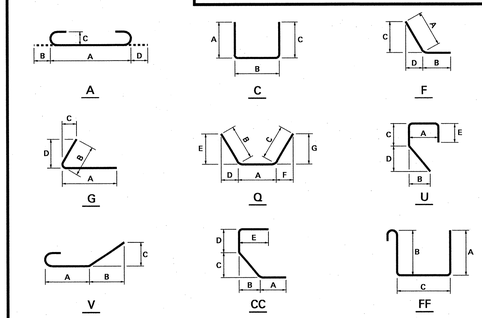
MARK	TYPE	LENGTH FT. IN.	NO. OF UNITS	NO. OF BARS/ UNIT	TOTAL NO. OF BARS	CORR. PROT.	A FT. IN.	B FT. IN.	C FT. IN.	REMARKS D FT. IN.	E FT. IN.	F FT. IN.	G FT. IN.
CONSTRUCTION STAGE 1B – WEST ABUTMENT													
FOOTING													
13F01	bar216	2′-6″	1	5	5		1′-6″	1′-0″					
16F01	STR	6′-6″	2	49	98								
16F02	STR	24′-8″	1	18	18								
16F03	STR	25′-3″	2	7	14								
16F04	A	5′-11″	1	23	23		5′-4″	7″	5″				
16F05	A	6′-10″	1	23	23		6′-3″	7″	5″				
16F06	A	6′-8″	1	25	25		6′-1″	7″	5″				
16F07	A	7′-7″	1	25	25		7′-0″	7″	5″				
16F08	A	3′-11½″	1	6	6		3′-4½″	7″	5″				
16F09	bar216	5′-7″	1	3	3		4′-7″	1′-0″					
STEM													
13A01	bar216	4′-9½″	1	32	32		2′-7½″	2′-2″					
13A02	STR	3′-0″	1	3	3								
13A03	STR	23′-8½″	2	4	8								
13A04	STR	23′-11½″	2	5	10								
13A05	F	6′-11″	1	4	4		5′-2″	1′-9″	5′-2″				
16A01	C	7′-5″	1	48	48	E	3′-2″	1′-1″	3′-2″				
16A02	STR	23′-8½″	1	2	2	E							
16A03	STR	23′-11½″	1	2	2	E							
16A04	STR	6′-7½″	1	4	4								
16A05	bar216	7′-5½″	1	3	3		6′-3½″	1′-2″					
16A06	C	4′-2″	6	4	24	E	10″	2′-6″	10″	GRILLAGE			
16A07	C	3′-3½″	6	4	24	E	10″	1′-7½″	10″	GRILLAGE			
BACKWALL													
13B01	STR	23′-8½″	4	3	12	E							
13B02	STR	2′-10″	1	6	6	E							
13B03	F	4′-7½″	1	6	6	E	2′-10½″	1′-9″	2′-10½″				
13B04	STR	23′-11″	2	3	6	E							
16B01	U	4′-9″	1	42	42	E	1′-8″	11″	1′-0″	10½″	10″		
16B02	C	6′-8″	1	48	48	E	2′-10″	1′-0″	2′-10″				
19B01	C	10′-3½″	1	4	4	E	4′-10″	7½″	4′-10″				
HEADER													
13H01	STR	16′-9″	2	1	2	E							
13H02	STR	23′-11″		8	8	E							
13H03	U	5′-9½″	1	5	5	E	1′-0″	9″	1′-3″	1′-0″	2′-3½″		
PARAPET													
13P01	STR	2′-11″	2	4	8	E							
13P02	Q	5′-4″	1	5	5	E	4″	2′-6″	2′-6″	3″	2′-6″		2′-6″
13P03	STR	1′-8″	1	5	5	E							
EAST ABUTMENT													
FOOTING													
13F30	F	3′-6″	1	12	12		2′-0″	1′-6″	2′-0″				
16F30	STR	6′-6″	2	49	98								
16F31	STR	24′-11″	1	18	18								
16F32	STR	25′-5″	2	7	14								
16F33	A	6′-9″	1	25	25		6′-2″	7″	5″				
16F34	A	7′-8″	1	50	50		7′-1″	7″	5″				
16F35	A	6′-0″	1	23	23		5′-5″	7″	5″				
16F36	A	6′-11″	1	23	23		6′-4″	7″	5″				
16F37	F	7′-2″	1	3	3		6′-2″	1′-0″	6′-2″				
16F38	A	5′-6½″	1	12	12		4′-11½″	7″	5″				
STEM													
13A30	F	4′-11″	1	32	32		2′-7½″	2′-3½″	2′-7½″				
13A31	STR	24′-0½″	2	5	10								
13A32	STR	23′-7″	2	4	8								
13A33	STR	3′-0″	1	4	4								
13A34	F	6′-11″	1	7	7		5′-2″	1′-9″	5′-2″				
16A30	C	7′-5″	1	48	48	E	3′-2″	1′-1″	3′-2″				
16A31	STR	24′-0½″	1	2	2	E							
16A32	STR	23′-7″	1	2	2	E							
16A33	F	7′-6½″	1	3	3		6′-4½″	1′-2″	6′-4½″				
16A34	STR	6′-8½″	1	4	4								
16A35	C	4′-2″	6	3	18	E	10″	2′-6″	10″	GRILLAGE			
16A36	C	3′-3½″	6	4	24	E	10″	1′-7½″	10″	GRILLAGE			
BACKWALL													
13B30	STR	24′-0½″	2	3	6	E							
13B31	STR	23′-7″	2	6	12	E							
13B32	F	4′-7½″	1	12	12	E	2′-10½″	1′-9″	2′-10½″				
13B33	STR	2′-10″	1	6	6	E							
16B30	U	4′-9″	1	42	42	E	1′-8″	11″	1′-0″	10½″	10″		
16B31	C	6′-8″	1	48	48	E	2′-10″	1′-0″	2′-10″				
19B30	C	10′-3½″	1	4	4	E	4′-10″	7½″	4′-10″				
HEADER													
13H30	STR	24′-0½″	2	3	6	E							
13H31	STR	24′-1″	2	1	2	E							
13H32	STR	16′-3″	2	1	2	E							
13H33	U	5′-9½″	1	5	5	E	1′-0″	9″	1′-3″	1′-0″	2′-3½″		

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO. 2004-163

ROUTE 22 OVER ACCESS ROAD
(FORMERLY STR. NO. 2004-153)



BAR TYPES

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BAR SCHEDULE – 1

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B99 of B128

206

REVISION	BY	CKD.	DATE

NOTES:

1. ALL REINFORCEMENT BENDS SHALL CONFORM TO THE LATEST ACI REQUIREMENTS.
2. ANY DAMAGE TO CORROSION PROTECTION OF REINFORCEMENT BARS SHALL BE REPAIRED AS PER SPECIFICATIONS.
3. BAR LOCATIONS MAY BE SHIFTED SLIGHTLY TO AVOID WEEP HOLES, BACKWALL PLATE, ANCHOR BOLTS, AND OTHER BARS. FIELD BENDS ARE NOT PERMITTED, UNLESS NOTED OTHERWISE.

STRUCTURE UNIT:

A – ABUTMENT STEM
B – BACKWALL
C – PIER COLUMN, PIER CAP, CULVERT, HAMMERHEAD PIER, CRASH WALL, PIER WALL, CLOSURE POUR
D – DECK SLAB, DIAPHRAGMS
F – FOOTING
H – HEADER, HEADWALL
M – MEDIAN SLAB
P – PARAPET, BARRIER CURB, PYLON
R – APPROACH SLAB
S – SIDEWALK, CURB
T – TOE WALL
W – WINGWALL, RETAINING WALL

BAR SIZE
STRUCTURE UNIT
BAR NUMBER
16 B 22

EXAMPLE: 16B22 = A SIZE 16 BAR, NUMBER 22, PLACED IN THE BACKWALL OF THE ABUTMENT.

CORROSION PROTECTION:

E – EPOXY COATED
G – GALVANIZED
S – SOLID STAINLESS STEEL

CONTROL SECTION		JOB NO.	
DES. BY	J. BOGNAR	CHK. BY	M. CHEN
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	M. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

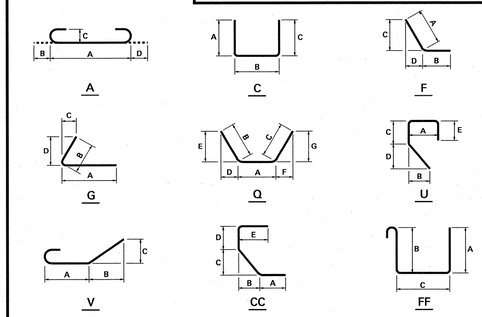
PARSONS BRINCKERHOFF CADD DATA
OPERATOR marvema
PLOT DATE 01-DEC-2009 14:59
PENTABLE str-full.tbl
DESIGN FILE T:\00404\struc\Bridge_2\bs02_a.dgn

MARK	TYPE	LENGTH FT. IN.	NO. OF UNITS	NO. OF BARS/ UNIT	TOTAL NO. OF BARS	CORR. PROT.	A FT. IN.	B FT. IN.	C FT. IN.	REMARKS D FT. IN.	E FT. IN.	F FT. IN.	G FT. IN.
					PARAPET								
13P30	STR	2′-11″	2	4	8	E							
13P31	Q	5′-4″	1	5	5	E	4″	2′-6″	2′-6″	3″	2′-6″		2′-6″
13P32	STR	1′-8″	1	5	5	E							
					DECK								
					SLAB								
13D50	U	5′-6″	4	17	68	E	11″	9″	1′-2½″	1′-0″	2′-1½″		
16D50	STR	20′-10″	1	97	97	E							
16D51	STR	29′-4″	1	97	97	E							
16D52	A	17′-4″	1	49	49	E	16′-9″	7″	5″				
16D53	A	34′-0″	1	49	49	E	33′-5″	7″	5″				
16D54	A	25′-10″	1	48	48	E	25′-3″	7″	5″				
16D55	A	25′-6″	1	48	48	E	24′-11″	7″	5″				
16D56	STR	32′-6″	1	190	190	E							
16D57	CC	5′-8½″	10	8	80	E	7″	2″	1′-5″	1′-1″	2′-7½″		
16D58	F	2′-1½″	10	8	80	E	1′-4″	9½″	11½″	11½″			
16D59	STR	8′-2″	10	4	40	E							
16D60	STR	25′-1″	8	2	16	E							
16D61	C	6′-6″	2	6	12	E	2′-10½″	9″	2′-10½″				
16D62	STR	4′-0″		30	76	E							
16D63	C	7′-5″	3	6	18	E	3′-3½″	10″	3′-3½″				
19D50	FF	9′-4″	6	11	66	E	4′-0″	4′-0″	8″				
19D51	A	5′-2″	2	96	192	E	4′-6″	8″	6″				
					PARAPET								
13P50	STR	10′-2″	12	5	60	E							
13P51	G	4′-11½″	4	17	68	E	2′-6″	2′-5½″	2′-5″	6″			
13P52	STR	15′-3½″	4	4	16	E							
					CONSTRUCTION STAGE 2B – WEST ABUTMENT								
					FOOTING								
13F10	F	3′-6″	1	7	7		2′-0″	1′-6″	2′-0″				
16F10	STR	6′-6″	2	49	98								
16F11	STR	24′-7″	1	18	18								
16F12	STR	25′-1″	2	7	14								
16F13	A	7′-3″	1	50	50		6′-8″	7″	5″				
16F14	A	8′-2″	1	50	50		7′-7″	7″	5″				
16F15	A	7′-5½″	1	46	46		6′-10½″	7″	5″				
16F16	A	8′-4½″	1	46	46		7′-9½″	7″	5″				
16F17	F	7′-2″	1	5	5		6′-2″	1′-0″	6′-2″				
16F18	A	5′-6½″	1	12	12		4′-11½″	7″	5″				
					STEM								
13A10	F	6′-4½″	1	32	32		3′-9″	2′-7½″	3′-9″				
13A11	STR	24′-1½″	2	6	12								
13A12	STR	23′-4″	2	6	12								
13A13	STR	3′-0″	1	5	5								
13A14	G	6′-11″	1	6	6		5′-2″	1′-9″		1′-9″			
16A10	C	7′-5″	1	48	48	E	3′-2″	1′-1″	3′-2″				
16A11	STR	24′-1″	1	2	2	E							
16A12	STR	23′-4″	1	2	2	E							
16A13	F	9′-0″	1	3	3		7′-10″	1′-2″	7′-10″				
16A14	STR	8′-2½″	1	4	4								
16A15	C	4′-2″	6	4	24	E	10″	2′-6″	10″	GRILLAGE			
16A16	C	3′-3½″	6	4	24	E	10″	1′-7½″	10″	GRILLAGE			
					BACKWALL								
13B10	STR	24′-1½″	2	3	6	E							
13B11	STR	23′-4″	1	12	12	E							
13B12	G	4′-7½″	1	6	6	E	2′-10½″	1′-9″		1′-9″			
13B13	STR	2′-10″	1	6	6	E							
13B14	F	8′-8½″	2	1	2	E	6′-9″	1′-11½″	6′-9″	1½″			
16B10	U	4′-9″	1	42	42	E	1′-8″	11″	1′-0″	10½″	10″		
16B11	C	6′-8″	1	48	48	E	2′-10″	1′-0″	2′-10″				
19B10	C	10′-3½″	1	4	4	E	4′-10″	7½″	4′-10″				
					HEADER								
13H10	STR	24′-1½″	2	3	6	E							
13H11	STR	24′-1″	2	1	2	E							
13H12	STR	16′-3″	2	1	2	E							
13H13	U	5′-9½″	1	5	5	E	1′-0″	9″	1′-3″	1′-0″	2′-3½″		
					PARAPET								
13P10	STR	2′-11″	2	4	8	E							
13P11	Q	5′-4″	1	5	5	E	4″	2′-6″	2′-6″	3″	2′-6″		2′-6″
13P12	STR	1′-8″	1	5	5	E							
					EAST ABUTMENT								
					FOOTING								
13F40	F	2′-6″	1	7	7		1′-6″	1′-0″	1′-6″				
16F40	STR	6′-6″	2	49	98								
16F41	STR	24′-8″	1	18	18								
16F42	STR	25′-2″	2	7	14								
16F43	A	7′-6½″	1	23	23		6′-11½″	7″	5″				
16F44	A	8′-5½″	1	46	46		7′-10½″	7″	5″				
16F45	A	7′-4″	1	25	25		6′-9″	7″	5″				
16F46	A	8′-3″	1	25	25		7′-8″	7″	5″				
16F47	A	5′-7½″	1	6	6		5′-0½″	7″	5″				
16F48	F	7′-3″	1	3	3		6′-3″	1′-0″	6′-3″				

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO. 2004-163

ROUTE 22 OVER ACCESS ROAD
(FORMERLY STR. NO. 2004-153)



BAR TYPES

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BAR SCHEDULE – 2

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B100 of B128

207

REVISION	BY	CKD.	DATE

NOTES:

1. ALL REINFORCEMENT BENDS SHALL CONFORM TO THE LATEST ACI REQUIREMENTS.
2. ANY DAMAGE TO CORROSION PROTECTION OF REINFORCEMENT BARS SHALL BE REPAIRED AS PER SPECIFICATIONS.
3. BAR LOCATIONS MAY BE SHIFTED SLIGHTLY TO AVOID WEEP HOLES, BACKWALL PLATE, ANCHOR BOLTS, AND OTHER BARS. FIELD BENDS ARE NOT PERMITTED, UNLESS NOTED OTHERWISE.

STRUCTURE UNIT:

A – ABUTMENT STEM
B – BACKWALL
C – PIER COLUMN, PIER CAP, CULVERT, HAMMERHEAD PIER, CRASH WALL, PIER WALL, CLOSURE POUR
D – DECK SLAB, DIAPHRAGMS
F – FOOTING
H – HEADER, HEADWALL
M – MEDIAN SLAB
P – PARAPET, BARRIER CURB, PYLON
R – APPROACH SLAB
S – SIDEWALK, CURB
T – TOE WALL
W – WINGWALL, RETAINING WALL

BAR SIZE
STRUCTURE UNIT
BAR NUMBER
16 B 22

EXAMPLE: 16B22 = A SIZE 16 BAR, NUMBER 22, PLACED IN THE BACKWALL OF THE ABUTMENT.

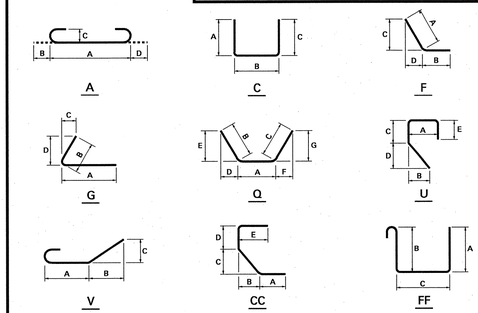
CORROSION PROTECTION:

E – EPOXY COATED
G – GALVANIZED
S – SOLID STAINLESS STEEL

CONTROL SECTION		JOB NO.	
DES. BY	J. BOGNAR	CHK. BY	M. CHEN
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	M. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marquema
PLOT DATE 01-DEC-2009 14:59
PENTABLE str-full.tbl
DESIGN FILE T:\00404\struc\Bridge_2\bs02_b.dgn

MARK	TYPE	LENGTH FT. IN.	NO. OF UNITS	NO. OF BARS/ UNIT	TOTAL NO. OF BARS	CORR. PROT.	A FT. IN.	B FT. IN.	C FT. IN.	REMARKS D FT. IN.	E FT. IN.	F FT. IN.	G FT. IN.
STEM													
13A40	F	6′-5½″	1	32	32		3′-10″	2′-7½″	3′-10″				
13A41	STR	3′-0″	1	5	5								
13A42	STR	23′-7″	2	6	12								
13A43	STR	24′-0″	2	5	10								
13A44	F	6′-11″	1	5	5		5′-2″	1′-9″	5′-2″				
16A40	C	7′-5″	1	48	48	E	3′-2″	1′-1″	3′-2″				
16A41	STR	23′-7″	1	2	2	E							
16A42	STR	24′-0½″	1	2	2	E							
16A43	STR	8′-3″	1	4	4								
16A44	F	9′-1″	1	3	3		7′-11″	1′-2″	7′-11″				
16A45	C	4′-2″	6	3	18	E	10″	2′-6″	10″	GRILLAGE			
16A46	C	3′-3½″	6	4	24	E	10″	1′-7½″	10″	GRILLAGE			
BACKWALL													
13B40	STR	23′-7″	2	6	12	E							
13B41	STR	2′-10″	1	6	6	E							
13B42	F	4′-7½″	1	6	6	E	2′-10½″	1′-9″	2′-10½″				
13B43	STR	24′-0½″	2	3	6	E							
13B44	F	8′-10½″	2	1	2	E	6′-7″	2′-3½″	6′-7″	1½″			
16B40	U	4′-9″	1	41	41	E	1′-8″	11″	1′-0″	10½″	10″		
16B41	C	6′-8″	1	47	47	E	2′-10″	1′-0″	2′-10″				
19B40	C	10′-3½″	1	4	4	E	4′-10″	7½″	4′-10″				
HEADER													
13H40	STR	16′-9″	2	1	2	E							
13H41	STR	23′-11″	1	2	2	E							
13H42	U	5′-9½″	1	5	5	E	1′-0″	9″	1′-3″	1′-0″	2′-3½″		
13H43	STR	24′-0½″	1	6	6	E							
PARAPET													
13P40	STR	2′-11″	2	4	8	E							
13P41	Q	5′-4″	1	5	5	E	4″	2′-6″	2′-6″	3″	2′-6″		2′-6″
13P42	STR	1′-8″	1	5	5	E							
DECK SLAB													
13D70	V	2′-9″	3	22	66	E	9″	4½″	1′-5½″				
13D71	G	2′-10½″	3	22	66	E	1′-6″	1′-4½″		1′-4½″			
13D72	U	5′-6″	4	17	68	E	11″	9″	1′-2½″	1′-0″	2′-1½″		
16D70	STR	20′-10″	1	97	97	E							
16D71	STR	29′-4″	1	97	97	E							
16D72	A	25′-10″	1	49	49	E	25′-3″	7″	5″				
16D73	A	25′-6″	1	49	49	E	24′-11″	7″	5″				
16D74	A	34′-4″	1	48	48	E	33′-9″	7″	5″				
16D75	A	17′-0″	1	48	48	E	16′-5″	7″	5″				
16D76	STR	32′-6″	1	190	190	E							
16D77	CC	5′-8″	10	8	80	E	6½″	2½″	1′-5″	1′-1″	2′-7½″		
16D78	F	2′-1½″	10	8	80	E	1′-4″	9½″	11½″	11½″			
16D79	STR	8′-2″	10	4	40	E							
16D80	STR	25′-1″	8	2	16	E							
16D81	C	6′-6″	2	6	12	E	2′-10½″	9″	2′-10½″				
16D82	STR	4′-0″		30	76	E							
19D70	FF	9′-4″	6	11	66	E	4′-0″	4′-0″	8″				
19D71	A	5′-2″	2	96	192	E	4′-6″	8″	6″				
SIDEWALK													
13S70	STR	6′-6½″	3	22	66	E							
13S71	STR	20′-8½″	3	7	21	E							
PARAPET													
13P70	STR	10′-2″	12	4	48	E							
13P71	G	4′-11½″	4	17	68	E	2′-6″	2′-5½″	2′-5″	6″			
13P72	STR	15′-3½″	4	4	16	E							
CONSTRUCTION STAGE 2D													
WEST ABUTMENT – SIDEWALK													
13S20	F	6′-2″	1	2	2	E	5′-6½″	7½″	5′-6½″	1½″			
13S21	STR	1′-0″	1	6	6	E							
13S22	STR	2′-7″	1	2	2	E							
EAST ABUTMENT – SIDEWALK													
13S30	F	6′-2″	1	2	2	E	5′-6½″	7½″	5′-6½″	1½″			
13S31	STR	1′-0″	1	6	6	E							
13S32	STR	2′-7″	1	2	2	E							
DECK – SIDEWALK													
13S25	F	6′-2½″	3	22	66	E	5′-7″	7½″	5′-7″	1½″	DOWEL BAR		
13S26	STR	2′-3″	3	22	66	E				THREAD ONE END			
13S27	STR	20′-8½″	3	6	18	E							



STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO. 2004-163

ROUTE 22 OVER ACCESS ROAD
(FORMERLY STR. NO. 2004-153)

BAR TYPES

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BAR SCHEDULE – 3

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 28369

SCALE: AS SHOWN

BRIDGE SHEET NO. B101 of B128

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REVISION	BY	CKD.	DATE

NOTES:

1. ALL REINFORCEMENT BENDS SHALL CONFORM TO THE LATEST ACI REQUIREMENTS.
2. ANY DAMAGE TO CORROSION PROTECTION OF REINFORCEMENT BARS SHALL BE REPAIRED AS PER SPECIFICATIONS.
3. BAR LOCATIONS MAY BE SHIFTED SLIGHTLY TO AVOID WEEP HOLES, BACKWALL PLATE, ANCHOR BOLTS, AND OTHER BARS. FIELD BENDS ARE NOT PERMITTED, UNLESS NOTED OTHERWISE.

STRUCTURE UNIT:

A – ABUTMENT STEM
B – BACKWALL
C – PIER COLUMN, PIER CAP, CULVERT, HAMMERHEAD PIER, CRASH WALL, PIER WALL, CLOSURE POUR
D – DECK SLAB, DIAPHRAGMS
F – FOOTING
H – HEADER, HEADWALL
M – MEDIAN SLAB
P – PARAPET, BARRIER CURB, PYLON
R – APPROACH SLAB
S – SIDEWALK, CURB
T – TOE WALL
W – WINGWALL, RETAINING WALL

BAR SIZE — STRUCTURE UNIT — BAR NUMBER
16 B 22

EXAMPLE: 16B22 = A SIZE 16 BAR, NUMBER 22, PLACED IN THE BACKWALL OF THE ABUTMENT.

CORROSION PROTECTION:

E – EPOXY COATED
G – GALVANIZED
S – SOLID STAINLESS STEEL

CONTROL SECTION		JOB NO.	
DES. BY	J. BOGNAR	CHK. BY	M. CHEN
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	M. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR mar-uema
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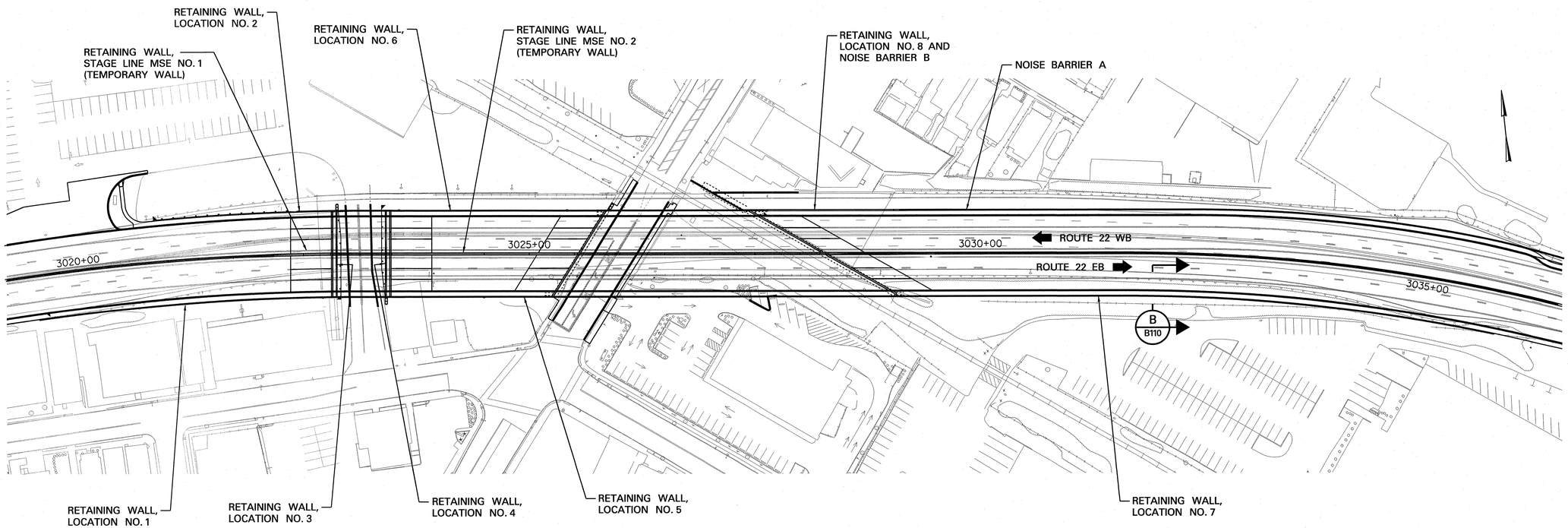
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALLS AND NOISE BARRIERS



KEY PLAN
1" = 60'

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CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

1" = 60'
60' 30' 0 60' 120'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

KEY PLAN TO RETAINING WALLS AND NOISE BARRIERS

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP
MUNICIPALITY

UNION
COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B102 of B128

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STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

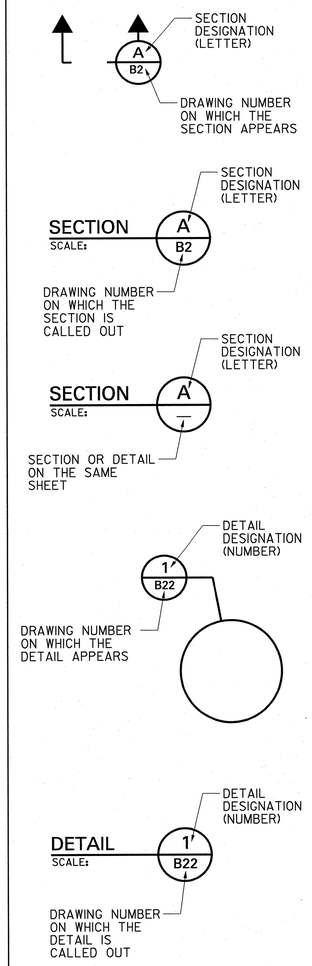
ROUTE 22 RETAINING WALLS AND NOISE BARRIERS

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICALS
ABUT.	ABUTMENT
ALIGN.	ALIGNMENT
ALT. W/	ALTERNATE WITH
APPR.	APPROACH
APPROX.	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
℄ OR B/L	BASE LINE
B/C	BARRIER CURB
BAR.	BARRIER
BETW.	BETWEEN
BIT. CONC.	BITUMINOUS CONCRETE
BOT. OR B	BOTTOM
BRGS.	BEARINGS
℄ OR C/L	CENTER LINE
C.L.F.	CHAIN-LINK FENCE
C.I.P.	CAST-IN-PLACE
C/C OR C. TO C.	CENTER TO CENTER
CLR.	CLEAR, CLEARANCE
COL.	COLUMN
CONC.	CONCRETE
CONN. ⅊ (OR PL)	CONNECTION PLATE
CONSTR.	CONSTRUCTION
CONT.	CONTINUOUS, CONTINUED
CONTR.	CONTRACTION
COV. ⅊ (OR PL)	COVER PLATE
CSP	CORRUGATED STEEL PIPE
CSUP	CORRUGATED STEEL UNDERDRAIN PIPE
CTR	CENTER
CAACP	CORRUGATED ALUMINUM ALLOY CULVERT PIPE
CAAUP	CORRUGATED ALUMINUM ALLOY UNDERDRAIN PIPE
DIA. (OR D)	DIAMETER
DIAPH.	DIAPHRAGM
E	EAST
E.F.	EACH FACE
E.O.P.	EDGE OF PAVEMENT
EA.	EACH
EB	EASTBOUND
EL.	ELEVATION
ELEC.	ELECTRIC, ELECTRICAL
EQ.	EQUALLY
EXIST.	EXISTING
EXP. OR E	EXPANSION
EXT.	EXTERIOR
FASC.	FASCIA
F.F.	FRONT FACE
F.O.C.	FIBER OPTIC CABLE
FDN.	FOUNDATION
FIN.	FINISH, FINISHED
FIX. OR F	FIXED
FT	FOOT
FTG.	FOOTING
G/L	GROUND LINE
G/R	GUIDE RAIL
GA.	GAUGE
GALV.	GALVANIZED
H.P.	HIGH POINT
HPC	HIGH PERFORMANCE CONCRETE
H.S.	HIGH STRENGTH
HORIZ.	HORIZONTAL
I.D.	INSIDE DIAMETER
IN	INCH
INCL.	INCLUDING
INT.	INTERIOR
INTERM.	INTERMEDIATE
INV. EL.	INVERT ELEVATION
JB	JUNCTION BOX
JT.	JOINT
K	KIP, KIPS
LBS.	POUNDS
LMC OVERLAY	LATEX MODIFIED CONCRETE OVERLAY
LONGIT. OR LONG.	LONGITUDINAL
LSB	LIGHTING STANDARD BOSS
LT.	LEFT
M.H.W.	MEAN HIGH WATER
MAX.	MAXIMUM
MED.	MEDIAN, MEDIUM
MIN.	MINIMUM
MISC.	MISCELLANEOUS
M.b.m.	1000 BOARD MEASURE
MSE	MECHANICALLY STABILIZED EARTH
N	NORTH
N.F.	NEAR FACE
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NB	NORTHBOUND
NE	NORTHEAST
NW	NORTHWEST
O.D.	OUTSIDE DIAMETER
OPP.	OPPOSITE
O. TO O.	OUT TO OUT
PVMT.	PAVEMENT
⅊ OR PL	PLATE
P.C.	POINT OF CURVATURE, PRESTRESSED CONCRETE
P.I.	POINT OF INTERSECTION
P.T.	POINT OF TANGENCY
P.V.C.	POINT OF VERTICAL CURVATURE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY
PGL	PROFILE GRADE LINE
PROP.	PROPOSED
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
R	RADIUS
R.F.	REAR FACE
R.M.C.	RIGID METALLIC CONDUIT
R.N.M.C.	RIGID NON-METALLIC CONDUIT
RR	RAILROAD
R/C	REINFORCED CONCRETE
RDWY.	ROADWAY
REINF.	REINFORCED, REINFORCEMENT
REL.	RELOCATED
REQ'D	REQUIRED
RET. WALL	RETAINING WALL
REV.	REVISION
ROW	RIGHT OF WAY
RT.	RIGHT, ROUTE
S	SOUTH
S.I.P.	STAY-IN-PLACE
S.S.	STAINLESS STEEL
S/W OR SDWK.	SIDEWALK
SB	SOUTHBOUND
SE	SOUTHEAST
SH. B	SHEET BRIDGE
SHLDR.	SHOULDER
SIM.	SIMILAR
SPA. @	SPACING CENTER TO CENTER
SPC	SEISMIC PERFORMANCE CATEGORY
SPEC.	SPECIFICATION
SQ.	SQUARE
STA.	STATION
STD.	STANDARD
STD. HEX.	STANDARD HEXAGONAL
STIFF. ⅊ (OR PL)	STIFFENER PLATE
STL	STEEL
STRUCT. OR STR.	STRUCTURE
SUBSTR.	SUBSTRUCTURE
SUPERSTR.	SUPERSTRUCTURE
SW	SOUTHWEST
SYM.	SYMMETRY, SYMMETRICAL
T	TOP
T&B	TOP AND BOTTOM
TEMP.	TEMPORARY, TEMPERATURE
THK.	THICK, THICKNESS
TRANSV.	TRANSVERSE
TRK.	TRACK
TYP.	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V.C.	VERTICAL CURVE
VAR.	VARIES
VAR. SPA.	VARIABLE SPACING
VERT.	VERTICAL
W	WEST
W/	WITH
WB	WESTBOUND
WP	WORKING POINT NUMBER
WW	WINGWALL
WWF	WELDED WIRE FABRIC
YR.	YEAR

LEGEND

— CTV —	Cable TV (Exist.)
— CTV —	CABLE TV (PROP.)
— DOT —	DOT Electric Line (Exist.)
— E —	Electric Line (Exist.)
— E —	ELECTRIC LINE (PROP.)
— E (OH) —	ELECTRIC LINE - OVERHEAD (PROP.)
ELEC MH	Electric Manhole (Exist.)
ELEC MH	ELECTRIC MANHOLE (PROP.)
E	EXPANSION BEARING
—x——x—	Fence (Exist.)
—x——x—	FENCE (PROP.)
F	FIXED BEARING
— F —	Fiber Optic Cable (Exist.)
— F —	FIBER OPTIC CABLE (PROP.)
— G —	Gas Line (Exist.)
— G —	GAS LINE (PROP.)
Guy	Guy Wire (Exist.)
	Inlet (Exist.)
	INLET (PROP.)
	Junction Box (Exist.)
	JUNCTION BOX (PROP.)
	Sanitary Sewer Line (Exist.)
	SANITARY SEWER LINE (PROP.)
	Scupper (Exist.)
	SCUPPER (PROP.)
	Street Light (Exist.)
	STREET LIGHT (PROP.)
— T —	Telephone Line (Exist.)
— T —	TELEPHONE LINE (PROP.)
— T (OH) —	TELEPHONE LINE - OVERHEAD (PROP.)
	Manhole (Exist.)
	MANHOLE (PROP.)
	Utility Pole (Exist.)
	UTILITY POLE (PROP.)
— W —	Water Line (Exist.)
— W —	WATER LINE (PROP.)
W	Water Valve (Exist.)



INDEX OF DRAWINGS

SHEET NUMBER	DRAWING TITLE
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BI03	INDEX OF DRAWINGS, ABBREVIATIONS AND LEGEND
BI04	RETAINING WALLS - SUMMARY OF QUANTITIES, WORK ITEMS AND SOIL PARAMETERS
BI05	RETAINING WALLS - GENERAL NOTES
BI06	ARCHITECTURAL RENDERING
BI07	RETAINING WALLS GEOMETRY, PLAN AND WORKING POINTS
BI08	TYPICAL CONSTRUCTION STAGING FOR RETAINING WALLS
BI09	RETAINING WALL NO. 1 PLAN AND ELEVATION
BI10	RETAINING WALL NO. 2 PLAN AND ELEVATION
BI11	RETAINING WALL NO. 3 PLAN AND ELEVATION
BI12	RETAINING WALL NO. 4 PLAN AND ELEVATION
BI13	RETAINING WALL NO. 5 PLAN AND ELEVATION
BI14	RETAINING WALL NO. 6 PLAN AND ELEVATION
BI15	RETAINING WALL NO. 7 PLAN AND ELEVATION - SH. 1
BI16	RETAINING WALL NO. 7 PLAN AND ELEVATION - SH. 2
BI17	RETAINING WALL NO. 8 AND NOISE BARRIER B, PLAN AND ELEVATION
BI18	RETAINING WALL NO. 8 AND NOISE BARRIER B DETAILS - 1
BI19	RETAINING WALL NO. 8 AND NOISE BARRIER B DETAILS - 2
BI20	STAGE LINE MSE RETAINING WALL NO. 1 PLAN AND ELEVATION
BI21	STAGE LINE MSE RETAINING WALL NO. 2 PLAN AND ELEVATION
BI22	RETAINING WALLS TYPICAL SECTIONS AND DETAILS - 1
BI23	RETAINING WALLS TYPICAL SECTIONS AND DETAILS - 2
BI24	RETAINING WALLS TYPICAL SECTIONS AND DETAILS - 3
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BI27	NOISE BARRIERS PRECAST CONCRETE POST DETAILS
BI28	GROUND MOUNTED NOISE BARRIER FOUNDATION DETAILS

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

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REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

INDEX OF DRAWINGS, ABBREVIATIONS AND LEGEND

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP
MUNICIPALITY

UNION
COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B103 of B128

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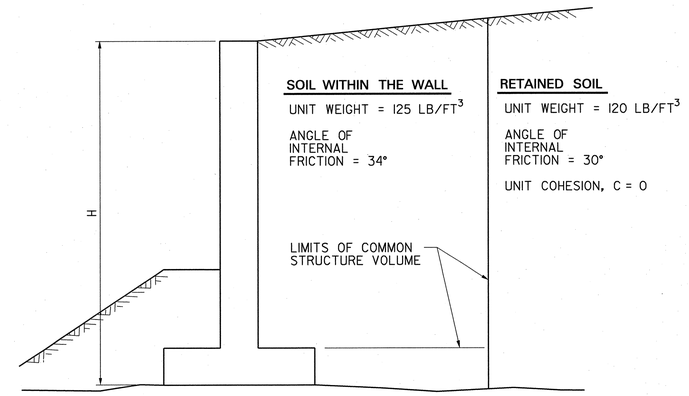
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALLS

SUMMARY OF QUANTITIES

STANDARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITIES
501003P	TEMPORARY SHEETING	SF	19,065
502300P	VIBRATION MONITORING	LS	LUMP SUM
509084P	CHAIN-LINK FENCE, PVC-COATED STEEL, BRIDGE, 6'-3" HIGH CURVED-TOP	LF	1,422
513003P	RETAINING WALL, LOCATION NO. 1	SF	3,315
513003P	RETAINING WALL, LOCATION NO. 2	SF	385
513003P	RETAINING WALL, LOCATION NO. 3	SF	1,500
513003P	RETAINING WALL, LOCATION NO. 4	SF	1,780
513003P	RETAINING WALL, LOCATION NO. 5	SF	5,105
513003P	RETAINING WALL, LOCATION NO. 6	SF	6,045
513003P	RETAINING WALL, LOCATION NO. 7	SF	9,510
513003P	RETAINING WALL, LOCATION NO. 8	SF	1,540
513007P	STAGE LINE MSE RETAINING WALL, NO. 1	SF	1,750
513007P	STAGE LINE MSE RETAINING WALL, NO. 2	SF	6,400



WORK ITEMS

FOR INFORMATION ONLY (PRICE TO BE INCLUDED IN WALL ITEM)

DESCRIPTION	UNIT	WALL NO.1	WALL NO.2	WALL NO.3	WALL NO.4	WALL NO.5	WALL NO.6	WALL NO.7	WALL NO.8	STAGE LINE WALL NO.1	STAGE LINE WALL NO.2
FOUNDATION EXCAVATION	CY	2080	297	1364	376	800	939	5940	880	990	910
CONCRETE LEVELING PAD	LF	337	45	97	97	177	233	657	153	-	-
SPECIFIED BACKFILL	CY	2285	297	2430	2810	5790	6154	9542	1100	990	6198
CONCRETE IN SUPERSTRUCTURE, PARAPET*	LF	330	36	-	-	168	227	657	155	-	-
C.I.P. CONCRETE COPING	LF	-	-	97	97	-	-	-	-	-	-
MEDIAN BARRIER WITH MOMENT SLAB	LF	-	-	-	-	-	-	-	-	63	207
PRECAST WALL ELEMENT	SF	3760	915	1825	1920	5525	6636	11160	1815	-	-
WIRE MESH WALL ELEMENT	SF	-	-	-	-	-	-	-	-	1750	6400
IMPERVIOUS MEMBRANE	SF	3770	350	1860	1860	4090	5040	10450	1660	-	-
TEMPORARY SHEETING	SF	4900	-	30	25	-	-	11930	2180	-	-
JUNCTION BOX FOUNDATION	UNIT	1	-	-	-	1	2	-	-	-	-
1 1/2" RIGID METALLIC CONDUIT	LF	5	-	-	-	5	10	-	-	-	-
2" RIGID METALLIC CONDUIT	LF	-	42	-	-	298	416	-	-	-	-
8" DIA. CAAUP	LF	220	23	56	49	149	198	565	-	-	-
8" DIA. CAAP	LF	-	-	-	-	26	-	-	-	-	-

*INCLUDES REINFORCEMENT AND MOMENT SLAB

FOUNDATION SOIL PARAMETER FOR MSE WALLS

DESCRIPTION	UNIT	WALL NO. 1-2, 5-7	WALL NO. 3-4	WALL NO. 8
UNIT WEIGHT	LB/FT^3	120	120	120
ANGLE OF INTERNAL FRICTION	DEG	32	34	32
UNIT COHESION	PSF	0	0	0
ALLOWABLE BEARING PRESSURE (STATIC)	PSF	160H + 510 (MIN. = 2000 PSF)	8,000	280H + 2010 (MIN. = 2500 PSF)
ALLOWABLE BEARING PRESSURE (SEISMIC)	PSF	280H (MIN. = 3000 PSF)	14,000	575H + 645 (MIN. = 3000 PSF)

SOIL PARAMETERS
N.T.S.

PARSONS BRINCKERHOFF CADD DATA
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CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
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SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALLS – SUMMARY OF QUANTITIES, WORK ITEMS AND SOIL PARAMETERS
ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B104 of B128

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STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALLS

GENERAL NOTES:

1. **DESIGN SPECIFICATIONS:**

   (A) 2002 (17TH EDITION) AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (WITH CURRENT INTERIMS) AS MODIFIED BY SECTION 3A OF NJDOT DESIGN MANUAL FOR BRIDGES AND STRUCTURES.

   (B) SEISMIC DESIGN:
   SEISMIC PERFORMANCE CATEGORY (SPC) = B
   ACCELERATION COEFFICIENT (A) = 0.18
   SITE COEFFICIENT (S) = 1.0
   SOIL PROFILE TYPE I

2. **CONSTRUCTION SPECIFICATIONS:**

   2007 NJDOT STANDARD SPECIFICATIONS (ENGLISH UNITS) FOR ROAD AND BRIDGE CONSTRUCTION AS MODIFIED BY THE SPECIAL PROVISIONS.

3. **LIVE LOAD:**

   LIVE LOAD SURCHARGE EQUAL TO 2 FEET OF EARTH PRESSURE.

4. **CONCRETE COMPRESSIVE STRESSES:**

   (A) DESIGN COMPRESSIVE STRENGTHS, (f'c):
   CLASS A = 4,000 psi
   CLASS B = 3,000 psi
   CLASS P = 5,000 psi

   (B) CLASS MIX DESIGN STRENGTHS:
   CLASS A = 4,600 psi
   CLASS B = 3,700 psi
   CLASS P = 5,500 psi

   (C) ALLOWABLE STRESSES, EXTREME FIBER IN COMPRESSION, (fc):
   CLASS A = 1,600 psi
   CLASS B = 1,200 psi
   CLASS P = 2,000 psi

5. **REINFORCEMENT STEEL:**

   AASHTO M31 (ASTM A615), GRADE 60, (fs) = 24,000 psi.
   REINFORCEMENT IN PARAPETS AND MEDIAN BARRIERS SHALL BE CORROSION PROTECTED

6. **CONCRETE CLASSES:**

   (A) CLASS A CONCRETE:
   C.I.P. BARRIER CURBS, AND C.I.P. PARAPET

   (B) CLASS B CONCRETE:
   C.I.P. MOMENT SLABS, LEVELING PADS, C.I.P. COPING AND LEVEL-UP CONCRETE

   (C) CLASS P CONCRETE:
   PRECAST CONCRETE WALL UNITS.
   PRECAST CONCRETE BARRIER UNITS.
   PRECAST CONCRETE COPING UNITS.

7. **BORINGS:**

   INDICATES LOCATION OF 2005 BORINGS.

   LOG. NO.

8. **FOUNDATION DESIGN CRITERIA:**

   ANGLE OF INTERNAL FRICTION FOR RETAINED BACKFILL = 30
   ANGLE OF INTERNAL FRICTION FOR SPECIFIED BACKFILL = 34
   FOR SOIL PROPERTIES, SEE SOIL PARAMETERS TABLE 1, SH. B104.

9. WALLS SHALL BE DESIGNED USING THE FOLLOWING PARAMETERS:
   SLIDING FACTOR OF SAFETY = 1.5 (STATIC), 1.125 (SEISMIC)
   OVERTURNING FACTOR OF SAFETY = 2.0 (STATIC), 1.5 (SEISMIC)

10. **DIMENSIONS:**

    ALL EXISTING DIMENSIONS SHOWN ON THESE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION OR FABRICATION. NECESSARY ADJUSTMENTS SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE ENGINEER'S APPROVAL.

11. TOP OF LEVELING PAD ELEVATIONS (SHOWN LEVEL) AND LOCATIONS OF CHANGES IN LEVELING PAD ELEVATIONS ARE APPROXIMATE. ACTUAL ELEVATIONS AND LOCATION OF CHANGES IN ELEVATIONS ARE TO BE DETERMINED BY THE PROPRIETARY WALL MANUFACTURER BASED ON HIS SPECIFIC WALL WHILE MAINTAINING THE MINIMUM DIMENSION FROM THE GROUND LINE TO THE BOTTOM OF THE LEVELING PAD SHOWN ON THESE PLANS. IF THE CONTRACTOR USES STEPS GREATER THAN 2.5 FEET IN HEIGHT, HE IS RESPONSIBLE FOR PROVIDING AN ACCEPTABLE METHOD OF RETAINING THE SOIL.

12. **DATUM:**

    ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD)-1988. WORKING POINT COORDINATES ARE BASED ON NORTH AMERICAN DATUM (NAD)-1983.

13. **CONSTRUCTION STAGE(S):**

    CONSTRUCTION OF WALLS SHALL BE PERFORMED UNDER THE CONSTRUCTION STAGES SHOWN IN THE TRAFFIC CONTROL AND STAGING PLANS.

14. EXCEPT FOR THE STAGE LINE MSE RETAINING WALL, WALL TYPE IS TO BE MECHANICALLY STABILIZED EARTH (MSE) WALL. NO OTHER WALL TYPE MAY BE SUBSTITUTED AT THIS PROJECT SITE.

15. **ARCHITECTURAL TREATMENT:**

    PANELS SHALL BE 5' SQUARE OR CRUCIFORM SHAPE AS PER ARCHITECTURAL RENDERING.

16. OPEN JOINTS BETWEEN PRECAST PARAPET AND MEDIAN BARRIER UNITS SHALL NOT EXCEED 1/2".

17. CONTRACTOR SHALL SUBMIT DETAILS FOR TREATMENT OF DRAINAGE STRUCTURES BEHIND MSE WALLS LOCATION NO. 1 AND NO. 7. IF PANELS LARGER THAN 5 FOOT SQUARE ARE REQUIRED A NOTCH SHALL BE USED TO EMULATE JOINTS BETWEEN PANELS.

    THE CONTRACTOR MAY SUBSTITUTE A CAST-IN-PLACE BARRIER USING CLASS A CONCRETE IN PLACE OF A PRECAST BARRIER. THE LENGTH OF THE PARAPET SHALL NOT EXCEED 10 FEET OR 20 FEET WITH A CONSTRUCTION JOINT LOCATED AT THE CENTER.

18. **CHAIN-LINK FENCE:**

    (A) CHAIN-LINK FENCE SHALL BE STEEL PVC COATED, 6'-3" HIGH CURVED-TOP. FOR FENCE DETAILS, SEE NJDOT STANDARD CONSTRUCTION DETAILS DRAWING BCD-509-1. ALL CHAIN-LINK FENCE, INCLUDING FABRIC, POST, TENSIONERS, FASTENERS, SUPPORTS AND ANY MISCELLANEOUS HARDWARE IS TO BE BROWN VINYL COATED.

    (B) THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING THE POST SPACING FOR THE FENCE IN ACCORDANCE WITH THE DETAILS AND LIMITATIONS SHOWN ON BCD-509-1. THE POST SPACING IS TO BE UNIFORM ALONG THE LENGTH OF EACH WALL SUCH THAT A PLEASING APPEARANCE IS PROVIDED, AND SHALL ACCOUNT FOR JOINTS IN THE PARAPET. THE PROPOSED LAYOUT IS TO BE PROVIDED TO THE ENGINEER, FOR APPROVAL

19. **LARGE DRAINAGE INLETS:**

    (A) THE INSTALLATION OF THE LARGE DRAINAGE INLETS NEEDS TO BE COORDINATED WITH THE INSTALLATION OF THE PREFABRICATED PANELS. WHERE THERE ARE TWO INLETS ADJACENT TO EACH OTHER THE DISTANCE BETWEEN THE INLETS SHALL BE MINIMIZED; IT SHALL BE SUFFICIENT TO ALLOW THE REQUIRED NUMBER OF REINFORCING STRAPS TO BE PLACED BETWEEN THE INLETS TO PROPERLY ANCHOR THE PANELS.

    (B) PANELS LARGER THAN 5-FOOT SQUARE (OR CRUCIFORM SHAPED PANELS) MAY BE USED AT THE LOCATIONS OF THE LARGE-SIZE DRAINAGE INLETS IN ORDER TO PROVIDE A SHAPE THAT HAS A SUFFICIENT NUMBER OF REINFORING STRAPS TO PROPERLY ANCHOR THE PANELS.

    (C) IF 10-FOOT WIDE PANELS ARE USED AT THE LOCATIONS WHERE THERE ARE TWO INLETS ADJACENT TO EACH OTHER, THE ENDS OF THE PANELS SHOULD BE CENTERED BETWEEN THE TWO INLETS.

    (D) IF PANELS LARGER THAN 5-FOOT SQUARE (OR CRUCIFORM) PANELS ARE USED, DUMMY JOINTS ARE TO INSTALLED SO THAT WALL PROVIDES THE APPEARANCE THAT PANELS ARE 5-FOOT SQUARE (OR CRUCIFORM-SHAPED). DETAILS OF THE DUMMY JOINTS ARE TO BE SUBMITTED FOR APPROVAL.

20. **MOMENT SLAB:**

    AT LOCATIONS WHERE THERE ARE GUIDE RAIL POSTS, ACCOMMODATIONS (I.E., NOTCHES OR BLOCKOUTS) NEED TO BE PROVIDED IN THE MOMENT SLAB TO ALLOW FOR THE INSTALLATION OF THE POSTS. THE NOTCHES/BLOCKOUTS NEED TO BE ACCOUNTED FOR IN THE DESIGN OF THE MOMENT SLAB.

21. **STAGE LINE MSE RETAINING WALLS:**

    STAGE LINE MSE RETAINING WALLS NOS. 1 AND 2 ARE TEMPORARY WALLS. THEIR FUNCTION IS TO RETAIN ROADWAY EMBANKMENT FOR THE ROADWAY CONSTRUCTED IN STAGE 1B UNTIL SUCH TIME THAT ROADWAY EMBANKMENT CAN BE PLACED IN THOSE AREAS DURING CONSTRUCTION STAGE 2B. THESE WALLS ARE TO BE CONSTRUCTED IN CONJUNCTION WITH THE EAST AND WEST ABUTMENTS OF THE ACCESS ROAD BRIDGE.

22. **OVERLAPPING WALLS:**

    RETAINING WALLS USED AS PART OF THE ABUTMENTS FOR THE ACCESS ROAD BRIDGE (WALLS NOS. 3 AND 4) HAVE OVERLAPPING COMMON STRUCTURE VOLUMES WITH ADJACENT WALLS. THE PLANS SHOW COMMON STRUCTURE VOLUME TO BE ASSOCIATED WITH THE ABUTMENT WALLS. HOWEVER, THERE ARE ITEMS WITHIN THOSE COMMON STRUCTURE VOLUMES ASSOCIATED WITH ADJACENT WALLS (E.G., REINFORCING STRAPS, IMPERVIOUS MEMBRANE, LEVELING PAD) THAT ARE TO BE INCLUDED IN THE COST OF THE ADJACENT WALLS. EXCAVATION AND BACKFILL ARE TO BE INCLUDED IN WITH THE ABUTMENT WALLS. AS IS SHOWN GRAPHICALLY ON THE PLANS

23. **RETAINING WALLS 3 AND 4:**

    RETAINING WALLS 3 AND 4 ARE TO BE DESIGNED FOR A 100 YEAR LIFE.

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALLS – GENERAL NOTES

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B105 of B128

212

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marruema
PLOT DATE 01-DEC-2009 15:58
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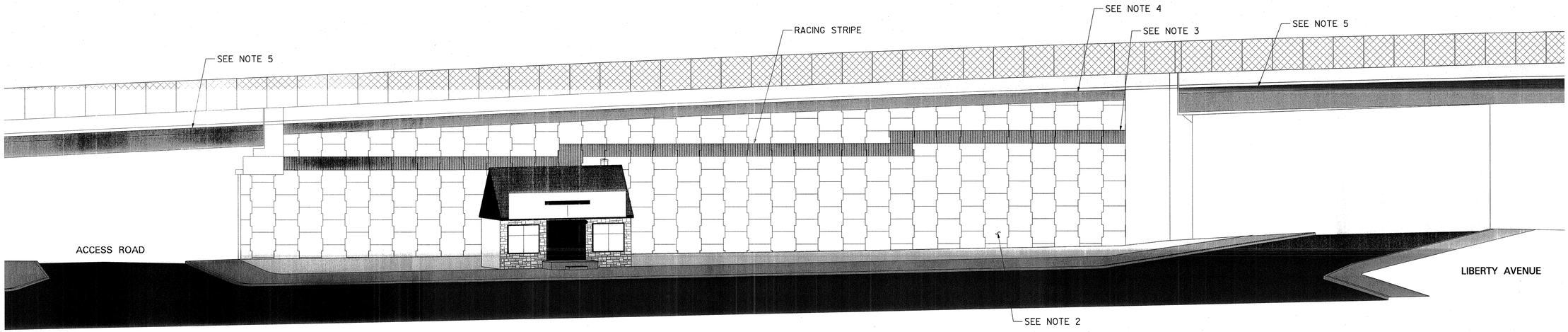
DESIGN FILE T:\00404\struct\rwgn.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

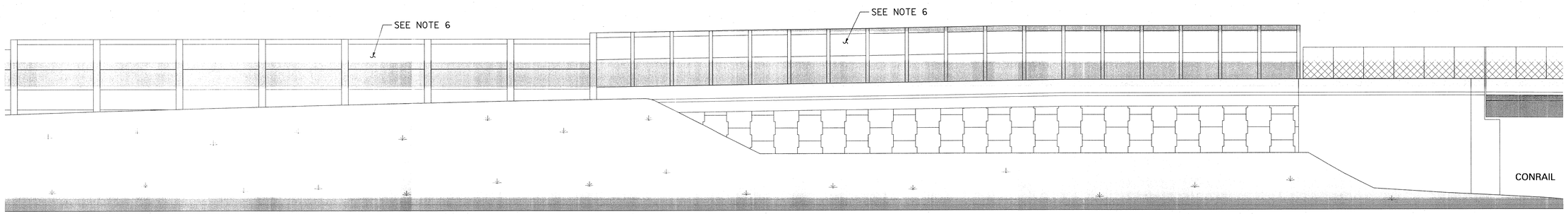
STRUCTURE NO.

ROUTE 22 RETAINING WALLS AND NOISE BARRIERS



SOUTH ELEVATION

(RETAINING WALL NO. 5 SHOWN)
N.T.S.



NORTH ELEVATION

(RETAINING WALL NO. 8 AND NOISE BARRIERS SHOWN)
N.T.S.

NOTES:

1. THE RENDERINGS SHOWN ON THIS DRAWING ARE INTENDED TO CONVEY A REPRESENTATION OF THE ARCHITECTURAL TREATMENTS THE RETAINING WALLS, NOISE BARRIERS AND BRIDGES ARE TO RECEIVE.

   THE CONTRACTOR IS TO SUBMIT A RENDERING, SIMILAR TO THAT SHOWN ON THIS DRAWING, FOR RETAINING WALL NO. 5. THE RENDERING IS TO BE DRAWN TO SCALE AND SHALL SHOW THE INDIVIDUAL PANELS, THE ABUTMENTS, THE PARAPET AND THE RACING STRIPE. THE RENDERING WILL BE REVIEWED FOR THE LAYOUT OF THE RACING STRIPE. THE COST OF THE RENDERING IS TO BE INCLUDED IN THE COST OF WALL NO. 5.

2. PANELS FOR ALL RETAINING WALLS ARE TO BE 5 FOOT SQUARE OR 5 FOOT CRUCIFORM SHAPED AND ARE TO HAVE A STAGGERED PATTERN SHOWN. EXCEPT FOR THE RACING STRIPE THE PANELS ARE TO BE GIVEN A SMOOTH FINISH AND STAINED RANDOM TAN.

3. THE RACING STRIPE IS TO BE FORMED FROM A FRACTURED FIN FINISH APPLIED TO THE TOP OR BOTTOM HALVES OF PANELS. THE RACING STRIPE PORTION OF THE PANEL IS TO BE STAINED BROWN. THE RACING STRIPE WILL ONLY BE APPLIED TO RETAINING WALLS 5 AND 6. THE STRIPE IS TO BEGIN AT THE BOTTOM OF THE EXPOSED PORTION OF THE ACCESS ROAD ABUTMENT FOOTING AND IS TO HAVE TWO STEPS, AS IS SHOWN IN THE RENDERING.

   AN ACTUAL SIZE TEST PANEL THAT IS TO BE USED AS PART OF THE RACING STRIPE SHALL BE FABRICATED AND STAINED WITH THE TWO COLORS STIPULATED. THE ENGINEER IS TO APPROVE THE COLORS PRIOR TO THEIR USE ON THE JOB. THE ENGINEER MAY REQUEST UP TO TWO COLOR CHANGES FOR EACH OF THE COLORS WHEREBY TWO ADDITIONAL TEST PANELS WILL BE REQUIRED. THE COST OF THE TEST PANELS AND STAINS IS TO BE INCLUDED IN THE COST OF WALL NO. 5. SEE NOTE 8 FOR THE ACTUAL SHADES OF THE COLORS TO BE REPLICATED.

4. FOR RETAINING WALLS 5 AND 6, THE BOTTOM PORTION OF THE PARAPETS (THE PROTION BELOW THE COPING) IS TO BE STAINED BROWN.

5. FOR BOTH SIDES OF THE BRIDGE OVER THE ACCESS ROAD AND THE BRIDGE OVER LIBERTY AVENUE AND CONRAIL THE EXPOSED PORTION OF THE DECK SLAB (THE SIDE OF THE DECK SLAB JUST BELOW THE COPING AND THE UNDERSIDE OF THE OVERHANG), ARE TO BE STAINED BROWN.

6. THE RESIDENTIAL SIDE OF NOISE BARRIERS A AND B ARE TO RECEIVE A FRACTURED FIN FINISH ACHIEVED BY USING A FORMLINER. THE HIGHWAY SIDE OF THE BARRIERS ARE TO RECEIVE A STAMPED ASHLAR STONE FINISH. THE CAP ON BOTH SIDES OF BOTH NOISE BARRIERS IS TO RECEIVE A SMOOTH FINISH. BOTH SIDES OF THE PRECAST POSTS ARE TO RECEIVE A SMOOTH FINISH. BOTH SIDES OF BARRIERS AND POSTS ARE TO BE STAINED RANDOM TAN.

7. PAINT COLORS

   FEDERAL PAINT CHIP NUMBERS FOR THE STAINS REQUIRED ARE AS FOLLOWS:

   BROWN: CHIP NO. 30111
   RANDOM TAN: CHIP NO. 33613

   THE ABOVE COLORS WERE SELECTED TO BE SIMILAR TO PARTICULAR RENDERING. THE ENGINEER IS TO OBTAIN THE RENDERING FROM THE DESIGN ENGINEER IN ORDER TO APPROVE THE TEST PANEL.

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

ARCHITECTURAL RENDERING

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 28369

SCALE: AS SHOWN

BRIDGE SHEET NO. B106 of B128

213

CONTROL SECTION		JOB NO.	
DES. BY	L. LAU	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	M. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
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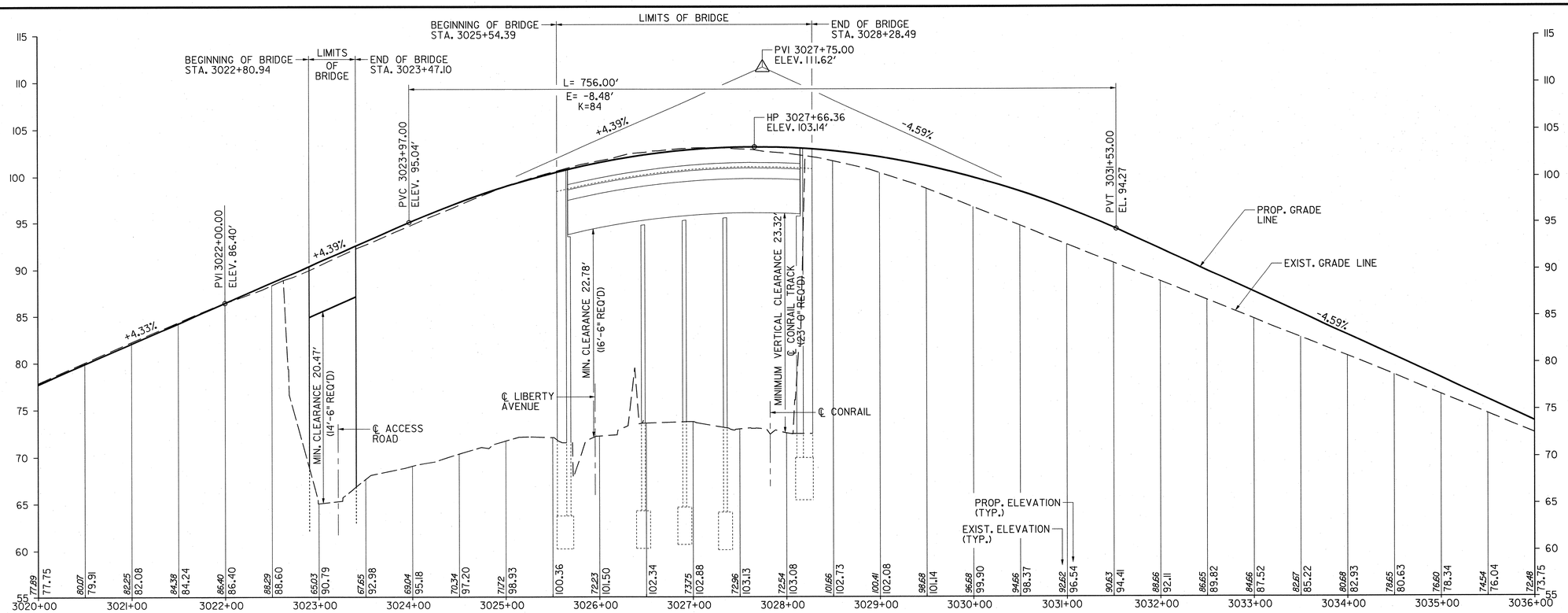
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALLS

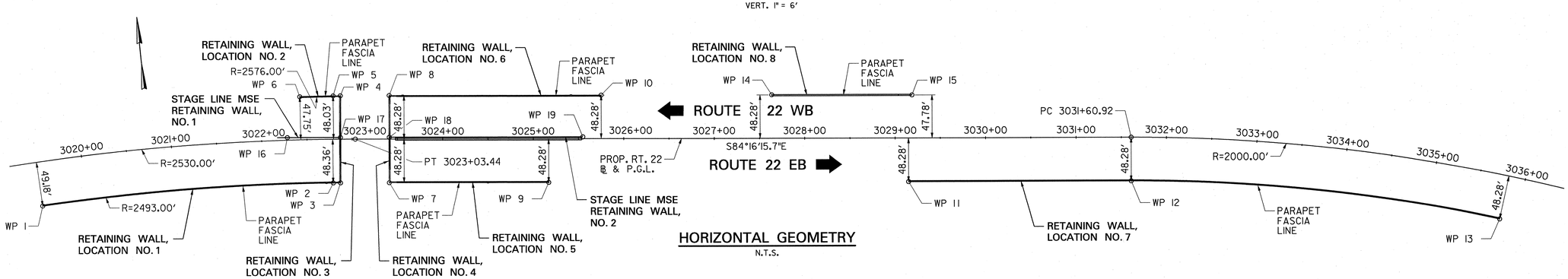
NOTES:

1. FOR GENERAL NOTES, SEE SH. B105.
2. EXISTING GRADE ELEVATIONS SHOWN ARE BASED ON SURVEY. CONTRACTOR SHALL VERIFY THESE ELEVATIONS PRIOR TO CONSTRUCTION AND SUBMIT NECESSARY ADJUSTMENTS TO THE ENGINEER FOR APPROVAL.



PROFILE ROUTE 22

HORZ. 1" = 60'
VERT. 1" = 6'



HORIZONTAL GEOMETRY

N.T.S.

TABLE 1 – WORKING POINT INFORMATION

WORKING POINT	STATION ON RT. 22 ℄	OFFSET FROM RT. 22 ℄	COORDINATES NORTH	COORDINATES EAST	WORKING POINT	STATION ON RT. 22 ℄	OFFSET FROM RT. 22 ℄	COORDINATES NORTH	COORDINATES EAST
WP 1	3019+50.00	49.18'	679724.85	565892.02	WP 11	3029+14.83	48.28'	679654.28	566846.57
WP 2	3022+78.54	48.36'	679717.55	566213.92	WP 12	3031+60.92	48.28'	679629.72	567091.44
WP 3	3022+86.70	48.33'	679716.85	566221.89	WP 13	3035+81.23	48.28'	679546.35	567492.27
WP 4	3022+87.33	48.09'	679812.78	566231.52	WP 14	3027+63.76	48.28'	679765.44	566705.90
WP 5	3022+79.47	48.03'	679813.46	566223.54	WP 15	3029+18.76	47.78'	679749.47	566860.07
WP 6	3022+43.30	47.75'	679816.25	566186.79	WP 16	3022+17.11	3.20'	679772.56	566168.53
WP 7	3023+41.02	48.28'	679711.56	566275.63	WP 17	3022+87.03	1.77'	679766.70	566226.89
WP 8	3023+41.02	48.28'	679807.64	566285.27	WP 18	3023+41.02	2.00'	679761.59	566280.65
WP 9	3025+17.06	48.28'	679693.99	566450.79	WP 19	3025+54.84	2.00'	679740.25	566493.41
WP 10	3025+75.16	48.28'	679784.27	566518.24					

1" = 6' 6' 3' 0 6' 12'

1" = 60' 60' 30' 0 60' 120'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALLS GEOMETRY, PLAN AND WORKING POINTS

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B107 of B128

214

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

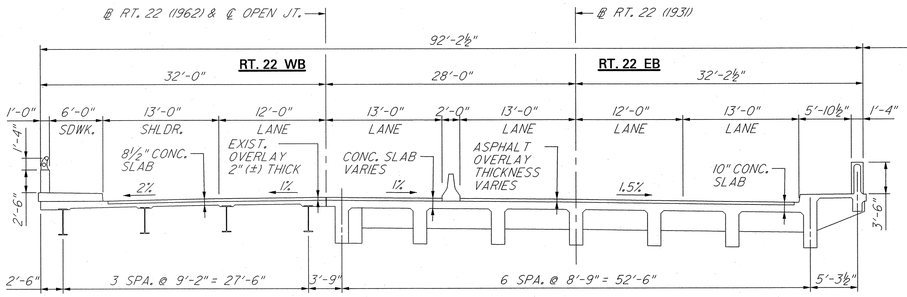
PARSONS BRINCKERHOFF CADD DATA

OPERATOR	maruema
PLOT DATE	01-DEC-2009 15:58
PENTABLE	str-full.tbl
DESIGN FILE	T:\00404\struc\r-wgeo.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

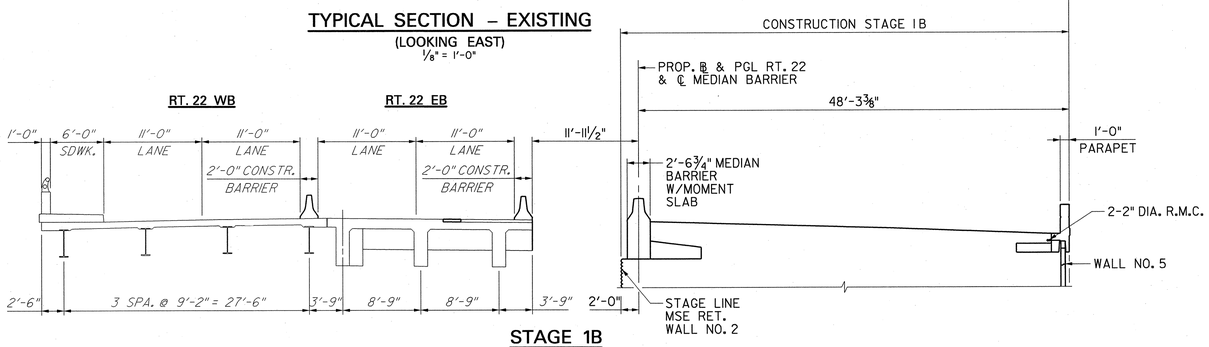
STRUCTURE NO.

ROUTE 22 RETAINING WALLS



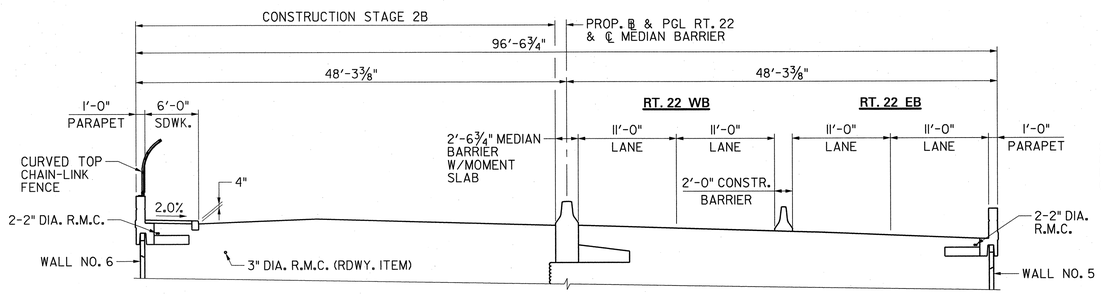
TYPICAL SECTION – EXISTING

(LOOKING EAST)
⅛" = 1'-0"



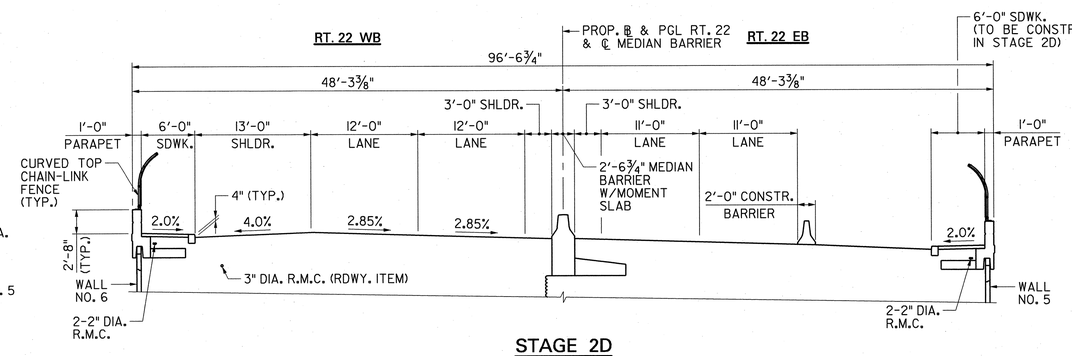
STAGE 1B

(LOOKING EAST)
⅛" = 1'-0"



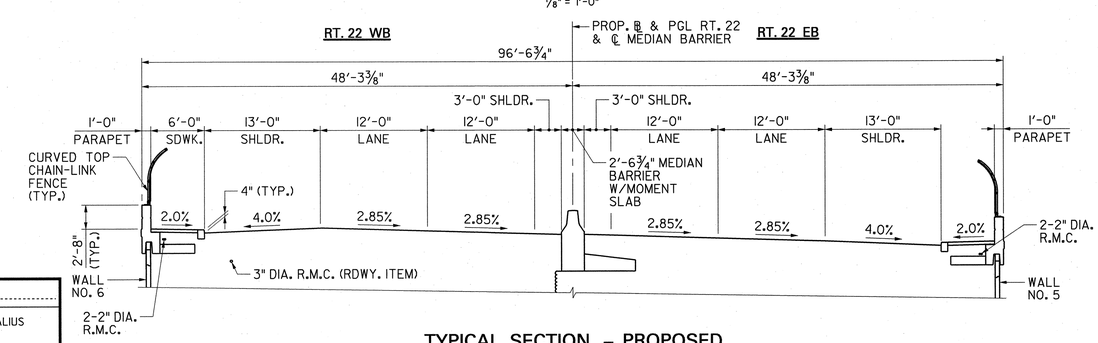
STAGE 2B

(LOOKING EAST)
⅛" = 1'-0"



STAGE 2D

(LOOKING EAST)
⅛" = 1'-0"



TYPICAL SECTION – PROPOSED

(LOOKING EAST)
⅛" = 1'-0"

NOTES:

1. SECTIONS ARE SHOWN AT LOCATION OF EXISTING BRIDGE AND SHOW RETAINING WALLS NOS. 5 AND 6. SECTIONS AT OTHER RETAINING WALLS ARE SIMILAR.

NOTE:

SIDEWALK AND FENCE TO BE CONSTRUCTUED IN STAGE 2D.

⅛" = 1'-0"
1'0 2' 4' 8' 16'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

TYPICAL CONSTRUCTION STAGING FOR RETAINING WALLS

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B108 of B128

215

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		

IN CHARGE OF B. KARALIUS

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marcuema
PLOT DATE 01-DEC-2009 15:58
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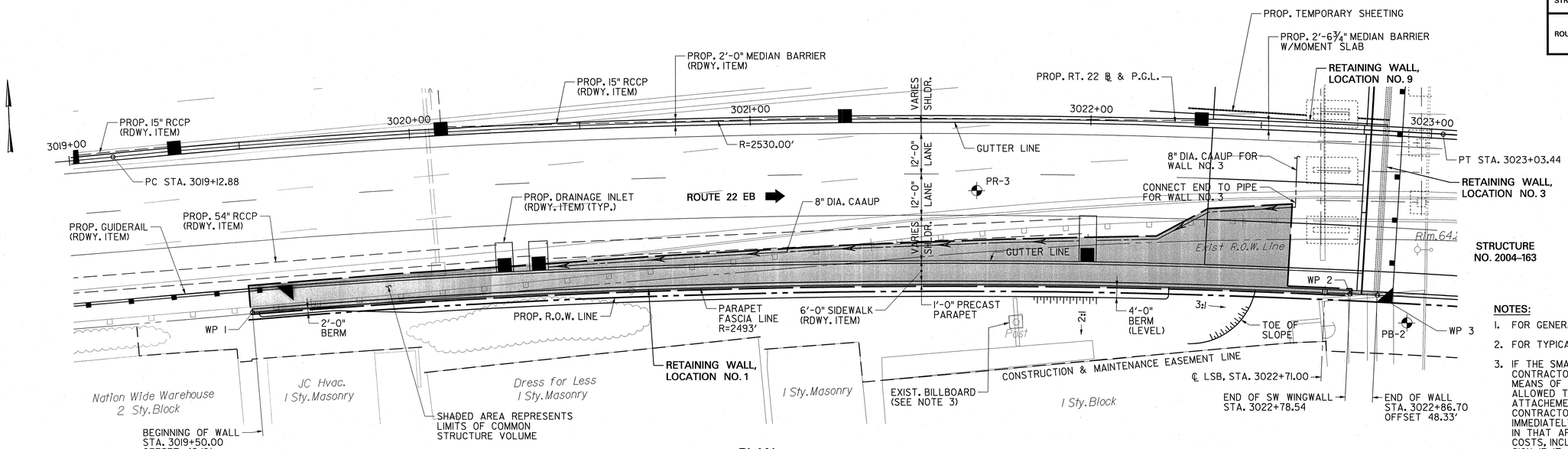
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 1

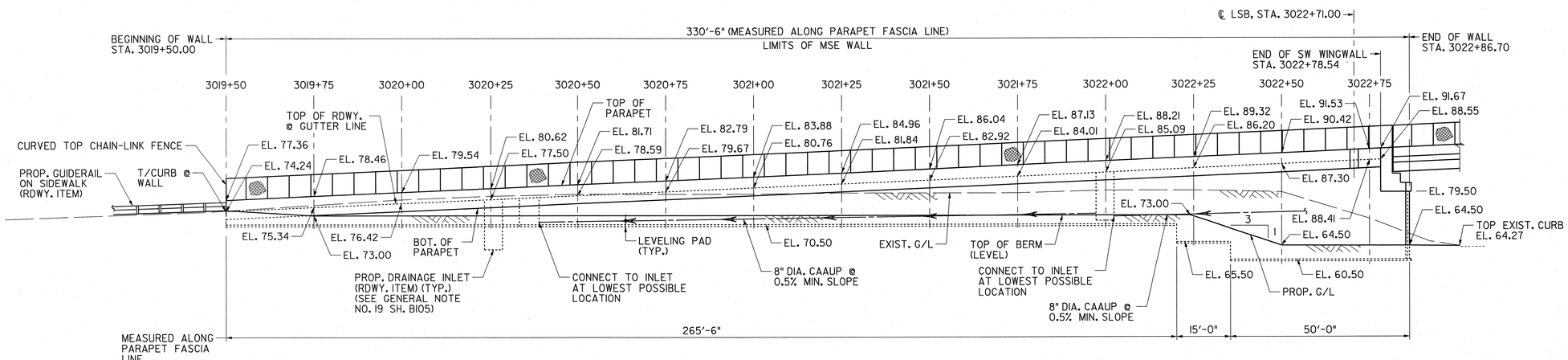


PLAN

1/16" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. B105.
2. FOR TYPICAL SECTIONS AND DETAILS SEE SH. B122.
3. IF THE SMALL BILLBOARD INTERFERES WITH THE CONTRACTOR'S CONSTRUCTION ACTIVITIES, OR MEANS OF ACCESS, THE CONTRACTOR WILL BE ALLOWED TO REMOVE THE BILLBOARD, AT ITS ATTACHEMENT TO THE FOUNDATION. THE CONTRACTOR SHALL REINSTALL THE SIGN IMMEDIATELY AFTER CONSTRUCTION ACTIVITIES IN THAT AREA ARE COMPLETED. ALL ASSOCIATED COSTS, INCLUDING THE COST OF REPAIRING THE SIGN IF IT IS DAMAGED IN THE PROCESS, ARE TO BE INCLUDED IN THE PAY ITEM CLEARING SITE, BRIDGE.



ELEVATION

1/16" = 1'-0"

1/16" = 1'-0"

1'0 2'4' 8' 16' 32'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 1 PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B109 of B128

216

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

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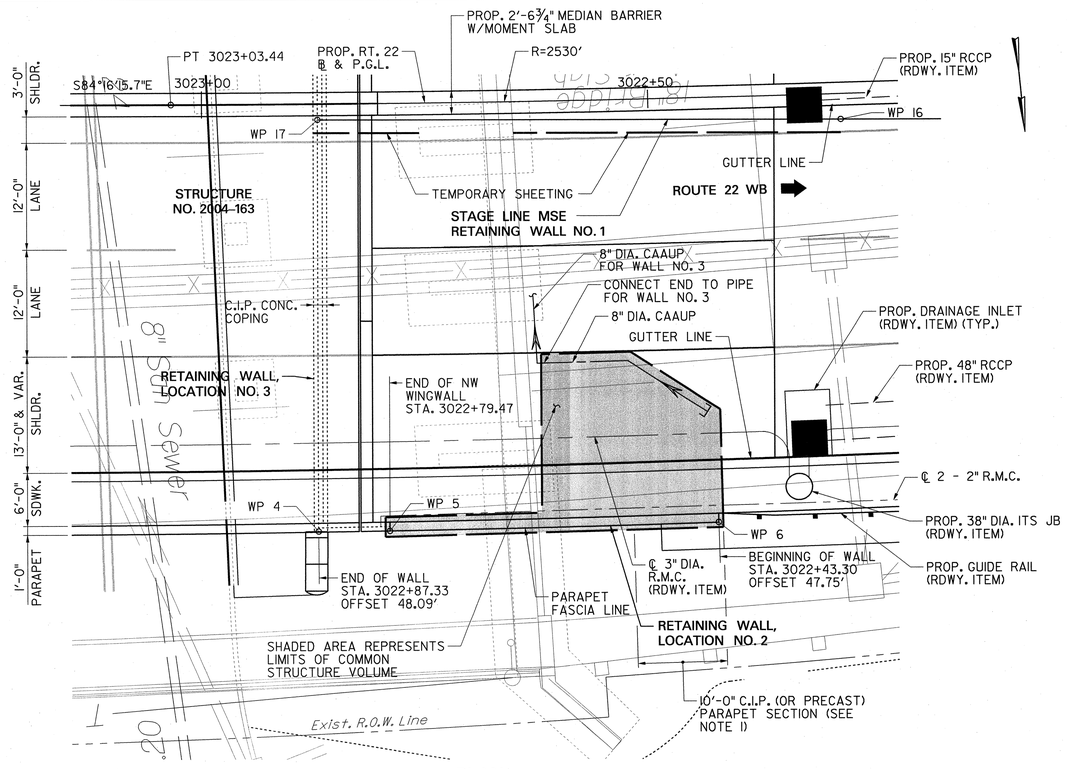
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

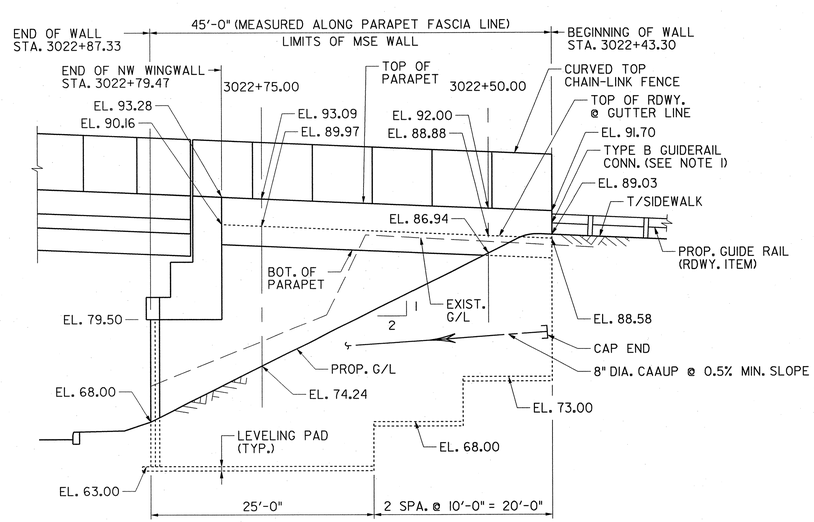
STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 2



PLAN

1/8" = 1'-0"



ELEVATION

1/8" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. B105.
2. FOR TYPICAL SECTION SEE SH. B122.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A CAST-IN-PLACE BARRIER (OR PRECAST) SECTION FOR THE END UNIT WHERE A GUIDERAIL ATTACHMENT IS REQUIRED. DETAILS SHALL BE IN ACCORDANCE WITH THOSE SHOWN IN THE HIGHWAY CONSTRUCTION DETAILS, CD-609-15 FOR A TYPE B CONNECTION. THE COST IS TO BE INCLUDED IN THE COST OF THE RETAINING WALL.

1/8" = 1'-0"

1'0 2' 4' 8' 16'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 2 PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B110 of B128

217

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA

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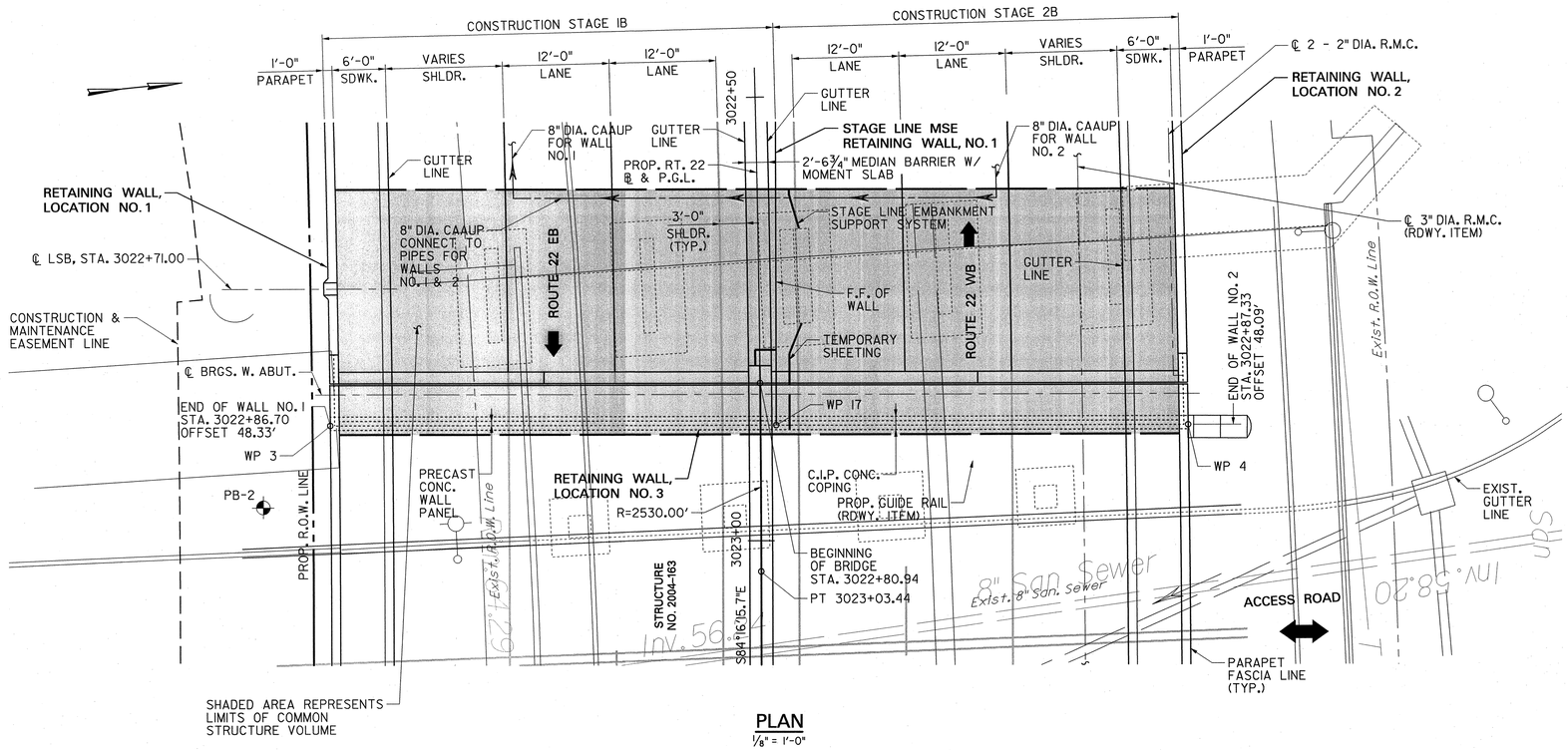
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

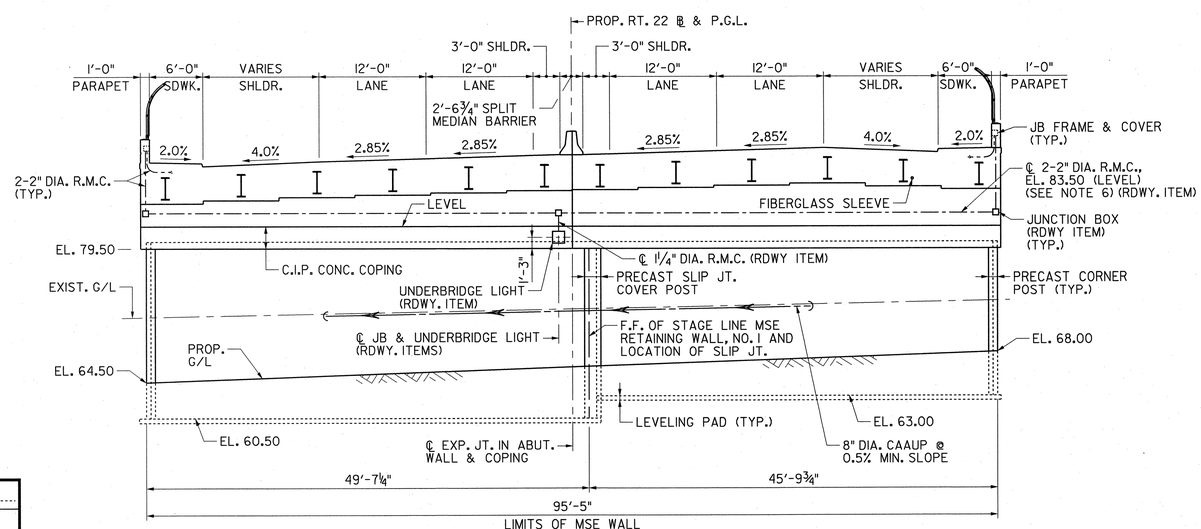
STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 3



PLAN

1/8" = 1'-0"



ELEVATION

(WEST ABUTMENT)

1/8" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. BI05.
2. FOR TYPICAL SECTIONS AND DETAILS, SEE SH. BI23.
3. BEARING PRESSURE UNDER STUB ABUTMENT IS 4,000 PSI. MSE WALL TO BE DESIGNED ACCORDINGLY.

1/8" = 1'-0"

1'0 2' 4' 8' 16'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 3 PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800

BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B111 of B128

218

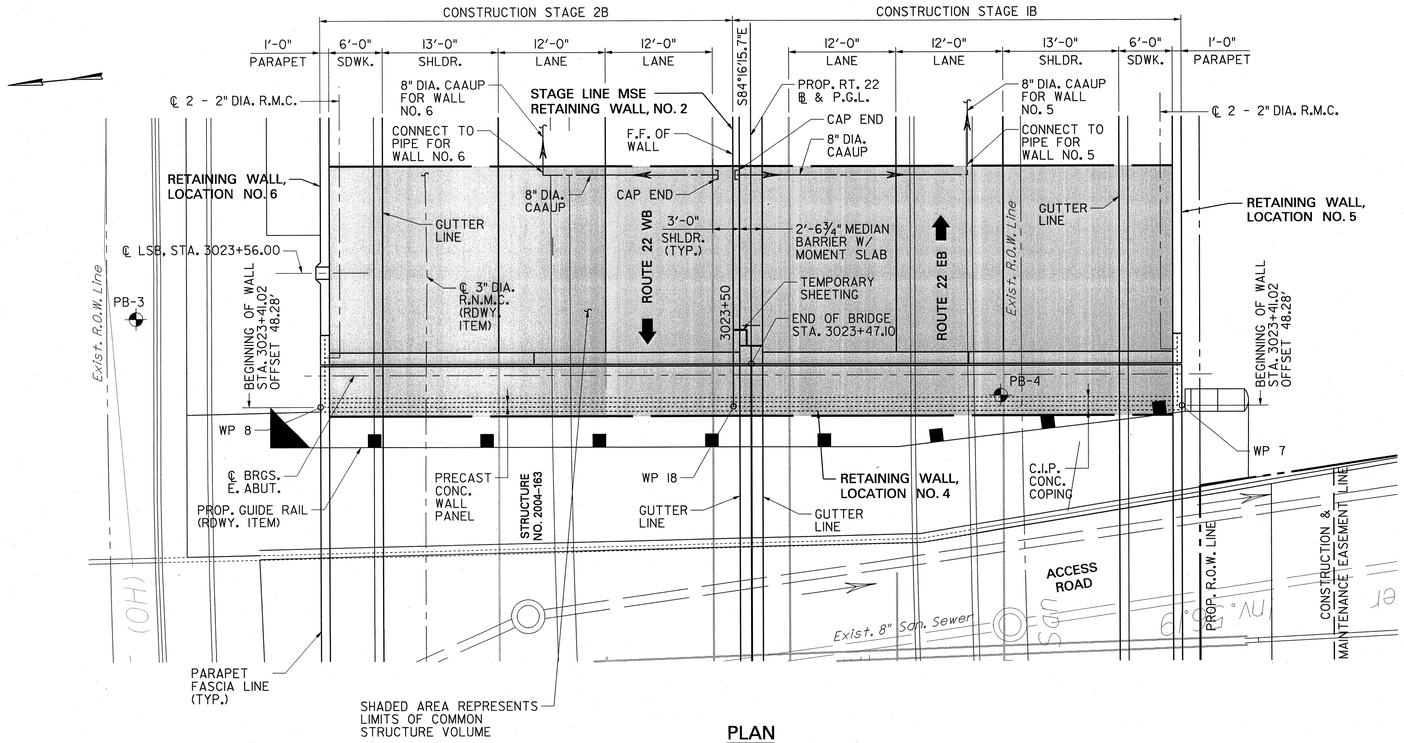
CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marcuema
PLOT DATE 01-DEC-2009 16:00
PENTABLE str-full.tbl
DESIGN FILE T:\00404\structure\Wall_3\r-w03.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

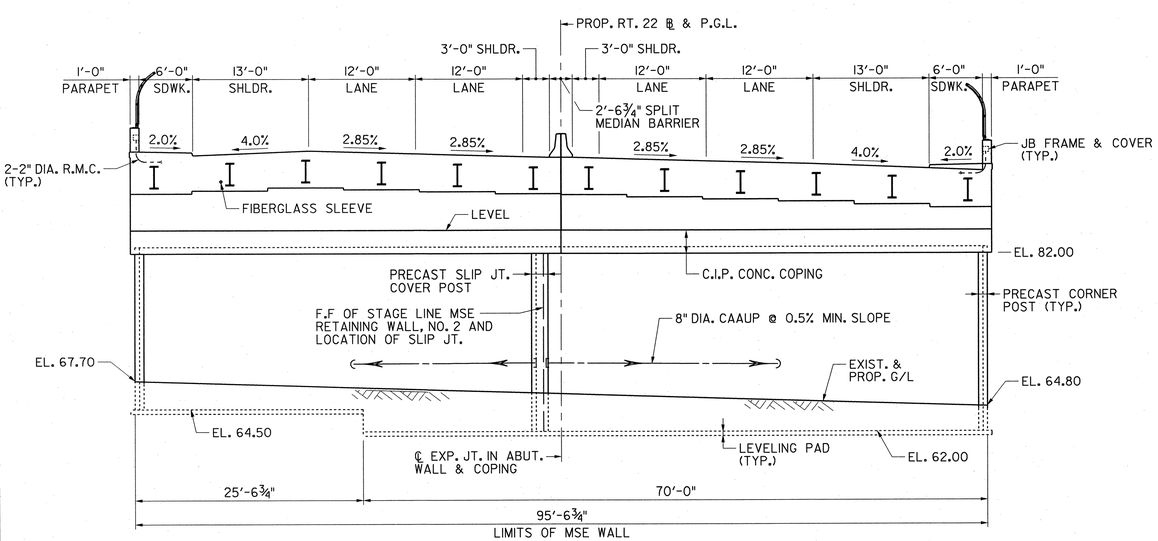
STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 4



PLAN

1/8" = 1'-0"



ELEVATION

(EAST ABUTMENT)

1/8" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. B105.
2. FOR TYPICAL SECTIONS AND DETAILS, SEE SH. B123.
3. BEARING PRESSURE UNDER STUB ABUTMENT IS 4,000 PSI. MSE WALL TO BE DESIGNED ACCORDINGLY.

1/8" = 1'-0"

1'0 2' 4' 8' 16'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 4
PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800

BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B112 of B128

219

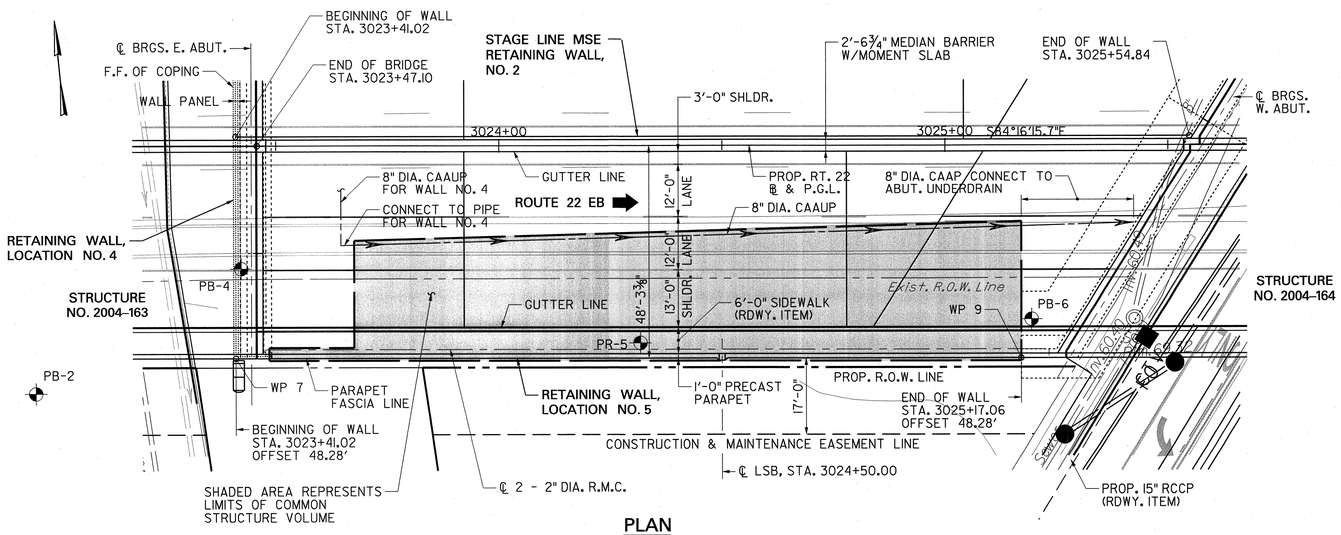
CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marquema
PLOT DATE 01-DEC-2009 16:00
PENTABLE str-full.tbl
DESIGN FILE T:\100404\struc\Wall_4\r-w04.dgn

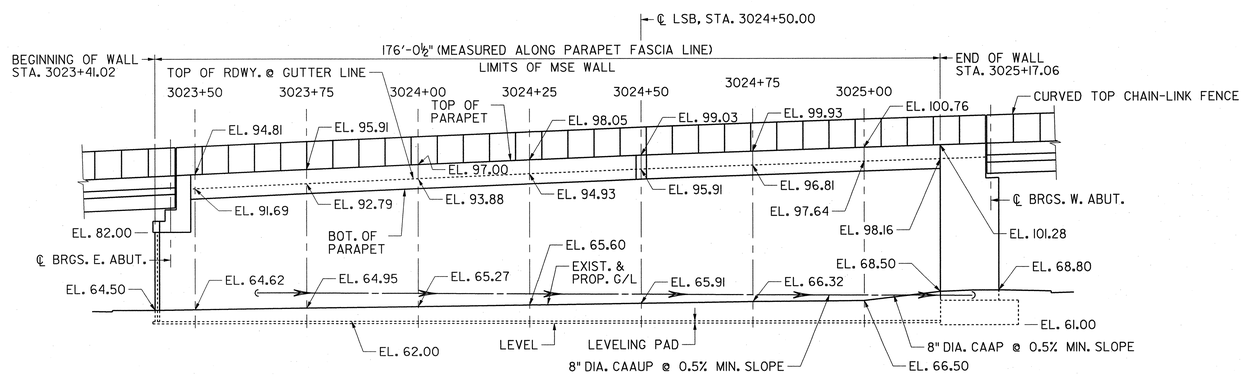
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 5



PLAN
1/16" = 1'-0"



ELEVATION
1/16" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. BI05.
2. FOR TYPICAL SECTIONS AND DETAILS, SEE SH. BI22.
3. ARCHITECTURAL TREATMENT IS NOT SHOWN. SEE SH. BI06 FOR THE ARCHITECTURAL TREATMENT BE APPLIED TO THIS WALL.

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marluema
PLOT DATE 01-DEC-2009 16:00
PENTABLE str-full.tbl
DESIGN FILE T:\00404\struc\Wall_5\r-w05.dgn

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

1/16" = 1'-0"
1'0 2'4' 8' 16' 32'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 5
PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP
MUNICIPALITY

UNION
COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

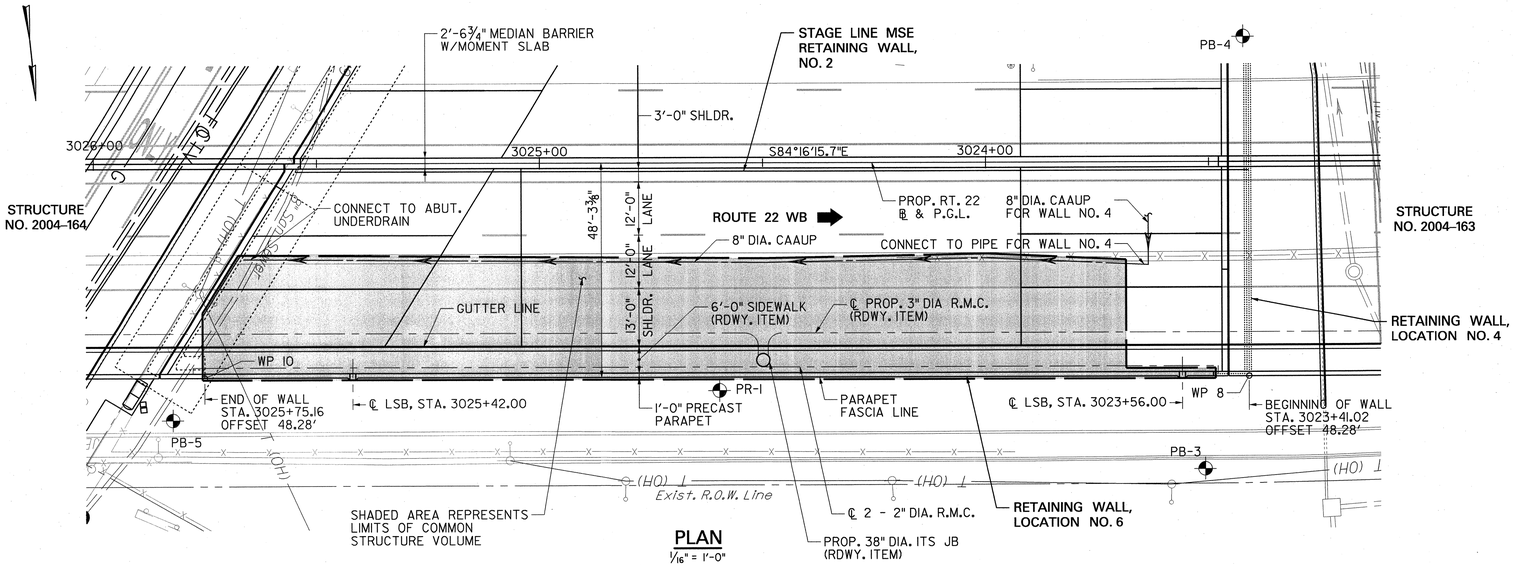
BRIDGE SHEET NO. B113 of B128

220

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

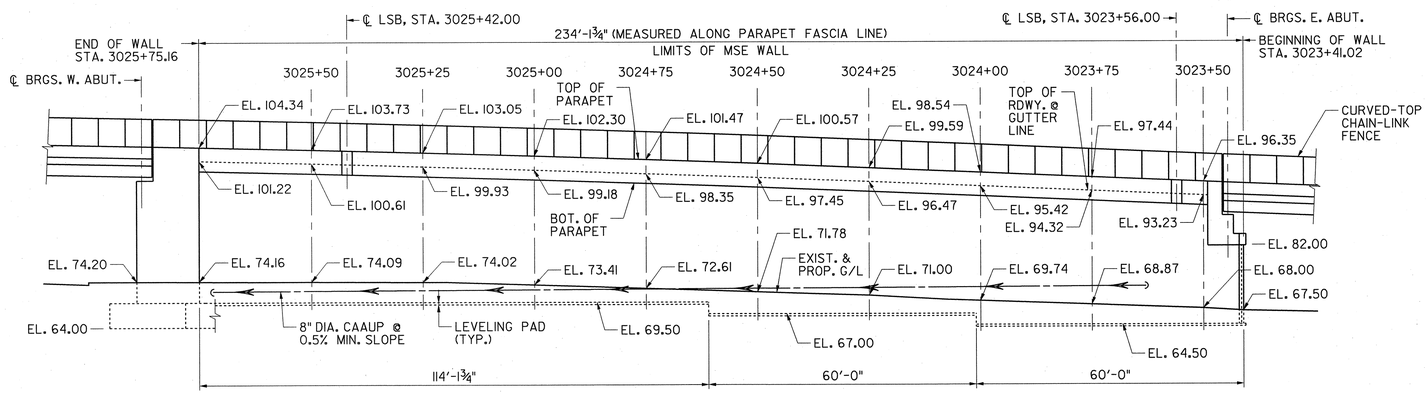
STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 6



PLAN

1/16" = 1'-0"



ELEVATION

1/16" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. BI05.
2. FOR TYPICAL SECTIONS AND DETAILS, SEE SH. BI22.
3. ARCHITECTURAL TREATMENT IS NOT SHOWN. SEE SH. BI06 FOR THE ARCHITECTURAL TREATMENT APPLIED TO THIS WALL.

PARSONS BRINCKERHOFF CADD DATA

OPERATOR	marquema
PLOT DATE	01-DEC-2009 16:01
PENTABLE	str-full.tbl
DESIGN FILE	T:\100404\struc\Wall 6\r-w06.dgn

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

1/16" = 1'-0"

1'0 2'4' 8' 16' 32'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 6
PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800

BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

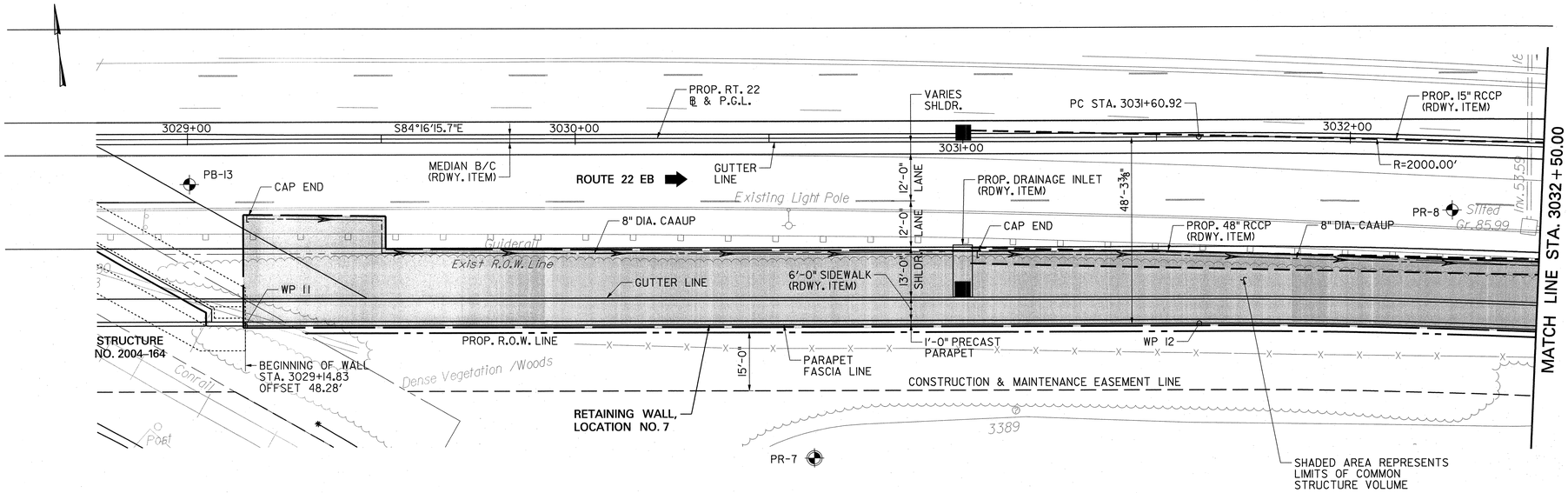
BRIDGE SHEET NO. B114 of B128

221

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

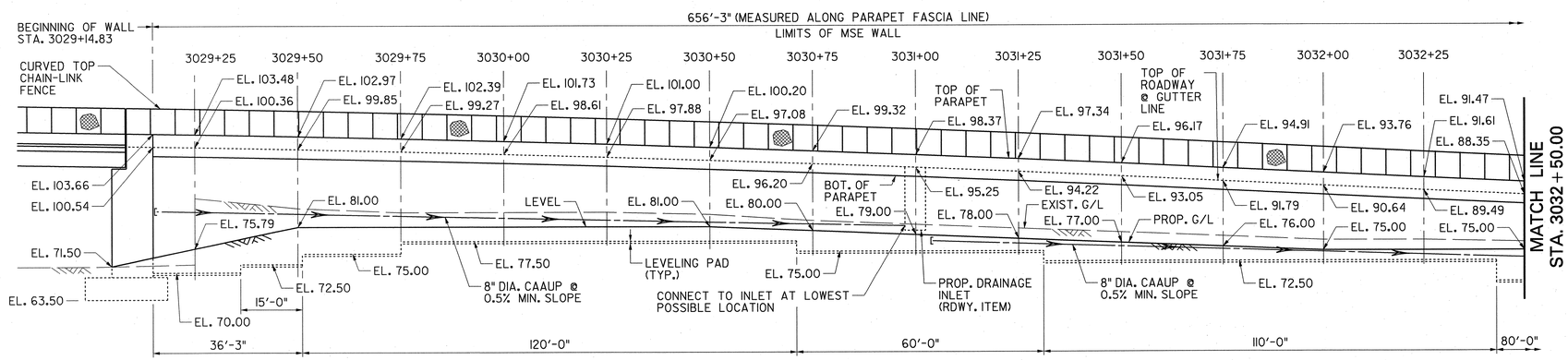
STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 7



PLAN

1/16" = 1'-0"



ELEVATION

1/16" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. B105.
2. FOR TYPICAL SECTIONS AND DETAILS, SEE SH. B122.

PARSONS BRINCKERHOFF CADD DATA

OPERATOR	marquema
PLOT DATE	01-DEC-2009 16:01
PENTABLE	str-full.tbl
DESIGN FILE	T:\00404\structure\Wall_7\r-w07a.dgn

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

1/16" = 1'-0" 1'0 2'4' 8' 16' 32'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 7
PLAN AND ELEVATION – 1

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 28369

SCALE: AS SHOWN

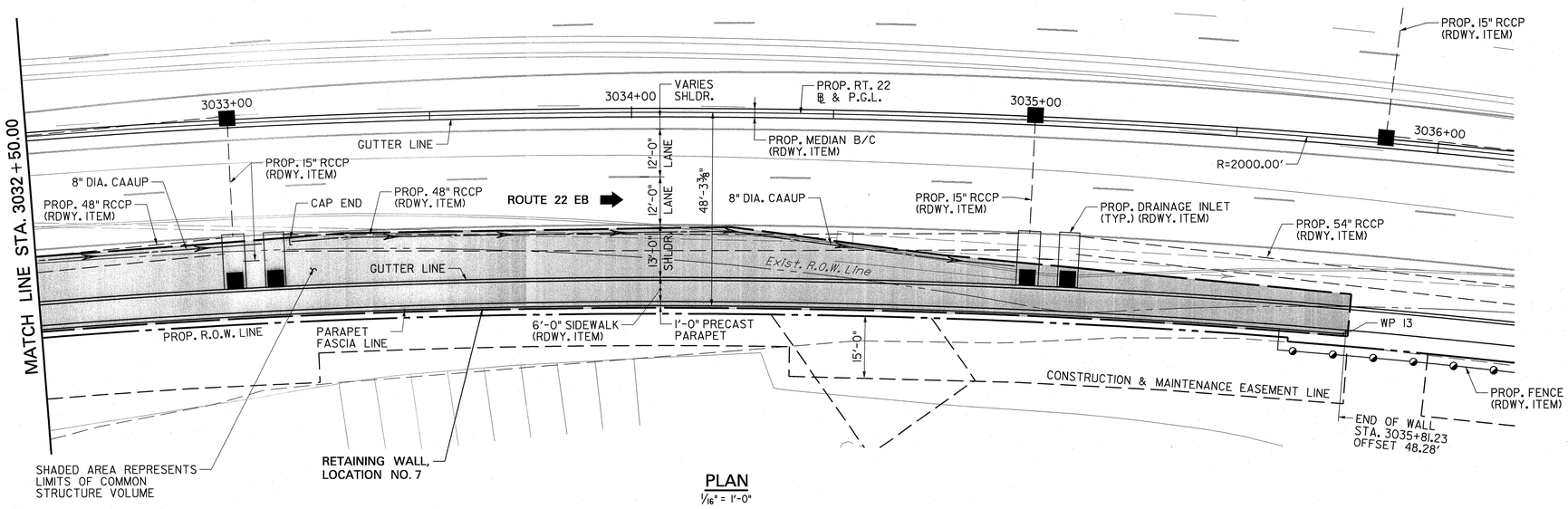
BRIDGE SHEET NO. B115 of B128

222

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

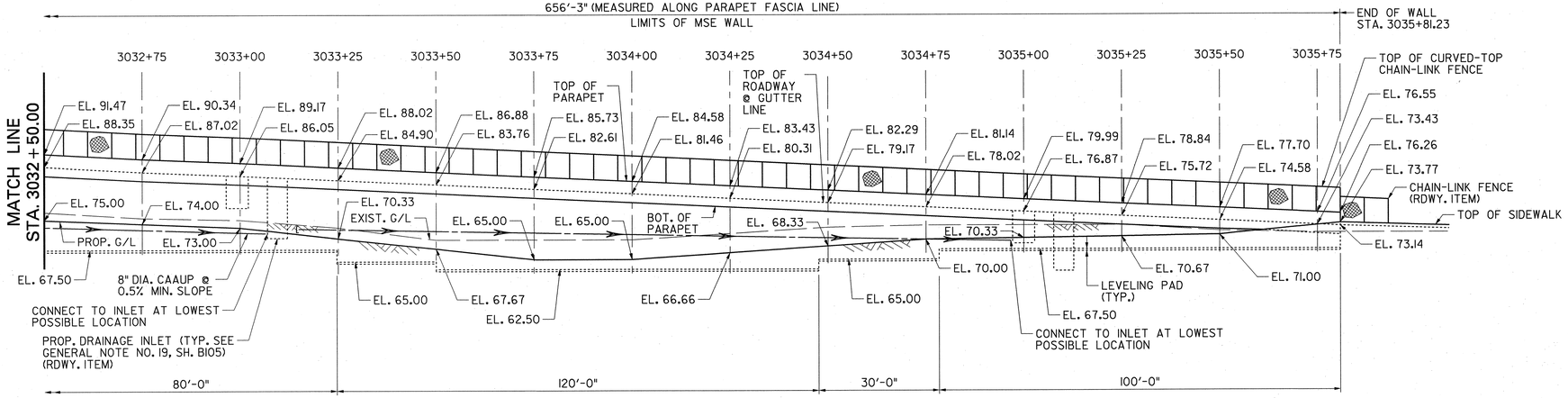
ROUTE 22 RETAINING WALL NO. 7



PLAN
1/16" = 1'-0"

NOTES:

1. WORK THIS DRAWING WITH SH. B115.



ELEVATION
1/16" = 1'-0"

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

1/16" = 1'-0"
1'0 2'4' 8' 16' 32'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 7
PLAN AND ELEVATION – 2

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B116 of B128

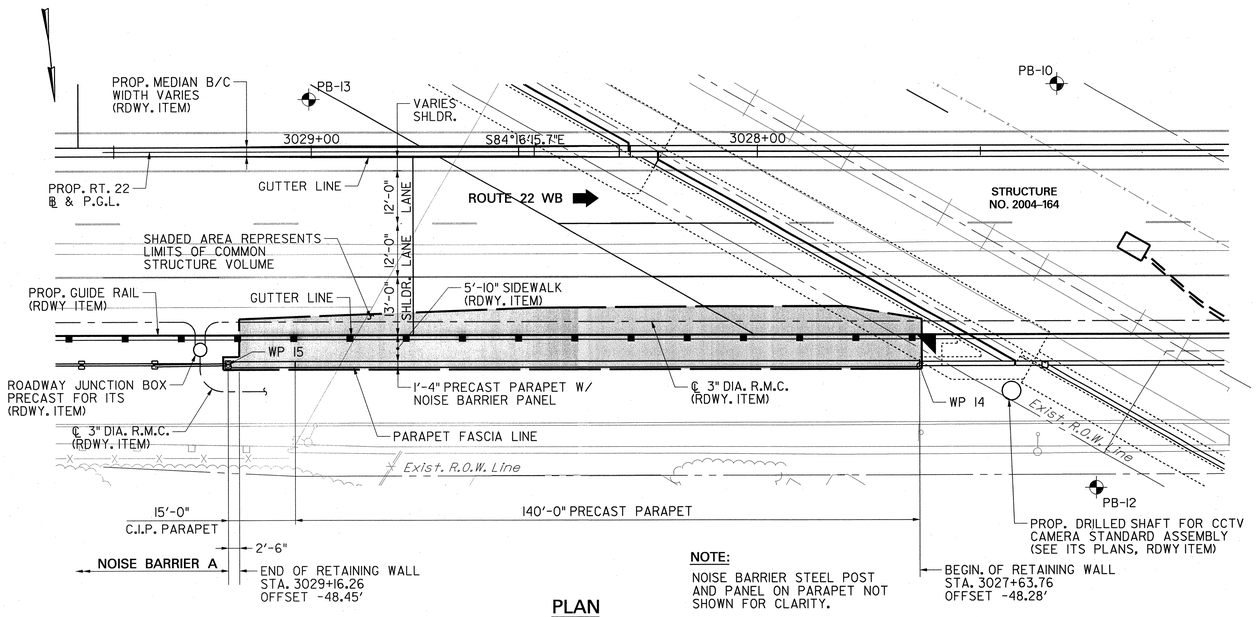
223

PARSONS BRINCKERHOFF CADD DATA
OPERATOR mar-uema
PLOT DATE 01-DEC-2009 16:01
PENTABLE str-full.tbl
DESIGN FILE T:\100404\structure\Wall_7\r-w07b.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

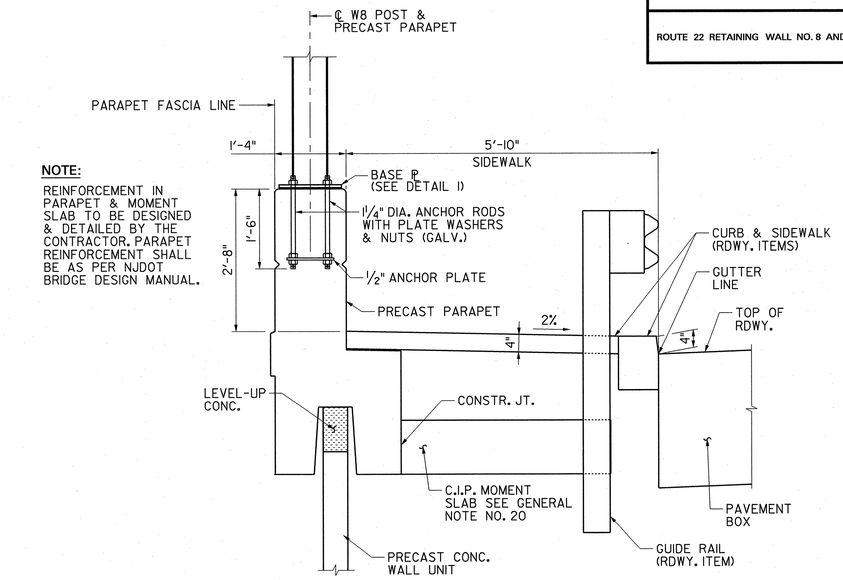
STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 8 AND NOISE BARRIER B



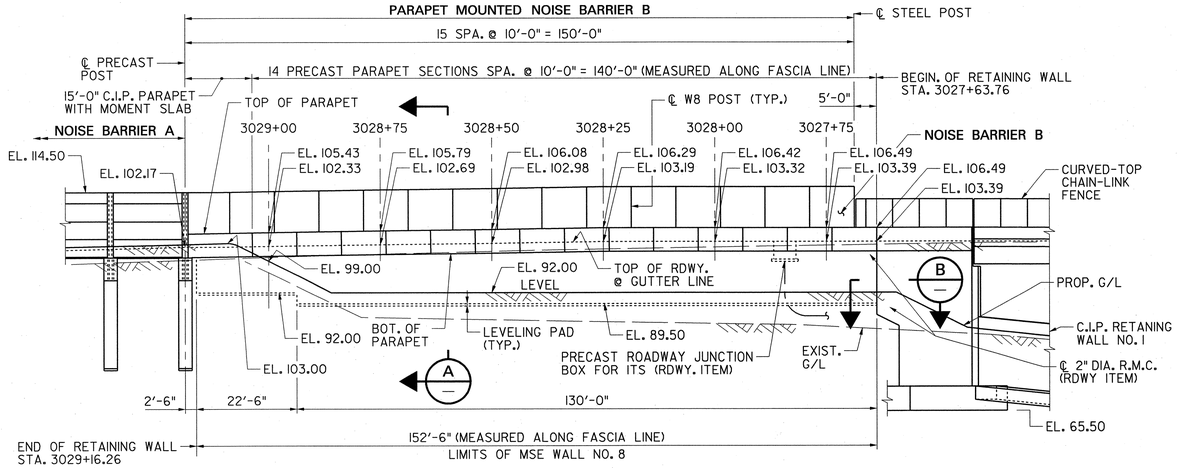
NOTE:
NOISE BARRIER STEEL POST AND PANEL ON PARAPET NOT SHOWN FOR CLARITY.

PLAN
1/16" = 1'-0"

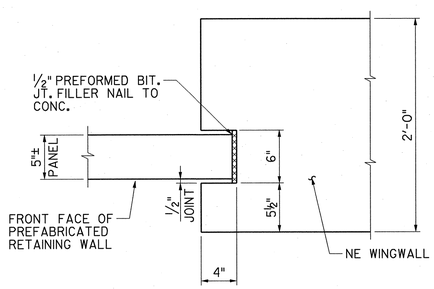


NOTE:
REINFORCEMENT IN PARAPET & MOMENT SLAB TO BE DESIGNED & DETAILED BY THE CONTRACTOR. PARAPET REINFORCEMENT SHALL BE AS PER NJDOT BRIDGE DESIGN MANUAL.

SECTION A
¾" = 1'-0"



ELEVATION
1/16" = 1'-0"



SECTION B
1½" = 1'-0"

NOTES:
1. FOR GENERAL RETAINING WALL NOTES SEE SH. B105.
2. FOR TYPICAL RETAINING WALL SECTIONS AND DETAILS, SEE SH. B122.
3. FOR GENERAL NOISE BARRIER NOTES SEE SH. B125.
4. FOR AN ARCHITECTURAL RENDERING OF THE RETAINING WALL AND THE NOISE BARRIER, AND FOR ARCHITECTURAL FINISHES, SEE SH. B106.

UNFACTORED LOADS AT BOTTOM OF W8 POST

VERTICAL LOAD (DEAD LOAD)	10.1 K
HORIZONTAL LOAD (WIND LOAD)	5.0 K
MOMENT (WIND LOAD)	29.0 K - FT

QUANTITIES

STANDARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITIES
613005P	NOISE BARRIER, BRIDGE	SY	156

NOTE:
THE PARAPET MOUNTED NOISE BARRIER B IS TO BE PAID UNDER "NOISE BARRIER, BRIDGE".

1/16" = 1'-0" 1'02'4' 8' 16' 32'
1 1/2" = 1'-0" 1' 6" 0 1'
3/4" = 1'-0" 1' 0 1' 2' 4'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 8 AND NOISE BARRIER B PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 28369

SCALE: AS SHOWN

BRIDGE SHEET NO. B117 of B128

224

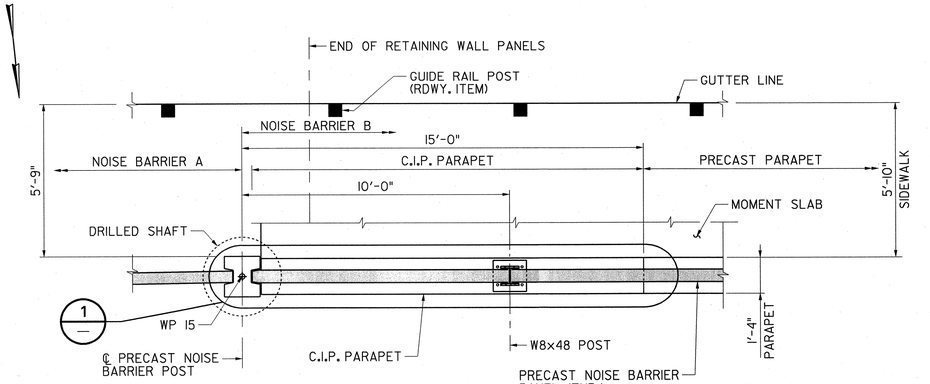
CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR mar-uema
PLOT DATE 01-DEC-2009 16:01
PENTABLE str-full.tbl
DESIGN FILE TA\00404\struct\Wall_8\rw08_a.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

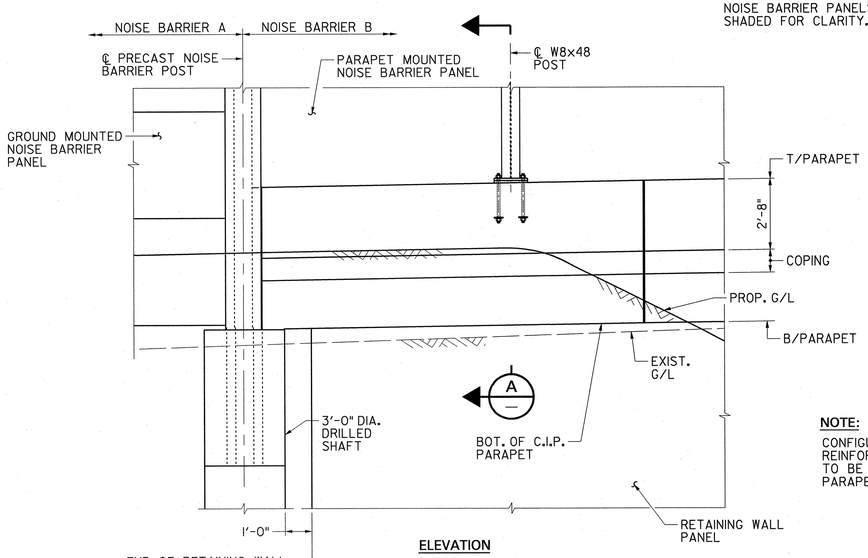
STRUCTURE NO.

ROUTE 22 RETAINING WALL NO. 8 AND NOISE BARRIER B



PLAN

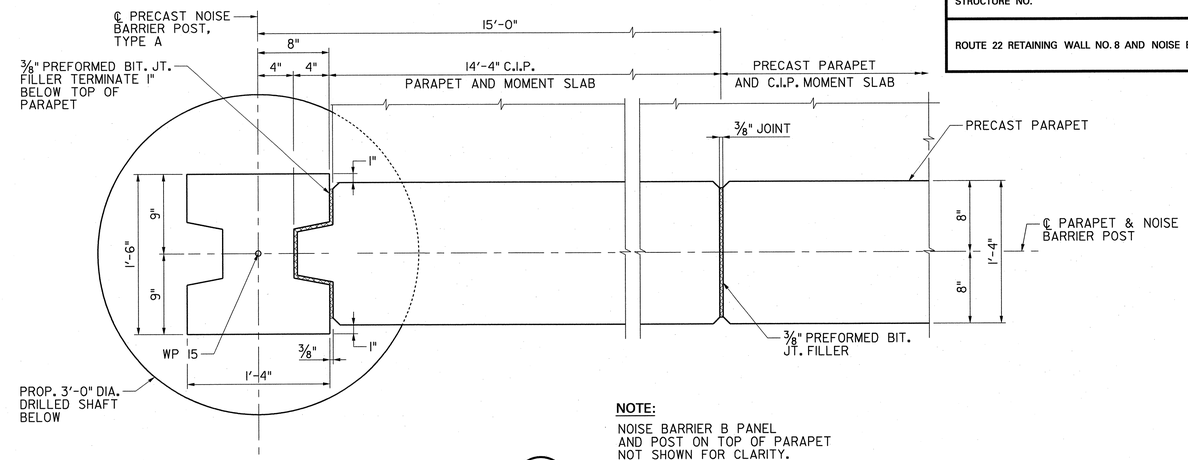
NOTE:
NOISE BARRIER PANELS SHOWN SHADED FOR CLARITY.



ELEVATION

C.I.P. PARAPET

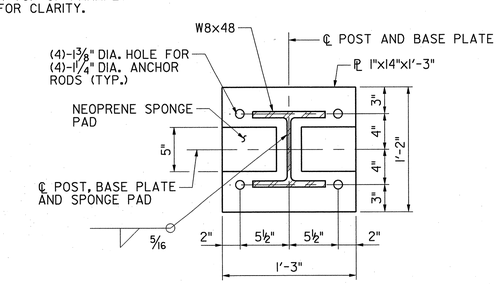
3/8" = 1'-0"



NOTE:
NOISE BARRIER B PANEL AND POST ON TOP OF PARAPET NOT SHOWN FOR CLARITY.

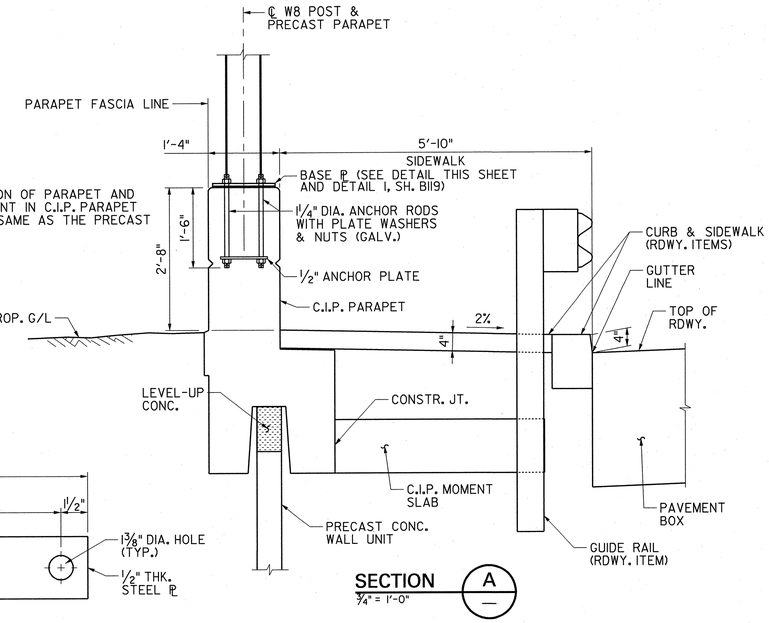
DETAIL 1

1 1/2" = 1'-0"



BASE PLATE DETAIL FOR W8 POST

1 1/2" = 1'-0"



NOTE:
CONFIGURATION OF PARAPET AND REINFORCEMENT IN C.I.P. PARAPET TO BE THE SAME AS THE PRECAST PARAPET

SECTION A

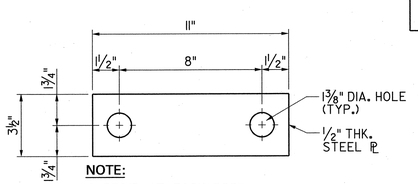
3/4" = 1'-0"

ANCHOR ROD DETAIL

1 1/2" = 1'-0"

NOTES:

1. WORK THIS DRAWING WITH SH. B117.
2. ANCHOR RODS:
   ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563. FLAT WASHERS SHALL CONFORM TO ASTM F436. ANCHOR RODS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153. SEE SHT. B126 FOR DETAILS.
3. PAYMENT FOR C.I.P. PARAPET TO BE UNDER PAY ITEM "RETAINING WALL, LOCATION NO. 8".
4. CONSTRUCT CAST IN PLACE PARAPET AFTER INSTALLING DRILLED SHAFT AND PRECAST NOISE BARRIER POST.
5. PAYMENT FOR BASE PLATE AND ASSOCIATED ITEMS TO BE INCLUDED IN THE COST OF NOISE BARRIER B.



NOTE:
2 REQ'D AT EACH POST.

ANCHOR PLATE DETAIL

3" = 1'-0"

3/8" = 1'-0"
3/4" = 1'-0"
1 1/2" = 1'-0"

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 8 AND NOISE BARRIER B DETAILS – 1

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B118 of B128

225

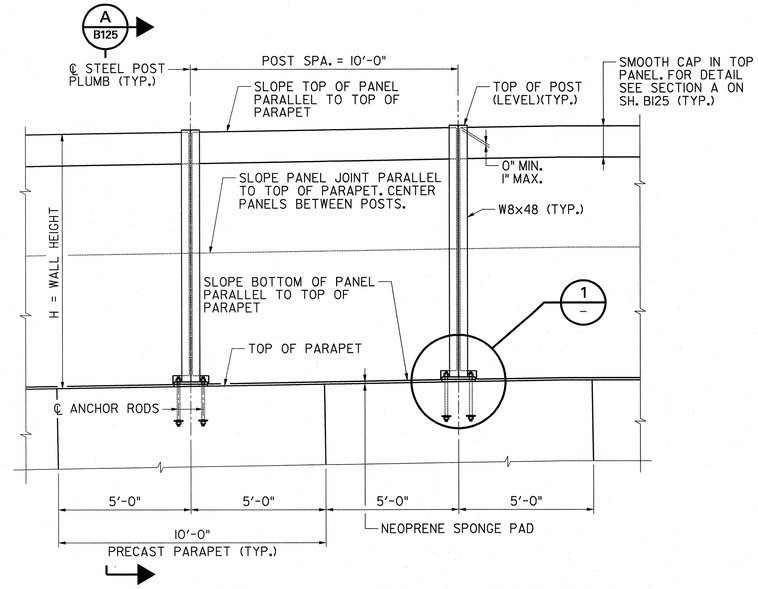
CONTROL SECTION		JOB NO.	
DES. BY		CHK. BY	
DWN. BY	F. SKROBOT		
EST. BY	C. MANJUNATH	CHK. BY	
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marruema
PLOT DATE 01-DEC-2009 16:01
PENTABLE str-full.tbl
DESIGN FILE T:\00404\struc\Wall_8\r-w08_b.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

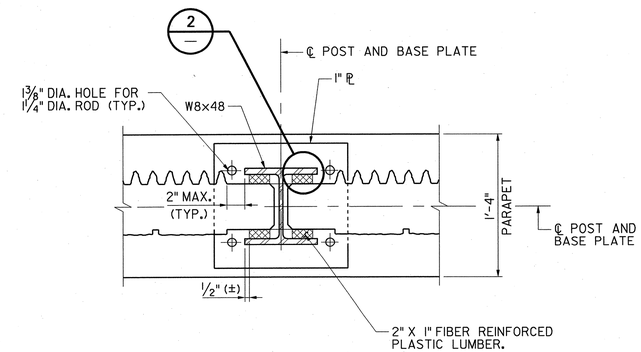
STRUCTURE NO.

ROUTE 22 NOISE BARRIER B



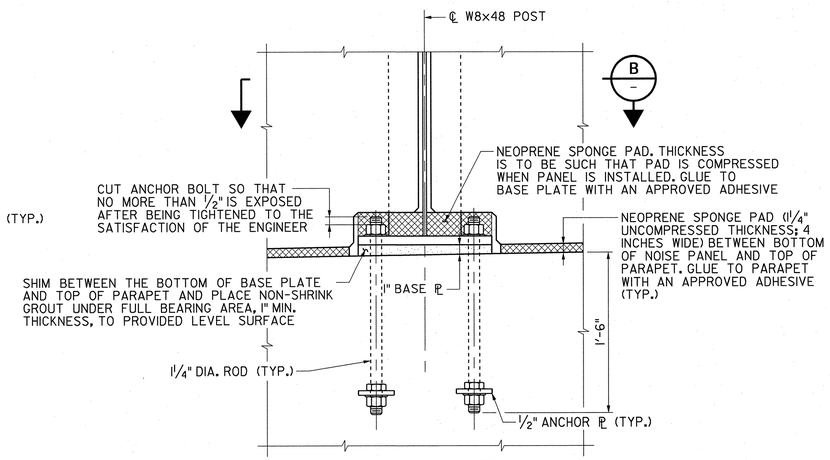
PARAPET MOUNTED NOISE BARRIER – PARTIAL ELEVATION

3/8" = 1'-0"



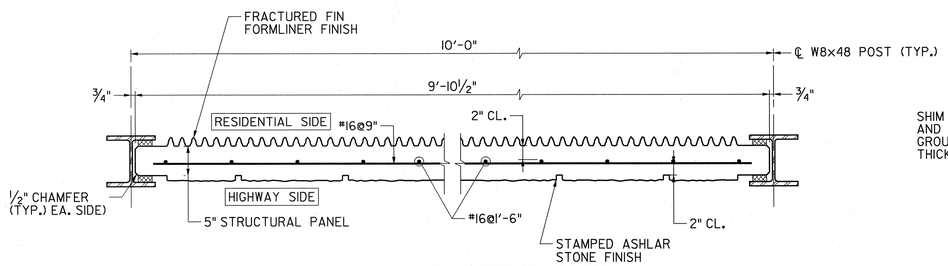
SECTION B

1 1/2" = 1'-0"



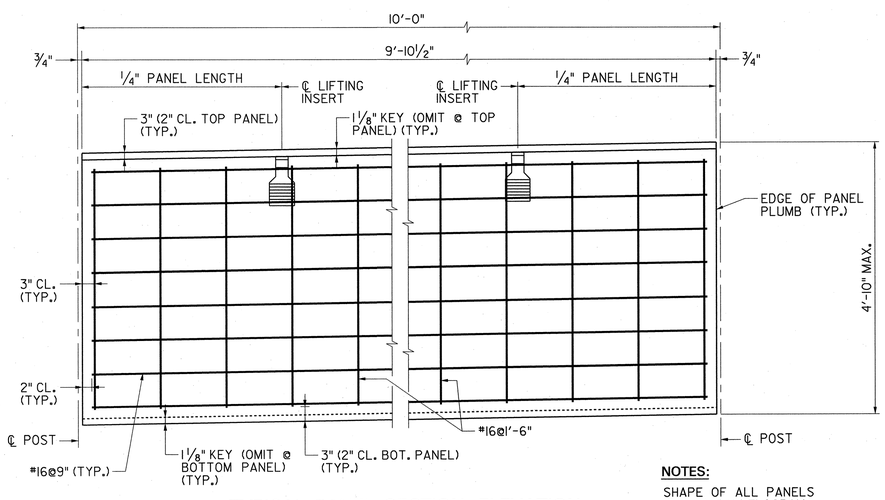
DETAIL 1

1 1/2" = 1'-0"



TYPICAL PANEL SECTION PLAN

N.T.S.



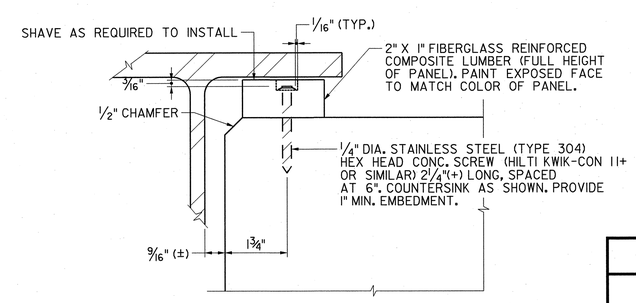
TYPICAL PANEL SECTION ELEVATION

N.T.S.

NOTES:

SHAPE OF ALL PANELS IS A PARALLELOGRAM.

SEE NOTE 5.



DETAIL 2

N.T.S.

NOTES:

1. WORK THIS DRAWING WITH SH. B117 AND B118.
2. POSTS AND PLATES: AASHTO M270, GRADE 50 (ASTM A709, GRADE 50) PAINT POSTS AS PER THE SPECIFICATIONS. COLOR SHALL BE RANDOM TAN (FEDERAL CHIP NO. 33613). COATING SYSTEM TO BE IEW. BASE PLATES TO BE HOT DIP GALVANIZED.
3. STEEL POSTS AND ANCHOR RODS ARE TO BE ERECTED PLUMB.
4. NEOPRENE SPONGE PADS SHALL CONFORM TO AASHTO M153, TYPE 1.
5. SEE GROUND MOUNTED NOISE BARRIER DETAILS, SH. B125 FOR ADDITIONAL PARAPET MOUNTED PANEL DETAILS.

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	F. SKROBOT		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marruema
PLOT DATE 01-DEC-2009 15:58
PENTABLE str-full.tbl
DESIGN FILE T:\00404\struc\nw_e.dgn

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALL NO. 8 AND NOISE BARRIER B DETAILS – 2

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

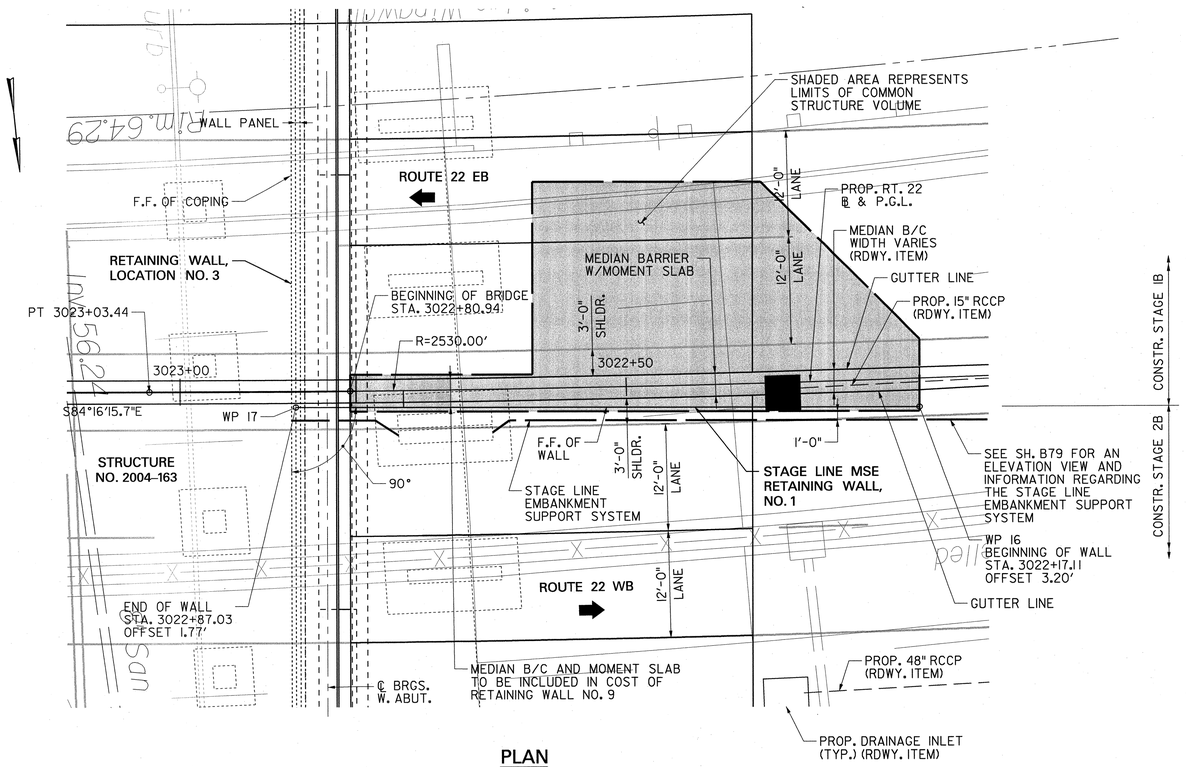
BRIDGE SHEET NO. B119 of B128

226

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

STAGE LINE MSE RETAINING WALL NO. 1

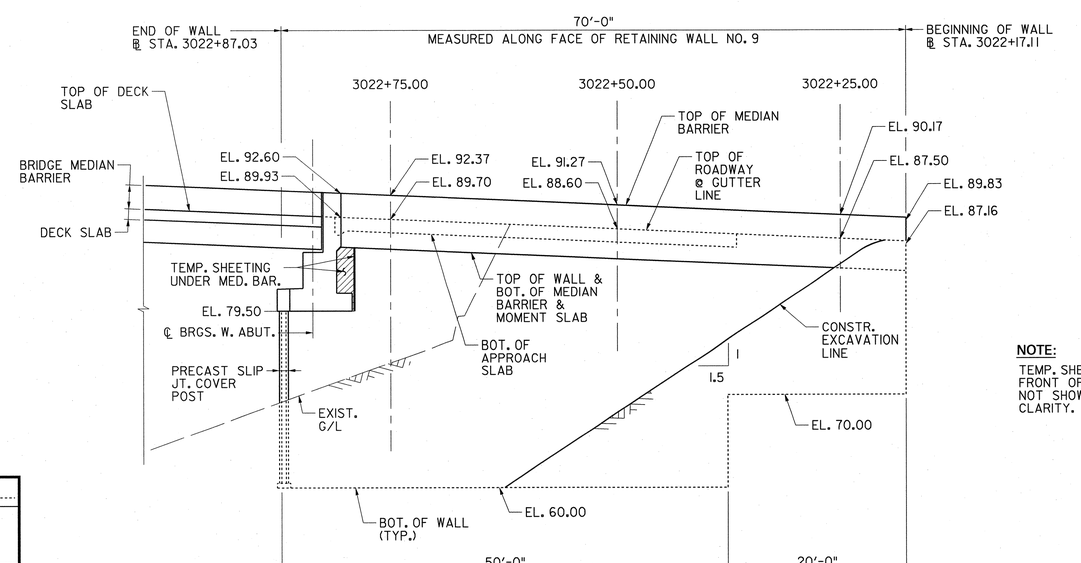


PLAN

1/8" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. B105.
2. FOR TYPICAL SECTIONS AND DETAILS, SEE SH. B122.



ELEVATION

1/8" = 1'-0"

NOTE:

TEMP. SHEETING IN FRONT OF WALL NOT SHOWN FOR CLARITY.

1/8" = 1'-0" 1'0 2' 4' 8' 16'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

STAGE LINE MSE RETAINING WALL NO. 1 PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 28369

SCALE: AS SHOWN

BRIDGE SHEET NO. B120 of B128

227

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS E. SKROBACZ
DWN. BY	I. PLOTNIKOVA		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marquema
PLOT DATE 01-DEC-2009 16:01
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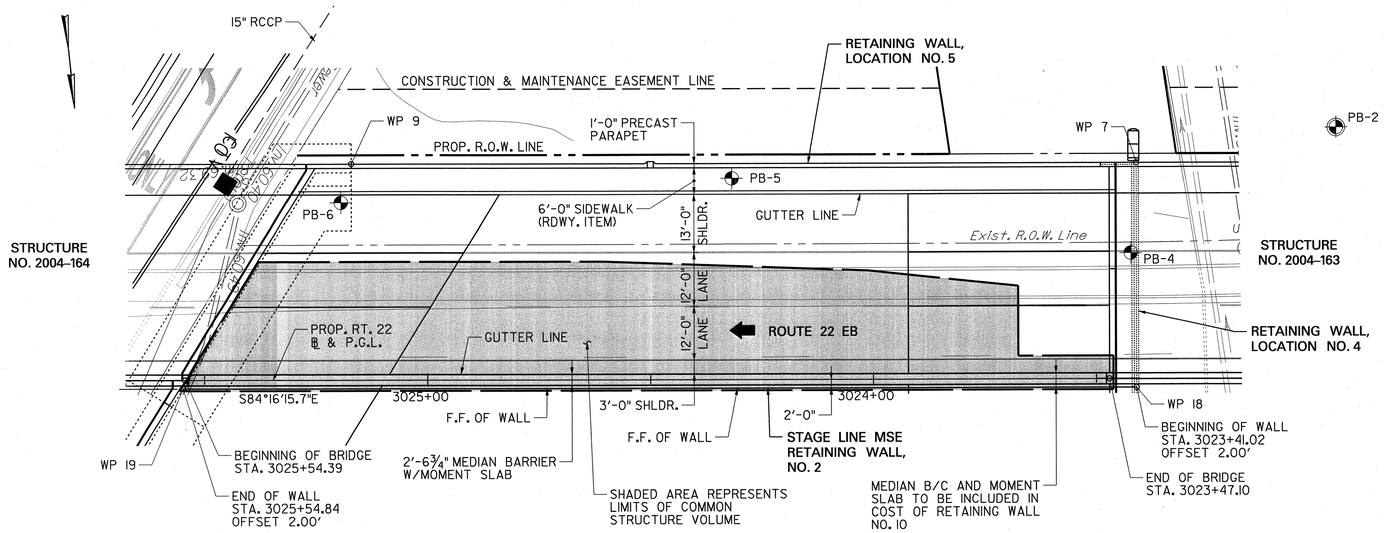
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

STAGE LINE MSE RETAINING WALL NO. 2

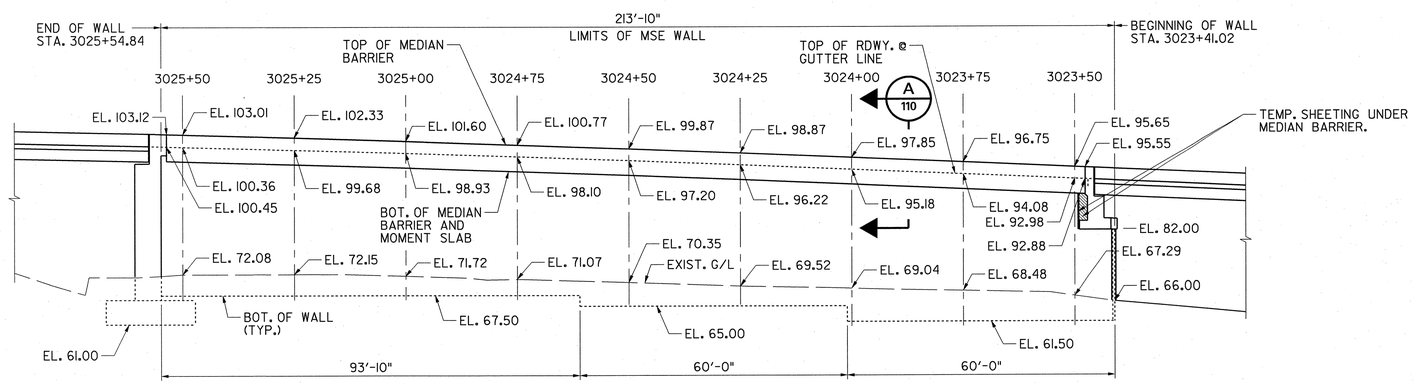


PLAN

1/16" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SH. B105.
2. FOR TYPICAL SECTIONS AND DETAILS, SEE SH. B122.



ELEVATION

1/16" = 1'-0"

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	I. PLOTNIKOVA		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marcuema
PLOT DATE 01-DEC-2009 16:02
PENTABLE str-full.tbl
DESIGN FILE T:\00404\structWall_10\r-w10.dgn

1/16" = 1'-0"
3/4" = 1'-0"
1'02'4' 8' 16' 32'
1' 0 1' 2' 4'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

STAGE LINE MSE RETAINING WALL NO. 2 PLAN AND ELEVATION

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

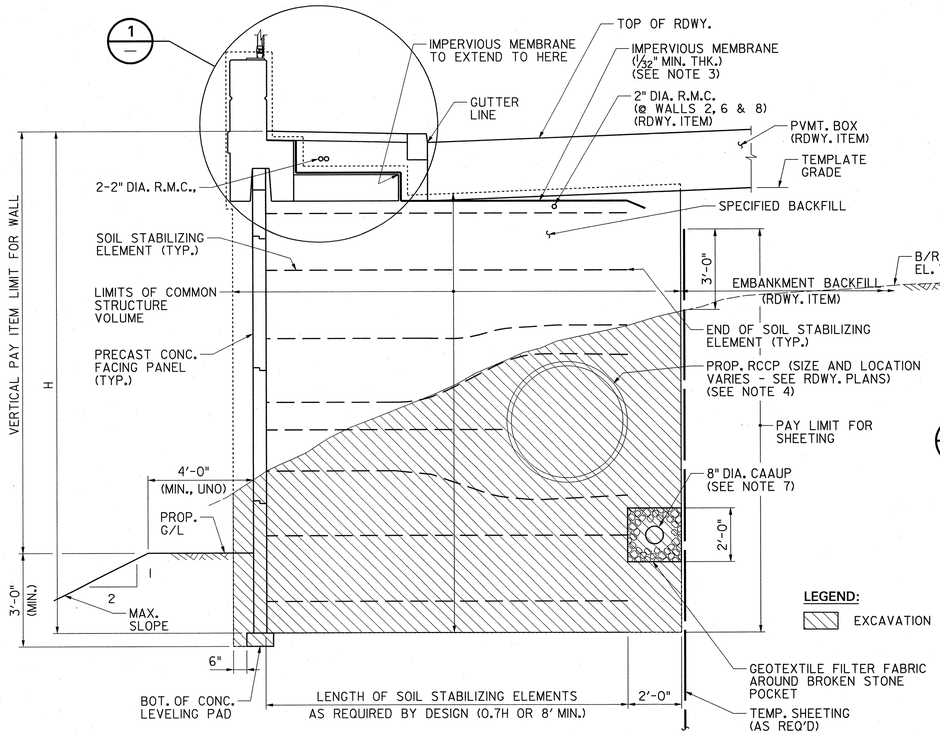
BRIDGE SHEET NO. B121 of B128

228

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALLS

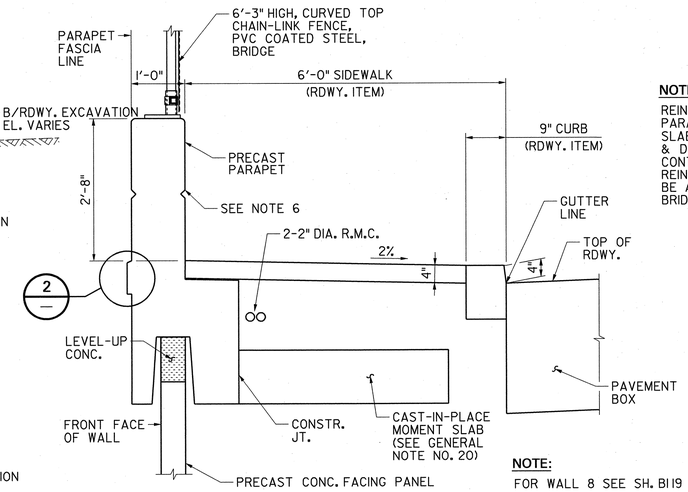


LEGEND:

EXCAVATION

TYPICAL SECTION
MECHANICALLY STABILIZED EARTH WALL

N.T.S.



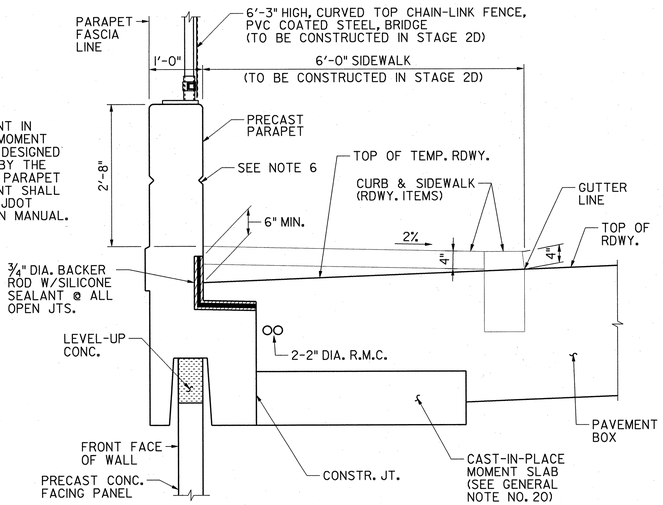
WALLS ALONG NORTH FASCIA

NOTE:

REINFORCEMENT IN PARAPET & MOMENT SLAB TO BE DESIGNED & DETAILED BY THE CONTRACTOR. PARAPET REINFORCEMENT SHALL BE AS PER NJDOT BRIDGE DESIGN MANUAL.

NOTE:

FOR WALL 8 SEE SH. B119

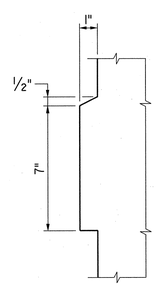


WALLS ALONG SOUTH FASCIA

DETAIL 1
3/4" = 1'-0"

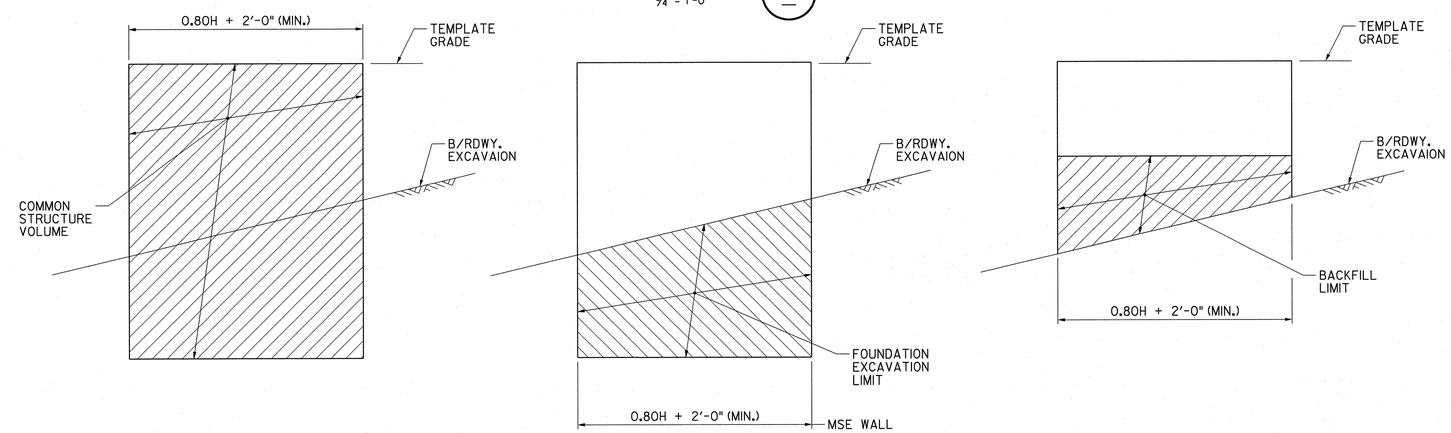
NOTES:

1. WORK THIS SHEET WITH SH. B121.
2. COST OF ALL CONSTRUCTION WORK AND ITEMS SHOWN WITHIN THE COMMON STRUCTURE VOLUME LIMITS, EXCEPT FOR THE ROADWAY DRAINAGE SYSTEM, SHALL BE INCLUDED UNDER PAY ITEM "RETAINING WALL, LOCATION NO. XX."
3. PROVISION OF AN IMPERVIOUS MEMBRANE UPON COMPLETION OF THE SPECIFIED BACKFILL PLACEMENT AND PROVISION OF FILLER MATERIAL OR FILTER FABRIC AT THE LOCATION OF VERTICAL AND HORIZONTAL JOINTS BETWEEN PANELS SHALL BE VERIFIED BY THE MANUFACTURER. REFER TO SUBSECTION 513.02 AND 919.05 OF THE SPECIFICATIONS FOR GUIDANCE. THE MEMBRANE SHALL BE PLACED SO THAT IT DRAINS AWAY FROM THE FACE OF THE WALL.
4. LARGE DRAINAGE INLETS (NOT SHOWN) EXIST WITHIN THE COMMON STRUCTURE VOLUME. SEE GENERAL RETAINING WALL NOTES NO. 19.
5. THE CAST-IN-PLACE MOMENT SLAB AT THE MSE WALLS ALONG THE SOUTH FASCIA SHALL BE DESIGNED FOR SIDEWALK LOADING AS WELL AS VEHICULAR LOADING.
6. FOR PARAPET RUSTICATION DETAILS SEE SH. B58.
7. ELEVATION OF CAAUP TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.



DETAIL 2
3" = 1'-0"

THIS DETAIL IS TYPICAL FOR ALL RETAINING WALLS



COMMON STRUCTURE VOLUME (PAY LIMIT)

FOUNDATION IN CUT (WORK LIMIT)

FOUNDATION IN FILL (WORK LIMIT)

COMMON STRUCTURE VOLUME AND PAY LIMIT FOR MSE WALL EXCAVATION

N.T.S.

3/4" = 1'-0"

1' 0 1' 2' 4'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALLS TYPICAL SECTIONS AND DETAILS – 1

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B122 of B128

229

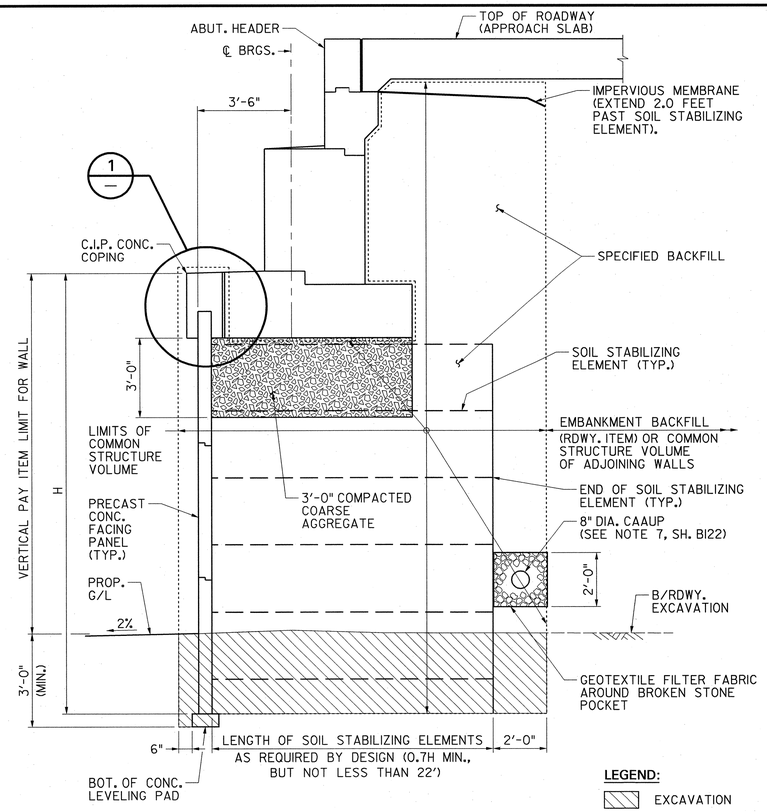
CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

PARSONS BRINCKERHOFF CADD DATA
OPERATOR mar-uema
PLOT DATE 01-DEC-2009 15:58
PENTABLE str-full.tbl
DESIGN FILE T:\00404\struc\r-wd-a.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

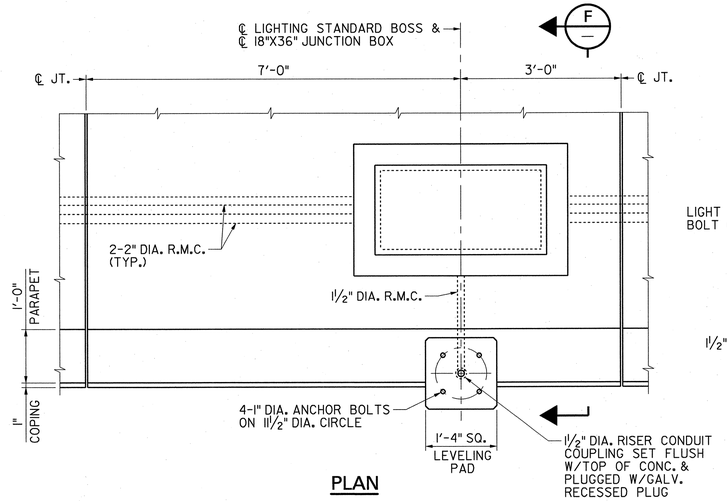
STRUCTURE NO.

ROUTE 22 RETAINING WALLS



MECHANICALLY STABILIZED EARTH WALL

N.T.S.



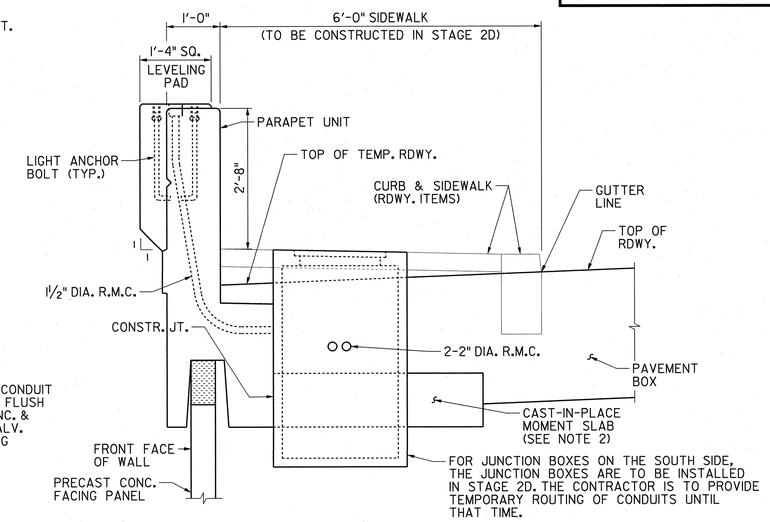
PLAN

NOTES:

A. CHAIN-LINK FENCE NOT SHOWN FOR CLARITY.

B. REINFORCEMENT IN PARAPET AND MOMENT SLAB TO BE DESIGNED AND DETAILED BY THE CONTRACTOR. REINFORCEMENT SHALL BE AS PER NJDOT BRIDGE DESIGN MANUAL.

C. NOT ALL DETAILS ARE SHOWN. FOR DETAILS NOT SHOWN, SEE DETAILS OF LIGHTING STANDARD BOSS ON 2'-8" PARAPET, BCD-504-5.



WALLS ALONG SOUTH FASCIA SHOWN

SECTION F

¾" = 1'-0"

TYPICAL PRECAST OR C.I.P. PARAPET UNIT FOR LIGHTING STANDARD BOSS

¾" = 1'-0"

LEGEND:

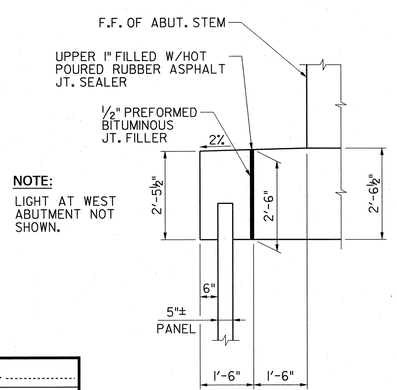
EXCAVATION

NOTES:

1. WORK THIS SHEET WITH SH. B108.
2. THE CAST-IN-PLACE MOMENT SLAB AT THE MSE WALLS ALONG THE SOUTH FASCIA SHALL BE DESIGNED FOR VEHICULAR LOADING DURING STAGED CONSTRUCTION WHEN THE SIDEWALK HAS NOT YET BEEN INSTALLED.

SECTION A

N.T.S. B102

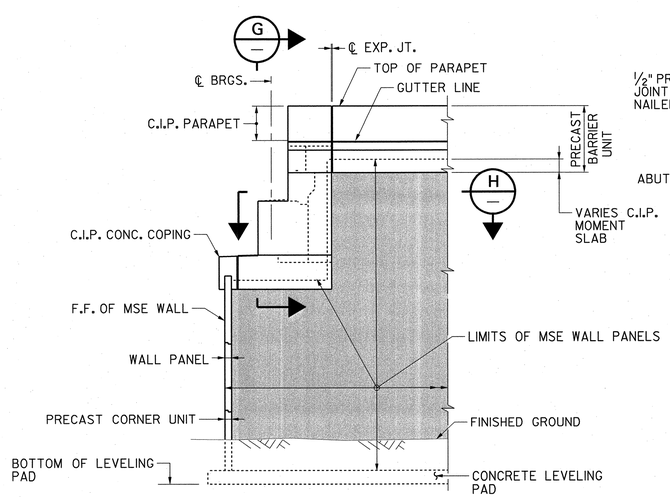


NOTE:

LIGHT AT WEST ABUTMENT NOT SHOWN.

DETAIL 1

½" = 1'-0"

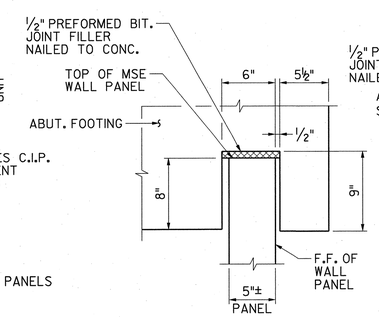


NOTE:

CHAIN-LINK FENCE NOT SHOWN FOR CLARITY.

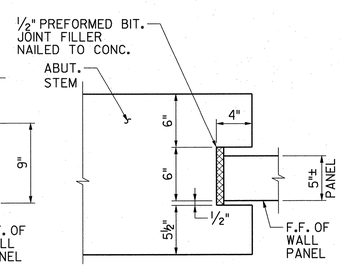
CORNER VIEW

3/16" = 1'-0"



SECTION G

1½" =1'-0"



SECTION H

1½" =1'-0"

1/2" = 1'-0"
1 1/2" = 1'-0"
3/16" = 1'-0"
3/4" = 1'-0"

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALLS TYPICAL SECTIONS AND DETAILS – 2

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B123 of B128

230

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		

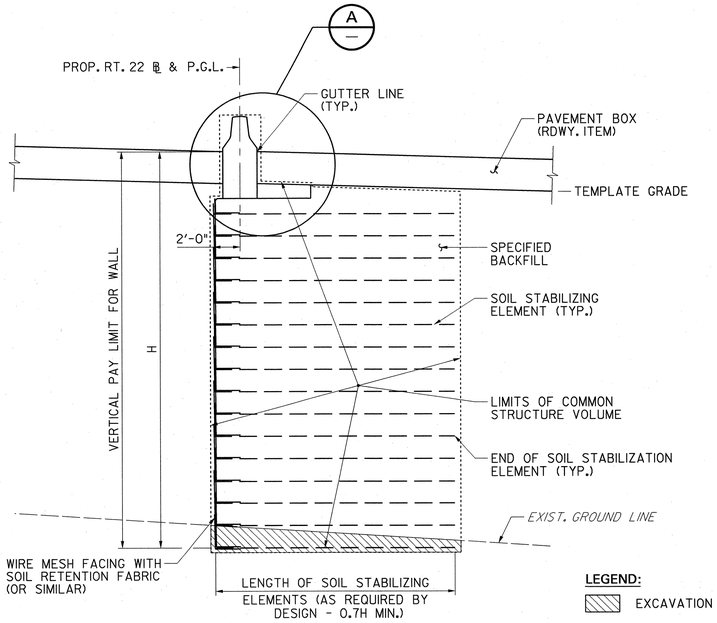
IN CHARGE OF B. KARALIUS

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marquema
PLOT DATE 01-DEC-2009 15:59
PENTABLE str-full.tbl
DESIGN FILE T:\00404\structure\r-wd-b.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 RETAINING WALLS

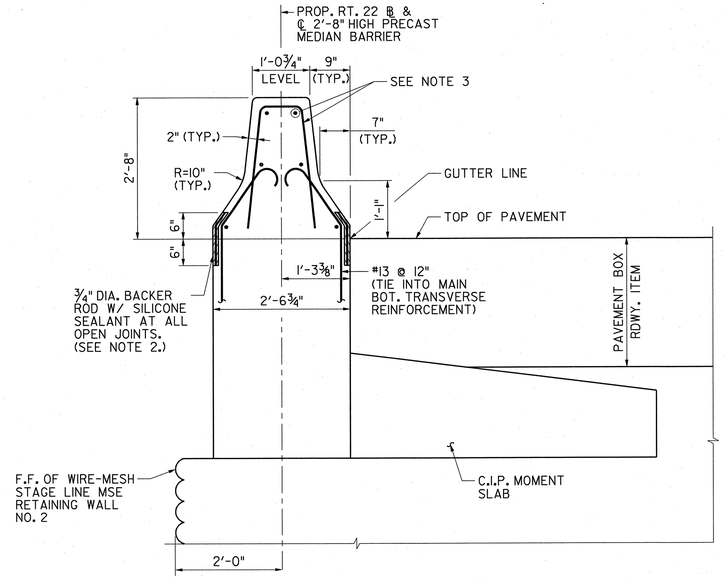


TYPICAL SECTION – STAGE LINE MSE RETAINING WALL

3/16" = 1'-0"

NOTE:

WALL 2 SHOWN
WALL 1 SIMILAR



DETAIL A

¾" = 1'-0"

NOTES:

1. THE STAGE LINE MSE RETAINING WALLS ARE TO BE MANUFACTURED BY A PROPRIETARY WALL COMPANY. DETAILS SHOWN ON THIS DRAWING CAN BE MODIFIED TO SUIT EACH COMPANY'S STANDARD DESIGN/DETAILS.
2. THE BACKER ROD AND SEALANT ARE TO BE INSTALLED ON THE SOUTH SIDE OF THE BARRIER PRIOR TO INSTALLING THE ROADWAY MATERIAL IN STAGE 1B. THE BACKER ROD AND SEALANT ARE TO BE INSTALLED ON THE NORTH SIDE OF BARRIER IN STAGE 2B, JUST PRIOR TO INSTALLING THE ROADWAY MATERIAL.
3. REINFORCEMENT IN THE BARRIER CURB AND MOMENT SLAB IS TO BE DESIGNED AND DETAILED BY THE CONTRACTOR IN ACCORDANCE WITH NJDOT REQUIREMENTS. AS A MINIMUM, IN THE BARRIER CURB PORTION, THE VERTICAL BARS ARE TO BE #16 AT 12" AND THREE #13 BARS ARE TO BE PLACED (EQUALLY SPACED) IN EACH FACE.
4. FOR ADDITIONAL NOTES SEE THE GENERAL NOTES, SH. B105.

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marruema
PLOT DATE 01-DEC-2009 15:59
PENTABLE str-full.tbl
DESIGN FILE T:\00404\structwrd_c.dgn

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	J. BOGNAR		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

3/16" = 1'-0"
1' 0 2' 4' 8' 16'

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

RETAINING WALLS TYPICAL SECTIONS AND DETAILS SH – 3

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP — MUNICIPALITY
UNION — COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B124 of B128

231

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

ROUTE 22 NOISE BARRIERS

GENERAL NOTES:

1. DESIGN SPECIFICATIONS:
   2002 (17TH EDITION) AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (WITH CURRENT INTERIMS) AS MODIFIED BY SECTIONS 3A AND 47 OF NJDOT DESIGN MANUAL FOR BRIDGES AND STRUCTURES AND 1989 AASHTO GUIDE SPECIFICATIONS FOR STRUCTURAL DESIGN OF SOUND BARRIERS (WITH CURRENT INTERIMS).

2. CONSTRUCTION SPECIFICATION:
   2007 NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AS MODIFIED BY SPECIAL PROVISIONS.

3. LOADINGS:
   WIND PRESSURE: 25 PSF FOR NOISE BARRIER A AND 33 PSF FOR NOISE BARRIER B CORRESPONDING TO A WIND VELOCITY OF 80 MPH, AS SPECIFIED IN TABLE 47-2 AND 47-3 OF SECTION 47 NJDOT DESIGN MANUAL FOR BRIDGES AND STRUCTURES.
   ICE LOAD: 3 PSF.
   SEISMIC PERFORMANCE ZONE 2, ACCELERATION COEFFICIENT (A) = 0.18, SOIL PROFILE - TYPE I

4. CONCRETE DESIGN STRESSES:
   (A) PRECAST MEMBERS (POST AND PANEL):
   SPECIFIED COMPRESSIVE STRENGTH f'c = 5,000 PSI
   EXTREME FIBER IN COMPRESSION f'c = 2,000 PSI

   (B) CAST-IN-PLACE MEMBERS:
   SPECIFIED COMPRESSIVE STRENGTH f'c = 3,000 PSI
   EXTREME FIBER IN COMPRESSION f'c = 1,200 PSI

5. REINFORCEMENT STEEL:
   DEFORMED BARS (ASTM A615, GRADE 60)
   ALLOWABLE TENSILE STRESS fs = 24,000 PSI
   DEFORMED WELDED WIRE REINFORCMENT MAY BE USED AS AN ALTERNATE. THE WELDED WIRE DESIGNATION AND SPACING SHALL MEET THE MINIMUM AREA OF STEEL AS DETERMINED BY DESIGN. REFER TO SECTION 905.01.03 (F) OF THE 2007 NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION FOR GUIDANCE CONCERNING CORROSION PROTECTION OF THE WELDED WIRE REINFORCEMENT.

6. CLASSES OF CONCRETE:
   (A) CLASS OF CONCRETE USED:
   CLASS P CONCRETE FOR POSTS AND PANELS
   CLASS B CONCRETE FOR FOUNDATIONS AND PEDESTALS

   (B) CLASS DESIGN STRENGTHS (MIX DESIGN REQUIREMENTS) (IN ACCORDANCE WITH SECTION 903 OF SPECIFICATIONS)
   CLASS P = 5,500 PSI
   CLASS B = 3,700 PSI

7. POSITION PANELS USING RECESSED LIFTING INSERTS AS SHOWN. RECESSED INSERT HOLES IN TOP PANELS AND IN POSTS SHALL BE SEALED WITH NON-SHRINK CEMENT MORTAR TINTED TO MATCH COLOR OF PANELS AND POSTS.

8. ALL CONCRETE POSTS AND PANELS SHALL BE STAINED. SEE THE ARCHITECTURAL RENDERING, SH. B106, FOR DETAILS. SEE THE SPECIAL PROVISIONS FOR STAINING REQUIREMENTS. COLOR IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

9. ALL PANELS AND POSTS SHALL BE INSTALLED TO TRUE VERTICAL (I.E., FACES OF PANELS SHALL BE FLUSH).

10. HORIZONTAL PANEL JOINTS ON EACH SIDE OF THE POST SHALL LINE UP WITHIN 1" TOLERANCE, PROVIDING THAT THE FIRST MATCHING PANEL JOINT FROM THE GROUND SHALL HAVE ZERO TOLERANCE AND THE LAST MATCHING JOINT SHALL HAVE 1" TOLERANCE.

11. ALL PRECAST MEMBERS SHALL BE FABRICATED TO PLAN DIMENSIONS WITHIN THE TOLERANCES SPECIFIED IN 613 OF THE SPECIAL PROVISIONS.

12. EXCAVATED FOUNDATION PITS SHALL BE KEPT DRY DURING PLACEMENT OF CRUSHED STONE AND CONCRETE. IF IT IS NOT POSSIBLE TO KEEP THE FOUNDATION PIT DRY TREMIE CONCRETE SHALL BE USED AT THE BASE, SEE SPECIAL PROVISIONS.

13. IF CORRUGATED METAL PIPE IS USED FOR THE CONSTRUCTION OF THE DRILLED SHAFT FOUNDATION, PAYMENT SHALL BE INCLUDED IN THE PAY ITEM "NOISE BARRIER, FOUNDATION".

14. SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR FOR THE ENGINEER'S APPROVAL SHALL SHOW COMPLETE NOISE BARRIER PLAN AND ELEVATIONS, INCLUDING ALL STEPS AND DETAILS AND DIMENSIONS NECESSARY FOR FABRICATION AND ERECTION. FOR THE LOCATIONS OF NOISE BARRIER, SEE ROADWAY PROFILE PLANS.

15. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION IN THE VICINITY OF THE PROPOSED NOISE BARRIER. DIG TEST PITS AS DIRECTED BY THE ENGINEER (ROADWAY ITEM).

16. FOR NOISE BARRIER, BRIDGE (NOISE BARRIER B) LAYOUT AND DETAILS, SEE SH. B117 TO SH. B119.

SUMMARY OF QUANTITIES

STANDARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITIES
	NOISE BARRIER		
613002P	NOISE BARRIER, FOUNDATION	UNIT	51
613004P	NOISE BARRIER, ROADWAY	SY	1,357
613005P	NOISE BARRIER, BRIDGE	SY	156
613015P	NOISE BARRIER TEST POSTS AND PANELS	LS	LUMP SUM

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	F. SKROBOT		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

NOISE BARRIERS – SUMMARY OF QUANTITIES AND GENERAL NOTES

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP
MUNICIPALITY

UNION
COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

BRIDGE SHEET NO. B125 of B128

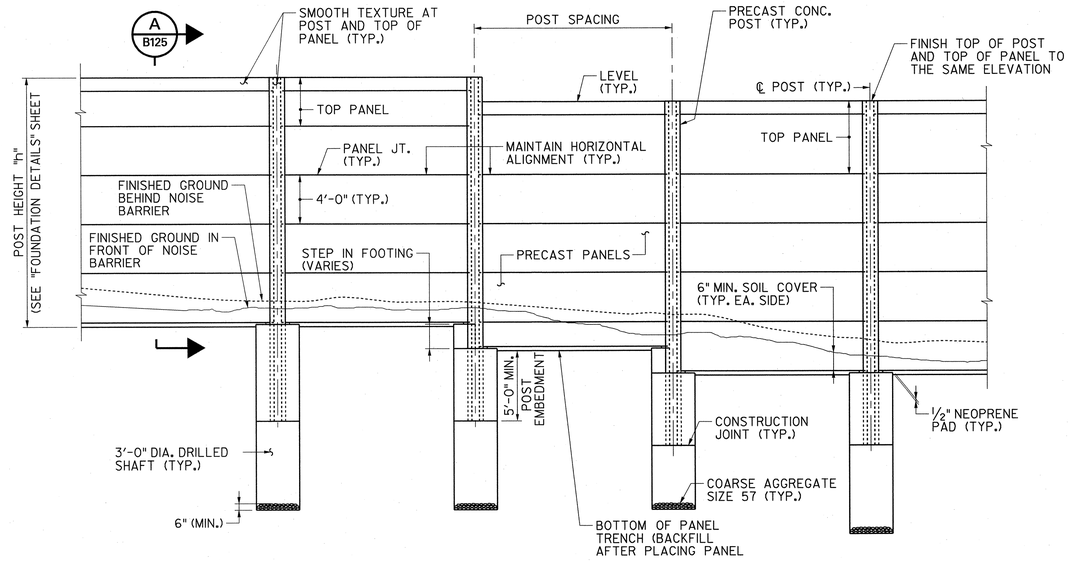
232

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marquema
PLOT DATE 01-DEC-2009 15:59
PENTABLE str-full.tbl
DESIGN FILE T:\N00404\structnw_a.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

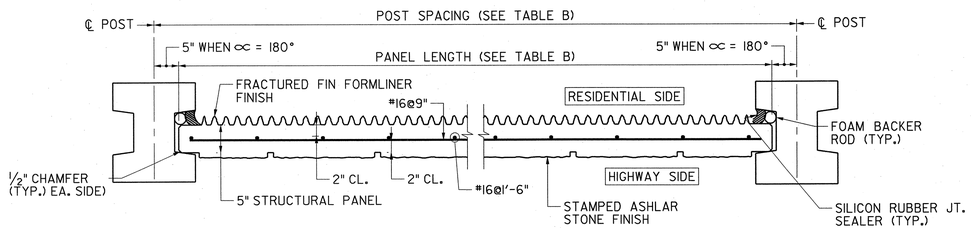
ROUTE 22 GROUND MOUNTED NOISE BARRIER



GROUND MOUNTED NOISE BARRIER – PARTIAL ELEVATION

(DRILLED SHAFT FOUNDATION AND HIGHWAY SIDE OF WALL SHOWN)

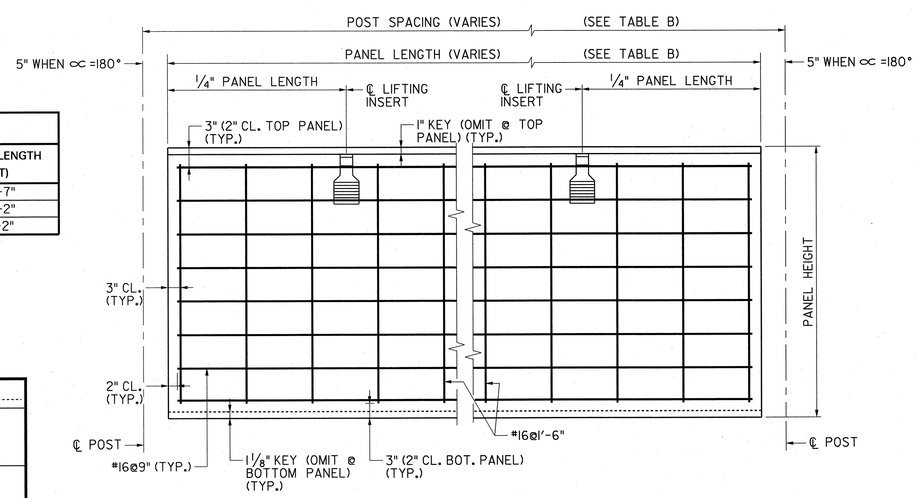
N.T.S.



TYPICAL PANEL SECTION PLAN

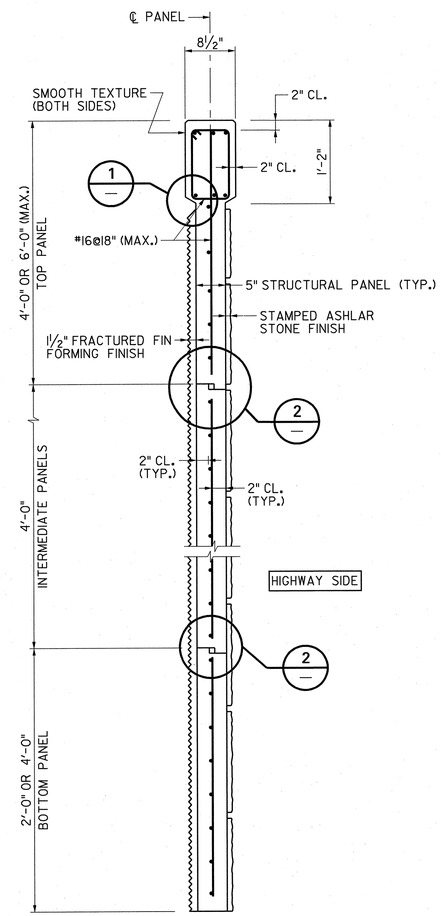
N.T.S.

TABLE B	
POST SPACING (FT)	PANEL LENGTH (FT)
16'-5"	15'-7"
13'-0"	12'-2"
10'-0"	9'-2"



TYPICAL PANEL SECTION ELEVATION

N.T.S.

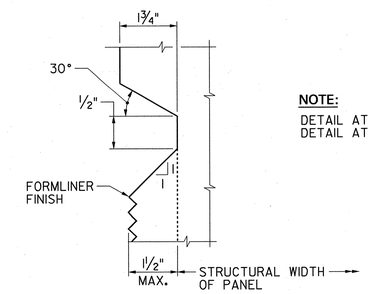


SECTION A B125

N.T.S.

NOTES:

1. FOR ELEVATION VIEW SEE ROADWAY PROFILE DRAWING P-3. FOR PLAN VIEW SEE ROADWAY CONSTRUCTION DRAWINGS C-4 AND C-5.
2. PROVIDE EPOXY COATED REINFORCEMENT FOR ALL BARRIER PANELS.

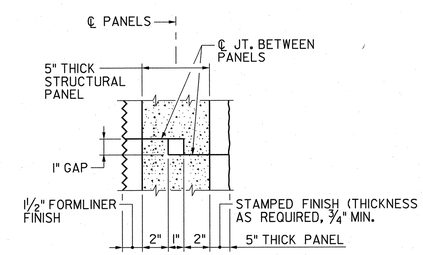


NOTE:

DETAIL AT FORMLINER FINISH SHOWN; DETAIL AT STAMPED FINISH SIMILAR.

DETAIL 1

N.T.S.



DETAIL 2

N.T.S.

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

GROUND MOUNTED NOISE BARRIER A PRECAST CONCRETE PANELS

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 26369

SCALE: AS SHOWN

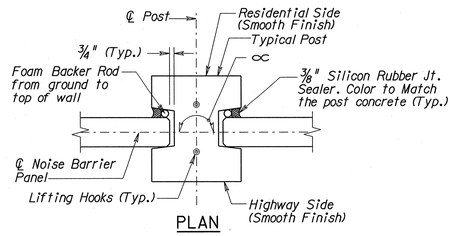
BRIDGE SHEET NO. B126 of B128

233

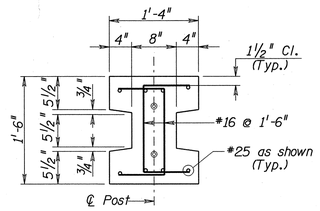
PARSONS BRINCKERHOFF CADD DATA	
OPERATOR	maruema
PLOT DATE	01-DEC-2009 15:59
PENTABLE	str-full.tbl
DESIGN FILE	TX\00404\strucVnw_b.dgn

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	F. SKROBOT		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

STATE	FEDERAL PROJECT NO.
N.J.	FS-BR-0040 (168)

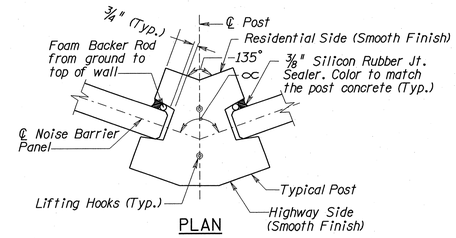


PLAN

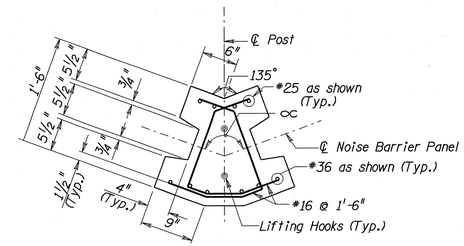


SECTION OF POST TYPE "A"

POST HEIGHT ≤ 16'-5" & 160° < ∝ < 200°

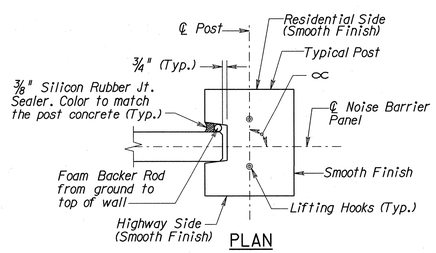


PLAN

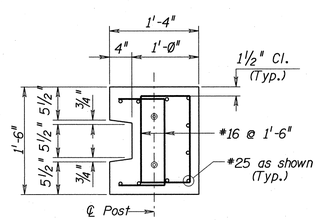


SECTION OF POST TYPE "KA"

POST HEIGHT ≤ 16'-5" & 110° < ∝ < 160°

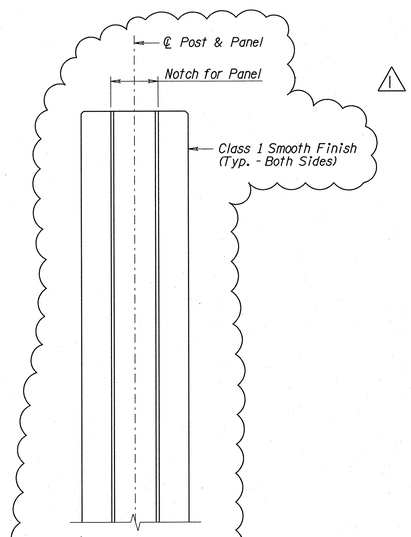


PLAN



SECTION OF END POST TYPE "D"

POST HEIGHT ≤ 16'-5" & 70° < ∝ < 110°



POST FINISH DETAIL

1	BJK	MC	5/09
REVISION	BY	CKD.	DATE

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800

SCALE : NONE

BRIDGE SHEET NO. BI27 OF BI28

234

STANDARD DRAWING PLATE 2.8-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

NOISE WALL BARRIERS
PRECAST CONCRETE POST DETAILS

ROUTE 22 OVER LIBERTY AVENUE /CONRAIL

MUNICIPALITY: HILLSIDE TOWNSHIP

COUNTY: UNION

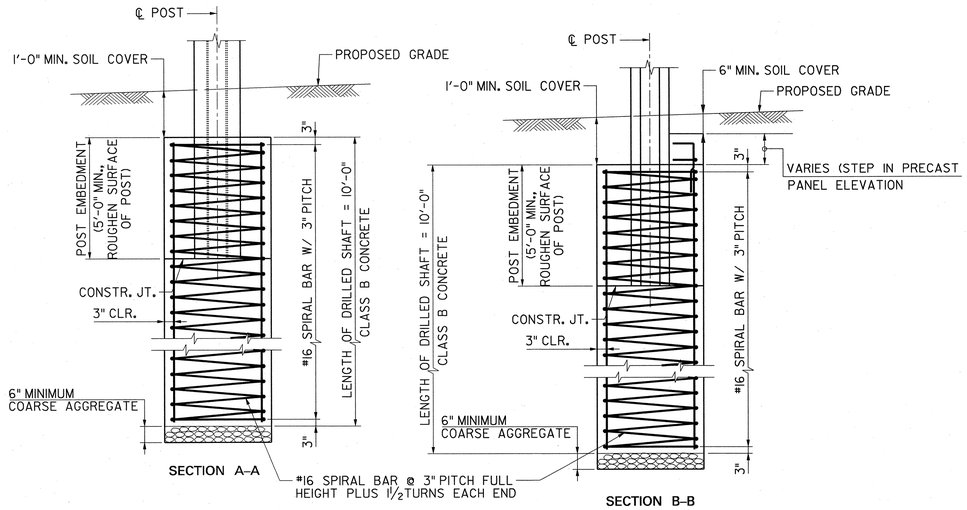
CONTROL SECTION	JOB NO.
DES. BY	CHK. BY
DWN. BY: I. PLOTNIKOVA	CHK. BY
EST. BY	CHK. BY
SPECS. BY	
IN CHARGE OF B. KARALIUS	

PARSONS BRINCKERHOFF CADD DATA
OPERATOR marquema
PLOT DATE 01-DEC-2009 15:11
PENTABLE HMES.TBL METRIC
DESIGN FILE T:\00404\struc\NJDOT Details\2.8-2.dgn

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	FS-BR-0040 (168)		

STRUCTURE NO.

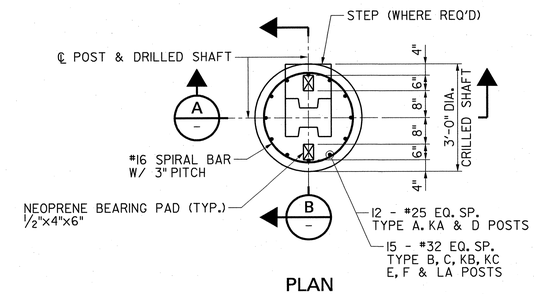
ROUTE 22 GROUND MOUNTED NOISE BARRIER



TYPICAL DRILLED SHAFT DETAIL

(FOR MAXIMUM POST HEIGHT OF 16'-0")

N.T.S.



PLAN

N.T.S.

NOTES:

1. DRILLED SHAFT IS PAID FOR UNDER THE ITEM "NOISE BARRIER, FOUNDATION".
2. "FOUNDATION EXCAVATION" IS PAID FOR UNDER THE ITEM, "NOISE BARRIER, FOUNDATION".
3. FOR LOCATION, PLAN AND ELEVATION OF NOISE BARRIER A AND B SEE ROADWAY PLANS AND RETAINING WALL NO. 8 RESPECTIVELY.

ESTIMATE QUANTITY OF POST & DRILLED SHAFT				
	POST TYPE			DRILLED SHAFT
	A	KA	D	
NO. REQ'D	48	2	1	51

PARSONS BRINCKERHOFF CADD DATA

OPERATOR	marcema
PLOT DATE	01-DEC-2009 15:59
PENTABLE	str-full.tbl
DESIGN FILE	TA\00404\struc\nw-d.dgn

CONTROL SECTION		JOB NO.	
DES. BY	Y. CHEN	CHK. BY	B. KARALIUS
DWN. BY	F. SKROBOT		
EST. BY	C. MANJUNATH	CHK. BY	Y. CHEN
SPECS. BY	B. KARALIUS		
IN CHARGE OF	B. KARALIUS		

REVISION	BY	CKD.	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

GROUND MOUNTED NOISE BARRIER FOUNDATION DETAILS

ROUTE 22 LIBERTY AVENUE & CONRAIL BRIDGE
CONTRACT NO. 057009080

HILLSIDE TOWNSHIP MUNICIPALITY — UNION COUNTY

PB AMERICAS, INC.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
BRUCE J. KARALIUS
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 28369

SCALE: AS SHOWN

BRIDGE SHEET NO. B128 of B128

235