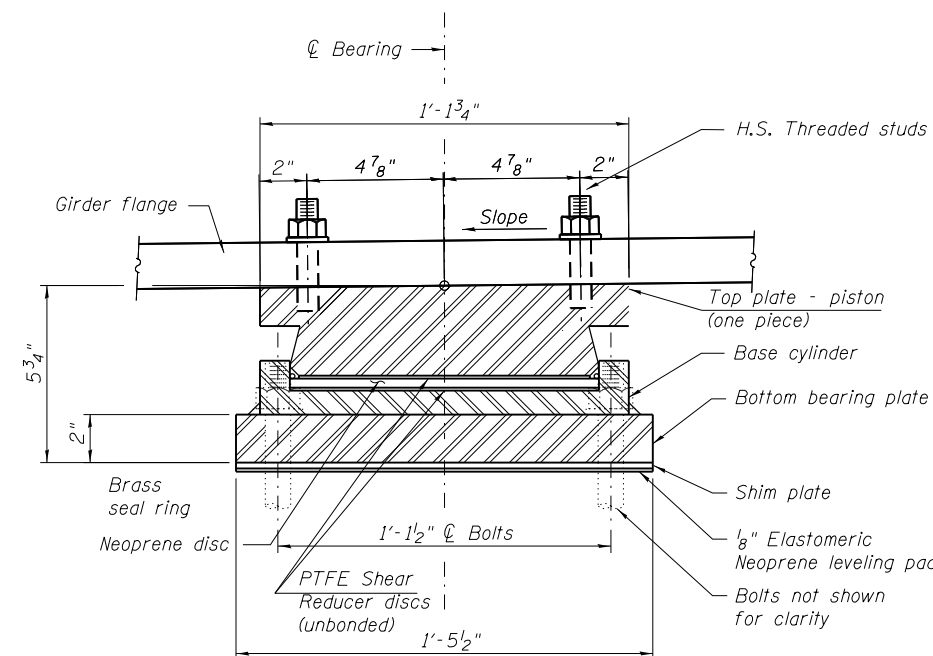
**TOP BEARING PLATE AND PISTON PLAN**



**SECTION A-A**



**BOTTOM BEARING PLATE AND BASE CYLINDER PLAN**



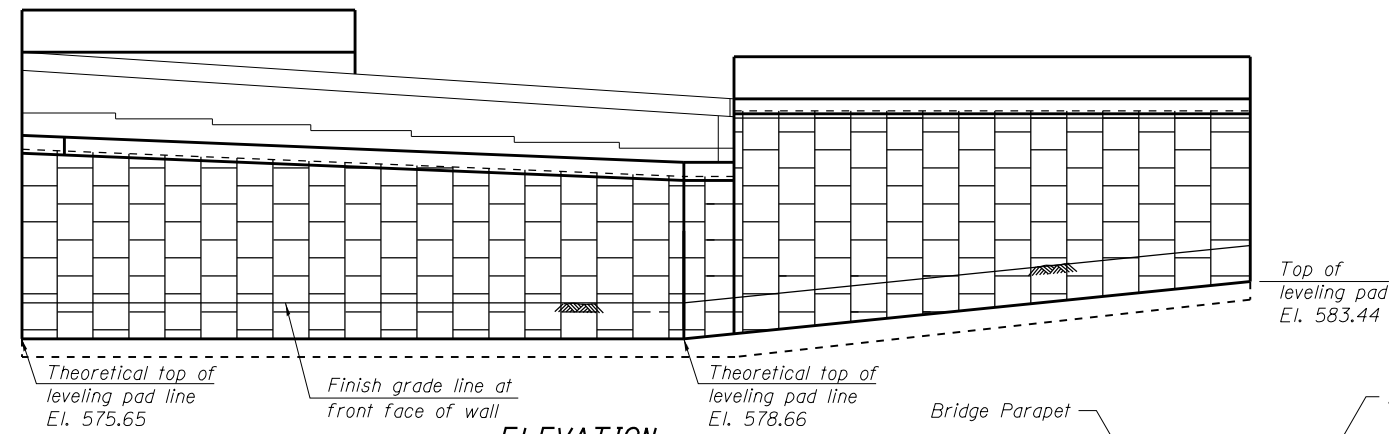
**SECTION B-B  
(Pier 1, Looking South)**

**BEARING SCHEDULE**

Type	Location	Vertical Design Load (kips)	Lateral Design Load (kips)	Maximum Factored Ultimate Design Rotation (radians)	Girders	Total Required Movement (in)	D	Lt	a	Wt	b	Lb	c	Wb	d	H	Tt	Tb
HLMR, Guided Expansion, 150K	W. Abut.	142	28	0.02	1-7	0.87	7 1/2"	1'-1 1/2"	2"	1'-3"	2"	1'-0"	2"	1'-11"	2"	5"	1 1/2"	1 3/4"
HLMR, Guided Expansion, 250K	E. Abut.	202	40	0.02	1-7	0.40	9 1/2"	1'-1 1/2"	2"	1'-3"	2"	1'-0"	2"	1'-11"	2"	5 1/2"	1 1/2"	2"
HLMR, Guided Expansion, 250K	Pier 2	226	45	0.02	1-7	0.62	9 1/2"	1'-1 1/2"	2"	1'-3"	2"	1'-0"	2"	1'-11"	2"	5 1/2"	1 1/2"	2"
HLMR, Fixed, 400K	Pier 1	339	68	0.02	1-7	0.00	-	-	-	-	-	-	-	-	-	-	-	-

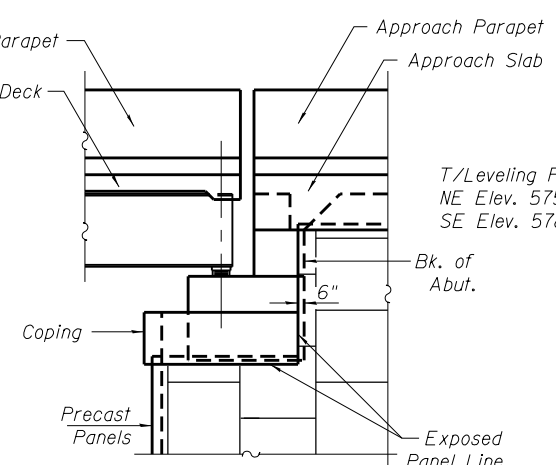
For Notes, See Sheet S30 of S49.



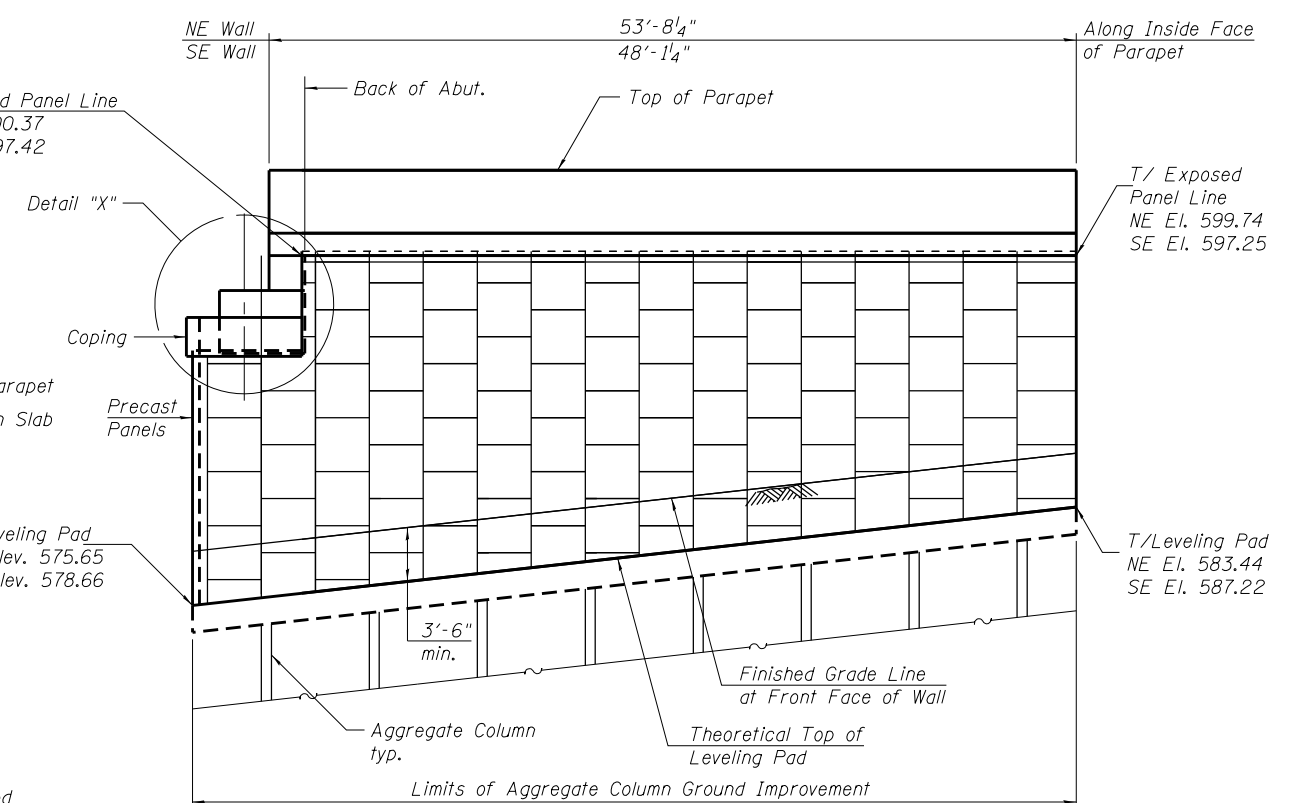


**ELEVATION**  
(Looking East)

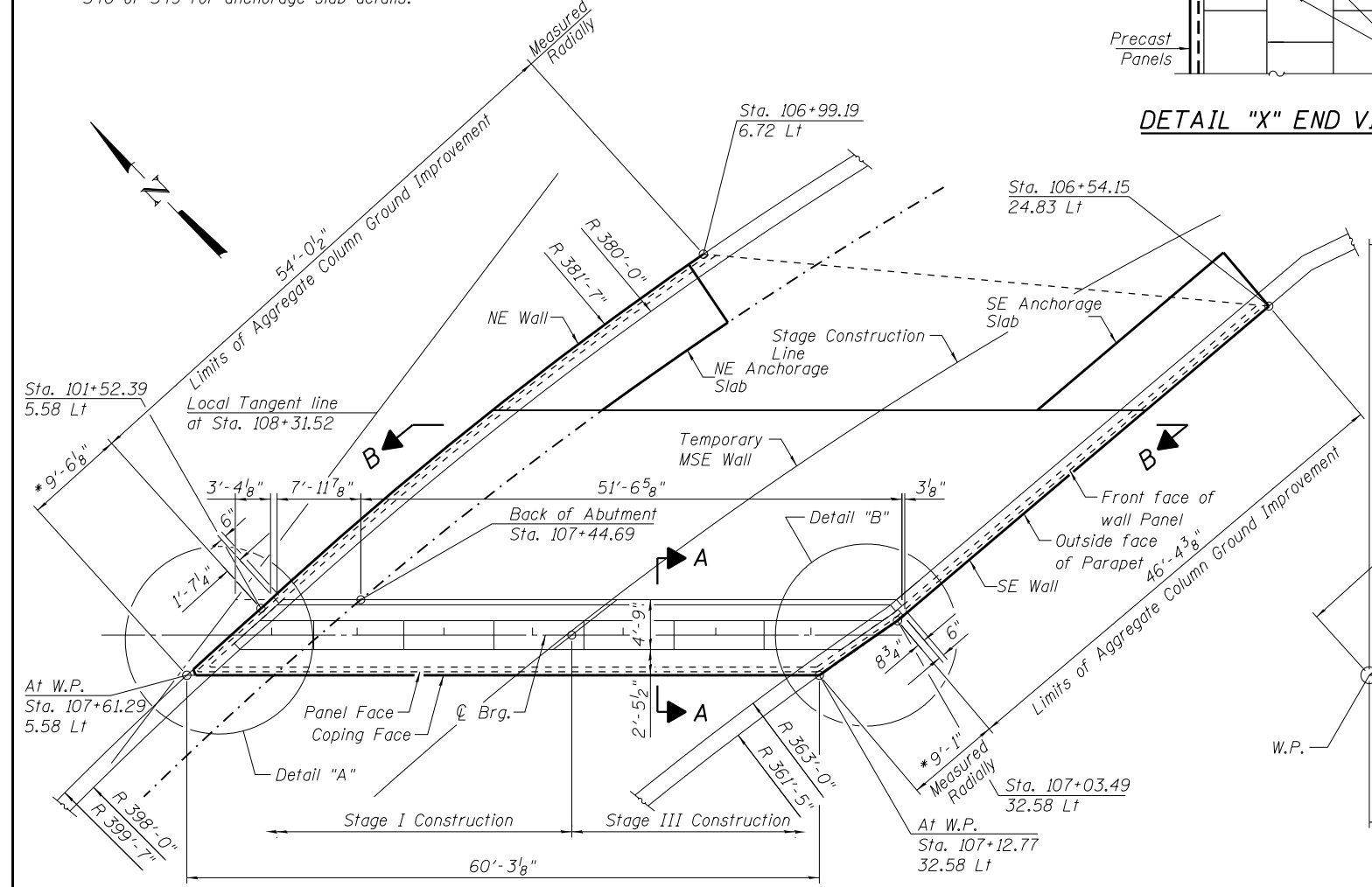
The M.S.E. wall supplier's internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0ksf and horizontal sliding force of 0.5 kips/ft. of wall. See sheet S40 of S49 for anchorage slab details.



**DETAIL "X" END VIEW**



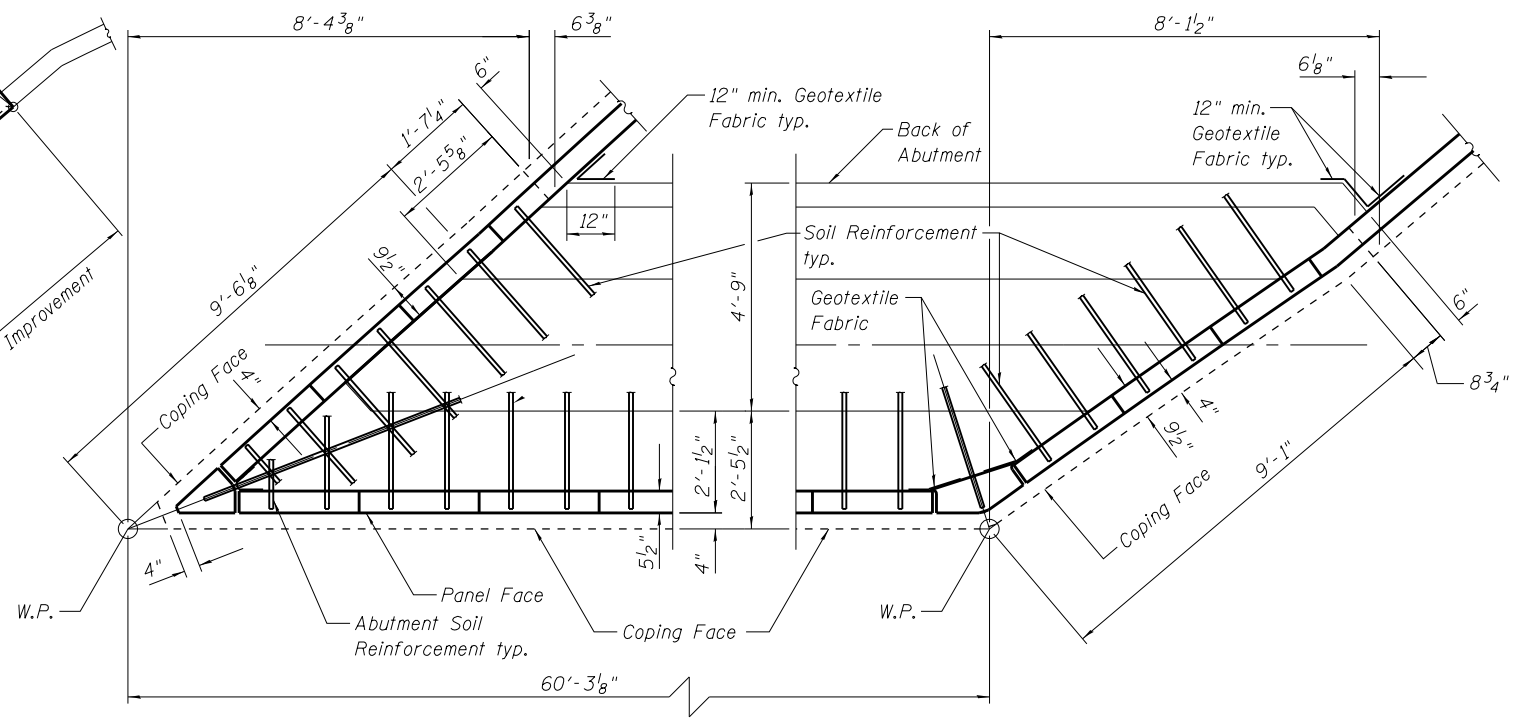
**EAST ABUTMENT M.S.E. ELEVATION**



**PLAN**

\*Included in Limits of Aggregate Column Ground Improvement

Temporary MSE wall required for Stage Construction shall remain in place.



**DETAIL "A"**

**DETAIL "B"**

The MSE supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.8 kips/ft of abutment.

Note:  
For sections A-A & B-B see sheet S34 of S49.

**COLLINS ENGINEERS**  
133 N. Rocker Dr.  
Suite 900  
Chicago, IL 60646  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinseng.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

USER NAME =	DESIGNED - MAH	REVISIONS
PLLOT SCALE =	CHECKED - LDB	REVISIONS
PLLOT DATE =	DRAWN - DR	REVISIONS
	CHECKED - JMH	REVISIONS

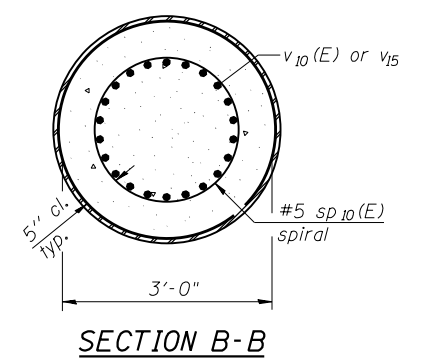
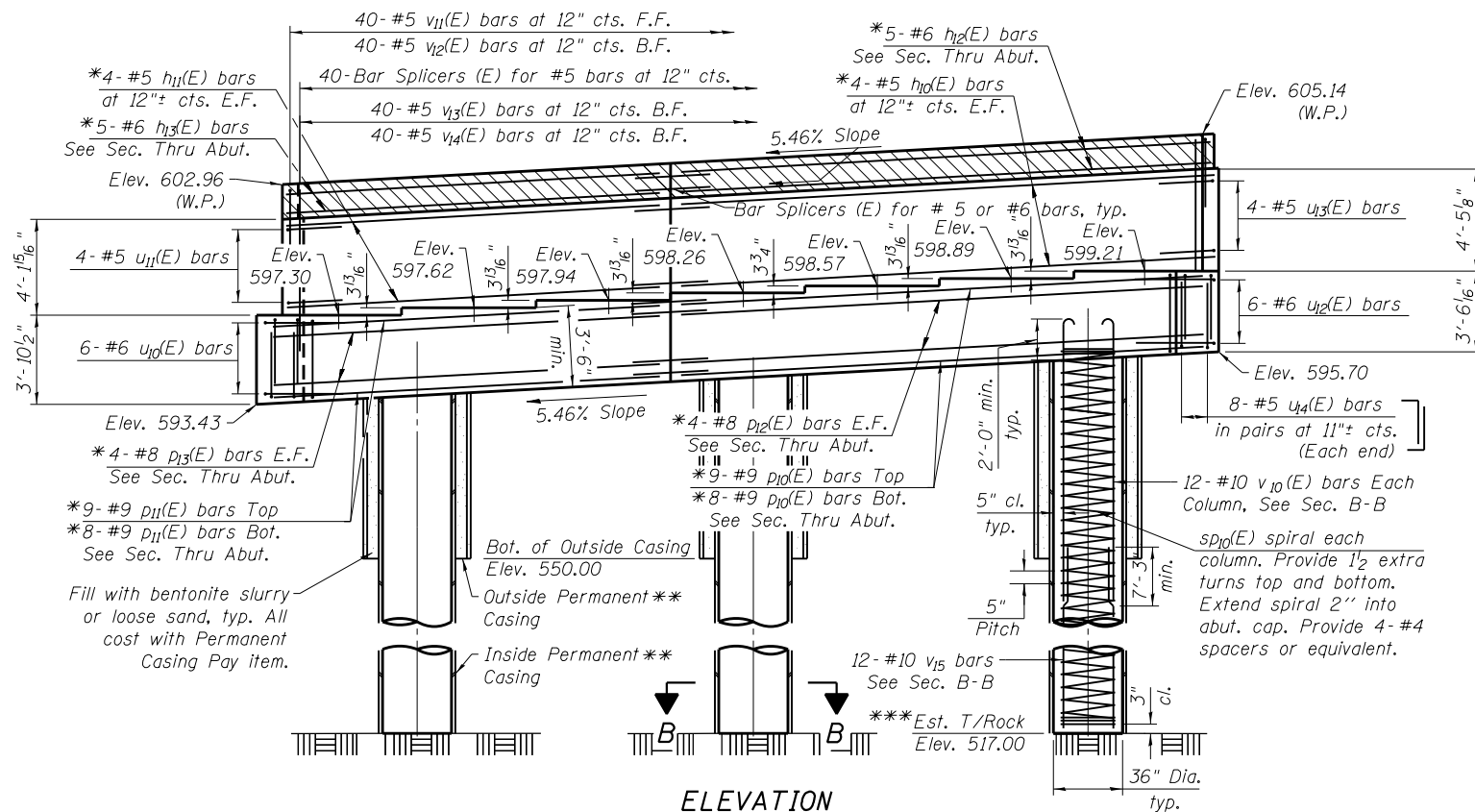
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**EAST ABUTMENT MSE WALL DETAILS**  
**STRUCTURE NO. 016-1322**

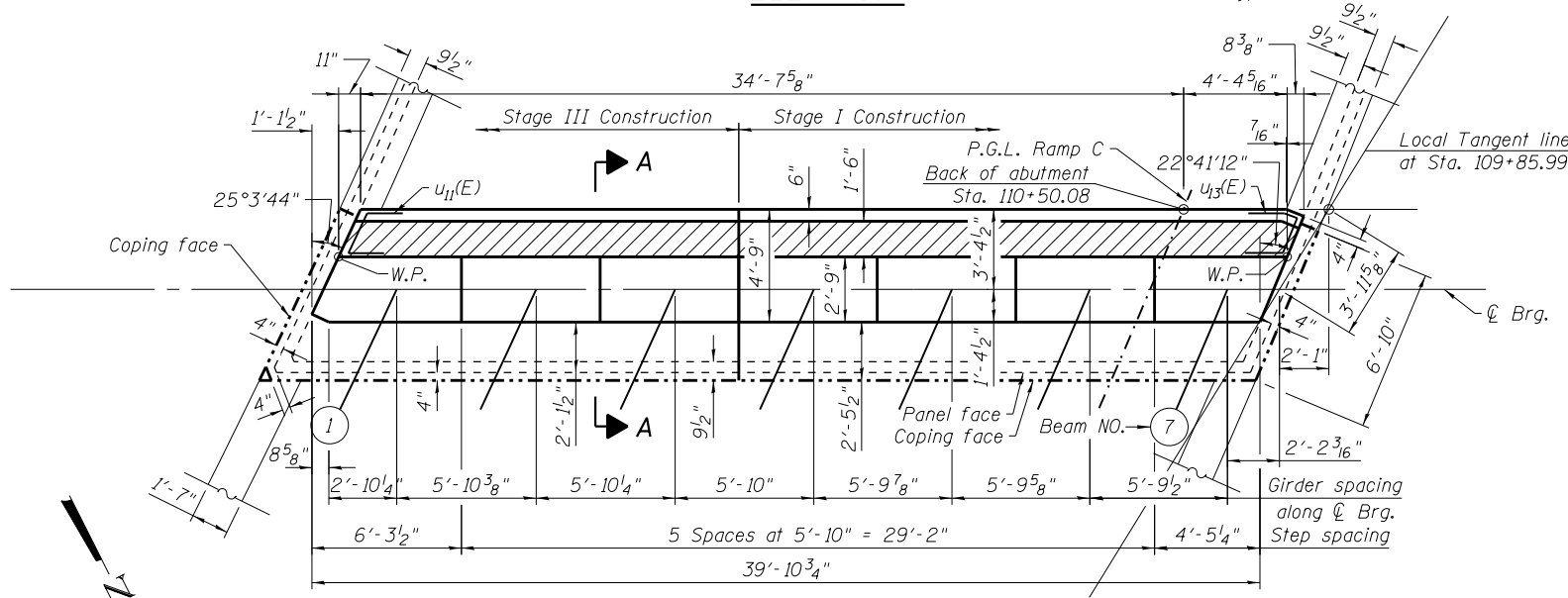
SHEET NO. S33 OF S49 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	225
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				





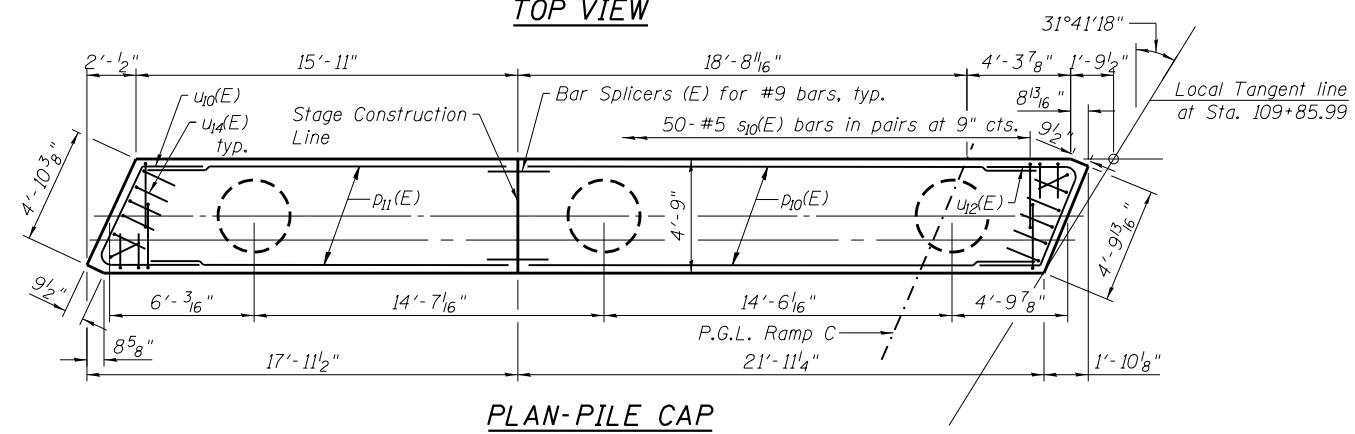
- \* Cut h(E) and p(E) bars to fit into bar splicers.
- \*\* The casing thickness shall be 1/2\"/>



**MINIMUM BAR LAP**  
(Abutment)

(E) bars	Other bars
#5 bar = 3'-3"	#10 bar = 7'-3"
#6 bar = 3'-10"	
#7 bar = 5'-2"	
#8 bar = 6'-9"	
Min. Lap for Spirals = 2'-6"	

Notes:  
 For Anchor Bolt and Bearing Plate locations, see sheets S29 thru S31 of S49.  
 For Section A-A and Section Thru Abutment, see sheet S36 of S49.  
 See sheet S43 of S49 for Bar Splicer Details.  
 Concrete sealer to be applied to front face, ends, and bearing seats of abutment cap and front face of backwall.



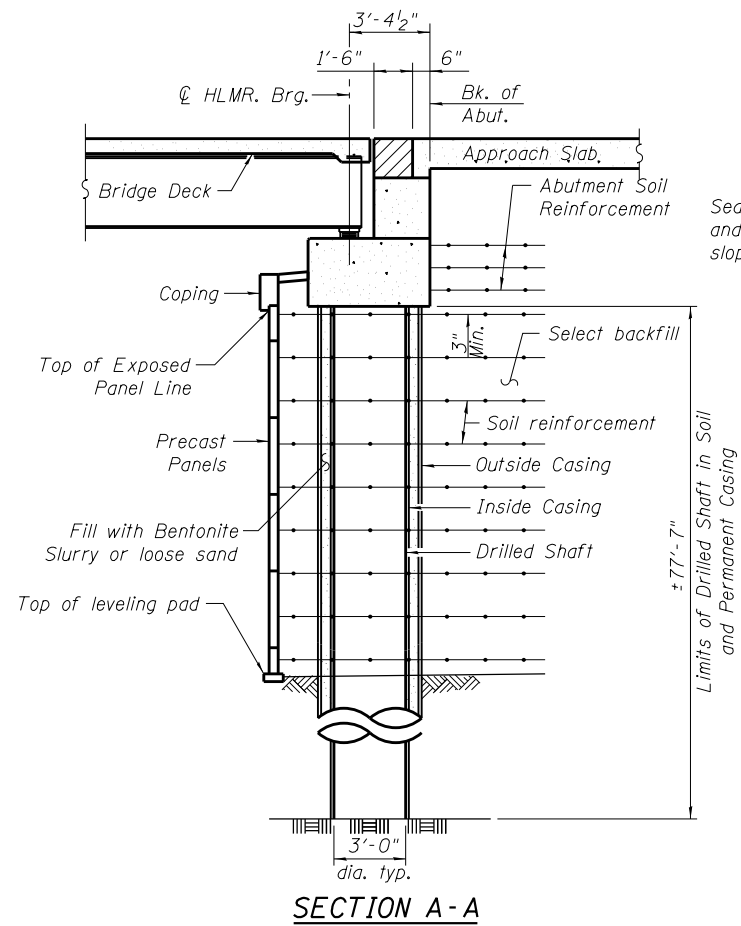
USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	227
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

**WEST ABUTMENT  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
$h_{10}(E)$	8	#5	23'-3"	—
$h_{11}(E)$	8	#5	17'-5"	—
$h_{12}(E)$	5	#6	23'-3"	—
$h_{13}(E)$	5	#6	17'-5"	—
$p_{10}(E)$	17	#9	23'-3"	—
$p_{11}(E)$	17	#9	17'-5"	—
$p_{12}(E)$	8	#9	23'-3"	—
$p_{13}(E)$	8	#9	17'-5"	—
$s_{10}(E)$	100	#5	12'-3"	□
* $sp_{10}(E)$	3	#5	78'-9"	⋈
$u_{10}(E)$	6	#6	12'-8"	⋈
$u_{11}(E)$	4	#5	5'-11"	⋈
$u_{12}(E)$	6	#6	11'-11"	⋈
$u_{13}(E)$	4	#5	5'-10"	⋈
$u_{14}(E)$	32	#5	4'-6"	⋈
$v_{10}(E)$	36	#10	45'-9"	⋈
$v_{11}(E)$	40	#5	2'-6"	—
$v_{12}(E)$	40	#5	3'-4"	—
$v_{13}(E)$	40	#5	7'-9"	—
$v_{14}(E)$	40	#5	9'-3"	—
$v_{15}$	36	#10	44'-0"	—
Concrete Structures		Cu. Yd.	42.9	
Reinforcement Bars		Pound	6,820	
Reinforcement Bars, Epoxy Coated		Pound	17,740	
Permanent Casing		Foot	367	
Drilled Shaft in Soil		Cu. Yd.	61.0	
Concrete Sealer		Sq. Ft.	481	
Locate Tunnel		L. Sum	1	
Bulkhead Tunnel		L. Sum	1	

\* Length is height of spiral.



**SECTION A-A**

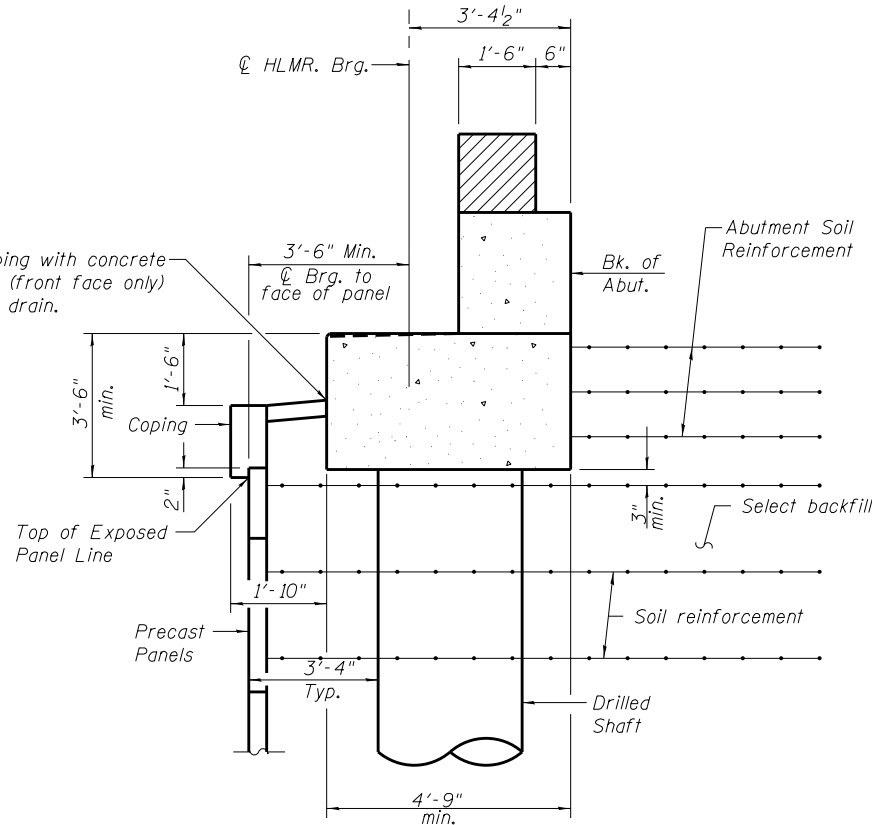
Note:

Existing 8'  $\phi$  tunnel is located near West Abutment. Contractor shall field locate the tunnel within a 20' radius of the proposed caissons. If the tunnel is found, the tunnel shall be bulkheaded. Cost of locating tunnel paid for as Locate Tunnel. If tunnel bulkheading is required, cost of bulkheading paid for as Bulkhead Tunnel. See Special Provisions and Existing Tunnel Bulkhead Notes and Details sheets.

**SUGGESTED CONSTRUCTION SEQUENCE**

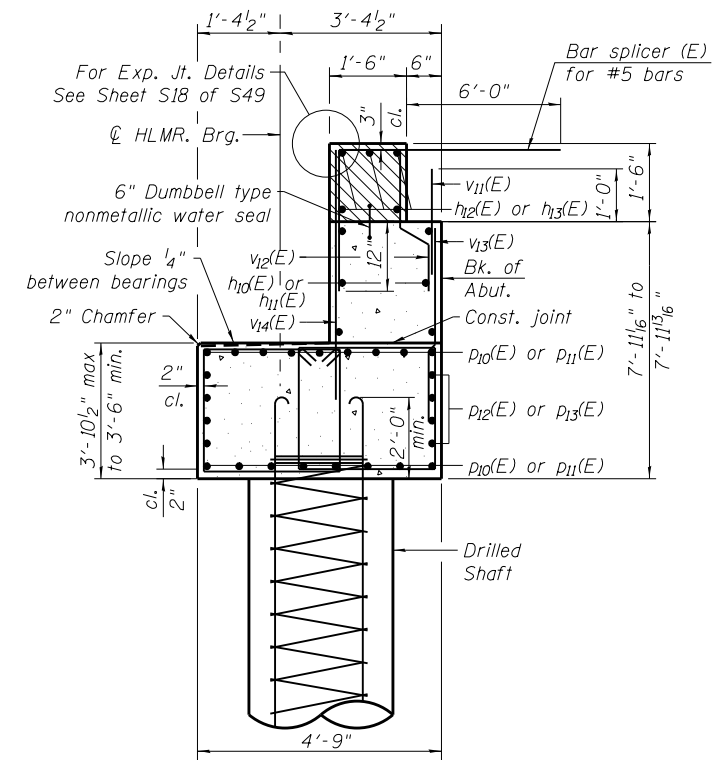
1. Install Permant Casing for Drilled Shafts.
2. Install MSE Wall. See SN 016-1323 Plans for MSE wall details.
3. Pour Concrete for Drilled Shafts.

Seal coping with concrete and PJF (front face only) slope to drain.



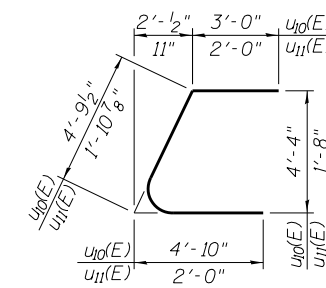
**SECTION THRU ABUTMENT**

Showing soil reinforcement and coping with precast panels. Casing not shown for clarity.

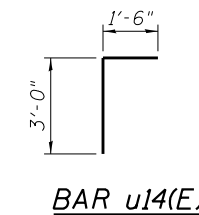


**SECTION THRU ABUTMENT**

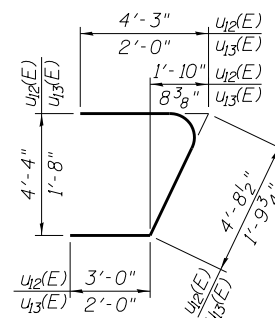
Soil reinforcement and coping are not shown see other "Section Thru Abutment" for details. Casing shown in Section A-A.



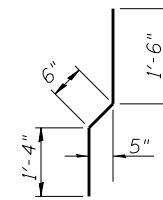
**BARS  $u_{10}(E)$  &  $u_{11}(E)$**



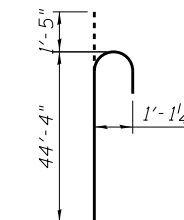
**BAR  $u_{14}(E)$**



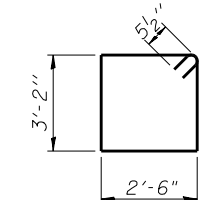
**BARS  $u_{12}(E)$  &  $u_{13}(E)$**



**BAR  $v_{12}(E)$**



**BAR  $v_{10}(E)$**



**BAR  $s_{10}(E)$**

Notes:

Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure on sheet S14 of S49.

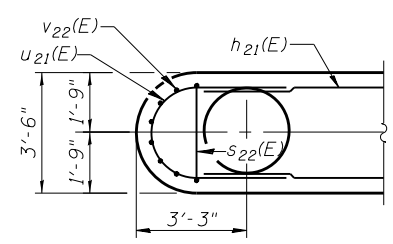
Space reinforcement in cap to miss anchor bolts.

Pour steps monolithically with cap. For details of Bar Splicers, see sheet S43 of S49.

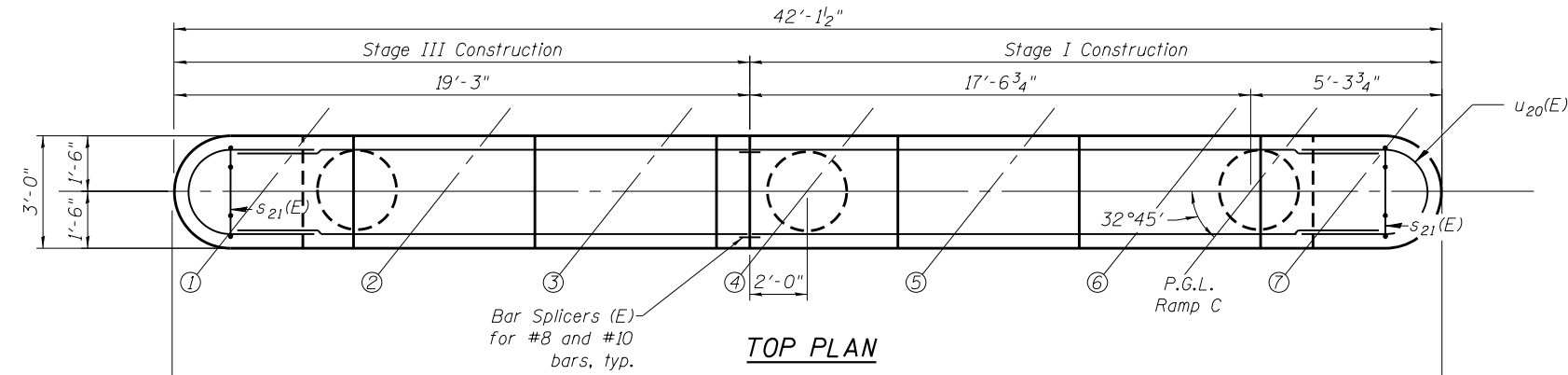
Quantity of embankment fill is included with roadway quantities.

Min. lap for spirals = 2'-6".

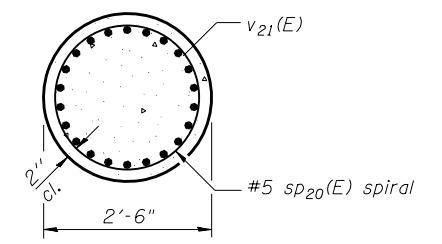




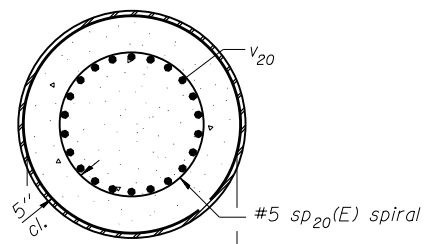
SECTION D-D



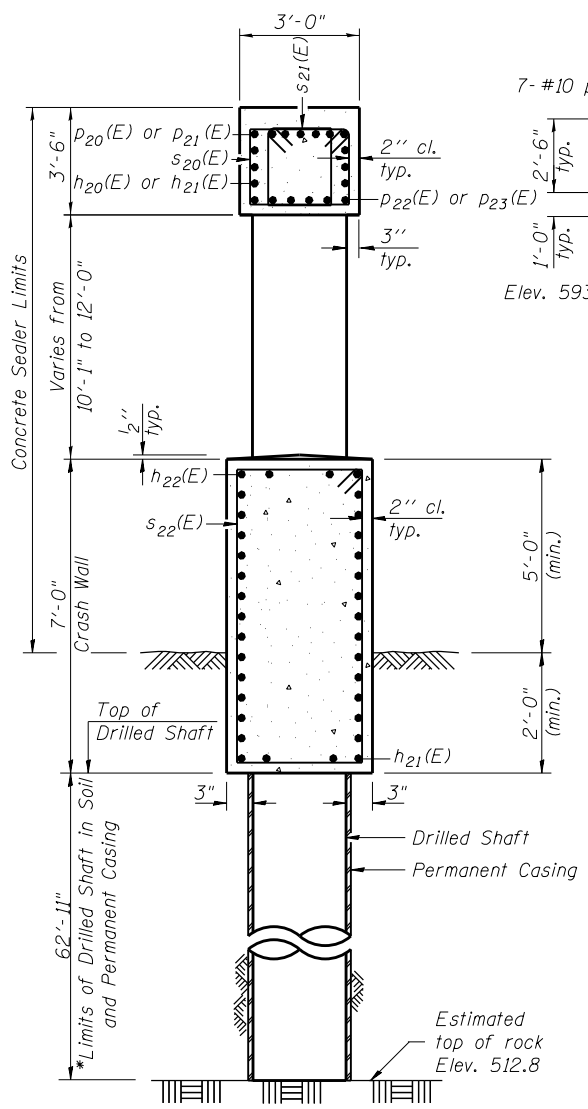
TOP PLAN



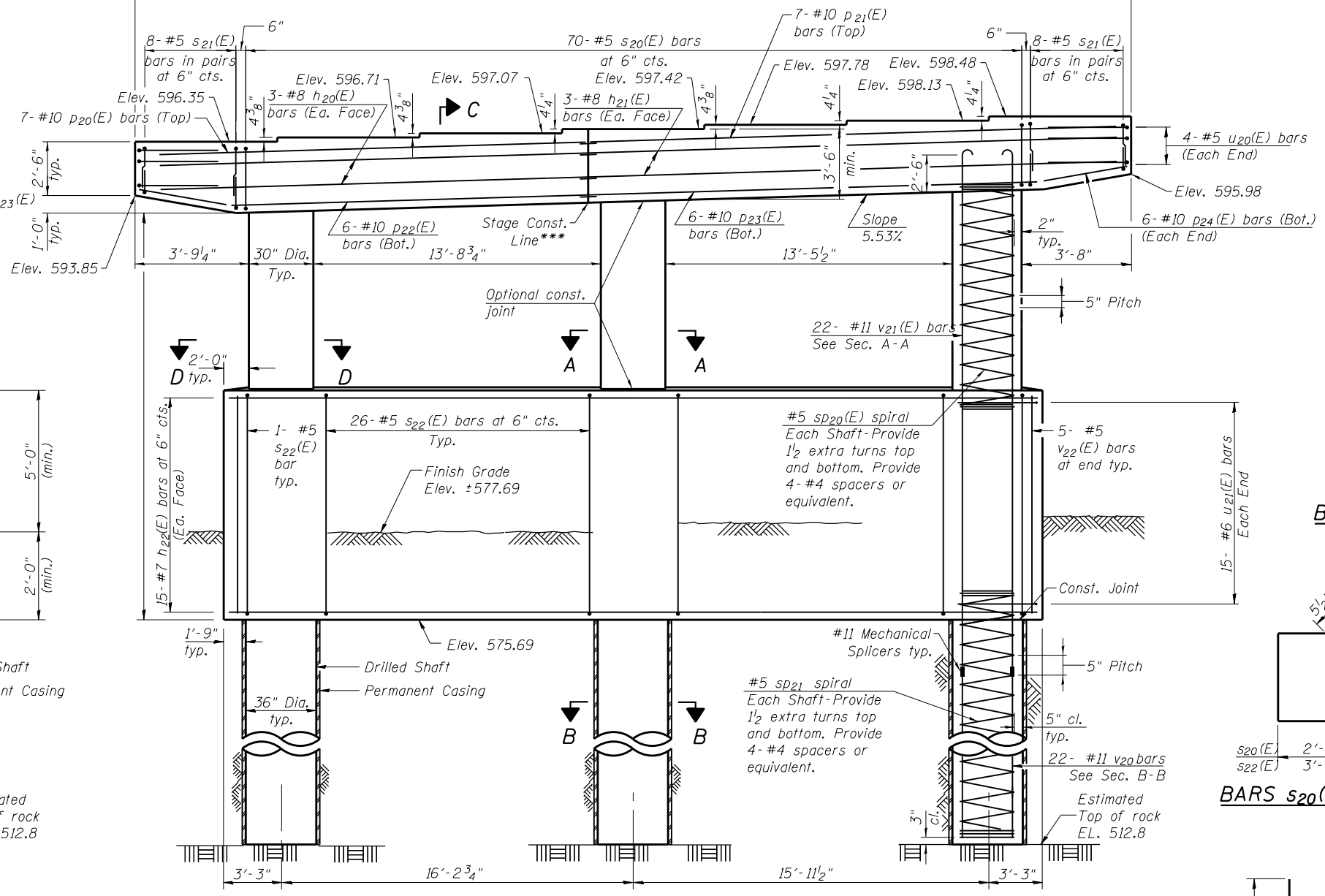
SECTION A-A



SECTION B-B



SECTION C-C



ELEVATION  
(Looking West)

BAR v21(E)

BARS s20(E) & s22(E)

BAR s21(E)

BARS u20(E) and u21(E)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h20(E)	6	#8	18'-9"	—
h21(E)	6	#8	22'-4"	—
h22(E)	30	#7	38'-2"	—
p20(E)	7	#10	18'-9"	—
p21(E)	7	#10	22'-4"	—
p22(E)	6	#10	15'-3"	—
p23(E)	6	#10	18'-10"	—
p24(E)	12	#10	2'-9"	—
s20(E)	70	#5	12'-7"	□
s21(E)	32	#5	7'-0"	U
s22(E)	54	#5	20'-7"	□
sp20(E)	3	#5	13'-3"	W
sp21	3	#5	63'-6"	W
u20(E)	8	#5	11'-0"	U
u21(E)	30	#6	11'-10"	U
v20	66	#11	44'-0"	—
v21(E)	66	#11	41'-3"	C
v22(E)	10	#5	6'-8"	—
Concrete Sealer	Sq. Ft.		433	
Concrete Structures	Cu. Yd.		58.6	
Reinforcement Bars	Pound		18,680	
Reinforcement Bars, Epoxy Coated	Pound		23,430	
Drilled Shaft in Soil	Cu. Yd.		49.4	
Permanent Casing	Foot		189	

\*\* Length is height of spiral.

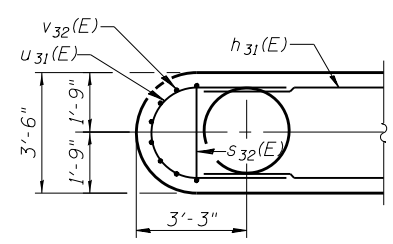
Notes:  
 Cast steps monolithically with cap.  
 Space cap reinforcement to miss anchor bolts.  
 Minimum lap for spirals = 2'-6"  
 Concrete Sealer applied to roadside face of Pier only.  
 For Anchor Bolt and Bearing Plate locations, see sheets S29 thru S49.  
 See sheet S43 of S49 for Bar Splicer Details.

MINIMUM BAR LAP

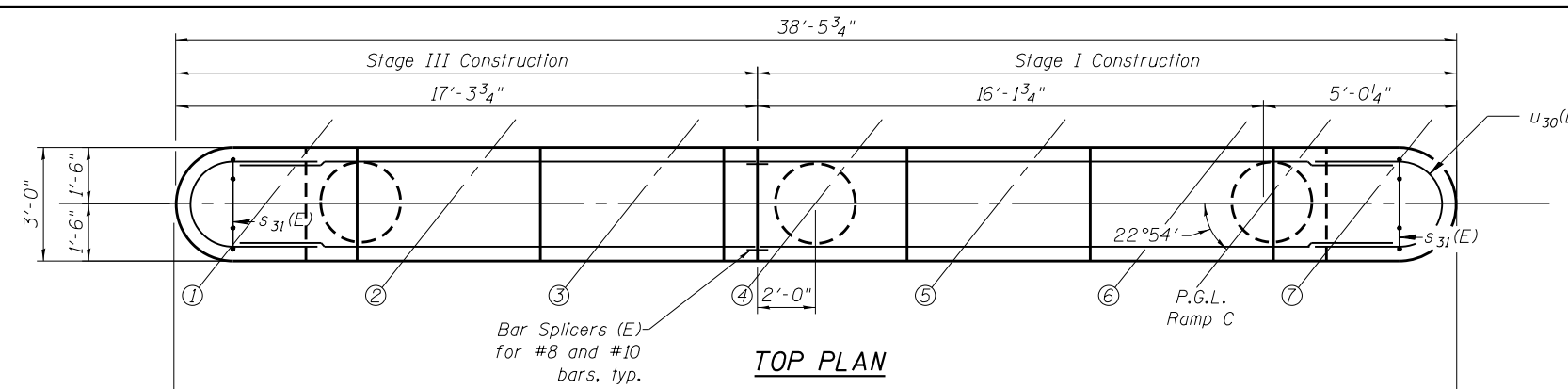
- (E) bars
- #5 bar = 3'-3"
- #6 bar = 3'-10"
- #8 bar = 6'-9"
- #10 bar = 10'-10"

\*\*\* South portion of pier cap only to be completed following existing structure removal

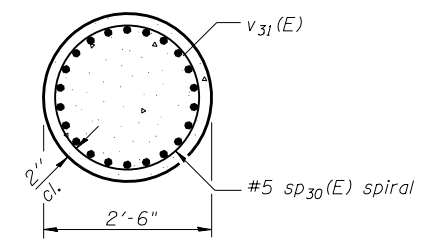
\* The quantities and reinforcement detailing are based on the top of shaft and the estimated top of rock elevations shown and may change based on the actual top of rock encountered at each shaft and the final top of shaft elevation. The casing thickness shall be 1/2", typ. See Article S16.06(d) of the Standard Specifications. Pay limits for the Permanent Casing are based on the minimum length shown.



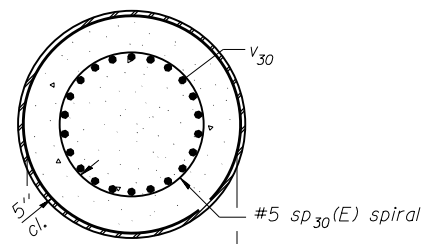
SECTION D-D



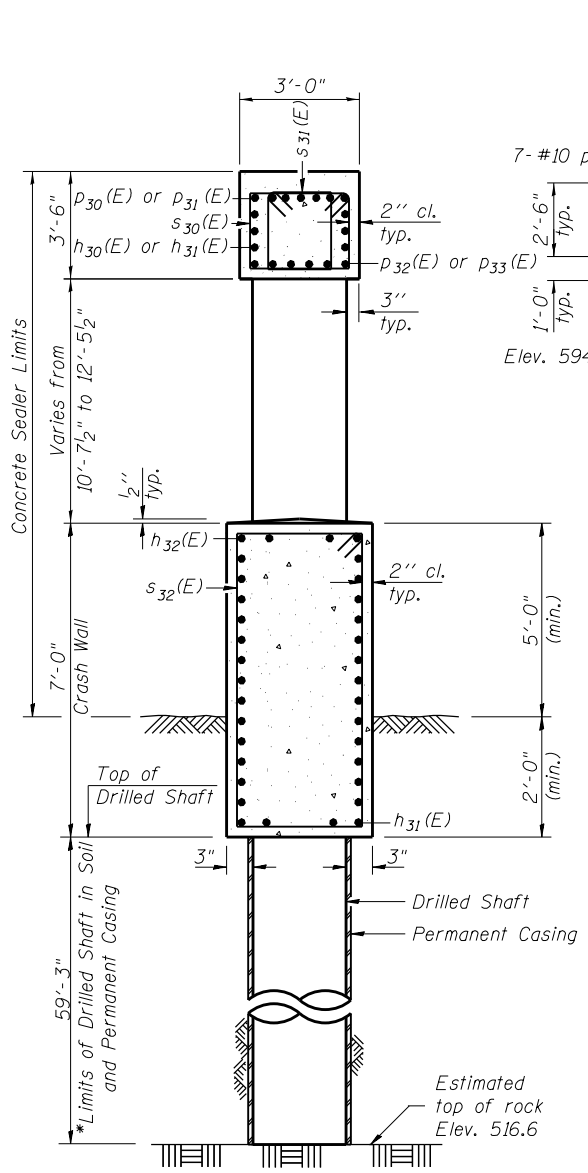
TOP PLAN



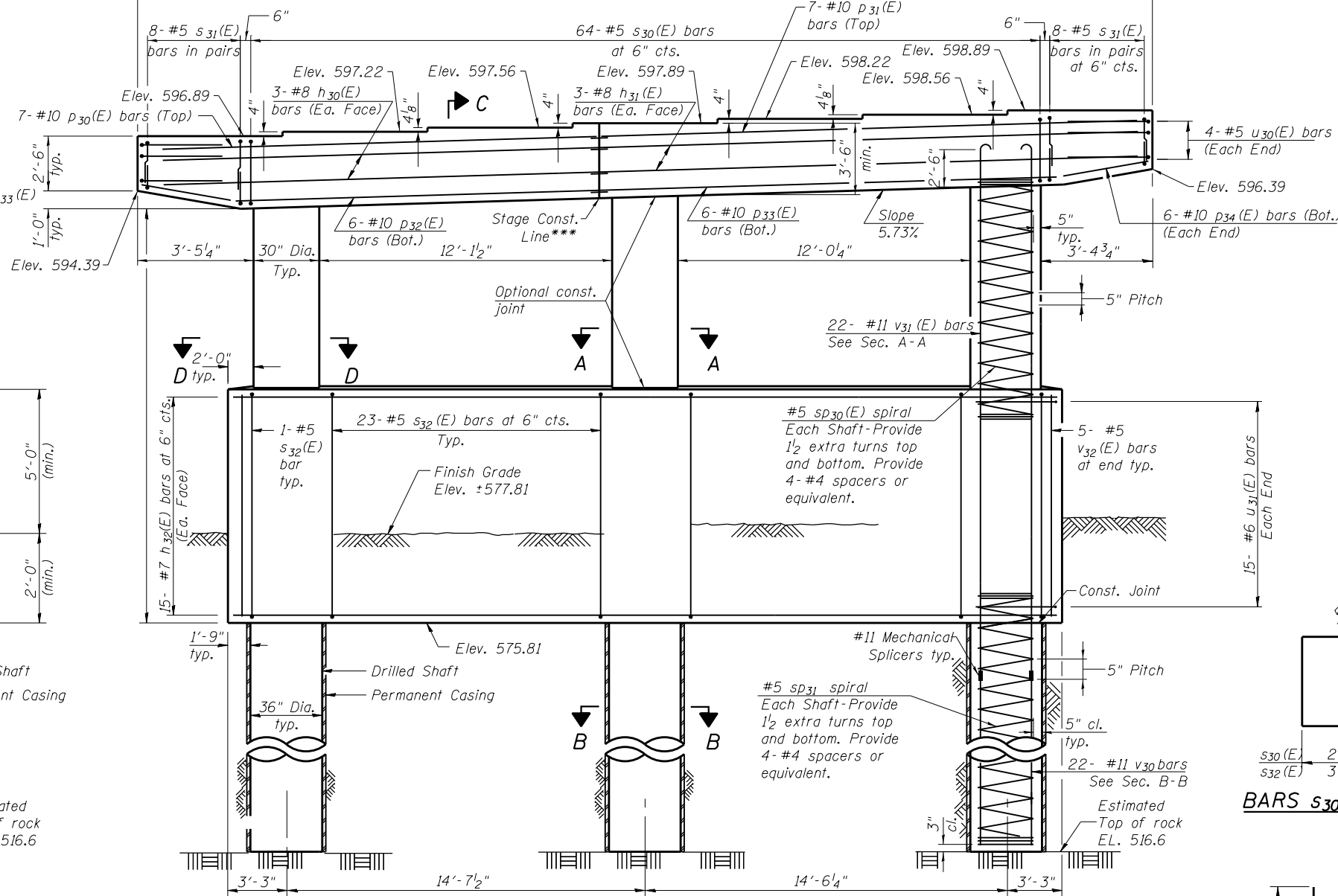
SECTION A-A



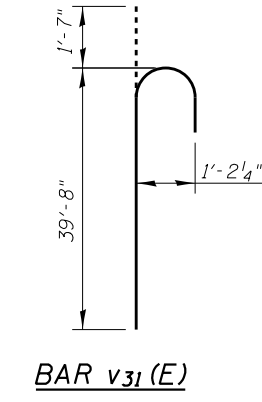
SECTION B-B



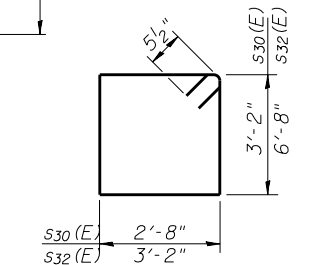
SECTION C-C



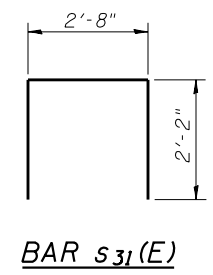
ELEVATION  
(Looking West)



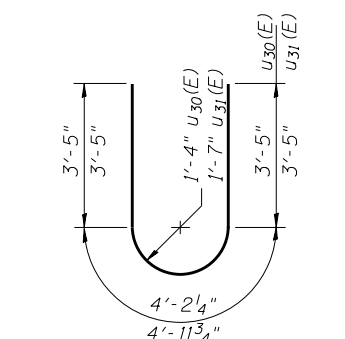
BAR v31(E)



BARS s30(E) & s32(E)



BAR s31(E)



BARS u30(E) and u31(E)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h30(E)	6	#8	16'-9"	—
h31(E)	6	#8	20'-8"	—
h32(E)	30	#7	35'-1"	—
p30(E)	7	#10	16'-9"	—
p31(E)	7	#10	20'-8"	—
p32(E)	6	#10	13'-5"	—
p33(E)	6	#10	17'-4"	—
p34(E)	12	#10	2'-8"	—
s30(E)	64	#5	12'-7"	□
s31(E)	32	#5	7'-0"	U
s32(E)	48	#5	20'-7"	□
sp30(E)	3	#5	14'-0"	W
sp31	3	#5	60'-0"	W
u30(E)	8	#5	11'-0"	U
u31(E)	30	#6	11'-10"	U
v30	66	#11	44'-0"	—
v31(E)	66	#11	37'-11"	—
v32(E)	10	#5	6'-8"	—
Concrete Sealer	Sq. Ft.	418		
Concrete Structures	Cu. Yd.	54.5		
Reinforcement Bars	Pound	18,500		
Reinforcement Bars, Epoxy Coated	Pound	21,640		
Drilled Shaft in Soil	Cu. Yd.	46.6		
Permanent Casing	Foot	178		

\*\* Length is height of spiral.

Notes:  
 Cast steps monolithically with cap.  
 Space cap reinforcement to miss anchor bolts.  
 Minimum lap for spirals = 2'-6"  
 Concrete Sealer applied to roadside face of Pier only.  
 For Anchor Bolt and Bearing Plate locations, see sheets S29 thru S31 of S49.  
 See sheet S43 of S49 for Bar Splicer Details.

\*\*\* South portion of pier cap only to be completed following existing structure removal

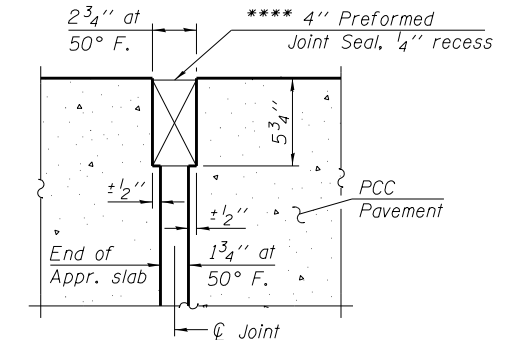
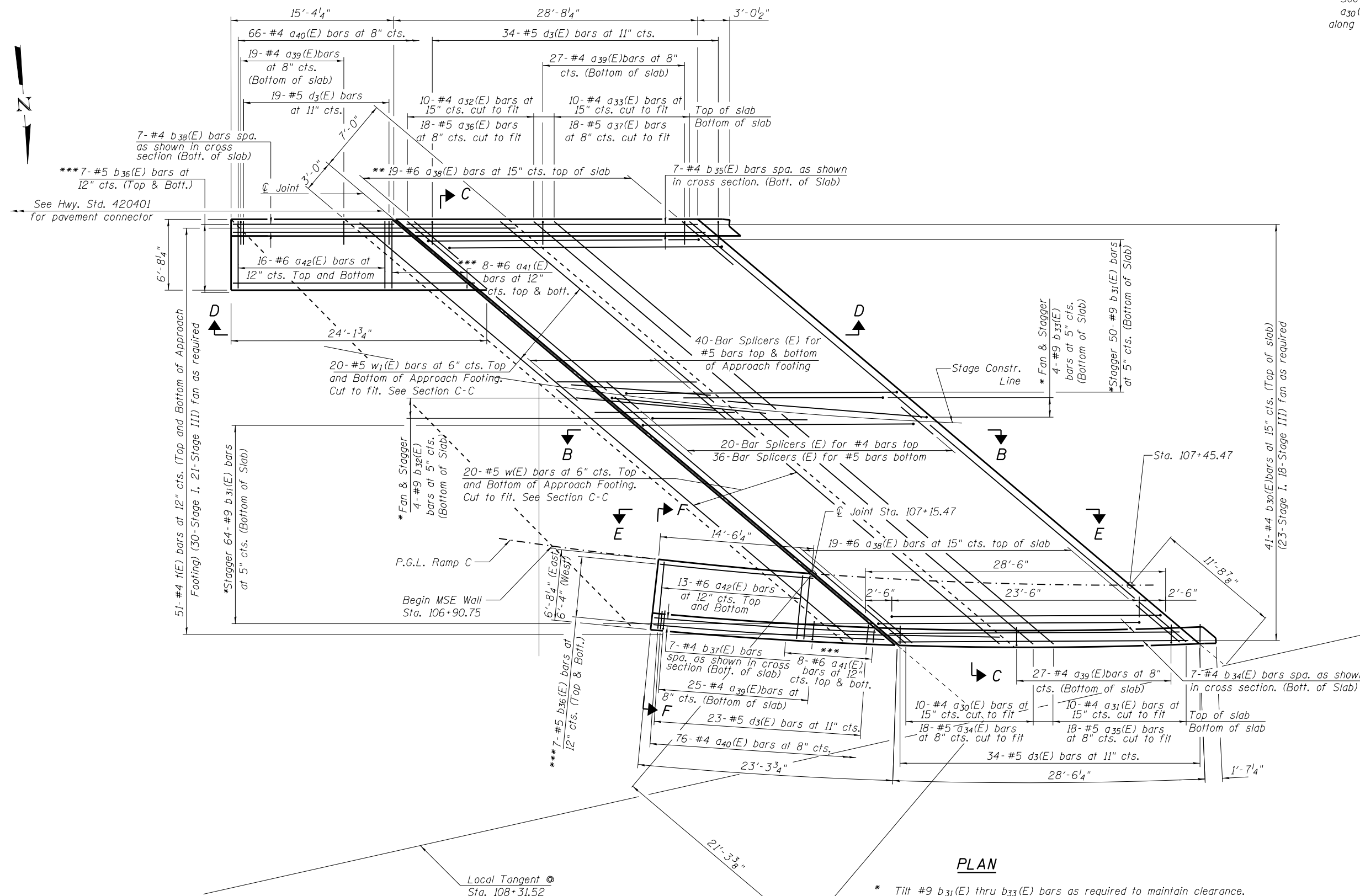
MINIMUM BAR LAP

- (E) bars
- #5 bar = 3'-3"
- #6 bar = 3'-10"
- #8 bar = 6'-9"
- #10 bar = 10'-10"

\* The quantities and reinforcement detailing are based on the top of shaft and the estimated top of rock elevations shown and may change based on the actual top of rock encountered at each shaft and the final top of shaft elevation. The casing thickness shall be 1/2", typ. See Article S16.06(d) of the Standard Specifications. Pay limits for the Permanent Casing are based on the minimum length shown.

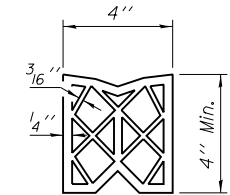
Notes:  
See sheet S40 of S49 for Sections B-B thru F-F.  
a<sub>30</sub>(E) thru a<sub>37</sub>(E) bar spacings measured perpendicular along span.

\*\*\*\* Cost included with Concrete Superstructure.



RIGID PAVEMENT

DETAIL A



PREFORMED JOINT SEAL

Local Tangent @ Sta. 108+31.52

- \* Tilt #9 b<sub>31</sub>(E) thru b<sub>33</sub>(E) bars as required to maintain clearance.
- \*\* Space between a<sub>30</sub>(E) or a<sub>31</sub>(E) bars in the north parapet and a<sub>32</sub>(E) or a<sub>33</sub>(E) bars in the south parapet.
- \*\*\* Order a<sub>41</sub>(E) and b<sub>36</sub>(E) bars full length. Cut to fit skew in bottom slab and use remainder in top slab.

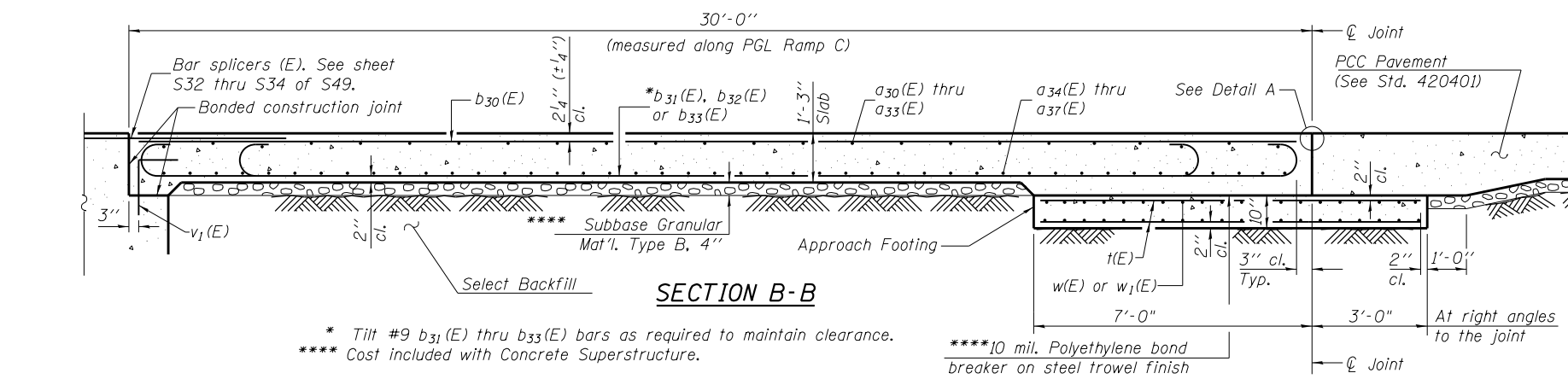
(Sheet 1 of 2)

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	231
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

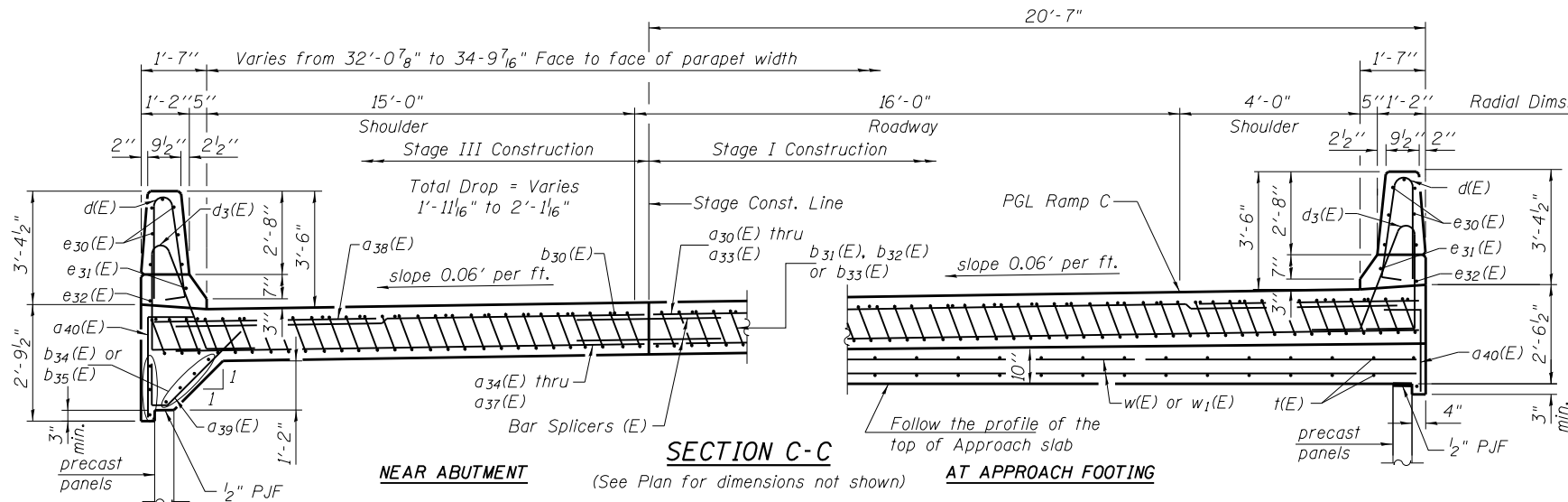
**EAST APPROACH  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a30(E)	10	#4	36'-8"	
a31(E)	10	#4	33'-8"	
a32(E)	10	#4	27'-7"	
a33(E)	10	#4	29'-4"	
a34(E)	18	#5	36'-8"	
a35(E)	18	#5	33'-8"	
a36(E)	18	#5	27'-7"	
a37(E)	18	#5	29'-4"	
a38(E)	38	#6	6'-6"	
a39(E)	98	#4	3'-6"	✓
a40(E)	142	#4	3'-5"	
a41(E)	32	#6	7'-5"	
a42(E)	58	#6	6'-2"	
b30(E)	41	#4	28'-2"	
b31(E)	114	#9	28'-3"	
b32(E)	4	#9	15'-10"	
b33(E)	4	#9	20'-1"	
b34(E)	7	#4	17'-2"	
b35(E)	7	#4	17'-6"	
b36(E)	14	#5	39'-0"	
b37(E)	7	#4	22'-10"	
b38(E)	7	#4	15'-0"	
d(E)	110	#5	6'-10"	
d3(E)	110	#5	7'-11"	
e30(E)	28	#4	15'-0"	
e31(E)	2	#8	30'-4"	
e32(E)	2	#4	30'-4"	
e33(E)	8	#4	16'-9"	
e34(E)	1	#8	16'-9"	
e35(E)	8	#4	20'-8"	
e36(E)	1	#8	20'-8"	
t(E)	102	#4	15'-7"	
w(E)	40	#5	37'-7"	
w1(E)	40	#5	27'-2"	
Concrete Superstructure		Cu. Yd.	82.9	
Concrete Structures		Cu. Yd.	19.4	
Bridge Deck Grooving		Sq. Yd.	113	
Protective Coat		Sq. Yd.	341	
Reinforcement Bars, Epoxy Coated		Pound	24,230	



\* Tilt #9 b31(E) thru b33(E) bars as required to maintain clearance.  
\*\*\*\* Cost included with Concrete Superstructure.

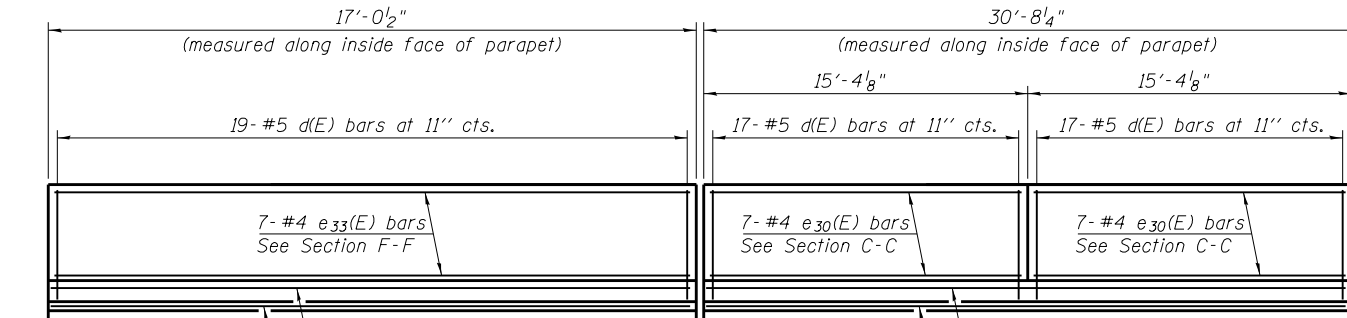
\*\*\*\*10 mil. Polyethylene bond breaker on steel trowel finish



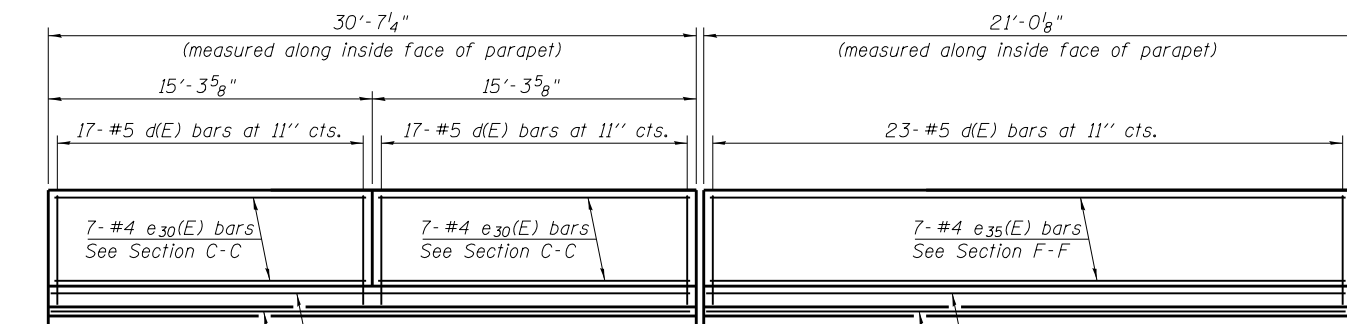
NEAR ABUTMENT

SECTION C-C (See Plan for dimensions not shown)

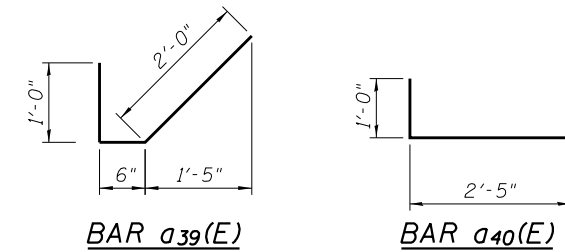
AT APPROACH FOOTING



VIEW D-D

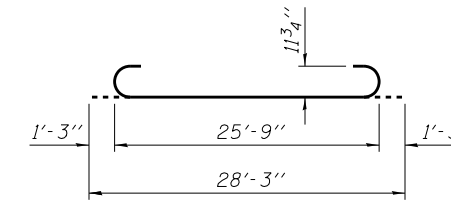


VIEW E-E

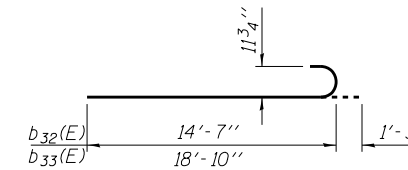


BAR a39(E)

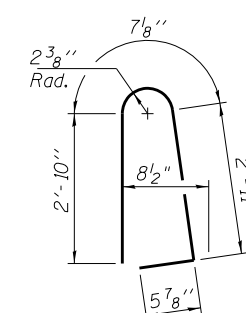
BAR a40(E)



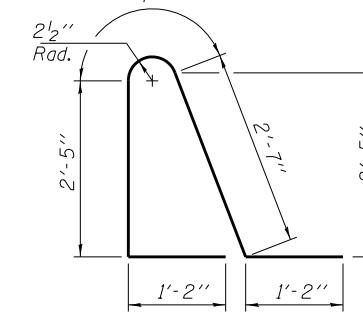
BAR b31(E)



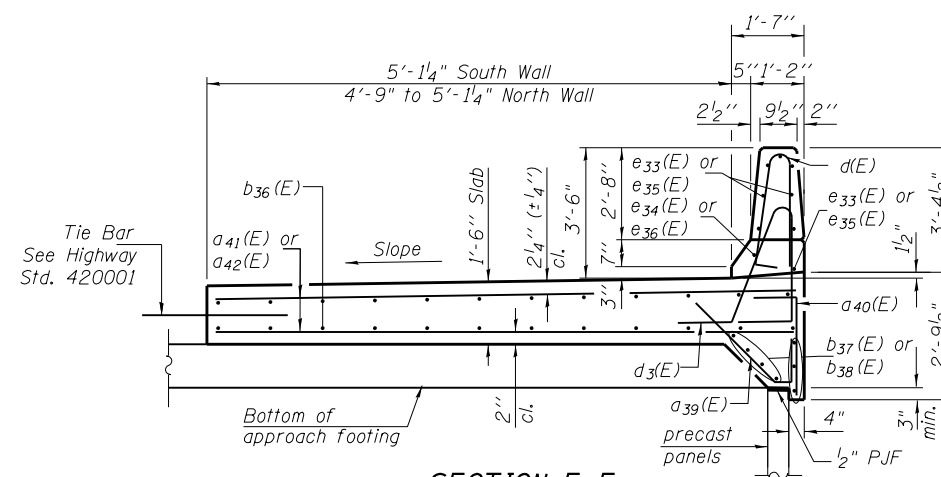
BAR b32(E) & b33(E)



BAR d(E)



BAR d3(E)



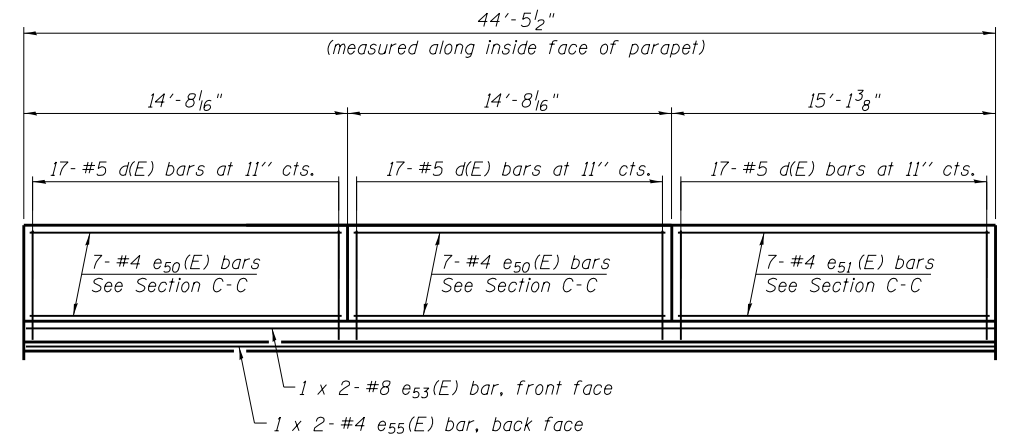
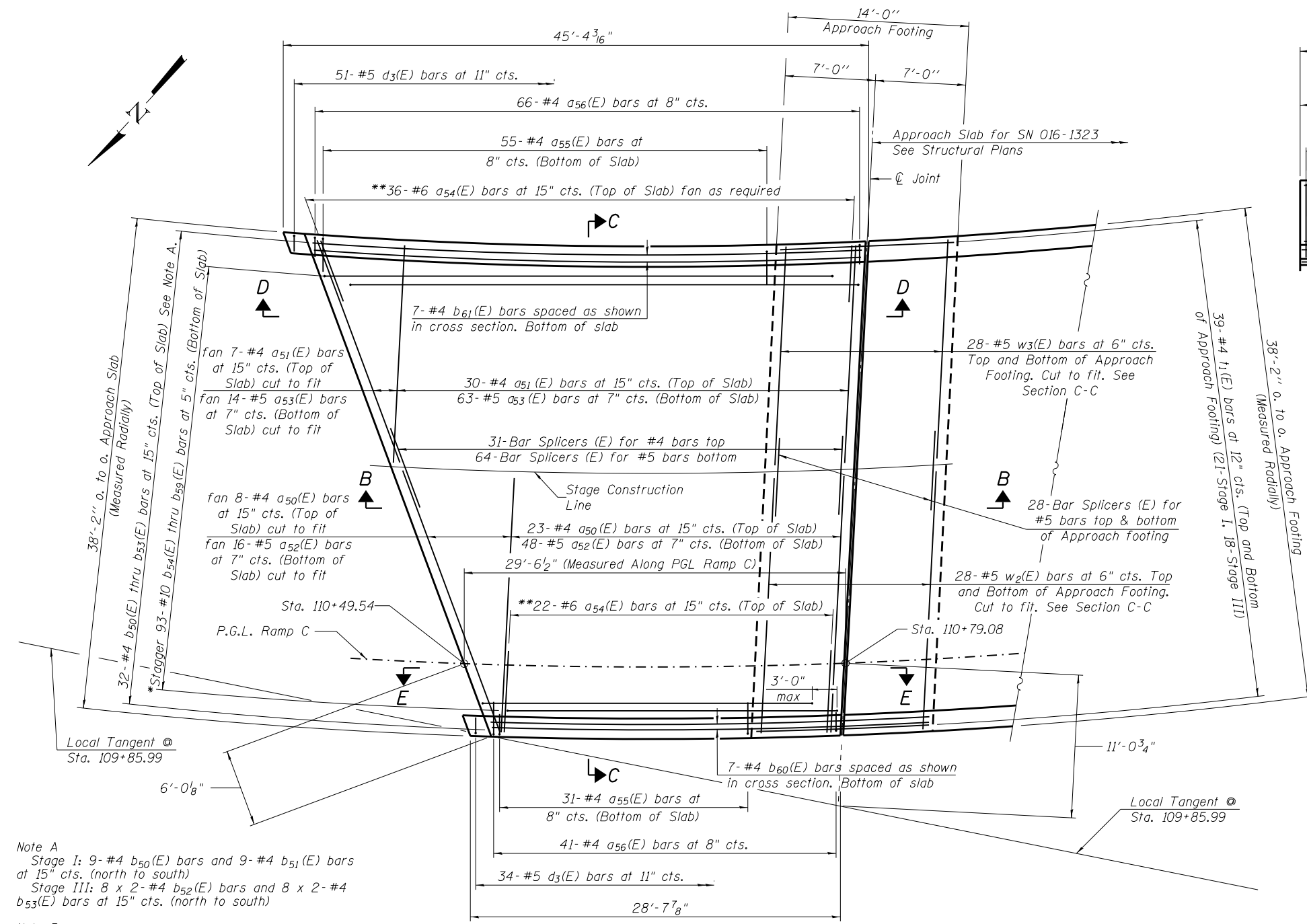
SECTION F-F

(See Plan for dimensions not shown)

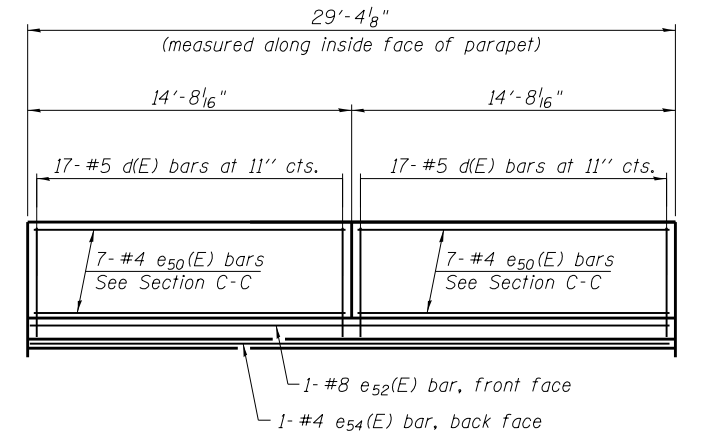
**Notes:**  
Approach slab and parapet concrete shall be paid for as Concrete Superstructure.  
Approach footing concrete shall be paid for as Concrete Structures.  
Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.  
Cost of excavation for approach footing included with Concrete Structures.  
Protective Coat shall be applied to the to the approach slab, the anchorage slabs, and the inside and top faces of the parapets.  
The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.  
For parapet joint details, see sheet S16 of S49.  
For v1(E) bar details, see sheets S32 thru S34 of S49.  
For Select Backfill, see sheet S34 of S49.  
See sheet S39 of S49 for Detail A.  
For bar splicer details, see sheet S43 of S49.

(Sheet 2 of 2)

**Notes:**  
 See sheet S42 of S49 for Sections B-B and C-C.  
 a<sub>50</sub>(E) thru a<sub>53</sub>(E) bar spacings measured perpendicular along span.  
 For parapet joint details, see sheet S16 of S49.  
 Bars indicated thus 1 x 2-#4 etc. indicates 1 line of bars with 2 lengths per line.



**MINIMUM BAR LAP**  
 (Parapet)  
 #4 bar = 2'-0"  
 #8 bar = 5'-2"



**VIEW E-E**

\*\*\* Cost included with Concrete Superstructure.

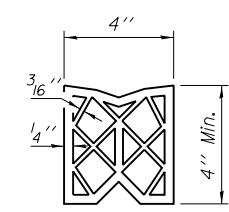
**Note A**  
 Stage I: 9-#4 b<sub>50</sub>(E) bars and 9-#4 b<sub>51</sub>(E) bars at 15" cts. (north to south)  
 Stage III: 8 x 2-#4 b<sub>52</sub>(E) bars and 8 x 2-#4 b<sub>53</sub>(E) bars at 15" cts. (north to south)

**Note B**  
 Stage I: 17-#10 b<sub>54</sub>(E), 17-#10 b<sub>55</sub>(E) and 16-#10 b<sub>56</sub>(E) bars at 5" cts. (north to south)  
 Stage III: 13-#10 b<sub>57</sub>(E), 15-#10 b<sub>58</sub>(E) and 15-#10 b<sub>59</sub>(E) bars at 5" cts. (north to south)

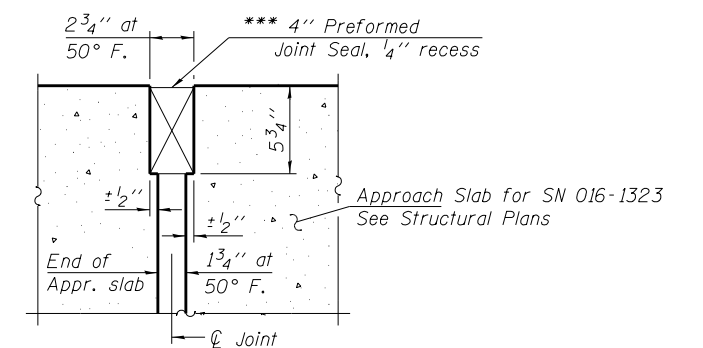
**PLAN**

\* Tilt #9 b<sub>54</sub>(E) thru b<sub>59</sub>(E) bars as required to maintain clearance. See Note B.  
 \*\* Space between a<sub>50</sub>(E) bars in the north parapet and a<sub>51</sub>(E) bars in the south parapet.

**MINIMUM BAR LAP**  
 #4 bar = 2'-7"



**PREFORMED JOINT SEAL**



**RIGID PAVEMENT**

**DETAIL A**

(Sheet 1 of 2)

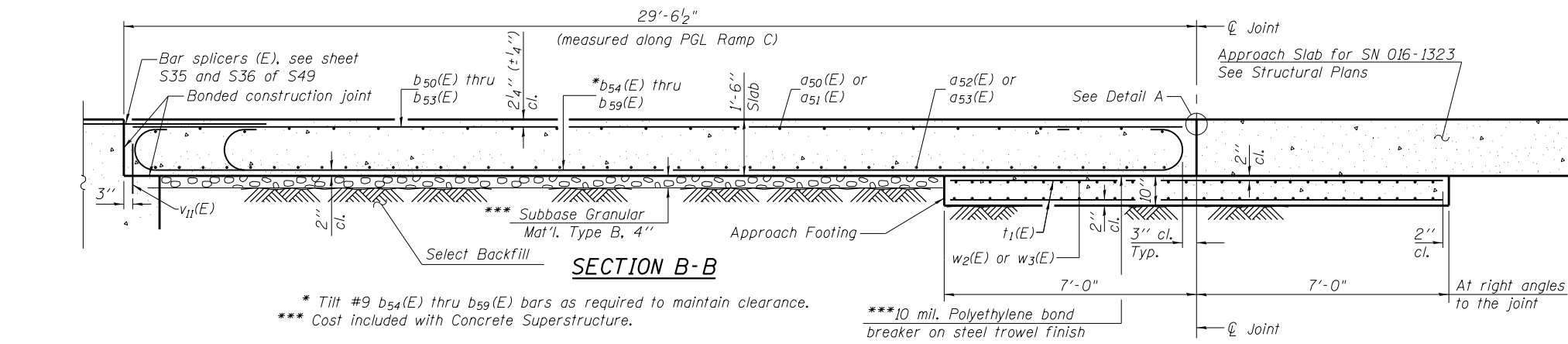
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	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	223
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

**WEST APPROACH  
BILL OF MATERIAL**

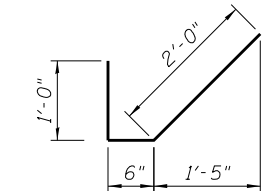
Bar	No.	Size	Length	Shape
a50(E)	31	#4	20'-4"	—
a51(E)	37	#4	17'-4"	—
a52(E)	64	#5	20'-4"	—
a53(E)	77	#5	17'-4"	—
a54(E)	58	#6	6'-6"	—
a55(E)	86	#4	3'-6"	✓
a56(E)	107	#4	3'-5"	┘
b50(E)	9	#4	31'-1"	—
b51(E)	9	#4	35'-6"	—
b52(E)	16	#4	21'-1"	—
b53(E)	16	#4	23'-1"	—
b54(E)	17	#10	29'-5"	┘
b55(E)	17	#10	32'-5"	┘
b56(E)	16	#10	35'-5"	┘
b57(E)	13	#10	38'-2"	┘
b58(E)	15	#10	40'-7"	┘
b59(E)	15	#10	43'-2"	┘
b60(E)	7	#4	19'-10"	—
b61(E)	7	#4	36'-4"	—
d(E)	85	#5	6'-10"	┘
d3(E)	85	#5	7'-11"	┘
e50(E)	28	#4	14'-5"	—
e51(E)	7	#4	14'-10"	—
e52(E)	1	#8	29'-1"	—
e53(E)	2	#8	24'-10"	—
e54(E)	1	#4	29'-1"	—
e55(E)	2	#4	23'-5"	—
t1(E)	78	#4	13'-8"	—
w2(E)	56	#5	20'-4"	—
w3(E)	56	#5	17'-4"	—
Concrete Superstructure			Cu. Yd.	88.2
Concrete Structures			Cu. Yd.	20.0
Bridge Deck Grooving			Sq. Yd.	130
Protective Coat			Sq. Yd.	280
Reinforcement Bars, Epoxy Coated			Pound	25,080

\*\* Bend Reinforcement to fit in Field.

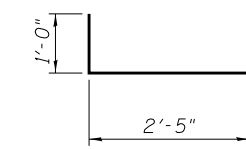


\* Tilt #9 b54(E) thru b59(E) bars as required to maintain clearance.  
\*\*\* Cost included with Concrete Superstructure.

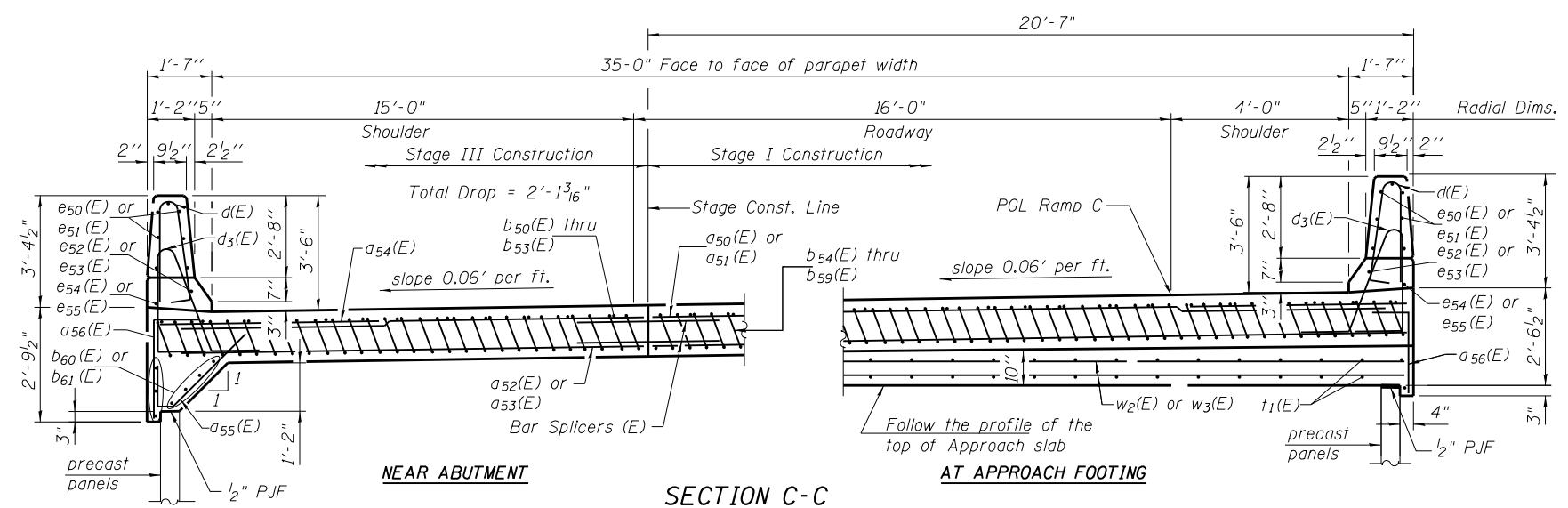
\*\*\*10 mil. Polyethylene bond breaker on steel trowel finish



BAR a55(E)



BAR a56(E)

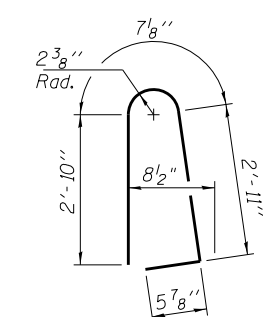


NEAR ABUTMENT

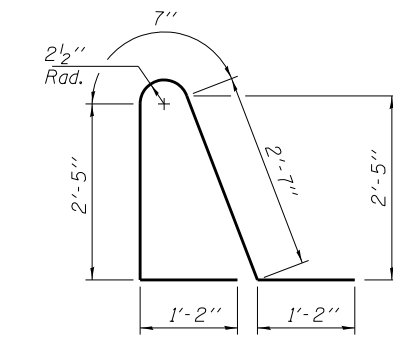
SECTION C-C

(See Plan for dimensions not shown)

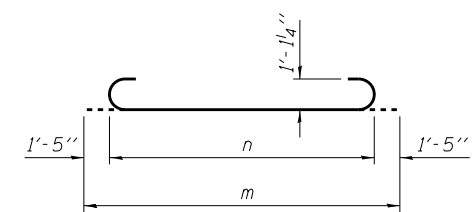
AT APPROACH FOOTING



BAR d(E)



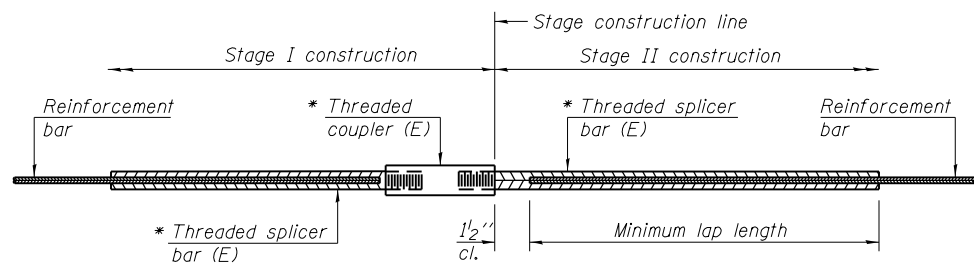
BAR d3(E)



See Table

Bar	m	n
b54(E)	29'-5"	26'-7"
b55(E)	32'-5"	29'-7"
b56(E)	35'-5"	32'-7"
b57(E)	38'-2"	35'-4"
b58(E)	40'-7"	37'-9"
b59(E)	43'-2"	40'-4"

Notes:  
 Approach slab and parapet concrete shall be paid for as Concrete Superstructure.  
 Approach footing concrete shall be paid for as Concrete Structures.  
 Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.  
 Cost of excavation for approach footing included with Concrete Structures.  
 The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.  
 For parapet joint details, see sheet S17 of S49.  
 For v11(E) bar details, see sheets S35 thru S36 of S49.  
 For Select Backfill, see SN 016-1323 plans.  
 See sheet S41 of S49 for Detail A.  
 For bar splicer details, see sheet S43 of S49.



**STANDARD BAR SPLICER ASSEMBLY**

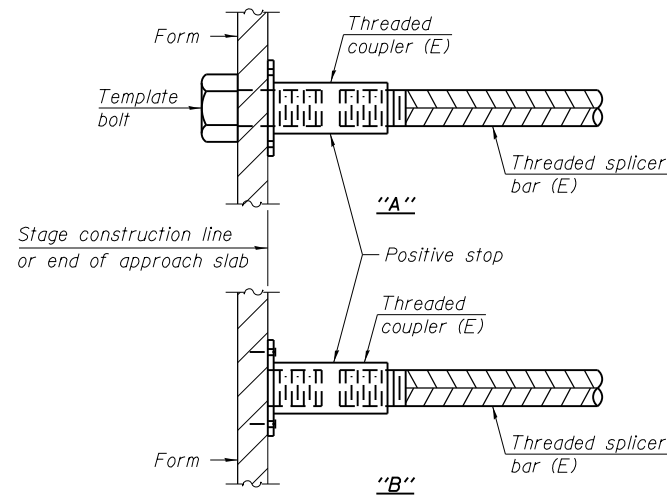
Minimum Lap Lengths						
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-7"	2'-11"
5	1'-9"	2'-5"	2'-7"	2'-11"	3'-3"	3'-8"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-10"	4'-5"
7	2'-9"	3'-10"	4'-2"	4'-8"	5'-2"	5'-10"
8	3'-8"	5'-1"	5'-5"	6'-2"	6'-9"	7'-8"
9	4'-7"	6'-5"	6'-10"	7'-9"	8'-7"	9'-8"

- Table 1: Black bar, 0.8 Class C
- Table 2: Black bar, Top bar lap, 0.8 Class C
- Table 3: Epoxy bar, 0.8 Class C
- Table 4: Epoxy bar, Top bar lap, 0.8 Class C
- Table 5: Epoxy bar, Class C
- Table 6: Epoxy bar, Top bar top, Class C

Threaded splicer bar length = min. lap length + 1 1/2" + thread length

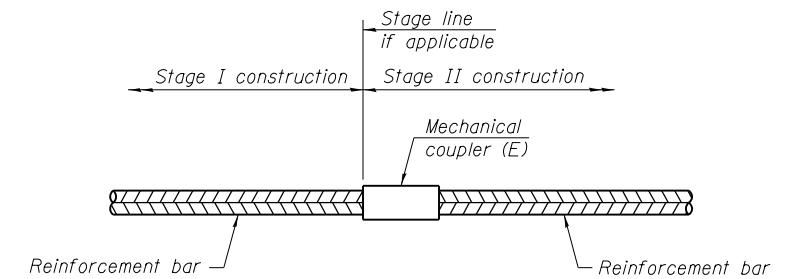
\* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length
Superstructure	#5	910	Table 3
Superstructure	#6	8	Table 3
E. Approach	#5	76	Table 3
E. Approach	#4	20	Table 3
W. Approach	#5	120	Table 3
W. Approach	#4	31	Table 3
Abutments	#9	50	Table 3
Abutments	#5	16	Table 3
Abutments	#6	10	Table 3
Piers	#10	26	Table 3
Piers	#8	12	Table 3



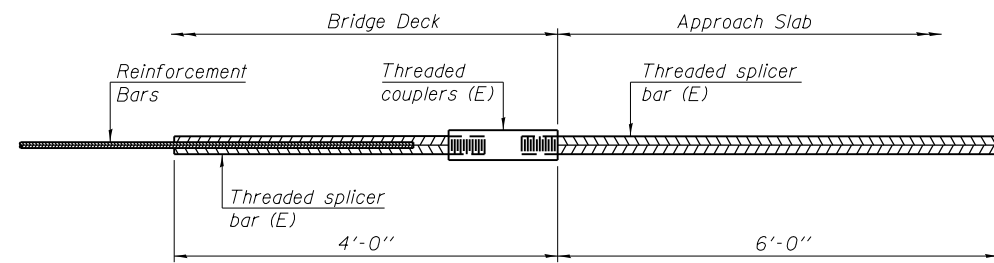
**INSTALLATION AND SETTING METHODS**

"A": Set bar splicer assembly by means of a template bolt.  
 "B": Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
 (E): Indicates epoxy coating.



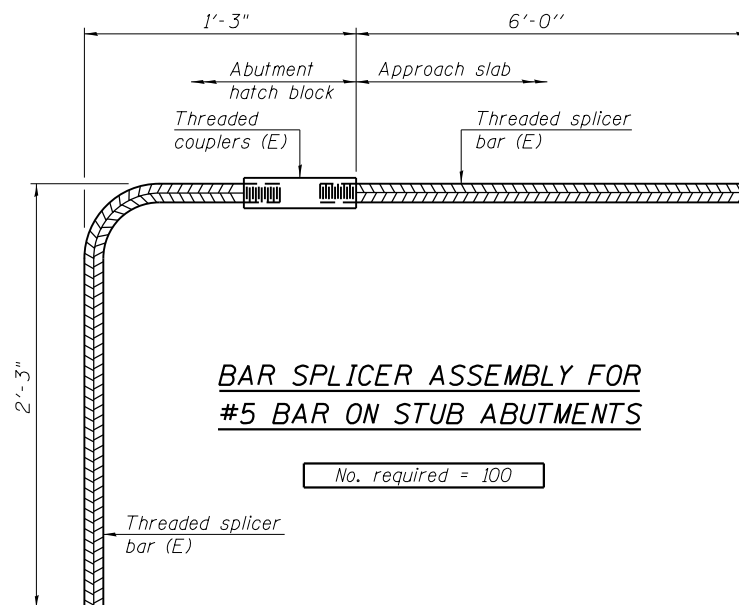
**STANDARD MECHANICAL SPLICER**

Location	Bar size	No. assemblies required
Superstructure	#5	910
Superstructure	#6	8
Pier Shafts	#11	132



**BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

No. required =



**BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS**

No. required = 100

**Notes:**  
 Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.  
 All reinforcement shall be lapped and tied to the splicer bars.  
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.  
 See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1

1-27-12

**COLLINS ENGINEERS**  
 133 N. Wacker Dr.  
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 Chicago, IL 60606  
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 Fax: (312) 704-9320  
 www.collinsengr.com  
 ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

USER NAME =	DESIGNED - MAH	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS  
 STRUCTURE NO. 016-1322**

SHEET NO. S43 OF S49 SHEETS

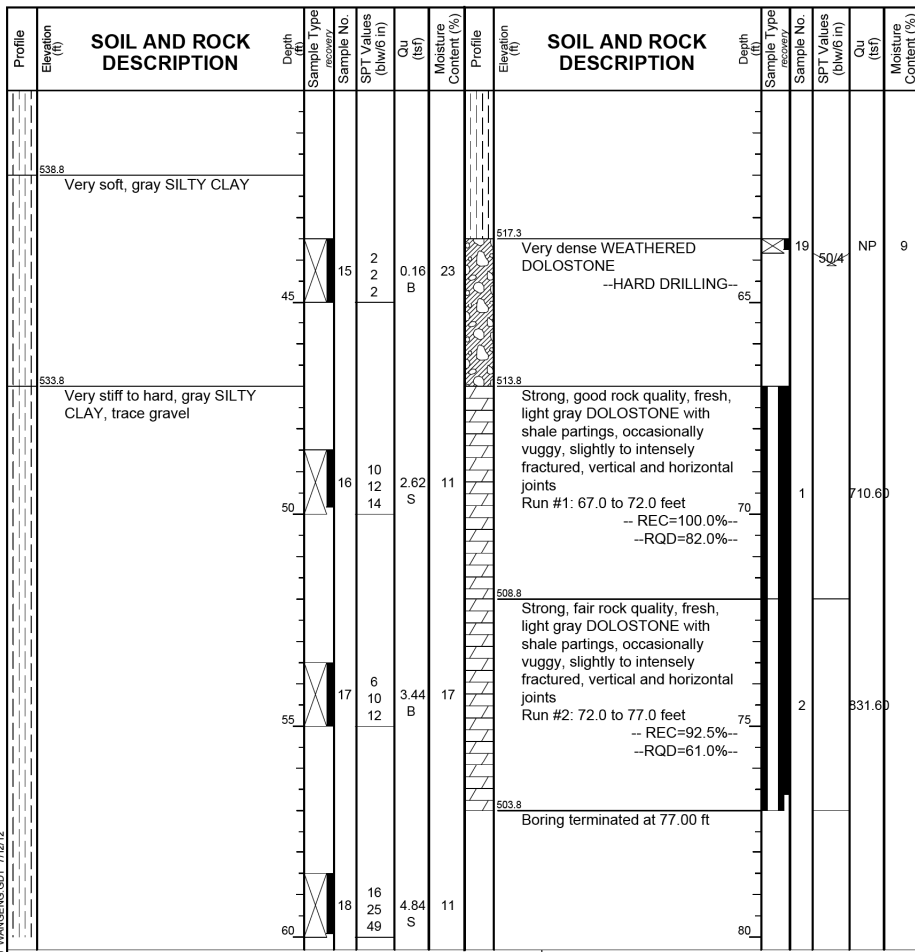
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	235
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)
572.4	13-inch thick, CONCRETE --PAVEMENT--						562.5	Very soft to soft, gray SILTY CLAY, trace gravel	9	0 1 3	0.25 P		27
	Medium dense to very dense, black CRUSHED STONE and RUBBLIZED ASPHALT --FILL--		1	50/3	NP	9			10	1 3 3	0.41 B		25
566.0	Medium dense, brown GRAVELLY SAND --FILL--		2	6 7 10	NP	3			11	2 3 3	0.25 P		23
568.0	Medium stiff to stiff, gray SILTY CLAY		3	1 2 2	0.57 B	19			12	2 3 4	NR		
			4	P U S H	0.50 P				13	2 2 4	0.98 B		20
			5	P U S H	0.86 B	22	541.5	Medium stiff to very stiff, gray CLAY, trace gravel	14	3 4 6	1.23 B		21
			6	1 3 3	1.39 B	21			15	0 0 3	0.74 B		20
			7	0 0 3	0.74 B	20			16	48 60/4			16
			8	0 2 2	NR				17	15 20 26	7.54 B		13
							516.5	Very dense, gray, gravelly SILT --WET--	18	48 60/4			16
							514.0	WEATHERED DOLOSTONE	19				

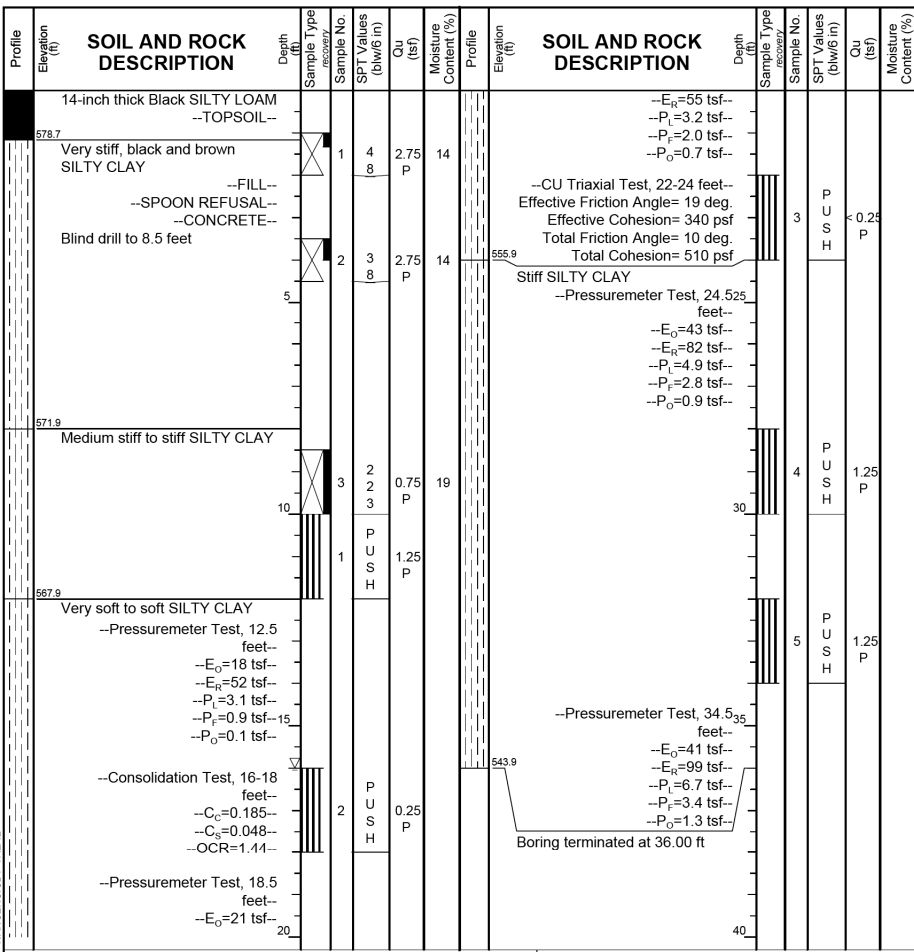
GENERAL NOTES				WATER LEVEL DATA			
Begin Drilling	10-06-2011	Complete Drilling	10-06-2011	While Drilling	56.80 ft		
Drilling Contractor	WTS	Drill Rig	Mobile B-57	At Completion of Drilling	WASHED		
Driller	R&N	Logger	E. Datz	Time After Drilling	NA		
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion			Depth to Water	NA		
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.							

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)
	--HARD DRILLING--						512.5	Strong, fair rock quality, fresh, light gray DOLOSTONE with shale partings and clay fillings, occasionally vuggy, slightly to intensely fractured, vertical and horizontal joints Run #1: 61.0 to 71.0 feet --RQD=65.8%-- --REC=83.3%--	19				
			15	5 6 12	2.54 B	18			20				
526.5	Hard, gray SILTY CLAY		16	10 10 14	4.18 B	12			21				
			17	15 20 26	7.54 B	13			22				
			18	48 60/4		16			23				
			19						24				
			20						25				
			21						26				
			22						27				
			23						28				
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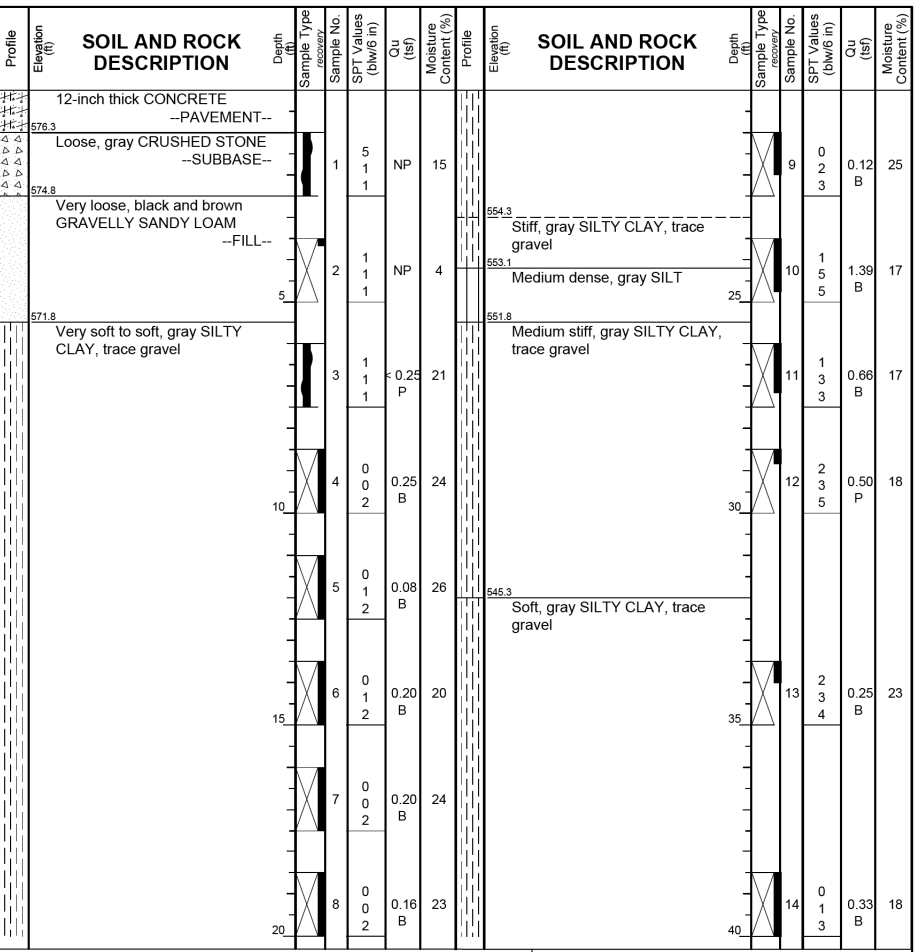




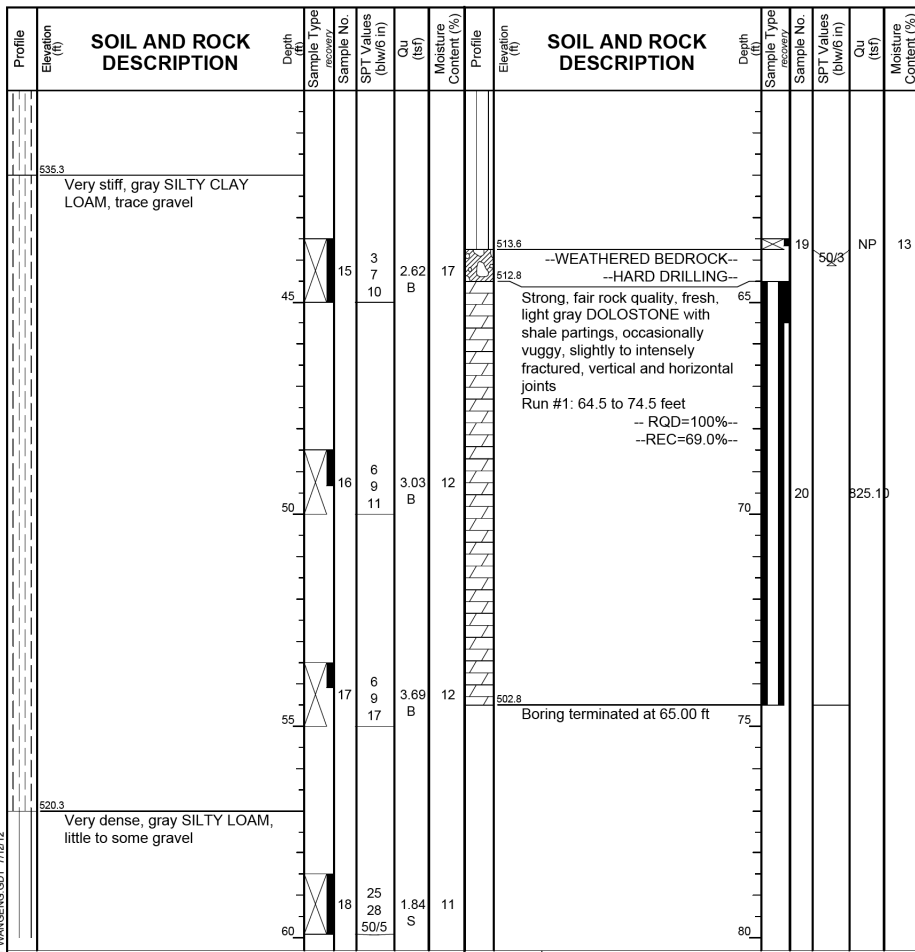
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	05-25-2012	Complete Drilling	05-25-2012
Drilling Contractor	WTS	Drill Rig	D-50 TMR
Driller	R&N	Logger	A. Kurnia
Checked by	S. Sugiarto	Drilling Method	3.25 IDA HSA; Boring backfilled upon completion
While Drilling	16.00 ft	At Completion of Drilling	WASHED
Time After Drilling	NA	Depth to Water	NA



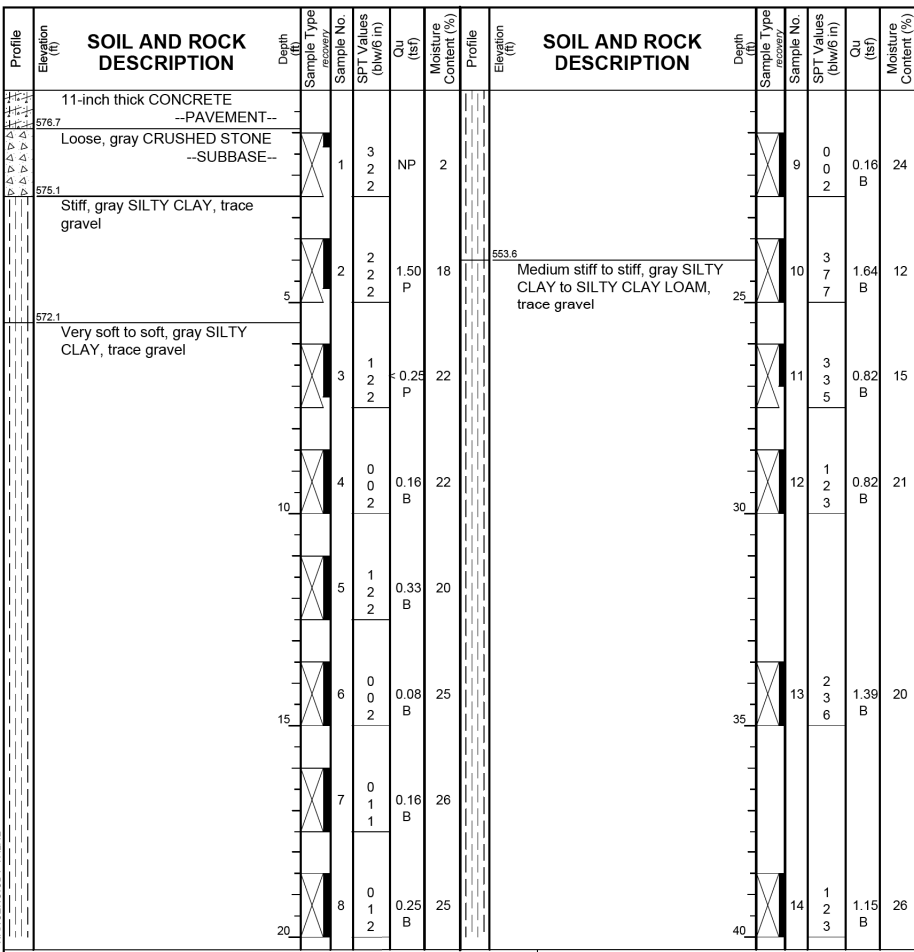
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	05-24-2012	Complete Drilling	05-24-2012
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&N	Logger	N. Boddy
Checked by	S. Sugiarto	Drilling Method	3.25 IDA HSA; Boring backfilled upon completion
While Drilling	16.00 ft	At Completion of Drilling	WASHED
Time After Drilling	NA	Depth to Water	NA



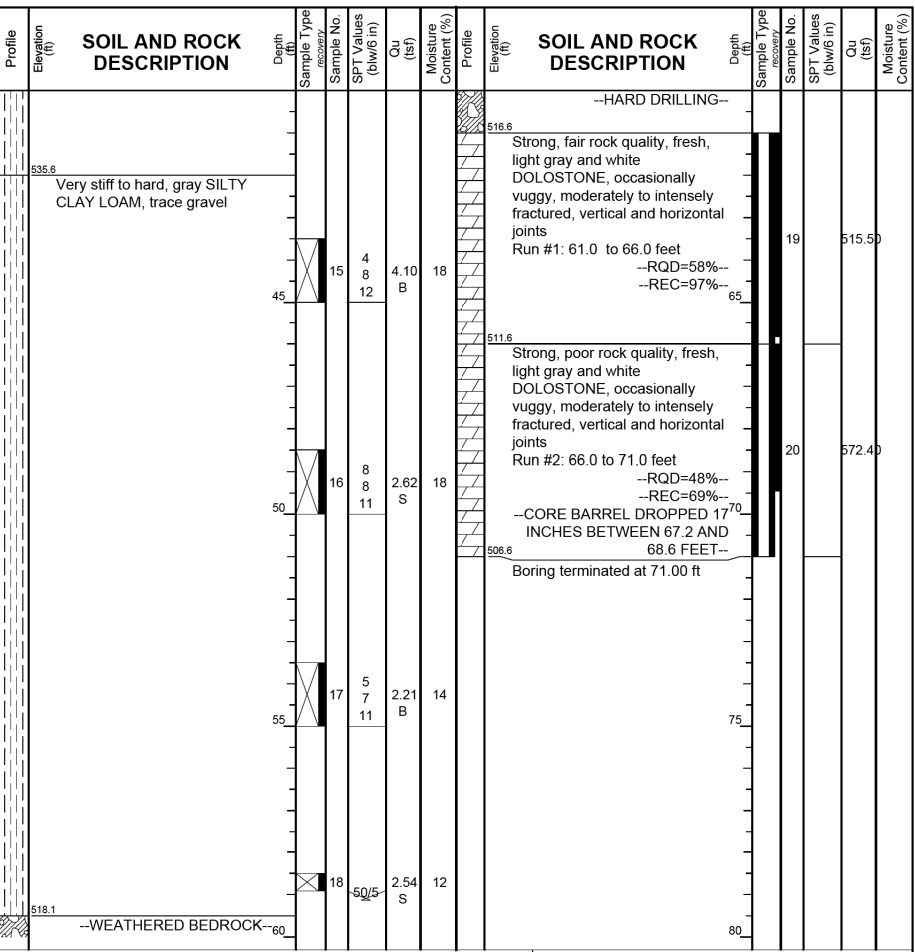
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-14-2012	Complete Drilling	06-15-2012
Drilling Contractor	WTS	Drill Rig	D-50 TMR
Driller	R&J	Logger	C. Marin
Checked by	S. Sugiarto	Drilling Method	2.25 SSA to 15 feet and Mud Rotary thrafter;
While Drilling	DRY	At Completion of Drilling	WASHED
Time After Drilling	NA	Depth to Water	NA



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-14-2012	Complete Drilling	06-15-2012
Drilling Contractor	WTS	Drill Rig	D-50 TMR
Driller	R&J	Logger	C. Marin
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	2.25 SSA to 15 feet and Mud Rotary threafter;	Depth to Water	NA
Boring backfilled upon completion		The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.	



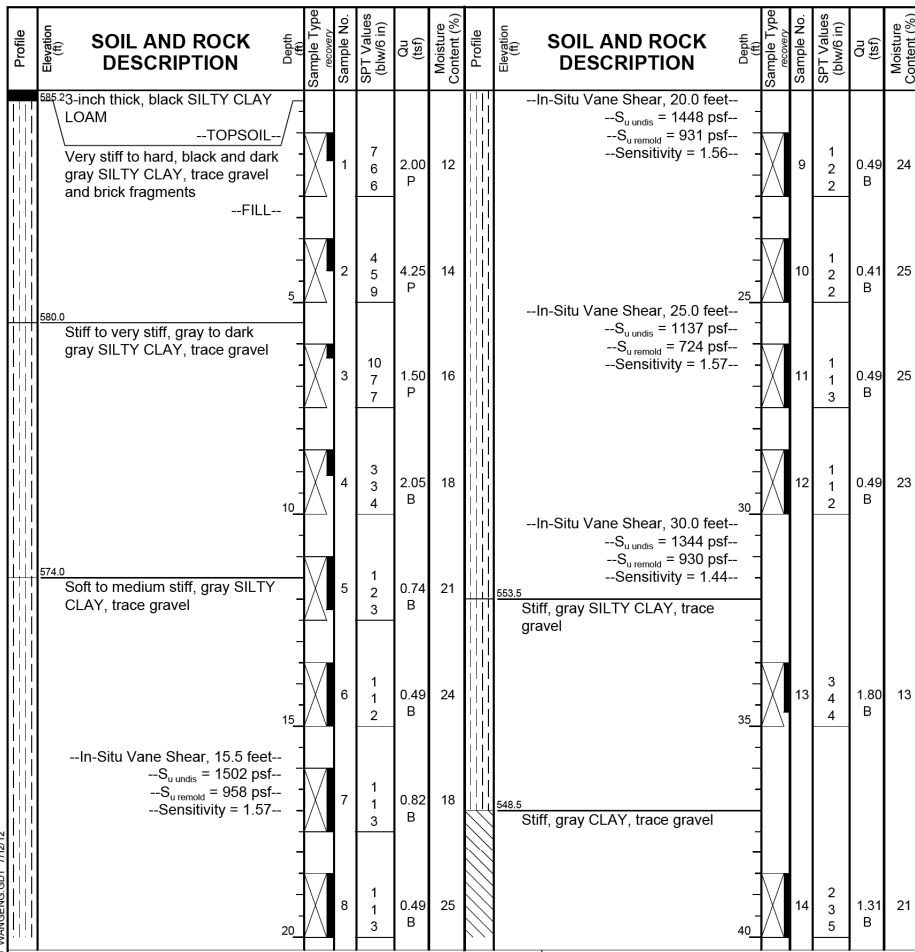
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-13-2012	Complete Drilling	06-19-2012
Drilling Contractor	WTS	Drill Rig	D-50 TMR
Driller	R&J	Logger	C. Marin & C. Davis
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	2.25 SSA to 15 feet and Mud Rotary threafter;	Depth to Water	NA
Boring backfilled upon completion		The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.	



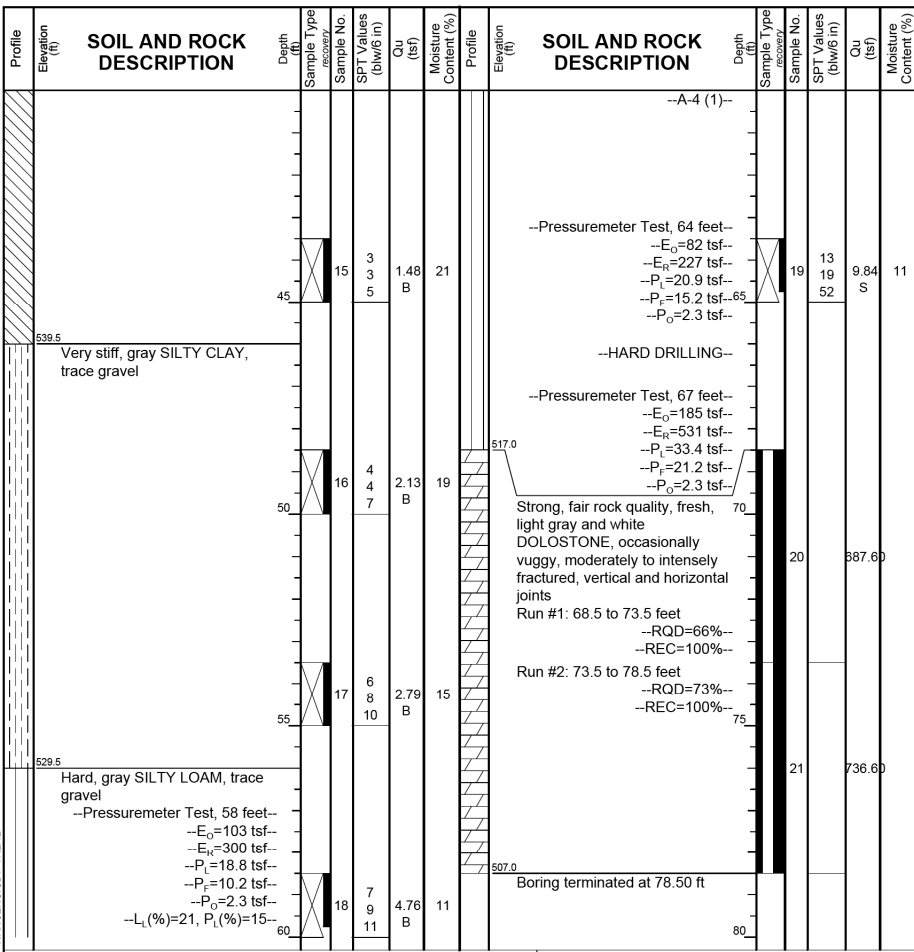
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-13-2012	Complete Drilling	06-19-2012
Drilling Contractor	WTS	Drill Rig	D-50 TMR
Driller	R&J	Logger	C. Marin & C. Davis
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	2.25 SSA to 15 feet and Mud Rotary threafter;	Depth to Water	NA
Boring backfilled upon completion		The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.	

USER NAME =	DESIGNED - MAH	REVISED
PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - DR	REVISED
	CHECKED - JMH	REVISED

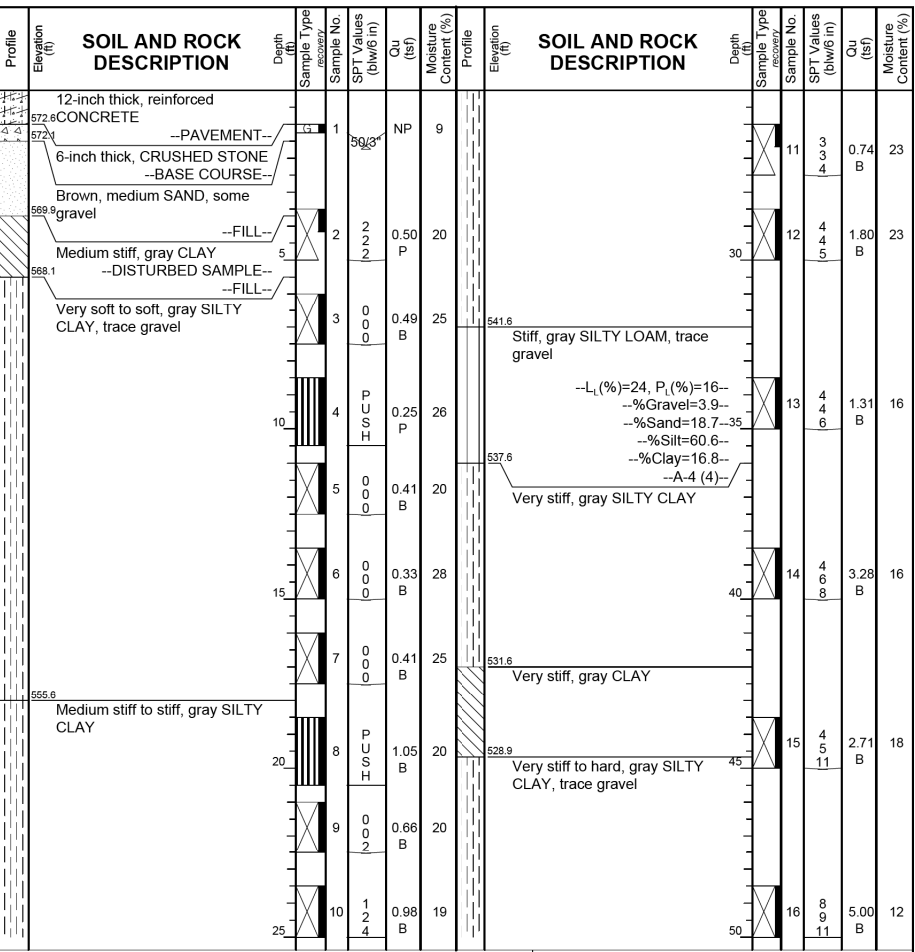
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	238
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-10-2011	Complete Drilling	10-10-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	C. Davis
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	DRY
		At Completion of Drilling	WASHED

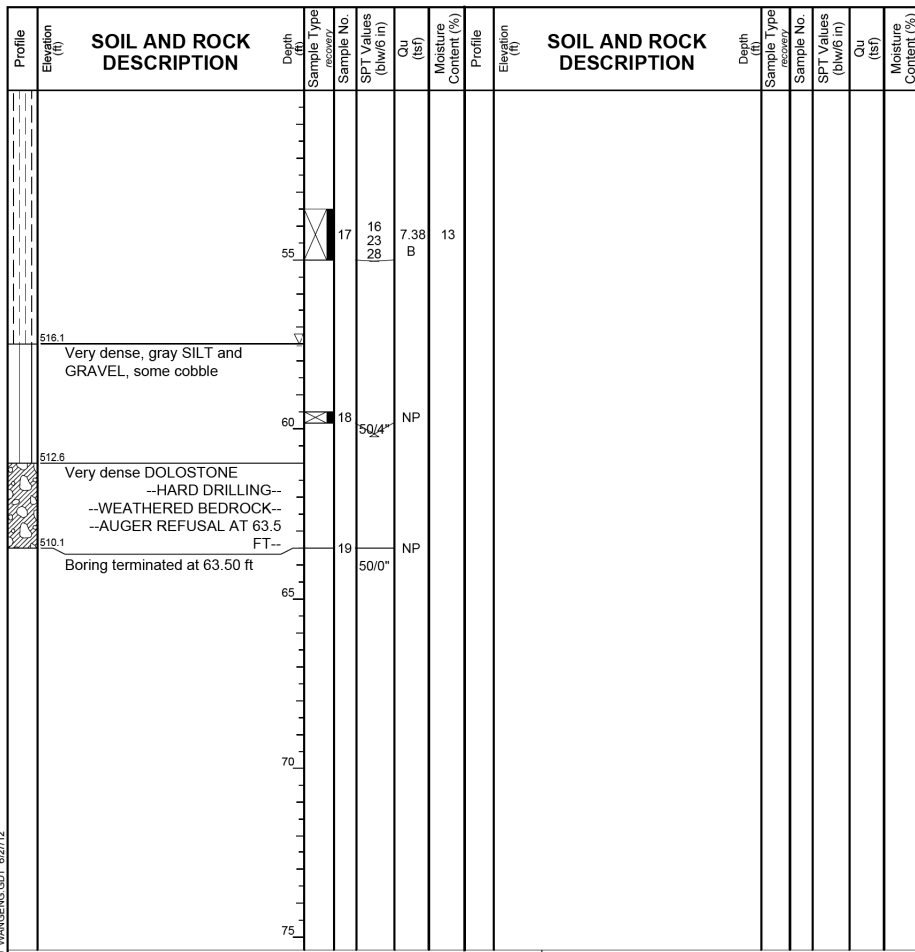


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-10-2011	Complete Drilling	10-10-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	C. Davis
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	DRY
		At Completion of Drilling	WASHED

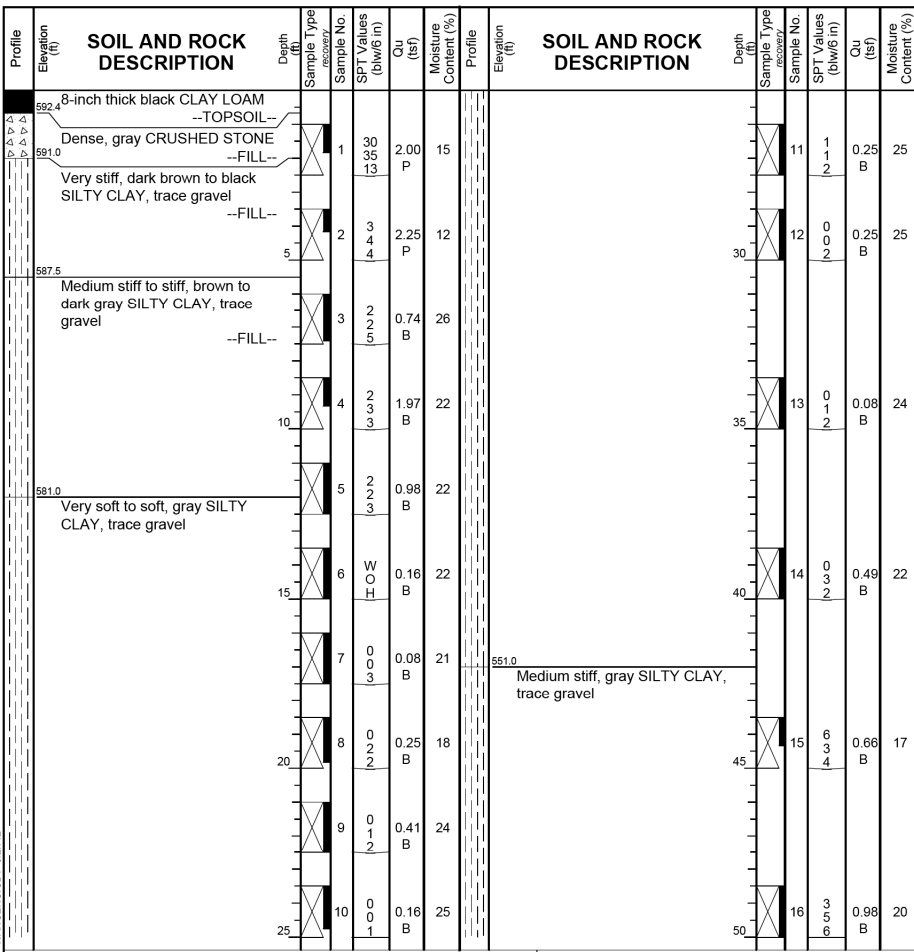


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-05-2011	Complete Drilling	10-05-2011
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&N	Logger	E. Datz
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	57.50 ft
		At Completion of Drilling	WASHED

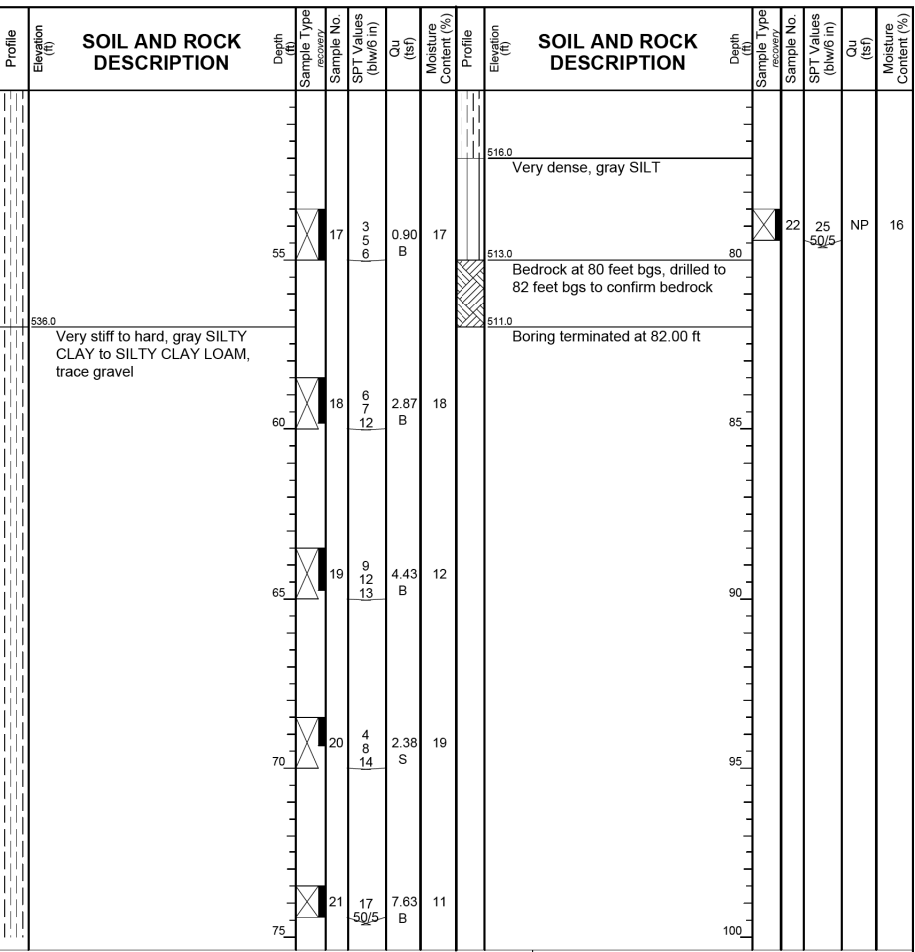
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PLLOT SCALE =	CHECKED - LDB	REVISION
PLLOT DATE =	DRAWN - DR	REVISION
	CHECKED - JMH	REVISION



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-05-2011	Complete Drilling	10-05-2011
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&N	Logger	E. Datz
Checked by	S. Sugiarto	Drilling Method	3.25 IDA HSA; Boring backfilled upon completion
While Drilling	57.50 ft	At Completion of Drilling	WASHED
Time After Drilling	NA	Depth to Water	NA

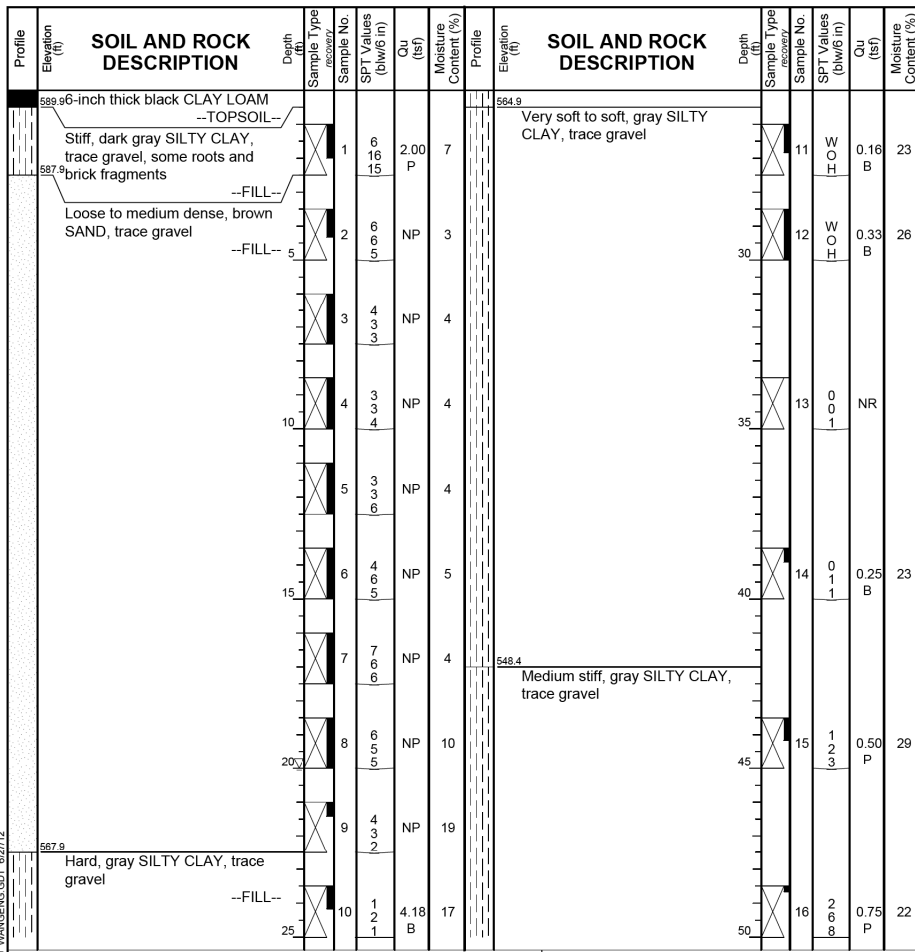


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-04-2012	Complete Drilling	06-04-2012
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&J	Logger	A. Kurnia
Checked by	S. Sugiarto	Drilling Method	2.25 SSA to 15 feet and Mud Rotary threater; Boring backfilled upon completion
While Drilling	DRY	At Completion of Drilling	DRY
Time After Drilling	NA	Depth to Water	NA

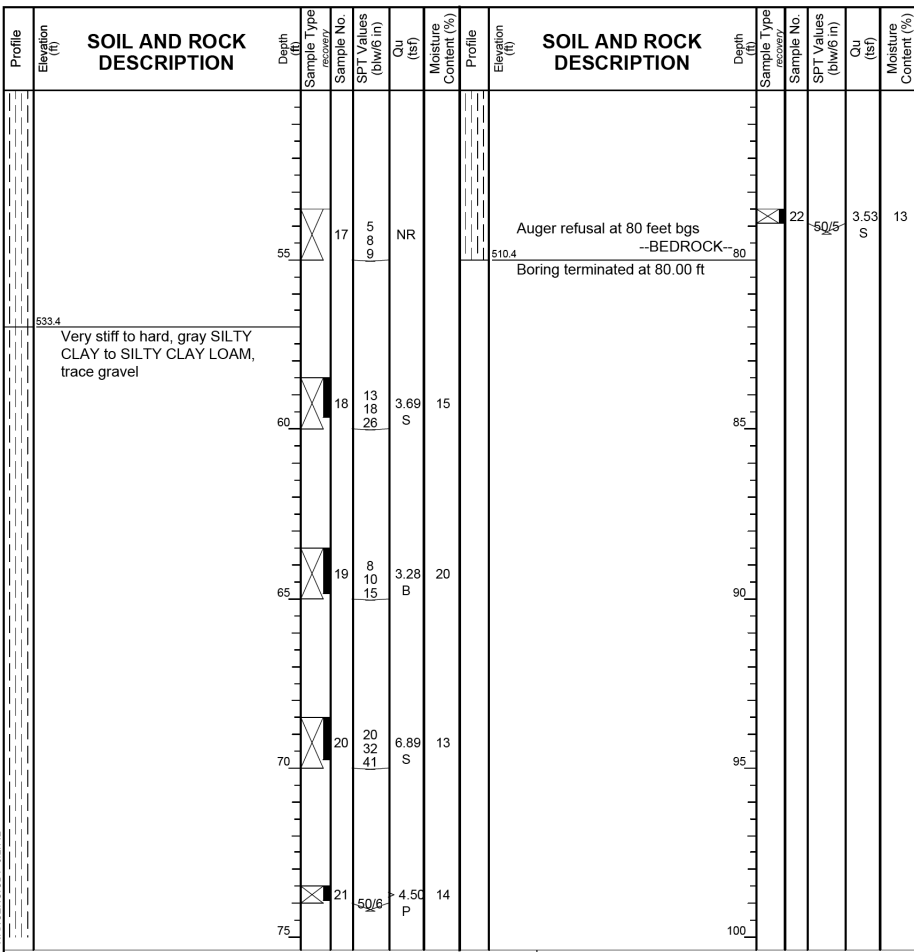


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-04-2012	Complete Drilling	06-04-2012
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&J	Logger	A. Kurnia
Checked by	S. Sugiarto	Drilling Method	2.25 SSA to 15 feet and Mud Rotary threater; Boring backfilled upon completion
While Drilling	DRY	At Completion of Drilling	DRY
Time After Drilling	NA	Depth to Water	NA

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	CHECKED - JMH	REVISED



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-01-2012	Complete Drilling	06-01-2012
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&J	Logger	A. Kurnia
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	2.25 SSA to 25 feet and Mud Rotary threater;	Depth to Water	NA
Boring backfilled upon completion		The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.	

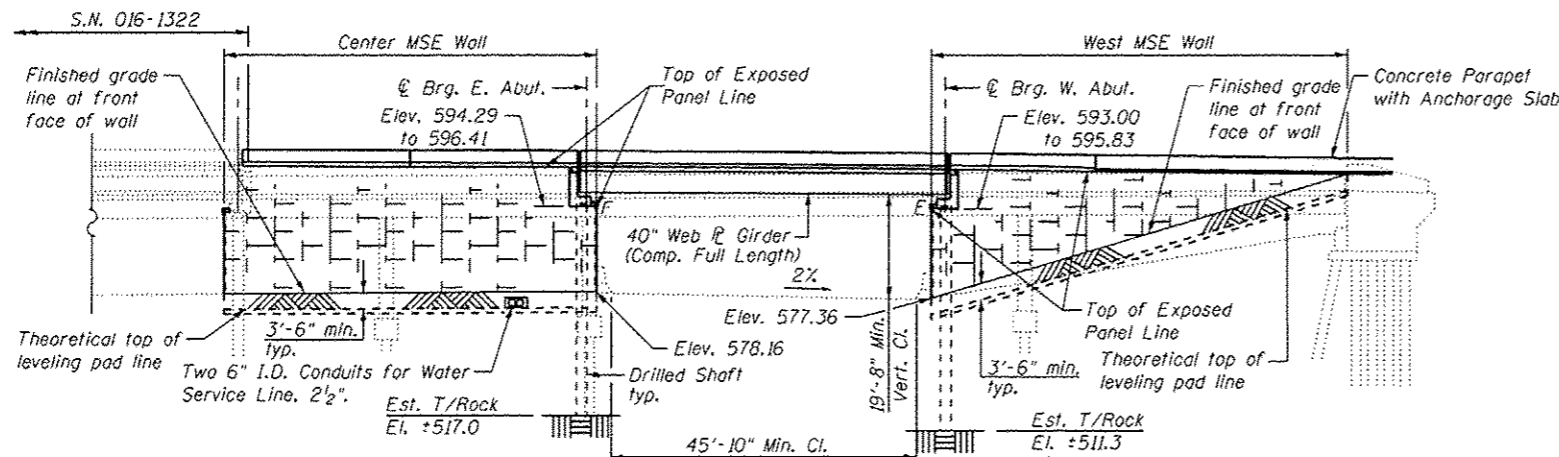
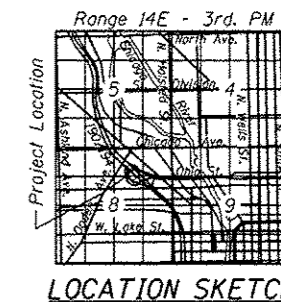
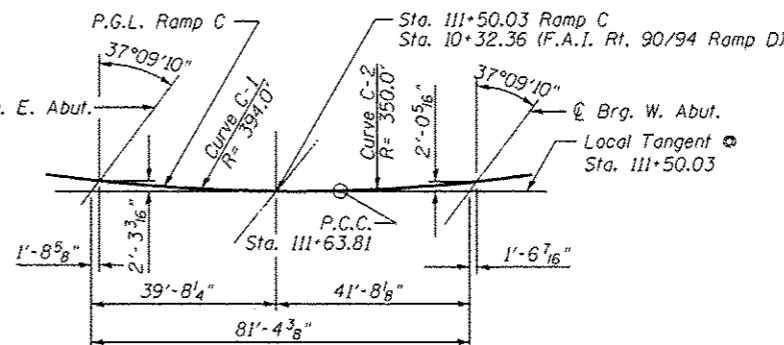
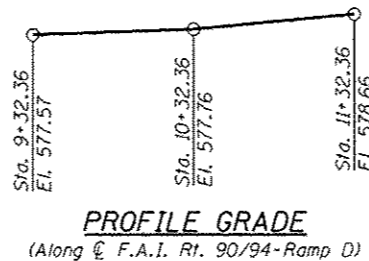


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-01-2012	Complete Drilling	06-01-2012
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&J	Logger	A. Kurnia
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	2.25 SSA to 25 feet and Mud Rotary threater;	Depth to Water	NA
Boring backfilled upon completion		The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.	

Bench Mark: BM-12 N. 1,904,392.510 E. 1,168,864.965 El. 581.496 Cut "Square" at SW corner, end of conc. barrier wall at SW corner of conc. support pier for Ontario feeder to I-90/94 EB overpass at left shoulder for EB I-90/94 exit 50B. At SW corner, top of barrier wall, 8.20 Ft. Westerly of SE corner of pier and 3.20 Ft. Southerly of NW corner of pier.

Existing Structure: S.N. 016-1003 was originally built in 1959 as F.A.I. Route 94, Section 0303-477-HB and rehabilitated in 1994. The existing structure consists of 8-span cast-in-place concrete curved box girders supported on stub abutments on pile supported footings and single-column rectangular piers (monolithic with the box girder structure). The back to back of abutments measures 637'-0 3/4" and the out-to-out of deck is 34'-8". The structure is to be removed and replaced with a three span bridge (S.N. 016-1322). A single span bridge (S.N. 016-1323) and three MSE walls. Traffic is to be maintained utilizing stage construction. Temporary detour of Ramp D will be utilized during the setting of beams.

No Salvage.



STATION 111+50.03  
BUILT BY  
STATE OF ILLINOIS  
F.A.P. RT. 0383 SEC. 0303-474HB-R  
LOADING HL-93  
STR. NO. 016-1323

NAME PLATE  
(See Std. 515001)

DESIGN SPECIFICATIONS  
2012 AASHTO LRFD Bridge Design  
Specifications, 6th Edition

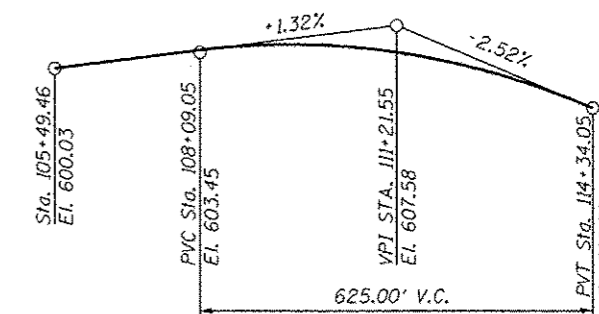
LOADING HL-93  
Allow 50#/sq. ft. for future wearing surface.

DESIGN STRESSES  
FIELD UNITS

f'c = 3,500 psi  
fy = 60,000 psi (Reinforcement)  
fy = 50,000 psi (M270 Grade 50)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1  
Design Spectral Acceleration at 1.0 sec. (S<sub>D1</sub>) = 0.085g  
Design Spectral Acceleration at 0.2 sec. (S<sub>D5</sub>) = 0.143g  
Soil Site Class = D



PROFILE GRADE  
(Along P.G.L. Ramp C)

APPROVED  
For Structural Adequacy Only  
*De Carl Ruppberg*  
Engineer of Bridges & Structures

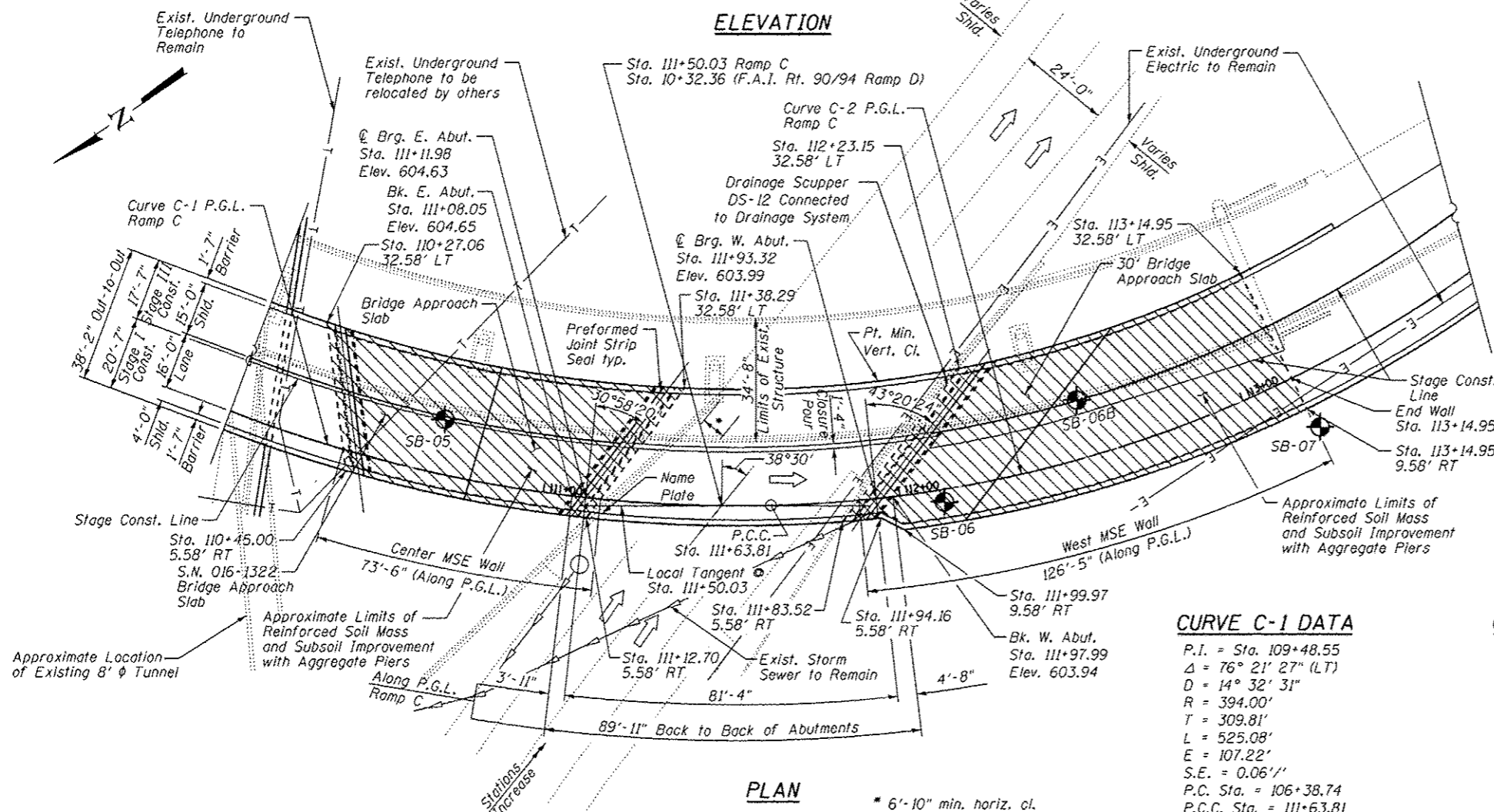


GOLLINS ENGINEERS, INC.  
JAMES M. HAMELKA  
NO. 81-6116  
EXPIRES 11-30-2014

GENERAL PLAN AND ELEVATION  
ONTARIO STREET OVER F.A.I. RT. 90/94 RAMP D  
F.A.P. RT. 0383 - SEC. 0303-474HB-R  
COOK COUNTY  
STATION 111+50.03  
STRUCTURE NO. 016-1323

CURVE C-1 DATA  
P.I. = Sta. 109+48.55  
Δ = 76° 21' 27" (LT)  
D = 14° 32' 31"  
R = 394.00'  
T = 309.81'  
L = 525.08'  
E = 107.22'  
S.E. = 0.06'/'  
P.C. Sta. = 106+38.74  
P.C.C. Sta. = 111+63.81

CURVE C-2 DATA  
P.I. = Sta. 118+82.33  
Δ = 128° 03' 26" (LT)  
D = 16° 22' 13"  
R = 350.00'  
T = 718.52'  
L = 782.26'  
E = 449.23'  
S.E. = 0.06'/'  
P.C.C. Sta. = 111+63.81  
P.T. Sta. = 119+46.07



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Chicago, IL 60606  
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Fax: 312.467.1101  
www.collinseng.com

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PLOT DATE	DRAWN - DR	REVISIONS
	CHECKED - JMH	REVISIONS

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CHECKED - JMH	REVISIONS

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION  
STRUCTURE NO. 016-1323  
SHEET NO. SRI OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	242
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	

**INDEX OF SHEETS**

SR1	General Plan and Elevation
SR2	General Notes, Index of Sheets and Total Bill of Material
SR3	Substructure Layout
SR4	Stage Construction Details
SR5	Temporary Concrete Barrier for Stage Construction
SR6	Top of Slab Plan
SR7-SR8	Top of Slab Elevations
SR9	Top of East Approach Slab Elevations
SR10	Top of West Approach Slab Elevations
SR11	Superstructure
SR12	Superstructure Parapet Elevations
SR13	Superstructure Details
SR14	Superstructure Bill of Material
SR15	Prefomed Joint Strip Seal
SR16	Drainage System
SR17	Drainage Scupper, DS-12
SR18	Framing Plan
SR19	Moment and Reaction Tables
SR20	Girder Elevations
SR21	Girder Layout
SR22-SR23	Steel Details
SR24	Bearing Layout
SR25-SR26	HLMR Bearing Details
SR27	East Abutment
SR28-SR29	East Abutment / Center MSE Wall Details
SR30	East Abutment Details
SR31	West Abutment
SR32	West Abutment / West MSE Wall Details
SR33	West Abutment Details
SR34-SR35	East Bridge Approach Slab Details
SR36-SR37	West Bridge Approach Slab Details
SR38	Bar Splicer Assembly and Mechanical Splicer Details
SR39-SR41	Soil Borings

**GENERAL NOTES**

Except as otherwise noted, fasteners shall be ASTM A325 Type 1, mechanically galvanized bolts Bolts 7/8-in.  $\phi$ , holes 15/16-in.  $\phi$ , unless otherwise noted.

Calculated weight of Structural Steel: AASHTO M 270 Grade 50 = 144,340 lbs.

No field welding is permitted except as specified in the contract documents.

Reinforcement bars designated (E) shall be epoxy coated.

If the Contractor elects to use cantilever forming brackets on the exterior beams or girders, the brackets shall be placed at the same locations as required for the hardwood blocks in Article 503.06(b) of the Standard Specifications. If additional cantilever forming brackets are required, hardwood blocking shall be wedged between the exterior and first interior beam at each of these additional bracket locations.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.

Concrete Sealer shall be applied to the designated areas of the abutment.

The Organic Zinc Rich Primer / Epoxy / Urethane Paint System shall be used for painting of new structural steel except where otherwise noted. The entire system shall be shop applied, with the exception of the exterior surface and the bottom of the bottom flange of fascia beams, masked off connection surfaces, field installed fasteners and damaged areas shall be touched up in the field. The color of the final finish coat for all interior steel surfaces shall be Gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be Reddish Brown, Munsell No. 2.5YR 3/4.

The Contractor shall retain the services of an engineering firm, pre qualified in the IDOT consultant selection category of Highway Bridges (Advanced Typical), for preparation of the Structural Assessment Report(s). Contractor's pre approval shall not be applicable for this project. See Special Provision.

Current Ratings on File for Existing Structure  
 Inventory: HS 9.5  
 Operating: HS 15.8  
 Live Load Restrictions: No

Inventory and Operating Ratings and Live Load Restrictions are provided for information only. Inventory and Operating Ratings are based on HS loading and configuration. Live Load Restrictions are based on Illinois legal loads and configurations. The Ratings and Live Load Restrictions are not necessarily representative of capacities to support the Contractor's equipment.

Slipforming of the parapets is not allowed.

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Removal and Disposal of Unsuuitable Material for Structures	Cu. Yd.		1,025.4	1,025.4
Concrete Structures	Cu. Yd.		108	108
Concrete Superstructure	Cu. Yd.	397.6		397.6
Bridge Deck Grooving	Sq. Yd.	576		576
Protective Coat	Sq. Yd.	1435		1435
Furnishing and Erecting Structural Steel	L. Sum	0.19		0.19
Stud Shear Connectors	Each	2,853		2,853
Reinforcement Bars	Pound		14,370	14,370
Reinforcement Bars, Epoxy Coated	Pound	77,230	41,420	118,650
Bar Splicers	Each	438	213	651
Mechanical Splicers	Each	276		276
Name Plates	Each	1		1
Permanent Casing	Foot		755	755
Drilled Shaft in Soil	Cu. Yd.		126.2	126.2
Prefomed Joint Strip Seal	Foot	101.0		101.0
Anchor Bolts, 1"	Each	56		56
Concrete Sealer	Sq. Ft.		1,030	1,030
Drainage Scuppers, DS-12	Each	1		1
Drainage System	L. Sum	0.5		0.5
Mechanically Stabilized Earth Retaining Wall	Sq. Ft.		9,896	9,896
Temporary Mechanically Stabilized Earth Retaining Wall	Sq. Ft.		4,377	4,377
Aggregate Column Ground Improvement	L. Sum		0.77	0.77
High Load Multi-Rotational Bearings, Guided Expansion, 200 kips	Each	7		7
High Load Multi-Rotational Bearings, Fixed, 150 kips	Each	7		7



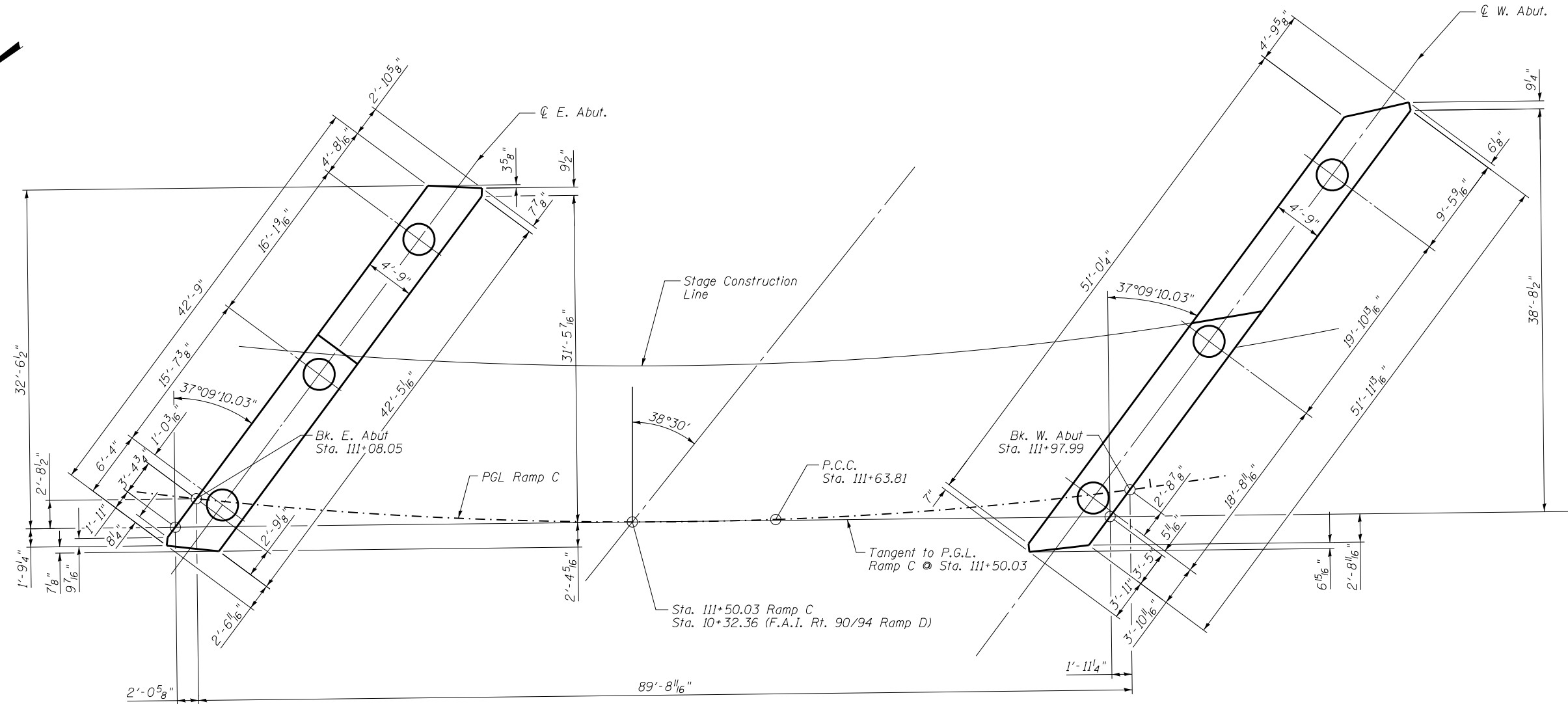
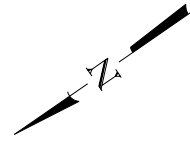
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**GENERAL NOTES, SHEET INDEX AND TOTAL BILL OF MATERIAL  
STRUCTURE NO. 016-1323**

SHEET NO. SR2 OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	243
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	

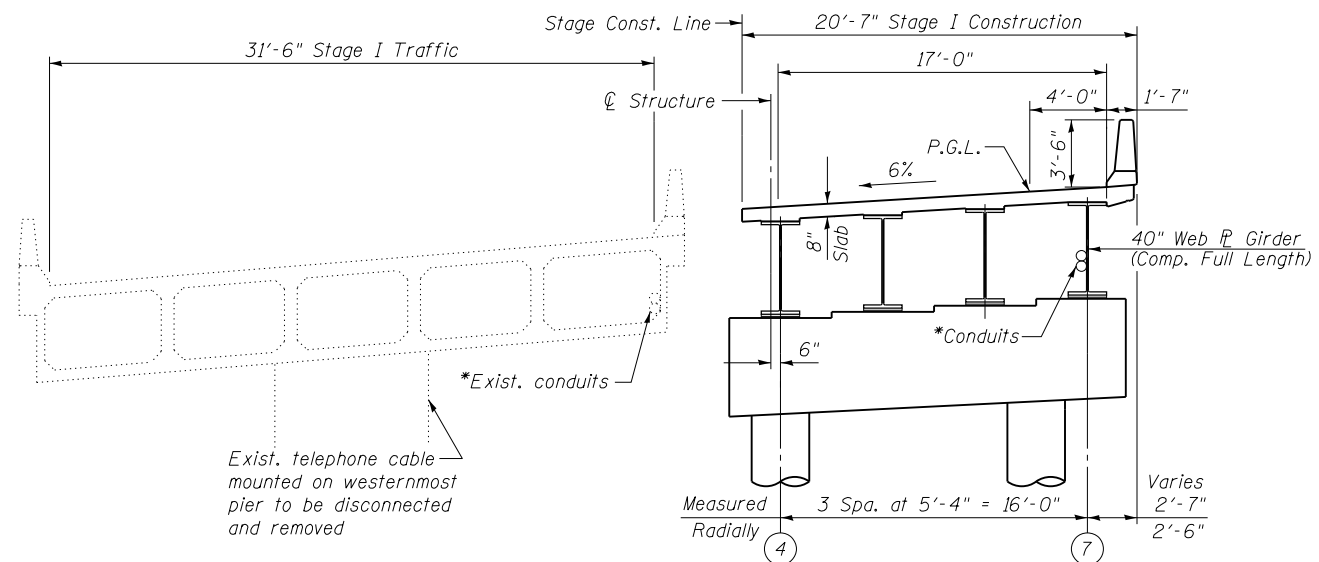


**SUBSTRUCTURE LAYOUT PLAN**

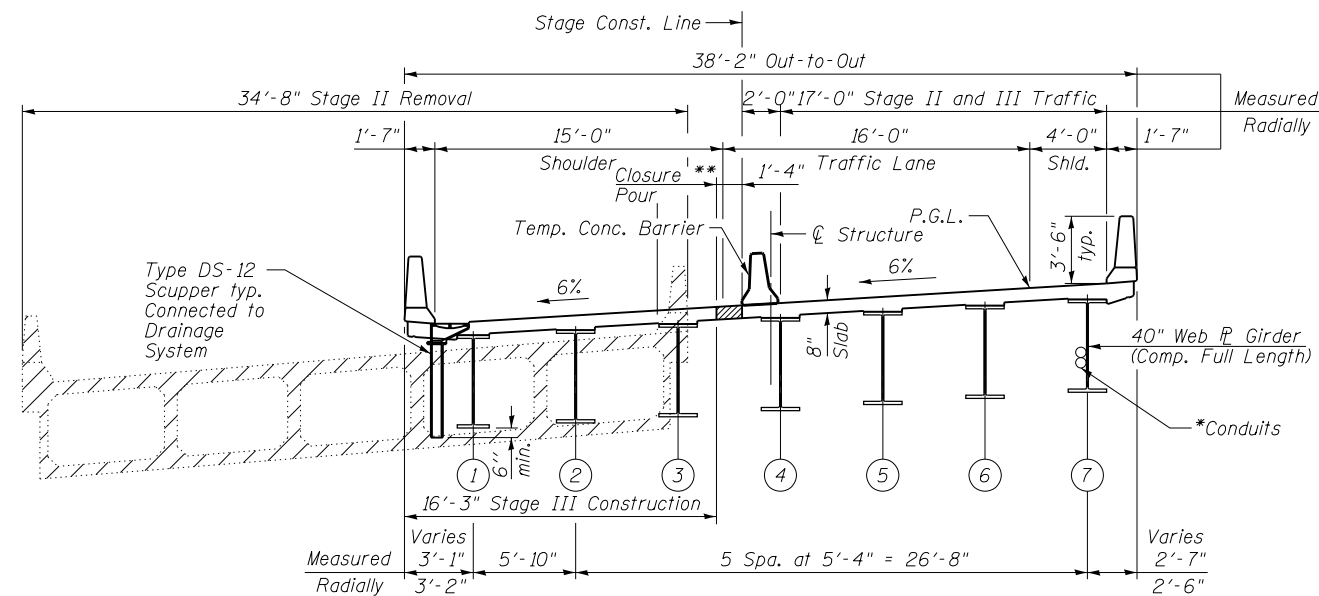
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PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	244
<b>CONTRACT NO. 60F63</b>				
ILLINOIS FED. AID PROJECT				

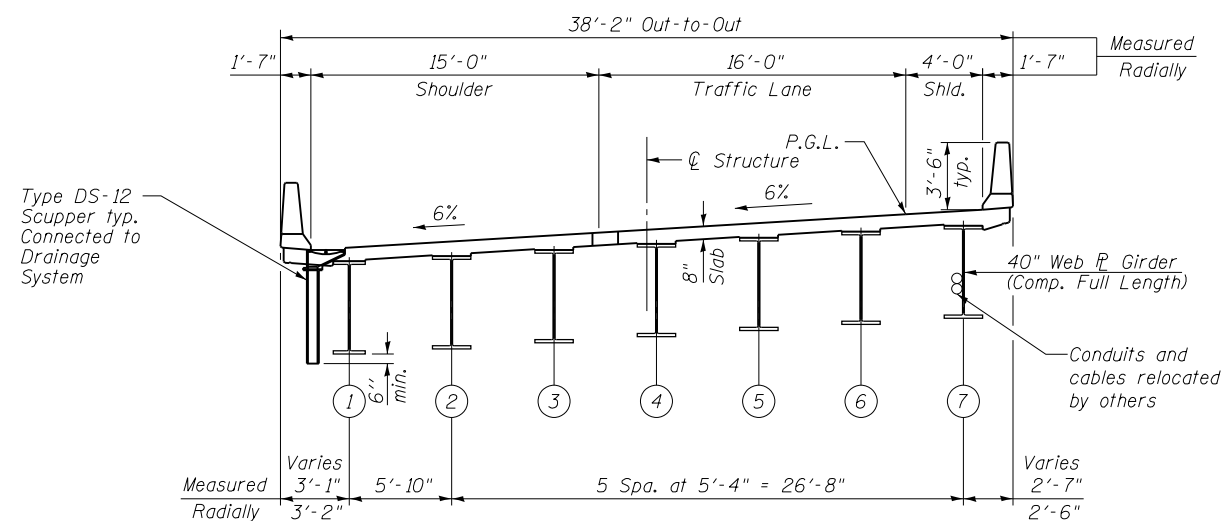




**TYPICAL CROSS SECTION - STAGE I**  
(Looking West)



**TYPICAL CROSS SECTION - STAGE II AND III**  
(Looking West)



**TYPICAL CROSS SECTION - FINAL**  
(Looking West)

\* Existing Conduits presumed to be empty and shall be removed. Contractor to verify prior to removal by opening these ducts first to confirm. If the ducts are not empty, they shall be protected, temporarily supported and/or relocated and mounted to the new structures. This work shall be included in the pay item for Removal of Existing Structures, Special.

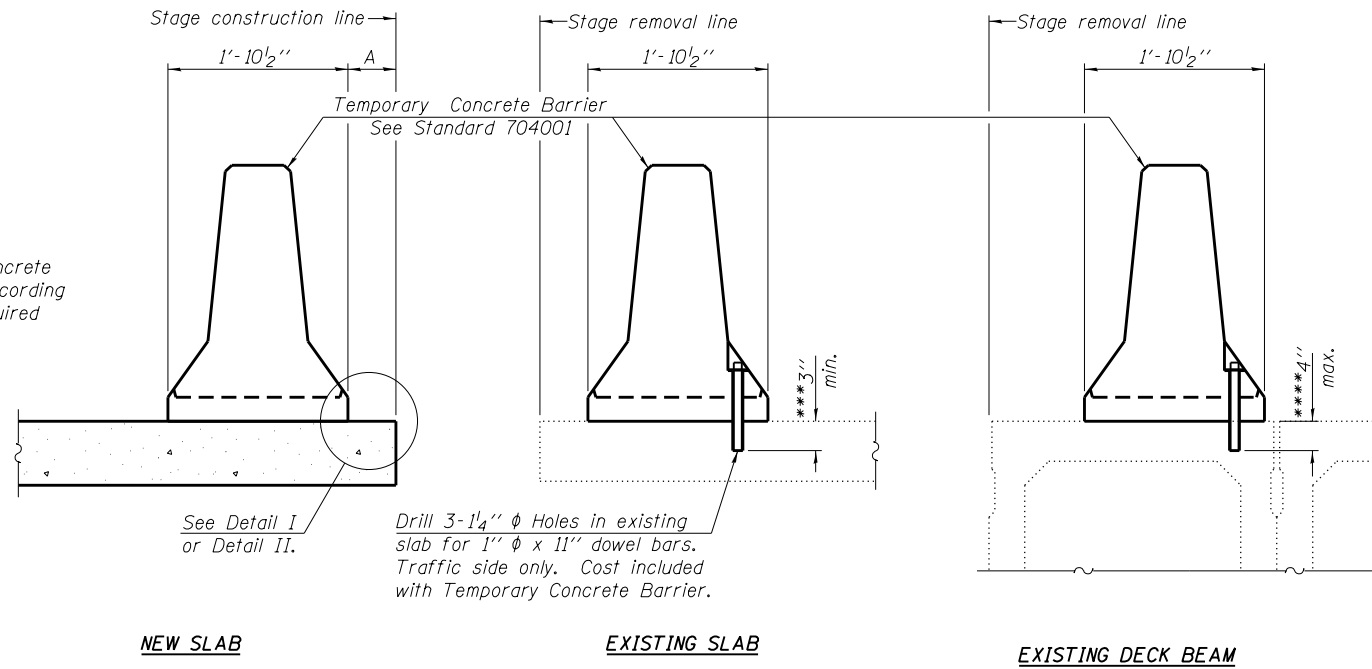
\*\* Closure pour to be completed following Stage III deck pour to account for differential deflections of Stage I and Stage III structures.

**Notes:**  
See sheet SR16 of SR41 for Drainage System Details.  
See SN. 016-1322 plans for Removal of Existing Structure Details.  
Stage construction line of individual substructure units vary with respect to deck and approach stage construction line.  
Refer to roadway plans for quantity of Temporary Concrete Barriers.

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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	245
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

When "A" is 3'-6" or less, the temporary concrete barrier shall be anchored to the new slab according to Detail I or Detail II. No anchorage is required when "A" is greater than 3'-6".



**SECTIONS THRU SLAB OR DECK BEAM**

**NOTES**

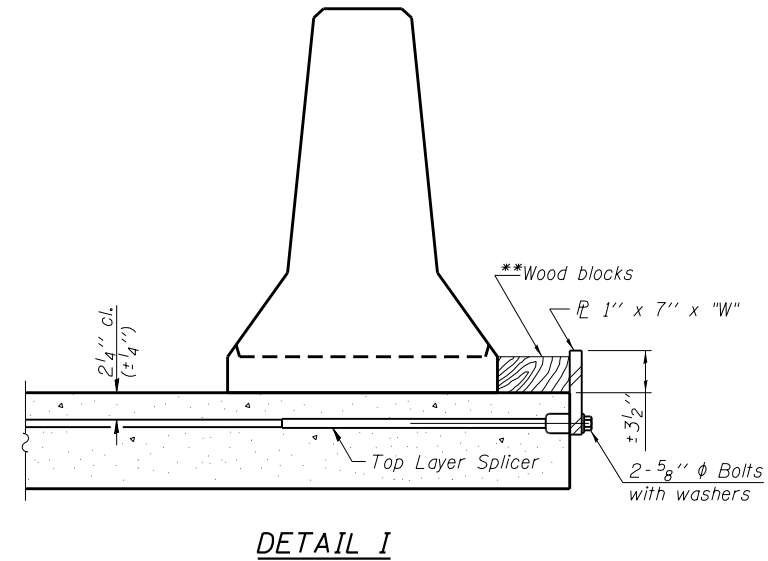
Detail I - With Bar Splicer or Couplers:  
Connect one (1) 1" x 7" x "W" steel  $\bar{L}$  to the top layer of couplers with 2-5/8"  $\phi$  bolts screwed to coupler at approximate  $\bar{C}$  of each barrier panel.

Detail II - With Extended Reinforcement Bars:  
Connect one (1) 1" x 7" x "W" steel  $\bar{L}$  to the concrete slab or concrete wearing surface with 2-5/8"  $\phi$  Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate  $\bar{C}$  of each barrier panel.

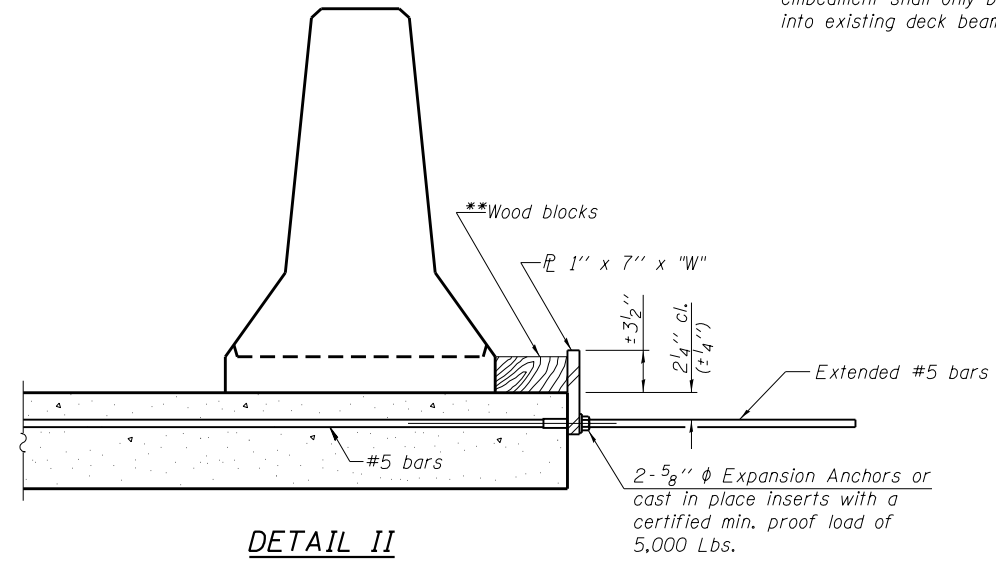
Cost of anchorage is included with Temporary Concrete Barrier. The 1" x 7" x "W" plate shall not be removed until stage II construction forms and all reinforcement bars are in place and the concrete is ready to be placed.

\*\*\* Dimension shown is minimum required embedment into concrete. If hot-mix asphalt wearing surface is present, minimum embedment shall be in addition to wearing surface depth.

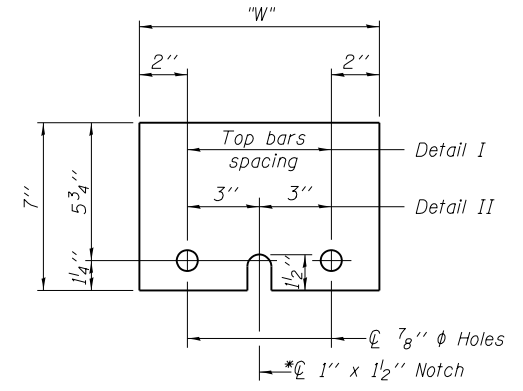
\*\*\*\* If existing deck beam is to remain in place after stage construction, embedment shall only be into wearing surface and not into existing deck beam concrete.



**DETAIL I**



**DETAIL II**



**STEEL RETAINER  $\bar{L}$  1" x 7" x "W"**  
\* Required only with Detail II

\*\* Wood blocks may be omitted when required to provide minimum stage traffic lane width. When the wood blocks are omitted, the concrete barrier shall be in direct contact with the steel retainer plate.

"W" = Top bars spacing + 4"

R-27

7-1-10

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133 N. Wacker Dr.  
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www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

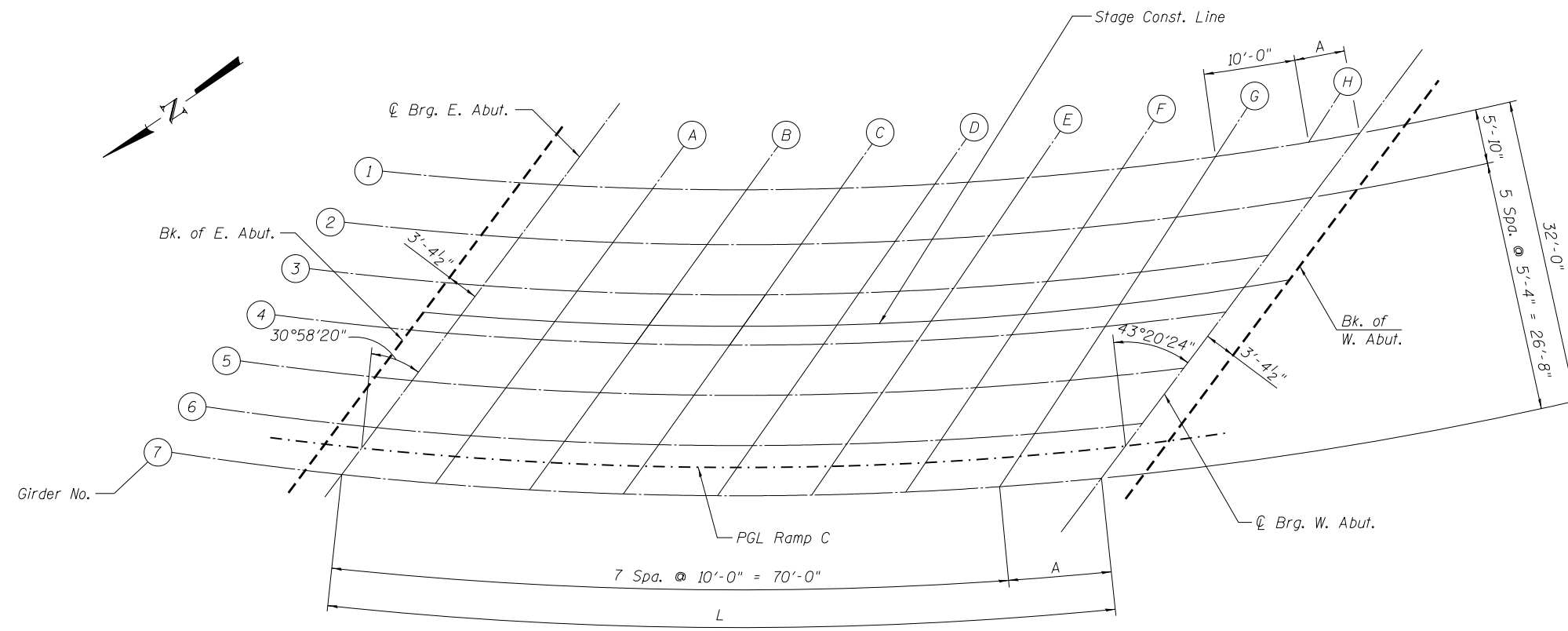
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TEMPORARY CONCRETE BARRIER FOR STAGE CONSTRUCTION  
STRUCTURE NO. 016-1323**

SHEET NO. SR5 OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	246
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	



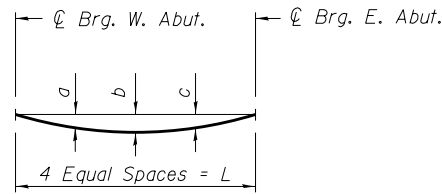
**PLAN**

**SCREED DIMENSION LAYOUT**

Girder	L	A
1	85'-6"	5'-6"
2	84'-6 1/8"	14'-6 1/8"
3	83'-8"	13'-8"
4	82'-10 3/4"	12'-10 3/4"
5	82'-2"	12'-2"
6	81'-6"	11'-6"
7	80'-10 3/8"	10'-10 3/8"

USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	247
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	



**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of concrete only.)

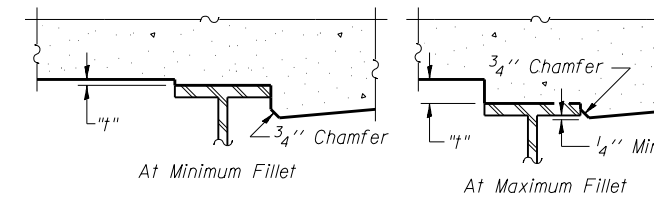
**Notes:**

The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below and on sheet SR8 of SR41.

See SR6 of SR41 for Screed Dimension Layout.

**DEAD LOAD DEFLECTIONS**

Location	Girder						
	1	2	3	4	5	6	7
a	3/4"	1 1/4"	1 3/8"	3/4"	7/8"	1"	1 1/4"
b	1 1/4"	1 5/8"	1 7/8"	1"	1 1/4"	1 1/2"	1 3/4"
c	7/8"	1 1/8"	1 3/8"	5/8"	3/4"	1"	1 1/4"



To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown on sheet SR6 of SR41. These elevations subtracted from the "Theoretical Grade Elevations Adjusted For Dead Load Deflection" shown below and on sheet SR8 of SR41, minus slab thickness, equals the fillet heights "t" above top flange of beams.

**FILLET HEIGHTS**

**GIRDER 1**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+27.04	-29.50	602.77	602.77
☉ BRG. E. ABUT.	111+31.41	-29.50	602.75	602.75
A	111+42.22	-29.50	602.67	602.70
B	111+53.03	-29.50	602.59	602.65
C	111+63.84	-29.50	602.50	602.58
D	111+74.76	-29.48	602.40	602.50
E	111+85.68	-29.42	602.30	602.39
F	111+96.60	-29.33	602.19	602.28
G	112+07.51	-29.20	602.08	602.14
H	112+18.41	-29.03	601.97	601.99
☉ BRG. W. ABUT.	112+24.41	-28.92	601.90	601.90
BK. W. ABUT.	112+29.87	-28.81	601.84	601.84

**GIRDER 2**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+23.00	-23.67	603.15	603.15
☉ BRG. E. ABUT.	111+27.27	-23.67	603.12	603.12
A	111+37.91	-23.67	603.05	603.10
B	111+48.55	-23.67	602.97	603.07
C	111+59.19	-23.67	602.89	603.00
D	111+69.88	-23.66	602.80	602.92
E	111+80.60	-23.62	602.70	602.82
F	111+91.32	-23.55	602.60	602.70
G	112+02.04	-23.44	602.49	602.55
☉ BRG. W. ABUT.	112+17.59	-23.21	602.33	602.33
BK. W. ABUT.	112+22.85	-23.12	602.27	602.27

**GIRDER 3**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+19.43	-18.33	603.49	603.49
☉ BRG. E. ABUT.	111+23.62	-18.33	603.46	603.46
A	111+34.11	-18.33	603.40	603.45
B	111+44.60	-18.33	603.32	603.44
C	111+55.10	-18.33	603.24	603.38
D	111+65.59	-18.33	603.15	603.31
E	111+76.14	-18.31	603.06	603.20
F	111+86.69	-18.25	602.96	603.08
G	111+97.24	-18.16	602.86	602.93
☉ BRG. W. ABUT.	112+11.66	-17.97	602.71	602.71
BK. W. ABUT.	112+16.76	-17.89	602.65	602.65

**STAGE CONSTRUCTION JOINT**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+17.27	-15.00	603.70	603.70
☉ BRG. E. ABUT.	111+21.41	-15.00	603.68	603.68
A	111+31.80	-15.00	603.61	603.65
B	111+42.20	-15.00	603.54	603.62
C	111+52.60	-15.00	603.46	603.56
D	111+62.99	-15.00	603.38	603.48
E	111+73.44	-15.00	603.28	603.38
F	111+83.93	-15.00	603.18	603.27
G	111+94.45	-15.00	603.08	603.13
☉ BRG. W. ABUT.	112+08.42	-15.00	602.92	602.92
BK. W. ABUT.	112+13.52	-15.00	602.87	602.87

**GIRDER 4**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+15.99	-13.00	603.83	603.83
☉ BRG. E. ABUT.	111+20.10	-13.00	603.81	603.81
A	111+30.44	-13.00	603.74	603.77
B	111+40.78	-13.00	603.67	603.73
C	111+51.12	-13.00	603.59	603.66
D	111+61.46	-13.00	603.51	603.59
E	111+71.84	-12.99	603.42	603.50
F	111+82.22	-12.95	603.32	603.38
G	111+92.61	-12.87	603.22	603.26
☉ BRG. W. ABUT.	112+05.99	-12.72	603.09	603.09
BK. W. ABUT.	112+10.94	-12.65	603.04	603.04

**GIRDER 5**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+12.66	-7.67	604.17	604.17
☉ BRG. E. ABUT.	111+16.69	-7.67	604.15	604.15
A	111+26.89	-7.67	604.08	604.12
B	111+37.09	-7.67	604.02	604.09
C	111+47.28	-7.67	603.94	604.03
D	111+57.48	-7.67	603.86	603.96
E	111+67.69	-7.66	603.78	603.87
F	111+77.91	-7.64	603.68	603.75
G	111+88.14	-7.57	603.59	603.63
☉ BRG. W. ABUT.	112+00.57	-7.45	603.46	603.46
BK. W. ABUT.	112+05.38	-7.39	603.42	603.42

(Sheet 1 of 2)

**GIRDER 6**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+09.43	-2.33	604.51	604.51
☉ BRG. E. ABUT.	111+13.39	-2.33	604.48	604.48
A	111+23.45	-2.33	604.43	604.47
B	111+33.50	-2.33	604.36	604.45
C	111+43.56	-2.33	604.29	604.40
D	111+53.62	-2.33	604.21	604.33
E	111+63.68	-2.33	604.13	604.24
F	111+72.75	-2.32	604.04	604.13
G	111+83.82	-2.27	603.95	604.00
☉ BRG. W. ABUT.	111+95.39	-2.17	603.84	603.84
BK. W. ABUT.	112+00.06	-2.12	603.79	603.79

**PGL**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+08.05	0.00	604.65	604.65
☉ BRG. E. ABUT.	111+11.98	0.00	604.63	604.63
A	111+21.98	0.00	604.57	604.63
B	111+31.98	0.00	604.51	604.61
C	111+41.98	0.00	604.44	604.57
D	111+51.98	0.00	604.37	604.50
E	111+61.98	0.00	604.28	604.41
F	111+71.98	0.00	604.20	604.29
G	111+82.01	0.00	604.10	604.16
☉ BRG. W. ABUT.	111+93.32	0.00	603.99	603.99
BK. W. ABUT.	111+97.99	0.00	603.94	603.94

**GIRDER 7**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. E. ABUT.	111+06.31	3.00	604.84	604.84
☉ BRG. E. ABUT.	111+10.19	3.00	604.82	604.82
A	111+20.12	3.00	604.77	604.82
B	111+30.04	3.00	604.70	604.81
C	111+39.97	3.00	604.64	604.77
D	111+49.89	3.00	604.56	604.71
E	111+59.82	3.00	604.48	604.62
F	111+69.73	3.01	604.40	604.50
G	111+79.65	3.04	604.31	604.37
☉ BRG. W. ABUT.	111+90.42	3.11	604.21	604.21
BK. W. ABUT.	111+94.97	3.15	604.16	604.16

(Sheet 2 of 2)



USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 016-1323**

SHEET NO. SR8 OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	249
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	

**SOUTH EDGE OF SLAB**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	110+82.29	-32.58	602.81
A1	110+93.20	-32.58	602.77
A2	111+04.12	-32.58	602.72
A3	111+14.56	-32.58	602.66
W. End East Appr. Pav't	111+29.89	-32.58	602.57

**SOUTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	110+82.12	-31.00	602.91
A1	110+92.99	-31.00	602.86
A2	111+03.86	-31.00	602.81
A3	111+14.24	-31.00	602.76
W. End East Appr. Pav't	111+28.75	-31.00	602.67

**STAGE CONSTRUCTION JOINT**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	110+80.49	-15.00	603.87
A1	110+90.89	-15.00	603.83
A2	111+01.29	-15.00	603.79
A3	111+11.23	-15.00	603.74
W. End East Appr. Pav't	111+17.88	-15.00	603.70

**PGL RAMP C**

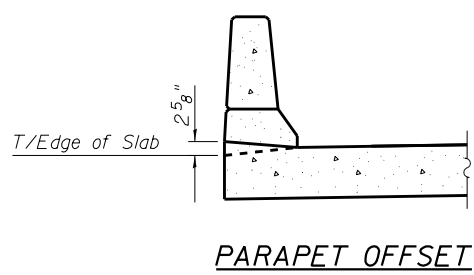
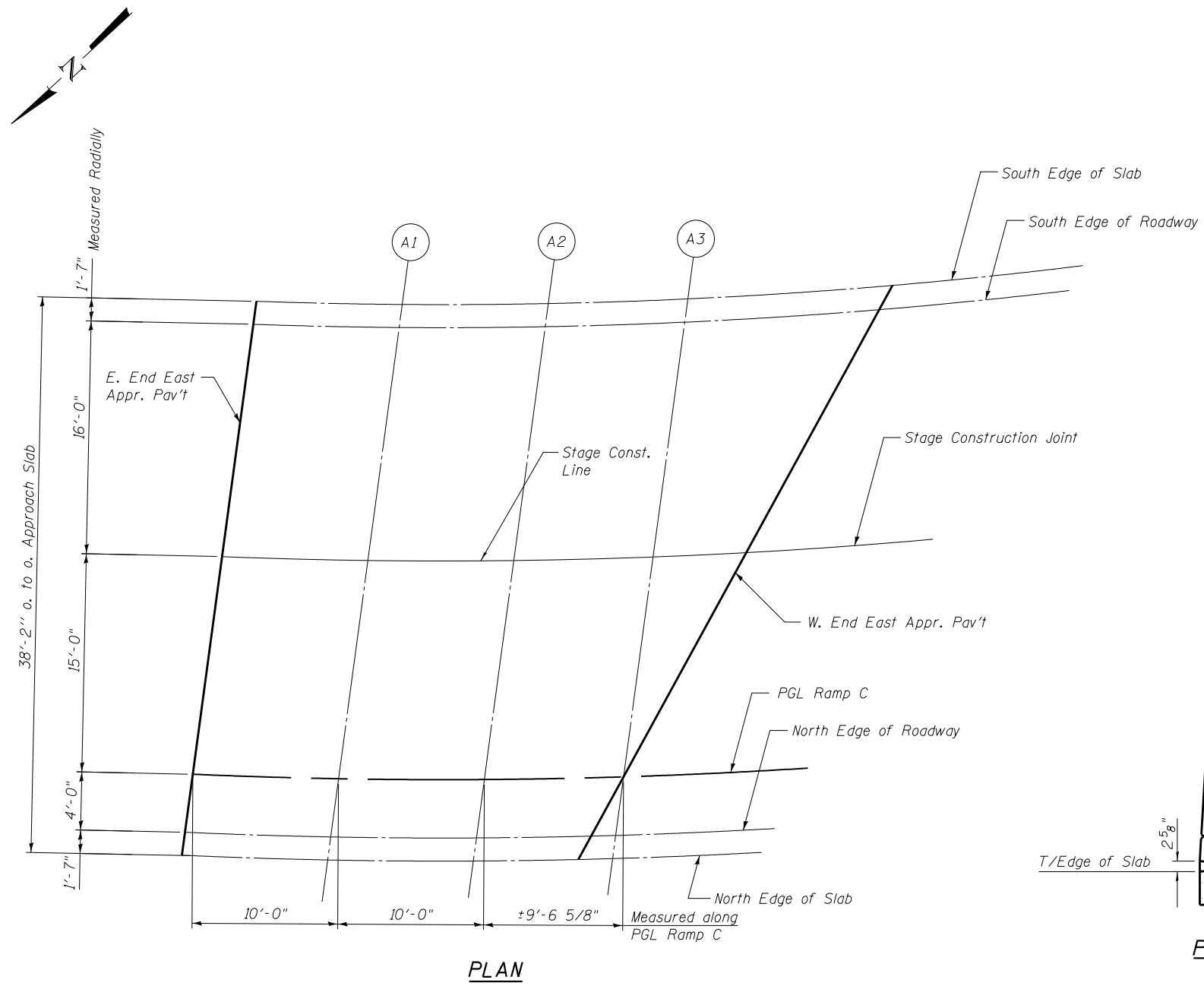
Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	110+79.08	0.00	604.78
A1	110+89.08	0.00	604.74
A2	110+99.08	0.00	604.70
W. End East Appr. Pav't/A3	111+08.63	0.00	604.65

**NORTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	110+78.72	4.00	605.02
A1	110+88.62	4.00	604.98
A2	110+98.52	4.00	604.94
W. End East Appr. Pav't	111+06.31	4.00	604.90

**NORTH EDGE OF SLAB**

Location	Station	Offset	Theoretical Grade Elevations
E. End East Appr. Pav't	110+78.59	5.58	605.11
A1	110+88.44	5.58	605.08
A2	110+98.30	5.58	605.04
W. End East Appr. Pav't	111+05.40	5.58	605.00



**SOUTH EDGE OF SLAB**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	112+33.89	-32.58	601.56
A4	112+46.32	-32.58	601.40
A5	112+58.96	-32.58	601.22
W. End West Appr. Pav't	112+71.85	-32.58	601.03

**SOUTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	112+31.83	-31.00	601.68
A4	112+44.10	-31.00	601.52
A5	112+56.57	-31.00	601.35
W. End West Appr. Pav't	112+69.27	-31.00	601.16

**STAGE CONSTRUCTION JOINT**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	112+09.50	-12.00	603.09
A4	112+20.24	-12.00	602.97
A5	112+31.04	-12.00	602.83
W. End West Appr. Pav't	112+41.89	-12.00	602.69

**PGL RAMP C**

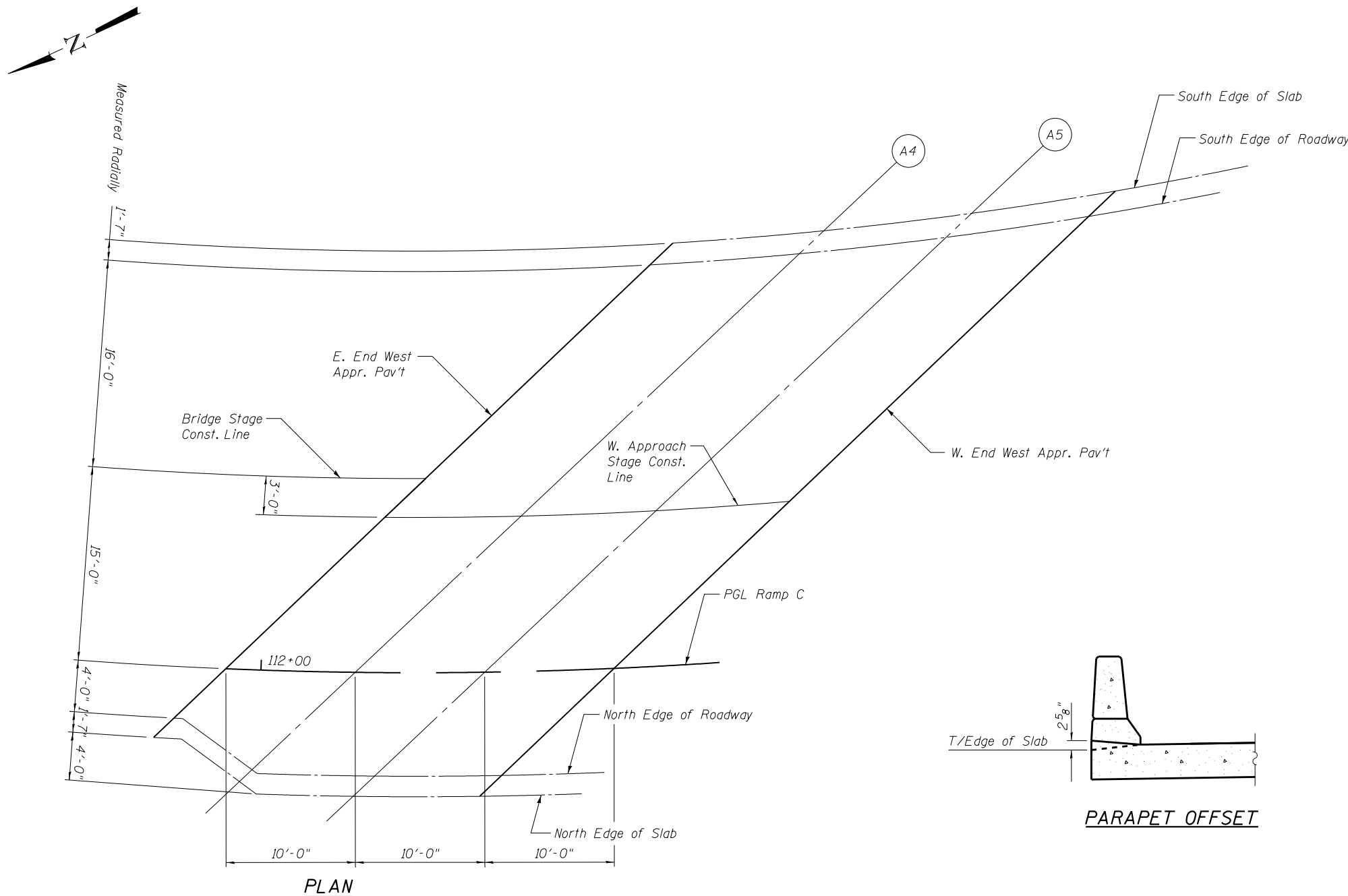
Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	111+97.29	0.00	603.95
A4	112+07.29	0.00	603.84
A5	112+17.29	0.00	603.72
W. End West Appr. Pav't	112+27.29	0.00	603.60

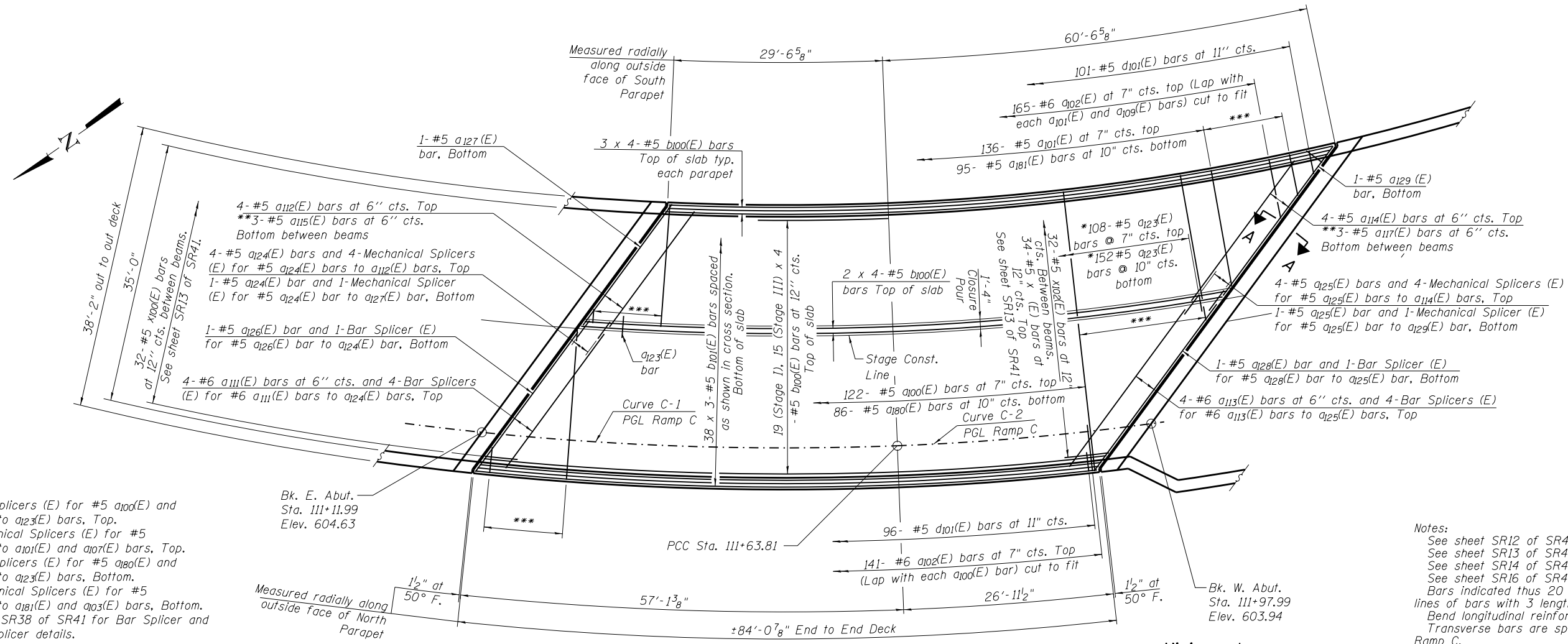
**NORTH EDGE OF ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	111+93.36	4.14	604.24
A4	111+99.63	7.74	604.39
A5	112+08.93	8.00	604.30
W. End West Appr. Pav't	112+18.45	8.00	604.19

**NORTH EDGE OF SLAB**

Location	Station	Offset	Theoretical Grade Elevations
E. End West Appr. Pav't	111+92.02	5.58	604.34
A4	111+98.72	8.70	604.45
A5	112+07.35	9.58	604.41
W. End West Appr. Pav't	112+16.78	9.58	604.30





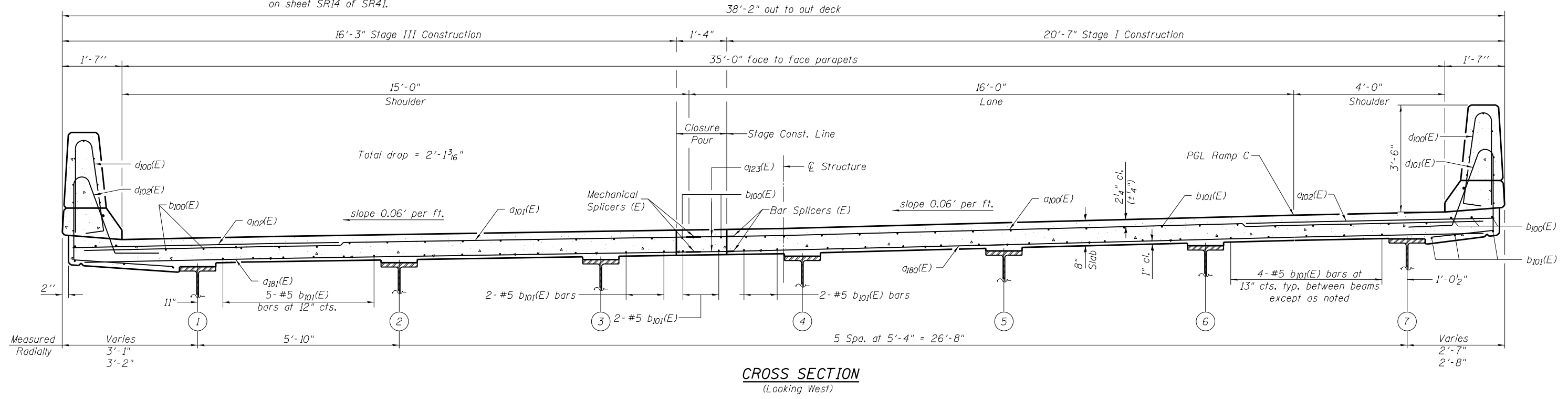
\* 108-Bar Splicers (E) for #5 a100(E) and a110(E) bars to a123(E) bars, Top.  
 108-Mechanical Splicers (E) for #5 a123(E) bars to a101(E) and a107(E) bars, Top.  
 152-Bar Splicers (E) for #5 a100(E) and a106(E) bars to a123(E) bars, Bottom.  
 152-Mechanical Splicers (E) for #5 a123(E) bars to a181(E) and a103(E) bars, Bottom.  
 See sheet SR38 of SR41 for Bar Splicer and Mechanical Splicer details.

\*\* Except between Beams 1 & 2 and 3 & 4, 3- #5 a116(E) (E Abut) & 3- #5 a118(E) (W Abut) for Beams 1 & 2. See Section A-A for details between Beams 3 & 4 on sheet SR13 of SR41.  
 \*\*\*For bars in this area see Cutting Diagrams on sheet SR14 of SR41.

Notes:  
 See sheet SR12 of SR41 for parapet reinforcement.  
 See sheet SR13 of SR41 for superstructure details.  
 See sheet SR14 of SR41 for Bill of Material.  
 See sheet SR16 of SR41 for drainage details.  
 Bars indicated thus 20 x 3- #5 etc. indicates 20 lines of bars with 3 lengths per line.  
 Bend longitudinal reinforcement to fit in field.  
 Transverse bars are spaced along Curve C-1 PGL Ramp C.

**PLAN**

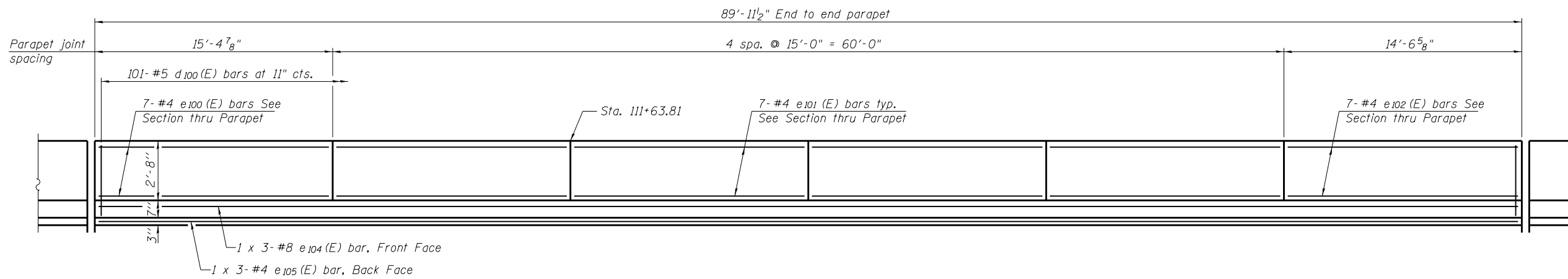
**Minimum Lap**  
 #5 bar = 3'-3"



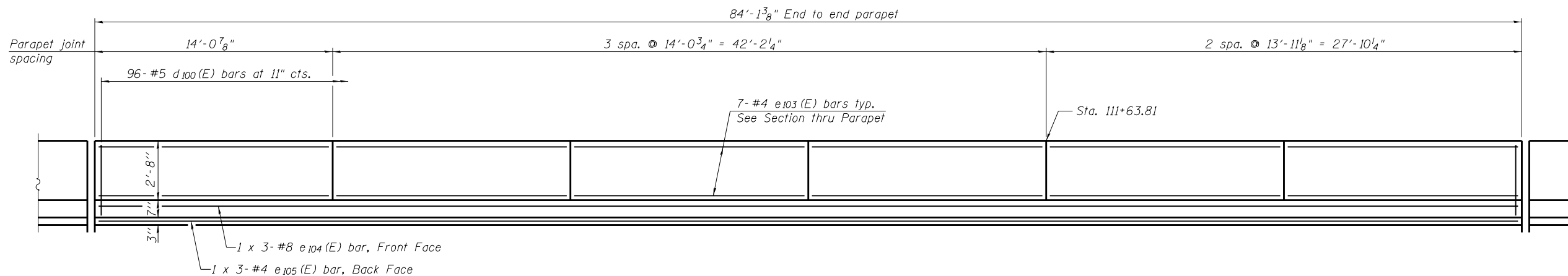
**CROSS SECTION**  
 (Looking West)

<b>COLLINS ENGINEERS</b> <small>133 N. Wacker Dr.        Suite 900        Chicago, IL 60606        Tel: (312) 704-3300        Fax: (312) 704-9320        www.collinseng.com        ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993</small>	USER NAME =	DESIGNED - AMS	REVISED	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SUPERSTRUCTURE</b> <b>STRUCTURE NO. 016-1323</b>	F.A.P. RTE. =	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE =	CHECKED - LDB	REVISED			0383	0303-474HB-R	COOK	368	252
	PLOT DATE =	DRAWN - DR	REVISED			CONTRACT NO. 60F63				
		CHECKED - JMH	REVISED			ILLINOIS FED. AID PROJECT				





**INSIDE ELEVATION OF SOUTH PARAPET**  
(Looking South)



**INSIDE ELEVATION OF NORTH PARAPET**  
(Looking South)

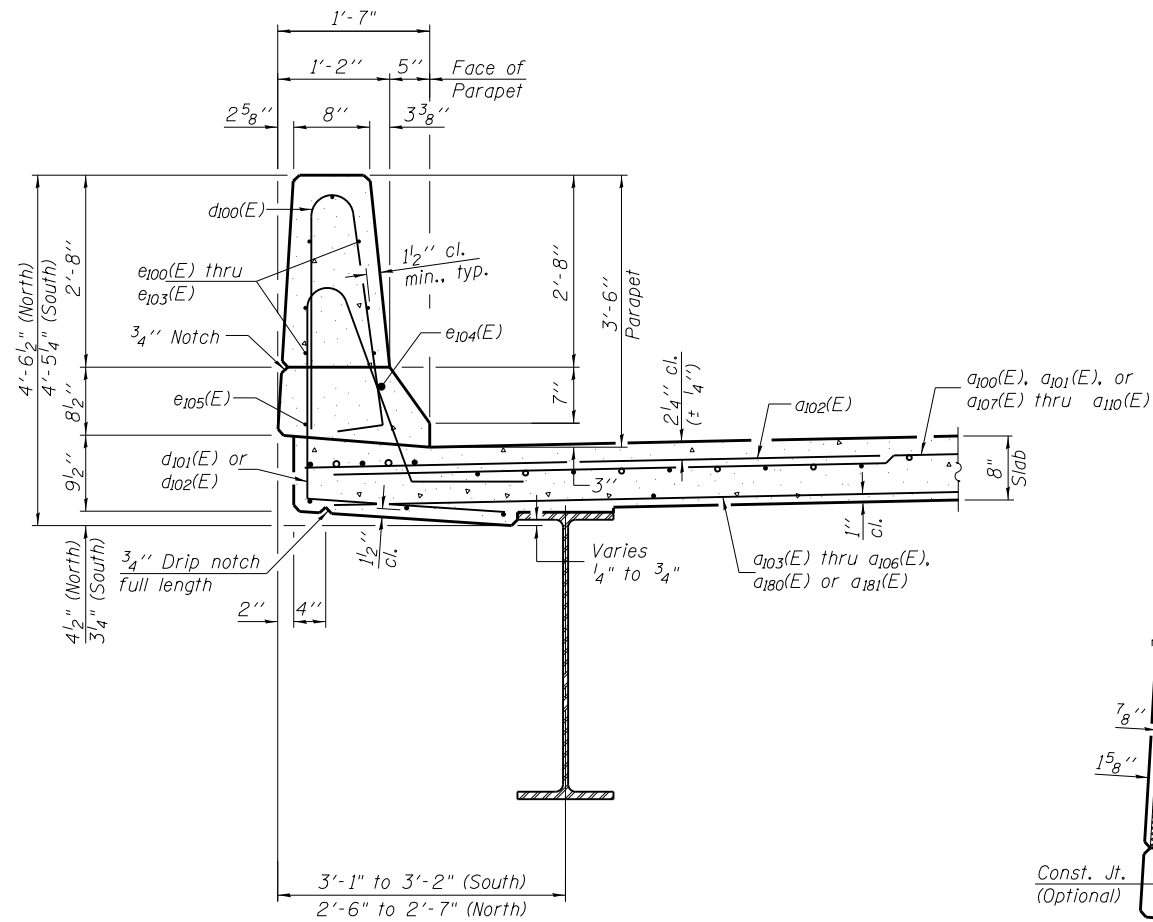
**Notes:**

See sheet SR1 and SR11 of SR41 for curve change details at Sta. 111+63.81.  
See sheet SR13 of SR41 for Section Thru Parapet.  
Bars indicated thus 1 x 3-#4 etc. indicates 1 line of bars with 3 lengths per line.  
Bend longitudinal reinforcement to fit in field.

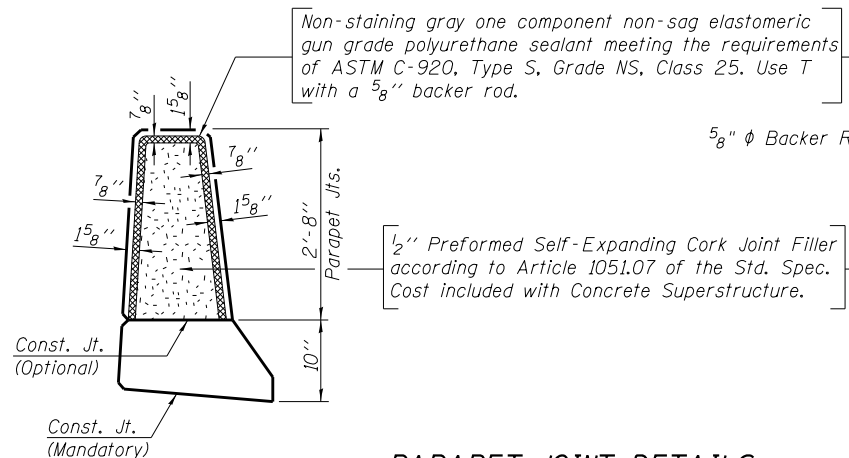
**MINIMUM BAR LAP**  
(Parapet)  
#4 bar = 2'-0"  
#8 bar = 5'-2"

USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

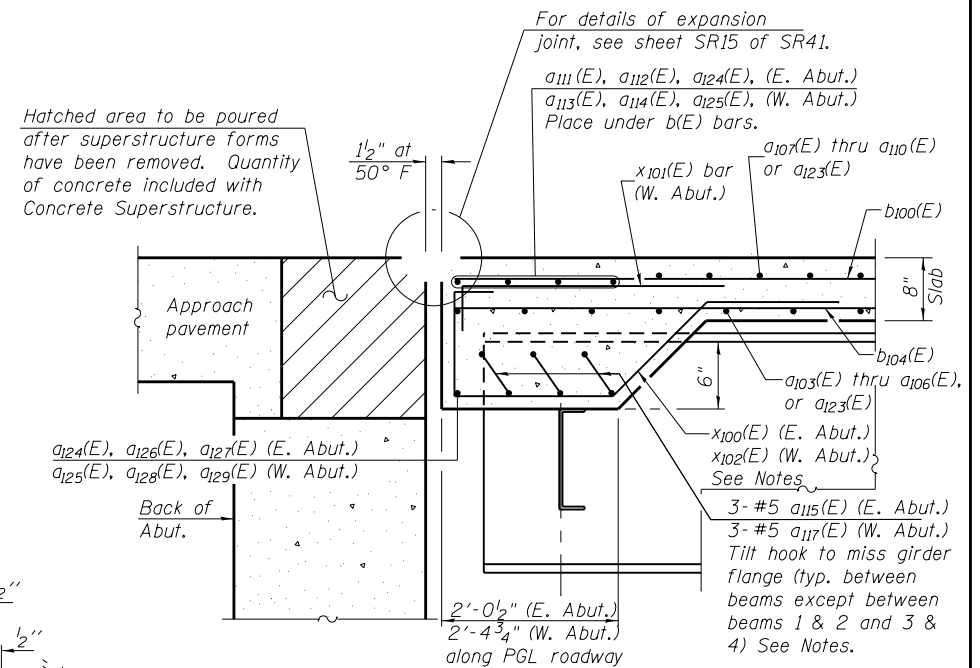
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	253
<b>CONTRACT NO. 60F63</b>				
ILLINOIS FED. AID PROJECT				



**SECTION THRU PARAPET**

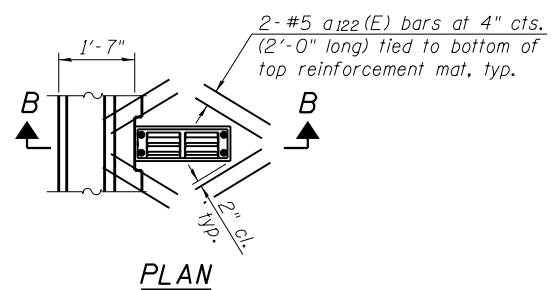


**PARAPET JOINT DETAILS**



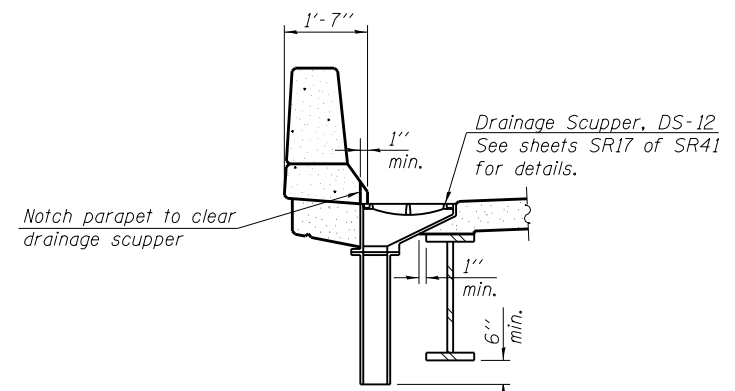
**SECTION A-A**

Notes:  
 For location of Section A-A see Sheet SR11 of SR41.  
 See sheet SR16 of SR41 for drainage details.  
 For Bottom rebar between beams 1 & 2 use:  
 3-#5 a116(E) at the East Abutment, 3-#5 a118(E) at the West Abutment.  
 For Bottom rebar between beams 3 & 4 use:  
 3-#6 a119(E) bars and 3-Bar Splicers (E) for #6 a119(E) bars (Stage I) to 3-#6 a124(E) bars and 3-Mechanical Splicers (E) for #6 a124(E) bars (Closure Pour) to 3-#6 a120(E) (Stage III) at the East Abutment,  
 3-#5 a121(E) and 3-Bar Splicers (E) for #5 a121(E) bars (Stage I) to 3-#5 a125(E) bars and 3-Mechanical Splicers (E) (Closure Pour) for #5 a125(E) bars to 3-#5 a120(E) (Stage III) at the West Abutment. Tilt hooks to miss girder flange.  
 5-#5 x100(E) or x102(E) bars, typ. between beams except 6 bars between Beams 1 & 2 and 6 bars between Beams 3 & 4 (2 Stage I, 2 Stage III, 2 Closure Pour).



**PLAN**

Note:  
 Cut longitudinal reinforcement to clear drainage scupper.

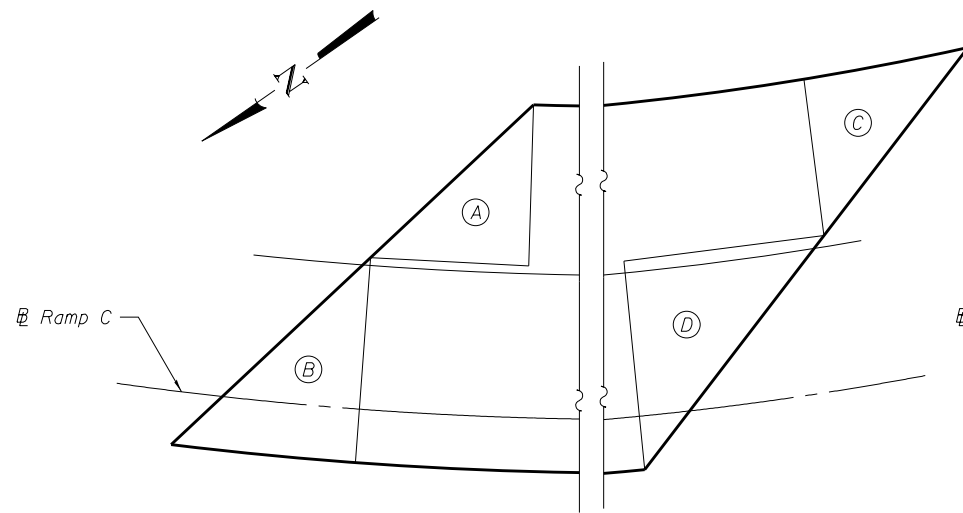


**SECTION B-B**

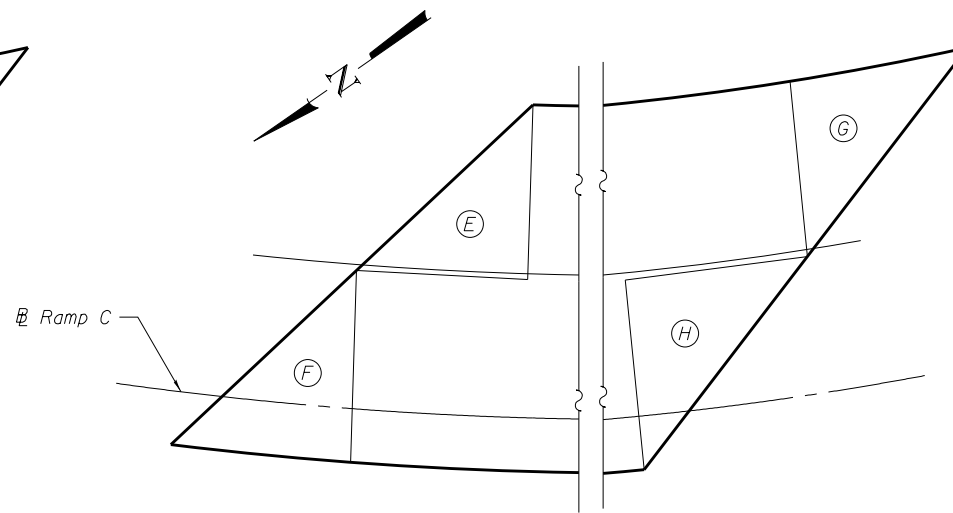
USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	254
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

**SUPERSTRUCTURE  
BILL OF MATERIAL**

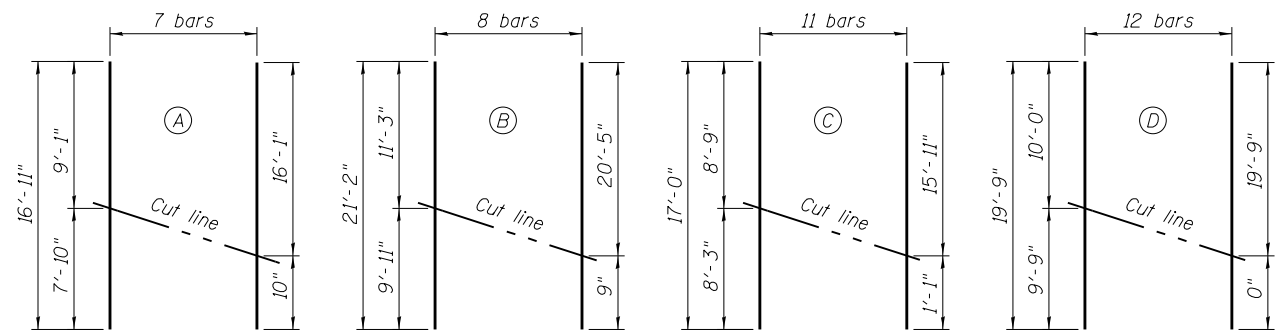


**BOTTOM BAR PLAN**



**TOP BAR PLAN**

**BRIDGE CUT BAR LOCATION PLAN**

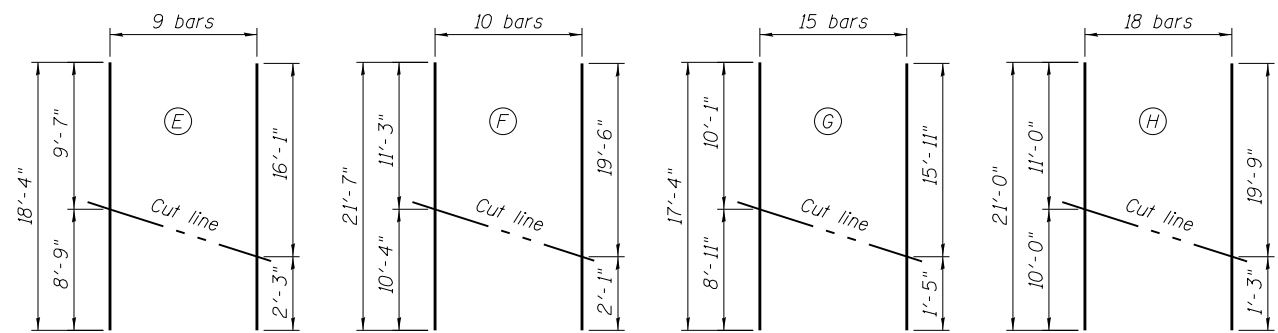


**BAR a103(E)**

**BAR a104(E)**

**BAR a105(E)**

**BAR a106(E)**

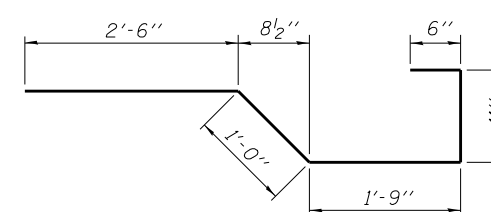


**BAR a107(E)**

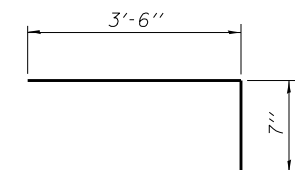
**BAR a108(E)**

**BAR a109(E)**

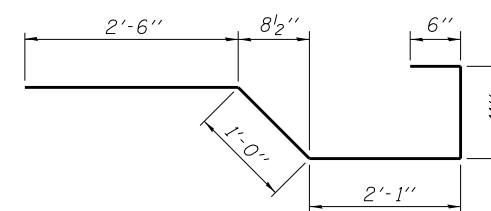
**BAR a110(E)**



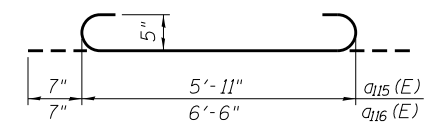
**BAR x100(E)**



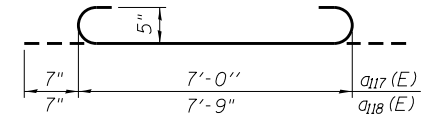
**BAR x101(E)**



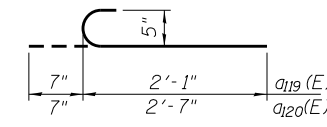
**BAR x102(E)**



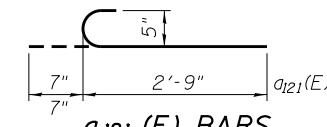
**a115(E) & a116(E) BAR**



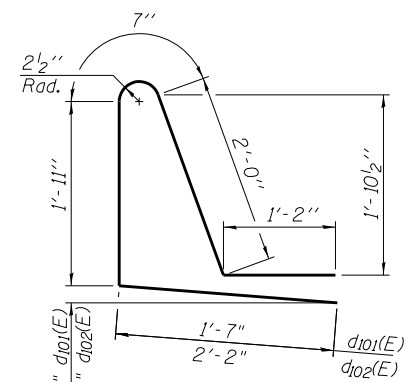
**a117(E) & a118(E) BAR**



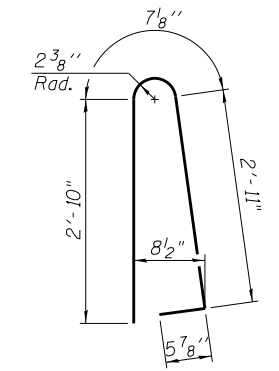
**a119(E) & a120(E) BARS**



**a121 (E) BARS**



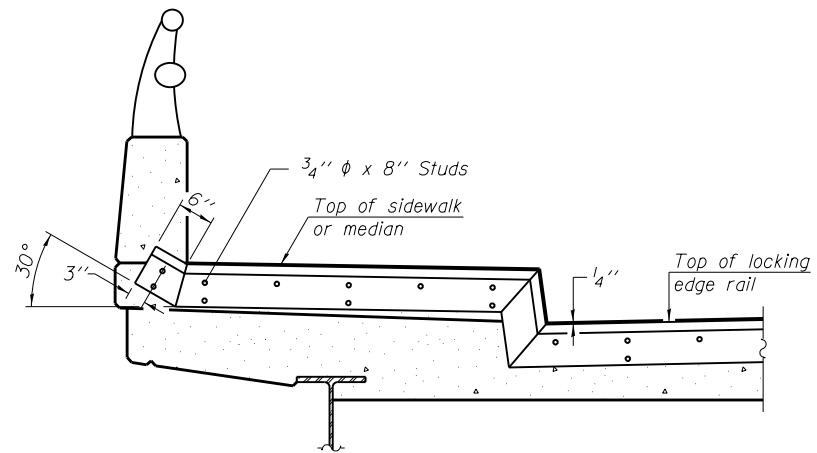
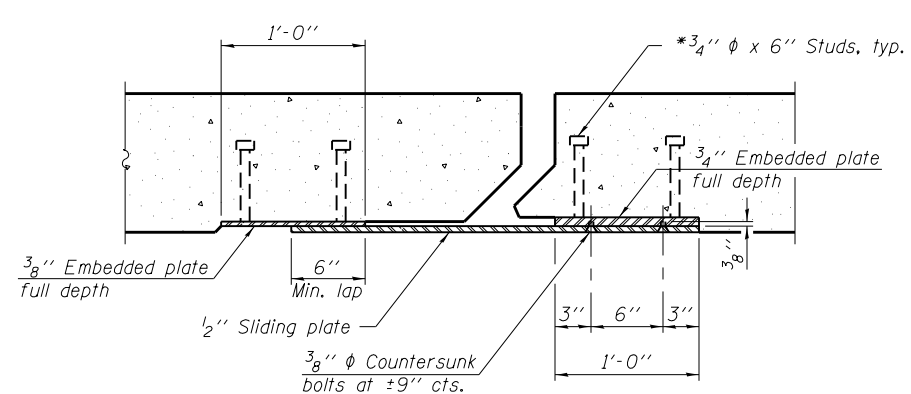
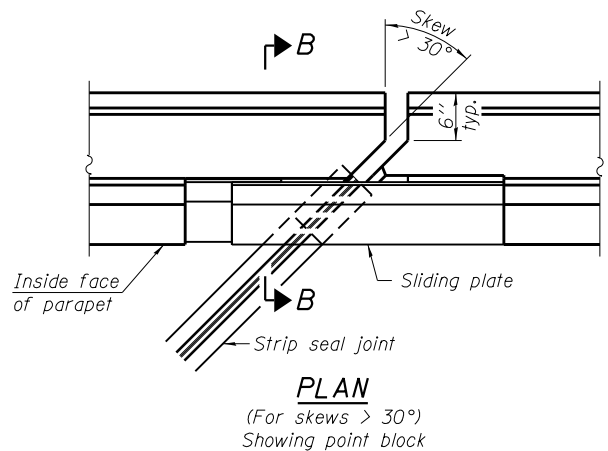
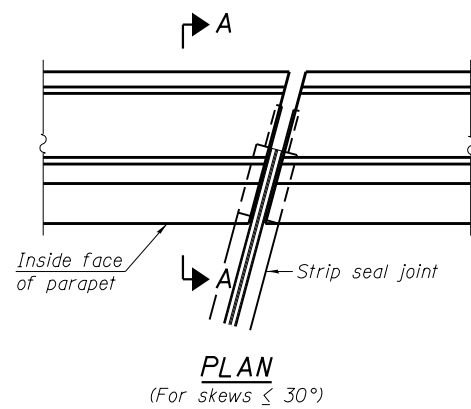
**BARS d101(E) & d102(E)**



**BAR d100(E)**

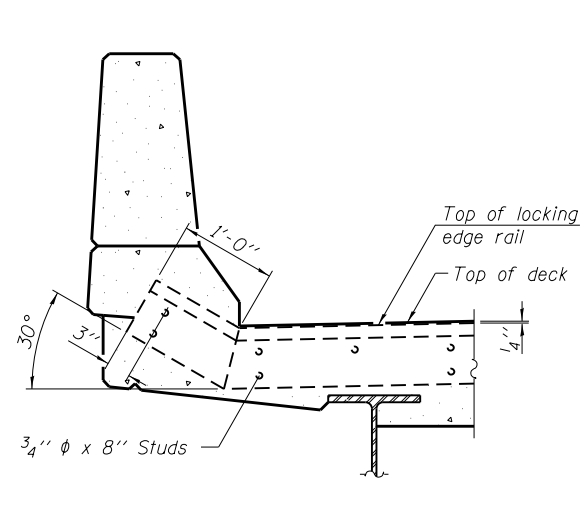
Bar	No.	Size	Length	Shape
a100(E)	122	#5	20'-1"	—
a101(E)	136	#5	16'-5"	—
a102(E)	306	#6	6'-6"	—
a103(E)	7	#5	16'-11"	—
a104(E)	8	#5	21'-2"	—
a105(E)	11	#5	17'-0"	—
a106(E)	12	#5	19'-9"	—
a107(E)	9	#5	18'-4"	—
a108(E)	10	#5	21'-7"	—
a109(E)	15	#5	17'-4"	—
a110(E)	16	#5	21'-0"	—
a111(E)	4	#5	23'-9"	—
a112(E)	4	#5	19'-9"	—
a113(E)	4	#5	28'-6"	—
a114(E)	4	#5	24'-7"	—
a115(E)	12	#5	7'-1"	—
a116(E)	3	#5	7'-8"	—
a117(E)	12	#5	8'-2"	—
a118(E)	3	#5	8'-11"	—
a119(E)	3	#5	2'-8"	—
a120(E)	6	#5	3'-2"	—
a121(E)	3	#5	3'-4"	—
a122(E)	8	#5	2'-0"	—
a123(E)	260	#5	1'-2"	—
a124(E)	8	#5	1'-5"	—
a125(E)	8	#5	1'-9"	—
a126(E)	1	#5	20'-9"	—
a127(E)	1	#5	16'-0"	—
a128(E)	1	#5	24'-11"	—
a129(E)	1	#5	18'-10"	—
a180(E)	86	#5	19'-9"	—
a181(E)	95	#5	16'-1"	—
b100(E)	168	#5	25'-2"	—
b101(E)	99	#5	32'-5"	—
d100(E)	197	#5	6'-10"	—
d101(E)	96	#5	7'-3"	—
d102(E)	101	#5	7'-10"	—
e100(E)	7	#4	15'-1"	—
e101(E)	28	#4	14'-8"	—
e102(E)	7	#4	14'-3"	—
e103(E)	42	#4	13'-8"	—
e104(E)	6	#8	33'-6"	—
e105(E)	6	#4	31'-4"	—
x100(E)	32	#5	6'-8"	—
x101(E)	34	#5	4'-1"	—
x102(E)	32	#5	7'-0"	—
Protective Coat		Sq. Yd.	506	
Bridge Deck Grooving		Sq. Yd.	319	
Concrete Superstructure		Cu. Yd.	138.4	
Reinforcement Bars, Epoxy Coated		Pound	26,920	

\* Extends 6" into closure pour.

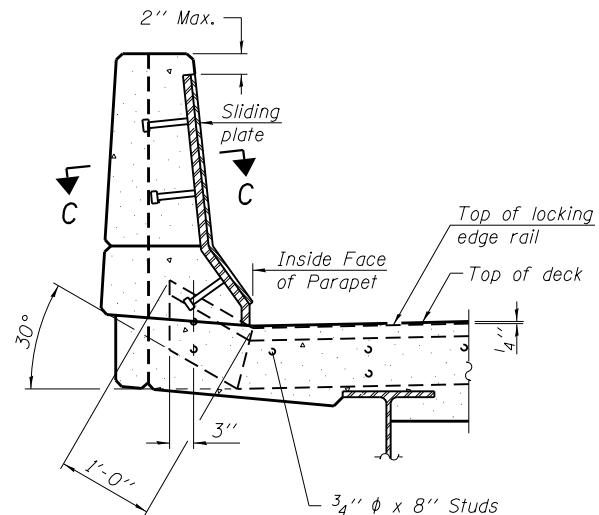


**TYPICAL END TREATMENT AT SIDEWALK OR MEDIAN**

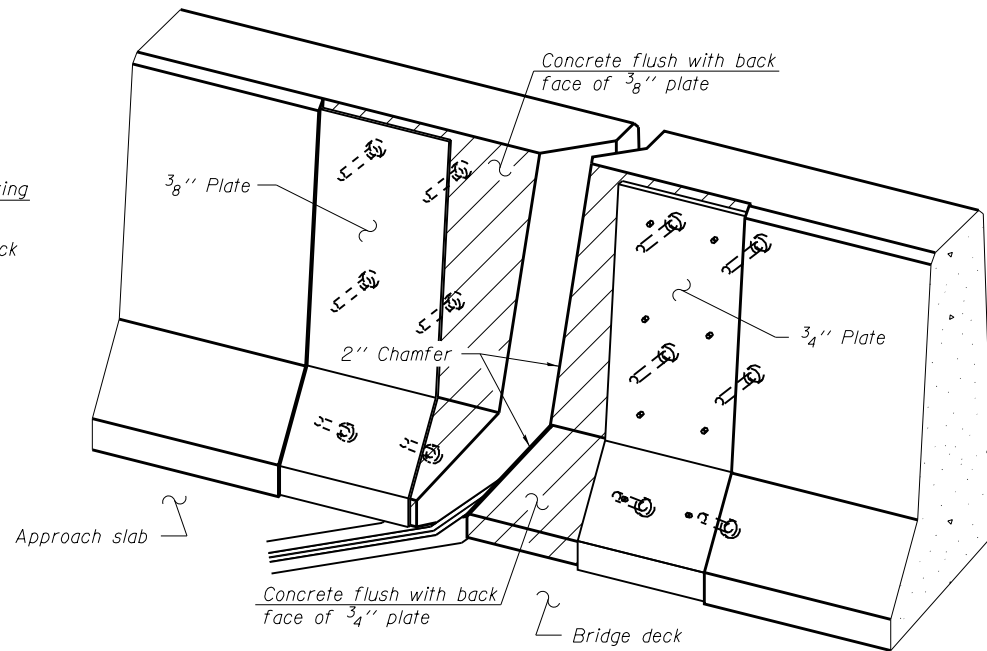
Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.



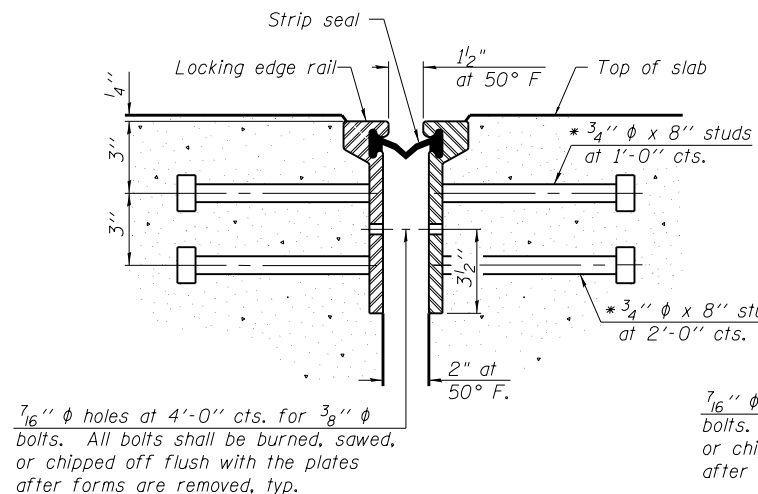
**SECTION A-A**



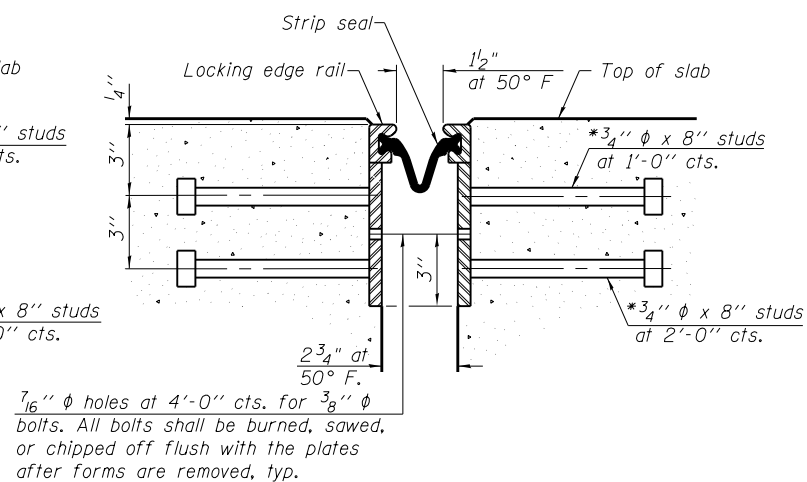
**SECTION B-B**



**TRIMETRIC VIEW (Showing back plates only)**



**SECTION THRU ROLLED RAIL JOINT**



**SECTION THRU WELDED RAIL JOINT**

**ROLLED EXTRUDED RAIL**

**WELDED RAIL**

**LOCKING EDGE RAIL SPLICE**

The inside of the locking edge rail groove shall be free of weld residue. Rolled rail shown, welded rail similar.

\*\*\* Back gouge not required if complete joint penetration is verified by mock-up.

**LOCKING EDGE RAILS**

**Notes:**

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.

The Locking Edge Rails depicted are conceptual only, except for the minimum dimensions shown. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities.

The manufacturer's recommended installation methods shall be followed.

The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

Maximum space between rail segments shall be 3/16", sealed with a suitable sealant. Joints in rails within 10 ft. of curbs shall be welded.

Parapet plates and anchorage studs for skews > 30° included in the cost of Preformed Joint Strip Seal.

**BILL OF MATERIAL**

Item	Unit	Total
Preformed Joint Strip Seal	Foot	101.0

EJ-SSJ

1-27-12

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

**COLLINS ENGINEERS**  
133 N. Wacker Dr.  
Suite 900  
Chicago, IL 60606  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

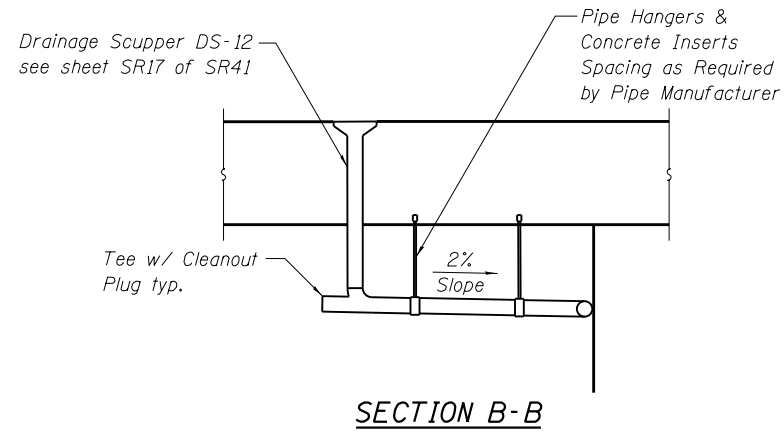
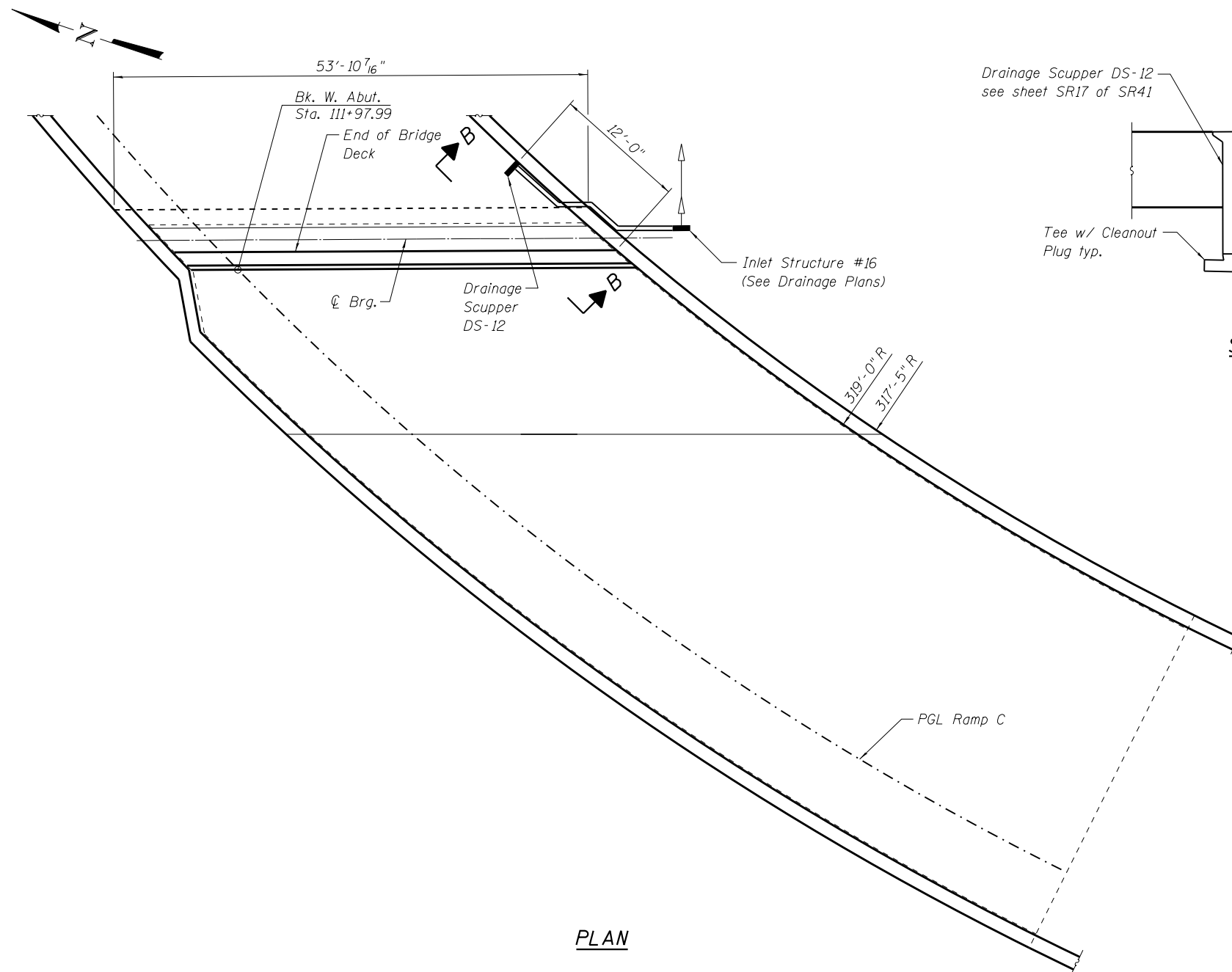
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PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - DR	REVISED
	CHECKED - JMH	REVISED

**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**

**PREFORMED JOINT STRIP SEAL STRUCTURE NO. 016-1323**

SHEET NO. SR15 OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	256
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60F63	



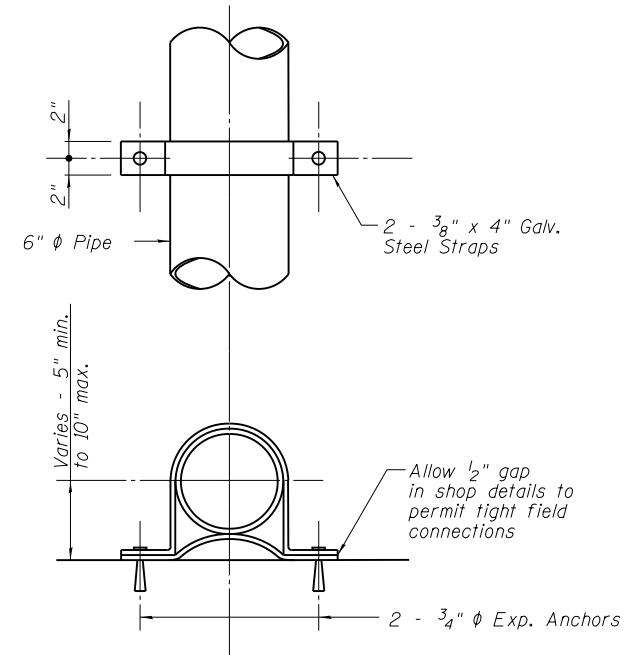
**Notes:**

All drain pipes and fittings shall be reinforced fiberglass conforming to the requirements of ASTM D 2996, with short time rupture strength hoop tensile stress of 200 MPa minimum.

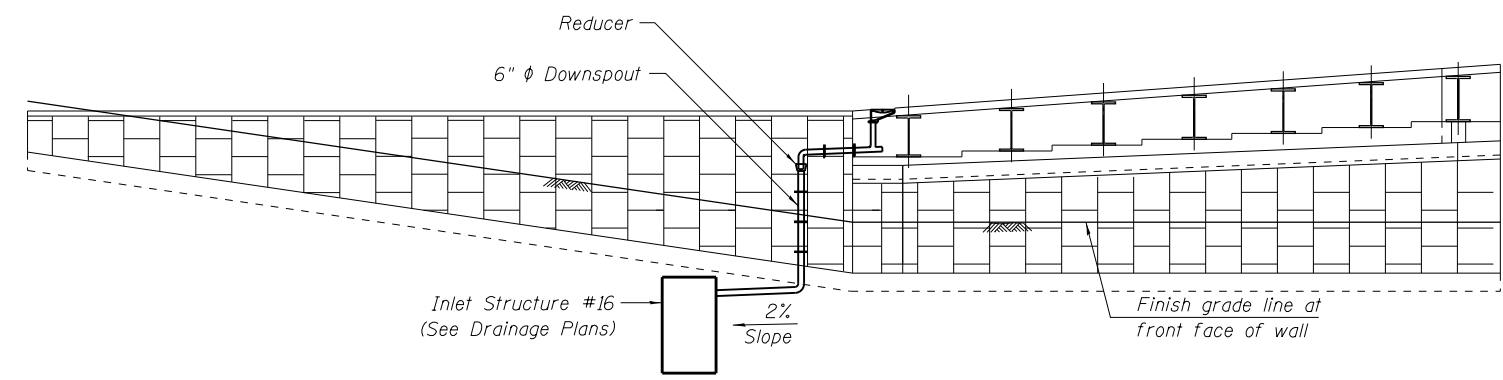
All pipe hangers, supports and hardware shall be galvanized by the Hot-Dip process. The zinc coating shall conform to requirements of AASHTO M232.

Pipe brackets shall be provided on all horizontal pipes at each tee, elbow or change in direction and at spacings required by the pipe manufacturer. There shall be a minimum of three brackets per abutment.

The surface of the fiberglass pipe shall be free of bond inhibiting agents.



**PIPE BRACKET DETAIL**  
(To M.S.E. Wall)



ITEM	UNIT	QUANTITY
Drainage System	L Sum	0.5

See SNO16-1322 plans for remainder of Drainage System quantity.

**COLLINS ENGINEERS**  
133 N. Rocker Dr.  
Suite 900  
Chicago, IL 60646  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

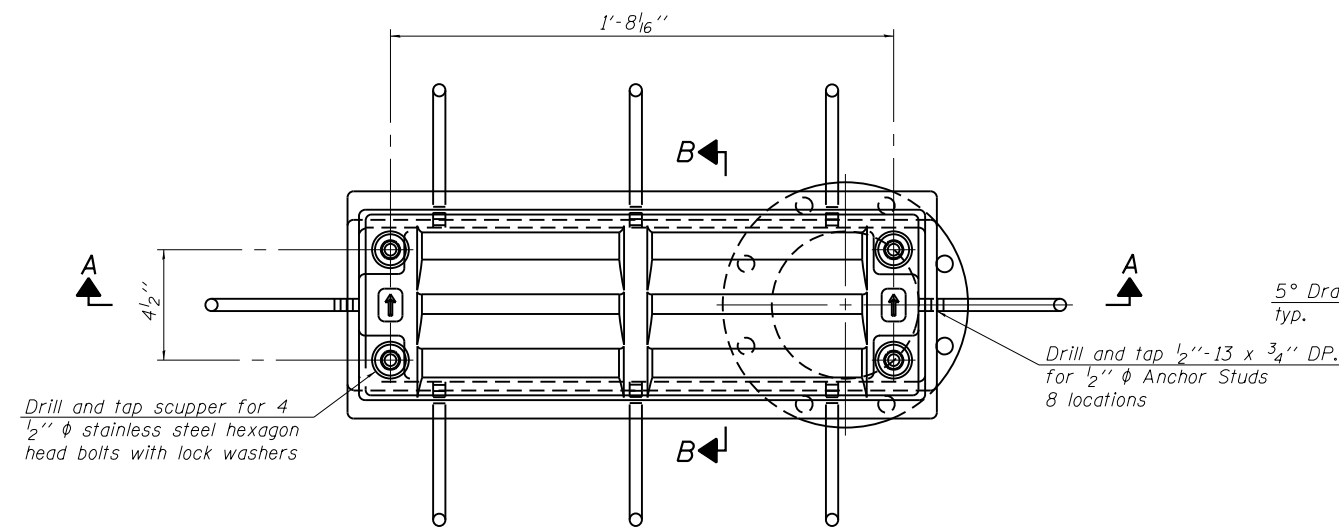
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	CHECKED - LDB	REVISED
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PLOT DATE =	CHECKED - JMH	REVISED

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

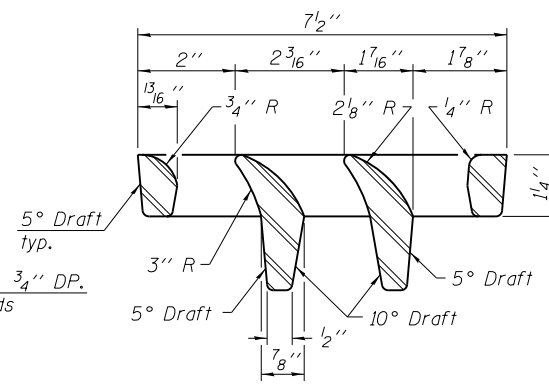
**DRAINAGE SYSTEM**  
**STRUCTURE NO. 016-1323**

SHEET NO. SR16 OF SR41 SHEETS

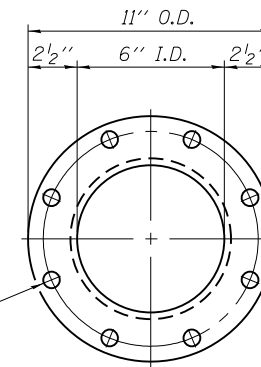
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	257
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	



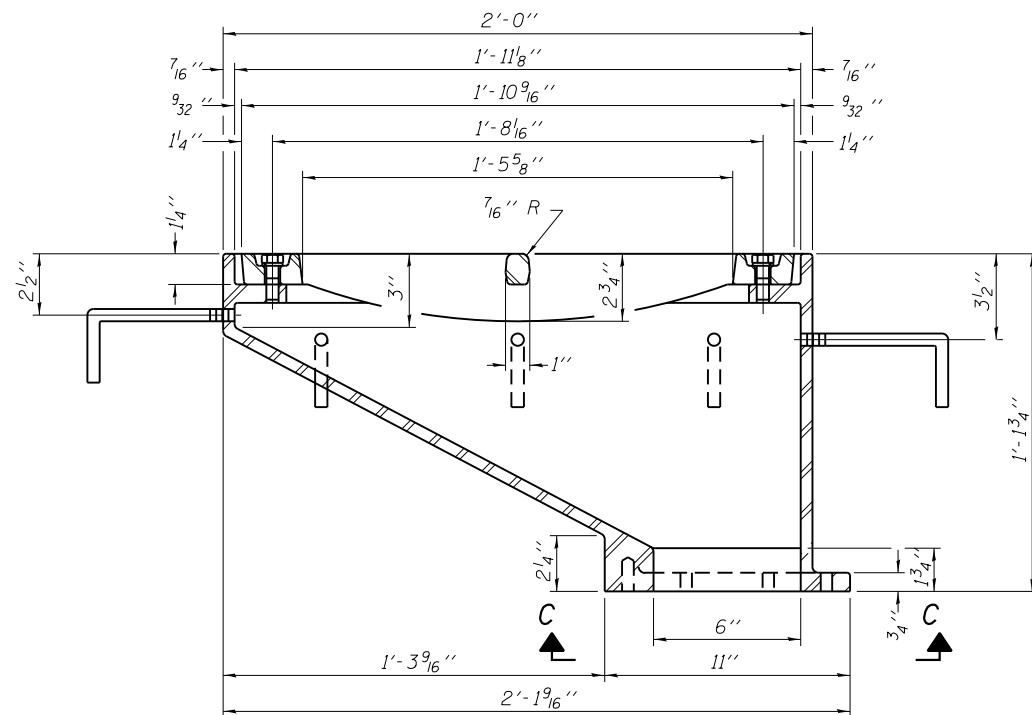
PLAN



VANE GRATE DETAIL

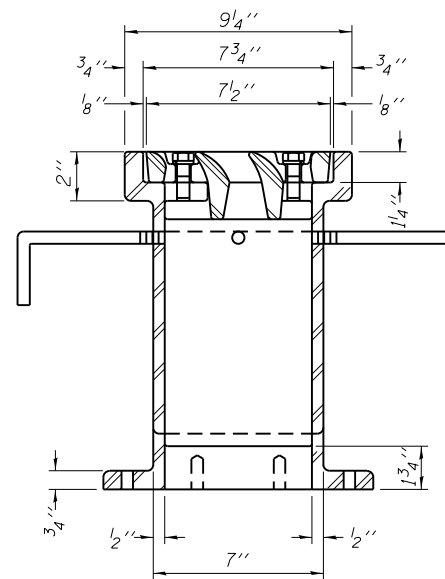


VIEW C-C

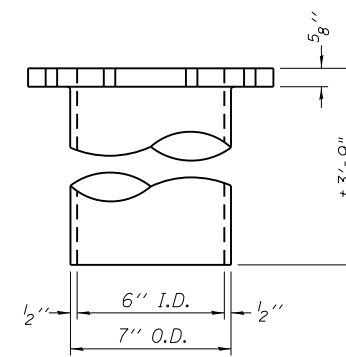


SECTION A-A

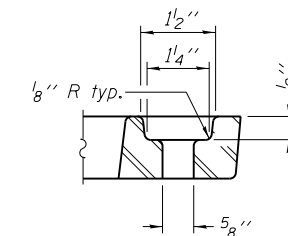
See sheet SR13 of SR41 for scupper location relative to parapet.



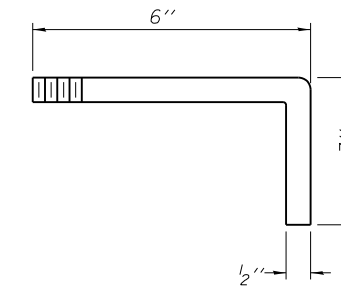
SECTION B-B



DOWNSPOUT



BOLT HOLE DETAIL



ANCHOR STUD DETAIL

Drill and tap 8 holes for 1/2"-13 bolts on a 9 1/2" φ bolt circle. (2 blind holes are 1/4" deep, 6 thru holes)

Notes:

All cast iron parts shall be gray iron conforming to the requirements of AASHTO M 105, Class 35B.

Bolts, anchor studs, washers and nuts shall conform to the requirements of ASTM A 307 and shall be galvanized according to AASHTO M 232.

Downspouts located on the exterior side of a painted steel fascia beam shall be painted with the finish coat specified for the exterior side of the fascia beam.

As an alternate, bolts, anchor studs, washers and nuts may be stainless steel according to Article 1006.29(d) of the Standard Specifications.

Structural steel weldments of equal sections and of the same configuration may be substituted for the cast iron scupper frame. Fillet or full penetration welds shall be used for the weldments. Details shall be submitted to the Engineer for approval. Structural steel weldments shall not be substituted for the cast iron scupper grate. Structural steel frames and downspouts shall be galvanized according to AASHTO M111.

The Contractor shall take appropriate measures to assure that Protective Coat is not applied to the scupper.

Cost of the Grate, Frame, Downspout, Anchor Studs, Bolts, Washers and Nuts including complete installation of the scupper shall be paid for at the contract unit price each for Drainage Scupper, DS-12.

Alternate fiberglass downspout conforming to ASTM D 2996 with a short-time rupture strength hoop tensile stress of 30,000 psi min. may be used in lieu of the cast iron or steel equivalent.

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-12	Each	1

DS-12

7-1-10

**COLLINS ENGINEERS**  
133 N. Wacker Dr.  
Suite 900  
Chicago, IL 60606  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

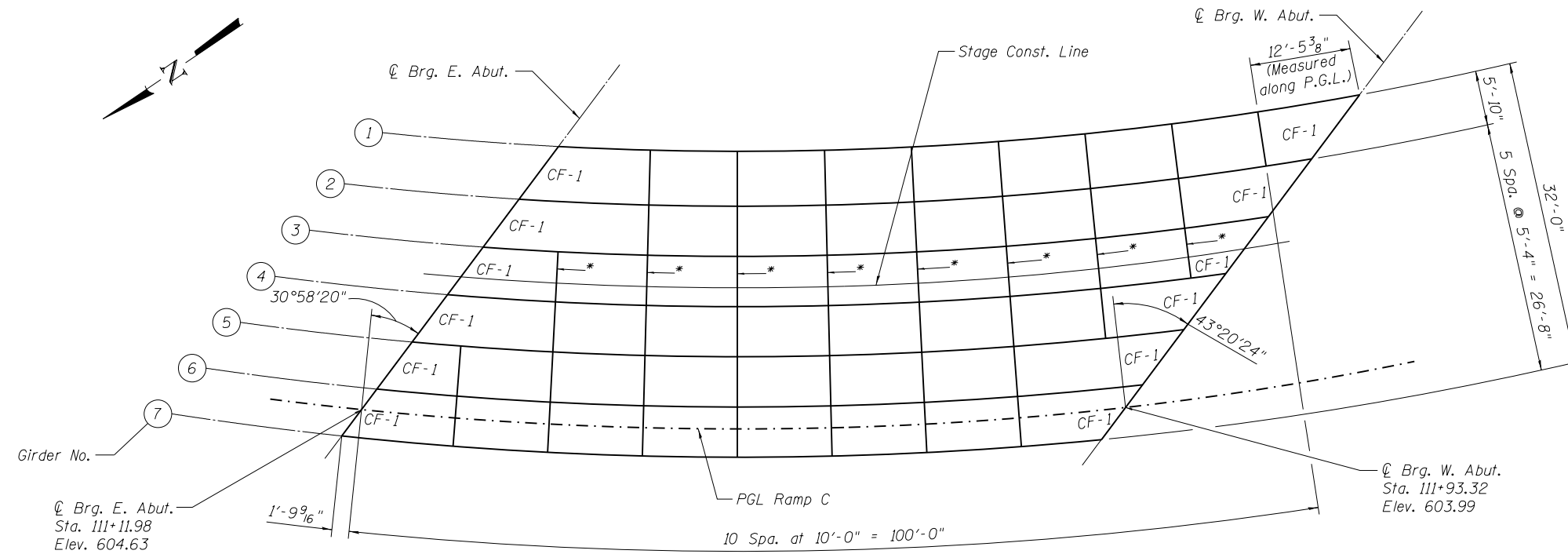
USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

DRAINAGE SCUPPER, DS-12  
STRUCTURE NO. 016-1323

SHEET NO. SR17 OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	258
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



**PLAN**

Cross bracing dimensioned Radially along PGL.

Note:  
All cross frames are CF-2  
unless otherwise noted.

Notes:  
Cross frames indicated with \* to be installed after completion of the Stage III deck pour. See sheet SR23 of SR41 for temporary bracing details during Stage III deck pour.

See sheet SR21 of SR41 for girder dimensions.

USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	259
<b>CONTRACT NO. 60F63</b>				
ILLINOIS FED. AID PROJECT				

INTERIOR GIRDER MOMENT TABLE (GIRDER 6)		
		0.5 Sp. 1
$I_s$	(in <sup>4</sup> )	17679
$I_c(n)$	(in <sup>4</sup> )	36701
$I_c(3n)$	(in <sup>4</sup> )	27035
$I_c(cr)$	(in <sup>4</sup> )	---
$S_s$	(in <sup>3</sup> )	905
$S_c(n)$	(in <sup>3</sup> )	1136
$S_c(3n)$	(in <sup>3</sup> )	1046
$S_c(cr)$	(in <sup>3</sup> )	---
$S_{xc}$	(in <sup>3</sup> )	67
DC1	(k/')	0.71
MDC1	('k)	681
DC2	(k/')	0.15
MDC2	('k)	143
DW	(k/')	0.267
MDW	('k)	249
$M_L + IM$	('k)	821
$f_r$ (Strength I)	(ksi)	9
$M_u + 1/2 f_r S_{xc}$	('k)	3042
$\phi_r M_n$	('k)	4353
$f_s$ DC1	(ksi)	9
$f_s$ DC2	(ksi)	2
$f_s$ DW	(ksi)	3
$f_s$ (L+IM)	(ksi)	9
$f_r$ (Service II)	(ksi)	10
$f_s + 1/2$ (Service II)	(ksi)	30
$0.95R_n F_y f$	(ksi)	47.5
$f_s + 1/3$ (Total)(Strength I)	(ksi)	37
$\phi_r F_n$	(ksi)	50
$V_r$	(k)	22

EXTERIOR GIRDER MOMENT TABLE (GIRDER 7)		
		0.5 Sp. 1
$I_s$	(in <sup>4</sup> )	17679
$I_c(n)$	(in <sup>4</sup> )	36545
$I_c(3n)$	(in <sup>4</sup> )	26923
$I_c(cr)$	(in <sup>4</sup> )	---
$S_s$	(in <sup>3</sup> )	905
$S_c(n)$	(in <sup>3</sup> )	1134
$S_c(3n)$	(in <sup>3</sup> )	1044
$S_c(cr)$	(in <sup>3</sup> )	---
$S_{xc}$	(in <sup>3</sup> )	67
DC1	(k/')	0.70
MDC1	('k)	761
DC2	(k/')	0.15
MDC2	('k)	208
DW	(k/')	0.267
MDW	('k)	283
$M_L + IM$	('k)	1291
$f_r$ (Strength I)	(ksi)	12
$M_u + 1/2 f_r S_{xc}$	('k)	4163
$\phi_r M_n$	('k)	4388
$f_s$ DC1	(ksi)	10
$f_s$ DC2	(ksi)	2
$f_s$ DW	(ksi)	3
$f_s$ (L+IM)	(ksi)	14
$f_r$ (Service II)	(ksi)	10
$f_s + 1/2$ (Service II)	(ksi)	39
$0.95R_n F_y f$	(ksi)	47.5
$f_s + 1/3$ (Total)(Strength I)	(ksi)	48
$\phi_r F_n$	(ksi)	50
$V_r$	(k)	29

$I_s, S_s$ : Non-composite moment of inertia and section modulus of the steel section used for computing  $f_s$  (Total-Strength I, and Service II) due to non-composite dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(n), S_c(n)$ : Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections due to short term composite live loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(3n), S_c(3n)$ : Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(cr), S_c(cr)$ : Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing  $f_s$  (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

$S_{xc}$ : Section modulus about the major axis of section to the controlling flange, tension or compression, taken as yield moment with respect to the controlling flange over the yield strength of the controlling flange (in<sup>3</sup>).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

MDC2: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

$M_L + IM$ : Un-factored live load moment plus dynamic load allowance (impact)(kip-ft.).

$f_r$ : Factored calculated normal stress at edge of flange for controlling flange plate due to lateral bending, Strength I or Service II as applicable (kip-ft.).

$M_u + 1/2 f_r S_{xc}$ : Factored design moment (kip-ft.).

$1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_L + IM$

$\phi_r M_n$ : Factored resistance available according to A6.1.1 (kips).

$f_s$  DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi):

$M_{DC1} / S_{nc}$

$f_s$  DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi):

$M_{DC2} / S_c(3n)$  or  $M_{DC2} / S_c(cr)$  as applicable.

$f_s$  DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi):

$M_{DW} / S_c(3n)$  or  $M_{DW} / S_c(cr)$  as applicable.

$f_s$  (L+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi):

$M_L + IM / S_c(n)$  or  $M_L + IM / S_c(cr)$  as applicable.

$f_s + 1/2$  (Service II): Sum of stresses as computed below (ksi):

$f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s (L + IM) + 1/2$

$0.95R_n F_y f$ : Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

$f_s + 1/3$  (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

$1.25 (f_s DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s (L + IM) + 1/3$

$\phi_r F_n$ : Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

$V_r$ : Maximum factored shear range in span computed according to Article 6.10.10.

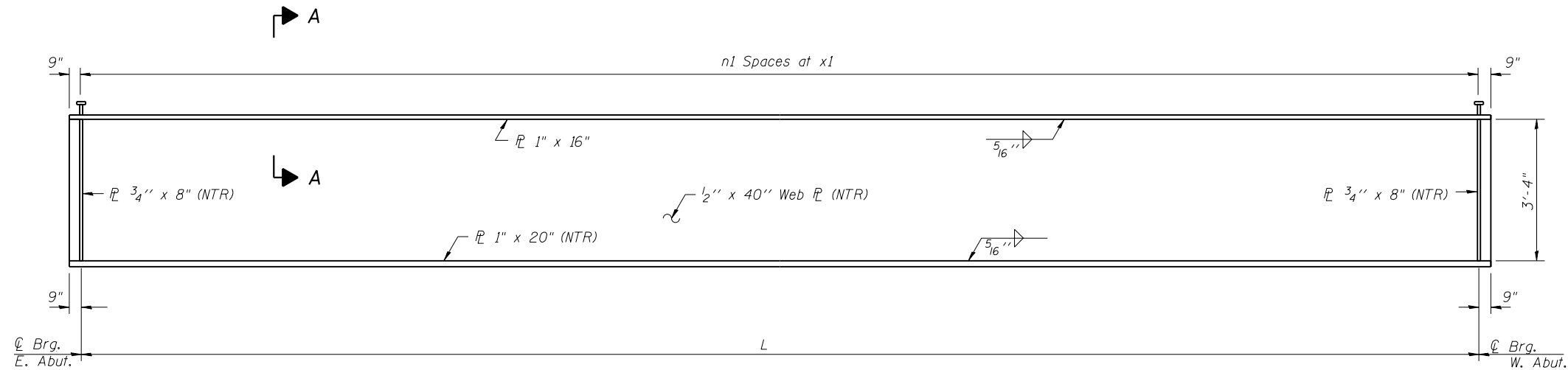
Note:

$M_L$  and  $R_L$  include the effects of centrifugal force and superelevation.

INTERIOR GIRDER REACTION TABLE		
Location of Max. Reaction	E. Abut.	W. Abut.
$R_{DC1}$	(k) 36.5	33.1
$R_{DC2}$	(k) 10.0	2.7
$R_{DW}$	(k) 12.7	11.7
$R_L + I$	(k) 50.5	71.8
$R_{Total}$	(k) 109.7	119.3

EXTERIOR GIRDER REACTION TABLE		
Location of Max. Reaction	E. Abut.	W. Abut.
$R_{DC1}$	(k) 34.9	38.9
$R_{DC2}$	(k) 9.9	12.8
$R_{DW}$	(k) 12.9	14.7
$R_L + I$	(k) 71.1	85.0
$R_{Total}$	(k) 128.8	151.4





**GIRDER ELEVATION**

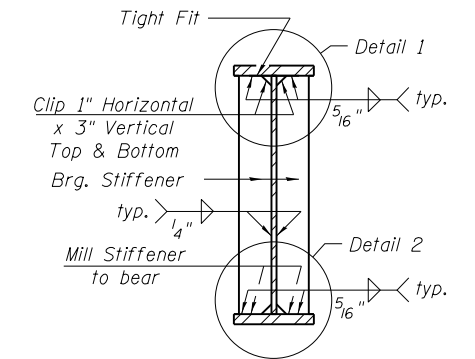
"NTR" denotes plates to which notch toughness requirements are applicable.

**SHEAR CONNECTOR SPACING**

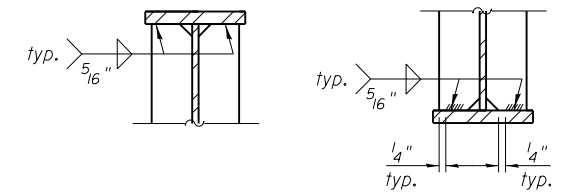
GIRDER	n1	x1 (in.)
1	146	7
2	126	8
3	125	8
4	124	8
5	123	8
6	139	7
7	161	6

**GIRDER DIMENSIONS**

GIRDER	RADIUS	L
1	364'-6"	85'-6"
2	370'-4"	84'-6 1/8"
3	375'-8"	83'-8"
4	381'-0"	82'-10 3/4"
5	386'-4"	82'-2"
6	391'-8"	81'-6"
7	397'-0"	80'-10 3/8"

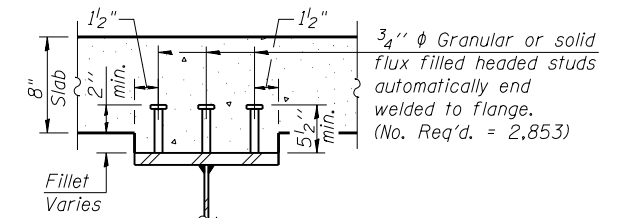


**SECTION AT ABUTMENT**



**DETAIL 1**

**DETAIL 2**



**SECTION A-A**

**Notes:**

All structural steel shall be AASHTO M270 Grade 50.  
 All bearing stiffeners, connection plates and gusset plates shall comply with NTR.  
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

G-1

7-1-10

**COLLINS ENGINEERS**  
 133 N. Rocker Dr.  
 Suite 900  
 Chicago, IL 60606  
 Tel: (312) 704-9300  
 Fax: (312) 704-9320  
 www.collinsengr.com  
 ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

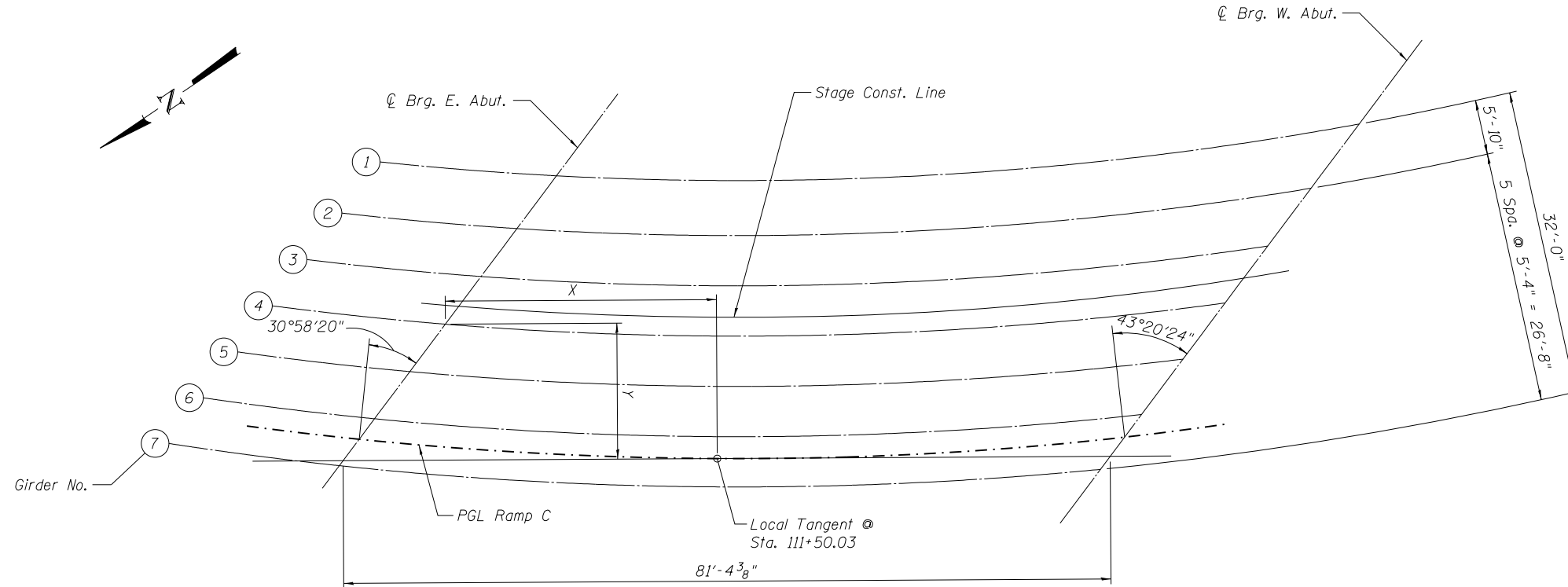
USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**GIRDER ELEVATIONS  
 STRUCTURE NO. 016-1323**

SHEET NO. SR20 OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	261
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	



PLAN

TOP OF WEB ELEVATIONS

GIRDER	☉ Brg. E. Abut.	☉ Brg. W. Abut.
1	601.89	601.05
2	602.27	601.47
3	602.61	601.86
4	602.95	602.24
5	603.29	602.61
6	603.63	602.98
7	603.97	603.35

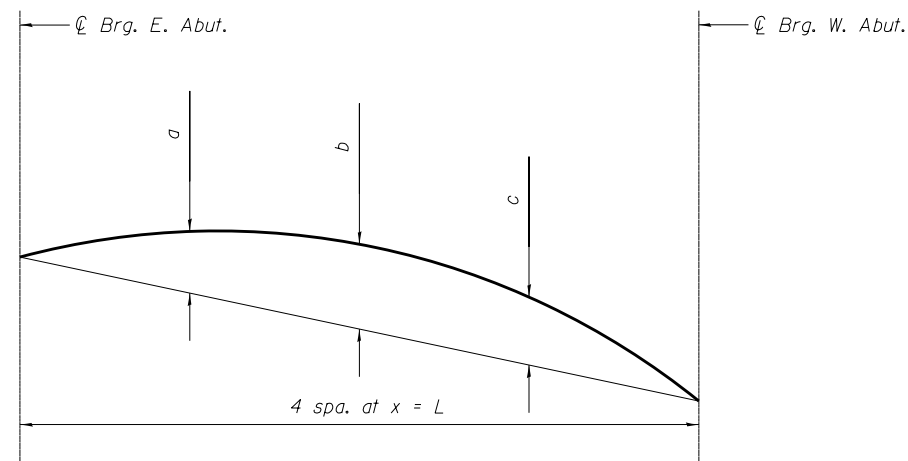
" Top of web elevations for fabrication only "

LAYOUT DIMENSIONS (in feet-inches)

GIRDER	RADIUS	☉ Brg. E. Abut.		☉ Brg. W. Abut.	
		x	y	x	y
1	364'-6"	-16'-10 <sup>9</sup> / <sub>16</sub> "	30'-1 <sup>3</sup> / <sub>16</sub> "	68'-3 <sup>5</sup> / <sub>16</sub> "	35'-1 <sup>5</sup> / <sub>16</sub> "
2	370'-4"	-21'-1 <sup>1</sup> / <sub>4</sub> "	24'-6 <sup>5</sup> / <sub>16</sub> "	63'-1 <sup>5</sup> / <sub>8</sub> "	28'-3 <sup>7</sup> / <sub>8</sub> "
3	375'-8"	-24'-11 <sup>5</sup> / <sub>16</sub> "	19'-5 <sup>1</sup> / <sub>2</sub> "	58'-6 <sup>3</sup> / <sub>8</sub> "	22'-2 <sup>5</sup> / <sub>8</sub> "
4	381'-0"	-28'-9 <sup>1</sup> / <sub>8</sub> "	14'-5 <sup>1</sup> / <sub>8</sub> "	53'-11 <sup>1</sup> / <sub>16</sub> "	16'-2 <sup>7</sup> / <sub>16</sub> "
5	386'-4"	-32'-6 <sup>5</sup> / <sub>8</sub> "	9'-5"	49'-5 <sup>1</sup> / <sub>2</sub> "	10'-3 <sup>1</sup> / <sub>4</sub> "
6	391'-8"	-36'-3 <sup>15</sup> / <sub>16</sub> "	4'-5 <sup>1</sup> / <sub>4</sub> "	45'-0 <sup>1</sup> / <sub>4</sub> "	4'-5"
7	397'-0"	-40'-1"	-6 <sup>1</sup> / <sub>4</sub> "	40'-7 <sup>5</sup> / <sub>8</sub> "	-1'-4 <sup>7</sup> / <sub>16</sub> "

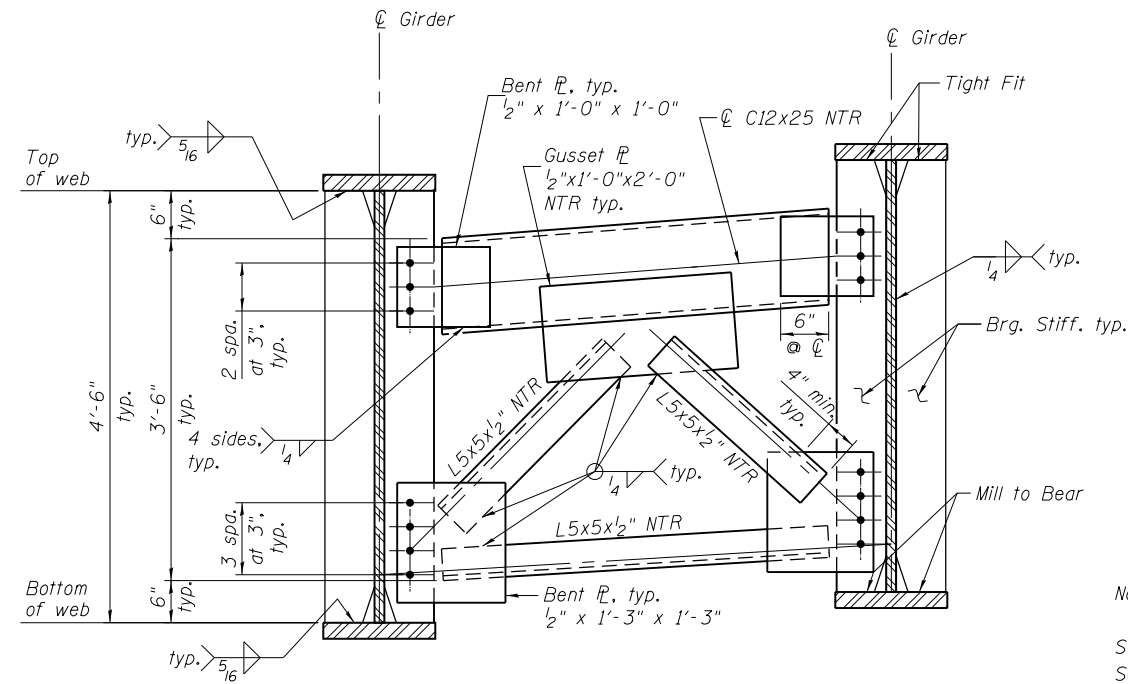
CAMBER VALUES

Location/Dimension	Girder						
	1	2	3	4	5	6	7
a	1 <sup>1</sup> / <sub>2</sub> "	2"	2 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>3</sup> / <sub>4</sub> "
b	2"	2 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>4</sub> "	2"	2 <sup>1</sup> / <sub>4</sub> "	2 <sup>1</sup> / <sub>2</sub> "
c	1 <sup>1</sup> / <sub>2</sub> "	2"	2 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>3</sup> / <sub>4</sub> "
x	21'-4 <sup>1</sup> / <sub>2</sub> "	21'-1 <sup>1</sup> / <sub>2</sub> "	20'-11"	20'-8 <sup>3</sup> / <sub>4</sub> "	20'-6 <sup>1</sup> / <sub>2</sub> "	20'-4 <sup>1</sup> / <sub>2</sub> "	20'-2 <sup>5</sup> / <sub>8</sub> "
L	85'-6"	84'-6 <sup>1</sup> / <sub>8</sub> "	83'-8"	82'-10 <sup>3</sup> / <sub>4</sub> "	82'-2"	81'-6"	80'-10 <sup>3</sup> / <sub>8</sub> "



CAMBER DIAGRAM

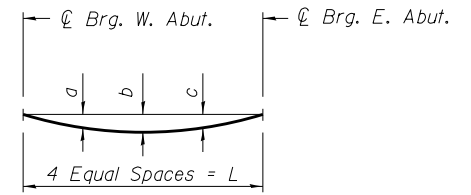
Notes:  
For Steel Framing Plan, see Sheet No. SR18 of SR41.  
For Girder Dimensions, see Sheet No. SR20 of SR41.



**TYPICAL END CROSS FRAME CF1**

Note:

End Cross frames at the Stage Line shall be installed after Stage I deck pour. See Stage III Deck Pour and Closure Sequencing on sheet SR22 of SR41. Timber block posts shall be used to support Stage I concrete formwork at the Abutments. Contractor shall apply grout to the top of the top channel of the end cross frames to ensure full contact between the Stage I concrete deck and the top of the channel of the end cross frames. Cost of timber block posts and grout shall be included in Furnishing and Erecting Structural Steel.

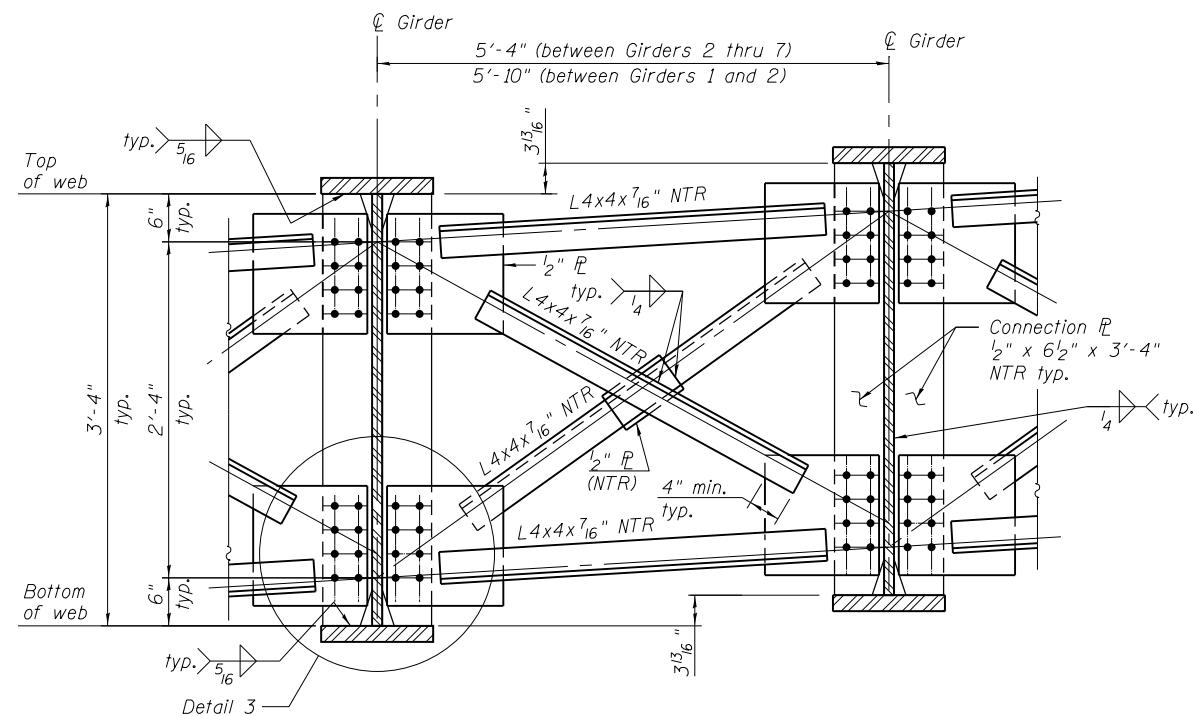


**GIRDER SELF-WEIGHT DEFLECTION DIAGRAM**

See Screenshot Dimension Layout Table on sheet SR6 of SR41 for span lengths.

**GIRDER SELF-WEIGHT DEFLECTIONS**

Location	Girder						
	1	2	3	4	5	6	7
a	1/4"	3/8"	1/2"	1/4"	1/4"	3/8"	3/8"
b	1/4"	1/2"	3/4"	1/4"	3/8"	1/2"	1/2"
c	1/4"	3/8"	1/2"	1/4"	1/4"	1/4"	3/8"



**TYPICAL INTERIOR CROSS FRAME CF2**

Notes:

See framing plan on sheet SR18 of SR41 for location of girder cross frames.

For Detail 3, see sheet SR23 of SR41.

AASHTO M270 Grade 50 steel shall be used for all cross frames, connection plates, and bearing stiffeners, unless otherwise noted.

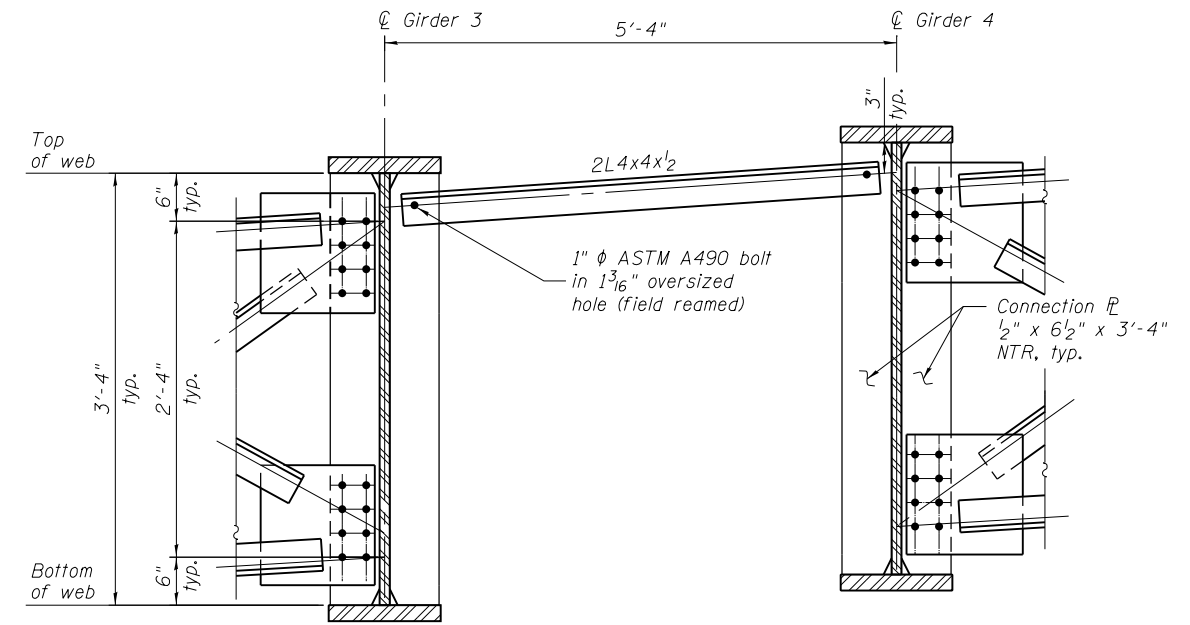
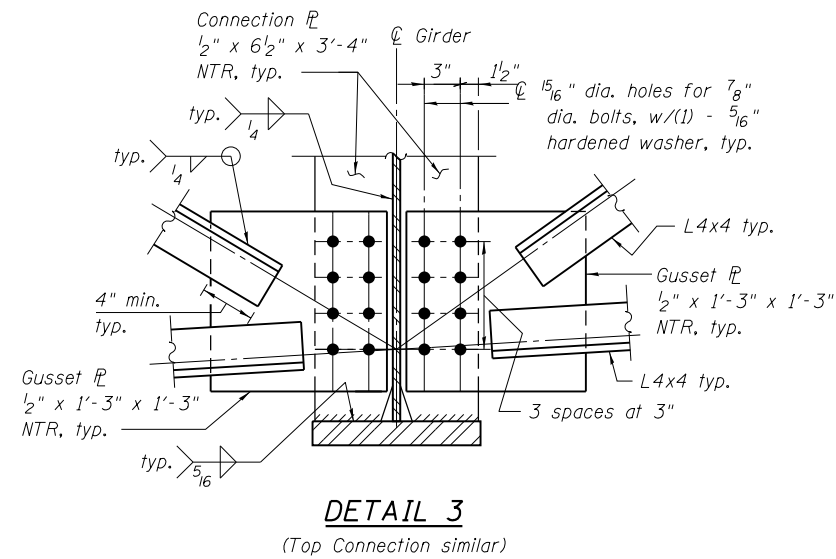
Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.

All cross frames between girders shall be installed with erection pins and bolts in accordance with erection plan submitted to and approved by the Engineer. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.

The calculated deflections of the primary girders under steel self-weight shall be used to detail the cross frame connections, and to erect the structural steel such that girders will be plumb within a tolerance of  $\pm 1/8$ " per vertical foot throughout the length of the girder system when supporting their own weight.

No connection plate on exterior side of exterior girders.

(Sheet 1 of 2)



**TEMPORARY BRACE FOR STAGE III DECK POUR**

Notes:  
Cost of temporary brace included in pay item "Furnishing and Erecting Structural Steel".

All structural steel shall be AASHTO M270 Grade 50.

NTR indicates Notch Toughness Requirements.

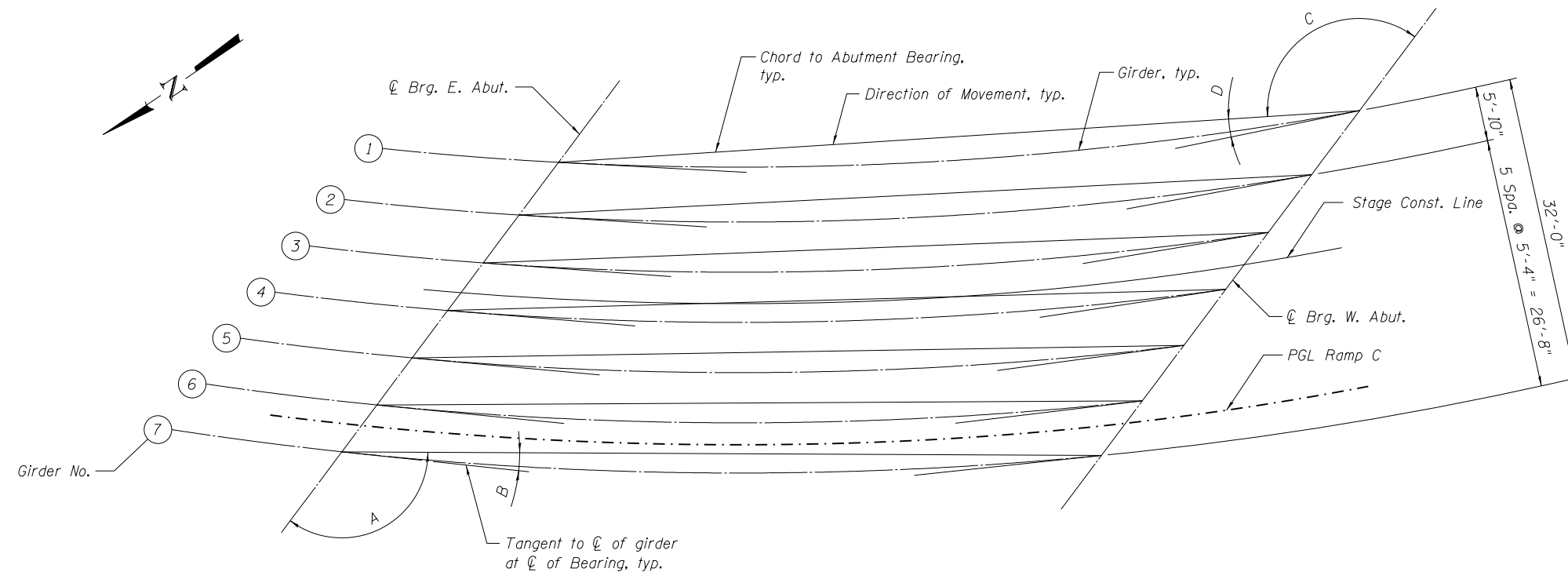
**STAGE III DECK POUR AND CLOSURE POUR SEQUENCING**

1. Erect girder lines 1 thru 3 with cross frames between girders 1-2 and 2-3. Abutment cross frames between girders 3 and 4 to be erected.
2. Erect temporary brace between girder lines 3 and 4 at each cross frame location by field drilling and reaming holes in connection plates.
3. Pour Stage III deck.
4. Install bottom cross frame angle by field drilling and reaming holes in connection plates.
5. Remove temporary brace.
6. Install top and diagonal angles of cross frames by field drilling and reaming.
7. Pour closure pour.

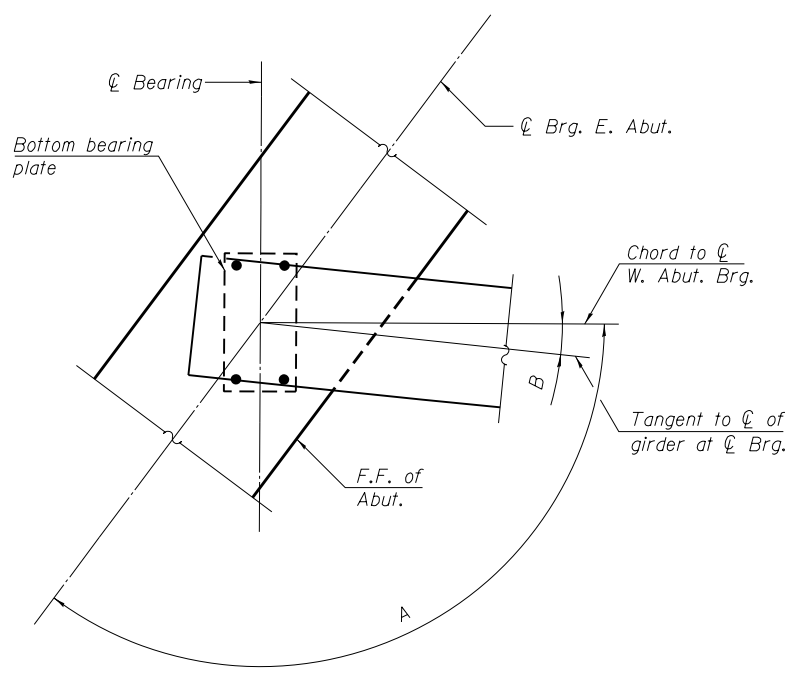
(Sheet 2 of 2)

USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

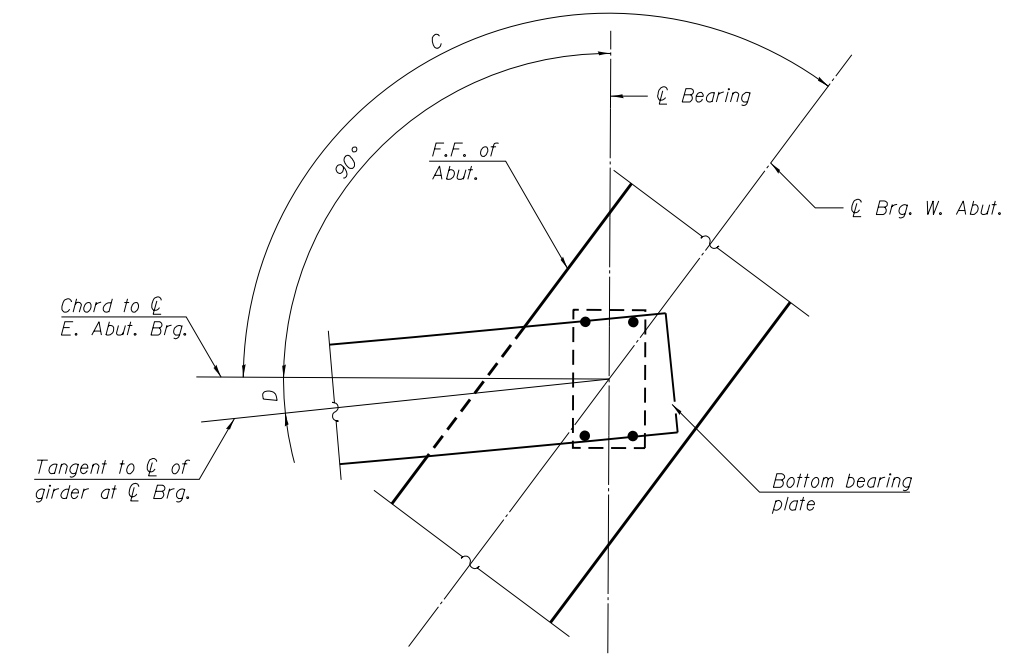
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	264
				<b>CONTRACT NO. 60F63</b>
ILLINOIS FED. AID PROJECT				



**PLAN**



**AT EAST ABUTMENT**

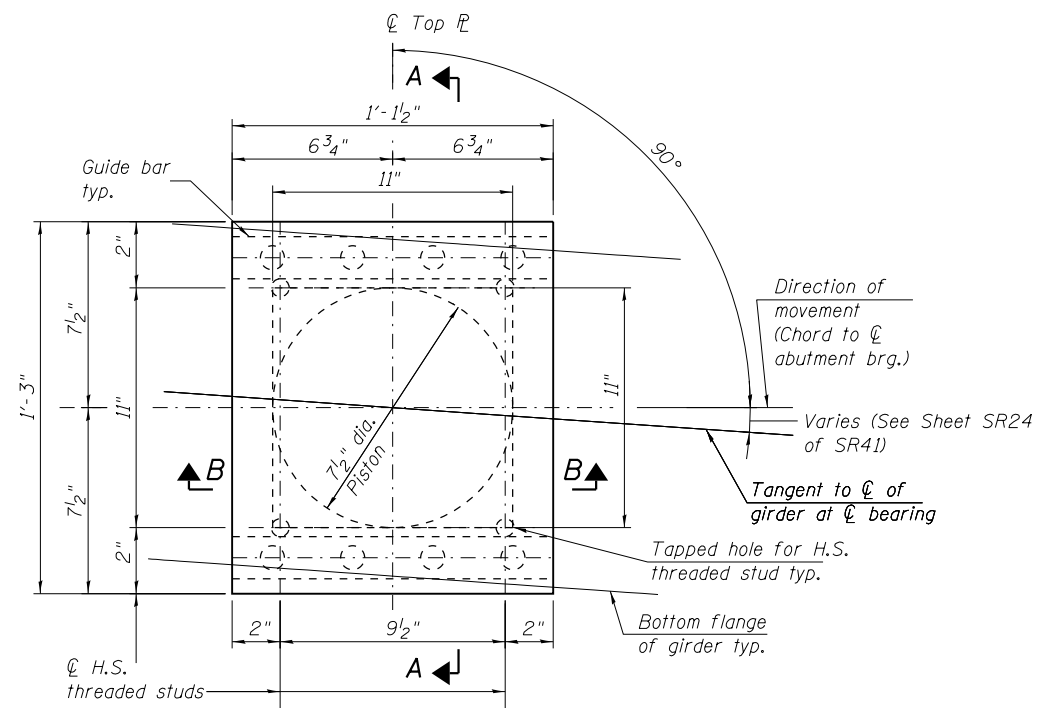


**AT WEST ABUTMENT**

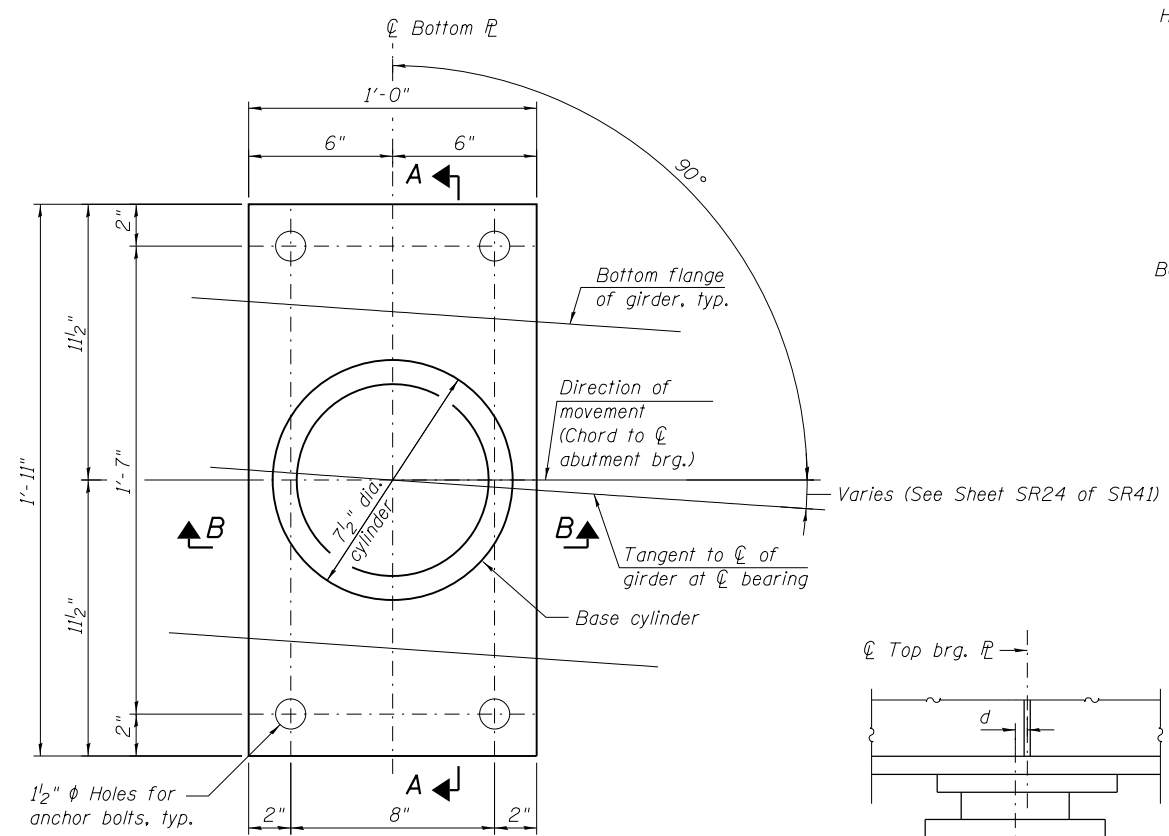
**LAYOUT ANGLES**

GIRDER	EAST ABUTMENT		WEST ABUTMENT	
	A	B	C	D
1	130.52°	6.72°	130.52°	7.91°
2	129.73°	6.54°	129.73°	7.58°
3	129.05°	6.38°	129.05°	7.30°
4	128.38°	6.23°	128.39°	7.03°
5	127.75°	6.09°	127.75°	6.78°
6	127.14°	5.96°	127.14°	6.54°
7	126.55°	5.84°	126.55°	6.32°

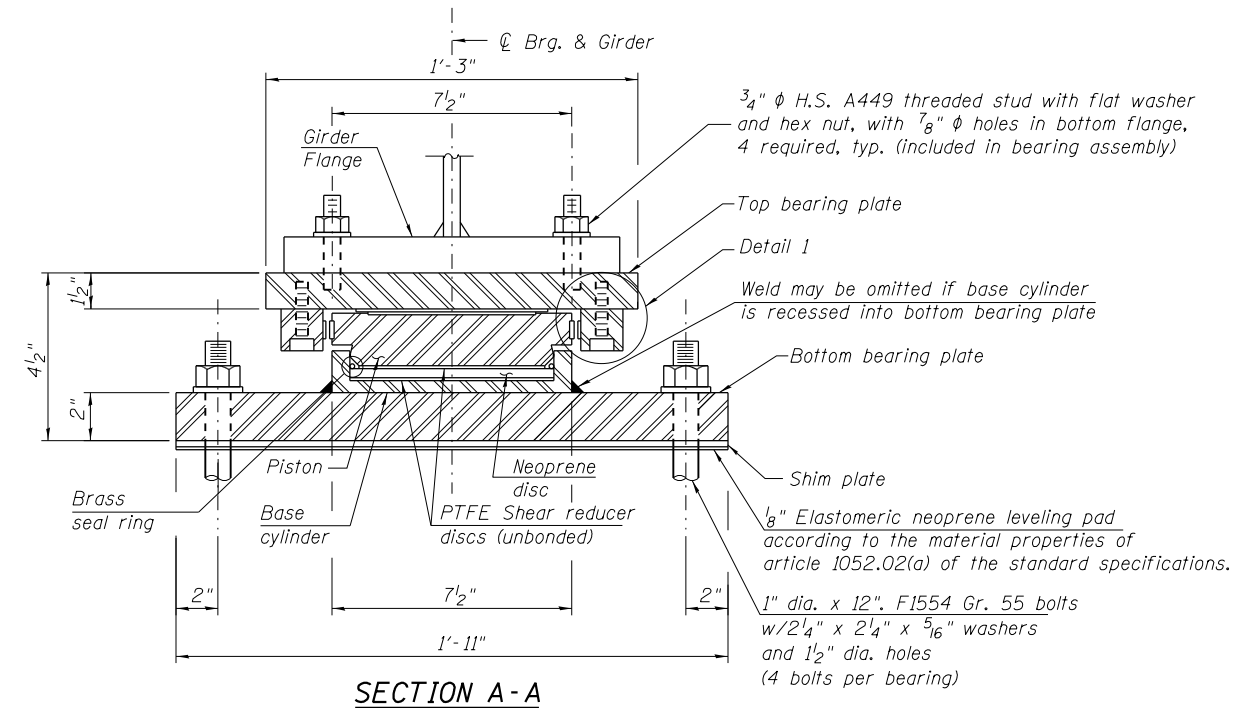
*Notes:*  
 For Bearing Details see sheets SR25 & SR26 of SR41.  
 Coordinate Anchor Bolt locations with abutment reinforcement plans.



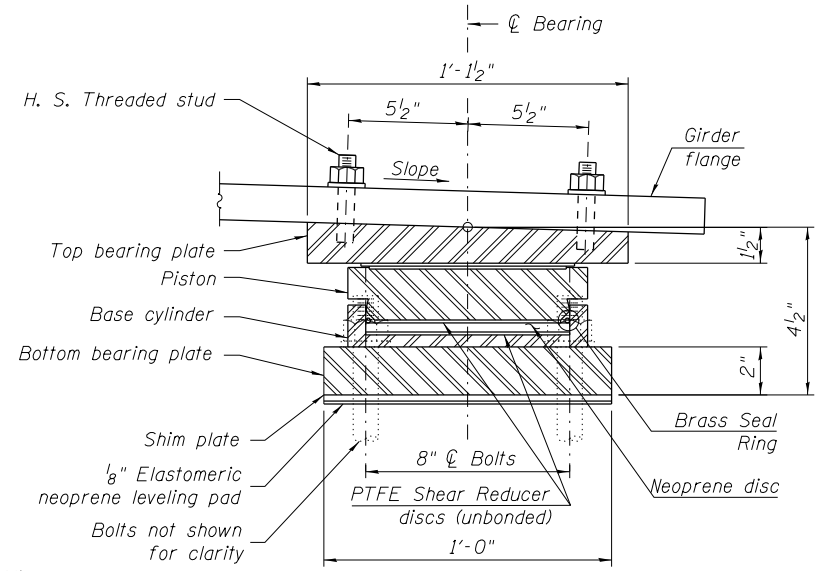
**TOP BEARING PLATE AND PISTON PLAN**



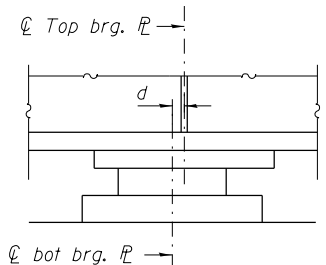
**BOTTOM BEARING PLATE AND BASE CYLINDER PLAN**



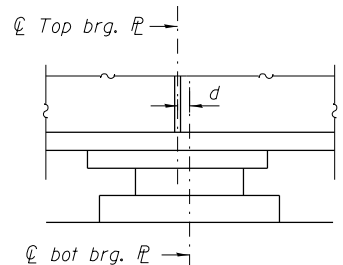
**SECTION A-A**



**SECTION B-B**  
(W. Abut., Looking South)



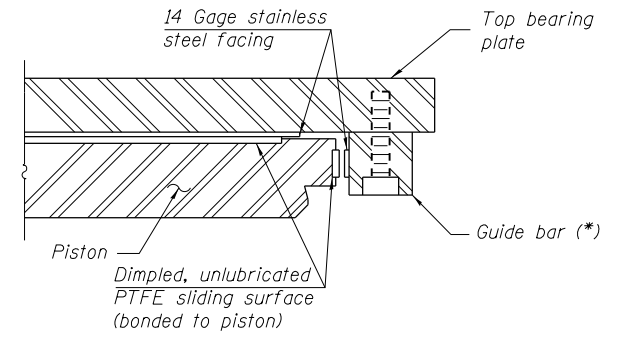
**BELOW 50°F**  
(Move bott. brg away from fixed brg.)



**ABOVE 50°F**  
(Move bott. brg toward fixed brg.)

**SETTING ANCHOR BOLTS AT EXPANSION BEARINGS**

NOTE: d=1/8" per each 100' of expansion for every 15° temperature change from the normal temperature of 50°F.



**DETAIL 1**

(\*) As alternates to the bolted connection shown, The guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece.

**Notes:**

All steel for bearings shall conform to the requirements of AASHTO M270 Grade 50, unless otherwise noted.

Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

Anchor bolts shall be ASTM F1554 all threads (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

PTFE and stainless steel materials shall conform to AASHTO requirements and the Special Provisions for High Load Multi-Rotational Bearings.

Total bearing height is estimated based on manufacturer data. Actual bearing height may differ from contract plans. The Contractor shall be responsible for verifying bearing heights and adjusting seat elevations, if required, prior to placing abutment concrete. Modifications to the Wt dimension for bearings at abutments shall take into account the location of the backwall and required expansion length if exceeding the end of the girder.

All (embedded and separate) bearing plates, side retainers, anchor bolts, nuts, washers and pintles shall be galvanized according to AASHTO M111 or M232 as applicable.

H.S. bolts in bearing assembly shall be galvanized according to AASHTO M298 Class 50.

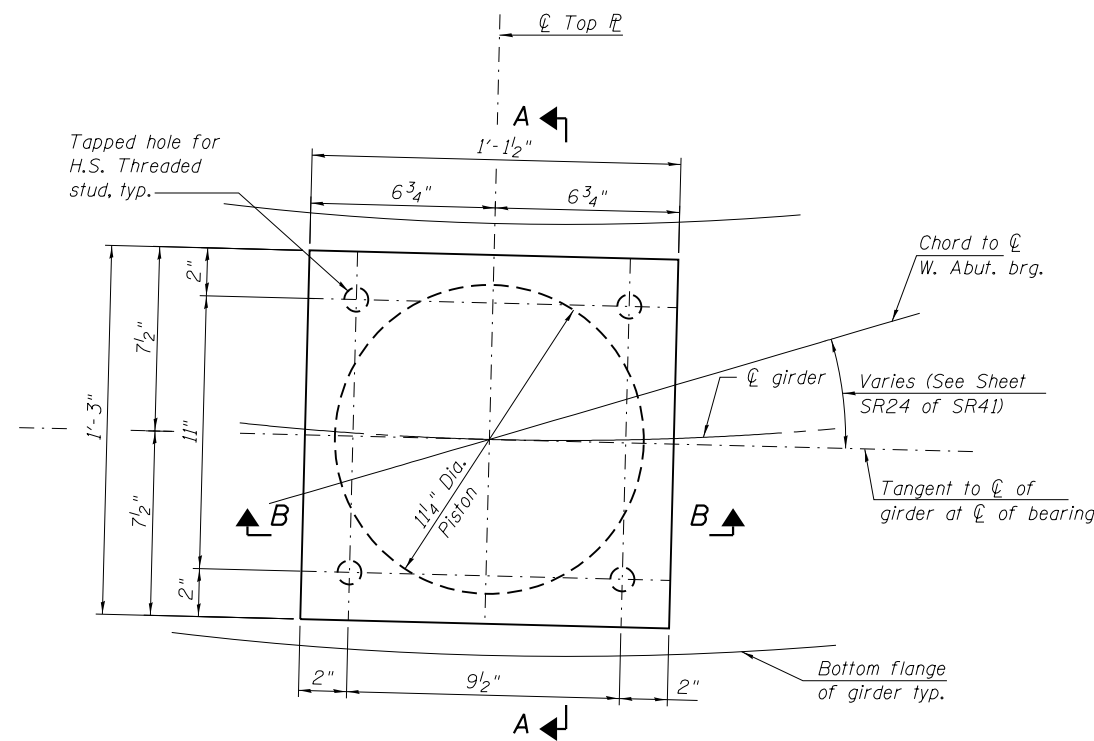
See Sheet SR26 of SR41 for Bearing Schedule.

**BILL OF MATERIAL**

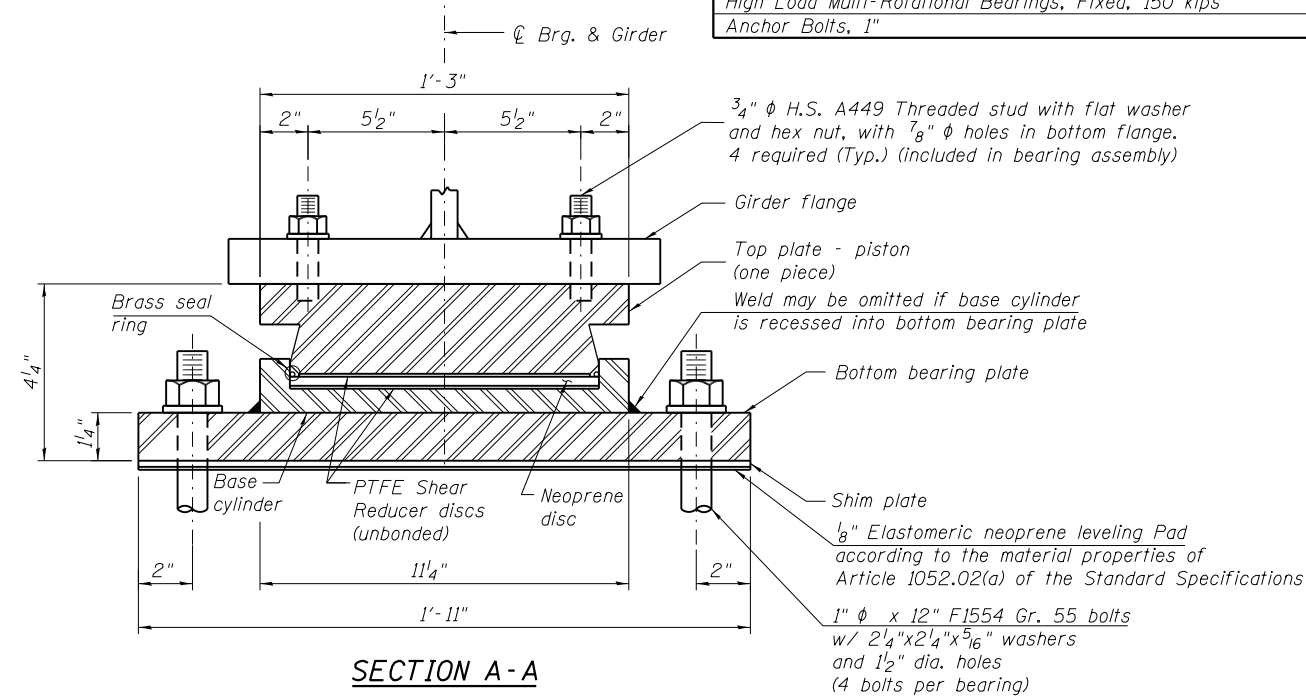
Item	Unit	Total
High Load Multi-Rotational Bearings, Guided Expansion, 200 kips	Each	7
Anchor Bolts, 1"	Each	28

**BILL OF MATERIAL**

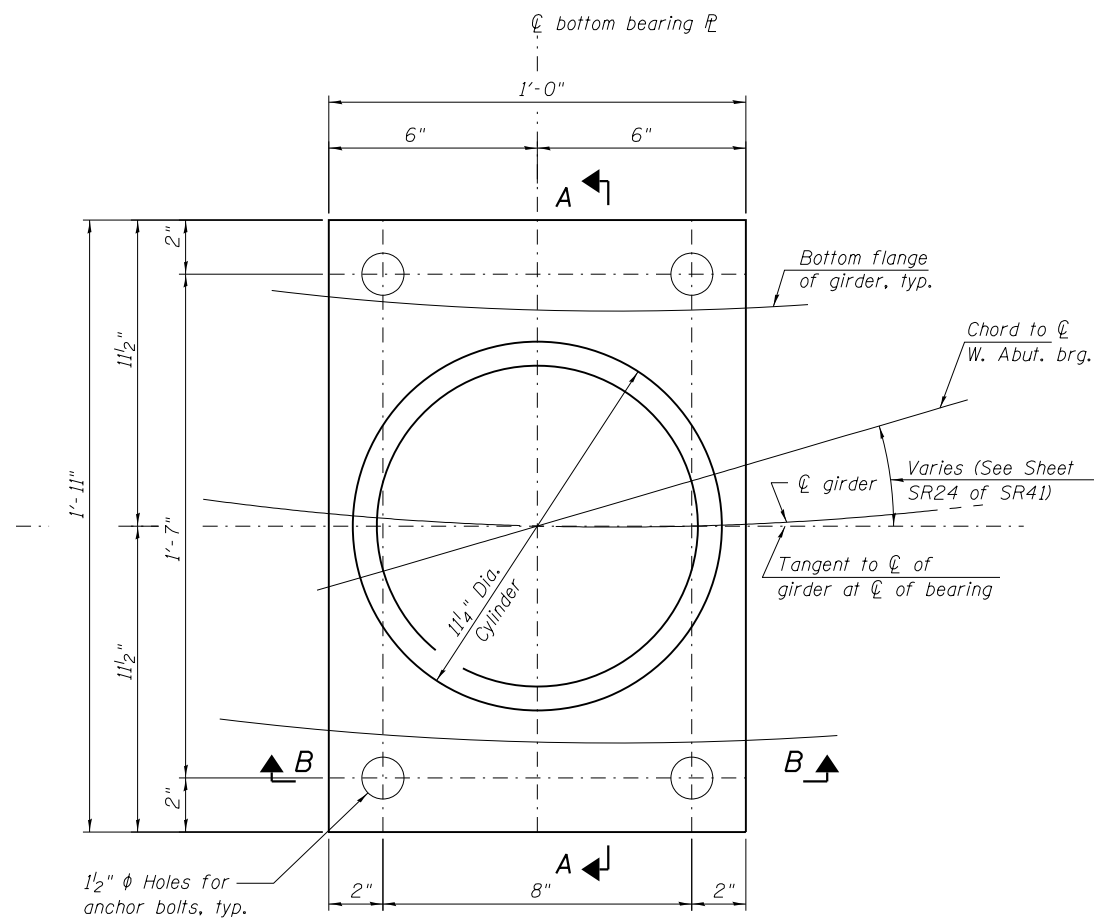
Item	Unit	Total
High Load Multi-Rotational Bearings, Fixed, 150 kips	Each	7
Anchor Bolts, 1"	Each	28



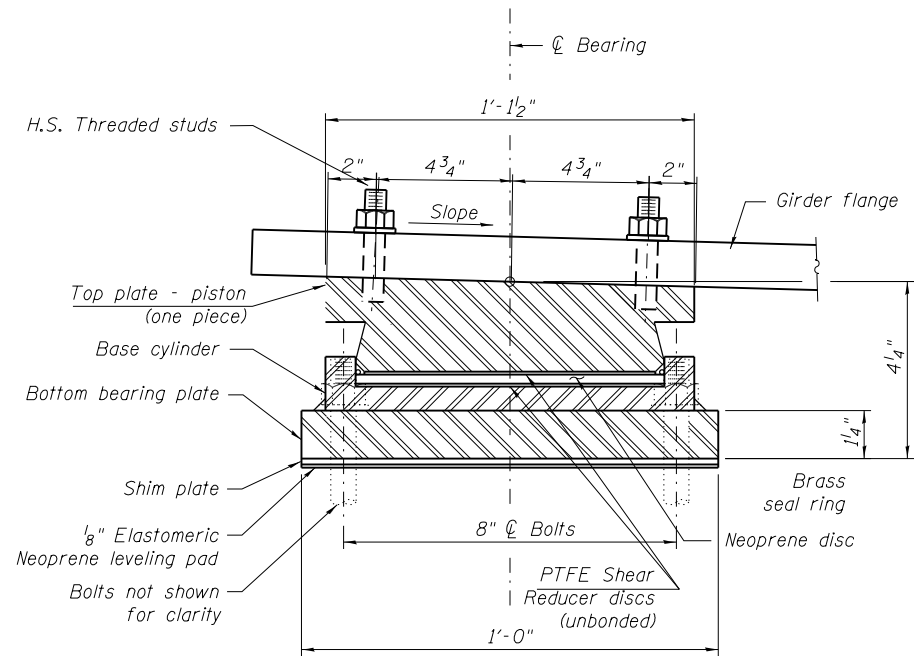
**TOP BEARING PLATE AND PISTON PLAN**



**SECTION A-A**



**BOTTOM BEARING PLATE AND BASE CYLINDER PLAN**

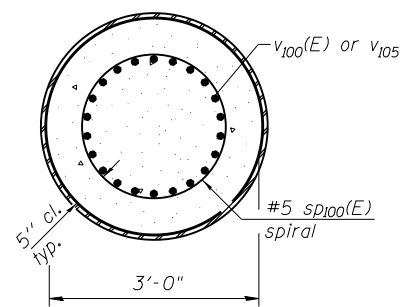
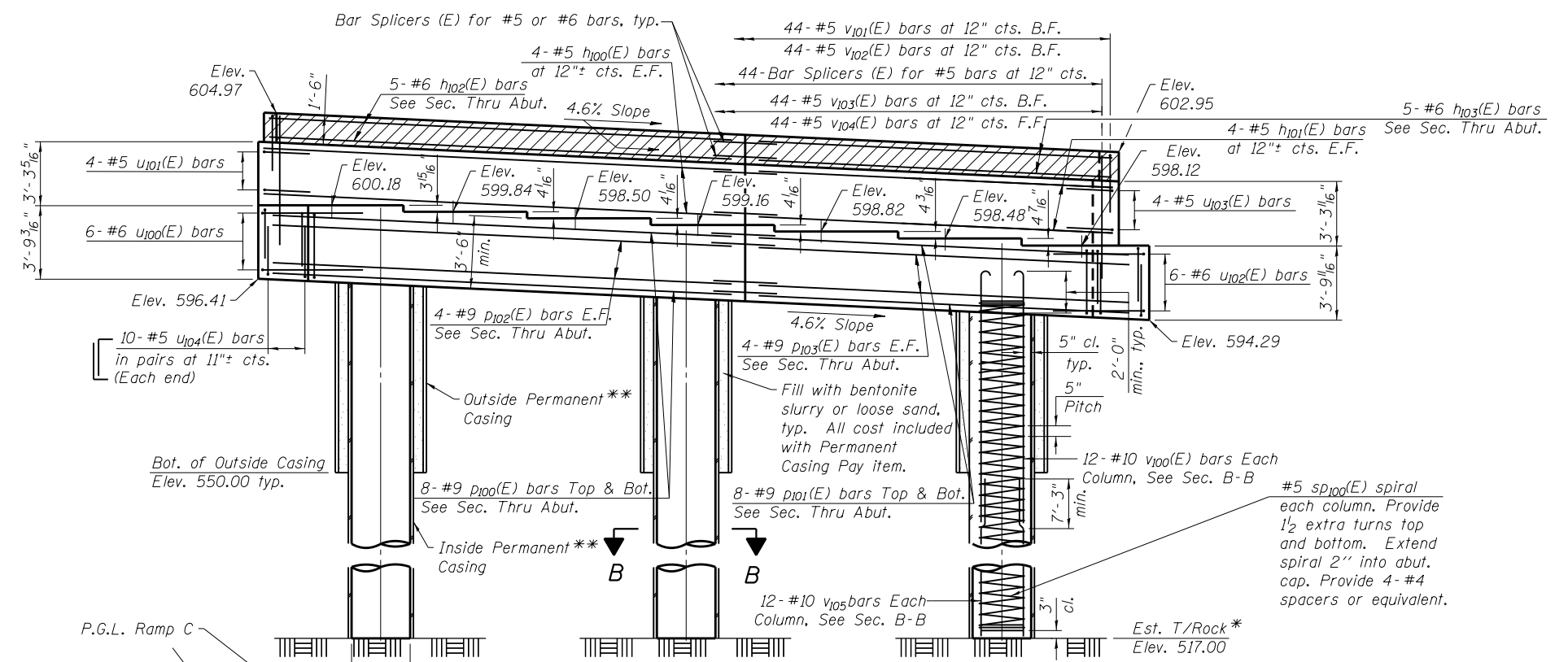


**SECTION B-B**  
(E. Abut., Looking South)

For Notes, See Sheet SR25 of SR41.

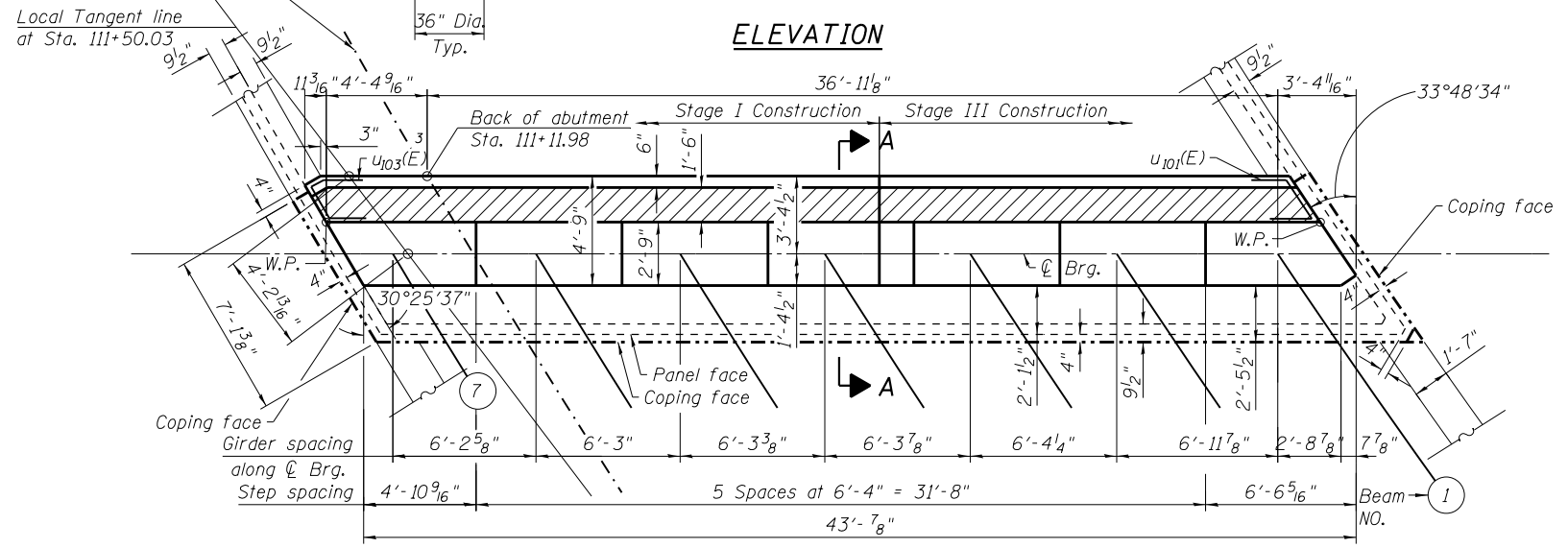
**BEARING SCHEDULE**

Type	Location	Vertical Design Load (kips)	Lateral Design Load (kips)	Maximum Factored Ultimate Design Rotation (radians)	Girders	Total Required Movement (in)
HLMR, Guided Expansion, 200K	W. Abut.	151	30	0.02	1-7	0.41
HLMR, Fixed, 150K	E. Abut.	129	26	0.02	1-7	0.00



\* The quantities and detailing are based on the estimated elevations shown on the plans. The actual elevations may differ at each shaft and corresponding adjustments shall be made to the drilled shaft and reinforcement quantities and payment limits.

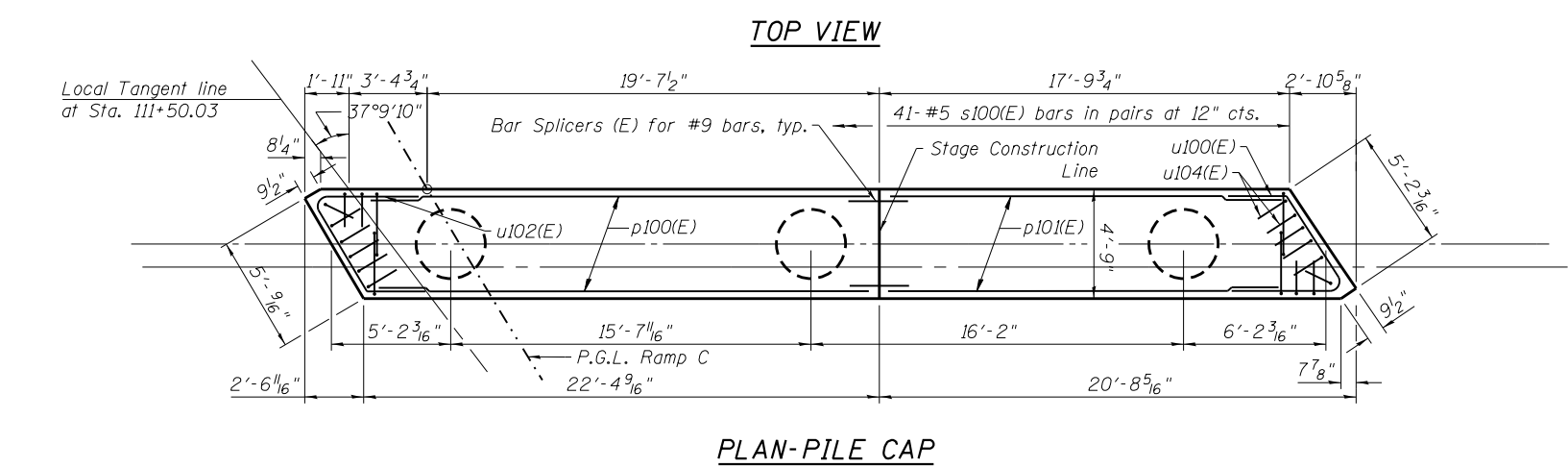
\*\* The casing thickness shall be 1/2", typ. See Article 516.06(d) of the Standard Specifications. Pay limits for permanent casing are based on the minimum length shown.



**MINIMUM BAR LAP**  
(Abutment)

(E) bars	Other bars
#5 bar = 3'-3"	#10 bar = 7'-3"
#6 bar = 3'-10"	
#7 bar = 5'-2"	
#8 bar = 6'-9"	

Min. Lap for Spirals = 2'-6"



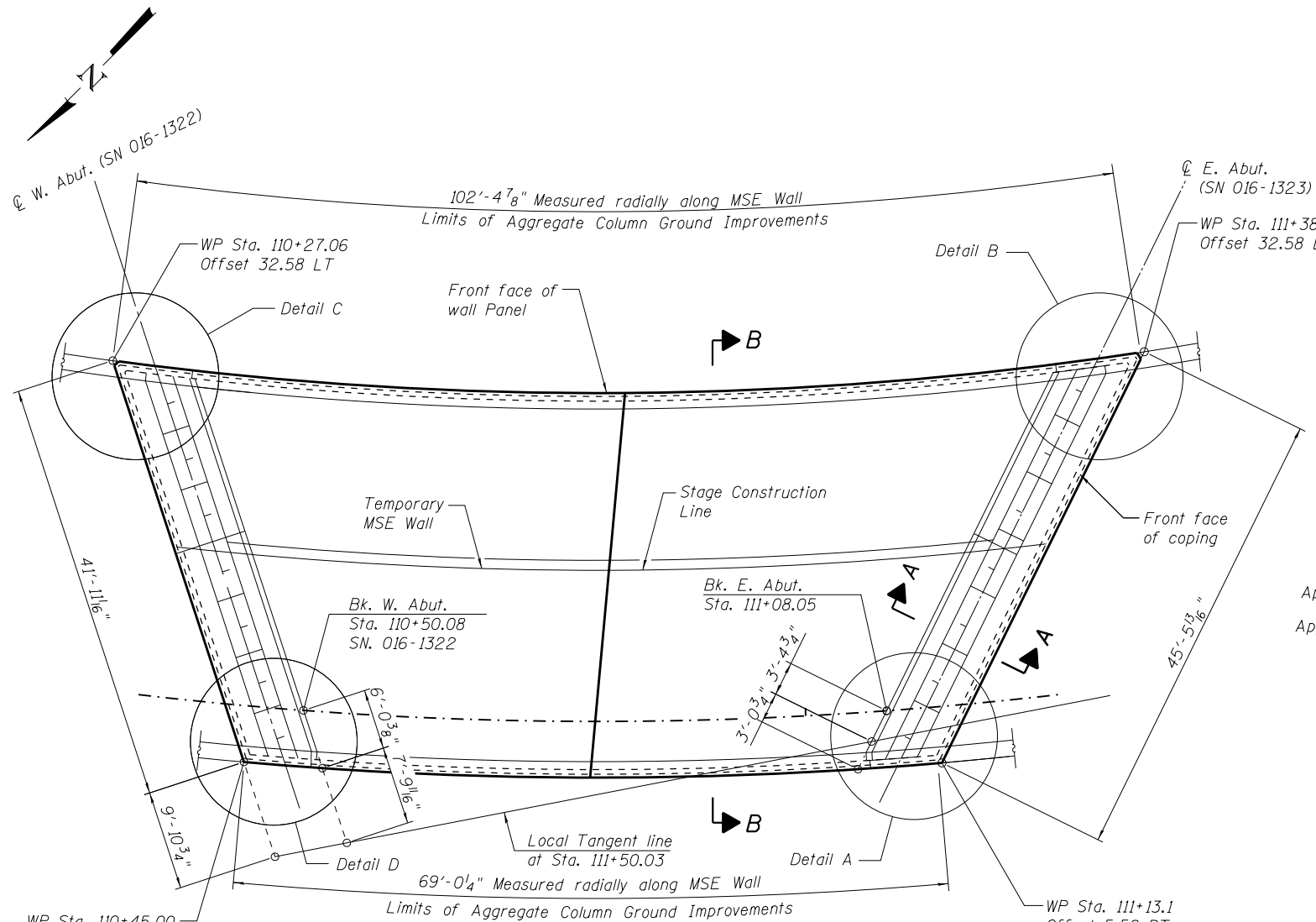
**NOTES:**

For Section A-A and Section Thru Abutment see Sheet SR30 of SR41.

Concrete sealer to be applied to front face, ends, and bearing seats of abutment cap and front face of backwall.

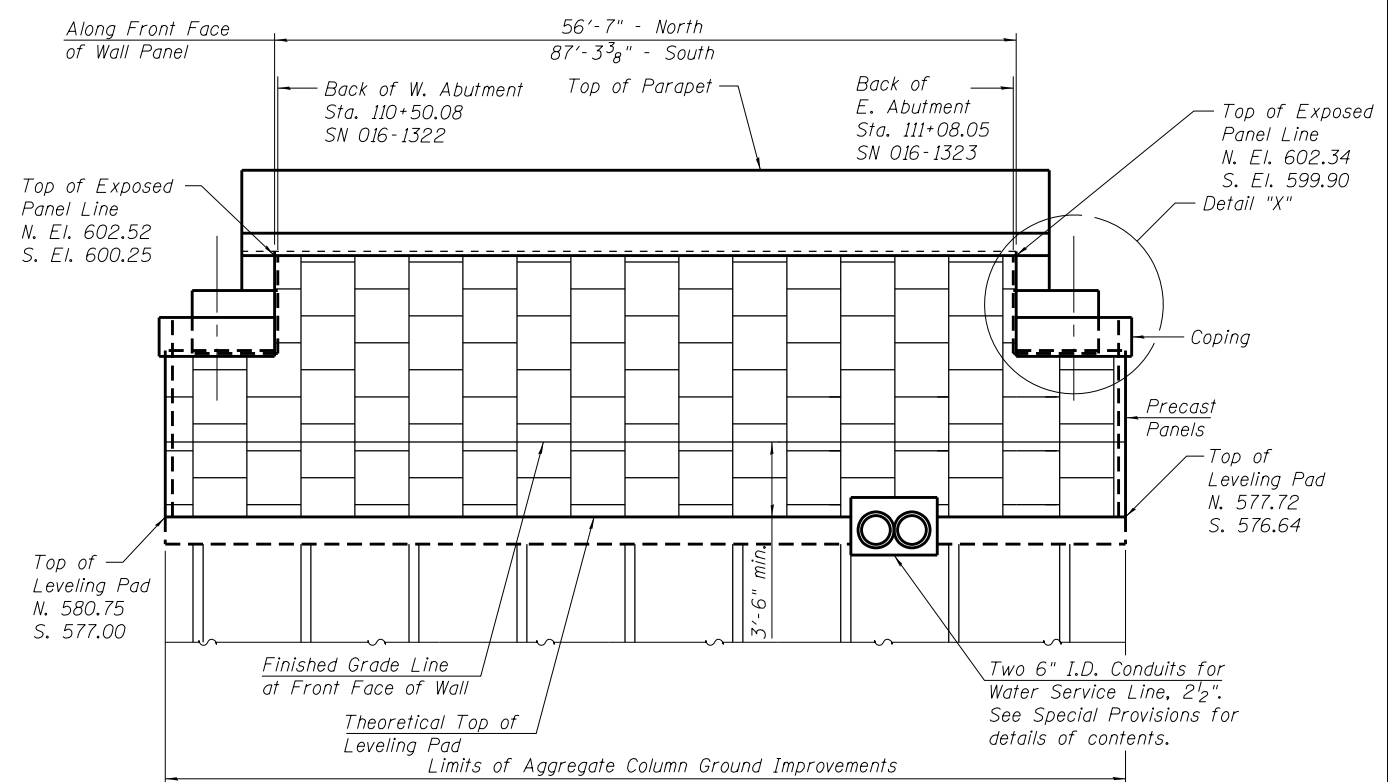
See sheet SR38 of SR41 for Bar Splicer Details.





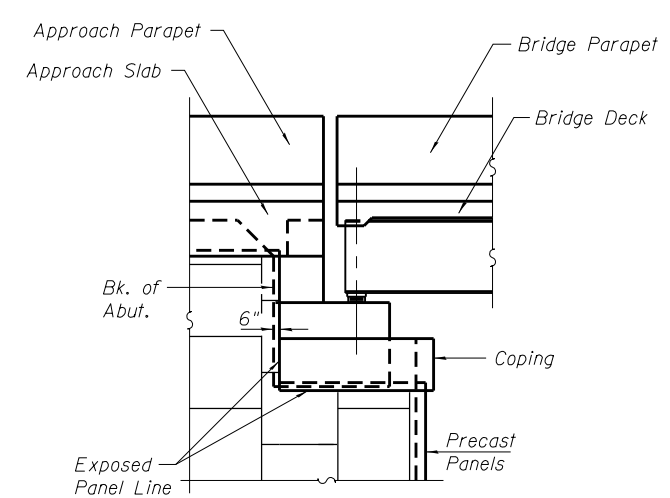
**PLAN**

Temporary MSE Wall Required for Stage Construction shall remain in place.

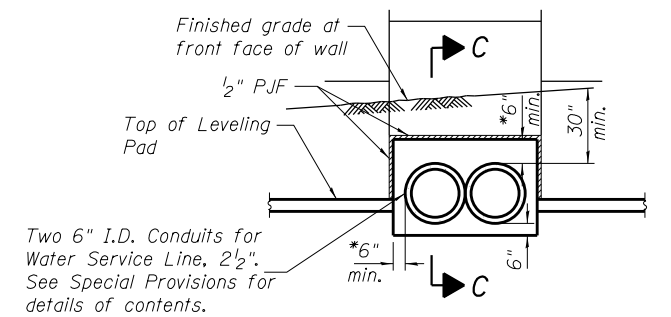


**CENTER M.S.E. ELEVATION**

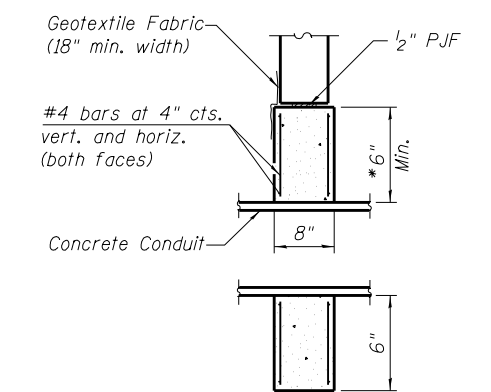
(North Wall Shown, South Wall Similar)



**DETAIL "X" END VIEW**



**SECTION THRU MSE WALL AT CONDUITS**



**SECTION C-C**

Notes:  
See Sheet SR30 of SR41 for sections A-A and B-B.  
Two 6" ID pipes are to be located thru the MSE Wall.  
See Section thru MSE Wall at Conduits, Modifications to Existing Irrigation System Plans and Special Provisions for more details. Cost of Concrete Conduits, Cast in Place Panels, Rebar, PJF, and Geotextile Fabric included with Mechanically Stabilized Earth Retaining Wall.

(Sheet 1 of 2)



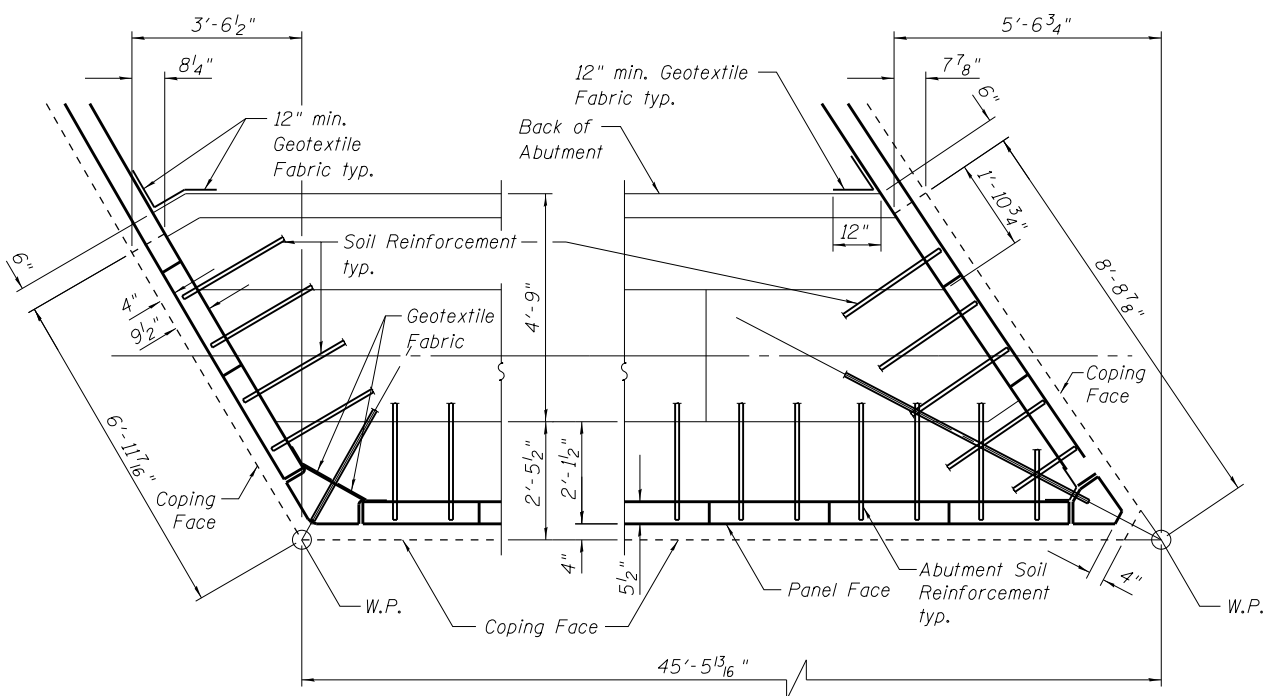
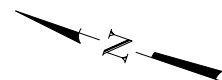
USER NAME =	DESIGNED - AMS	REVISED
PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - DR	REVISED
	CHECKED - JMH	REVISED

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EAST ABUTMENT / CENTER MSE WALL DETAILS  
STRUCTURE NO. 016-1323**

SHEET NO. SR28 OF SR41 SHEETS

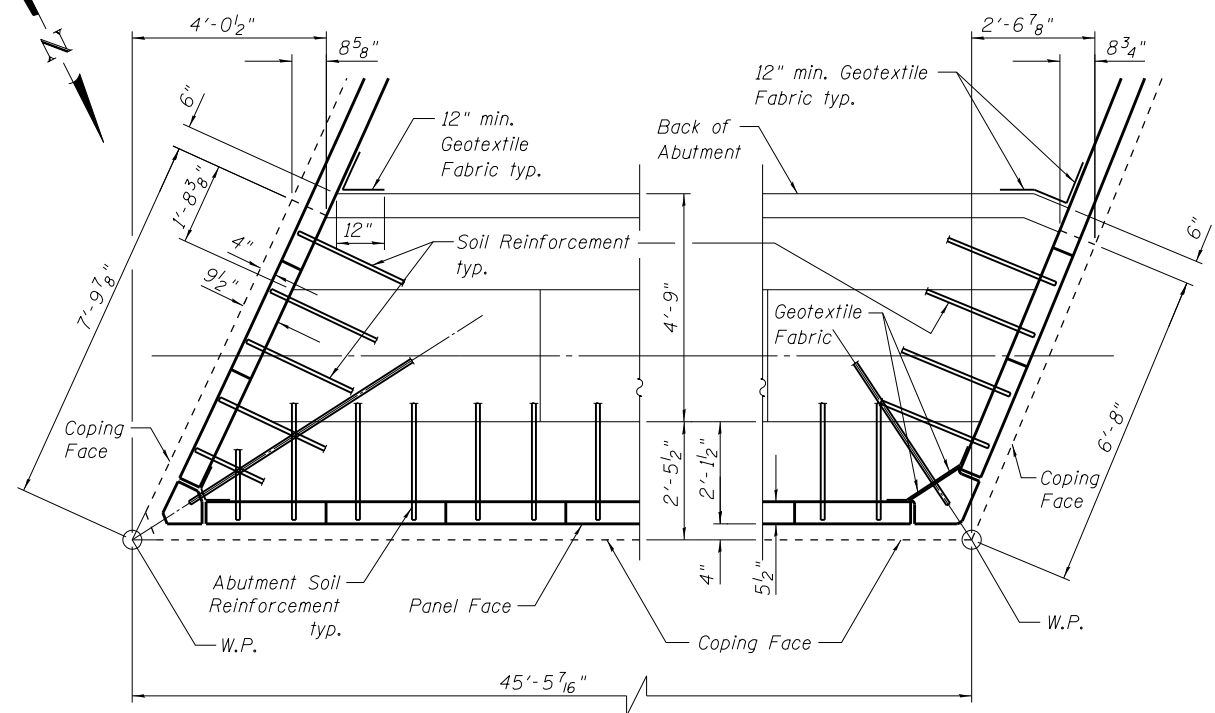
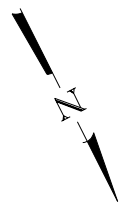
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	269
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



**DETAIL "A"**

**DETAIL "B"**

The MSE supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.8 kips/ft of abutment.



**DETAIL "C"**

**DETAIL "D"**

The MSE supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.8 kips/ft of abutment.

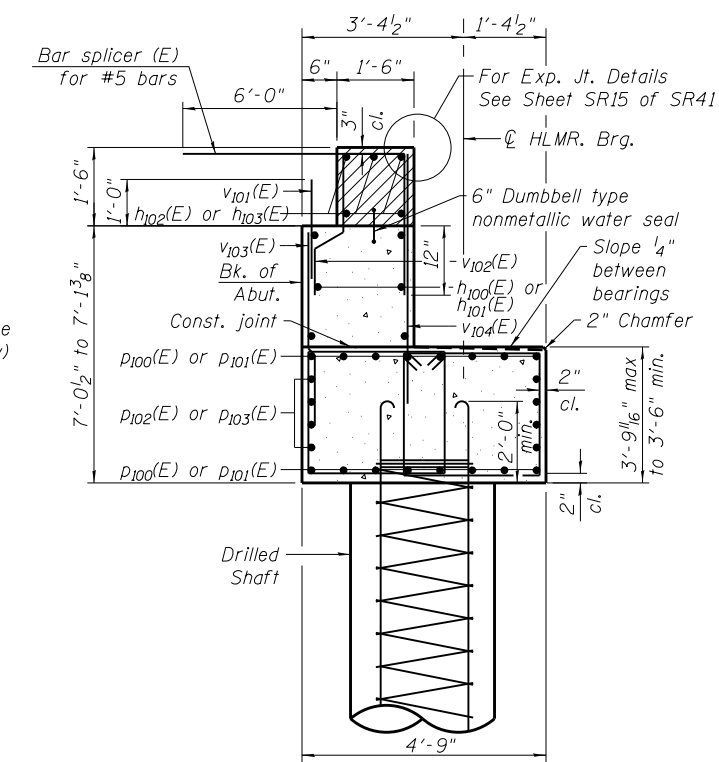
(Sheet 2 of 2)

USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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				<b>CONTRACT NO. 60F63</b>
ILLINOIS FED. AID PROJECT				

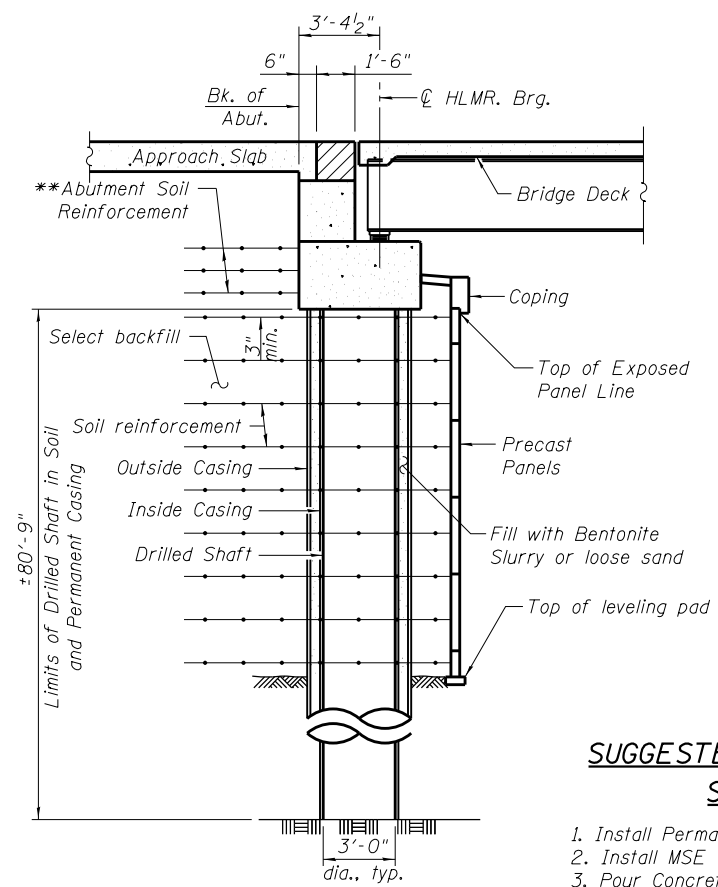
**EAST ABUTMENT  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h <sub>100</sub> (E)	8	#5	24'-5"	—
h <sub>101</sub> (E)	8	#5	20'-2"	—
h <sub>102</sub> (E)	5	#6	24'-5"	—
h <sub>103</sub> (E)	5	#6	18'-9"	—
p <sub>100</sub> (E)	16	#9	24'-5"	—
p <sub>101</sub> (E)	16	#9	20'-2"	—
p <sub>102</sub> (E)	8	#9	24'-5"	—
p <sub>103</sub> (E)	8	#9	18'-9"	—
s <sub>100</sub> (E)	82	#5	12'-3"	□
*s <sub>p100</sub> (E)	3	#5	81'-6"	⋈
u <sub>100</sub> (E)	6	#6	17'-6"	⋈
u <sub>101</sub> (E)	4	#5	7'-3"	⋈
u <sub>102</sub> (E)	6	#6	16'-4"	⋈
u <sub>103</sub> (E)	4	#5	7'-0"	⋈
u <sub>104</sub> (E)	40	#5	4'-6"	⋈
v <sub>100</sub> (E)	36	#10	45'-9"	⋈
v <sub>101</sub> (E)	44	#5	2'-6"	—
v <sub>102</sub> (E)	44	#5	3'-4"	—
v <sub>103</sub> (E)	44	#5	7'-9"	—
v <sub>104</sub> (E)	44	#5	9'-3"	—
v <sub>105</sub>	36	#10	45'-8"	—
Concrete Structures	Cu. Yd.		39.3	
Reinforcement Bars	Pound		7,080	
Reinforcement Bars, Epoxy Coated	Pound		18,210	
Drilled Shaft in Soil	Cu. Yd.		63.4	
Permanent Casing	Foot		380	
Concrete Sealer	Sq. Ft.		473	
Temporary Mechanically Stabilized Earth Retaining Wall	Sq. Ft.		2,186	
Mechanically Stabilized Earth Retaining Wall	Sq. Ft.		5,075	
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd.		426.5	
Aggregate Column Ground Improvement	L. Sum		0.32	



**SECTION THRU ABUTMENT**

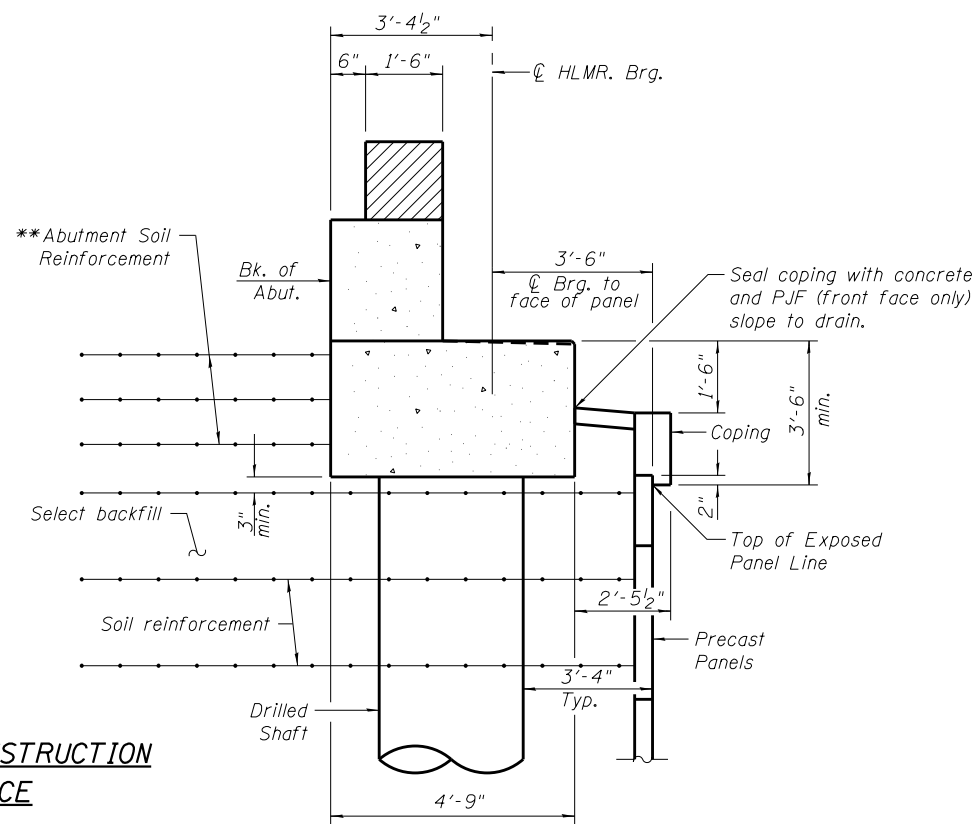
Soil reinforcement and coping are not shown see other "Section Thru Abutment" for details. Casing shown in Section A-A.



**SECTION A-A**

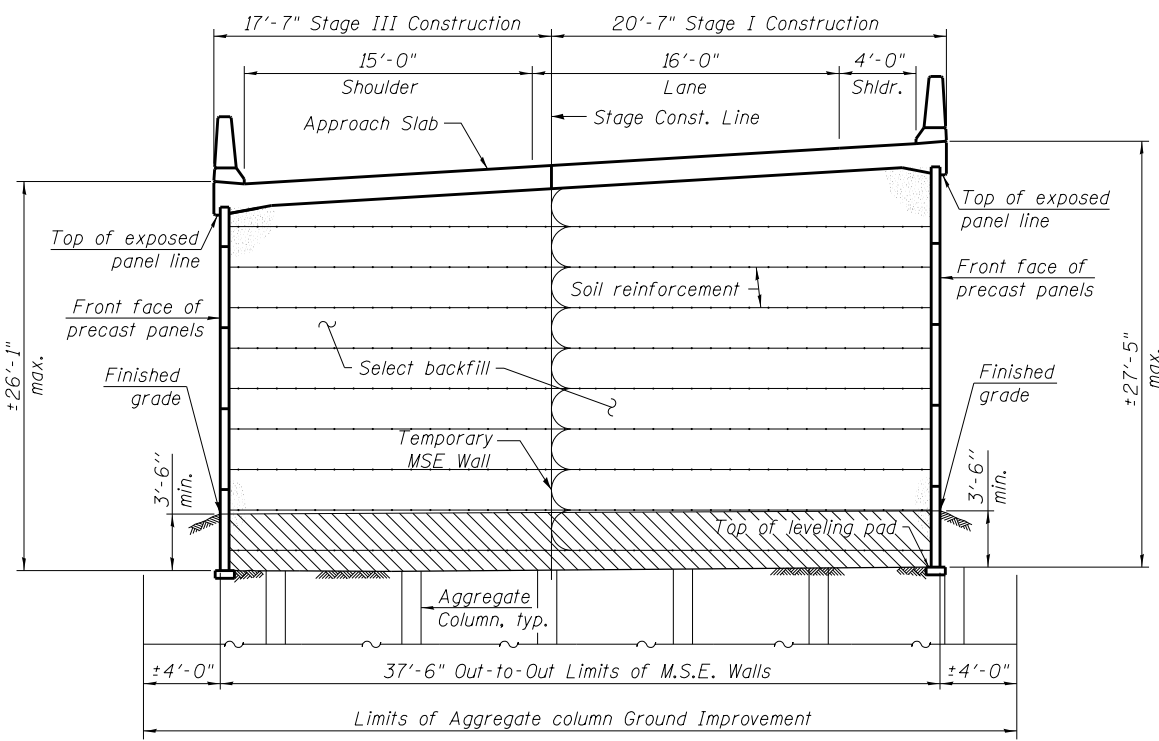
**SUGGESTED CONSTRUCTION SEQUENCE**

1. Install Permant Casing for Drilled Shafts.
2. Install MSE Wall.
3. Pour Concrete for Drilled Shafts.

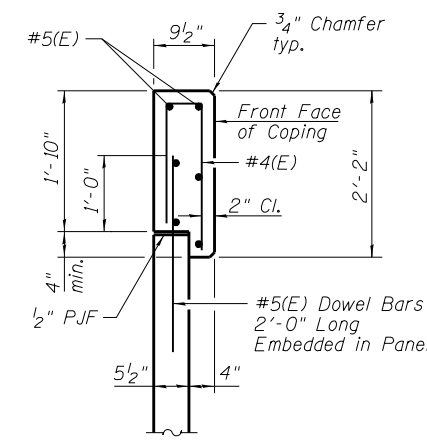


**SECTION THRU ABUTMENT**

Showing soil reinforcement and coping with precast panels. Casing not shown for clarity.



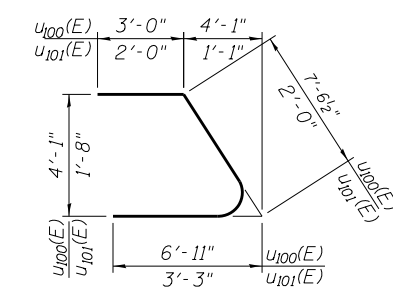
**SECTION B-B**



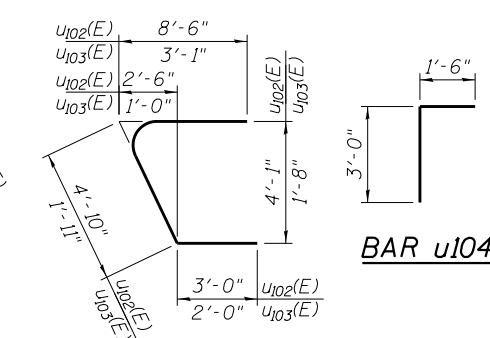
**COPING DETAILS**

Cost of Coping including Reinforcement in the Coping is included in the pay item "Mechanically Stabilized Earth Retaining Wall."

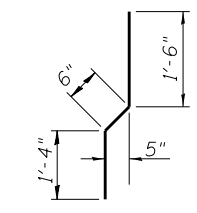
Removal of unsuitable material.



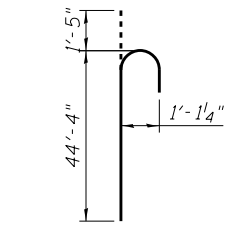
**BARS u100(E) & u101(E)**



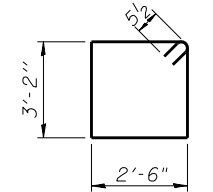
**BARS u102(E) & u103(E)**



**BAR v102(E)**



**BAR v100(E)**

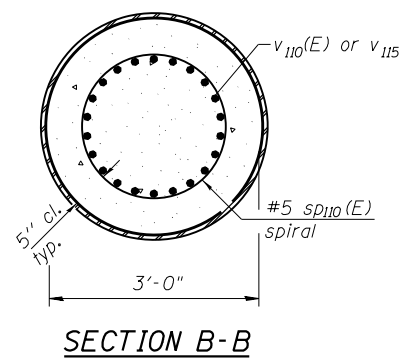
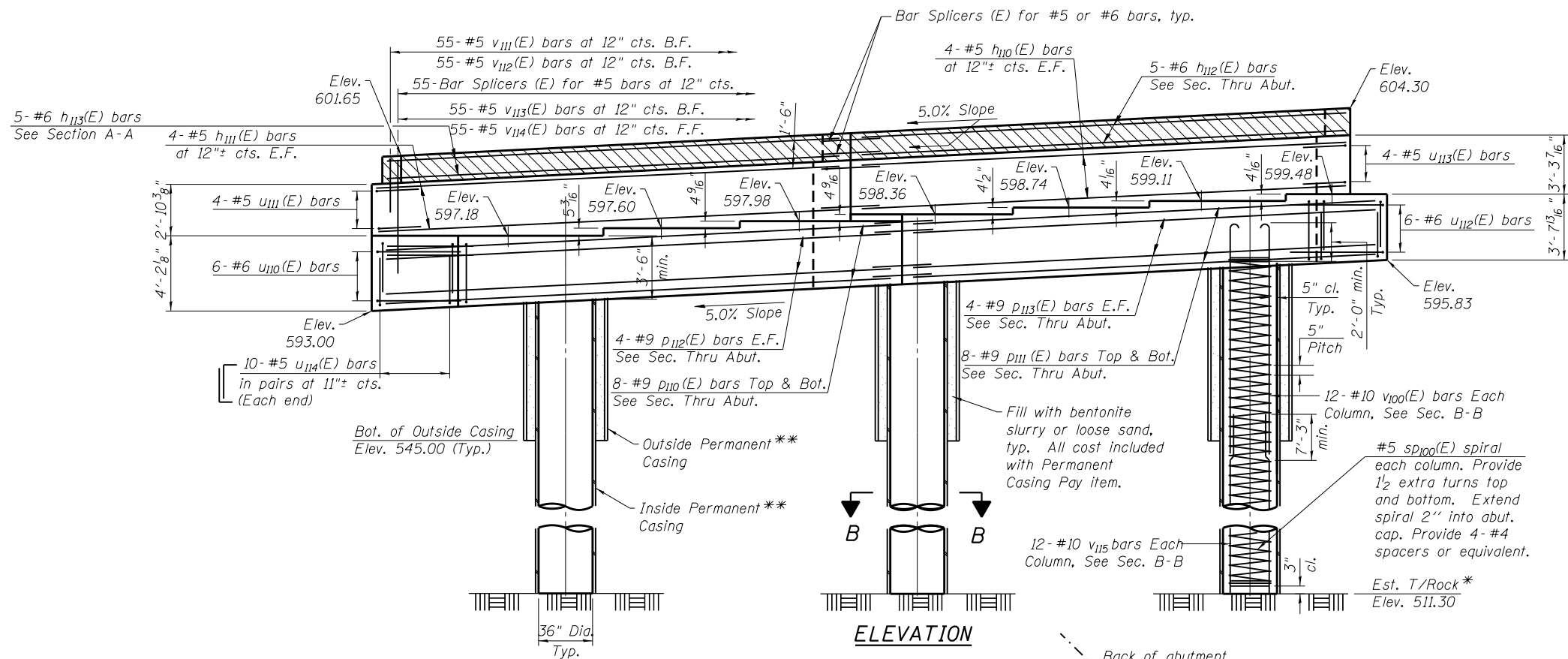


**BAR s100(E)**

\* Length is height of spiral.

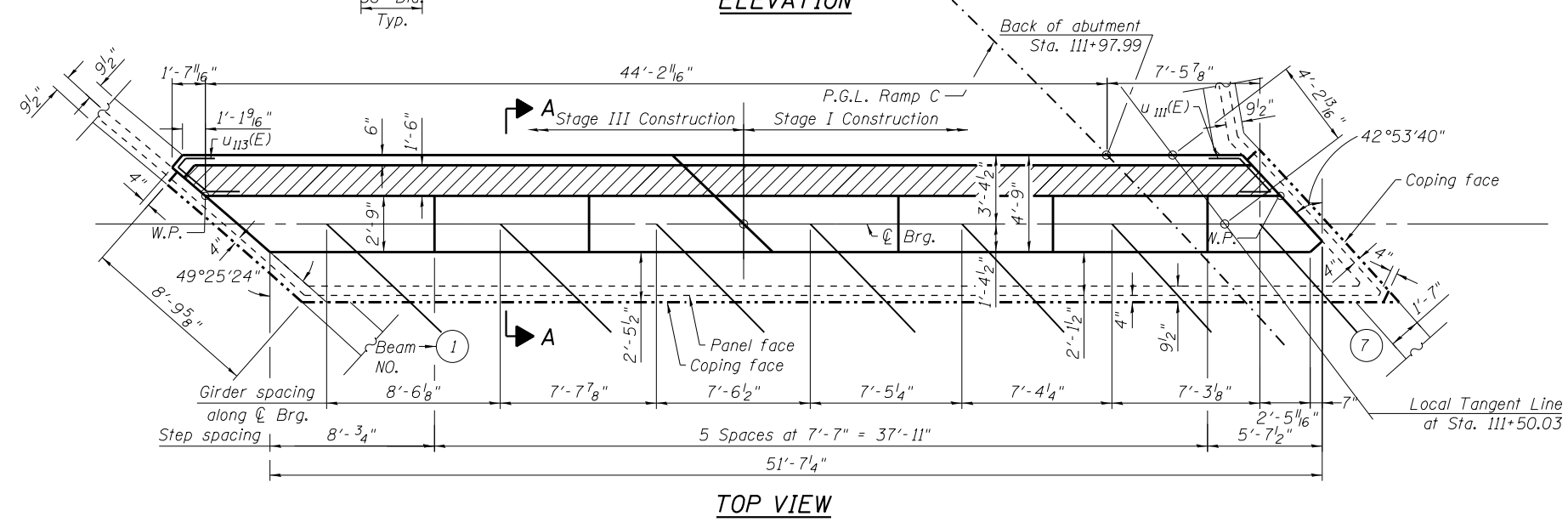
\*\* The MSE wall supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.8 k/ft of abutment.

**Notes:**  
Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure on sheet SR11 of SR41.  
Space reinforcement in cap to miss anchor bolts.  
Pour steps monolithically with cap. For details of Bar Splicers, see sheet SR38 of SR41.  
Quantity of embankment fill is included with roadway quantities.  
Min. lap for spirals = 2'-6".  
Temporary MSE walls required for stage construction shall remain in place. See SR33 of SR41 and SNO16-1322 plans for remainder of Aggregate Column Ground Improvement quantity.



\* The quantities and detailing are based on the estimated elevations shown on the plans. The actual elevations may differ at each shaft and corresponding adjustments shall be made to the drilled shaft and reinforcement quantities and payment limits.

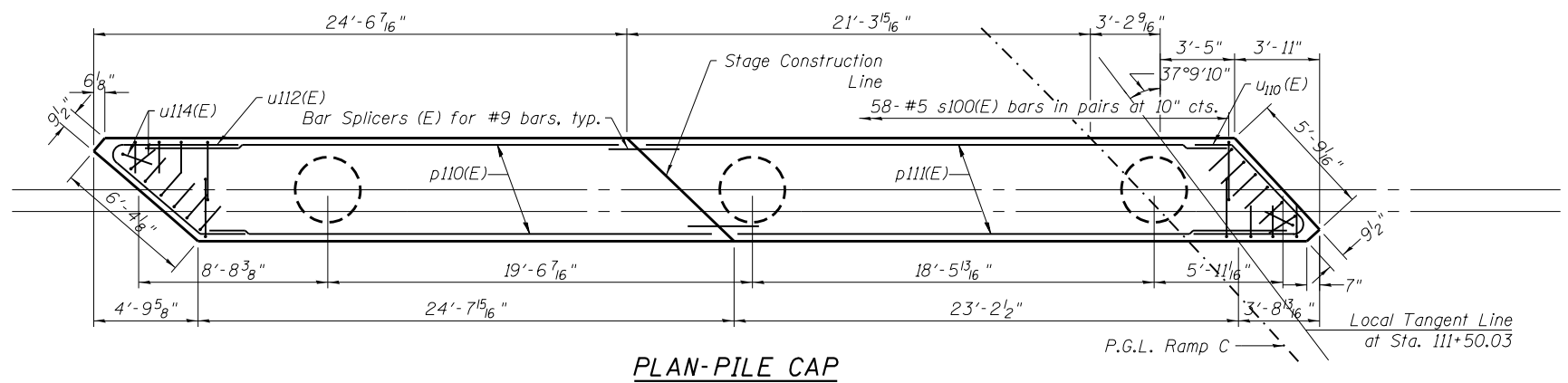
\*\* The casing thickness shall be 1/2", typ. See Article 516.06(d) of the Standard Specifications. Pay limits for permanent casing are based on the minimum length shown.



**MINIMUM BAR LAP**  
(Abutment)

(E) bars	Other bars
#5 bar = 3'-3"	#10 bar = 7'-3"
#6 bar = 3'-10"	
#7 bar = 5'-2"	
#8 bar = 6'-9"	

Min. Lap for Spirals = 2'-6"

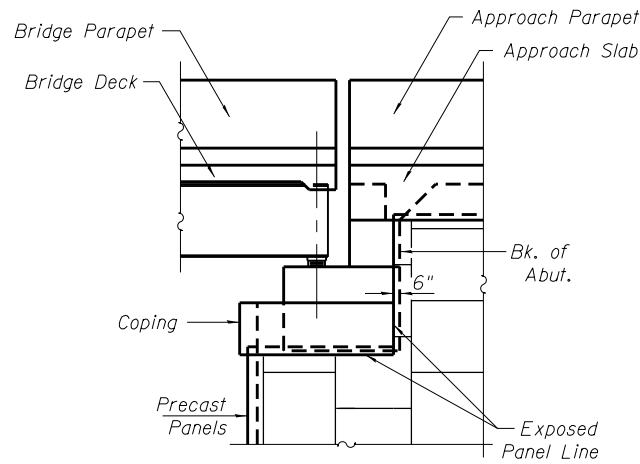


**Notes:**  
For Section A-A and Section Thru Abutment see Sheet SR33 of SR41.  
Concrete sealer to be applied to front face, ends, and bearing seats of abutment cap and front face of backwall.  
See sheet SR38 of SR41 for Bar Splicer Details.

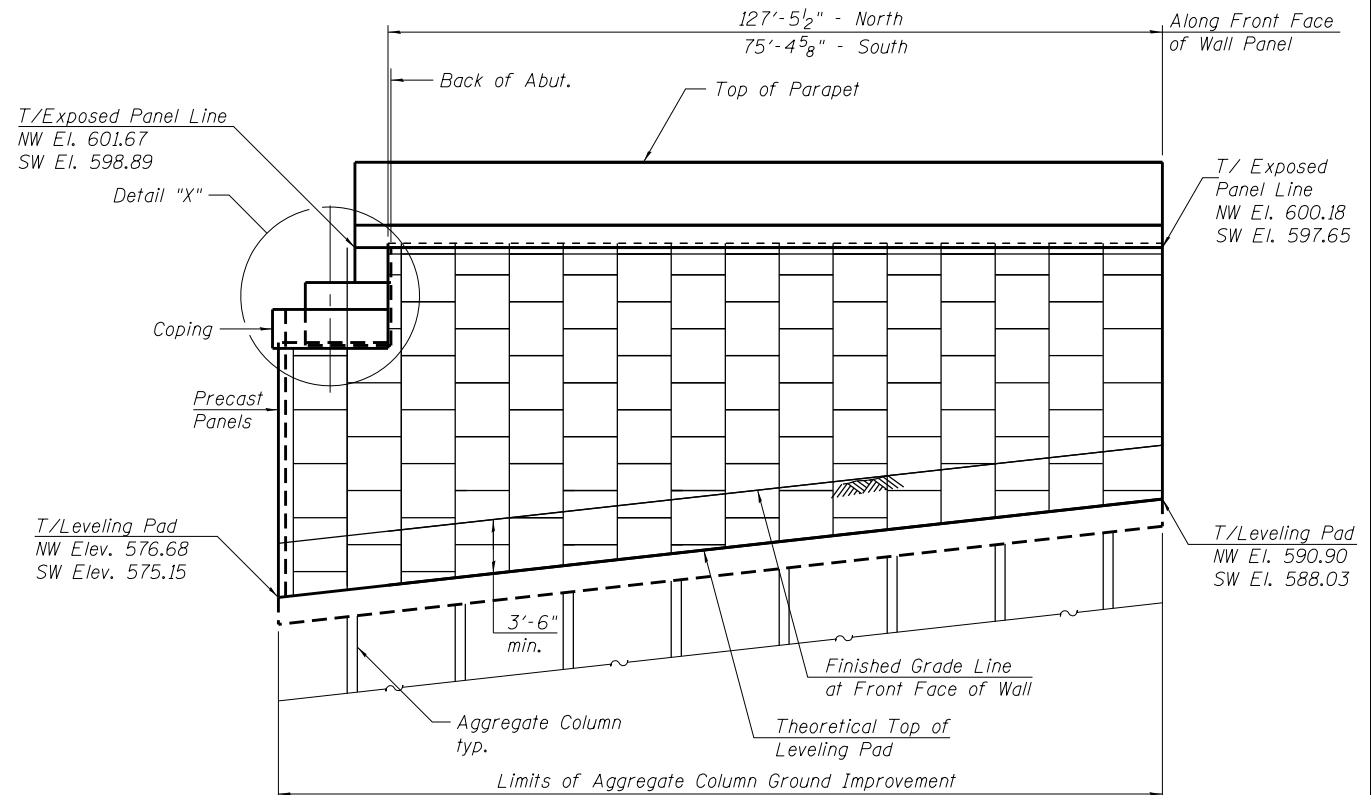
USER NAME =	DESIGNED - AMS	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - DR	REVISED
PLOT DATE =	CHECKED - JMH	REVISED

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	272
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				

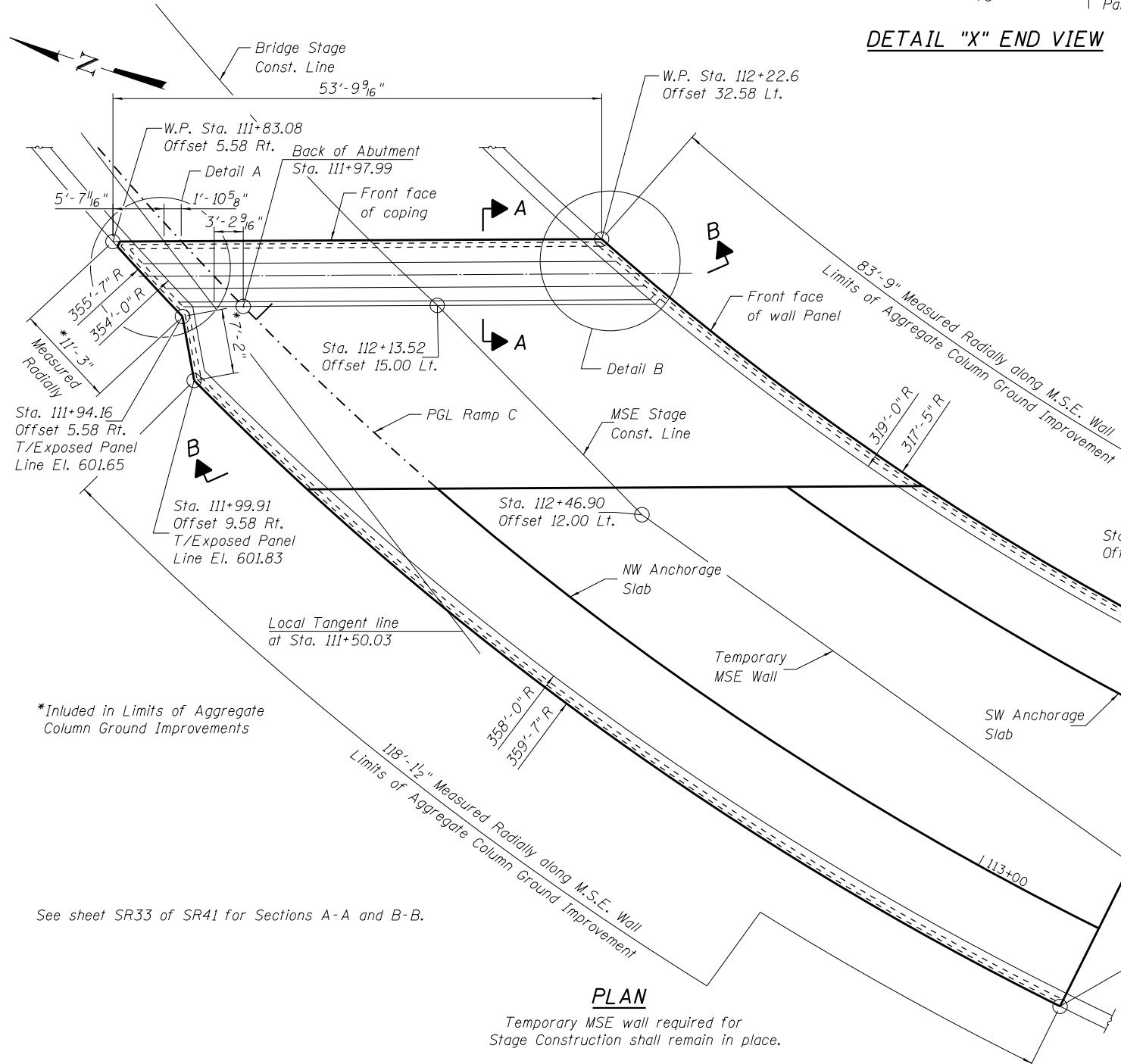
The M.S.E. wall supplier's internal design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksi and horizontal sliding force of 0.5 kips/ft of wall. See sheet SR37 of SR41 for anchorage slab details.



**DETAIL "X" END VIEW**

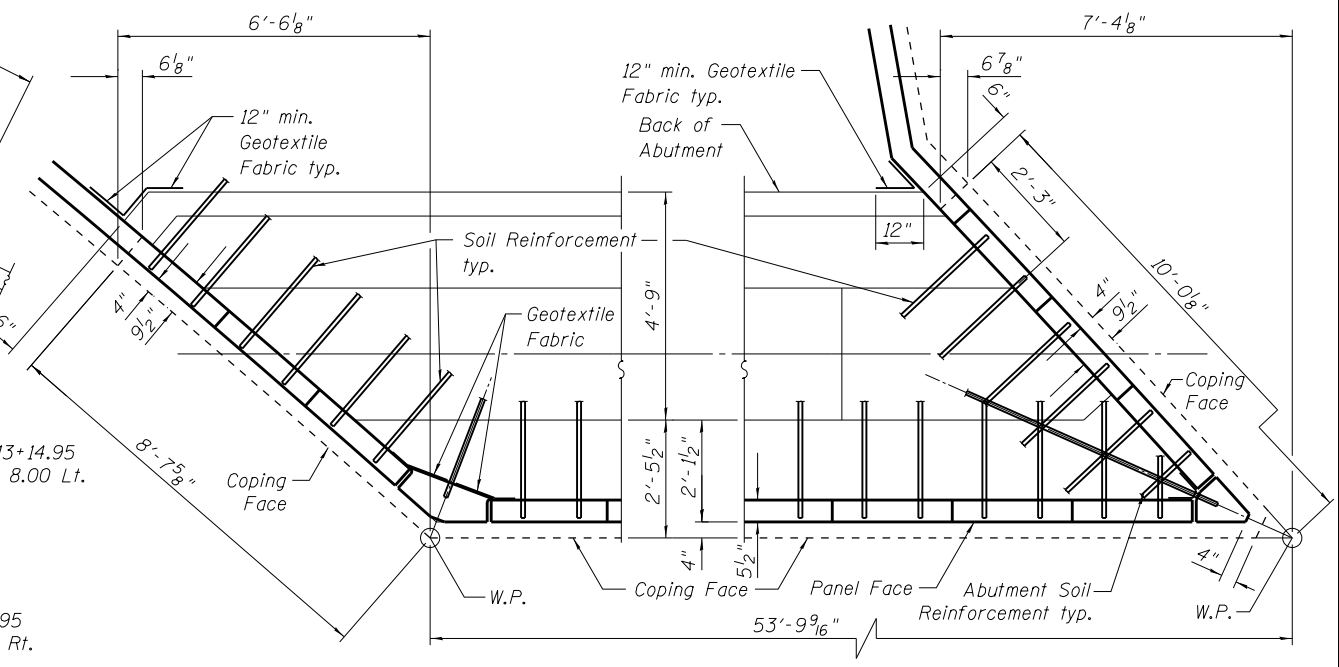


**WEST M.S.E. ELEVATION**



**PLAN**

Temporary MSE wall required for Stage Construction shall remain in place.



**DETAIL "A"**

**DETAIL "B"**

The MSE supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.8 kips/ft of abutment.

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PLOT DATE	CHECKED - JMH	REVISED

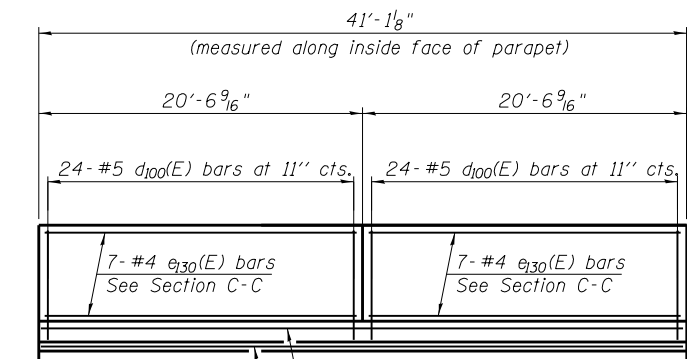
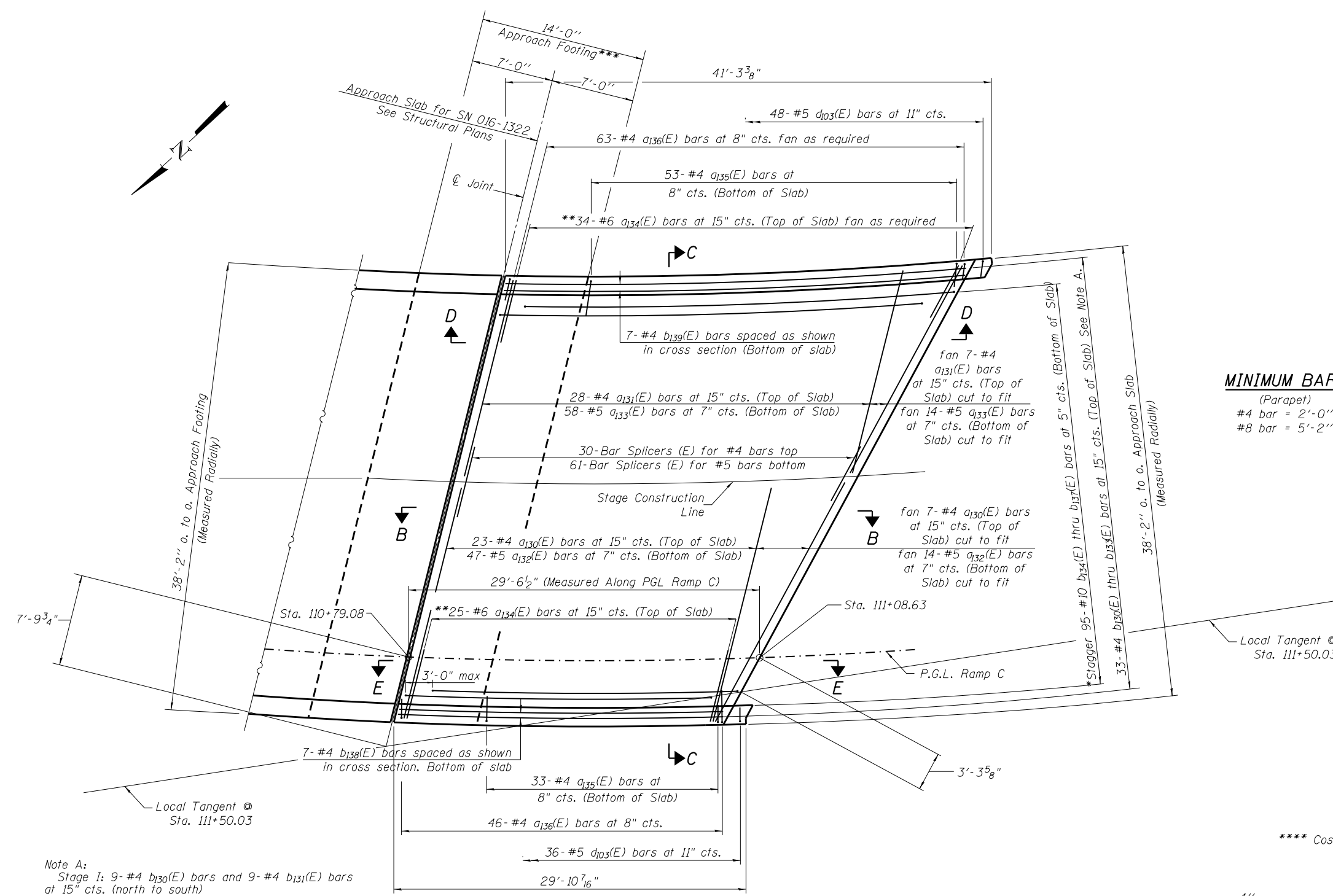
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**WEST ABUTMENT / WEST MSE WALL DETAILS  
STRUCTURE NO. 016-1323**  
SHEET NO. SR32 OF SR41 SHEETS

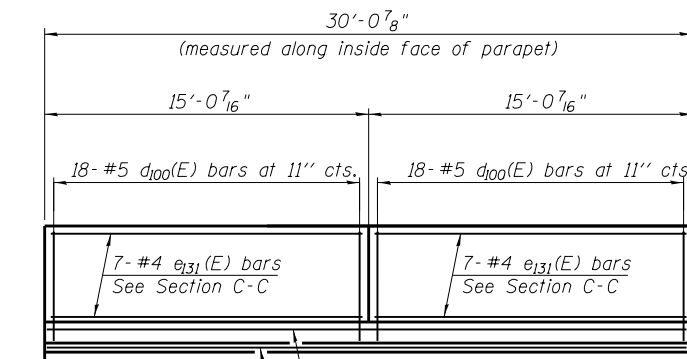
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	273
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



Notes:  
 See sheet SR34 of SR41 for Sections B-B and C-C.  
 $a_{130}(E)$  thru  $a_{133}(E)$  bar spacings measured perpendicular along span.  
 For parapet joint details, see sheet SR13 of SR41.  
 Bars indicated thus 1 x 2-#4 etc. indicates 1 line of bars with 2 lengths per line.



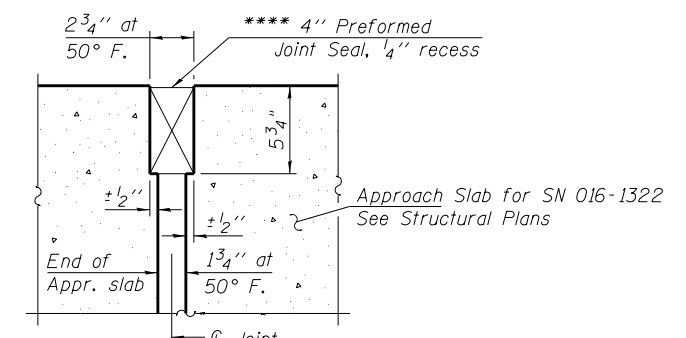
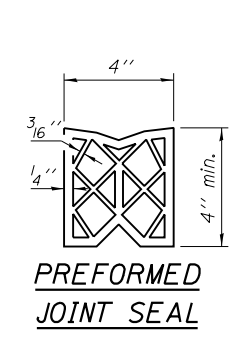
**VIEW D-D**



**VIEW E-E**

**MINIMUM BAR LAP**  
 (Parapet)  
 #4 bar = 2'-0"  
 #8 bar = 5'-2"

\*\*\*\* Cost included with Concrete Superstructure.



**DETAIL A**

Note A:  
 Stage I: 9-#4  $b_{130}(E)$  bars and 9-#4  $b_{131}(E)$  bars at 15" cts. (north to south)  
 Stage III: 8-#4  $b_{132}(E)$  bars and 7-#4  $b_{133}(E)$  bars at 15" cts. (north to south)

Note B:  
 Stage I: 26-#10  $b_{134}(E)$  and 26-#10  $b_{135}(E)$  bars at 5" cts. (north to south)  
 Stage III: 22-#10  $b_{136}(E)$  and 21-#10  $b_{137}(E)$  bars at 5" cts. (north to south)

**PLAN**

**PLAN**

\* Tilt #10  $b_{134}(E)$  thru  $b_{137}(E)$  bars as required to maintain clearance. See Note B.  
 \*\* Space between  $a_{130}(E)$  bars in the north parapet and  $a_{131}(E)$  bars in the south parapet.  
 \*\*\* Approach footing included in SN 016-1322 plans.

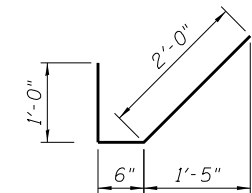
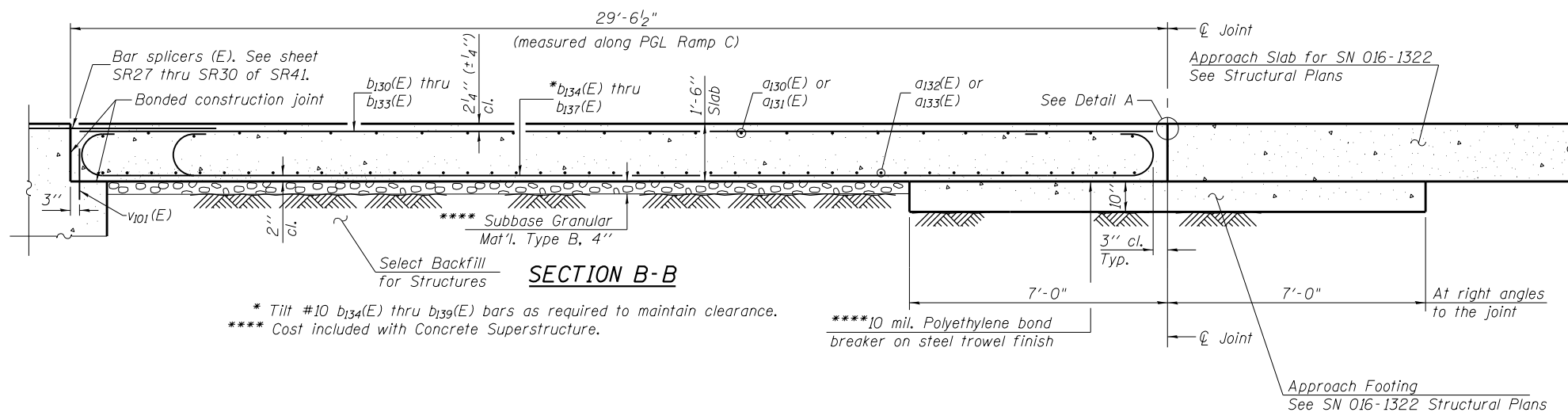
(Sheet 1 of 2)

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	PLOT DATE =	DRAWN - DR	REVISED			CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	
		CHECKED - JMH	REVISED		SHEET NO. SR34 OF SR41 SHEETS					

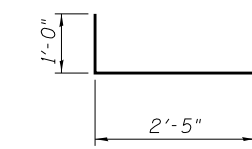
**EAST APPROACH  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a130 (E)	30	#4	20'-5"	—
a131 (E)	35	#4	17'-9"	—
a132 (E)	61	#5	20'-5"	—
a133 (E)	72	#5	17'-9"	—
a134 (E)	59	#6	6'-6"	—
a135 (E)	86	#4	3'-6"	✓
a136 (E)	109	#4	3'-5"	┌
*****				
b130 (E)	9	#4	30'-6"	—
b131 (E)	9	#4	33'-6"	—
b132 (E)	8	#4	36'-6"	—
b133 (E)	7	#4	39'-6"	—
b134 (E)	26	#10	28'-10"	—
b135 (E)	26	#10	31'-4"	—
b136 (E)	22	#10	34'-1"	—
b137 (E)	21	#10	36'-11"	—
b138 (E)	7	#4	32'-0"	—
b139 (E)	7	#4	20'-6"	—
*****				
d100 (E)	84	#5	6'-10"	—
d103 (E)	84	#5	7'-11"	—
*****				
e130 (E)	14	#4	20'-2"	—
e131 (E)	14	#4	14'-8"	—
e132 (E)	1	#8	29'-8"	—
e133 (E)	2	#8	23'-0"	—
e134 (E)	1	#4	20'-2"	—
e135 (E)	2	#4	21'-7"	—
*****				
Concrete Superstructure	Cu. Yd.		88.8	
Bridge Deck Grooving	Sq. Yd.		130	
Protective Coat	Sq. Yd.		281	
Reinforcement Bars, Epoxy Coated	Pound		20,660	

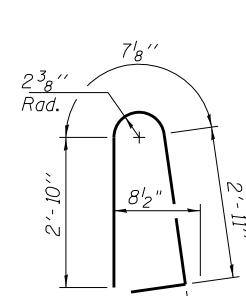
\*\*\*\*\* Bend Reinforcement to fit in Field.



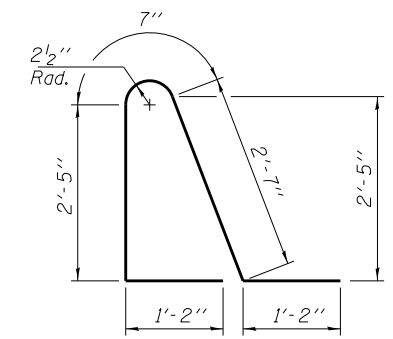
**BAR a135(E)**



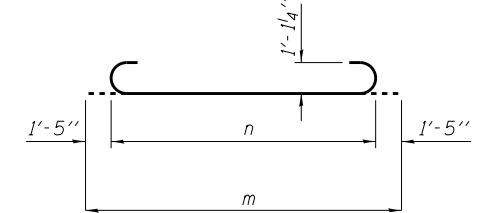
**BAR a136(E)**



**BAR d100(E)**

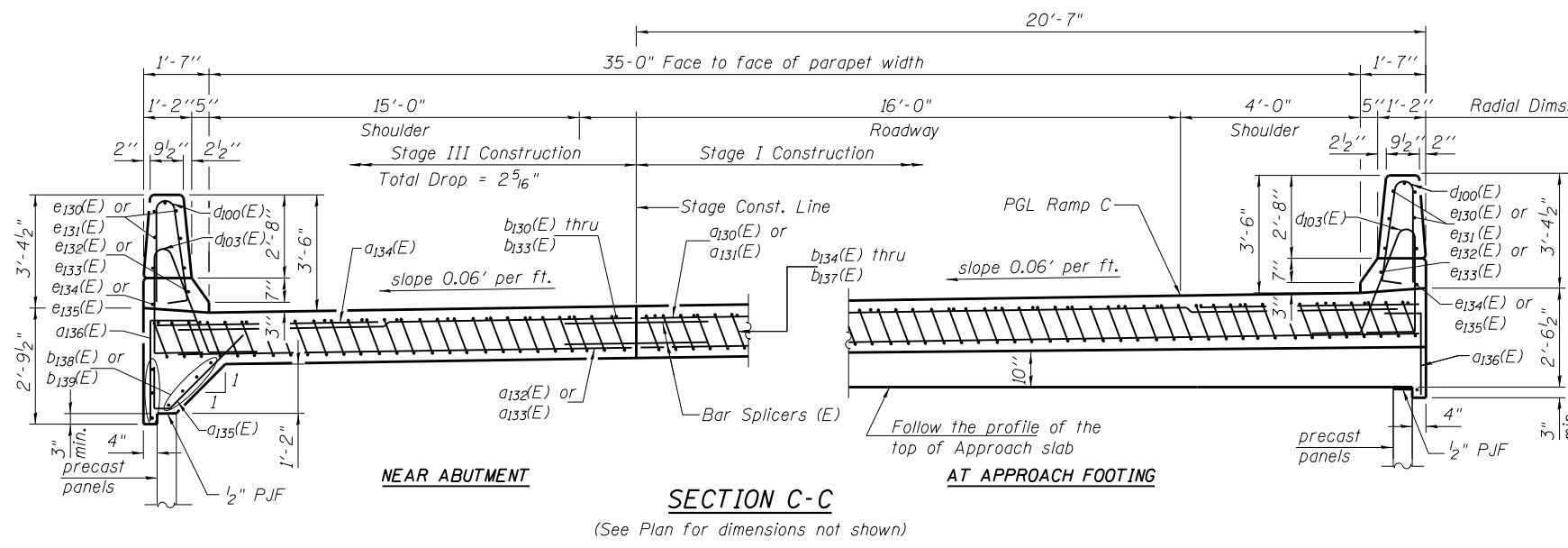


**BAR d103(E)**



**See Table**

Bar	m	n
b134(E)	28'-10"	26'-0"
b135(E)	31'-4"	28'-6"
b136(E)	34'-1"	31'-3"
b137(E)	36'-11"	34'-1"



**NEAR ABUTMENT**

**SECTION C-C**

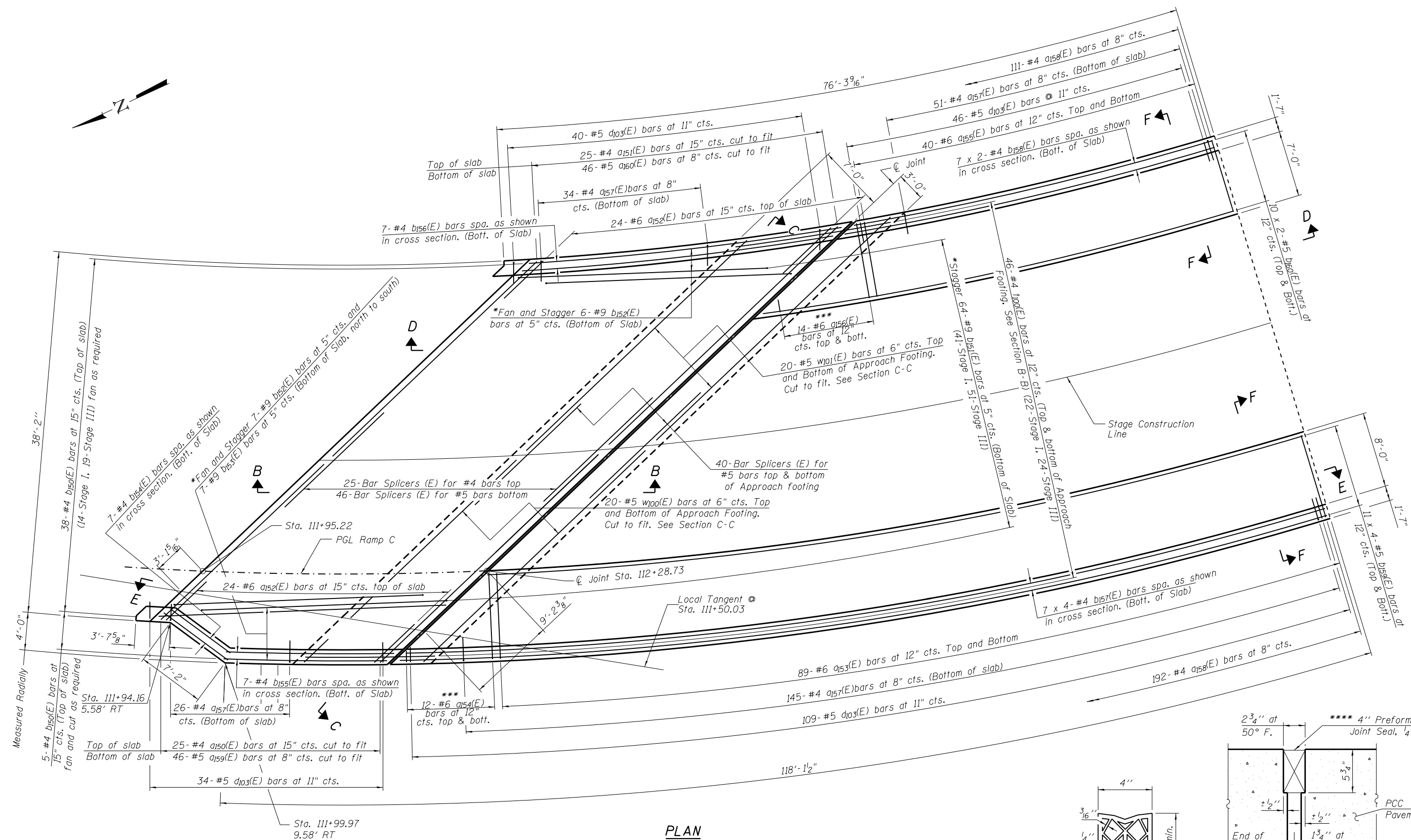
(See Plan for dimensions not shown)

**AT APPROACH FOOTING**

**Notes:**  
 Approach slab and parapet concrete shall be paid for as Concrete Superstructure.  
 Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.  
 The approach footing maximum applied service bearing pressure (Q<sub>max</sub>) = 2.0 ksf.  
 For v101(E) bar details, see sheets SR27 thru SR30 of SR41.  
 For Select Backfill for Structures, see sheet SR30 of SR41.  
 See sheet SR34 of SR41 for Detail A.  
 For bar splicer details, see sheet SR38 of SR41.

(Sheet 2 of 2)



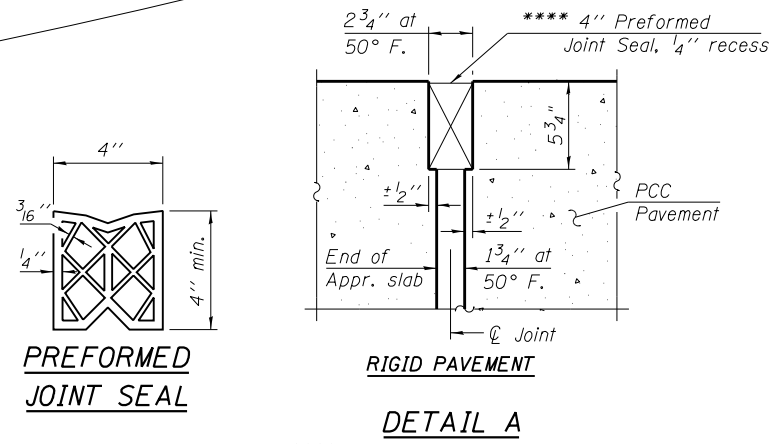


**PLAN**

**Notes:**  
 See sheet SR37 of SR41 for Sections B-B thru F-F.  
 #4, #5, #6, #9 bar spacings measured perpendicular along span.  
 Bars indicated thus 7 x 4-#4 etc. indicates 7 lines of bars with 4 lengths per line.

**MINIMUM BAR LAP**  
 #4 bar = 2'-7"  
 #5 bar = 3'-3"

\* Tilt #9 bars as required to maintain clearance.  
 \*\* Space between #4 bars in the north parapet and #5 bars in the south parapet.  
 \*\*\* Order #4 and #5 bars full length. Cut to fit skew in bottom slab and use remainder in top slab.



\*\*\*\* Cost included with Concrete Superstructure.

(Sheet 1 of 2)

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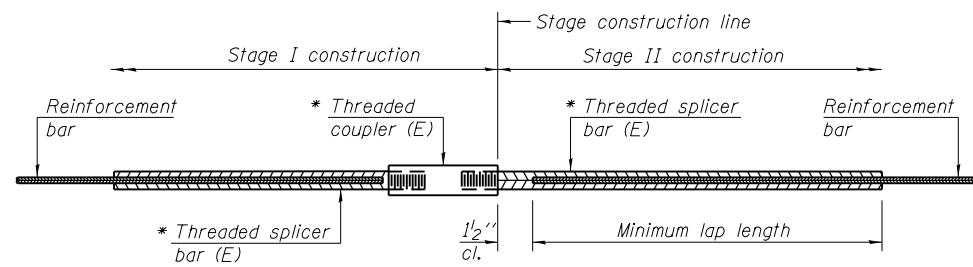
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PLOT DATE =	DRAWN - DR	REVISED
	CHECKED - JMH	REVISED

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**WEST BRIDGE APPROACH SLAB DETAILS**  
**STRUCTURE NO. 016-1323**  
 SHEET NO. SR36 OF SR41 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	277
				CONTRACT NO. 60F63
ILLINOIS FED. AID PROJECT				





**STANDARD BAR SPLICER ASSEMBLY**

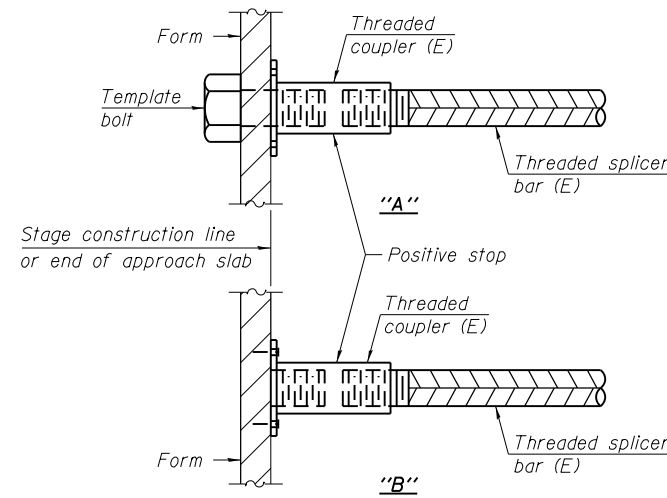
Minimum Lap Lengths						
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-7"	2'-11"
5	1'-9"	2'-5"	2'-7"	2'-11"	3'-3"	3'-8"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-10"	4'-5"
7	2'-9"	3'-10"	4'-2"	4'-8"	5'-2"	5'-10"
8	3'-8"	5'-1"	5'-5"	6'-2"	6'-9"	7'-8"
9	4'-7"	6'-5"	6'-10"	7'-9"	8'-7"	9'-8"

- Table 1: Black bar, 0.8 Class C
- Table 2: Black bar, Top bar lap, 0.8 Class C
- Table 3: Epoxy bar, 0.8 Class C
- Table 4: Epoxy bar, Top bar lap, 0.8 Class C
- Table 5: Epoxy bar, Class C
- Table 6: Epoxy bar, Top bar top, Class C

Threaded splicer bar length = min. lap length + 1 1/2" + thread length

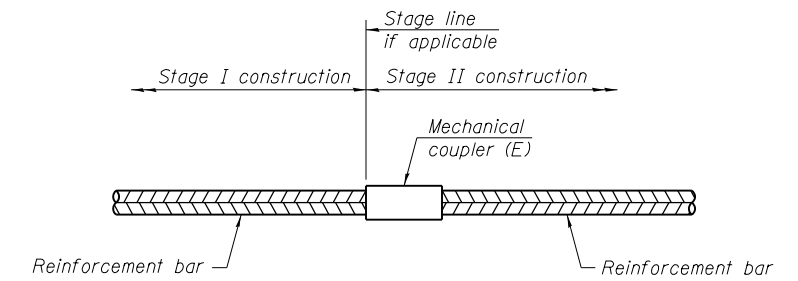
\* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length
Superstructure	#5	276	Table 3
E. Approach	#5	61	Table 3
E. Approach	#4	30	Table 3
W. Approach	#5	86	Table 3
W. Approach	#4	25	Table 3
Abutments	#9	48	Table 3
Abutments	#5	16	Table 3
Abutments	#6	10	Table 3



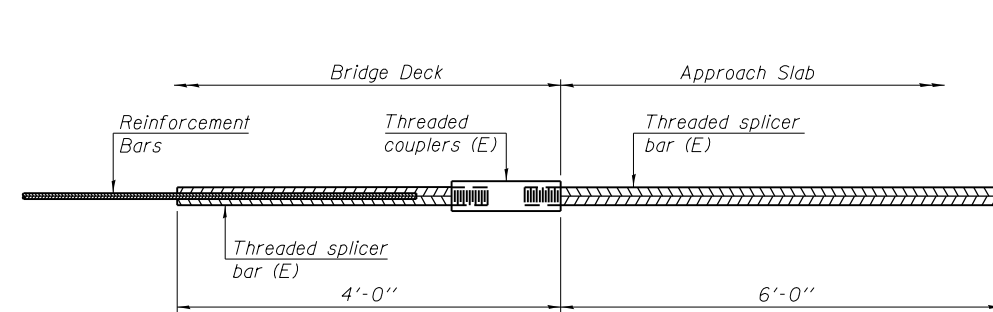
**INSTALLATION AND SETTING METHODS**

"A": Set bar splicer assembly by means of a template bolt.  
 "B": Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
 (E): Indicates epoxy coating.



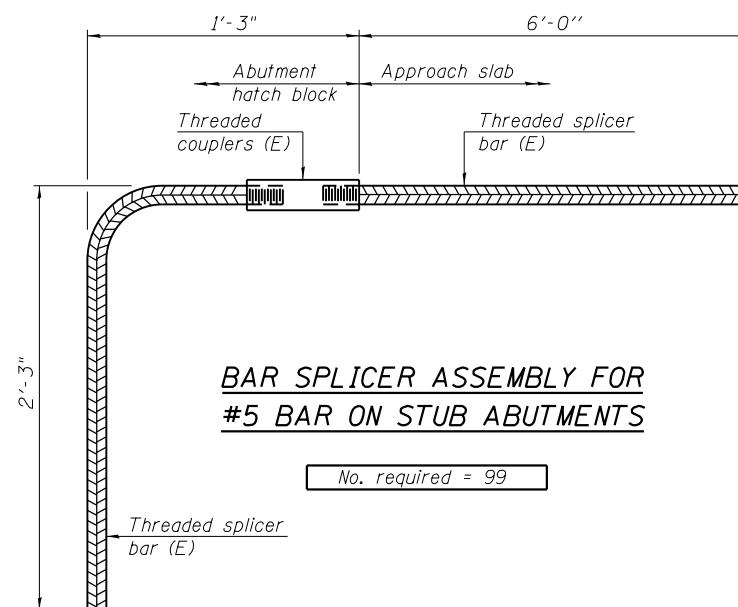
**STANDARD MECHANICAL SPLICER**

Location	Bar size	No. assemblies required
Superstructure	#5	276



**BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

No. required =



**BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS**

No. required = 99

**NOTES**

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.  
 All reinforcement shall be lapped and tied to the splicer bars.  
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.  
 See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1

1-27-12

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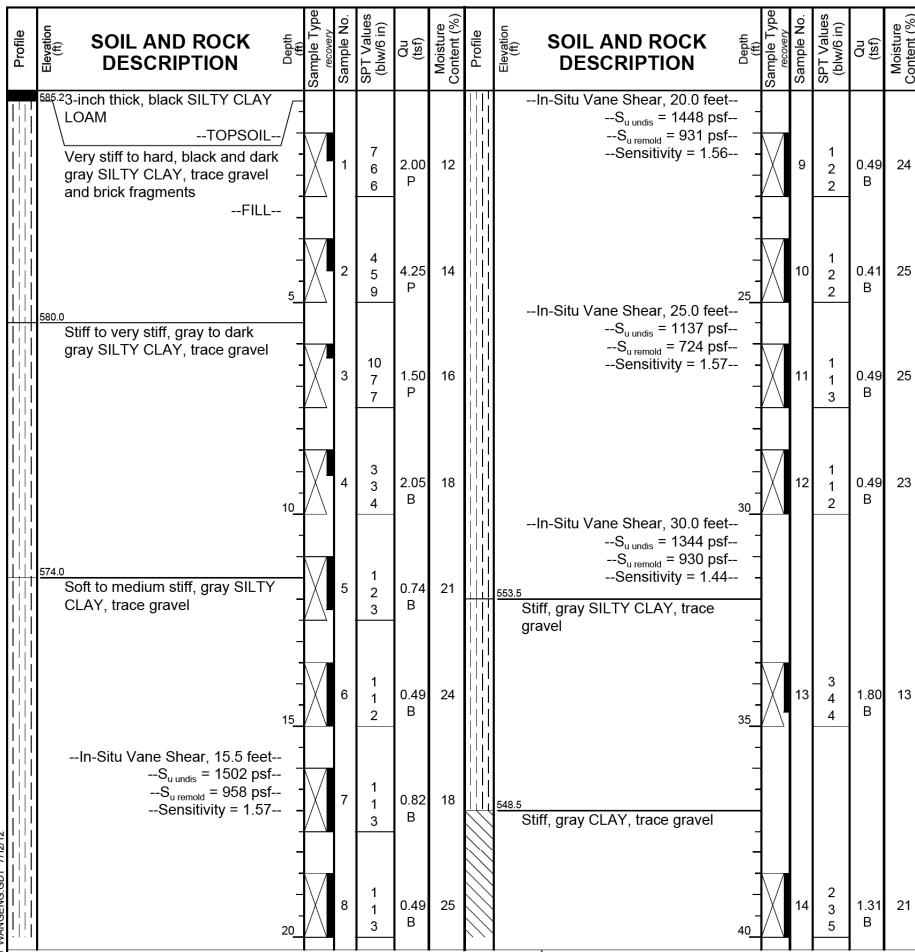
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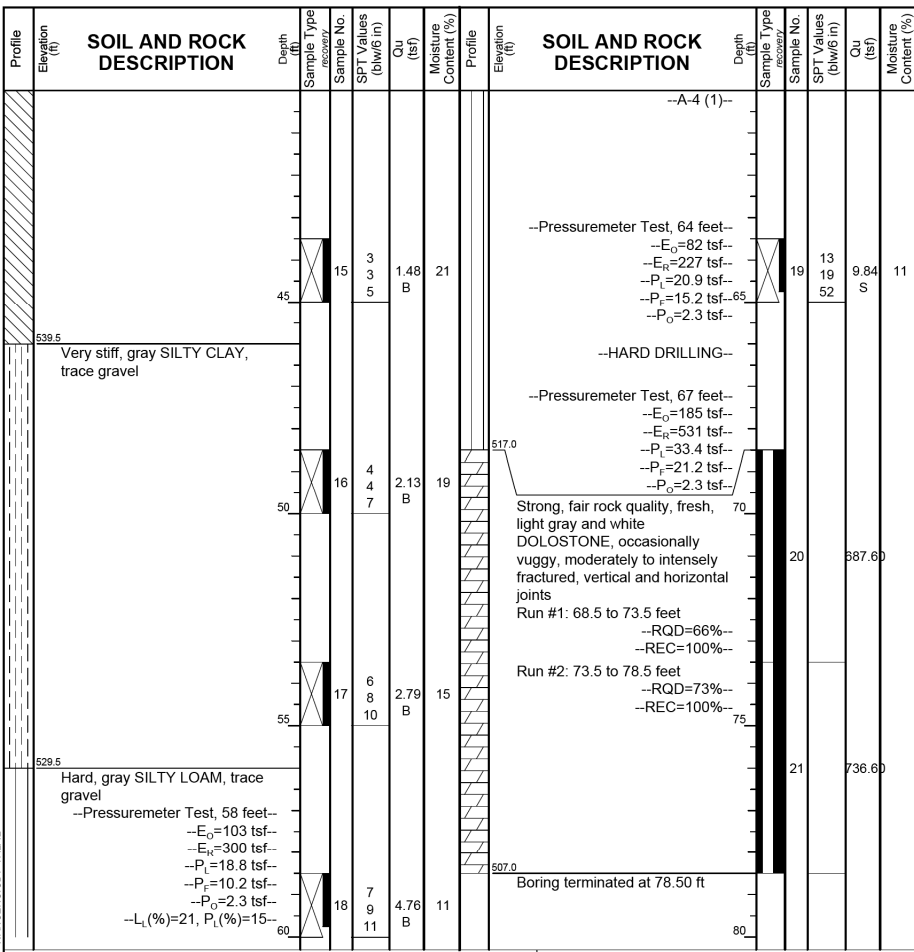
**BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS  
 STRUCTURE NO. 016-1323**

SHEET NO. SR38 OF SR41 SHEETS

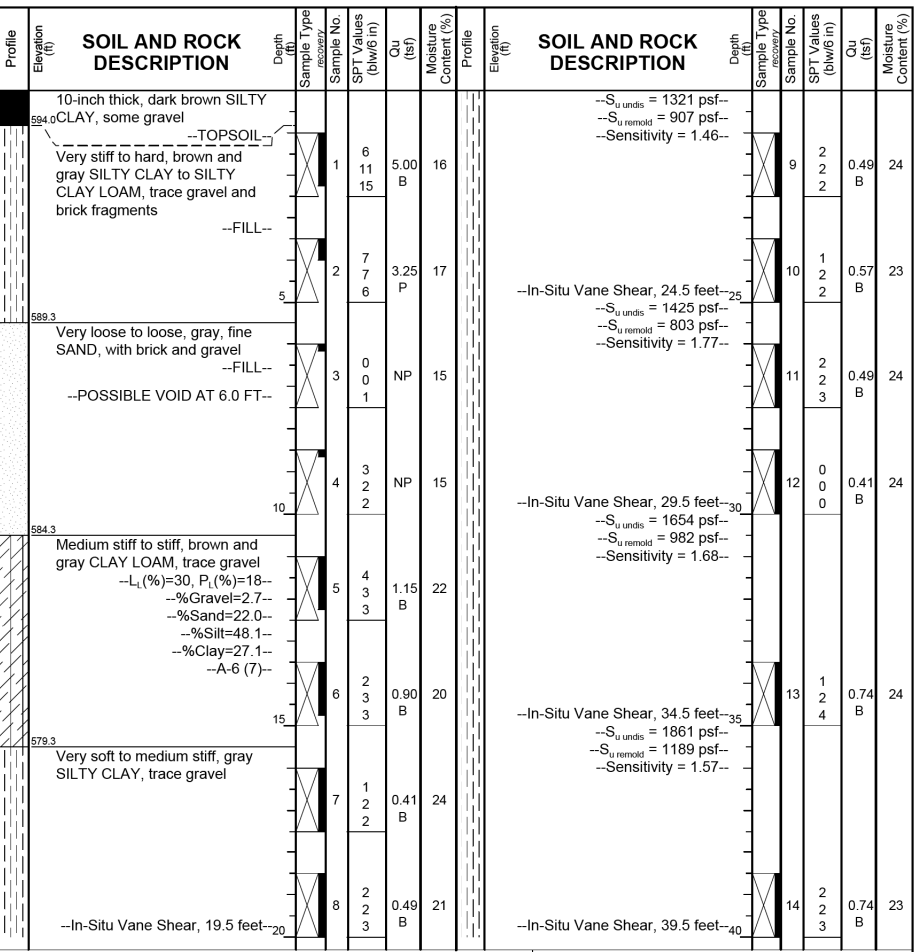
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	279
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-10-2011	Complete Drilling	10-10-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	C. Davis
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	DRY
		At Completion of Drilling	WASHED

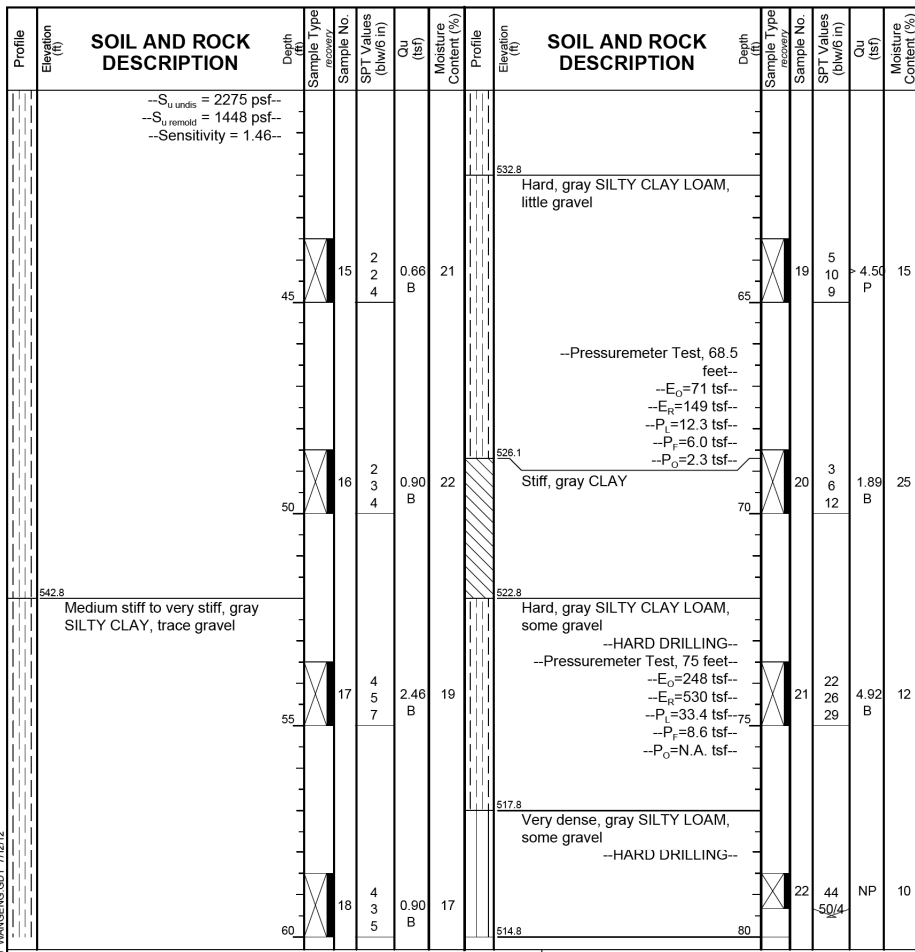


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-10-2011	Complete Drilling	10-10-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	C. Davis
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	DRY
		At Completion of Drilling	WASHED

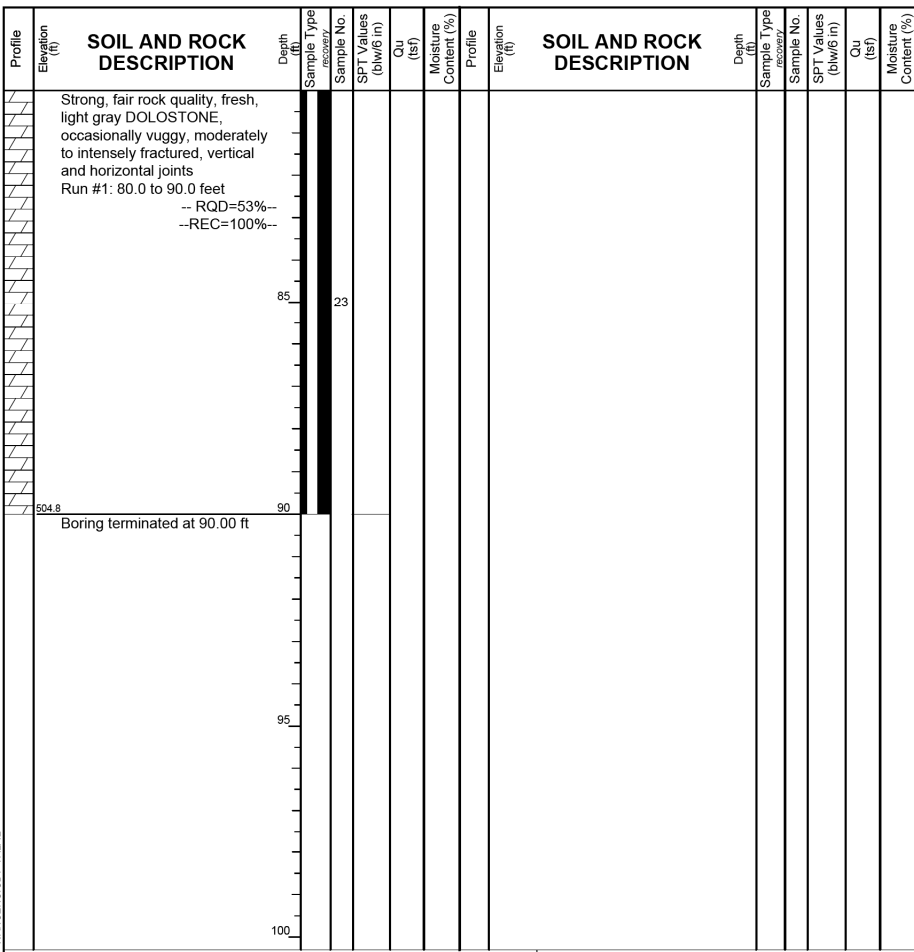


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-03-2011	Complete Drilling	10-04-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	B. Wilson
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	DRY
		At Completion of Drilling	WASHED

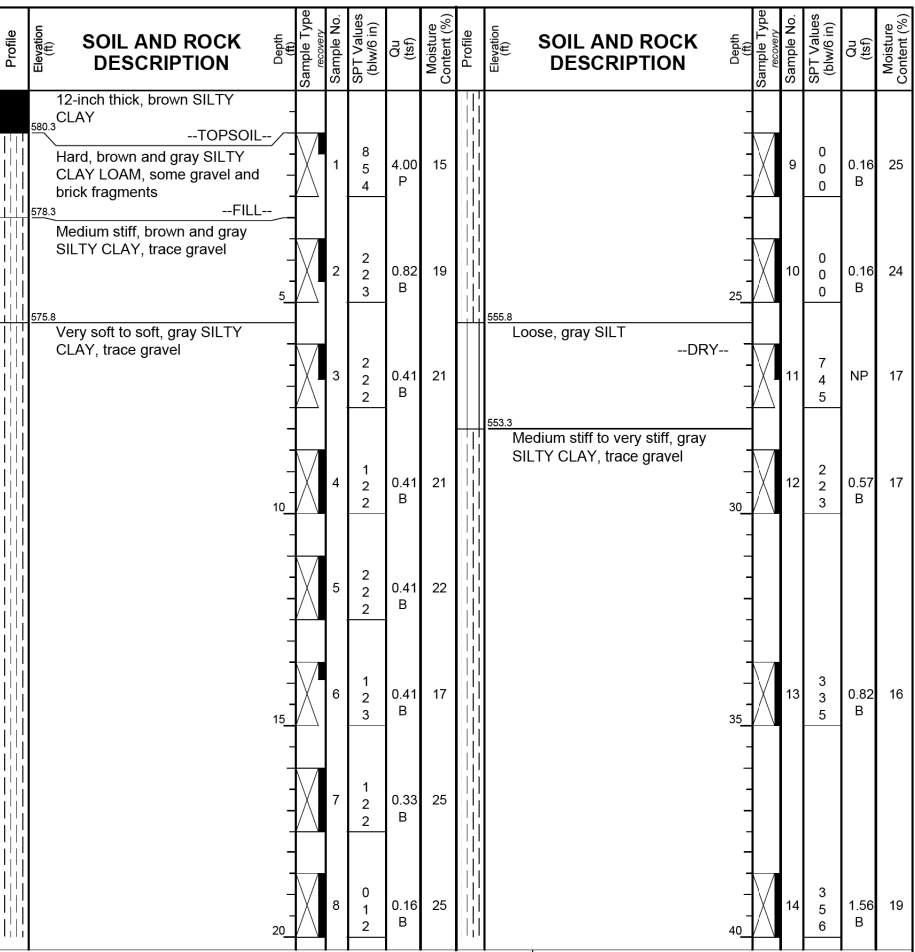
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PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - DR	REVISED
	CHECKED - JMH	REVISED



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-03-2011	Complete Drilling	10-04-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	B. Wilson
Checked by	S. Sugiarto	Drilling Method	3.25 IDA HSA; Boring backfilled upon completion
While Drilling	DRY	At Completion of Drilling	WASHED
Time After Drilling	NA	Depth to Water	NA



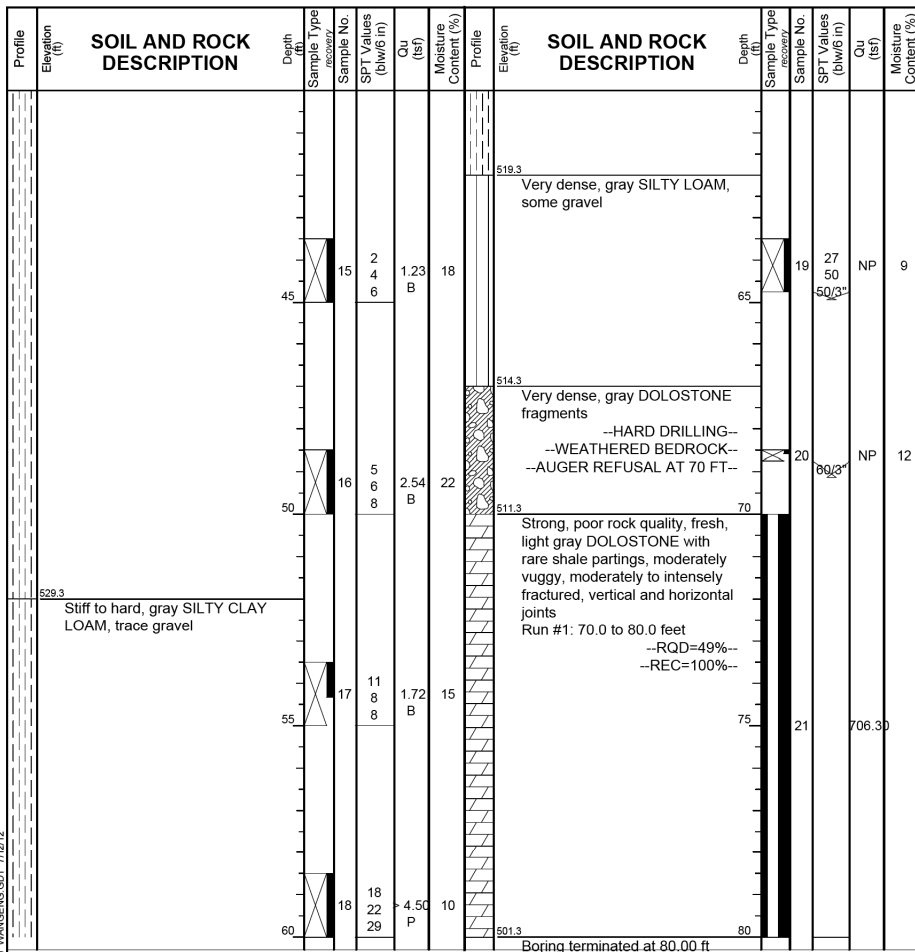
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Begin Drilling	10-03-2011	Complete Drilling	10-04-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	B. Wilson
Checked by	S. Sugiarto	Drilling Method	3.25 IDA HSA; Boring backfilled upon completion
While Drilling	DRY	At Completion of Drilling	WASHED
Time After Drilling	NA	Depth to Water	NA



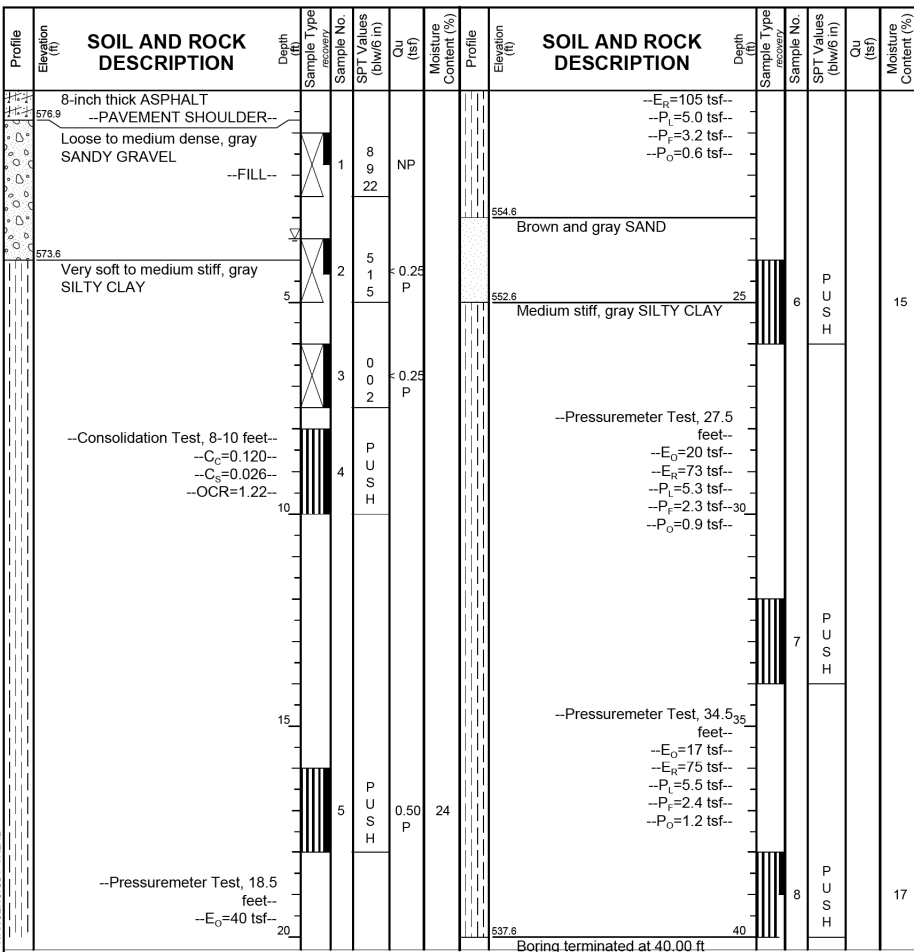
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-04-2011	Complete Drilling	10-05-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	B. Wilson
Checked by	S. Sugiarto	Drilling Method	3.25 IDA HSA; Boring backfilled upon completion
While Drilling	DRY	At Completion of Drilling	WASHED
Time After Drilling	NA	Depth to Water	NA

USER NAME =	DESIGNED - AMS	REVISIONS
DESIGNED - LDB	CHECKED - LDB	REVISIONS
DRAWN - DR	CHECKED - JMH	REVISIONS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0383	0303-474HB-R	COOK	368	281
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	10-04-2011	Complete Drilling	10-05-2011
Drilling Contractor	WTS	Drill Rig	D-50 ATV
Driller	K&K	Logger	B. Wilson
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	3.25 IDA HSA; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	DRY
		At Completion of Drilling	WASHED
		Drawn	DR
		Checked	JMH

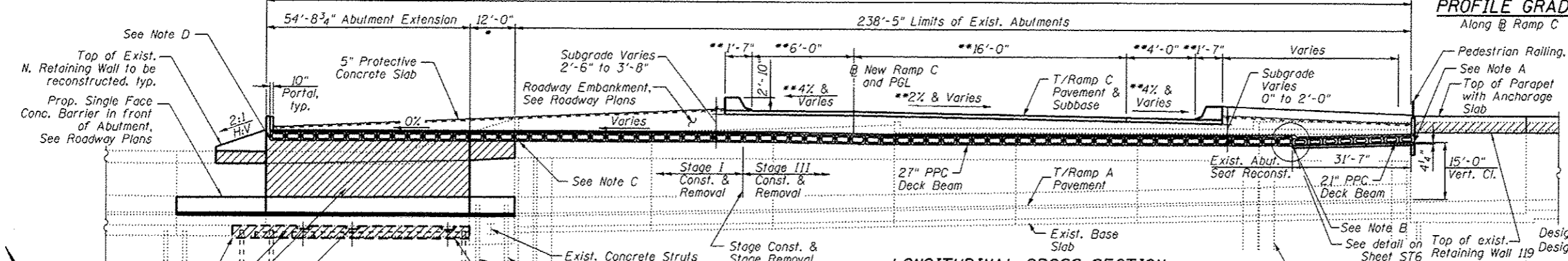
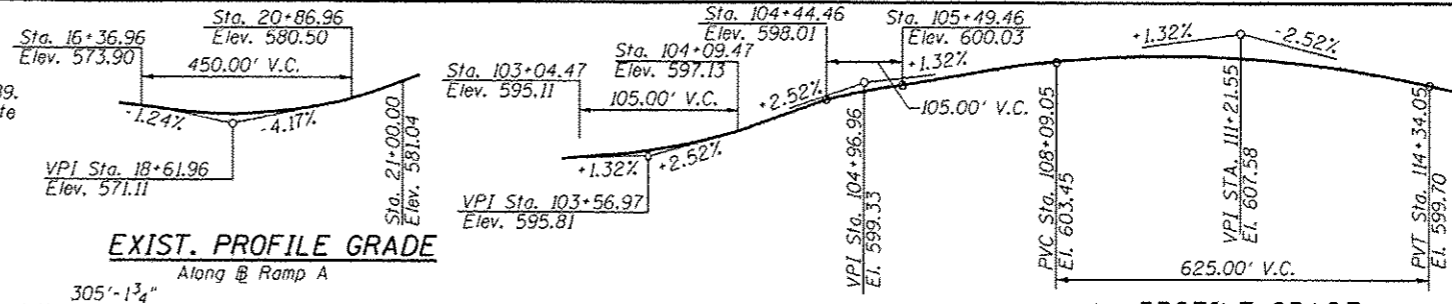


GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	06-12-2012	Complete Drilling	06-12-2012
Drilling Contractor	WTS	Drill Rig	Mobile B-57
Driller	R&J	Logger	M. Snider
Checked by	S. Sugiarto	Time After Drilling	NA
Drilling Method	2.25 SSA to 10 feet and Mud Rotary threater; Boring backfilled upon completion	Depth to Water	NA
		While Drilling	3.50 ft
		At Completion of Drilling	DRY
		Drawn	DR
		Checked	JMH

Benchmark: BM 09 - Cut square on top of wall at tunnel on East side, SE corner, Sta. 17+69.0, Offset 35 ft Rt., El. 598.615.

Existing Structure: S.N. 016-2573 built in 1991 as F.A.I.90/94 under Sec. 0303 (474HB, 477 HB-BR & 479 K) 89. The existing bridge is a single span PPC deck beam bridge supported on soldier pile type abutments with a concrete base slab below Ramp A pavement. The 21"x48" deck beams form a 238'-5" long tunnel over Ramp A. The exist. span length is 40'-5". There is a protective concrete slab adjacent to parapets on both sides of the ramp C pavement constructed on top of subgrade fill and a 4" bituminous concrete overlay with waterproofing membrane that protects the deck beams. The beam replacement will be performed using stage construction. The construction of two temporary runarounds of Ramp C will be required and coordinated with stage construction of SN 016-1322. There will be overnight closures on the Ramp A for setting beams.

No Salvage.



**LOADING HL-93**  
Allow 50#/#sq. ft. for future wearing surface.

**DESIGN SPECIFICATIONS**  
2012 AASHTO LRFD Bridge Design Specifications, 6th Edition

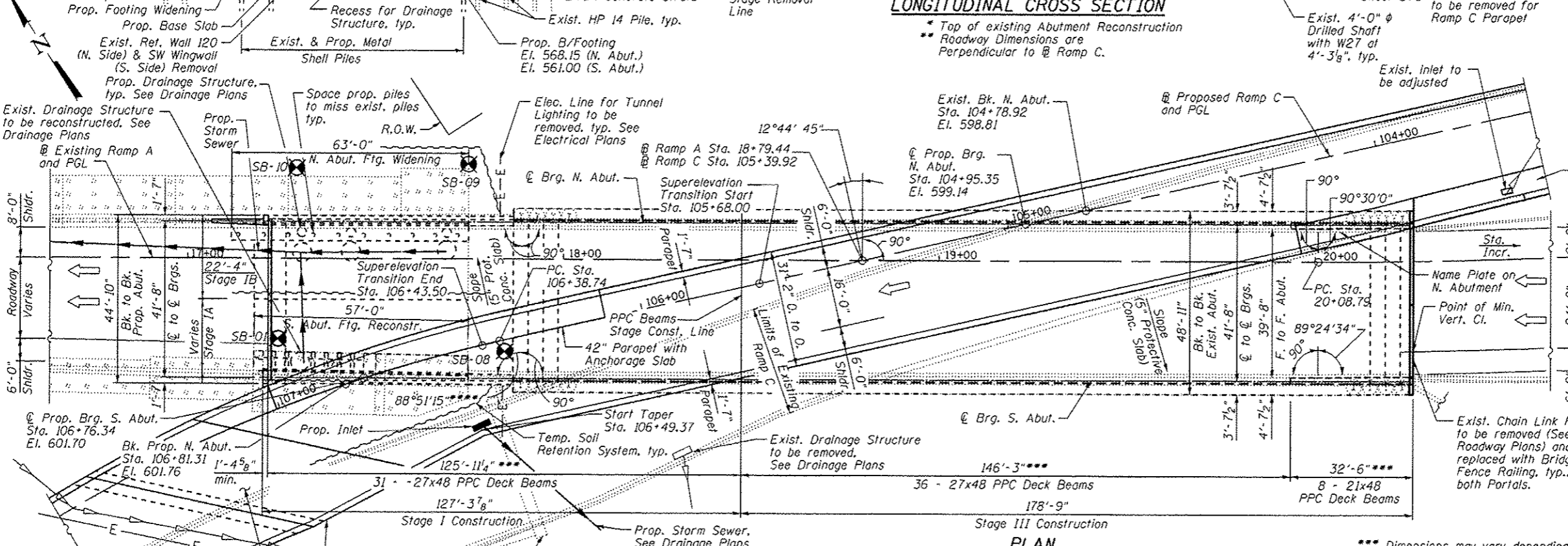
**SEISMIC DATA**  
Seismic Performance Zone (SPZ) = 1  
Design Spectral Acceleration at 1.0 sec. ( $S_{D1}$ ) = 0.085g  
Design Spectral Acceleration at 0.2 sec. ( $S_{D5}$ ) = 0.143g  
Soil Site Class = D

Note A: Proposed Seat Elevations  
593.11 (N. Abut.), 594.58 (S. Abut.)

Note B: Proposed Seat Elevations  
592.21 (N. Abut.), 593.68 (S. Abut.)

Note C: Existing and Proposed Seat Elevations  
592.58 (N. Abut.), 594.05 (S. Abut.)

Note D: Proposed Seat Elevations  
592.58 (N. Abut.), 594.05 (S. Abut.)



**APPROVED**  
For Structural Adequacy Only

James M. Hamelka  
Engineer of Bridges & Structures

\*\*\* Angle to face of abutment, 90° angle to @ proposed bearing.

PR CURVE RAMP C-1  
P.I. = Sta. 109+48.55  
 $\Delta$  = 76° 21' 27" (LT)  
D = 14° 32' 31"  
R = 394.00'  
T = 309.81'  
L = 525.08'  
E = 107.22'  
S.E. = 6%  
P.C. Sta. = 106+38.74  
P.C.C. Sta. = 111+63.81

EXIST. CURVE RAMP A  
P.I. = Sta. 23+01.33  
 $\Delta$  = 23° 42' 00" (LT)  
D = 4° 00' 00"  
R = 1,432.39'  
T = 300.55'  
L = 592.50'  
E = 31.19'  
P.C. Sta. = 20+08.79  
P.T. Sta. = 25+93.29

**DESIGN STRESSES**

**FIELD UNITS - PROPOSED**  
 $f'_c$  = 3,500 psi  
 $f_y$  = 60,000 psi (Reinf.)

**FIELD UNITS - EXISTING**  
 $f'_c$  = 3,500 psi (Typ.)  
 $f'_c$  = 4,000 psi (Piles & Shafts)  
 $f_y$  = 60,000 psi (Reinf.)  
 $f_y$  = 50,000 psi (W27 Embedded in shaft and HP-Piles)

**PRECAST PRESTRESSED PROPOSED**  
 $f'_c$  = 6,000 psi  
 $f'_{ci}$  = 5,000 psi  
 $f_{pu}$  = 270,000 psi (1/2"  $\phi$  Low Relax. Strands)  
 $f_{pb}$  = 201,960 psi (1/2"  $\phi$  Low Relax. Strands)

**GENERAL PLAN**  
ONTARIO STREET TO E.B. I-90/94 (RAMP C)  
OVER ONTARIO STREET TO W.B. I-90/94 (RAMP A)  
F.A.P. RT. 0383 - SEC. 0303-474HB-R  
COOK COUNTY  
STATION 18+79.44  
STRUCTURE NO. 016-2573

**COLLINS ENGINEERS**  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 061-000093

USER NAME :	DESIGNED - EKM	REVISED
PLOT SCALE :	CHECKED - LOB	REVISED
PLOT DATE :	DRAWN - DR/PRH	REVISED
	CHECKED - EKM	REVISED

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**GENERAL PLAN**  
STRUCTURE NO. 016-2573  
SHEET NO. ST1 OF ST30 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	283
			CONTRACT NO. 60F63	



**GENERAL NOTES**

Reinforcement bars designated (E) shall be epoxy coated.

Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

Protective coat shall not be applied to surfaces to which Waterproofing Membrane System is applied.

Concrete Sealer shall be applied to the designated areas of the Abutments.

A cantilevered sheet piling design does not appear feasible in locations noted on sheet ST1 and additional members or other retention systems may be necessary. The Contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer.

Existing reinforcement shall be cleaned and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included with Concrete Removal.

The Contractor shall retain the services of an engineering firm, prequalified in the IDOT consultant selection category of Highway Bridges Advanced Typical for preparation of the Structural Assessment Report(s). Contractor's pre-approval shall not be applicable for this project. See Special Provision.

The Contractor is advised that the existing PPC Deck Beams are in a deteriorated condition with reduced load carrying capacity. It is the Contractor's responsibility to account for the condition of the beams when developing construction procedures for removal and replacement of the superstructure.

Current Ratings on File for Existing Structure  
Inventory: HS 12.8  
Operating HS 23.0  
Live Load Restrictions: No

Inventory and Operating Ratings and Live Load Restrictions are provided for information only. Inventory and Operating Ratings are based on HS loading and configuration. Live load Restrictions are based on Illinois legal loads and configurations. The Ratings and Live Load Restrictions are not necessarily representative of capacities to support the Contractor's equipment.

Repair of the substructure shall be completed prior to placement of the new deck beams.

**INDEX OF SHEETS**

- ST1. General Plan
- ST2. General Notes, Index of Sheets and Total Bill of Material
- ST3. Stage Construction Plans
- ST4. Temporary Soil Retention System and Geotextile Retaining Wall
- ST5. 21" x 48" PPC Deck Beam
- ST6. 21" x 48" PPC Deck Beam Details
- ST7. 27" x 48" PPC Deck Beam
- ST8. 27" x 48" PPC Deck Beam Details
- ST9. Superstructure
- ST10. Superstructure Details I
- ST11. Superstructure Details II
- ST12. Superstructure Details III
- ST13. Bridge Fence Railing Parapet Mounted
- ST14. Concrete Removal Details
- ST15. North Abutment Details I
- ST16. North Abutment Details II
- ST17. South Abutment Details I
- ST18. South Abutment Details II
- ST19. North and South Abutment Details III
- ST20. Abutment Repairs and Seat Reconstruction
- ST21. Base Slab Details I
- ST22. Base Slab Details II
- ST23. Parapet and Anchorage Slab I
- ST24. Parapet and Anchorage Slab II
- ST25. Temporary Concrete Barrier for Stage Construction
- ST26. Metal Shell Pile Details
- ST27. Bar Splicer Assembly and Mechanical Splicer Details
- ST28. Soil Borings I
- ST29. Soil Borings II
- ST30. Soil Borings III

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
REMOVAL OF EXISTING SUPERSTRUCTURES NO. 1	EACH	1		1
CONCRETE REMOVAL	CU YD		173.5	173.5
STRUCTURE EXCAVATION	CU YD		321.4	321.4
CONCRETE STRUCTURES	CU YD		375.0	375.0
CONCRETE SUPERSTRUCTURE	CU YD	192.6		192.6
FORM LINER TEXTURED SURFACE	SQ FT		1,447	1,447
PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	1,371		1,371
PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	11,480		11,480
REINFORCEMENT BARS, EPOXY COATED	POUND	34,420	54,700	89,120
BAR SPLICERS	EACH	50	58	108
MECHANICAL SPLICERS	EACH		138	138
BRIDGE FENCE RAILING	FOOT	126		126
FURNISHING METAL SHELL PILES 12" X 0.250"	FOOT		396	396
DRIVING PILES	FOOT		396	396
TEST PILE METAL SHELLS	EACH		1	1
NAME PLATES	EACH		1	1
WATERPROOFING MEMBRANE SYSTEM	SQ YD	1,770		1,770
CONCRETE SEALER	SQ FT		2,279	2,279
EPOXY CRACK INJECTION	FOOT		10	10
GEOCOMPOSITE WALL DRAIN	SQ YD	24	286	310
CONTROLLED LOW-STRENGTH MATERIAL	CU YD		13.3	13.3
CONCRETE WEARING SURFACE, 6"	SQ YD	1,620		1,620
GRANULAR BACKFILL FOR STRUCTURES	CU YD		410.7	410.7
STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)	SQ FT		110	110
GEOTEXTILE RETAINING WALL	SQ FT		190	190
PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT	150		150
PIPE UNDERDRAINS FOR STRUCTURES 6"	FOOT		308	308
TEMPORARY SOIL RETENTION SYSTEM	SQ FT		2,410	2,410
PROTECTIVE CONCRETE SLAB	SQ YD	956		956

STATION 18+79.44  
RE-BUILT 201\_ BY  
STATE OF ILLINOIS  
F.A.P. RT. 0383 SEC. 0303-474HB-R  
LOADING HL-93  
STRUCTURE NO. 016-2573

**NAME PLATE**

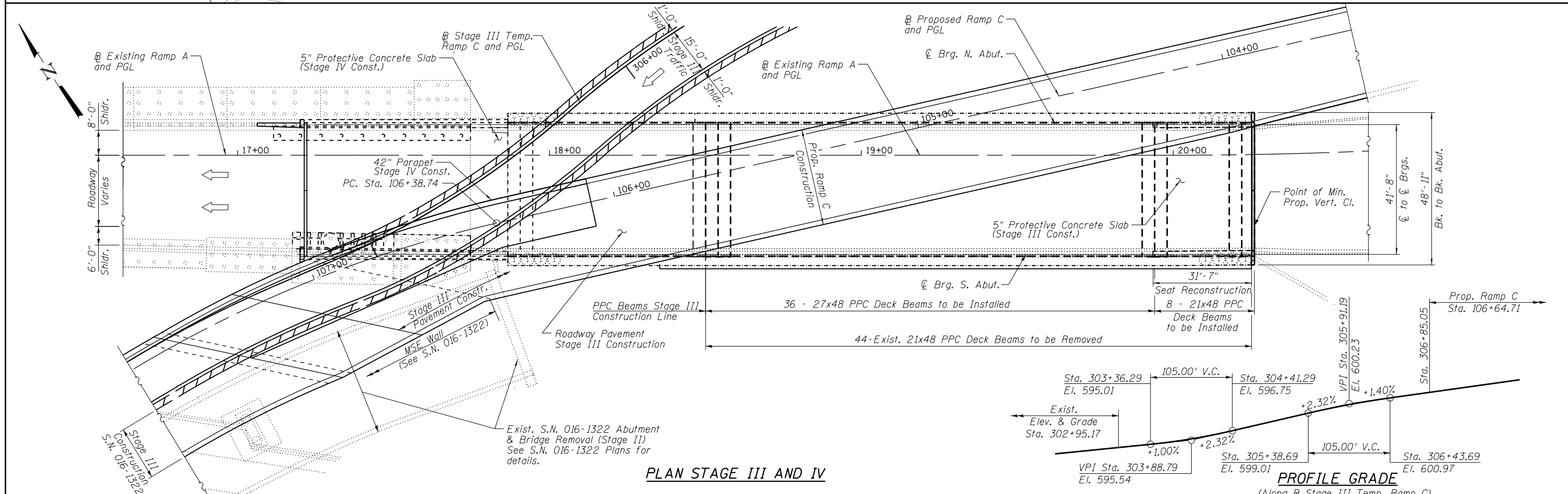
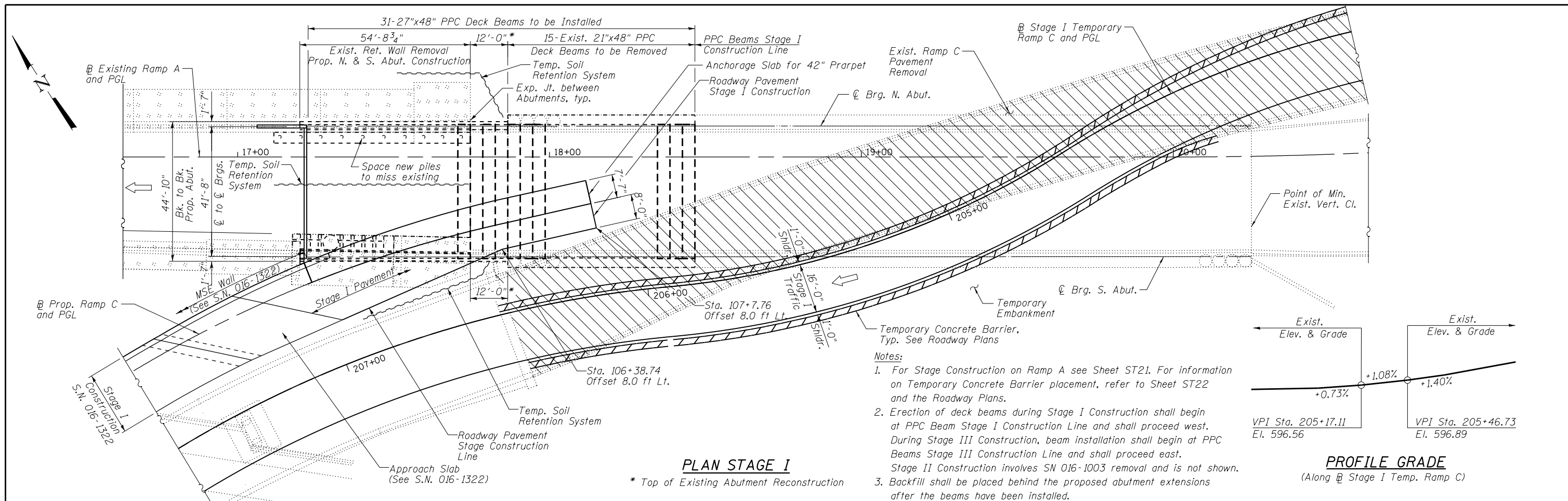
See Std. 515001

New Name Plate shall be located next to existing Name Plate.

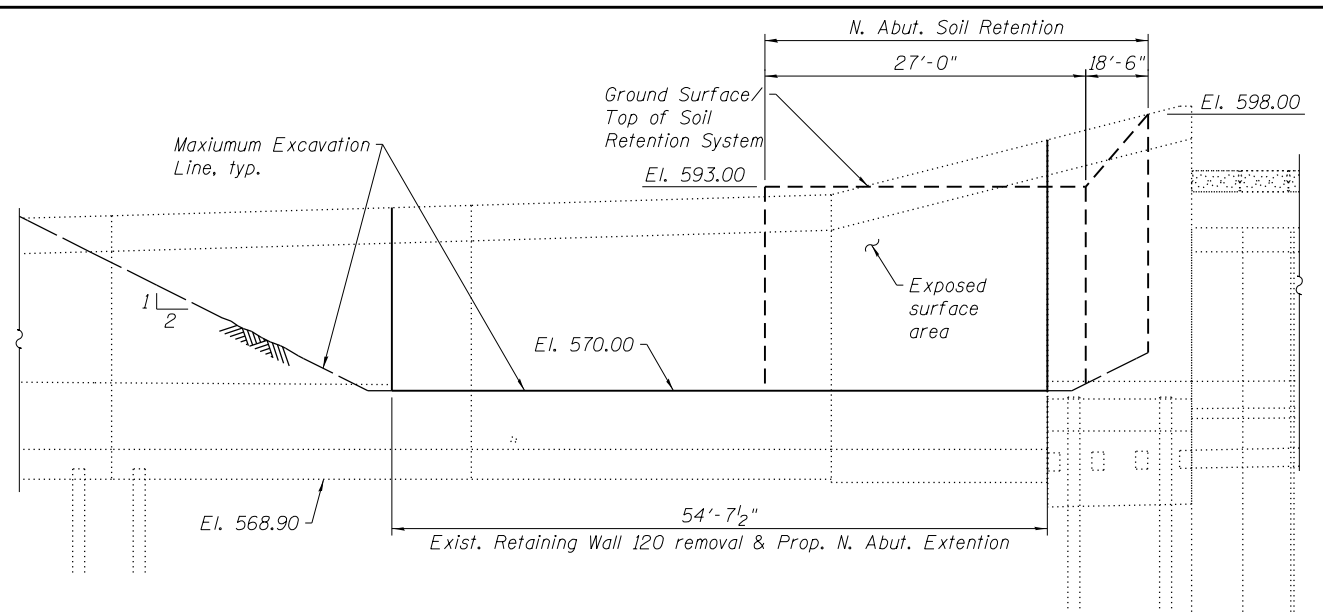
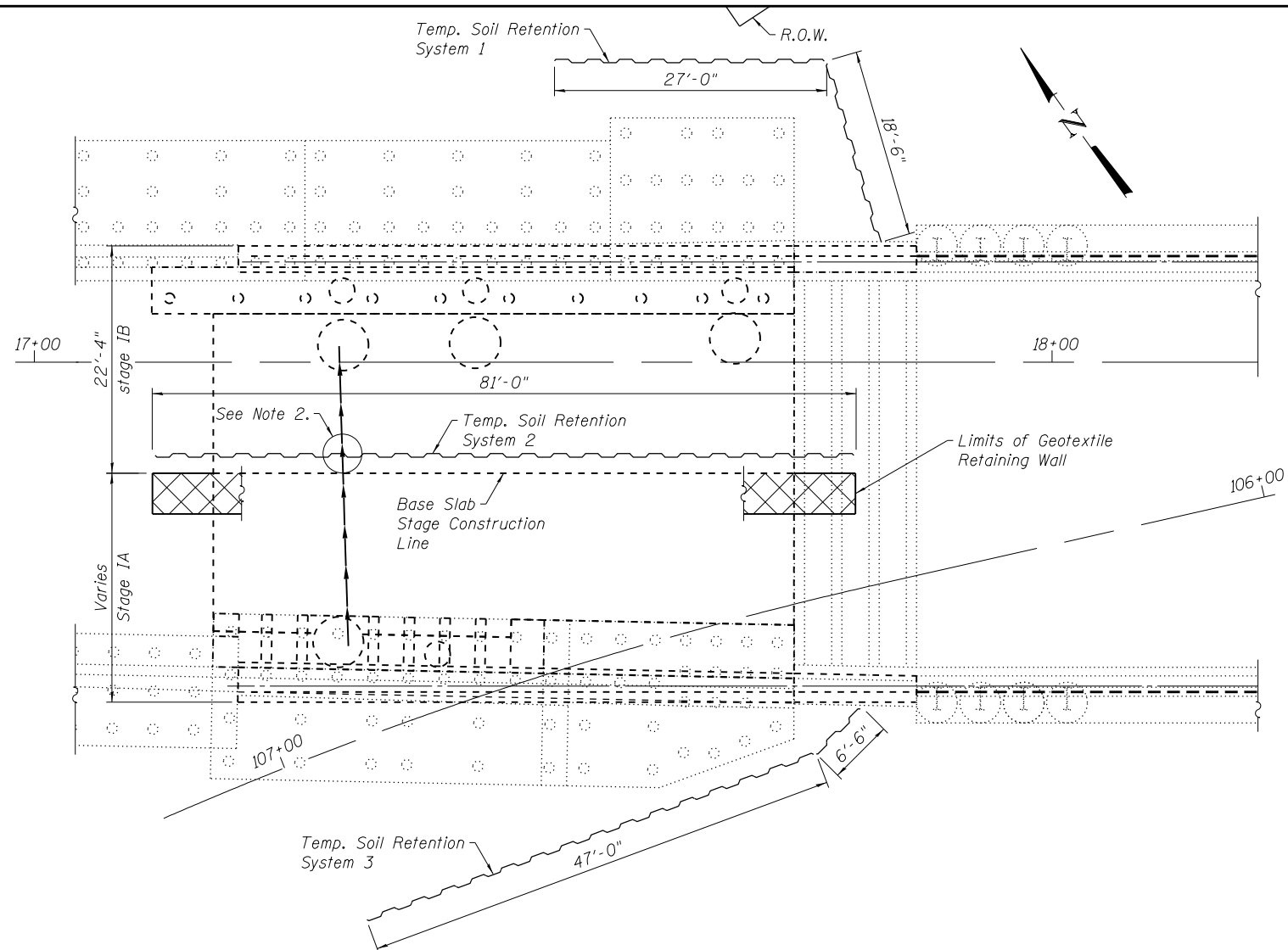
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PLOT SCALE =	DRAWN - PRH	REVISED
PLOT DATE =	CHECKED - EKM	REVISED

F.A.I. RE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	284
			CONTRACT NO. 60F63	
ILLINOIS FED. AID PROJECT				

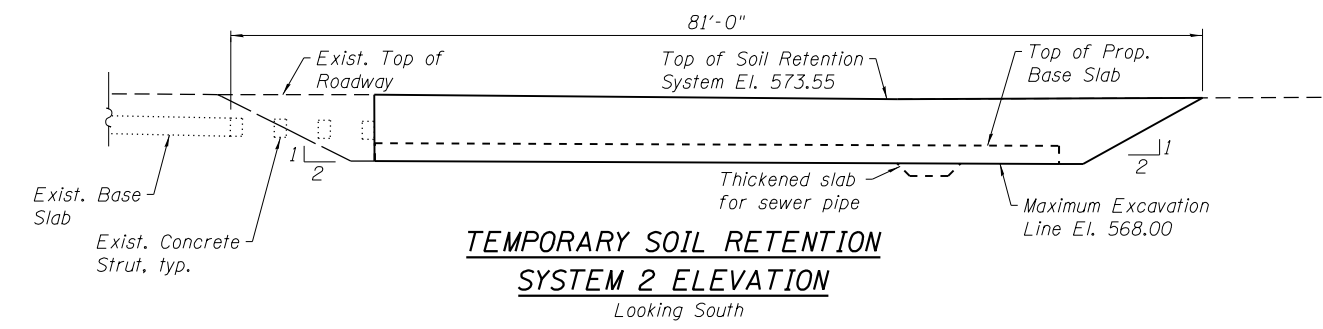




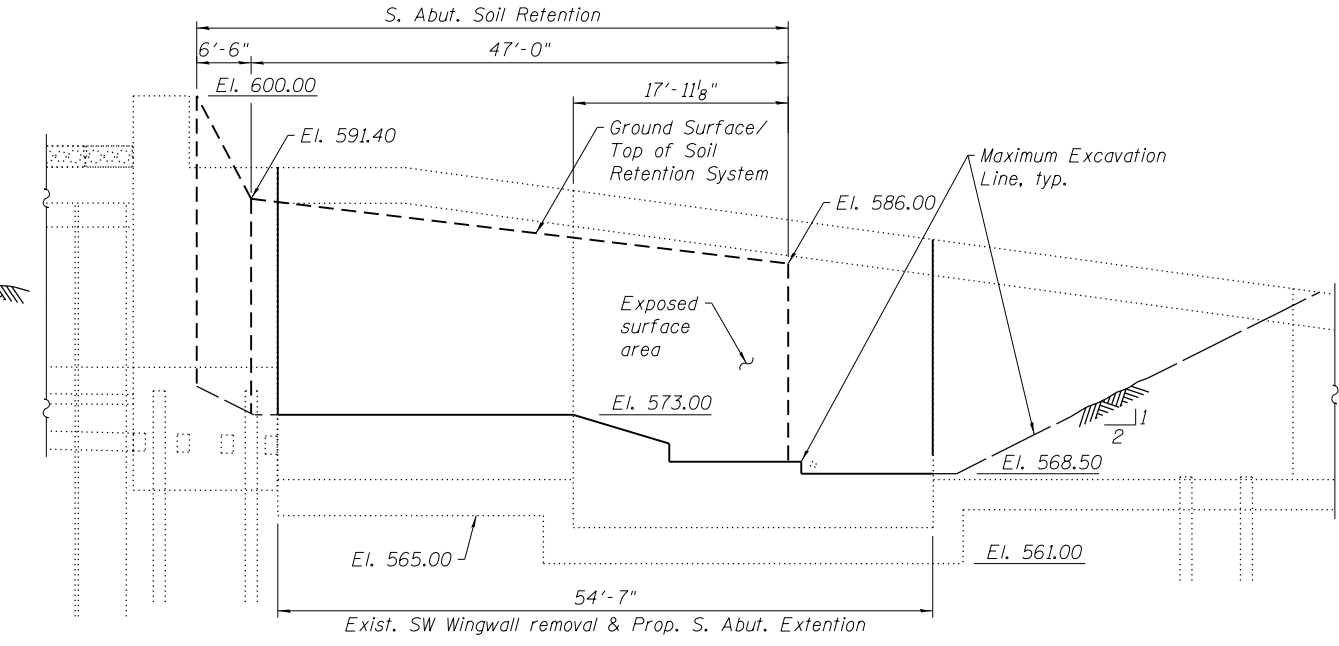
<b>COLLINS ENGINEERS</b> 133 N. Wacker Dr. Suite 900 Chicago, IL 60606 Tel: (312) 704-9300 Fax: (312) 704-9320 www.collinseng.com ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993	USER NAME	DESIGNED - EKM	REVISED	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>STAGE CONSTRUCTION PLANS</b> <b>STRUCTURE NO. 016-2573</b> SHEET NO. ST3 OF ST30 SHEETS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CHECKED - EKM	REVISED							



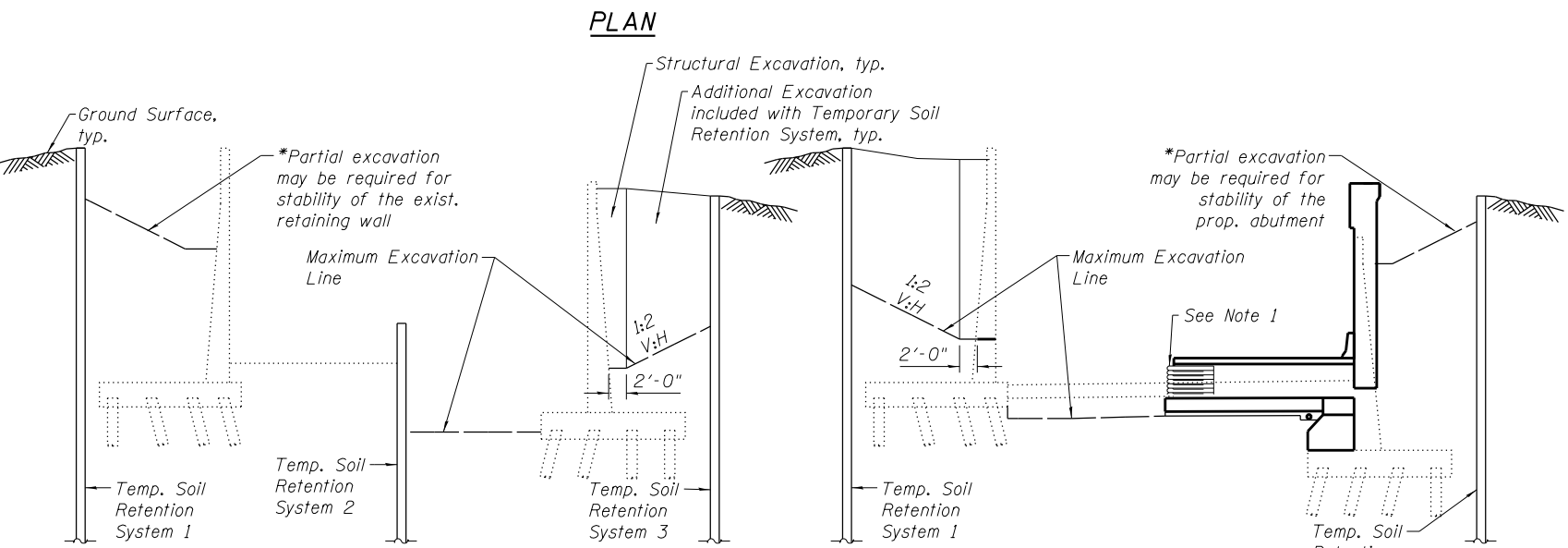
**TEMPORARY SOIL RETENTION SYSTEM 1 ELEVATION**  
Looking North



**TEMPORARY SOIL RETENTION SYSTEM 2 ELEVATION**  
Looking South



**TEMPORARY SOIL RETENTION SYSTEM 3 ELEVATION**  
Looking South



**STAGE IA**  
Looking East

\* The contractor's Engineer shall determine the required depth

**STAGE IB**  
Looking East

- Notes:  
1. Geotextile Retaining Wall shall be used for Stage IB Construction. See Sheet ST21 for details.  
2. The Contractor shall locate the existing storm sewer pipe and protect it during the Temporary Soil Retention System installation.  
3. Refer to Sheet ST22 and Roadway Plans for information on Temporary Concrete Barrier placement.

**BILL OF MATERIAL**

Item	Unit	Quantity
Temporary Soil Retention System	Sq. Ft.	2,410

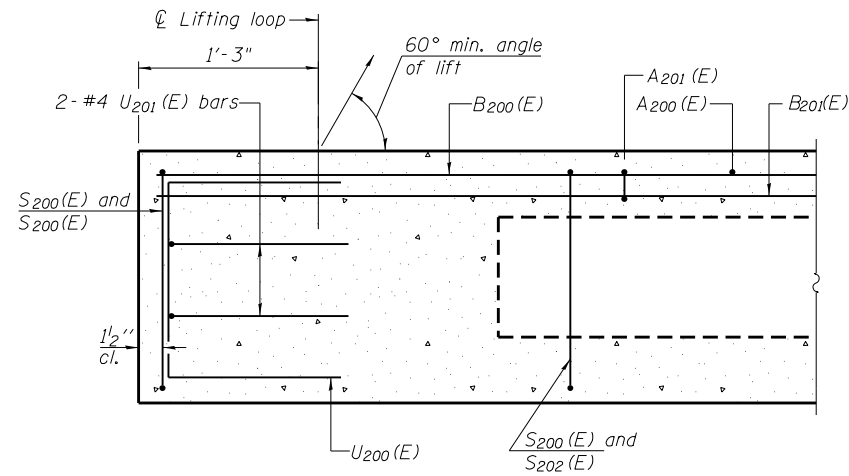
**COLLINS ENGINEERS**  
133 N. Wacker Dr.  
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Chicago, IL 60606  
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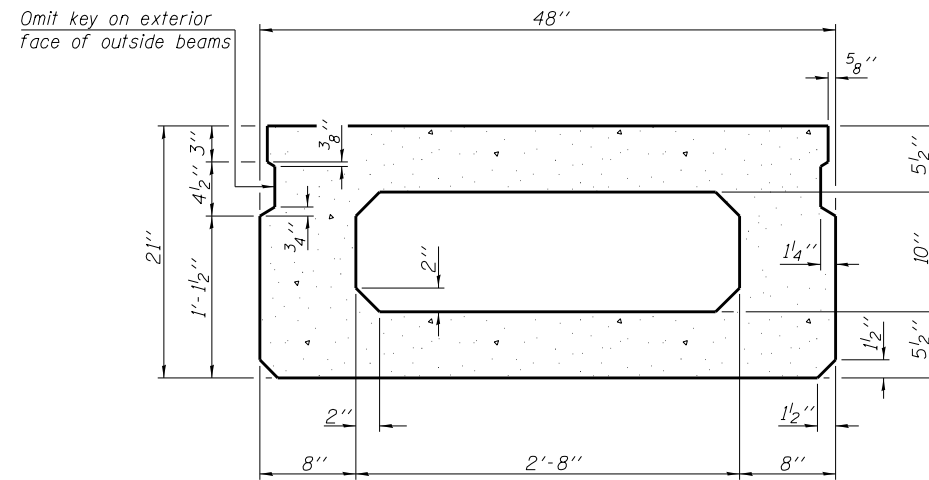
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**TEMPORARY SOIL RETENTION SYSTEM AND GEOTEXTILE RETAINING WALL**  
**STRUCTURE NO. 016-2573**  
SHEET NO. ST4 OF ST30 SHEETS

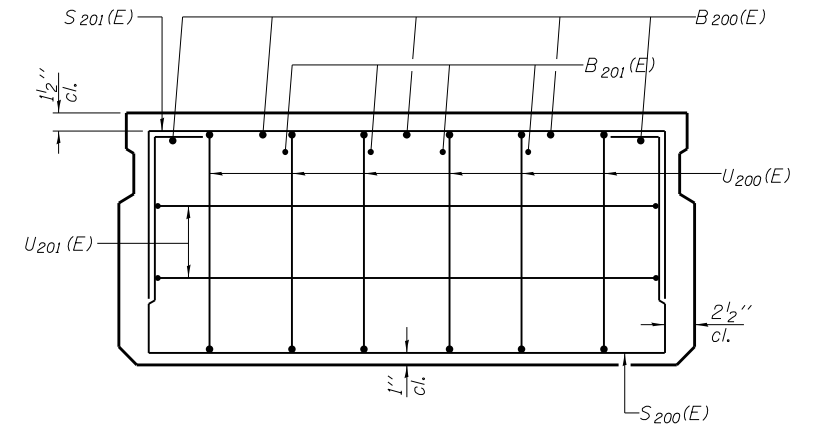
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CONTRACT NO. 60F63				ILLINOIS FED. AID PROJECT



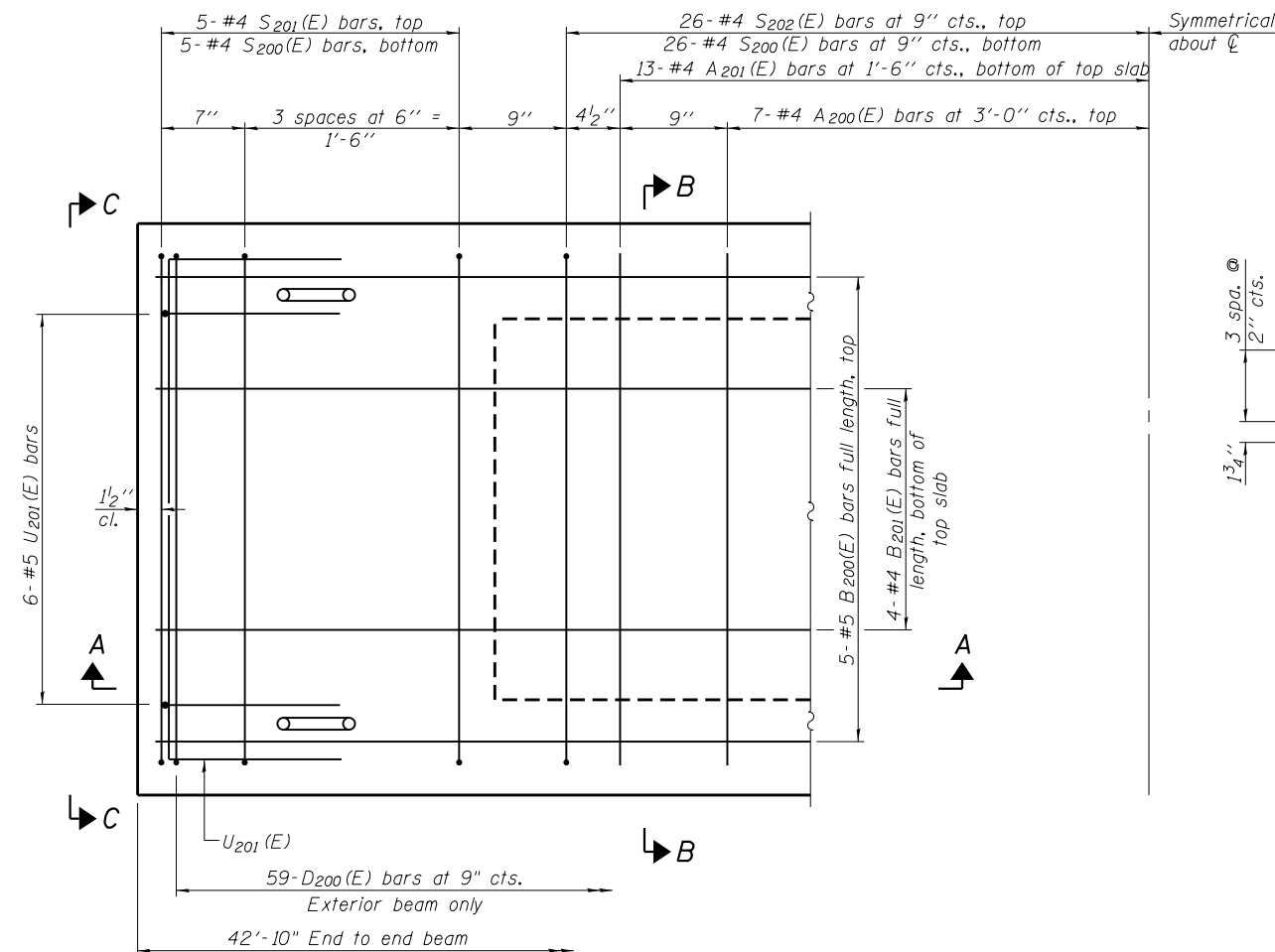
**SECTION A-A**



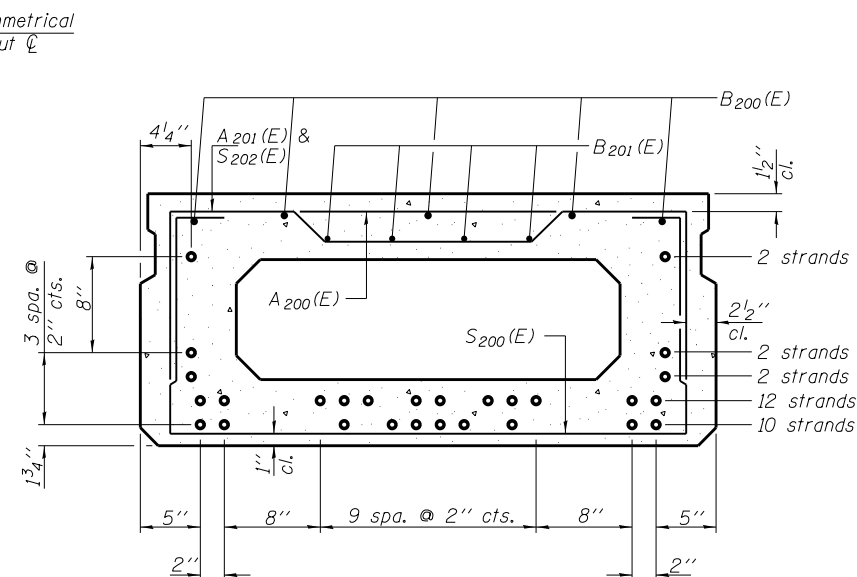
**SECTION B-B**  
(Showing dimensions)



**VIEW C-C**

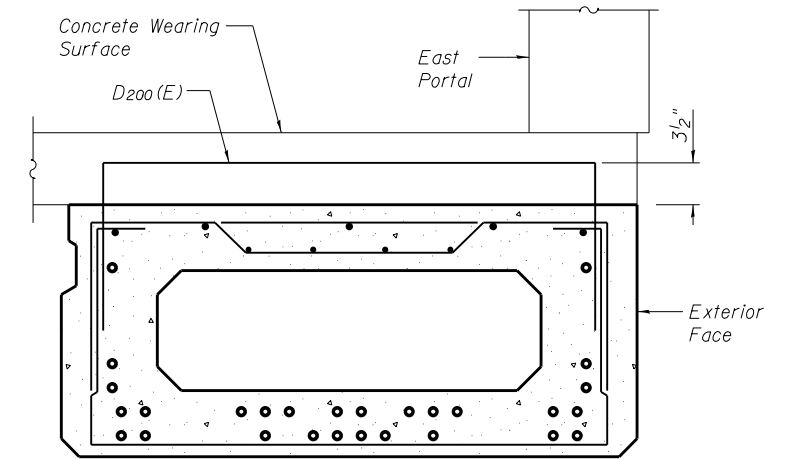


**PLAN VIEW**



**SECTION B-B**

(Showing reinforcement and permissible strand locations)  
Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.



**SECTION THRU EXTERIOR BEAM**

See Section B-B for strand pattern, dimensions and bar call outs.

**BAR LIST**  
**ONE BEAM ONLY**  
(For Information Only)

Bar	No.	Size	Length	Shape
A <sub>200</sub> (E)	14	#4	3'-7"	—
A <sub>201</sub> (E)	26	#4	3'-10"	~
B <sub>200</sub> (E)	5	#5	42'-7"	—
B <sub>201</sub> (E)	4	#4	42'-7"	—
* D <sub>200</sub> (E)	59	#4	5'-11"	⌋
S <sub>200</sub> (E)	62	#4	7'-5"	⌋
S <sub>201</sub> (E)	10	#4	5'-11"	⌋
S <sub>202</sub> (E)	52	#4	6'-2"	⌋
U <sub>200</sub> (E)	12	#5	4'-0"	⌋
U <sub>201</sub> (E)	4	#4	6'-0"	⌋

Note: See Sheet ST6 for additional details and Bill of Material.

\* D<sub>200</sub>(E) in Exterior Beam only.

**MINIMUM BAR LAP**

#4 bar = 2'-0"  
#5 bar = 2'-6"

Note: Spacing of S<sub>200</sub>(E) and S<sub>202</sub>(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.

PD-2148-0

7-1-10

**COLLINS ENGINEERS**  
133 N. Rocker Dr.  
Suite 900  
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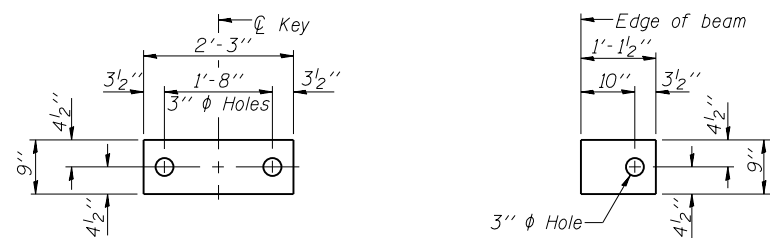
USER NAME =	DESIGNED - EKM	REVISED
PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - PRH	REVISED
	CHECKED - EKM	REVISED

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**21" x 48" PPC DECK BEAM**  
**STRUCTURE NO. 016-2573**

SHEET NO. ST5 OF ST30 SHEETS

F.A.I. RTÉ.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	287
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	



**FABRIC BEARING PAD**

(Interior)

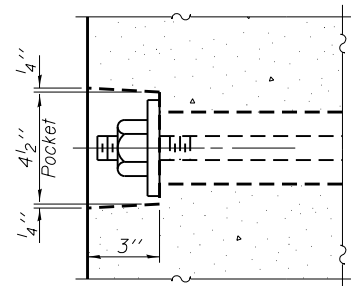
**FABRIC BEARING PAD**

(Exterior)

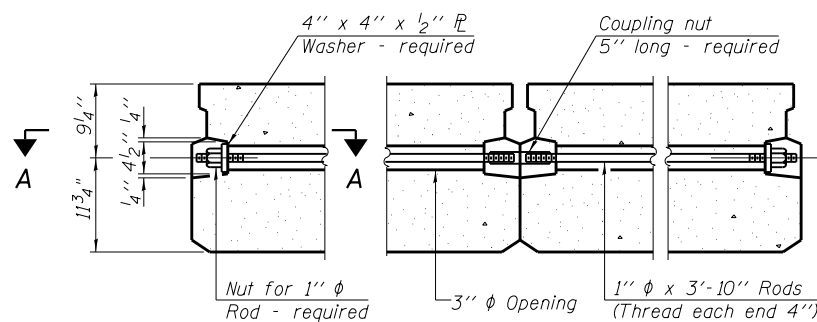
**FIXED**

Notes:

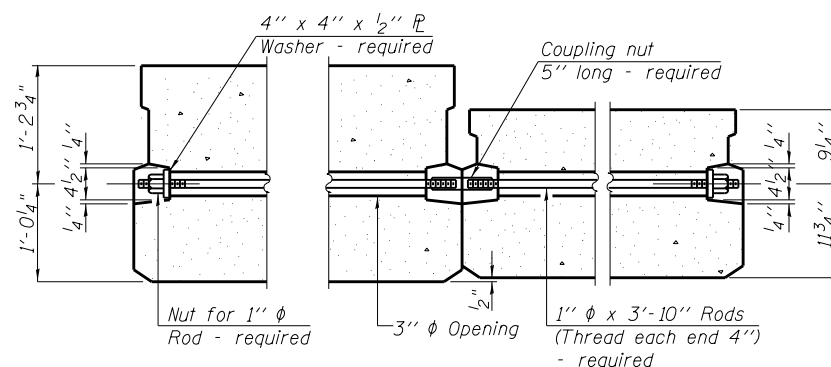
All bearing pads shall be 1" thick.  
Cost included with Precast Prestressed Concrete Deck Beams (21" depth).



**SECTION A-A**

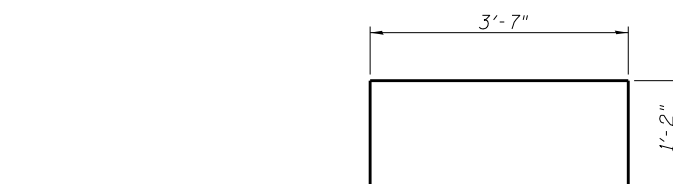


**TYPICAL TRANSVERSE TIE ASSEMBLY**

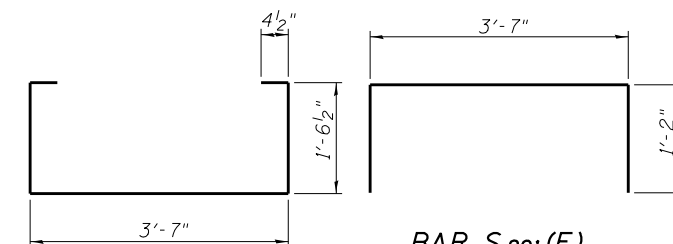


**TRANSVERSE TIE ASSEMBLY**

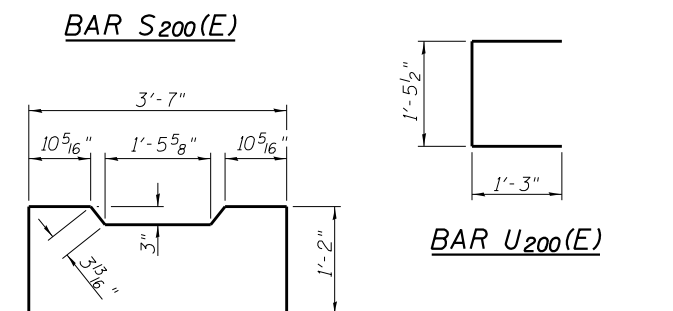
Between 21" and 27" beams



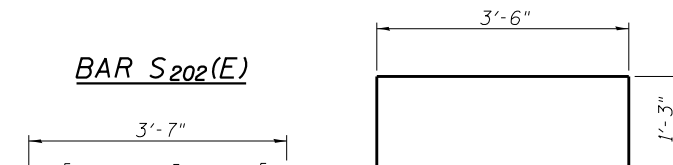
**BAR D 200(E)**



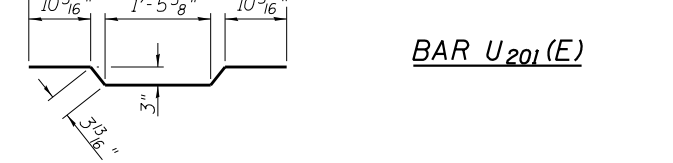
**BAR S 201(E)**



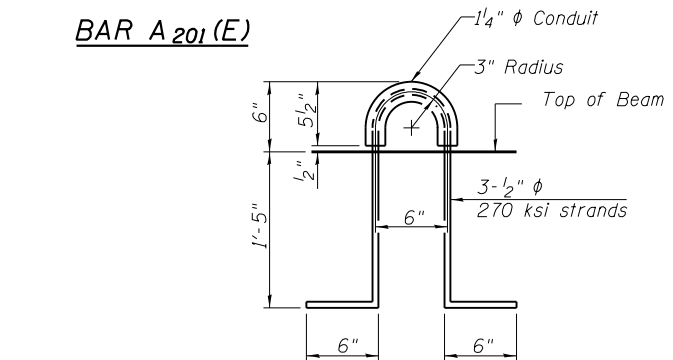
**BAR S 200(E)**



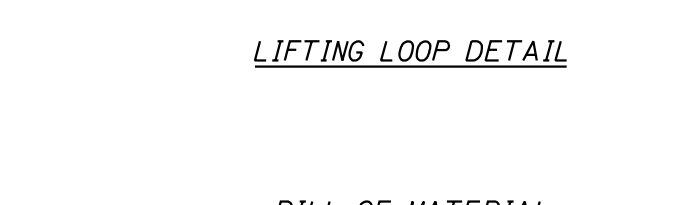
**BAR U 200(E)**



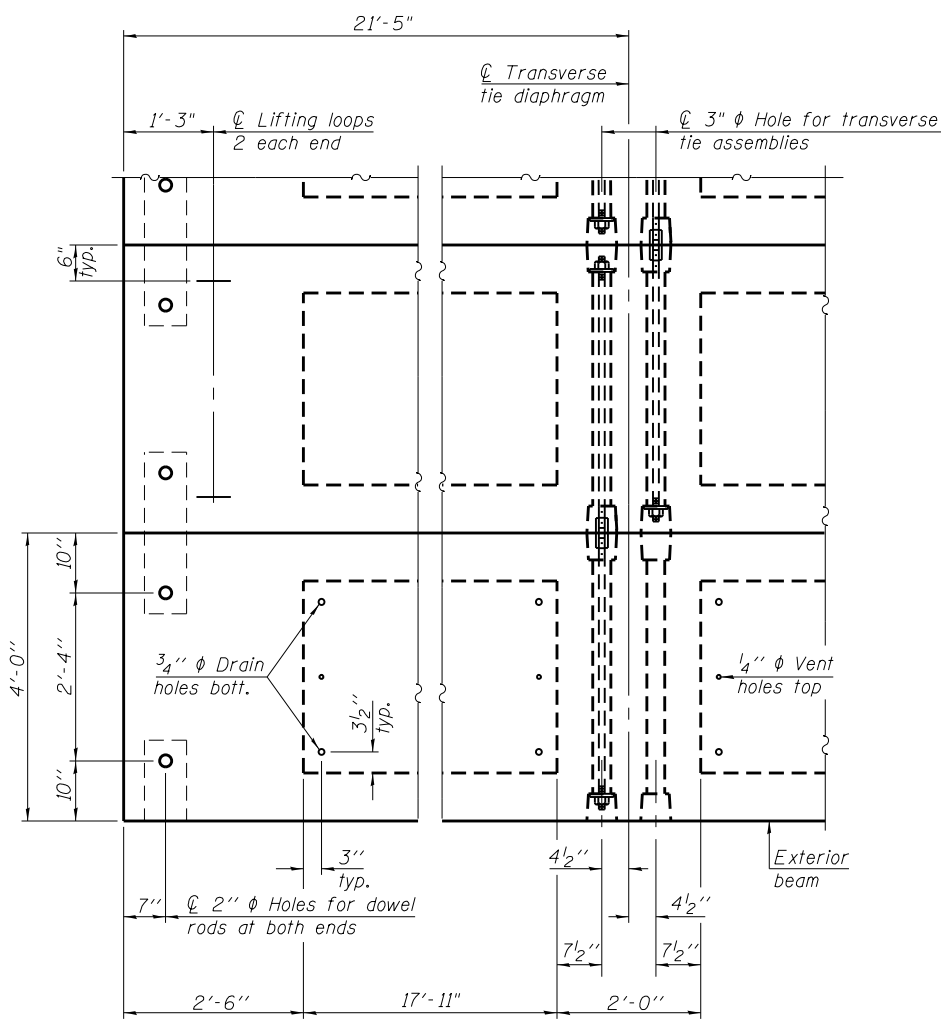
**BAR S 202(E)**



**BAR U 201(E)**

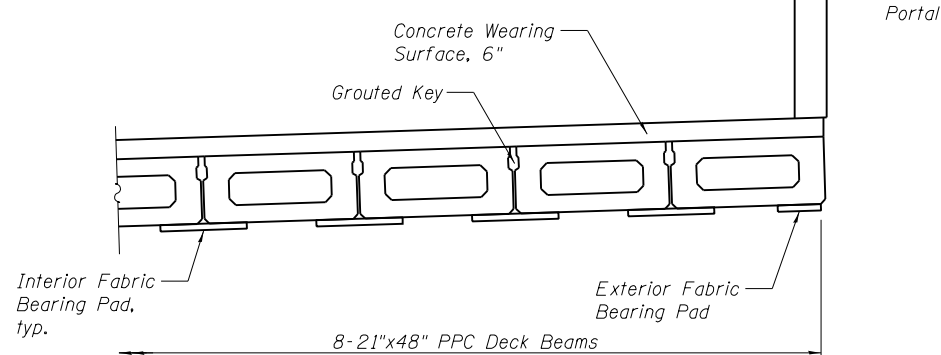


**LIFTING LOOP DETAIL**



**PLAN VIEW**

Notes:  
Connect beams in pairs with the transverse tie configuration shown.  
Cost included with Precast Prestressed Concrete Deck Beams (21" depth).  
Cost of dowel rods, with drilling and grouting, is included with Precast Prestressed Concrete Deck Beams (21" depth).



**PARTIAL CROSS SECTION**

**NOTES**

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.  
The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.  
Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).  
Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.  
A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling.  
Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.  
Compressive strength of prestressed concrete, f'c, shall be 6000 psi.  
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

**BILL OF MATERIAL**

Precast Prestressed Conc. Deck Bms. (21" depth)	Sq. Ft.	1,371
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PD-2148-OD 7-1-10

**COLLINS ENGINEERS**  
133 N. Wacker Dr.  
Suite 900  
Chicago, IL 60606  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

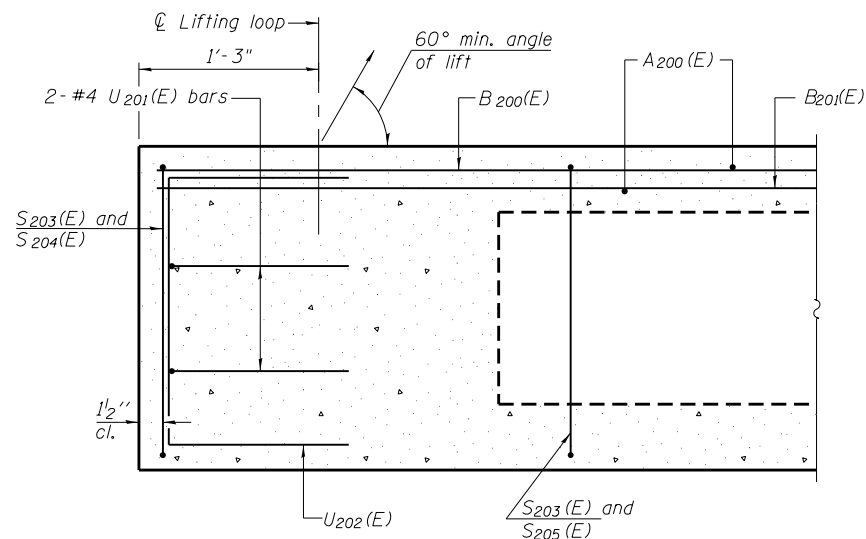
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	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - PRH	REVISED
PLOT DATE =	CHECKED - EKM	REVISED

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**21" x 48" PPC DECK BEAM DETAILS  
STRUCTURE NO. 016-2573**

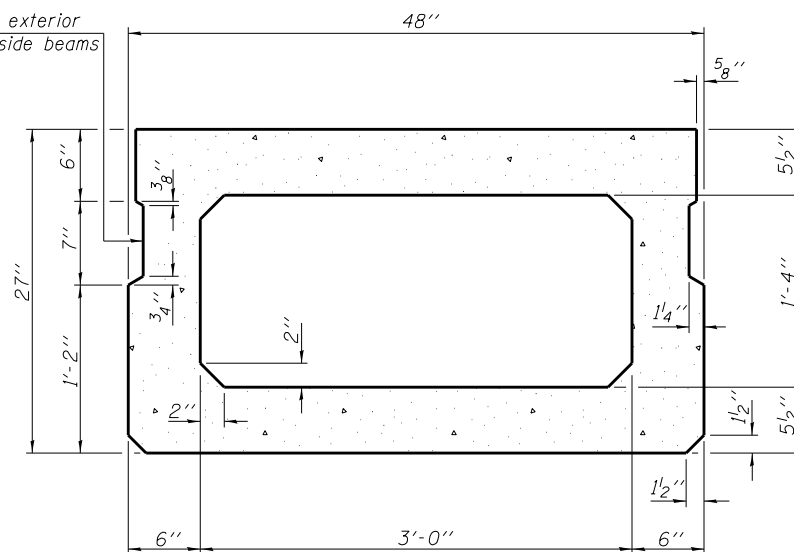
SHEET NO. ST6 OF ST30 SHEETS

F.A.I. RT.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	288
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	



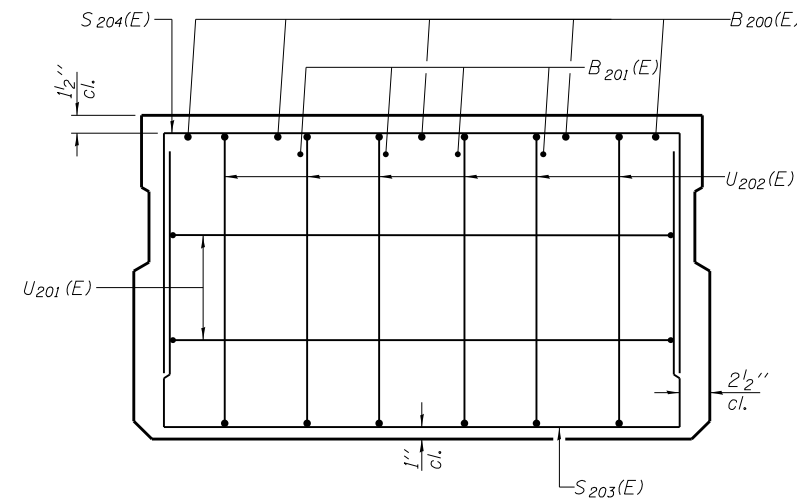
**SECTION A-A**

Omit key on exterior face of outside beams

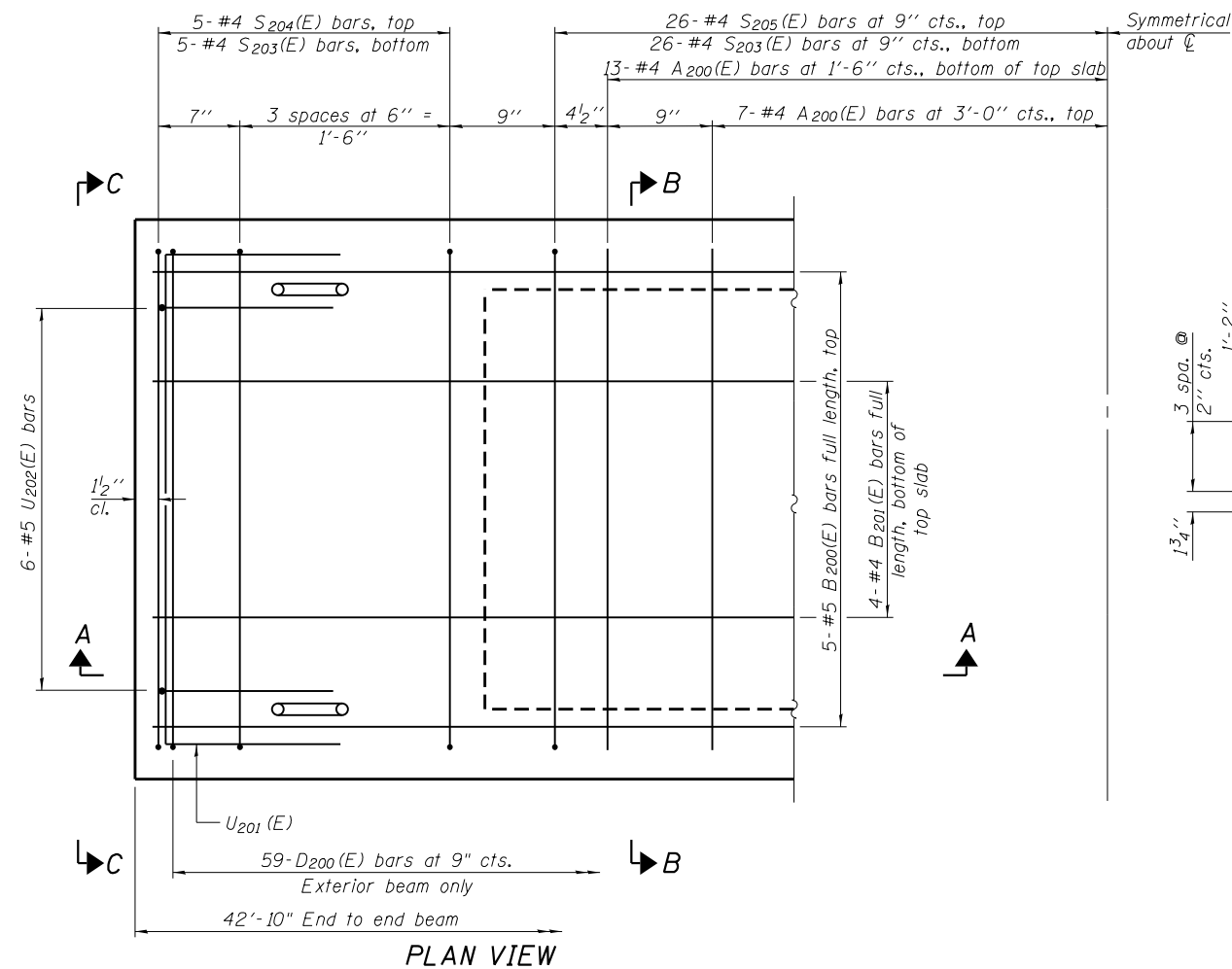


**SECTION B-B**

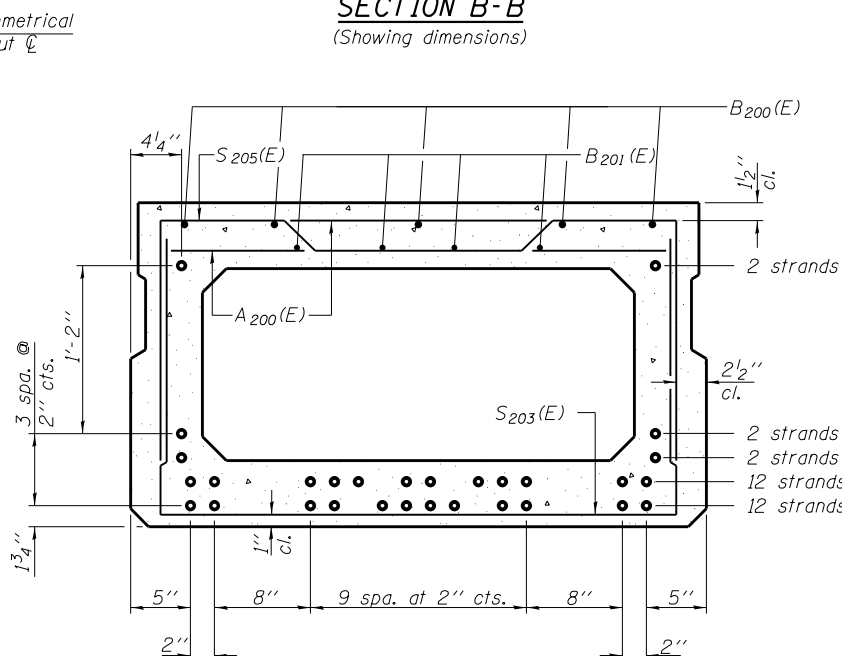
(Showing dimensions)



**VIEW C-C**



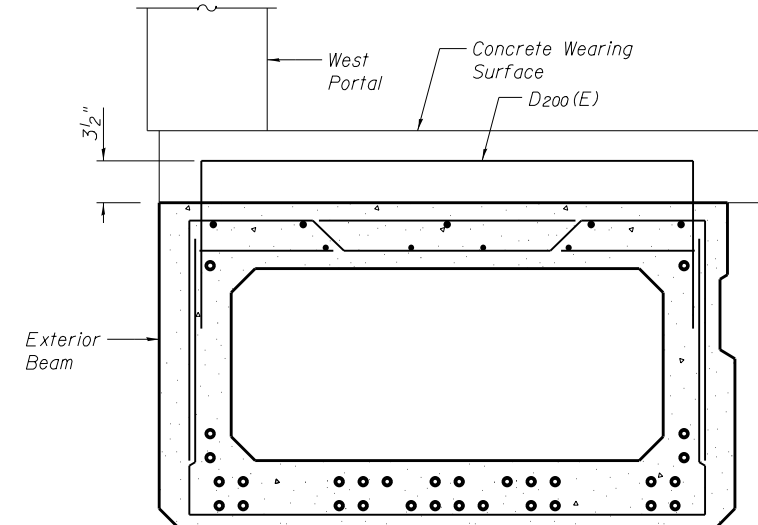
Symmetrical about  $\bar{C}$



**SECTION B-B**

(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.



**SECTION THRU EXTERIOR BEAM**

See Section B-B for strand pattern, dimensions and bar call outs.

**BAR LIST**  
**ONE BEAM ONLY**

(For information only)

Bar	No.	Size	Length	Shape
A 200(E)	40	#4	3'-7"	—
B 200(E)	5	#5	42'-7"	—
B 201(E)	4	#4	42'-7"	—
* D 200(E)	59	#4	5'-11"	—
S 203(E)	62	#4	7'-5"	U
S 204(E)	10	#4	6'-11"	U
S 205(E)	52	#4	7'-2"	U
U 201(E)	4	#4	6'-0"	U
U 202(E)	12	#5	4'-6"	C

Note: See Sheet ST8 for additional details and Bill of Material.

\* D 200(E) in Exterior Beam only.

**MINIMUM BAR LAP**

#4 bar = 2'-0"  
#5 bar = 2'-6"

PD-2748-0

7-1-10

**COLLINS ENGINEERS**  
133 N. Rocker Dr.  
Suite 900  
Chicago, IL 60646  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

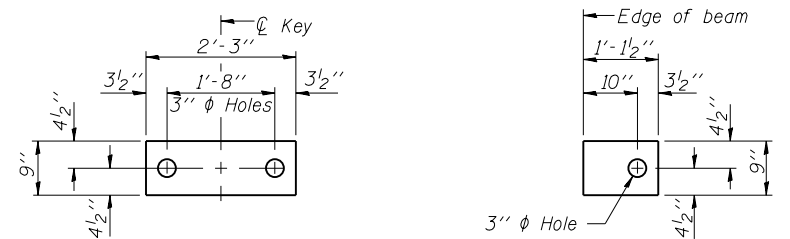
USER NAME =	DESIGNED - EKM	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - PRH	REVISED
PLOT DATE =	CHECKED - EKM	REVISED

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**27" x 48" PPC DECK BEAM**  
**STRUCTURE NO. 016-2573**

SHEET NO. ST7 OF ST30 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	289
CONTRACT NO. 60F63			ILLINOIS FED. AID PROJECT	

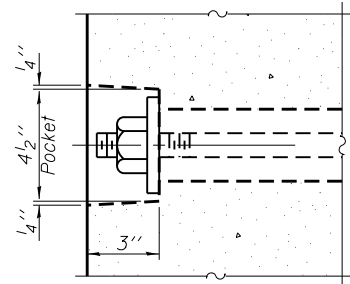


**FABRIC BEARING PAD**  
(Interior)

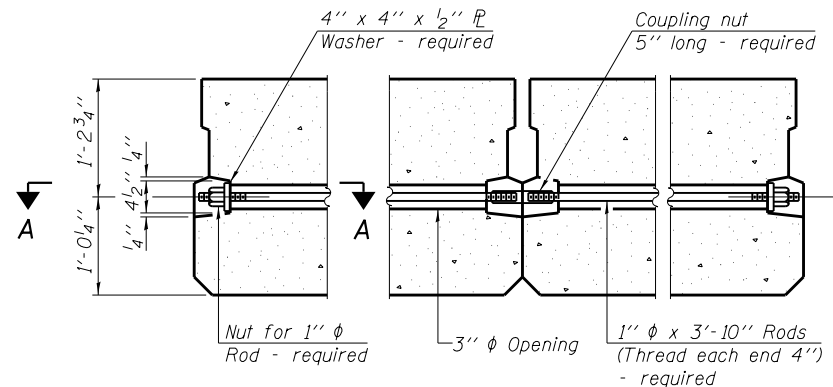
**FABRIC BEARING PAD**  
(Exterior)

**FIXED**

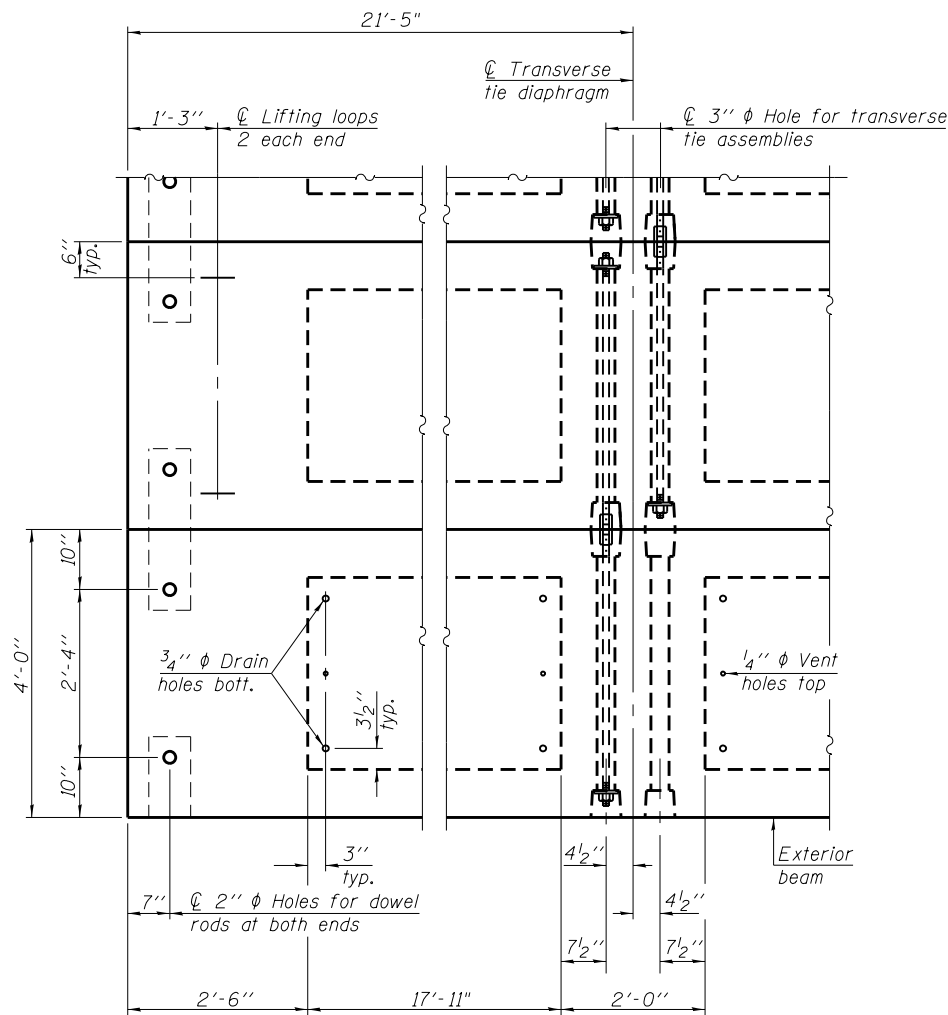
Notes:  
All bearing pads shall be 1" thick.  
Cost included with Precast Prestressed Concrete Deck Beams (27" depth).



**SECTION A-A**

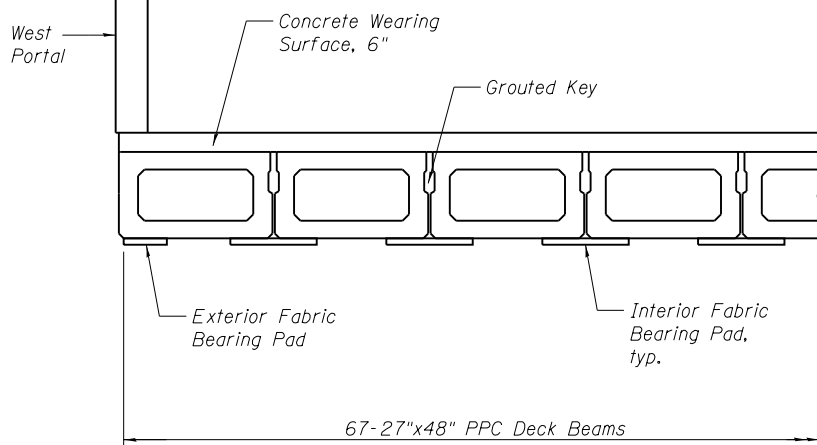


**TYPICAL TRANSVERSE TIE ASSEMBLY**



**PLAN VIEW**

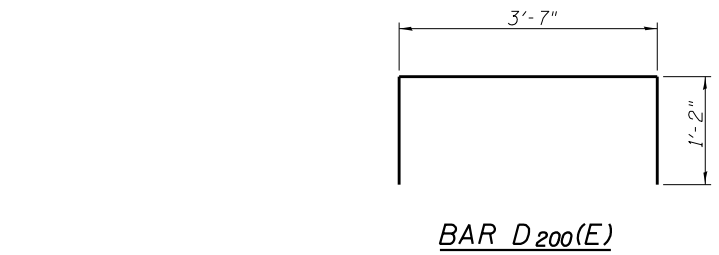
Notes:  
Connect beams in pairs with the transverse tie configuration shown.  
Cost included with Precast Prestressed Concrete Deck Beams (27").  
Cost of dowel rods, with drilling and grouting, is included with Precast Prestressed Concrete Deck Beams (27" depth).



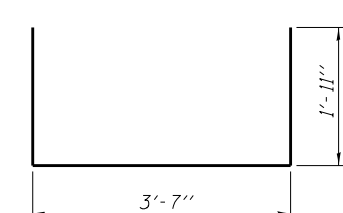
**PARTIAL CROSS SECTION**

**NOTES**

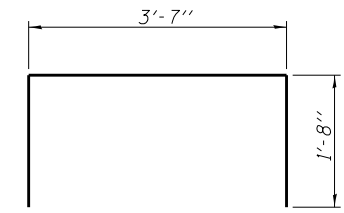
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.  
The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.  
Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).  
Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.  
A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling.  
Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.  
Compressive strength of prestressed concrete, f'c, shall be 6000 psi.  
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



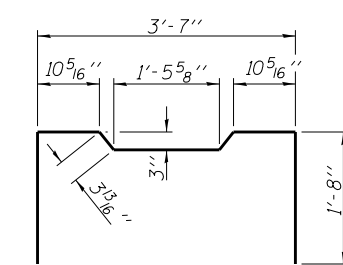
**BAR D 200(E)**



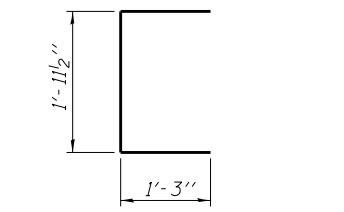
**BAR S 203(E)**



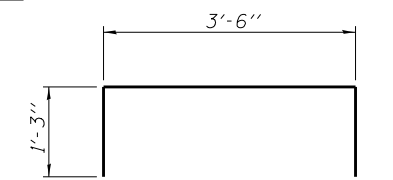
**BAR S 204(E)**



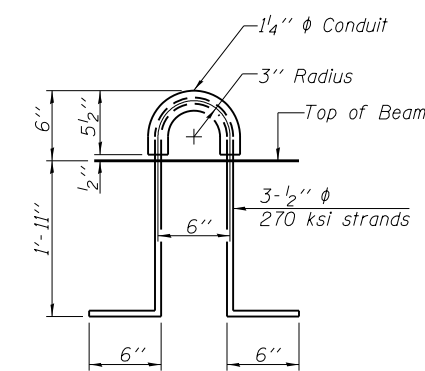
**BAR S 205(E)**



**BAR U 202(E)**



**BAR U 201(E)**



**LIFTING LOOP DETAIL**

**BILL OF MATERIAL**

Precast Prestressed Conc. Deck Bms. (27" depth)	Sq. Ft.	11,480
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PD-2748-0D 7-1-10

**COLLINS ENGINEERS**  
133 N. Wacker Dr.  
Suite 900  
Chicago, IL 60606  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

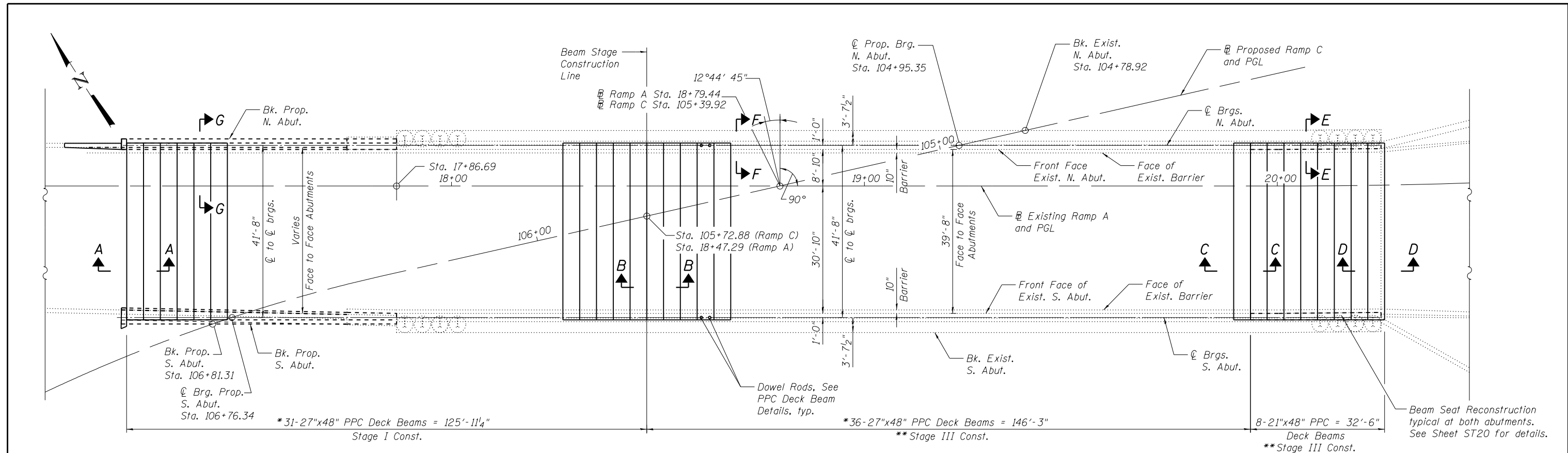
USER NAME =	DESIGNED - EKM	REVISED
PLOT SCALE =	CHECKED - LDB	REVISED
PLOT DATE =	DRAWN - PRH	REVISED
	CHECKED - EKM	REVISED

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**27" x 48" PPC DECK BEAM DETAILS**  
**STRUCTURE NO. 016-2573**

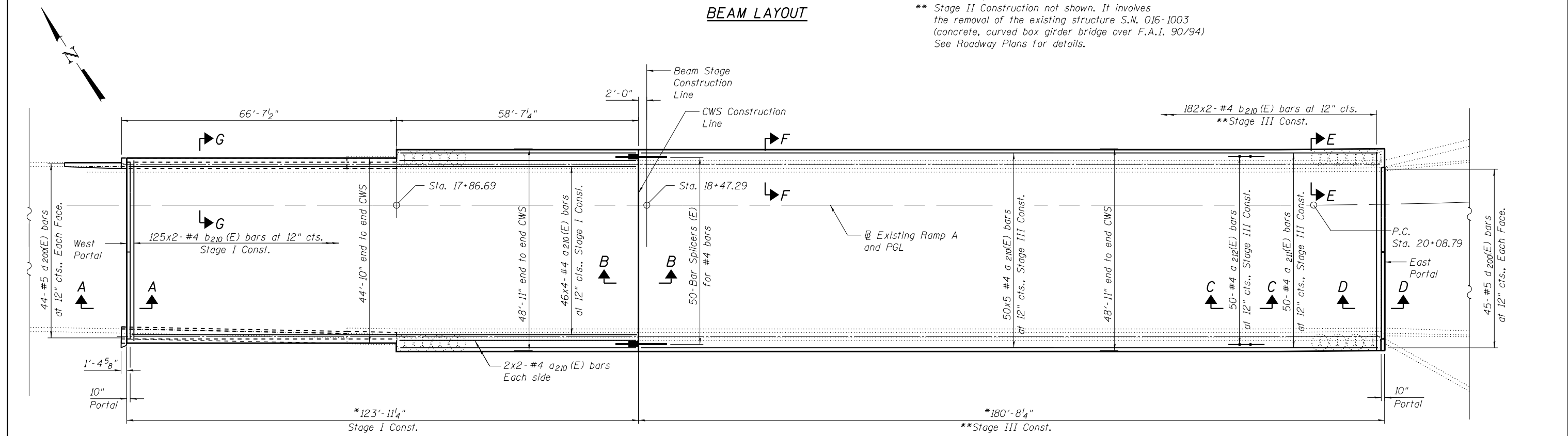
SHEET NO. ST8 OF ST30 SHEETS

F.A.I. RTÉ. 90/94	SECTION 0303-474HB-R	COUNTY COOK	TOTAL SHEETS 368	SHEET NO. 290
CONTRACT NO. 60F63				ILLINOIS FED. AID PROJECT



**BEAM LAYOUT**

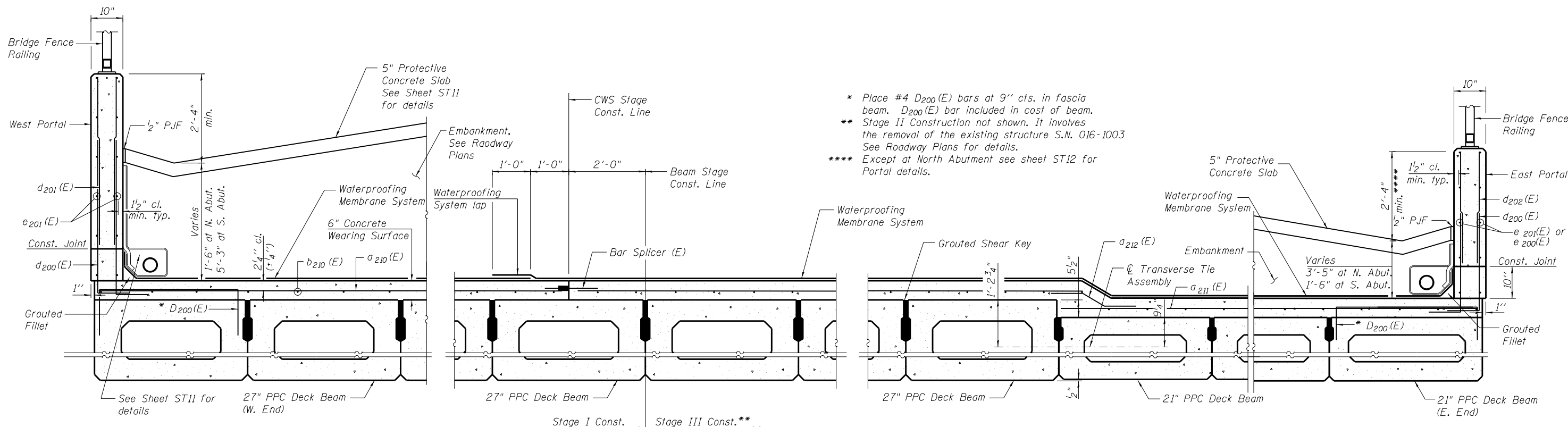
\* Dimensions may vary depending on beam tolerances, maximum dimensions shown  
 \*\* Stage II Construction not shown. It involves the removal of the existing structure S.N. 016-1003 (concrete, curved box girder bridge over F.A.I. 90/94) See Roadway Plans for details.



**CONCRETE WEARING SURFACE PLAN**

**MINIMUM BAR LAP**  
 #4 bar = 2'-7"

Notes:  
 See sheet ST10 for Section A-A, B-B, C-C and D-D.  
 See sheet ST12 for Bill of Material.  
 See sheet ST12 for section E-E, F-F and G-G.



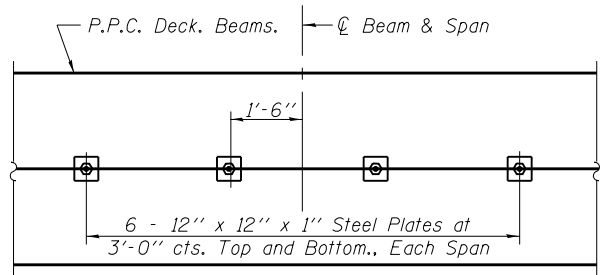
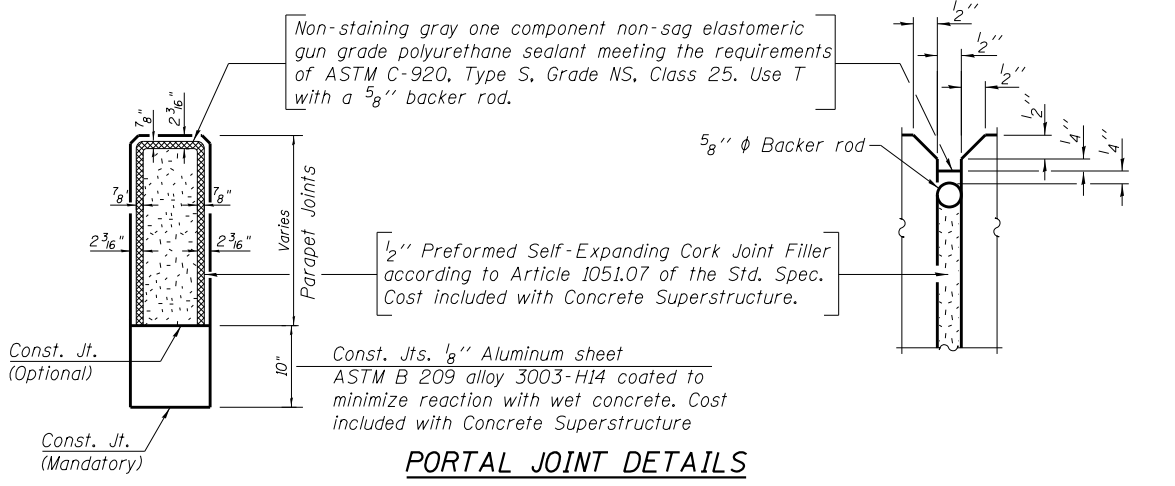
\* Place #4 D<sub>200</sub>(E) bars at 9" cts. in fascia beam. D<sub>200</sub>(E) bar included in cost of beam.  
 \*\* Stage II Construction not shown. It involves the removal of the existing structure S.N. 016-1003 See Roadway Plans for details.  
 \*\*\*\* Except at North Abutment see sheet ST12 for Portal details.

**SECTION A-A**

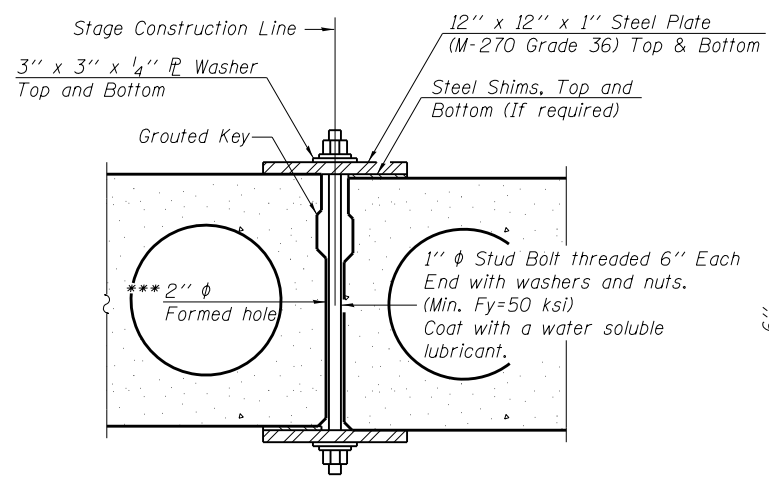
**SECTION B-B**  
 Embankment and Protective Concrete Slab not shown.

**SECTION C-C**  
 Embankment and Protective Concrete Slab not shown.

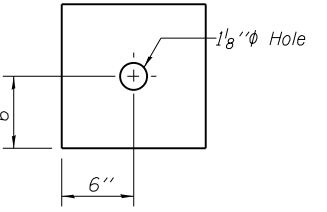
**SECTION D-D**



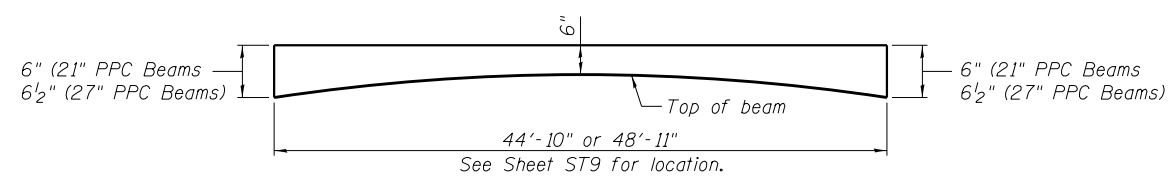
**PLAN**



**SECTION**



**CLAMPING PLATE**



**ANTICIPATED CONCRETE WEARING SURFACE PROFILE**  
 (For information only)

**SHEAR KEY CLAMPING DETAILS AT STAGE CONST. JT.**

Cost included with Precast Prestressed Concrete Deck Beams.  
 See Stage Construction Details for traffic lanes.

\*\*\* Cast semicircular recesses in the sides of each beam adjacent to the stage construction line. These recesses should align to form a hole at the appropriate locations for the clamping device bolts.

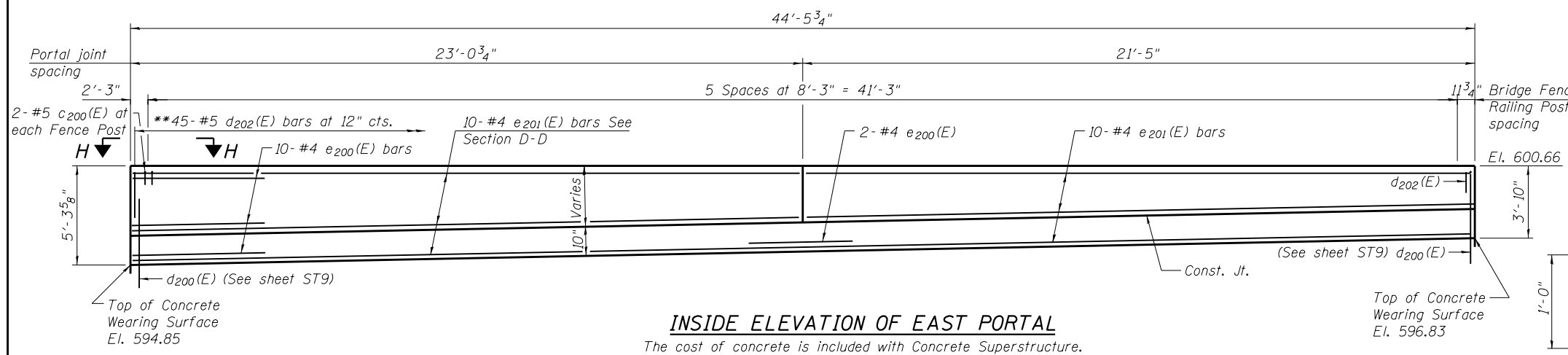
Note:  
 After the removal of existing beams for Stage I removal, the Contractor shall verify that the transverse ties in the existing beams are tightened for Stage I traffic.

USER NAME =	DESIGNED - EKM	REVISED
	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - PRH	REVISED
PLOT DATE =	CHECKED - EKM	REVISED

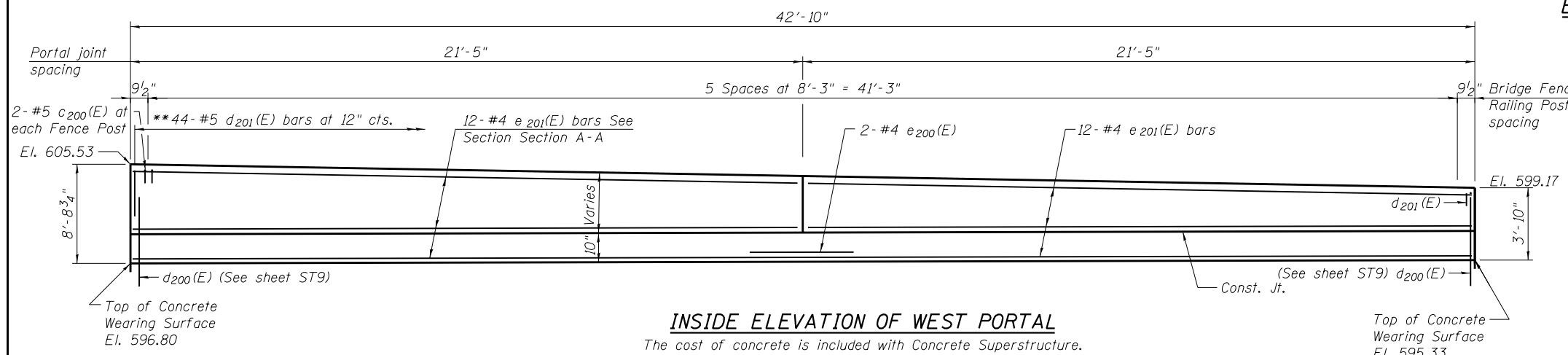
F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	292
CONTRACT NO. 60F63				
ILLINOIS FED. AID PROJECT				



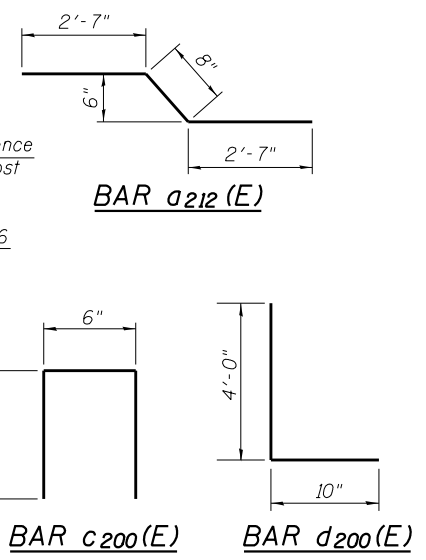




**INSIDE ELEVATION OF EAST PORTAL**  
The cost of concrete is included with Concrete Superstructure.



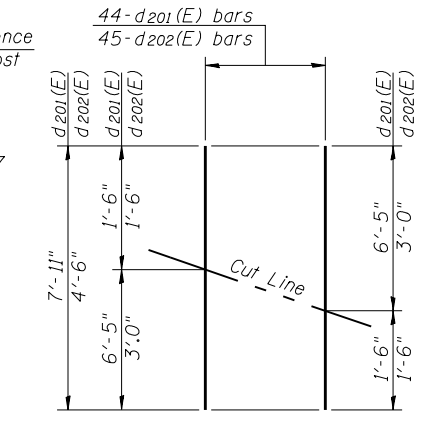
**INSIDE ELEVATION OF WEST PORTAL**  
The cost of concrete is included with Concrete Superstructure.



**SUPERSTRUCTURE  
BILL OF MATERIAL**

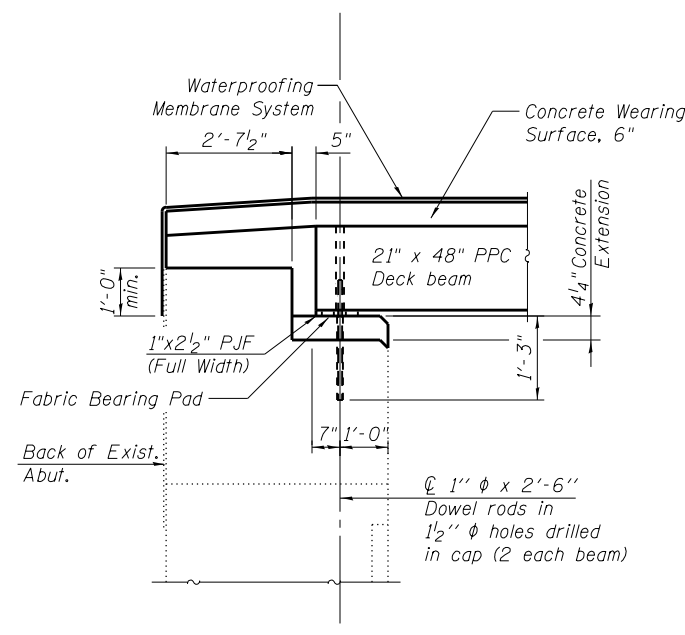
Bar	No.	Size	Length	Shape	
a210 (E)	442	#4	32'-10"	—	
a211 (E)	50	#4	31'-10"	—	
a212 (E)	50	#4	3'-10"	—	
b210 (E)	614	#4	25'-9"	—	
c200 (E)	24	#5	2'-6"	U	
d200 (E)	178	#5	4'-10"	L	
d201 (E)	44	#5	7'-11"	—	
d202 (E)	45	#5	4'-6"	—	
e200 (E)	14	#4	5'-7"	—	
e201 (E)	44	#4	21'-1"	—	
Reinforcement Bars, Epoxy Coated				Pound	23,660
Concrete Superstructure				Cu. Yd.	14.6
Waterproofing Membrane System				Sq. Yd.	1,770
Geocomposite Wall Drain				Sq. Yd.	24
Pipe Underdrains for Structures, 4"				Foot	150
Protective Concrete Slab				Sq. Yd.	956
Concrete Wearing Surface, 6"				Sq. Yd.	1,620

Bars indicated thus 1 x 4 - #4 etc. indicates 1 line of bars with 4 lengths per line.

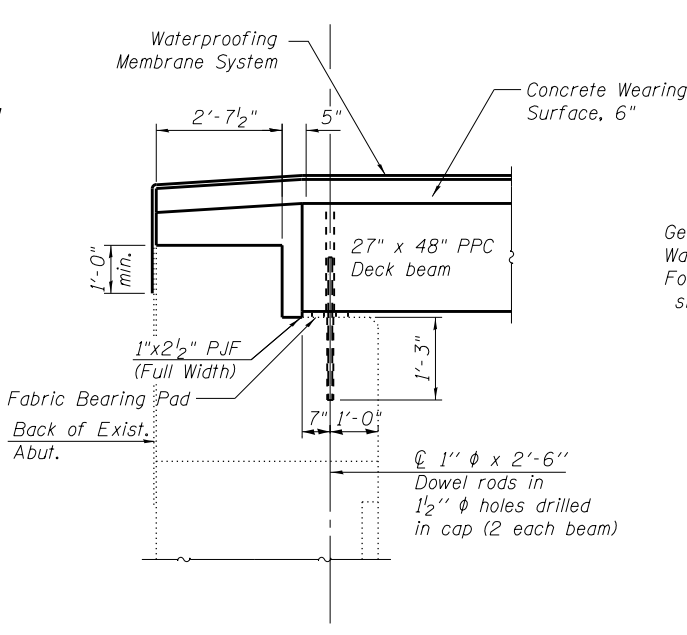


**FIELD CUTTING DIAGRAM**

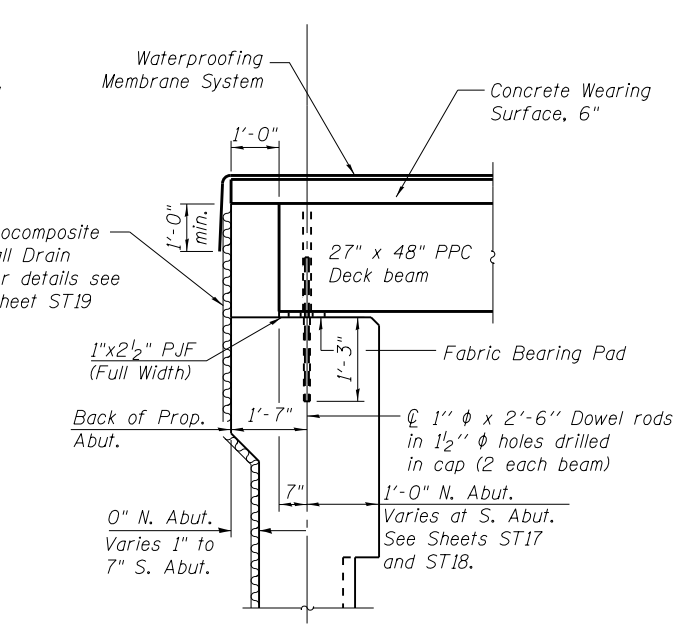
\*\* Order bars full length. Cut to fit as shown and use remainder of bars in the other face.



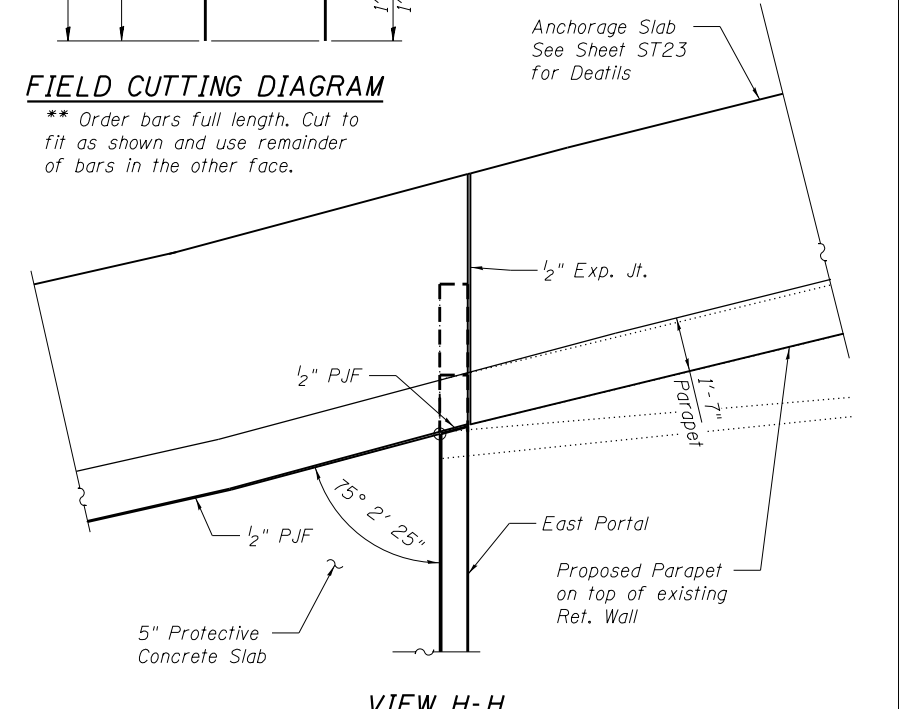
**SECTION E-E**  
See Sheet ST9 for Location



**SECTION F-F**  
See Sheet ST9 for Location

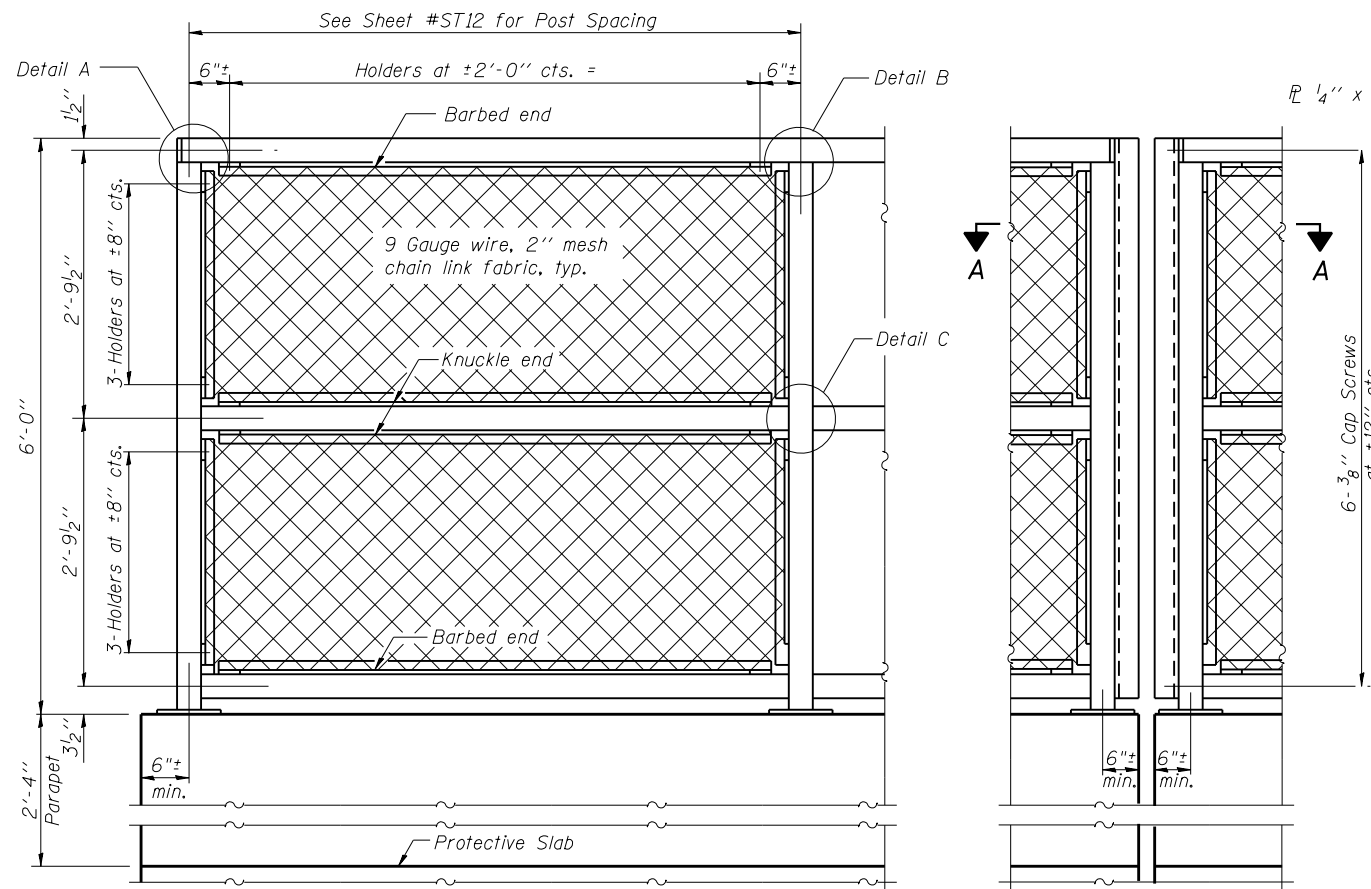


**SECTION G-G**  
See Sheet ST9 for Location



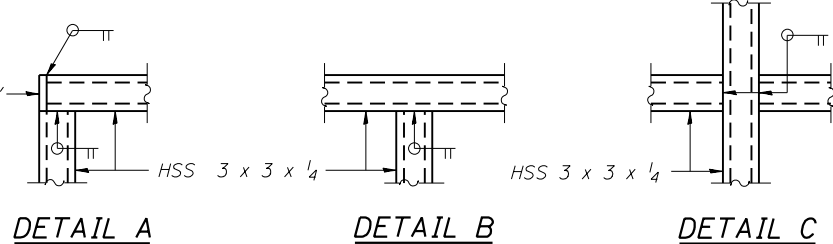
**VIEW H-H**

Note:  
The cost of fabric bearing pads, dowel rods and drilling and grouting is included with Precast Prestress Concrete Deck Beams of appropriate depth.



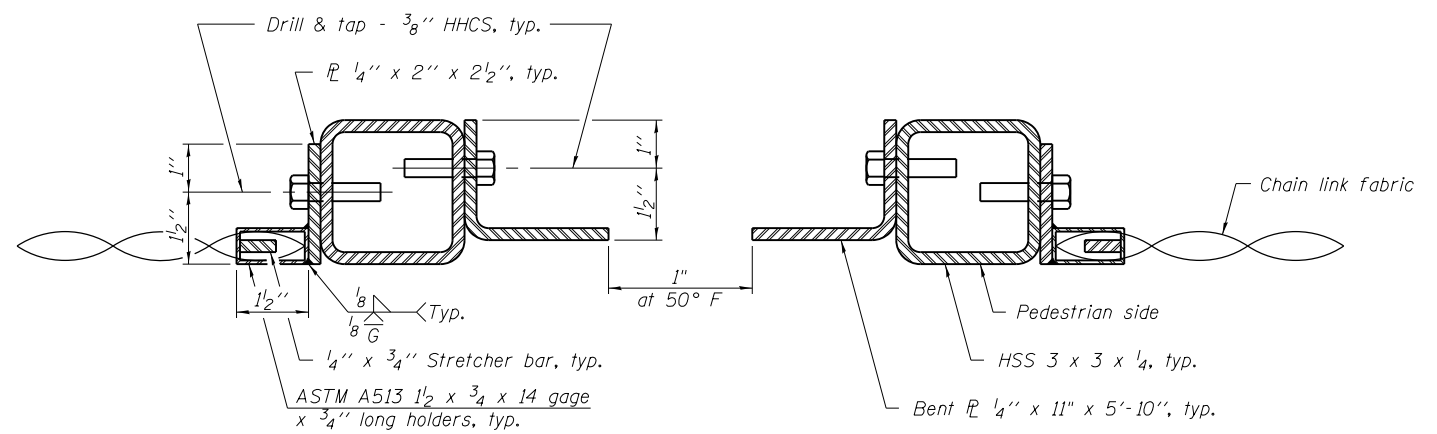
**ELEVATION**  
(Inside Face)

**ELEVATION**  
(At Expansion Joint)

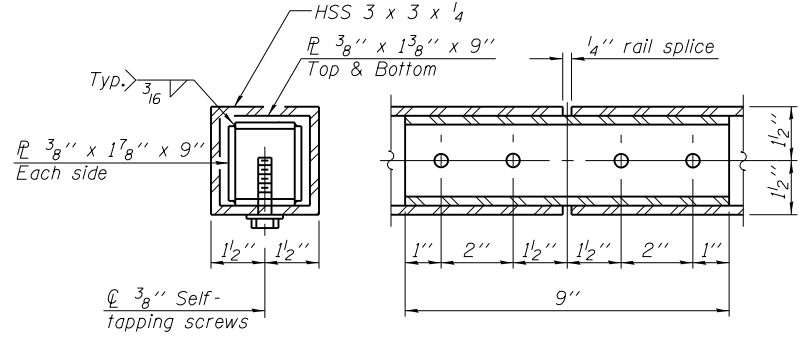


**DETAIL A**      **DETAIL B**      **DETAIL C**

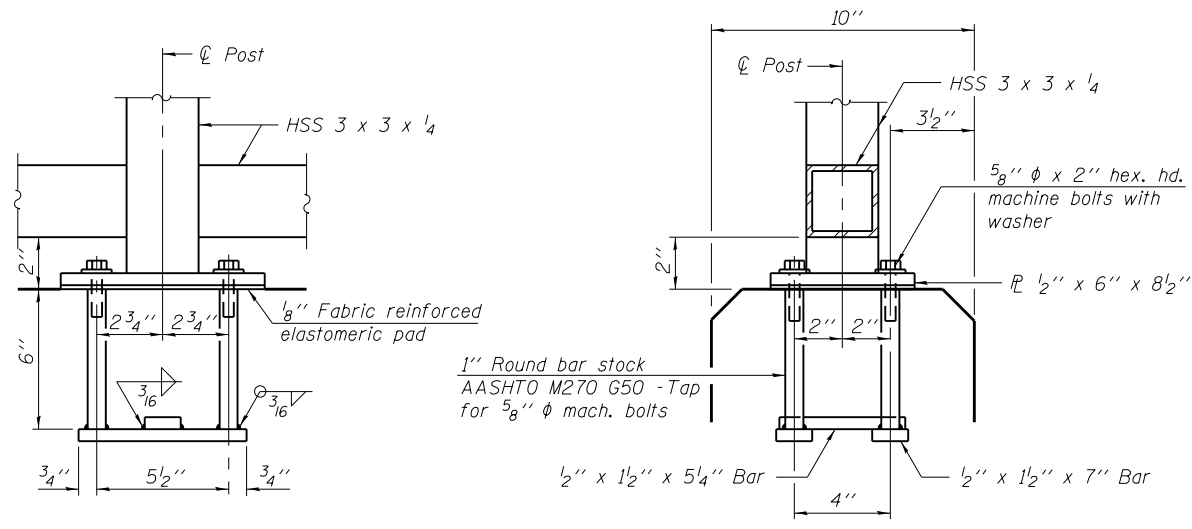
All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.



**SECTION A-A**



**RAIL SPLICE**



**ANCHOR BOLT DETAILS**

In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting 5/8"  $\phi$  anchor rods according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

**BILL OF MATERIAL**

Item	Unit	Quantity
Bridge Fence Railing	Foot	126

R-28

7-1-10 (10'-0" Maximum Post Spacing)

**COLLINS ENGINEERS**  
133 N. Rocker Dr.  
Suite 900  
Chicago, IL 60646  
Tel: (312) 704-9300  
Fax: (312) 704-9320  
www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993

USER NAME =	DESIGNED -	REVISIONS
	EKM	DESIGNED
	LDB	CHECKED
	PRH	DRAWN
	EKM	CHECKED

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

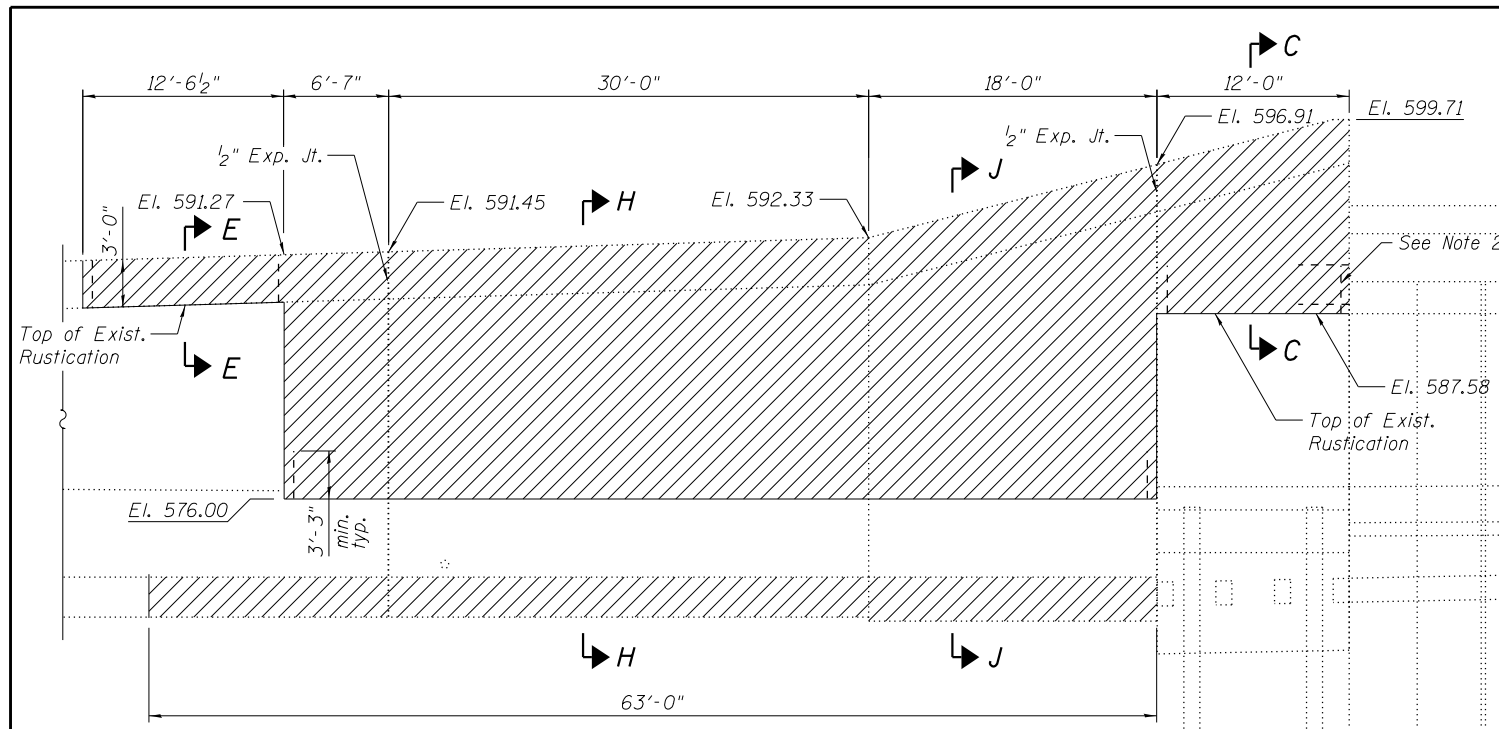
**BRIDGE FENCE RAILING, PARAPET MOUNTED**  
**STRUCTURE NO. 016-2573**

SHEET NO. ST13 OF ST30 SHEETS

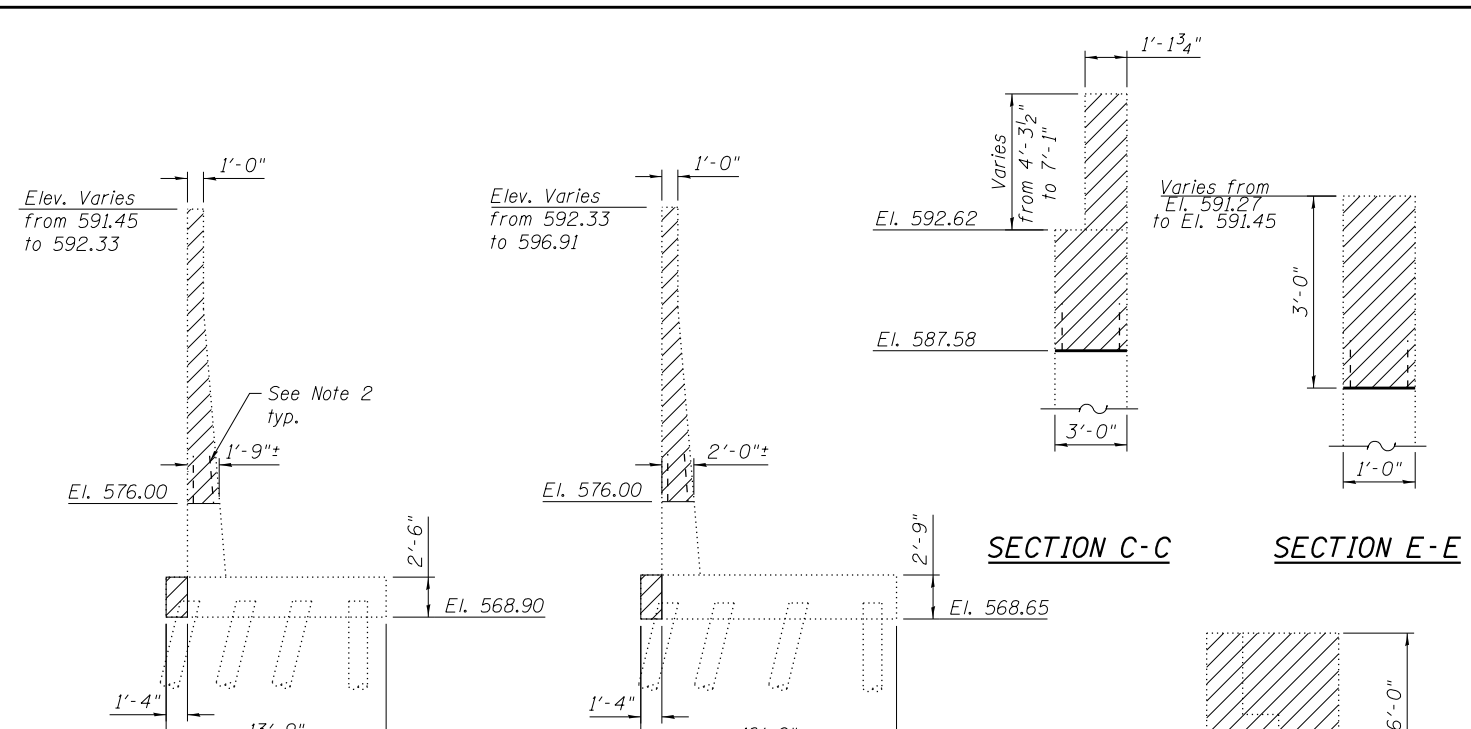
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	295

CONTRACT NO. 60F63

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**NORTH ABUTMENT AND RETAINING WALL 120**

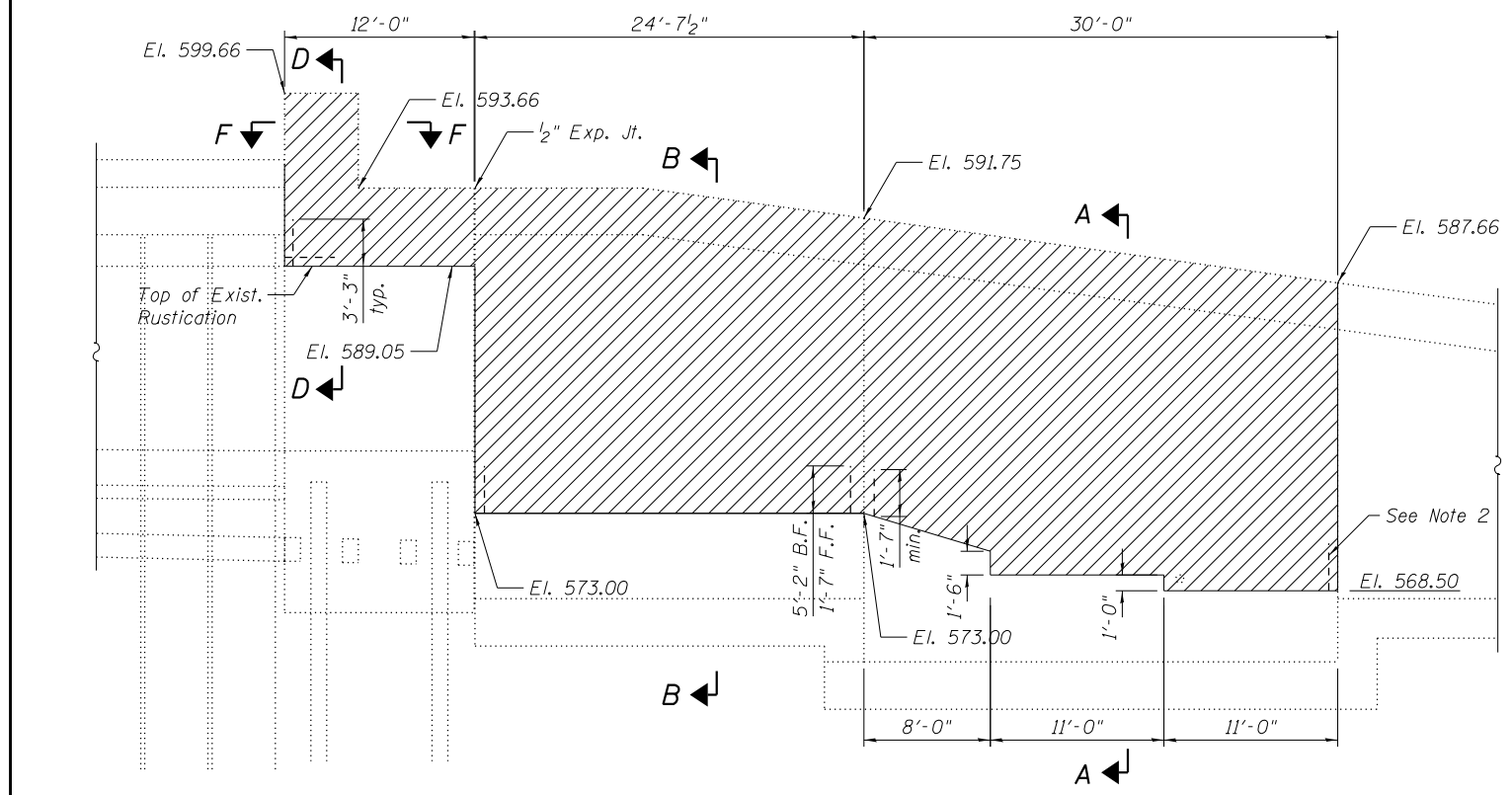


**SECTION H-H**

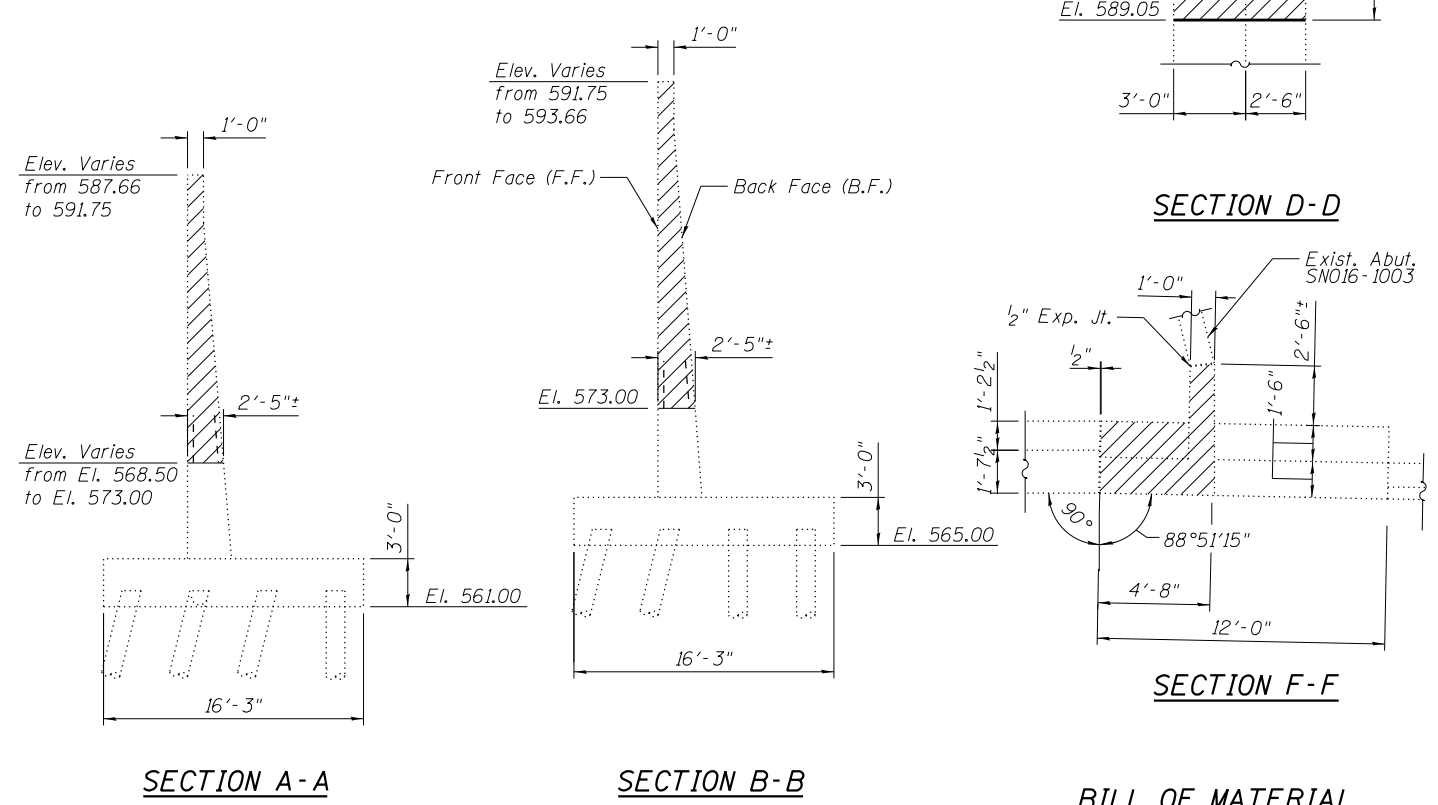
**SECTION J-J**

**SECTION C-C**

**SECTION E-E**



**SOUTH ABUTMENT AND SOUTHWEST RETAINING WALL**



**SECTION A-A**

**SECTION B-B**

**SECTION D-D**

**SECTION F-F**

**Notes:**  
 See Sheet ST20 for more concrete removal.  
 Existing reinforcement shall be cleaned and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included with Concrete Removal.

**BILL OF MATERIAL**

Item	Unit	Quantity
Concrete Removal	Cu. Yd.	144.3

**LEGEND:**

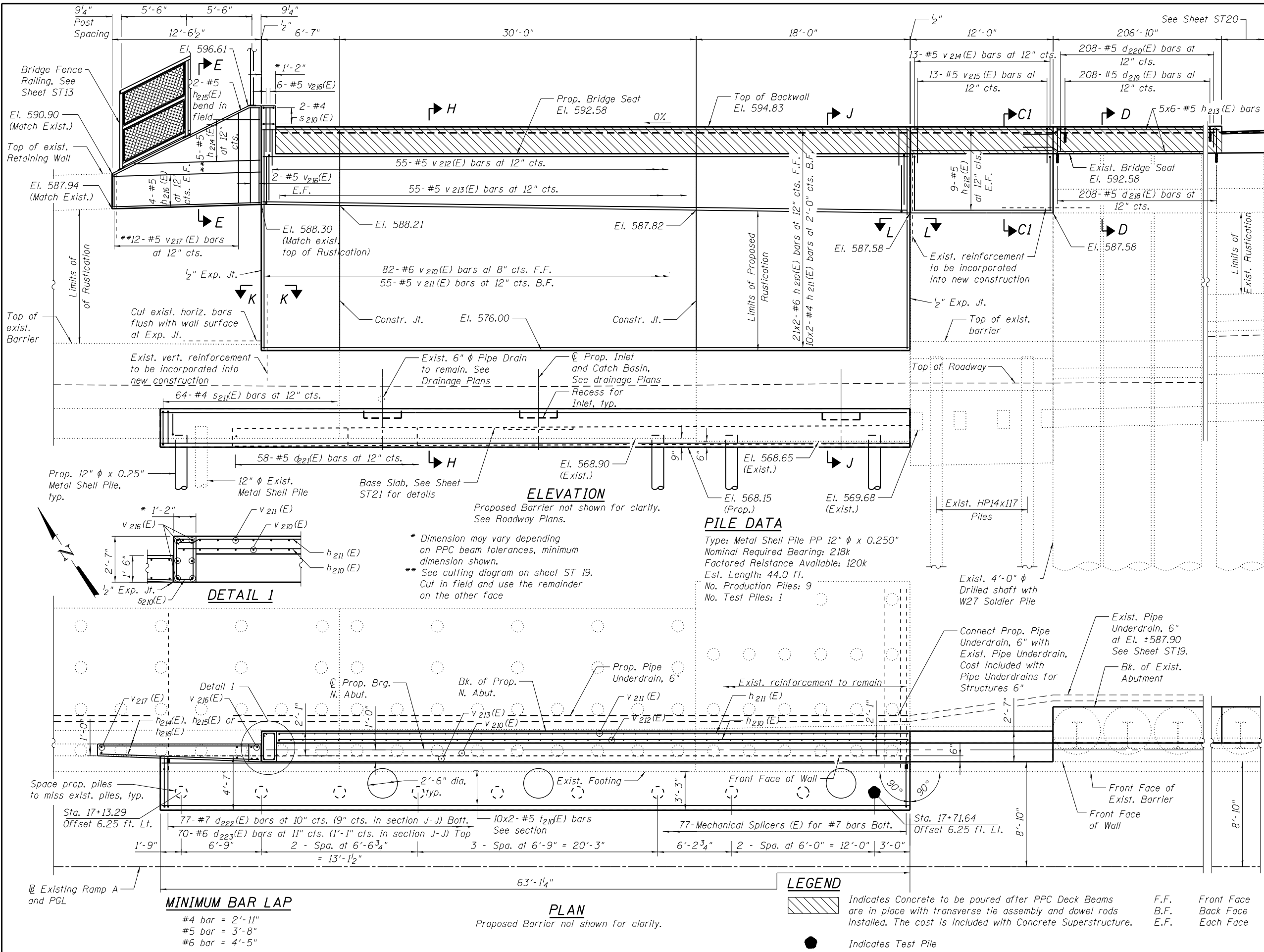
Indicates Concrete Abutment Wall and Footing Removal Area

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	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - PRH	REVISED
PLOT DATE	CHECKED - EKM	REVISED

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
d 218(E)	208	#5	2'-9"	—
d 219(E)	208	#5	3'-9"	—
d 220(E)	208	#5	4'-3"	—
d 221(E)	58	#6	7'-0"	—
d 222(E)	77	#7	6'-2"	—
d 223(E)	70	#6	7'-2"	—
h 210(E)	42	#6	29'-4"	—
h 211(E)	20	#4	28'-7"	—
h 212(E)	18	#5	11'-8"	—
h 213(E)	30	#5	34'-5"	—
h 214(E)	5	#5	13'-6"	—
h 215(E)	2	#5	13'-6"	—
h 216(E)	8	#5	12'-3"	—
v 210(E)	82	#6	16'-3"	—
v 211(E)	55	#5	18'-6"	—
v 212(E)	55	#5	3'-1"	—
v 213(E)	55	#5	9'-11"	—
v 214(E)	13	#5	11'-9"	—
v 215(E)	13	#5	6'-2"	—
v 216(E)	10	#5	12'-6"	—
v 217(E)	12	#5	11'-8"	—
s 210(E)	2	#4	7'-3"	—
s 211(E)	64	#4	13'-5"	—
t 210(E)	20	#5	33'-3"	—
Structure Excavation		Cu. Yd.	129.2	
Concrete Structures		Cu. Yd.	118.4	
Concrete Superstructure		Cu. Yd.	21.9	
Form Liner Textured Surface		Sq. Ft.	652	
Reinforcement Bars, Epoxy Coated		Pound	14,350	
Furnishing Metal Shell Piles 12" x 0.250"		Foot	396	
Driving Piles		Foot	396	
Test Pile Metal Shells		Each	1	
Concrete Sealer		Sq. Ft.	1,040	
Geocomposite Wall Drain		Sq. Yd.	124	
Granular Backfill for Structures		Cu. Yd.	181.7	
Pipe Underdrains for Structures 6"		Foot	78	

**Notes:**  
 Backfill shall be placed behind the abutment after the superstructure has been poured and falsework removed. See Article 502.10 of the Standard Specifications.  
 Existing reinforcement shall be cleaned and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included with Concrete Removal.  
 Concrete sealer shall be applied to all exposed surface areas of new concrete abutment.  
 Cast backwall after beams have been erected. For details of piles see sheet ST26.  
 See sheets ST16 and ST19 for sections and details of reinforcement.  
 Drill and epoxy grout bars into existing structure according to Section 584 of the Standard Specifications. Drilling and Grouting of bars is included with Concrete Structures.  
 All drainage system components shall extend 2'-0" from the back of abutment except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. See Article 601.05 of the Standard Specifications and Highway Standard 601101.



**PILE DATA**

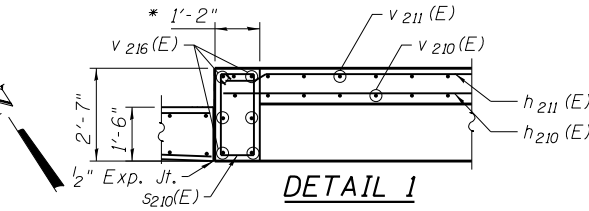
Type: Metal Shell Pile PP 12"  $\phi$  x 0.250"  
 Nominal Required Bearing: 218k  
 Factored Resistance Available: 120k  
 Est. Length: 44.0 ft.  
 No. Production Piles: 9  
 No. Test Piles: 1

**ELEVATION**

Proposed Barrier not shown for clarity. See Roadway Plans.

\* Dimension may vary depending on PPC beam tolerances, minimum dimension shown.  
 \*\* See cutting diagram on sheet ST 19. Cut in field and use the remainder on the other face

**DETAIL 1**



**LEGEND**

Indicates Concrete to be poured after PPC Deck Beams are in place with transverse tie assembly and dowel rods installed. The cost is included with Concrete Superstructure.  
 F.F. Front Face  
 B.F. Back Face  
 E.F. Each Face  
 Indicates Test Pile

**MINIMUM BAR LAP**

#4 bar = 2'-11"  
 #5 bar = 3'-8"  
 #6 bar = 4'-5"

**PLAN**

Proposed Barrier not shown for clarity.

**NORTH ABUTMENT DETAILS I  
 STRUCTURE NO. 016-2573**

SHEET NO. ST15 OF ST30 SHEETS

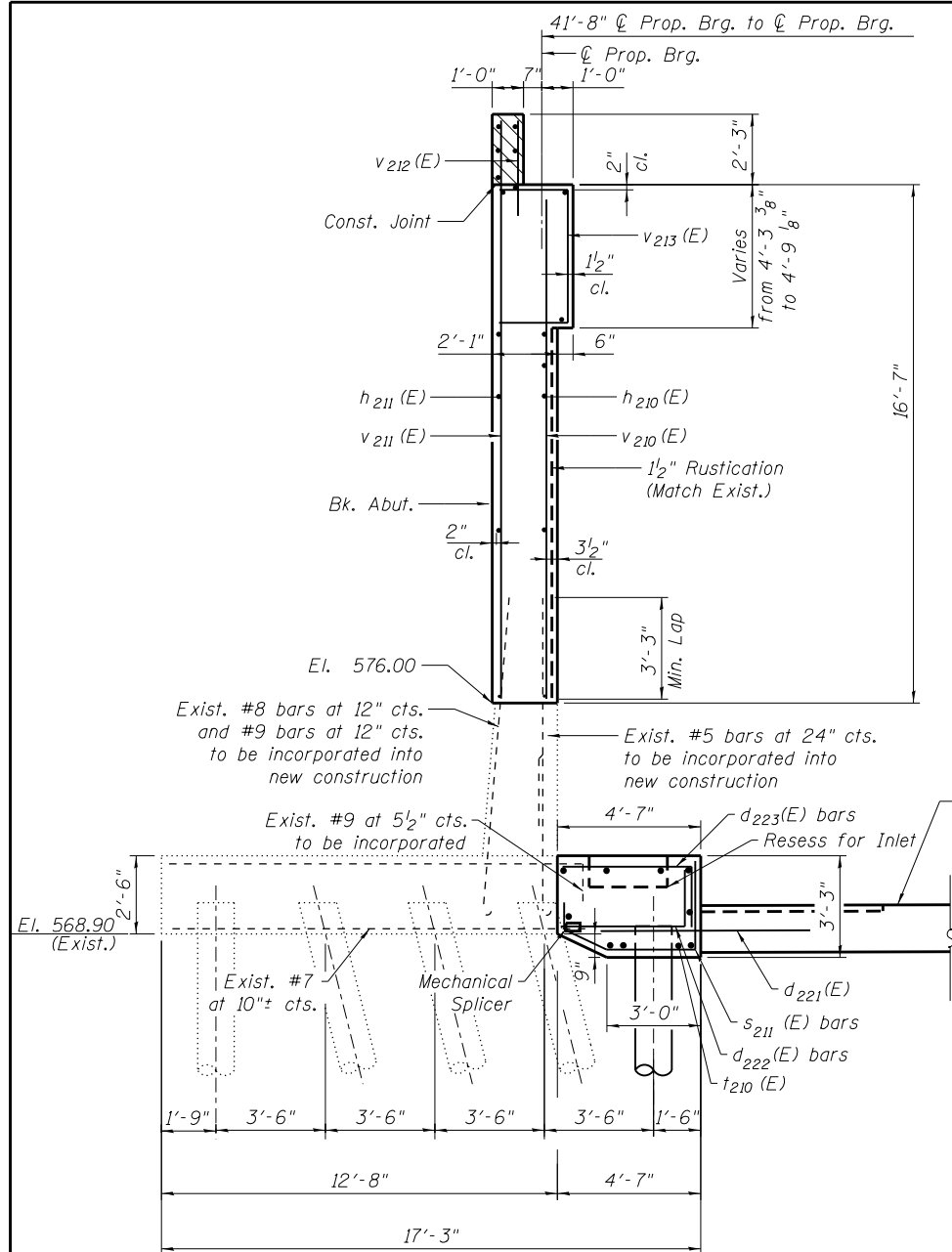
F.A.I. RT.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	297

CONTRACT NO. 60F63

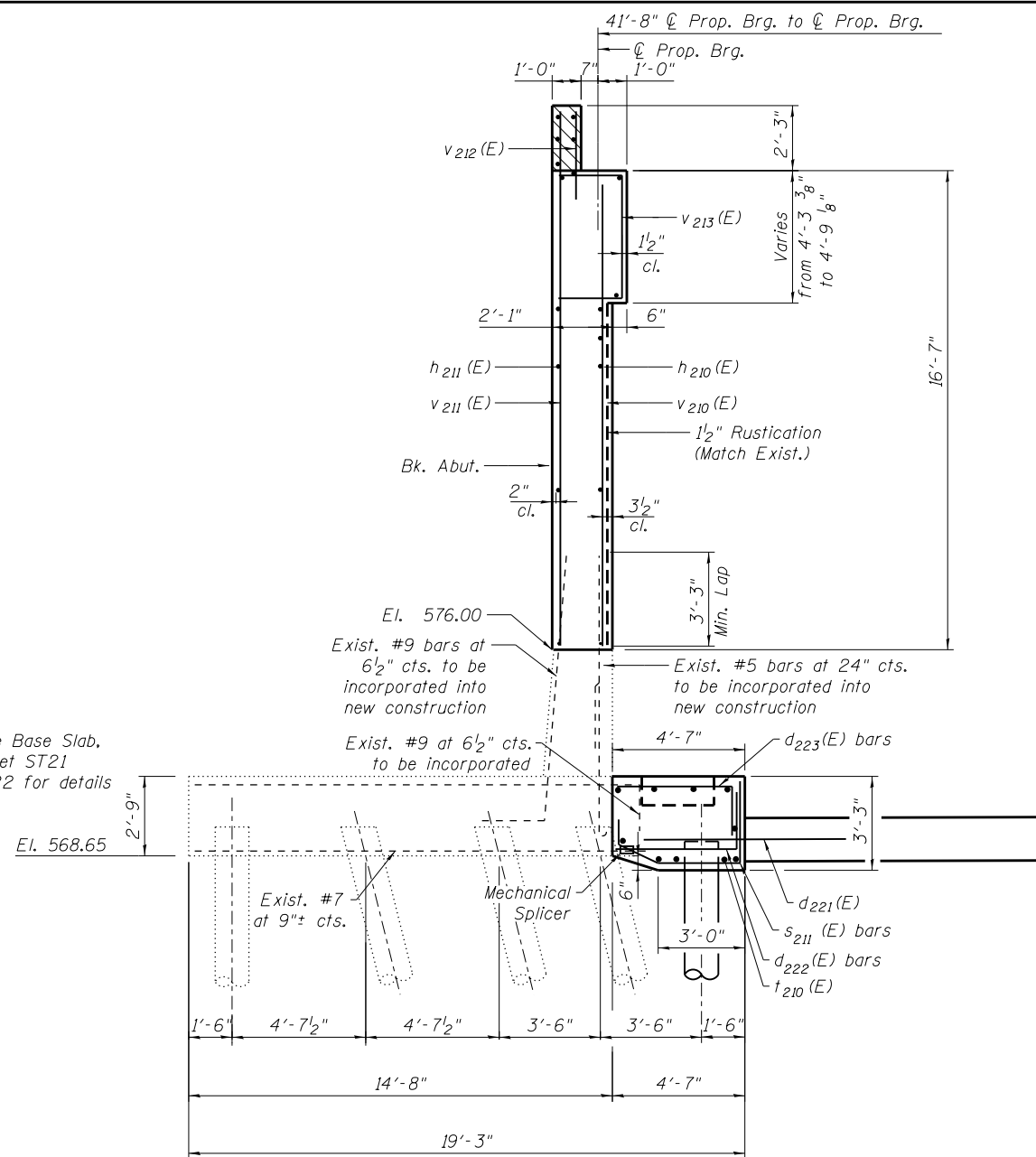
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 133 N. Wacker Dr.  
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LDB	LDB	REVISIONS
PRH	PRH	REVISIONS
EKM	EKM	REVISIONS

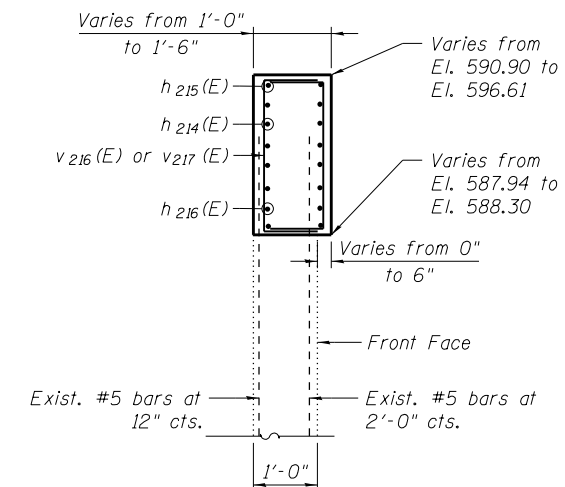
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**



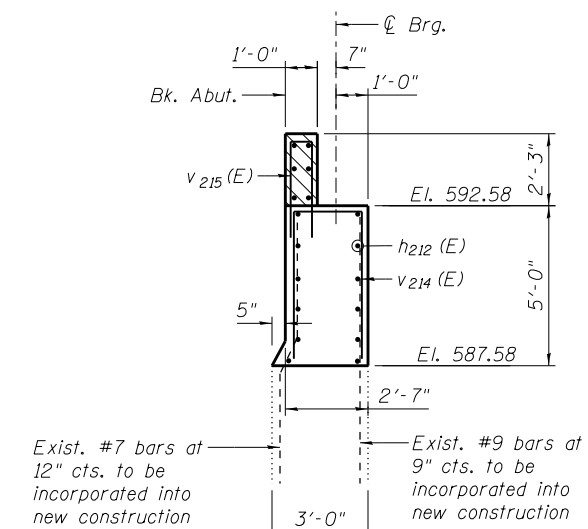
**SECTION H-H**



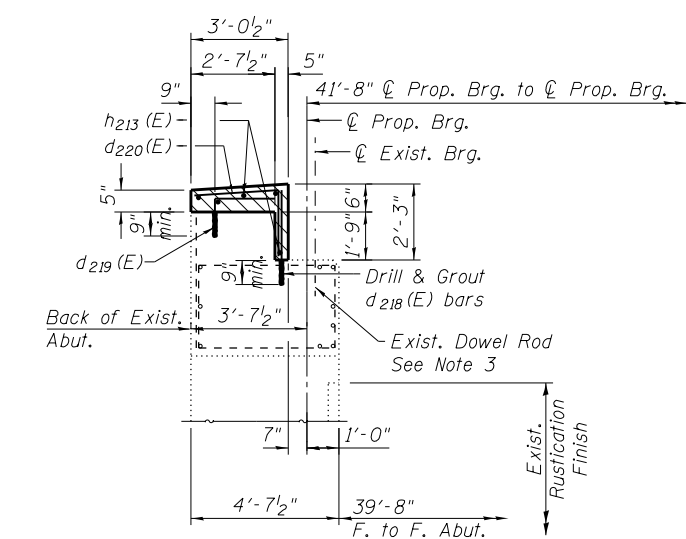
**SECTION J-J**



**SECTION E-E**



**SECTION C1-C1**



**SECTION D-D**

See Sheet ST15 for Location

- Notes:
- Existing reinforcement shall be cleaned and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included with Concrete Removal.
  - Drill and epoxy grout bars into existing structure according to Section 584 of the Standard Specifications. Drilling and Grouting of bars is included with Concrete Structures.
  - The existing dowel rods shall be burned or cut flush with the existing bearing seat, ground smooth and sealed with epoxy. The cost of this work shall be included with Concrete Removal.
  - See Sheet ST19 for Geocomposite Wall Drain and Pipe Underdrains detail.

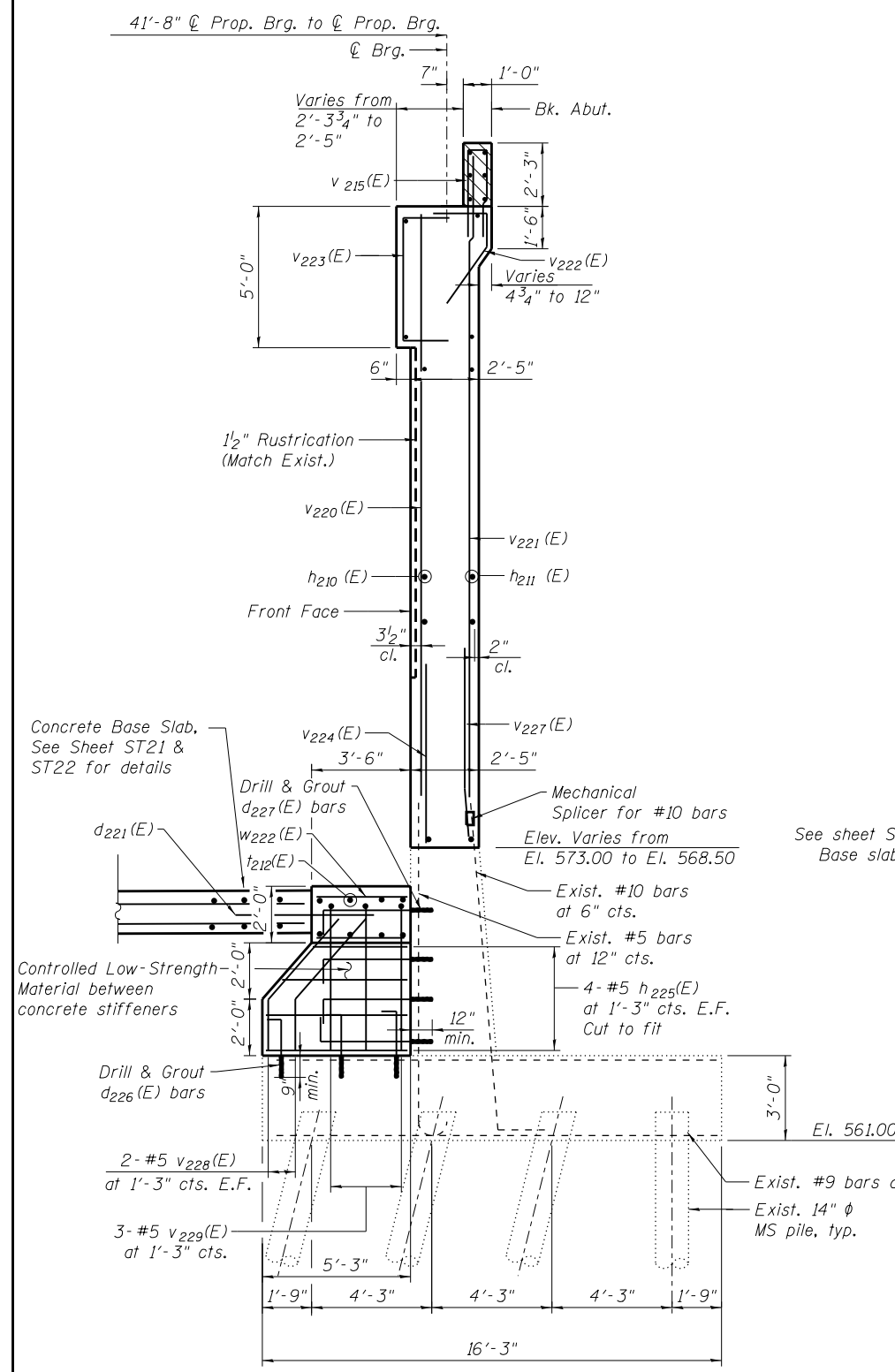
**LEGEND**

Indicates Concrete to be poured after PPC Deck Beams are in place with transverse tie assembly and dowel rods installed. The cost is included with Concrete Superstructure.

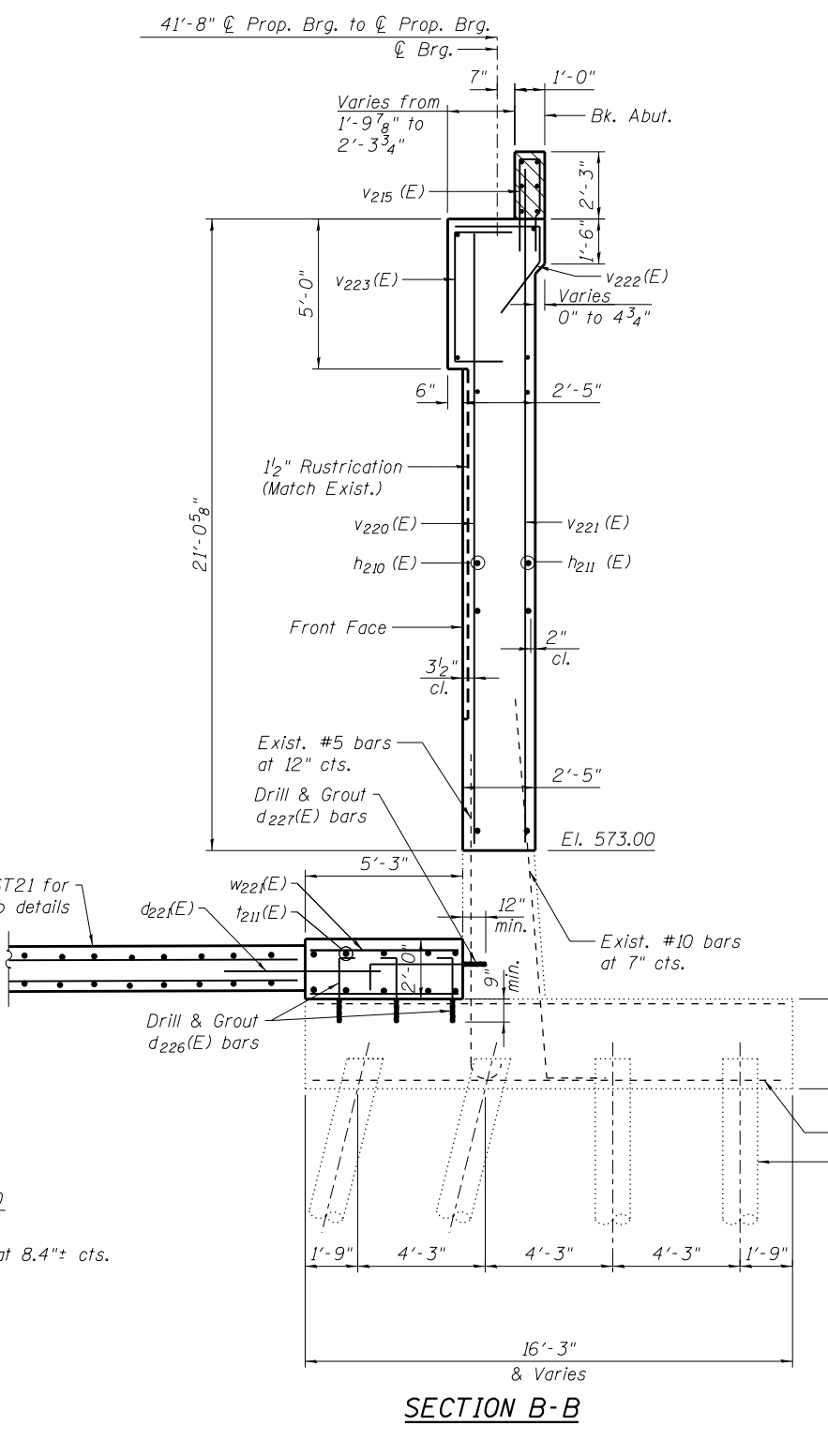
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	CHECKED - LDB	REVISED
PLOT SCALE =	DRAWN - PRH	REVISED
PLOT DATE =	CHECKED - EKM	REVISED

F.A.I. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	0303-474HB-R	COOK	368	298
CONTRACT NO. 60F63				
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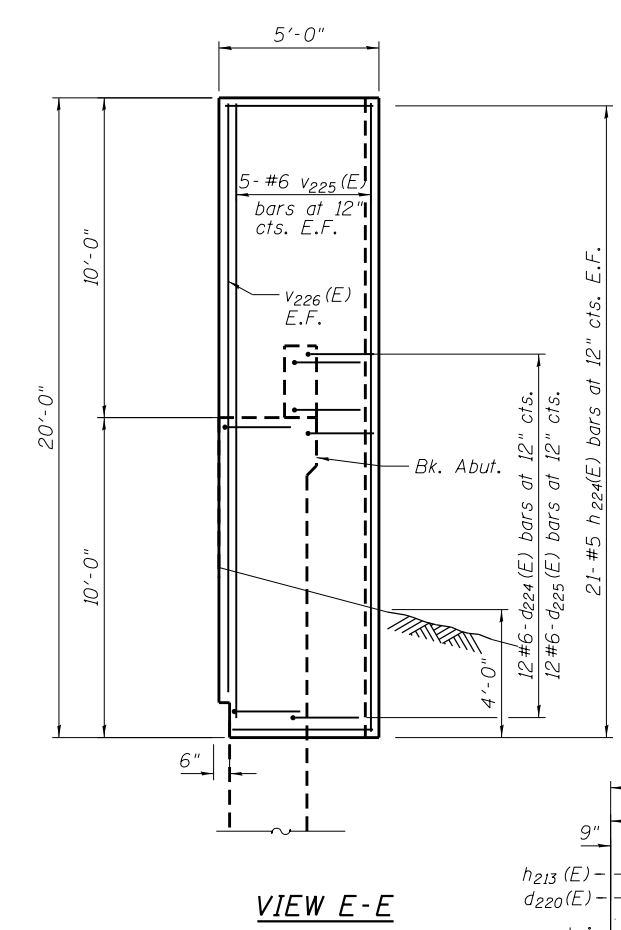




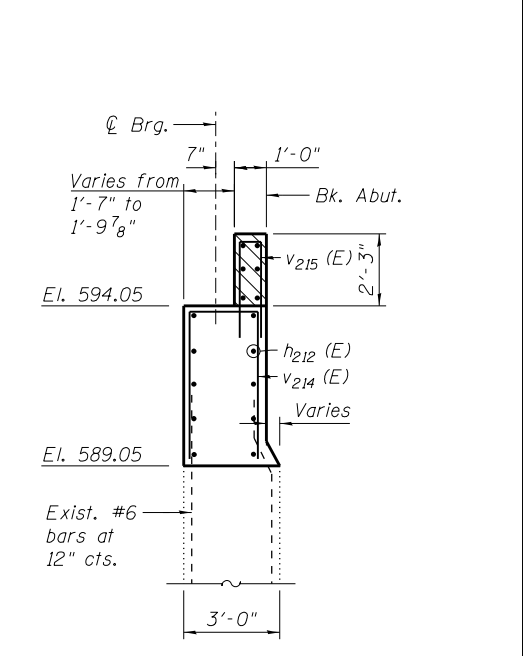
**SECTION A-A**



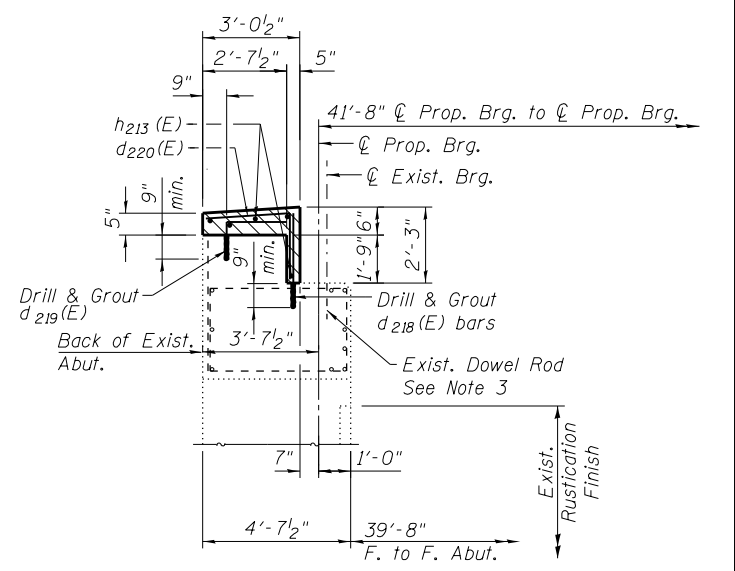
**SECTION B-B**



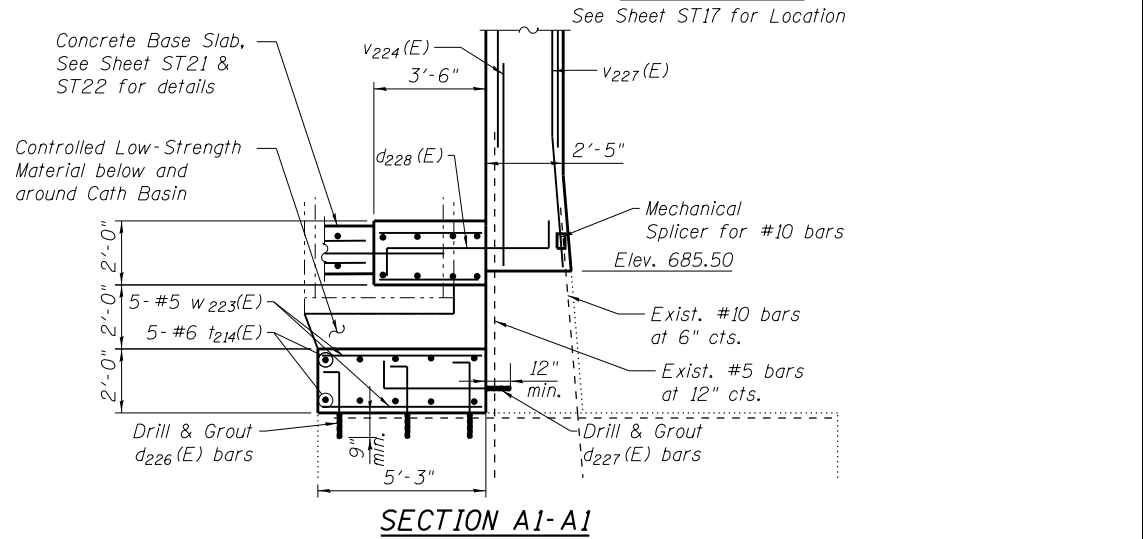
**VIEW E-E**



**SECTION C-C**



**SECTION D-D**



**SECTION A1-A1**

**LEGEND**

Indicates Concrete to be poured after PPC Deck Beams are in place with transverse tie assembly and dowel rods installed. The cost is included with Concrete Superstructure.

- Notes:**
- Existing reinforcement shall be cleaned and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included with Concrete Removal.
  - Drill and epoxy grout bars into existing structure according to Section 584 of the Standard Specifications. Drilling and Grouting of bars is included with Concrete Structures.
  - The existing dowel rods shall be burned or cut flush with the existing bearing seat, ground smooth and sealed with epoxy. The cost of this work shall be included with Concrete Removal.
  - See Sheet ST19 for Geocomposite Wall Drain and Pipe Underdrains detail.

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**STATE OF ILLINOIS  
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**SOUTH ABUTMENT DETAILS II  
STRUCTURE NO. 016-2573**  
SHEET NO. ST18 OF ST30 SHEETS

F.A.I. R.T.E. 90/94	SECTION 0303-474HB-R	COUNTY COOK	TOTAL SHEETS 368	SHEET NO. 300
CONTRACT NO. 60F63				ILLINOIS FED. AID PROJECT