

# BRIDGES

# PROJECT PROFILES



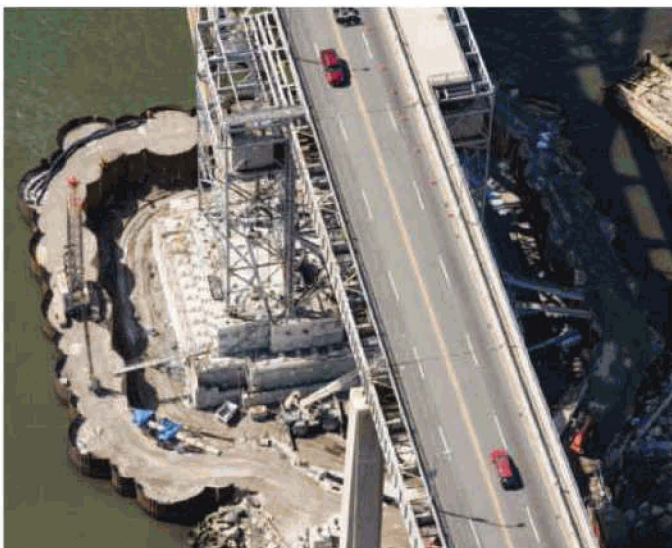
## Rehabilitating the New Jersey Abutment of Bayonne Bridge

The Bayonne Bridge features a 1,675-ft arch that spans the Kill Van Kull tidal strait connecting Bayonne, NJ, with Staten Island, NY.

Since the 1970s, the concrete of the Bayonne abutment has undergone steady deterioration due to alkali-silica reaction (ASR), which created internal expansive stresses and cracking. Previous efforts to mitigate the cracking proved ineffective.

The Port Authority of New York and New Jersey teamed with Modjeski and Masters, an engineering firm specializing in design, inspection and rehabilitation of bridges, to develop an innovative solution. They opted to encase the massive abutment (130 ft x 110 ft x 40 ft high) in new concrete with miles of tri-axial post-tensioning steel. To maintain the accuracy of drilling operations, the contractor utilized directionally-adjustable drill bits equipped with a light emitting diode (LED) tracking device, which allowed for real-time correction.

In the end, 245 miles of post-tensioning steel strand was installed over 5.5 miles of horizontal and vertical drilling. The \$30-million Bayonne Bridge rehabilitation project won the 2008 Award of Excellence in Bridge Rehabilitation from the Post-Tensioning Institute. ■



## ODOT Shifts to Design-Build on ARRA-Funded I-90 Bridge

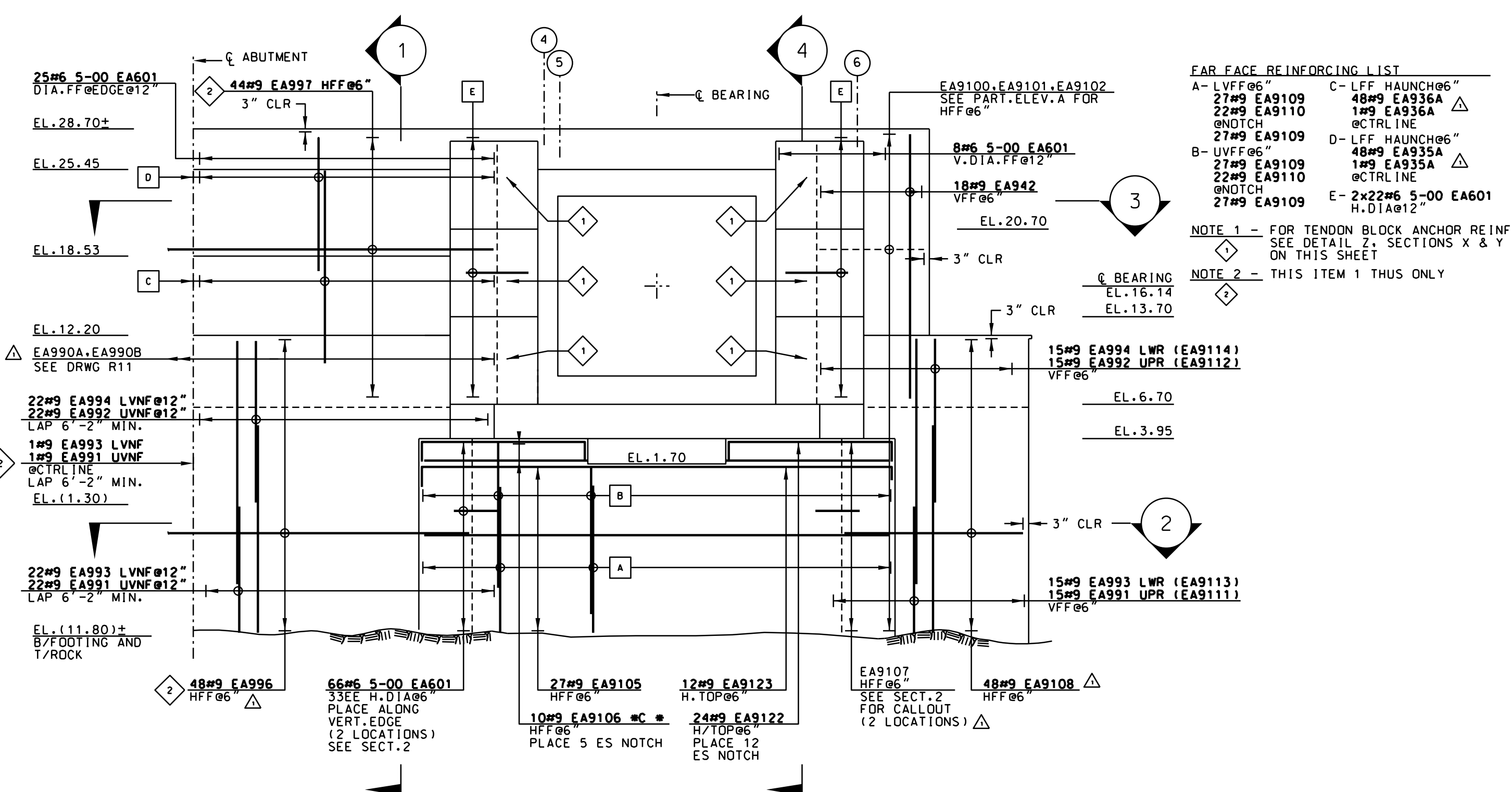
The Ohio Dept. of Transportation (ODOT) plans to allocate a significant portion of its \$744 million of stimulus funding to help construct a new westbound I-90/Innerbelt Bridge that crosses the Cuyahoga River Valley in Cleveland. Built in 1959, the existing Innerbelt Bridge is similar in design to the failed I-35W bridge in Minneapolis and is currently rated "poor" on the federal bridge rating system.



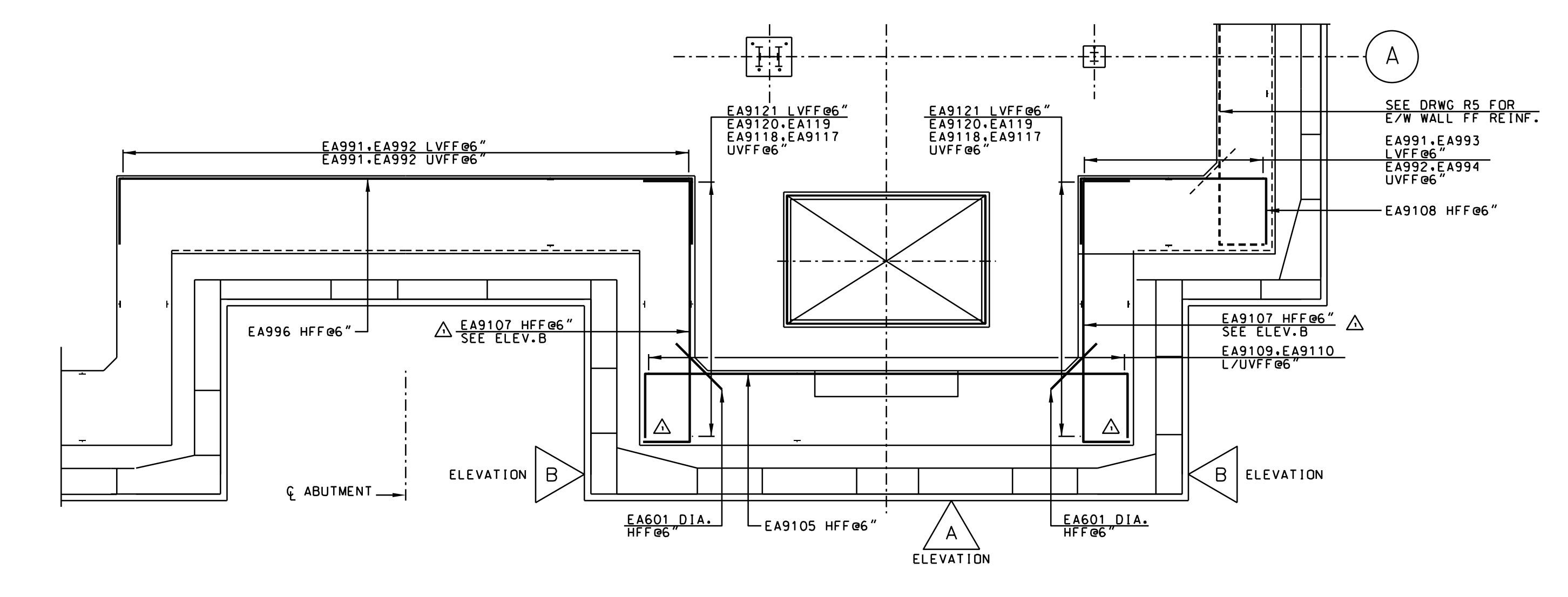
ODOT is looking to its project consultant, Michael Baker Jr., to help deliver the new five-lane bridge using speedier design-build techniques which will allow the state to meet the ARRA stipulations for construction. Baker is assisting ODOT with development of the procurement package, which will include specifications, design criteria, conceptual plans and project scoping for this large multi-faceted project that includes mainline construction over the valley and construction of multiple connections and overpasses. As part of this early project development, an extensive public stakeholder coordination program has been undertaken by the ODOT/Baker team to incorporate aesthetics and enhancements in cooperation with community groups, local officials and public stakeholders. The project will be Ohio's first value-based two-step design-build project and is expected to be to be opened to traffic by the end of 2013. ■



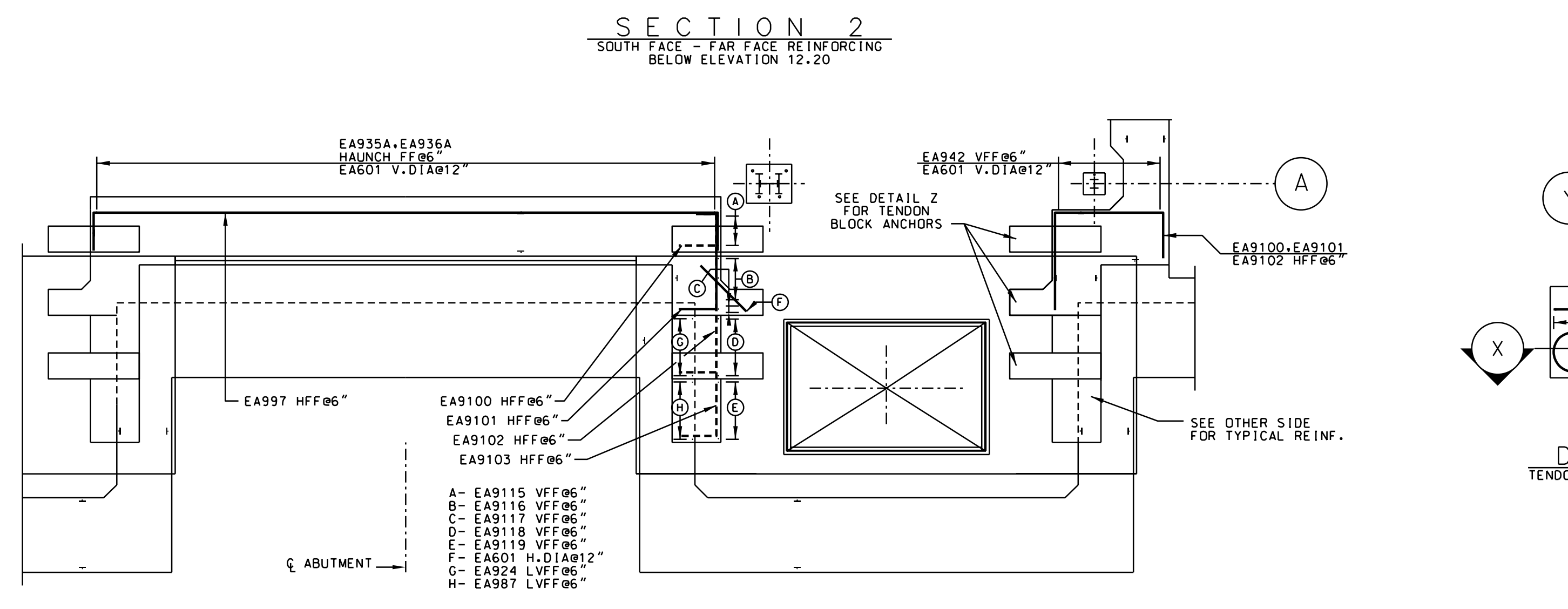
Ohio Department of Transportation



**ELEVATION A**  
SOUTH FACE - FAR FACE REINFORCING  
(THIS ELEVATION 2 THUS)



**ELEVATION B**  
SOUTH FACE - FAR FACE REINFORCING  
RETURN WALLS AT ARCH SHOE BRG  
(THIS ELEVATION 4 THUS)

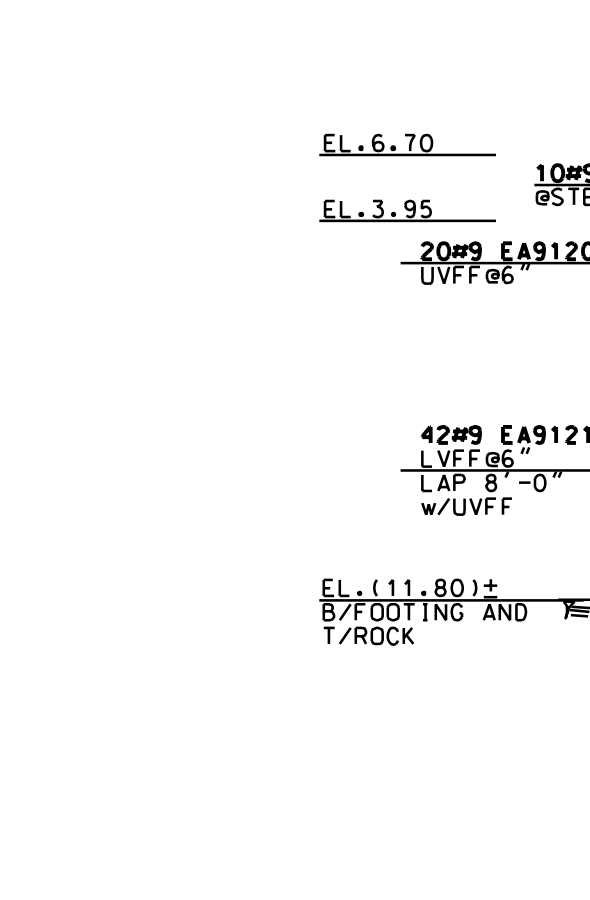


**SECTION 2**  
SOUTH FACE - FAR FACE REINFORCING  
BELOW ELEVATION 12.20

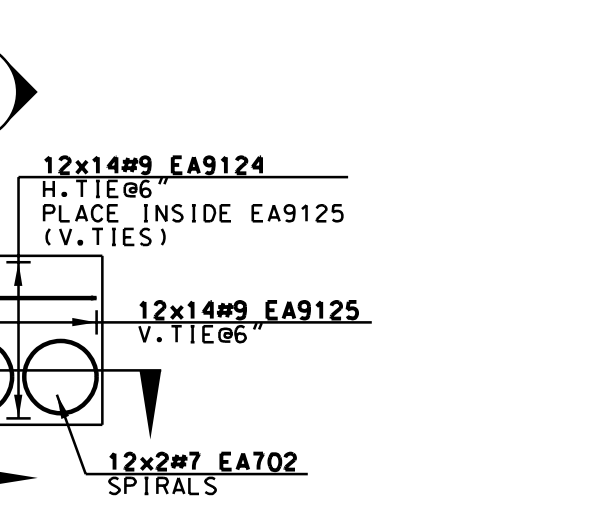


**SECTION 3**  
SOUTH FACE - FAR FACE REINFORCING  
ABOVE ELEVATION 12.20

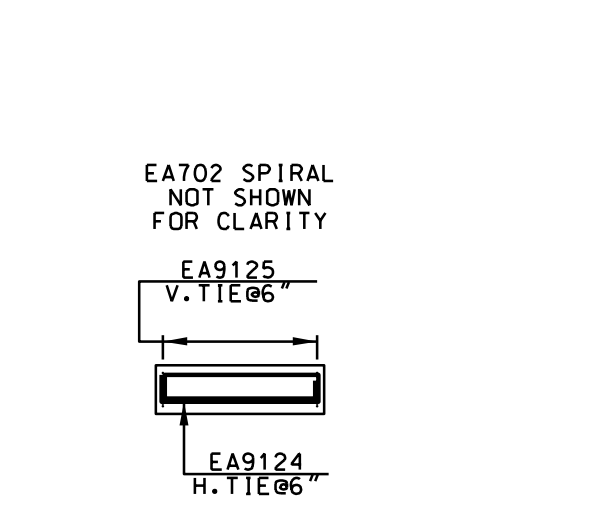
- FAR FACE REINFORCING LIST**
- A- LVFF#6
  - B- UVFF#6
  - C- LFF HAUNCH#6
  - D- LFF HAUNCH#6
  - E- 2x22#6 5-00 EA601 H.DIA#12"



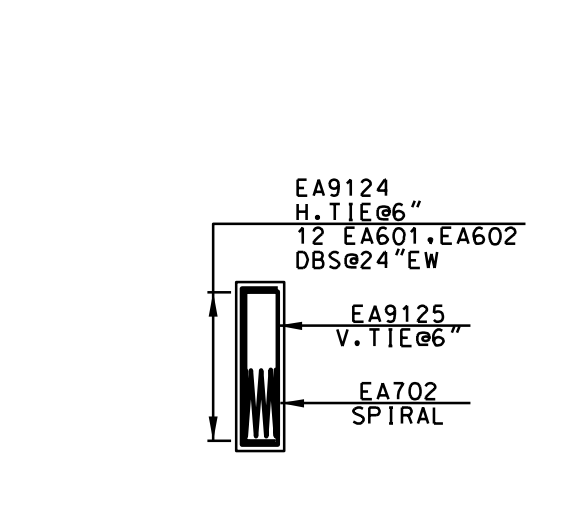
**SECTION 1**  
FAR FACE REINFORCING



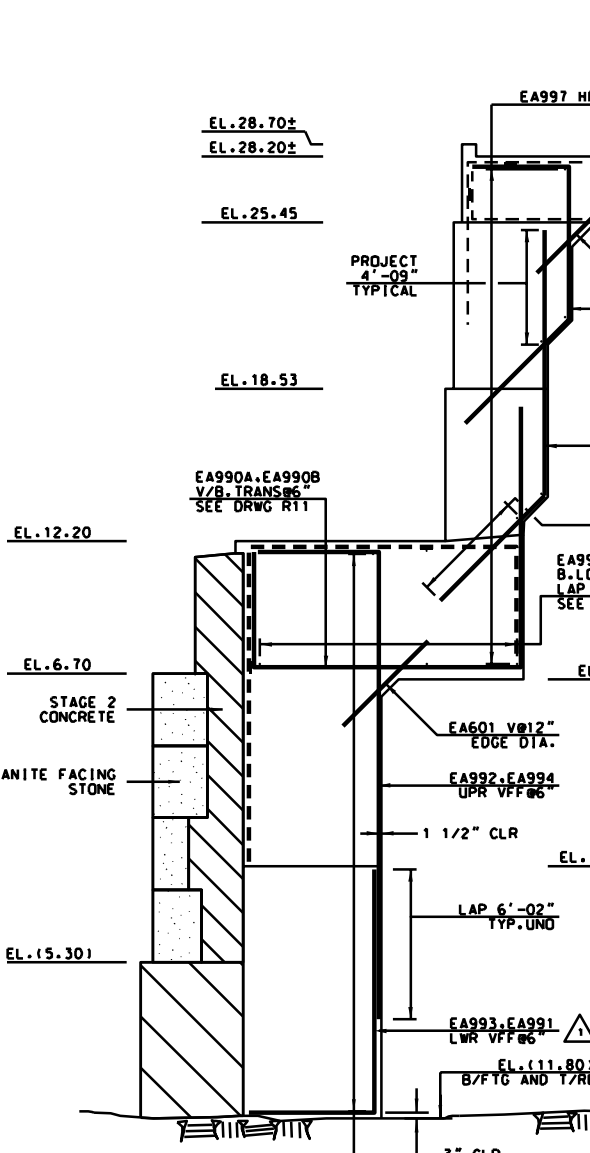
**DETAIL Z**  
TENDON BLOCK ANCHOR REINFORCING  
(12 THUS)



**SECTION X**  
SEE DETAIL Z



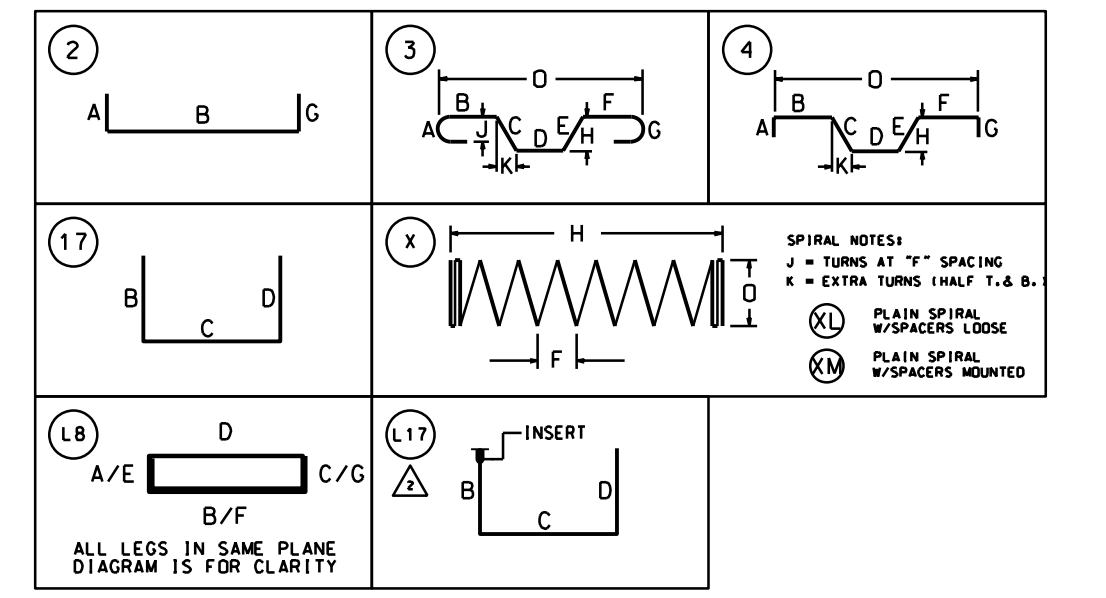
**SECTION Y**  
SEE DETAIL Z



**SECTION 4**  
SOUTH FACE - FAR FACE REINFORCING

QTY	SIZE	THEO LENGTH	WGT	EP	BAR MARK	BND V TYP CD	A	B	C	D	BENDING DIMENSIONS									
							E	F/R	G	H	J	K	L	M	N	O				
56	# 9	6-11	1317		EA9100	17		1-07	2-043	2-11										
56	# 9	11-09	2237		EA9101	17		1-07	7-032	2-11										
56	# 9	16-08	3173		EA9102	17		1-07	12-02	2-11										
24	# 9	15-00	1224		EA9103	17		1-07	10-06	2-11										
54	# 9	46-09	8583		EA9105	17		4-10	37-012	4-10										
20	# 9	18-00	1224	C	EA9106	L17		13-003	4-11											
128	# 9	27-01	11787		EA9107	17		3-06	20-01	3-06										
96	# 9	24-03	3173		EA9108	17		5-00	14-03	5-00										
216	# 9	16-10	12362		EA9109	17		5-02	11-08											
88	# 9	16-11	5061		EA9110	17		5-02	11-09											
28	# 9	26-05	2515		EA9115	17		3-00	20-043	3-00										
40	# 9	19-05	2641		EA9116	17		3-00	13-043	3-00										
8	# 9	29-04	798		EA9117	17		1-04	28-00											
40	# 9	22-04	3037		EA9118	17		1-04	21-00											
40	# 9	15-04	2085		EA9119	17		1-04	14-00											
80	# 9	15-01	4103		EA9120	17		3-10	11-03											
168	# 9	15-10	9044		EA9121	17		3-10	12-00											
48	# 9	16-02	2638		EA9122	2	1-07	13-00												
24	# 9	40-08	3318		EA9123	2	1-07	37-06												
168	# 9	24-06	13994		EA9124	L 8	1-03	6-06	1-03	6-06	1-03	6-06	1-03							
168	# 9	25-06	14566		EA9125	L 8	1-06	6-06	1-06	6-06	1-06	6-06	1-06							
48	# 9	16-00	2611		EA924	17		3-04	9-04	3-04										
97	# 9	16-06	5442		EA9354	4	4-00	6-04	6-02					4-041	4-041					
97	# 9	17-03	5689		EA9364	3		11-01	6-02					4-041	4-041					
36	# 9	28-01	3437		EA942	17		3-06	21-01	3-06										
40	# 9	9-00	1224		EA987	17		3-04	2-04	3-04										
75	# 9	24-07	6269		EA991	17		5-02	19-05											
74	# 9	18-01	4550		EA992	17		5-02	12-11											
75	# 9	15-03	3889		EA993	17		5-02	10-01											
74	# 9	21-09	5472		EA994	17		5-02	16-07											
44	# 9	54-00	8813		EA996	17		5-00	44-002	5-00										
44	# 9	53-10	8053		EA997	17		2-11	47-113	2-11										
175	# 7	60-06	21641		EA701	X								0-06	2-06	5	2	2-09		
24	# 7	43-03	2122		EA702	X								0-05	1-03	3	2	2-09		
286	# 6	5-00	2148		EA601															
TOTAL: 194982																				
Total for size 9: 169071																				
Total for size 7: 23763																				
Total for size 6: 2148																				

NOTE: QUANTITIES AND WEIGHTS IN SCHEDULE HAVE BEEN MODIFIED TO REFLECT CURRENT REVISION REVISION NUMBERS ABOVE AS LEFT INDICATE REVISIONS TO ALL OTHER SCHEDULE COLUMNS



PLACE CONCENTRIC WITH PIPES AT:  
1. BOTH ENDS OF HORIZ. TENDONS THAT DO NOT REQUIRE DRILLING  
2. ENTRY END OF OTHER HORIZ. TENDONS WITHIN 4'-0" FROM ANY VERTICAL OR HORIZ. EDGE - OTHER THAN THE 4" WIDE STEPS AND BEARING PADS  
3. AT TOP OF THE TYPE II ROCK ANCHORS (ANCHORS REQUIRING PIPE AT THE TOP OF HOLE)

**SECTION W**  
GC TO PROVIDE LOCATIONS AND VERIFY QTY'S  
SEE DETAIL D/S69 AND TYPE 19/S138

**JM AHLE CO., INC.**  
POST OFFICE BOX 282  
2 HERMAN STREET  
SOUTH RIVER, NEW JERSEY 08882  
Phone 1732-1238-1700 Fax 1732-1692-2345

ALL REINFORCING THIS DRAWING 2 THUS UNLESS OTHERWISE NOTED  
SCHEDULE INDICATES TOTAL QTY'S REQD.

REV. NO.	DATE	BY	DESCRIPTION
REVISION #2	8/18/03		REVISED PER ENGR REVIEW W/COMMENTS DATED 6-25-03 - HP 1 00014 18-1-031
REVISION #1	5/16/03		REVISED PER ENGR REVIEW W/COMMENTS DATED 4-1-03

DRW. NO.	RAI	SCALE	DATE	3/20/03
ARCH.	MODJESKI AND MASTERS			
ENGR.	MODJESKI AND MASTERS			
G.C.	SPEARIN PRESTON & BURROWS			
PROJ. TITLE	BAYONNE BRIDGE NJ ABUTMENT REHABILITATION			
LOCATION	BAYONNE, NEW JERSEY			
SOUTH SIDE STAGE 1 REINFORCING	FAR FACE REINFORCING			R9

**FINAL SET**