2nd Street Connector

Gateway to Historic Sacramento

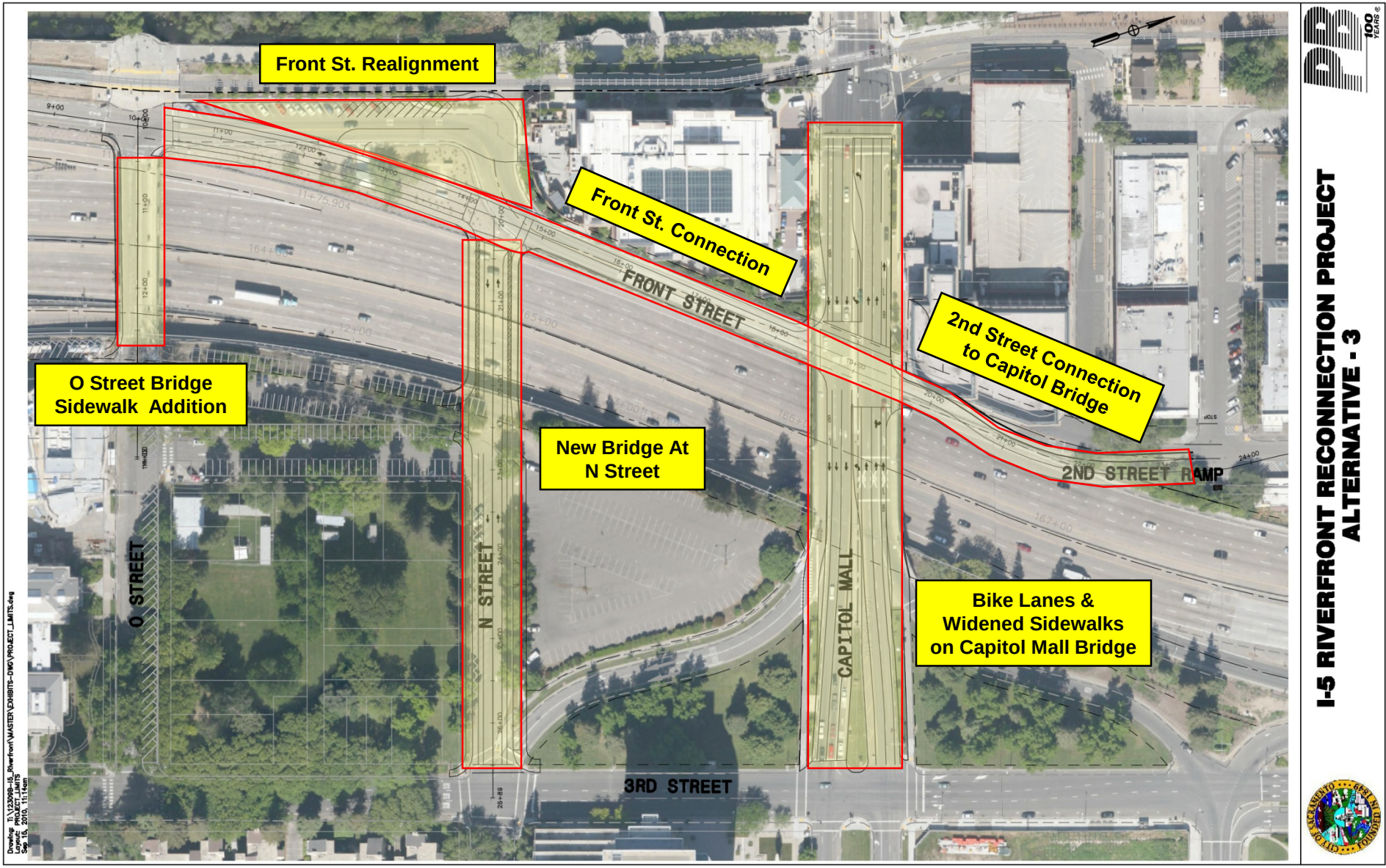
By: Ali Seyedmadani, PhD, PE

Western Bridge Engineer's Seminar
September 2015

Riverfront Reconnection Project

WSP | PARSONS BRINCKERHOFF

Ultimate Project

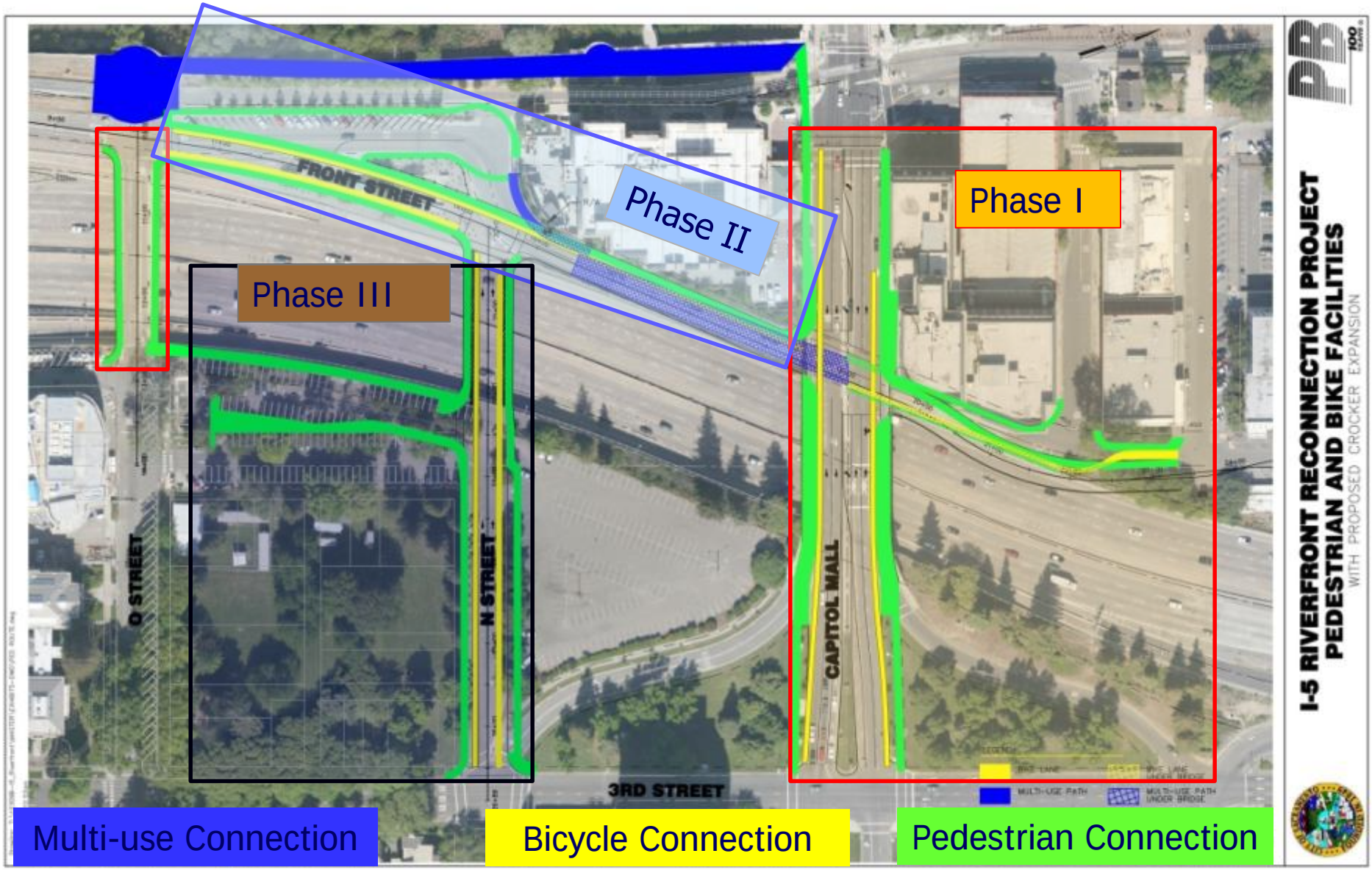


Project Purpose:

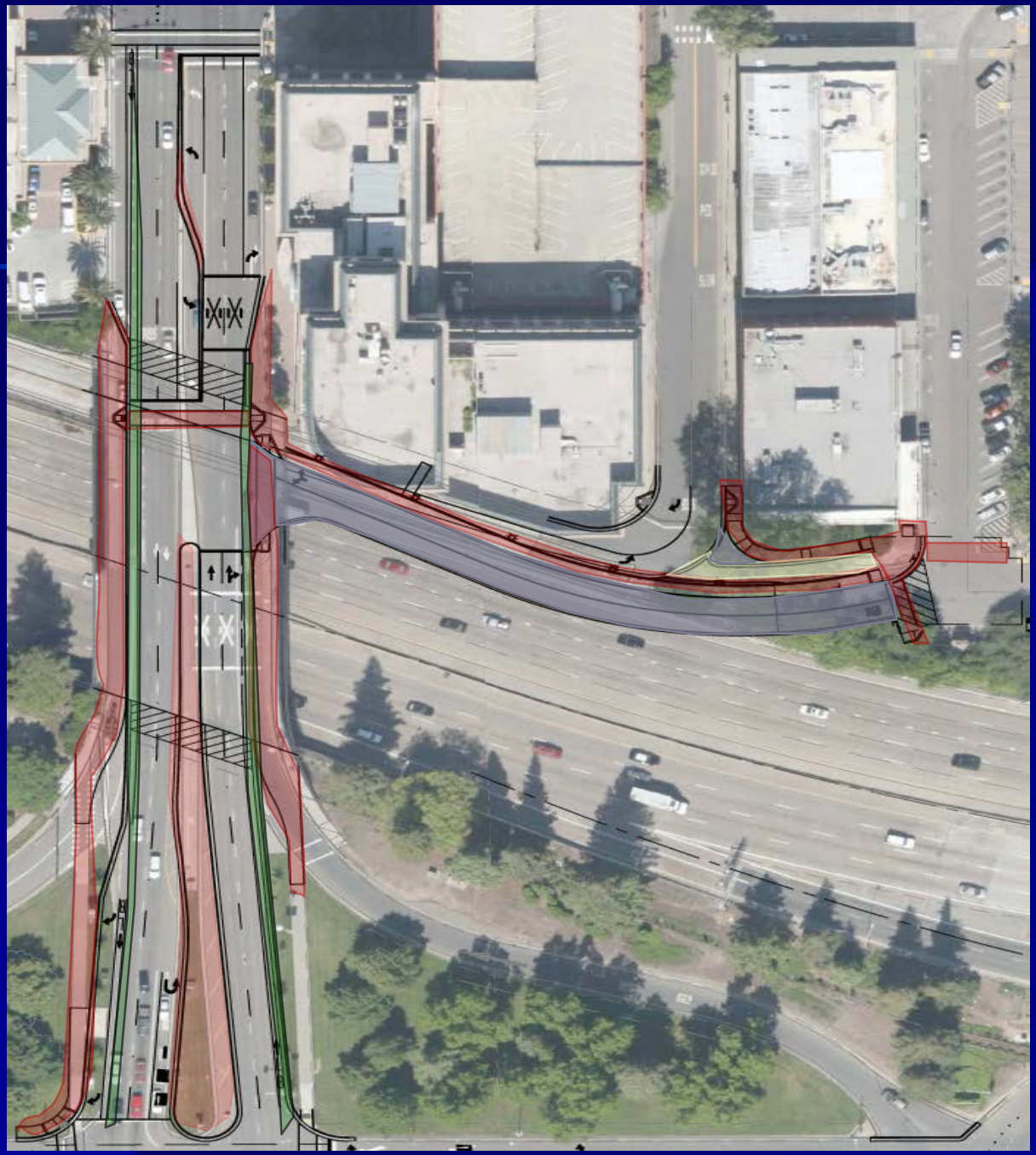
- Reconnect Downtown and the Riverfront/Old Sacramento Areas
- Improve circulation for bikes, pedestrians and vehicles

WSP | PARSONS BRINCKERHOFF

Project Phasing

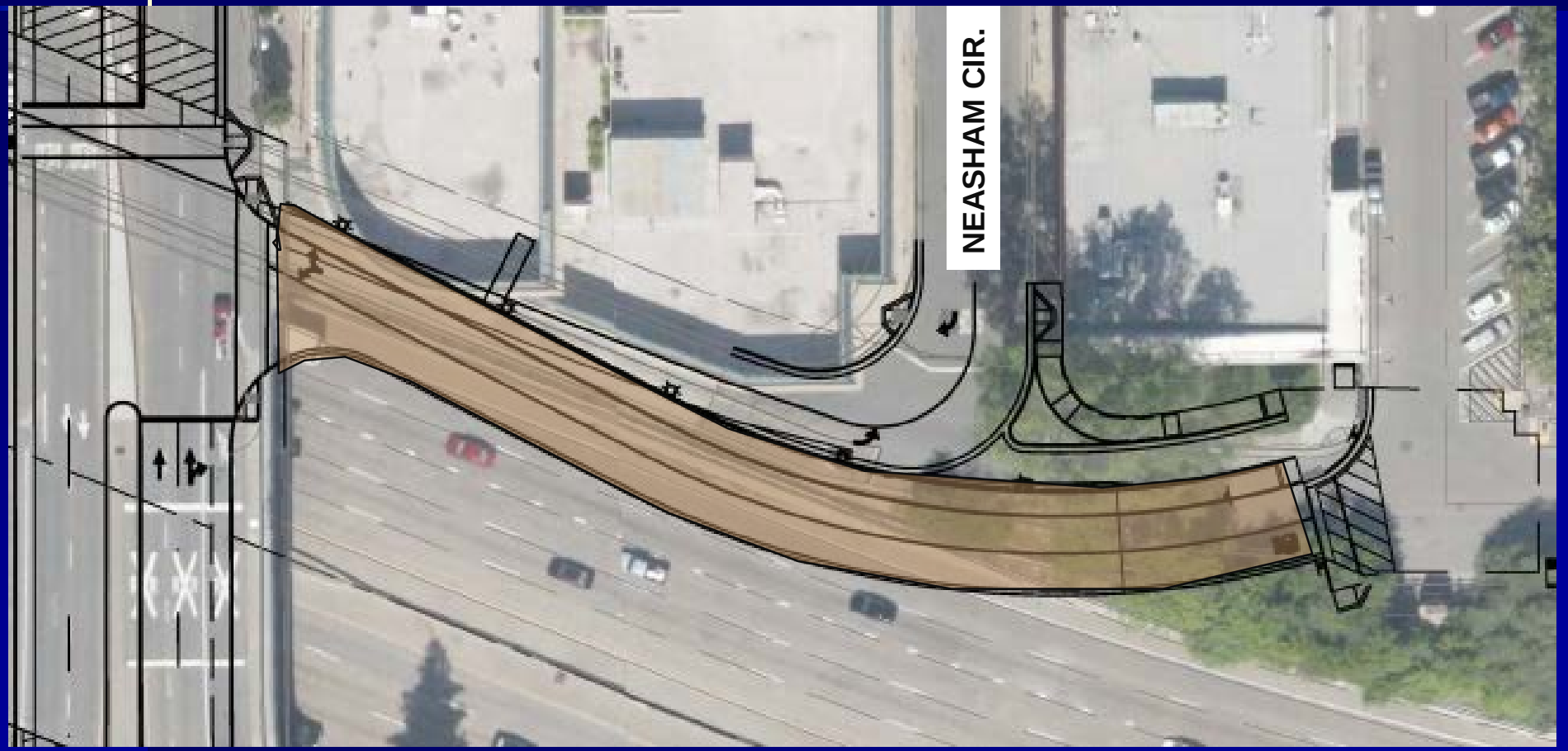


2nd Street Connection



WSP | PARSONS BRINCKERHOFF

2nd Street Connection



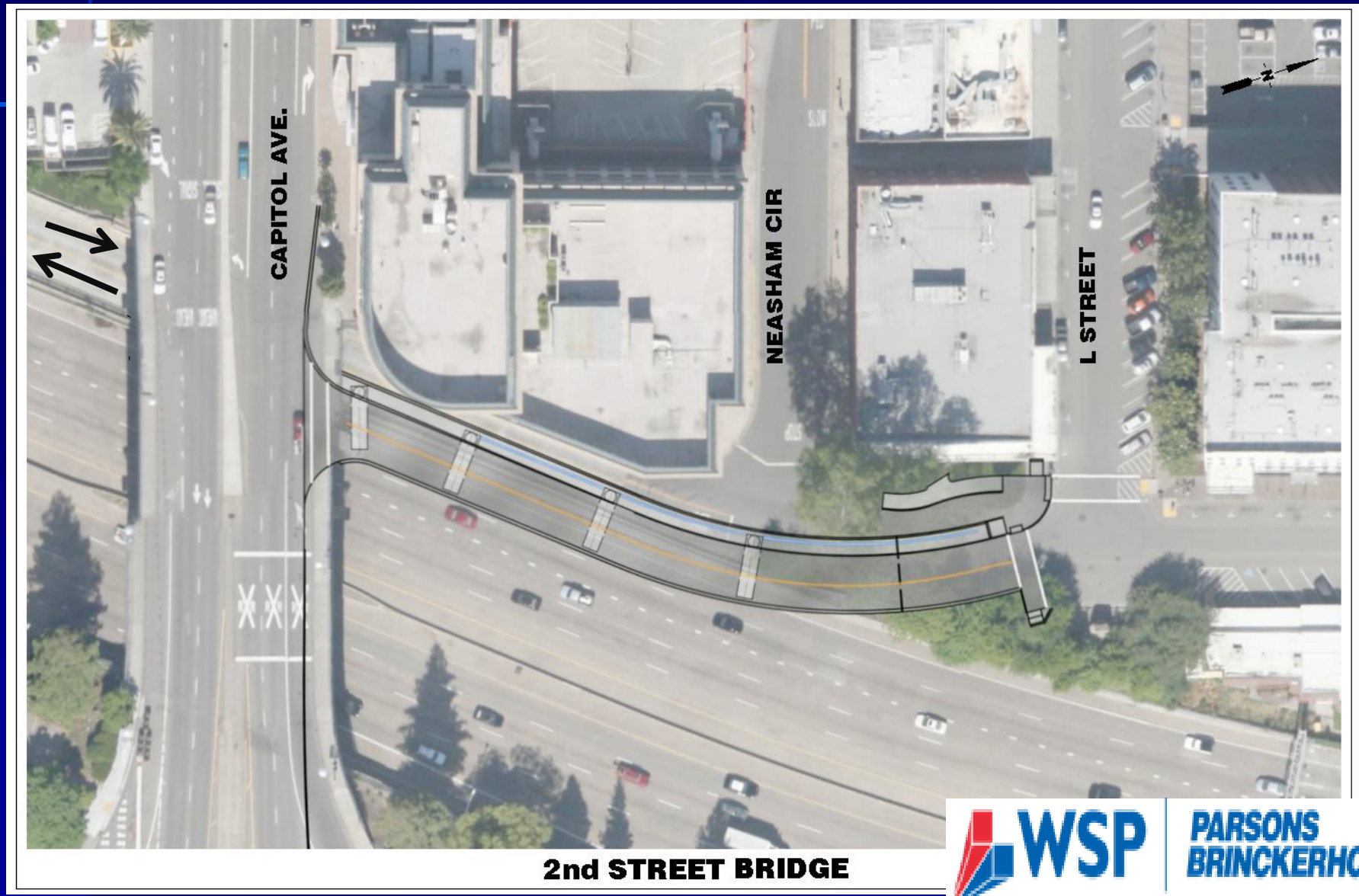
Existing 2nd Street

WSP | PARSONS BRINCKERHOFF


PBS
Space
Available
For Lease
(916)
288.4800
© 2013 Google
Google earth

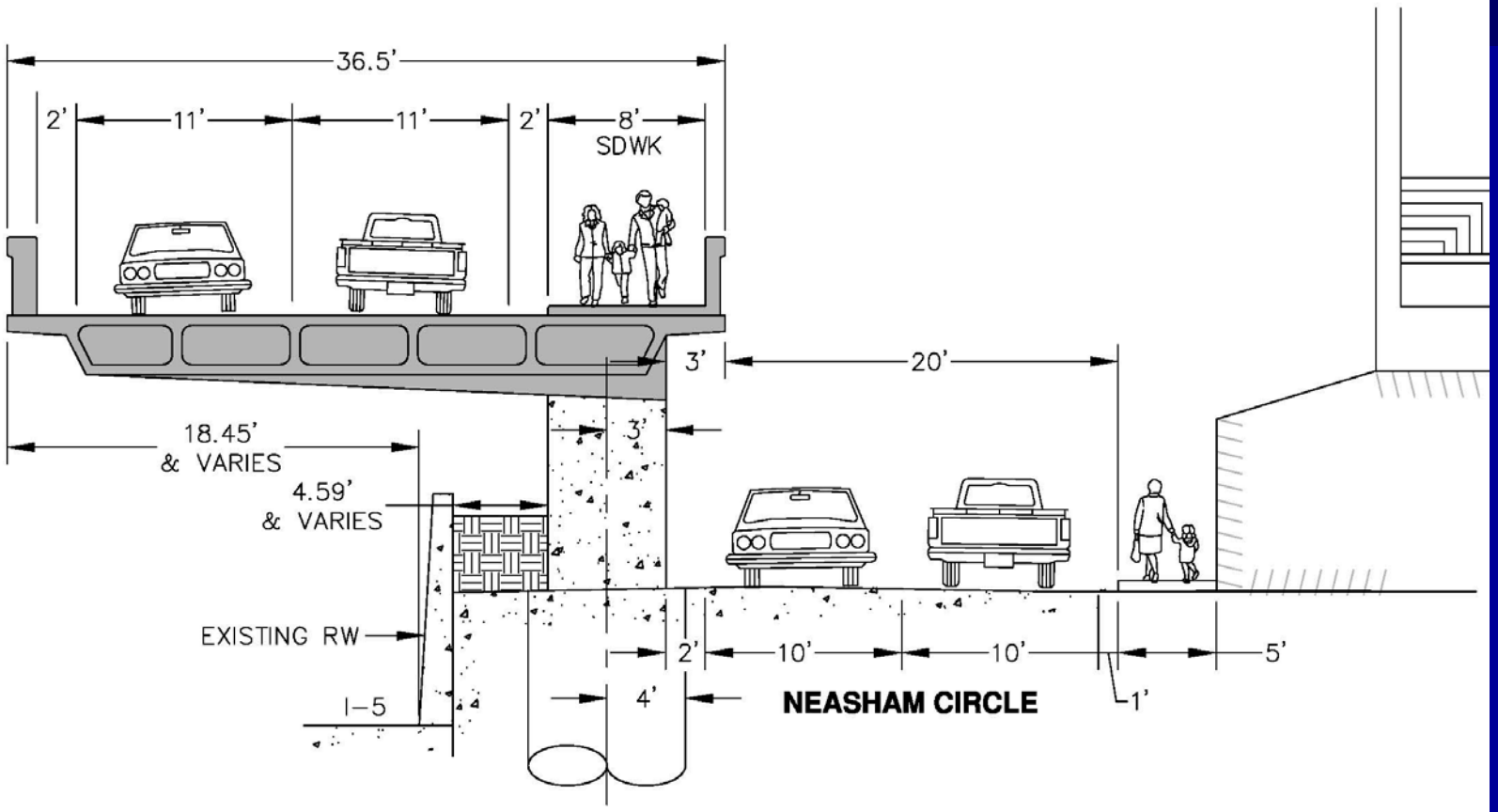
2nd Street/ Neasham Circle

2nd Street Alignment



WSP | PARSONS BRINCKERHOFF

Typical Section

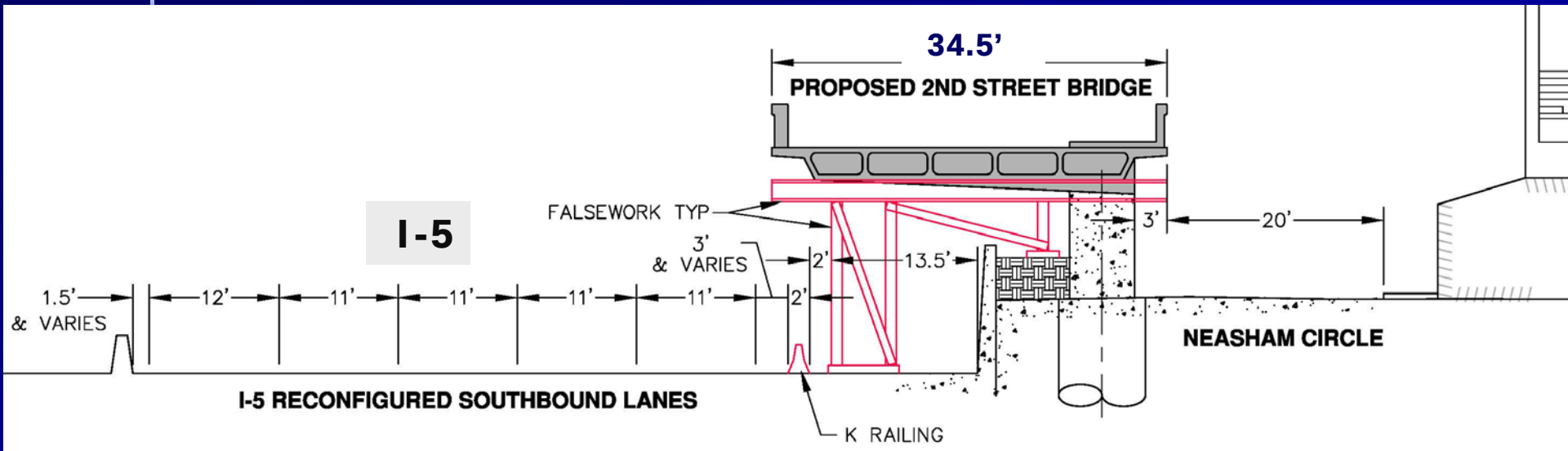


2nd STREET BRIDGE

OPTION 1 - ULTIMATE DESIGN

N.T.S

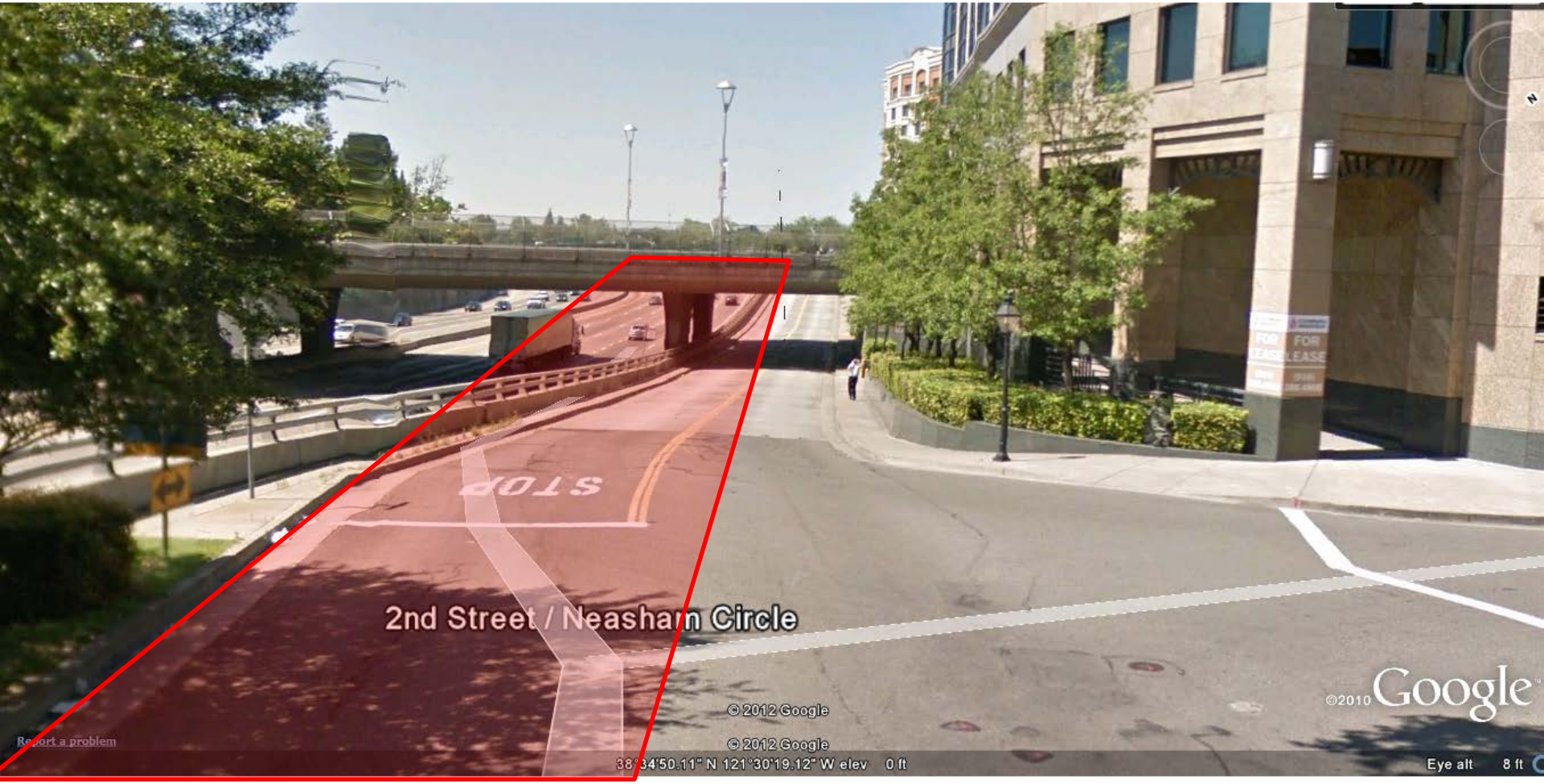
Impacts During Construction



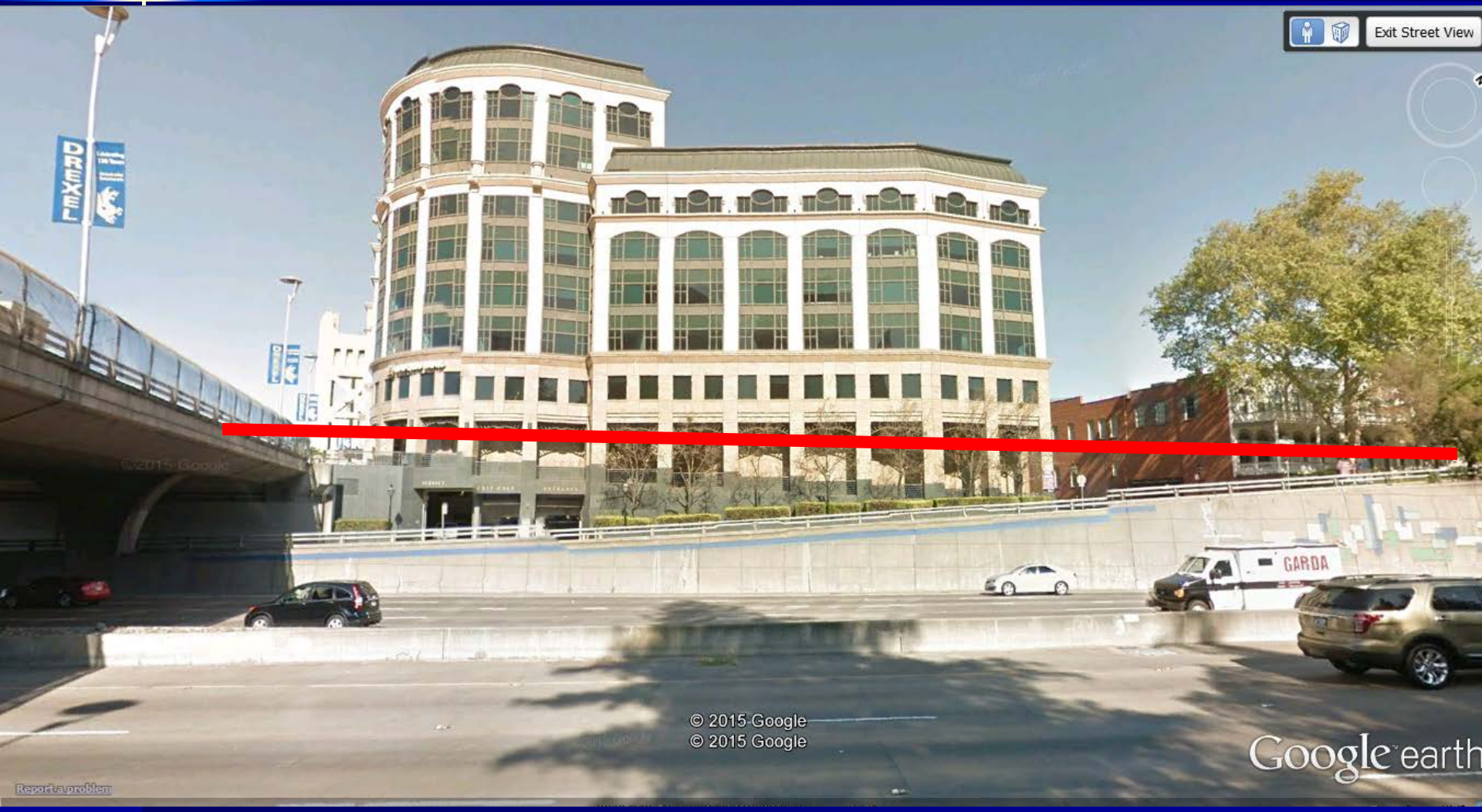
2nd STREET BRIDGE FALSEWORK AND I5 LANE RECONFIGURATION TYPICAL

N.T.S

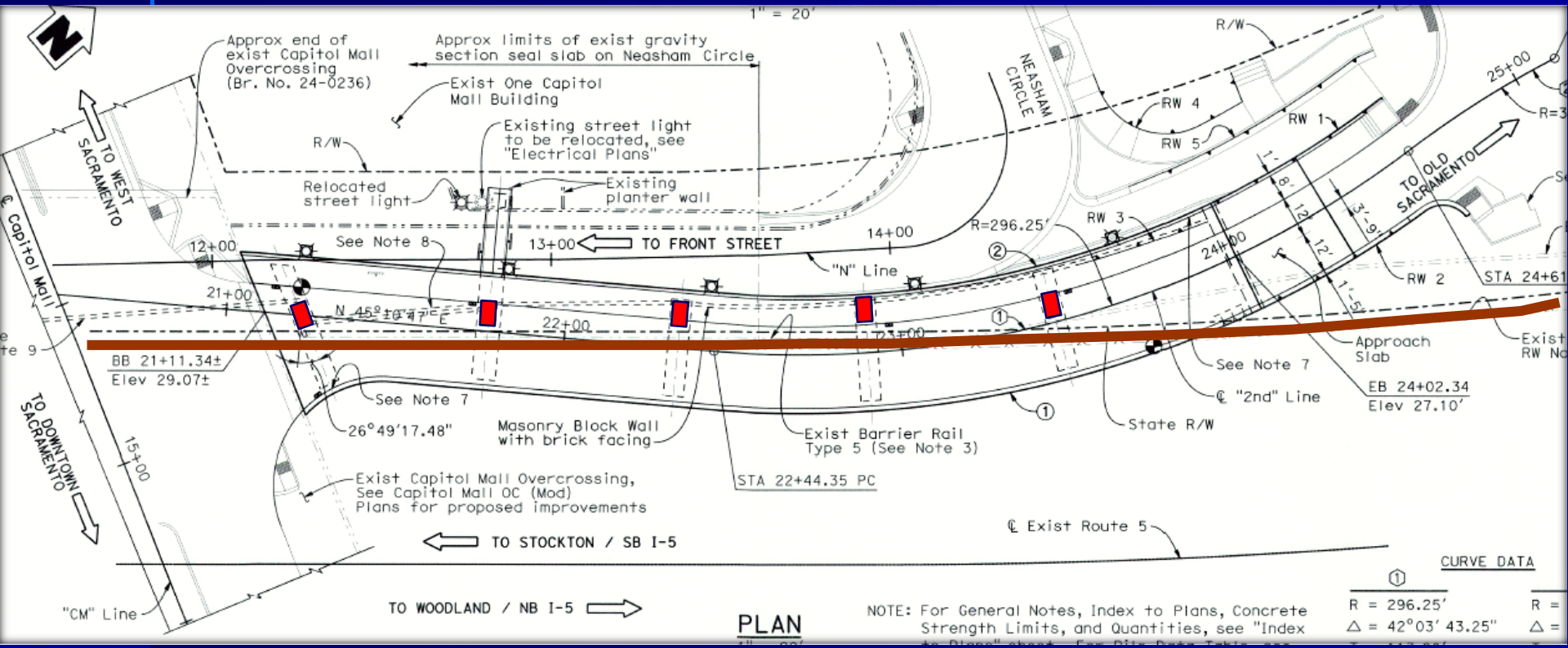
Bridge Profile



Bridge Profile

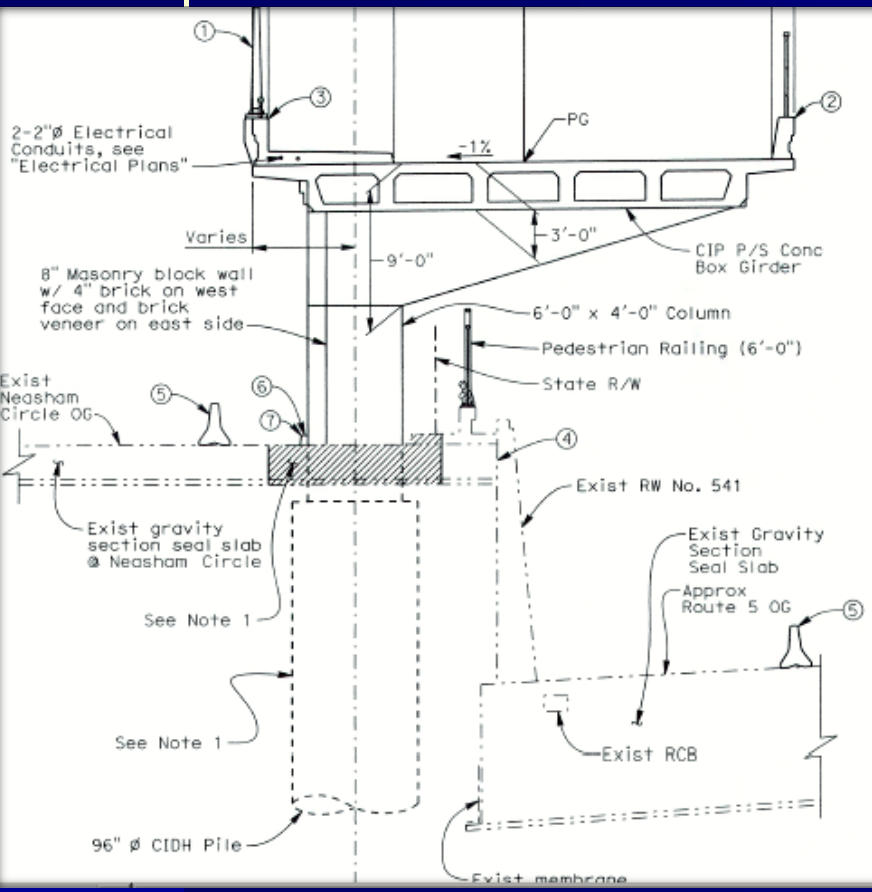


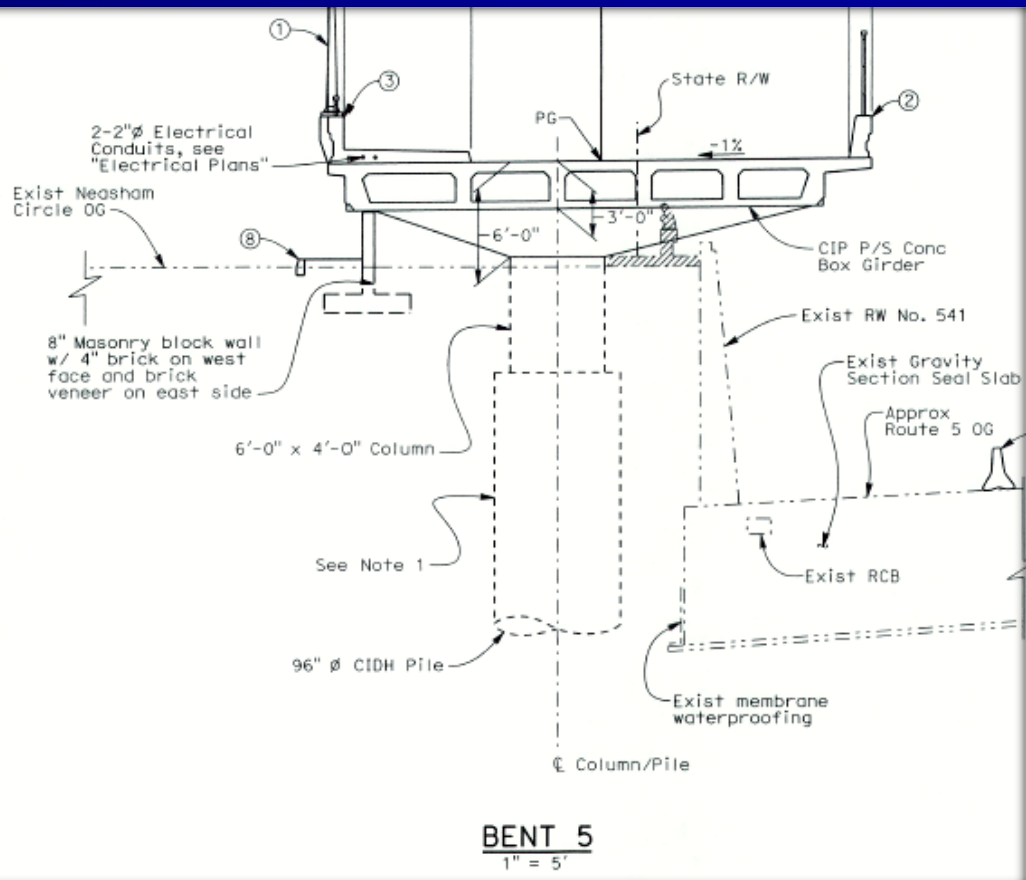
Bridge Layout



WSP | PARSONS BRINCKERHOFF

Typical Section





WSP | PARSONS BRINCKERHOFF

Parsons Brinckerhoff
Project No. 04.72120032

FUGRO

LOCATION:
Lat: 38.5804 Lon: -121.5054
SURFACE EL: 19.0 ft +/- (rel. MSL datum)

DEPTH, ft	BLOW COUNT OR PRESSURE, psi	N VALUE OR RQD%	RECOVERY	MATERIAL DESCRIPTION	DRY UNIT WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX	UNDRAINED SHEAR STRENGTH, S_u, ksf	OTHER TESTS
				ASPHALT CONCRETE: 6" Asphalt Concrete over 6" Aggregate Base							
	2 2 3	3	10/18"	SILT with SAND (ML): soft, olive brown, moist, fine to medium-grained sand, some wood debris [FILL]							
5	2 2 3	3	10/18"		82	37	97	31	7		MA
	2 9 22	31	14/18"			35					
	9 6 6	12	5/18"	trace concrete debris, becomes wet		27					
10	1 2 2	4	15/18"	grades more sandy		32	69				MA
15	2 2 3	3	16/18"	SILT (ML): soft, brown, wet, low to medium dilatency, fine to medium-grained sand	80	43	96	32	7		MA
20	1 2 2	4	18/18"	SANDY Lean CLAY (CL): soft, brown, wet, medium plasticity, fine to medium-grained sand		38		34	13		
25	2 2 3	3	15/18"	SANDY SILT (ML): soft, dark gray, wet, fine to medium-grained sand	83	34					
30	2 4 6	10	15/18"	SILTY SAND (SM): loose to medium dense, dark gray, wet, fine to medium-grained sand		29	33				MA
35	3 3 5	8	14/18"	Poorly-graded SAND with SILT (SP-SM): loose, grayish brown, wet		34	6				MA

Continued

BORING DEPTH: 71.5 ft
BACKFILL: Grout
DEPTH TO WATER: Not Encountered
FIELDWORK DATES: September 27, 2012 to September 28, 2012
DRILLING METHOD: 4-in. dia. Rotary Wash

HAMMER TYPE: Automatic Trip
RIG TYPE:
DRILLED BY: Pitcher Drilling
LOGGED BY: M. Bajuniemi
CHECKED BY: E Woo

LOG OF BORING NO. B-01
Riverfront Reconnection
Sacramento, California

FIGURE 2.1

Parsons Brinckerhoff
Project No. 04.72120032

FUGRO

LOCATION:
Lat: 38.5804 Lon: -121.5054
SURFACE EL: 19.0 ft +/- (rel. MSL datum)

DEPTH, ft	BLOW COUNT OR PRESSURE, psi	N VALUE OR RQD%	RECOVERY	MATERIAL DESCRIPTION	DRY UNIT WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX	UNDRAINED SHEAR STRENGTH, S_u, ksf	OTHER TESTS
	4 4 5	9	15/18"			30					
	6 7 8	15	12/18"	Well-graded SAND (SW): medium dense, gray, wet, medium to coarse-grained sand, small gravels		20	5				MA
	7 9 10	19	9/18"			12					
55	4 5 6	11	0/18"	Well-graded GRAVEL (GW): medium dense to dense, gray, wet, small to medium-sized fragmented gravels, medium to coarse-grained sand							
60	11 13 14	27	3/18"								
65	21 12 22	34	9/18"								
70	19 19 27	46	11/18"			7	2				MA

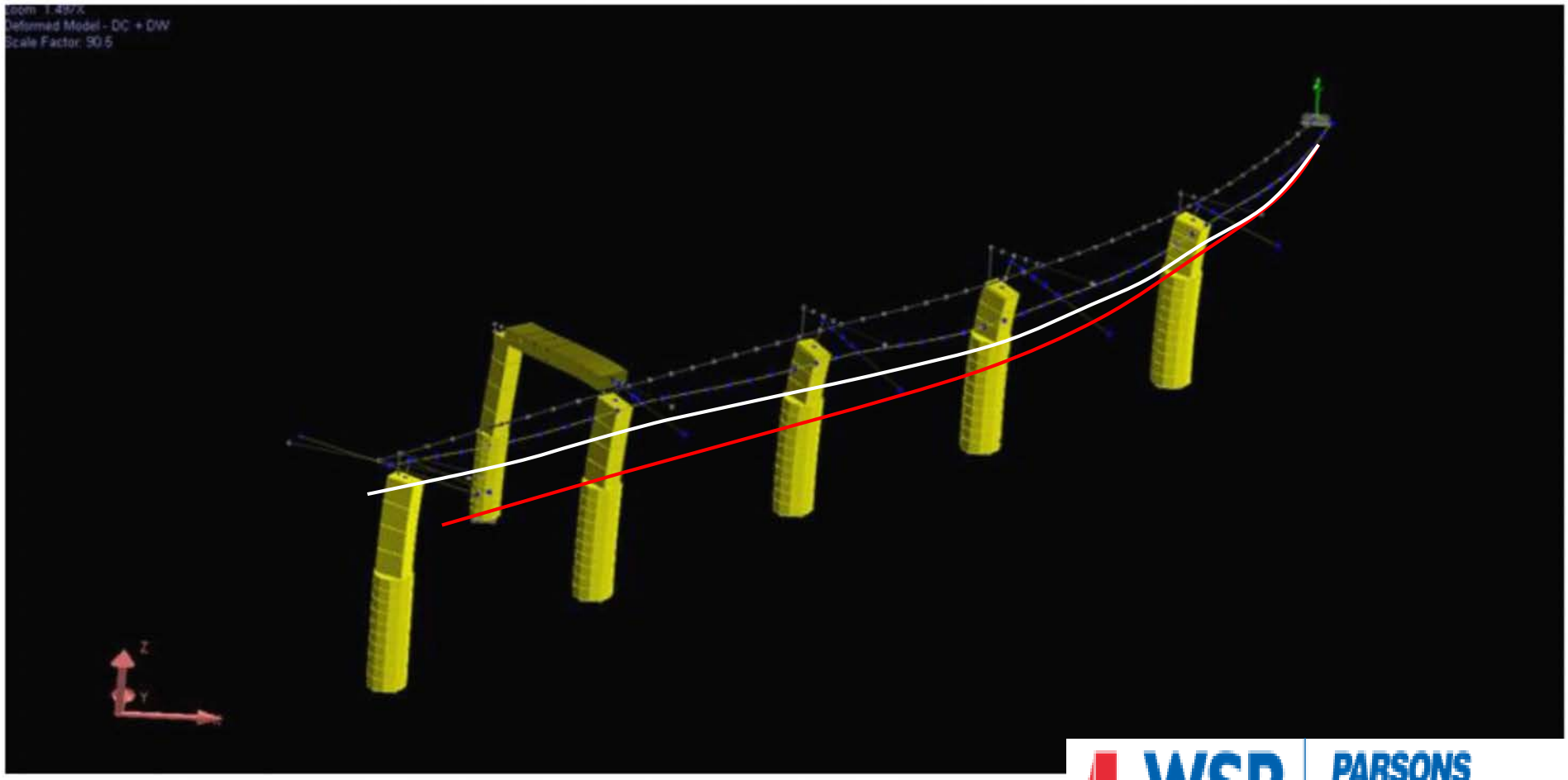
NOTES:
1. Terms and symbols defined on Plate A-1.

FCLP STANDARD LOG G:\JOBDOCS\04.72120032 RIVERFRONT RECONNECTION PROJECT\ENGINEERING\LOGS\20121001_LOGS.GPJ OGEM_LIB_JAN2012.GLB 10/12/12 07:16 p

LOG OF BORING NO. B-01
Riverfront Reconnection
Sacramento, California

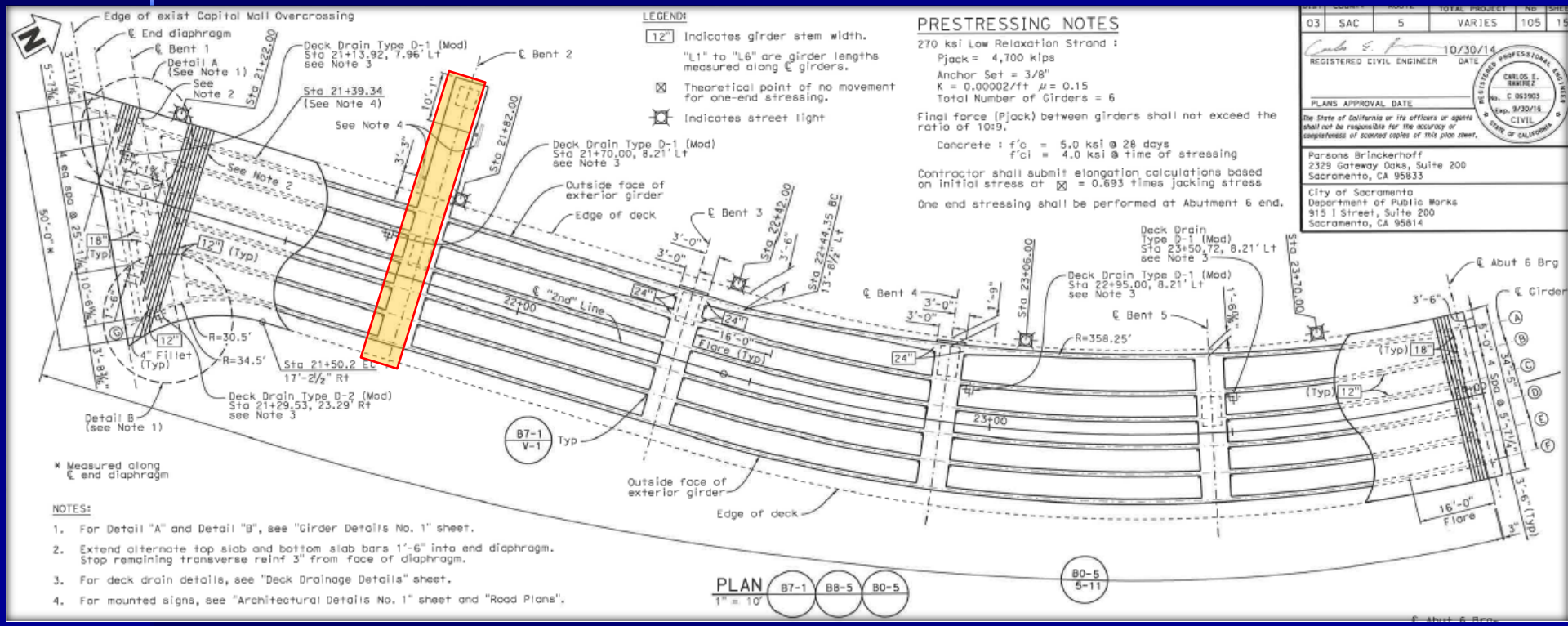
FIGURE 2.1

Seismic Displacement Demand

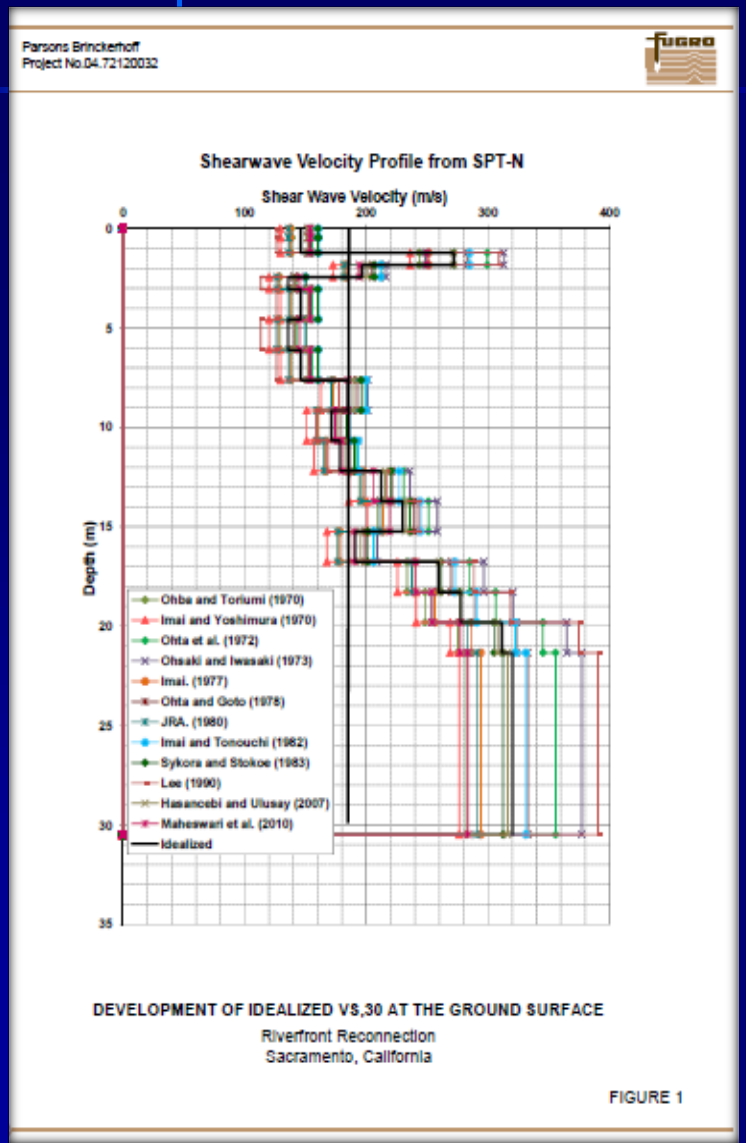


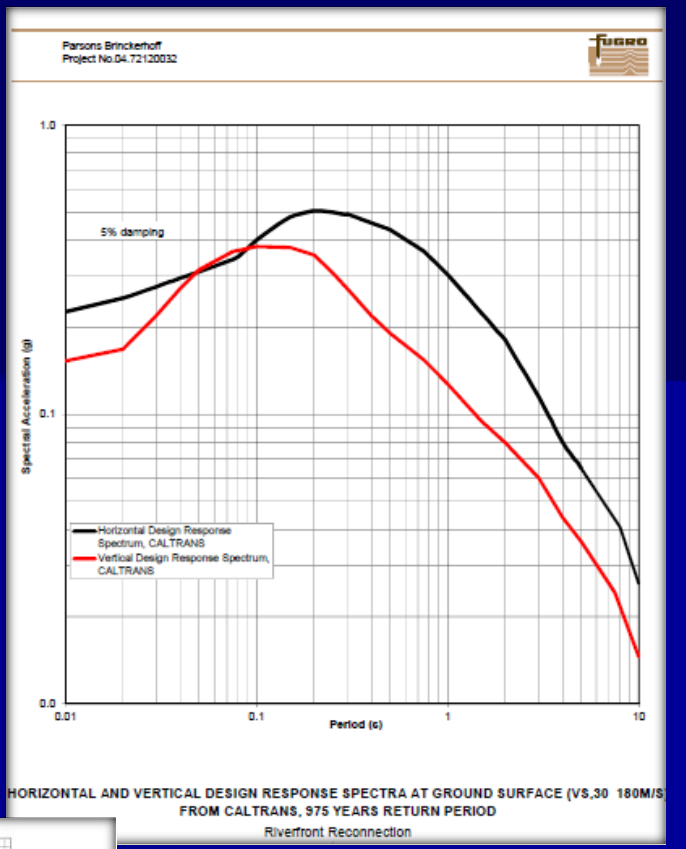
WSP | PARSONS BRINCKERHOFF

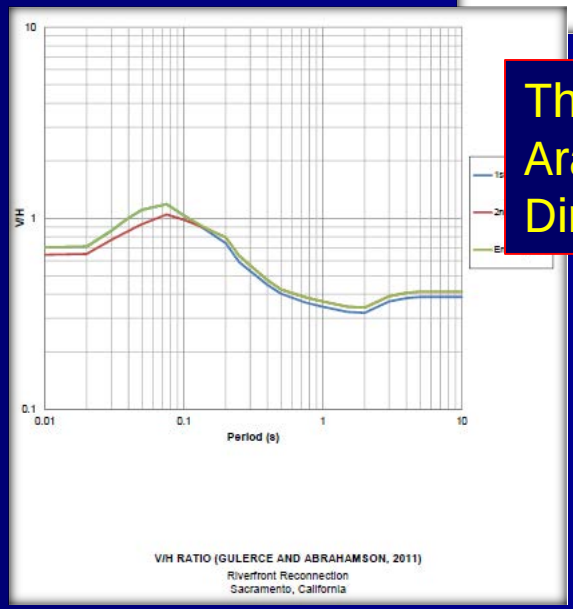
Framing Plan



Response Spectra



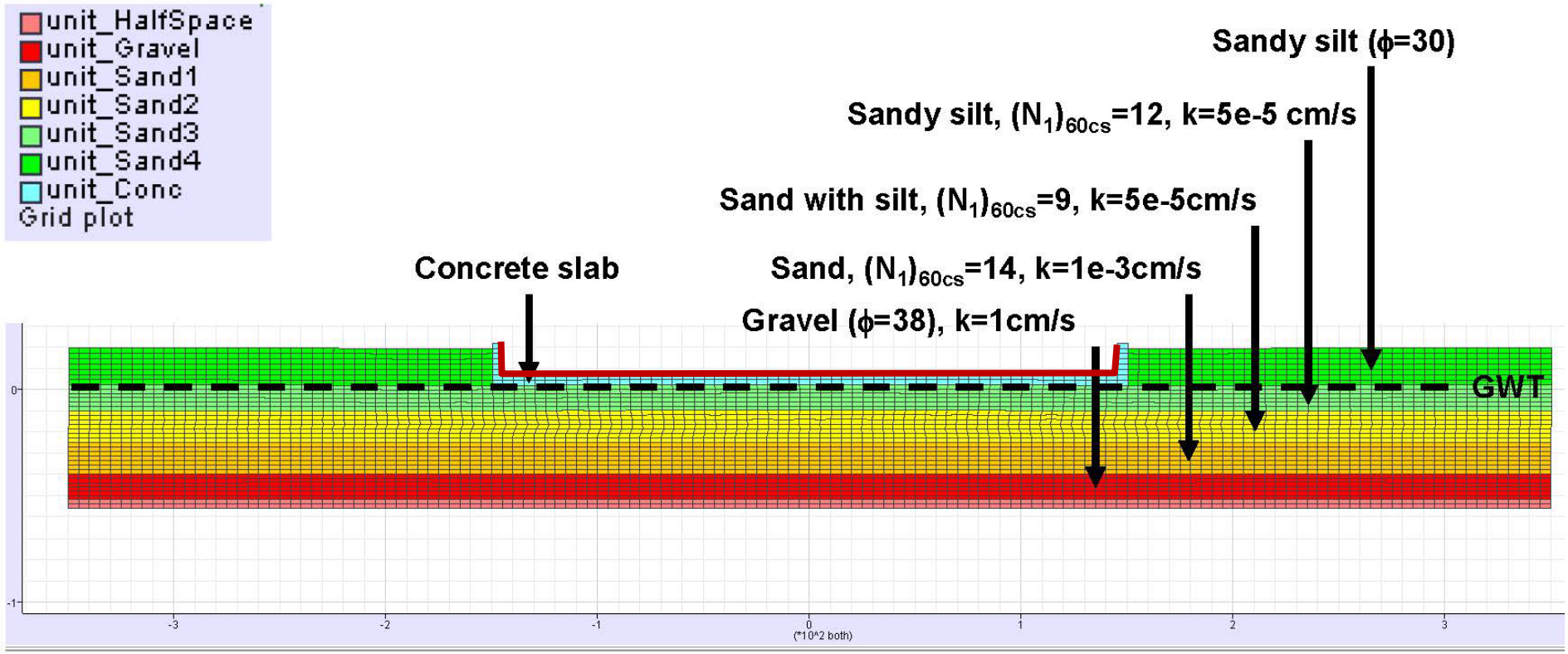




Thaleia Travasarou, PhD, PE
Arash Kosravifar, PhD, PE
Dimitri Tsiaousi, PE

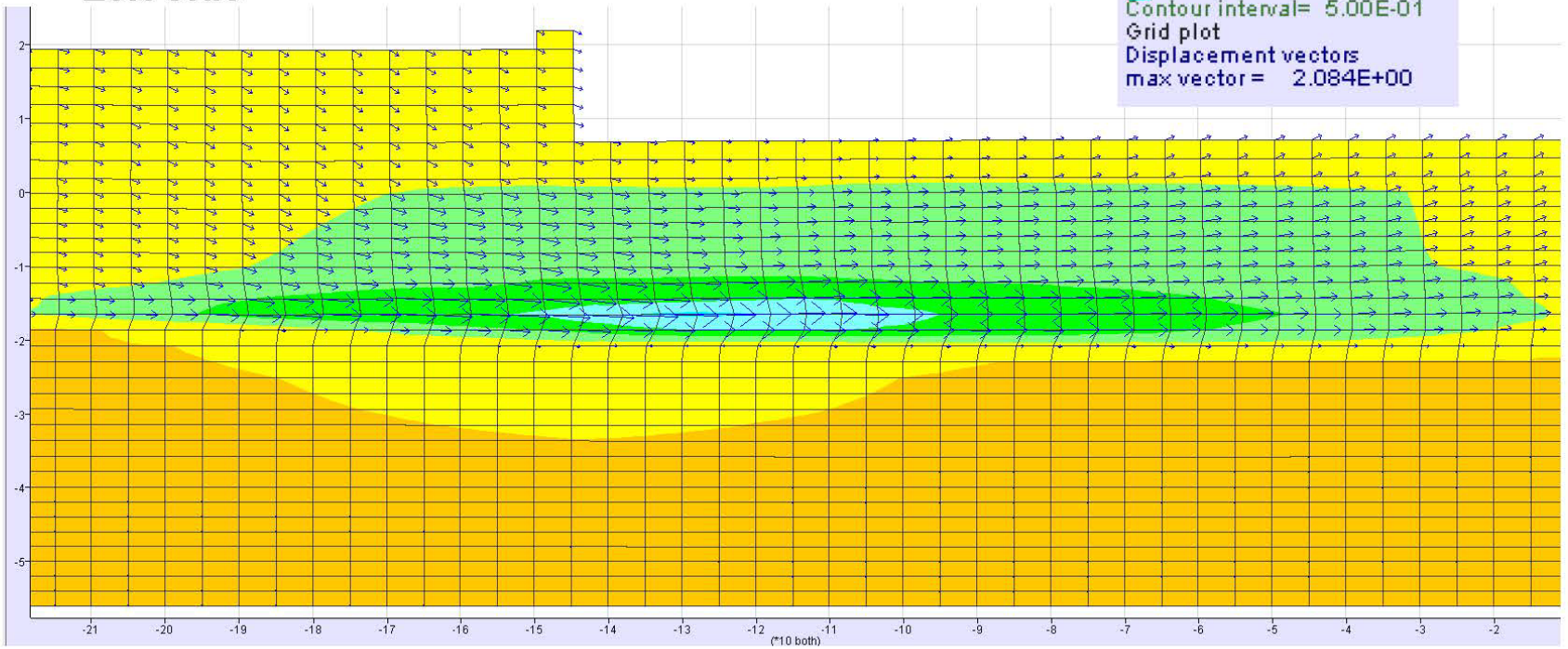
FLAC Model

FLAC model

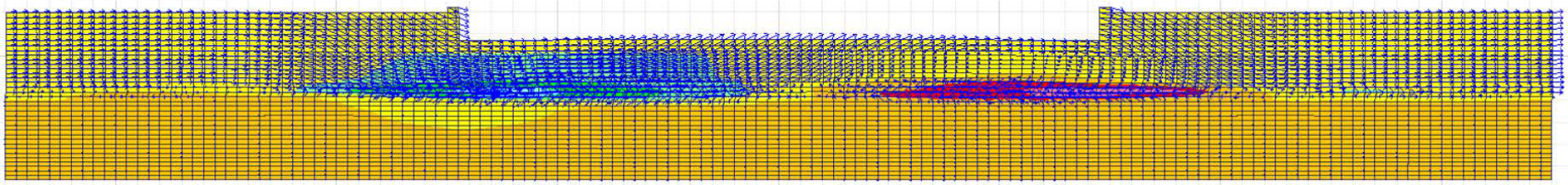


Horizontal displacements (end of shaking)

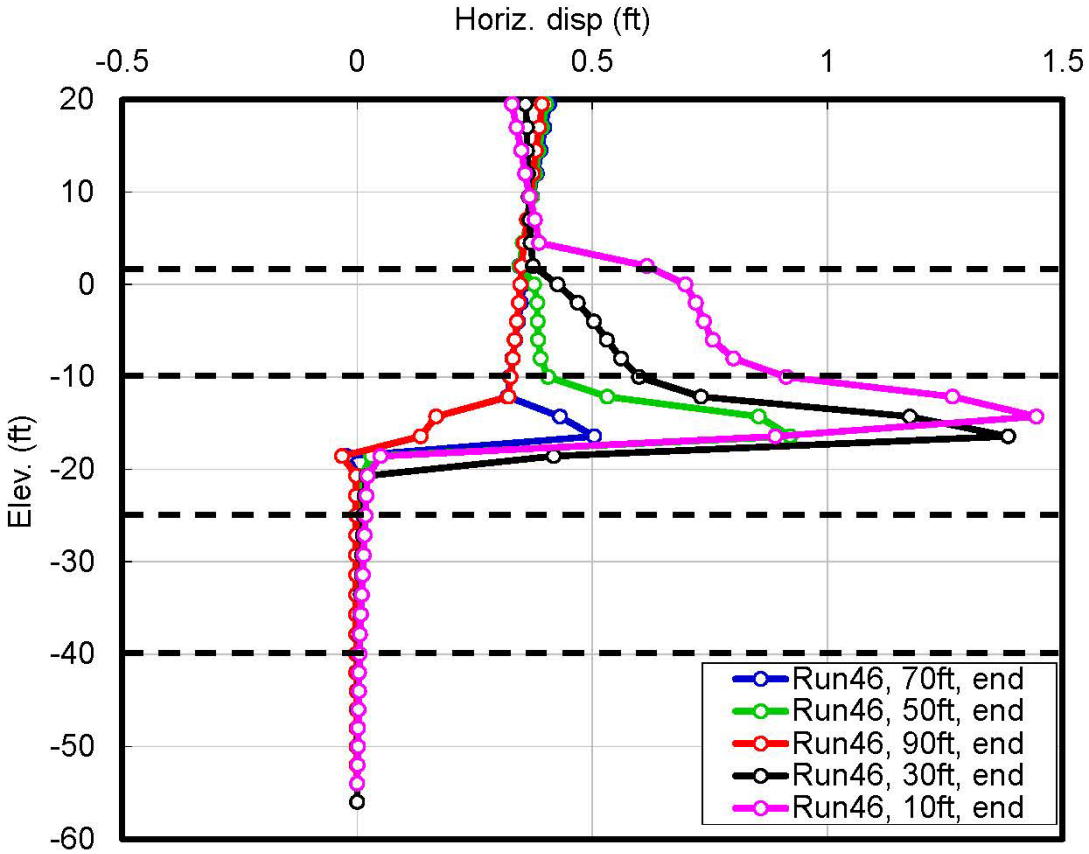
Left side



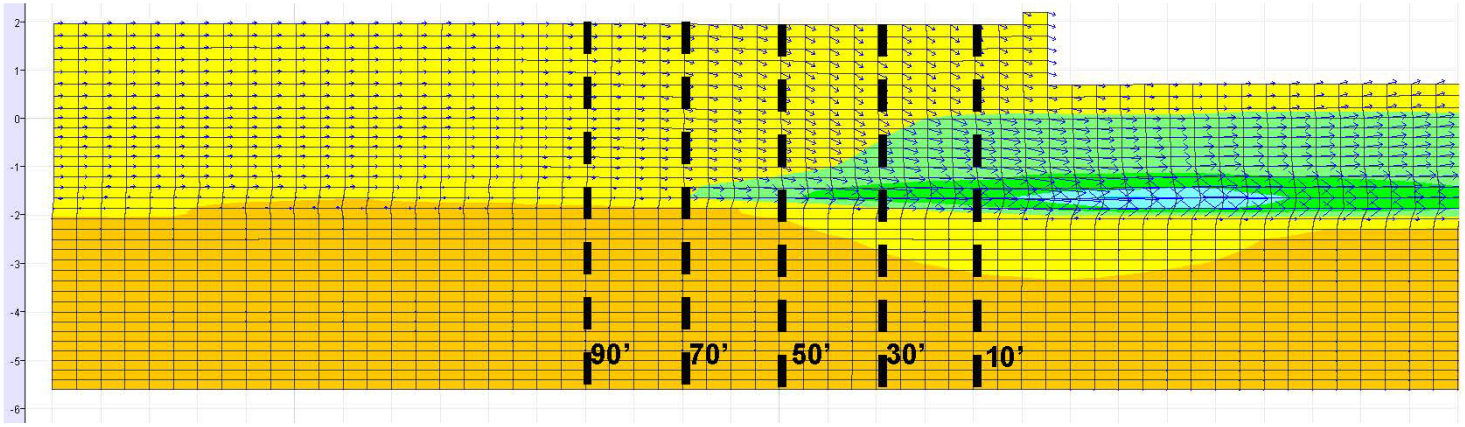
Full model

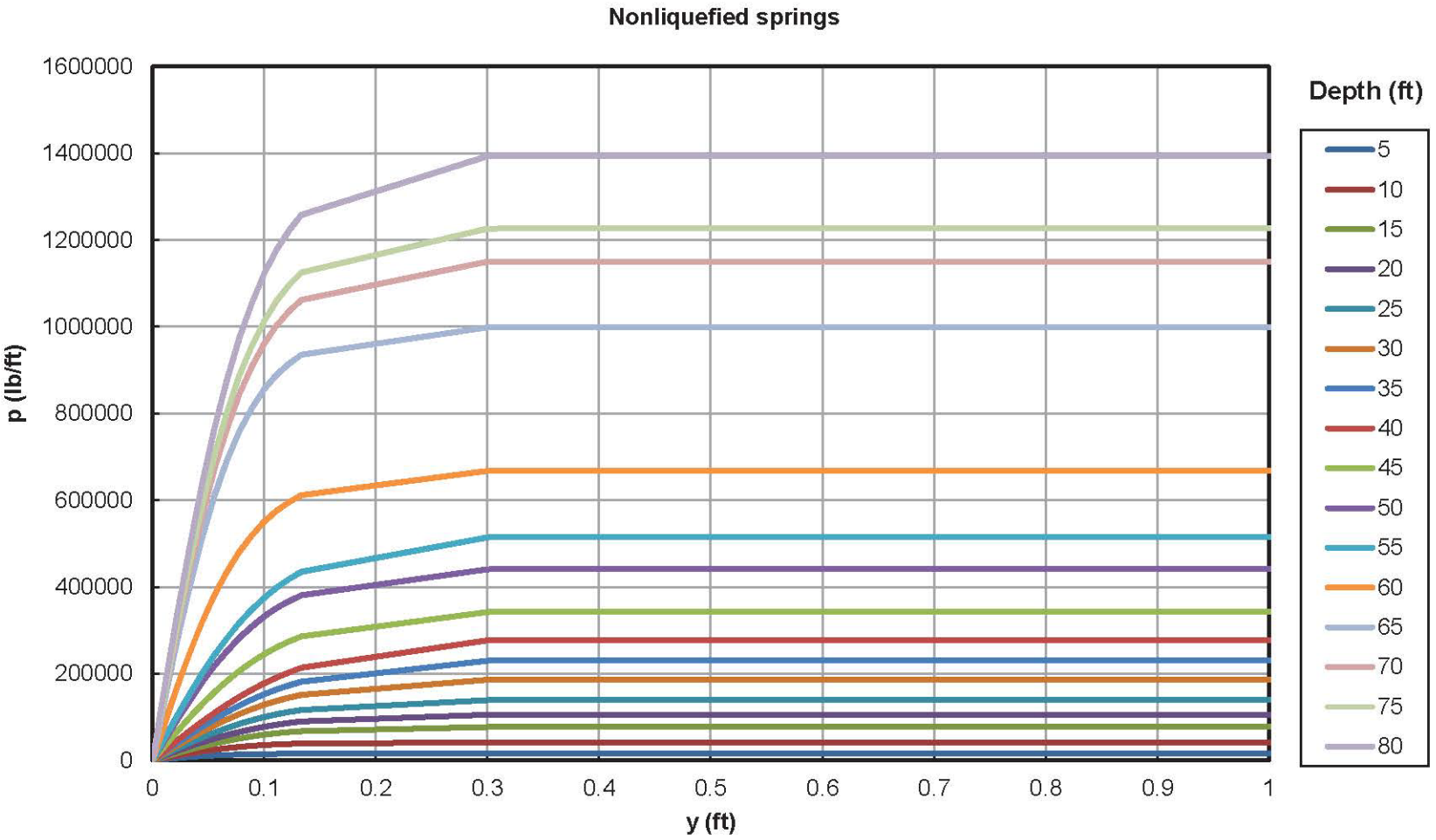


Horizontal displacements (end of shaking)



X-displacement contours
-1.00E+00
-5.00E-01
0.00E+00
5.00E-01
1.00E+00
1.50E+00
2.00E+00
Contour interval= 5.00E-01
Grid plot
Displacement vectors
max vector = 2.084E+00





NONLIQUEFIED P-Y SPRINGS

Riverfront Reconnection

Sacramento, California

Pile Displacements

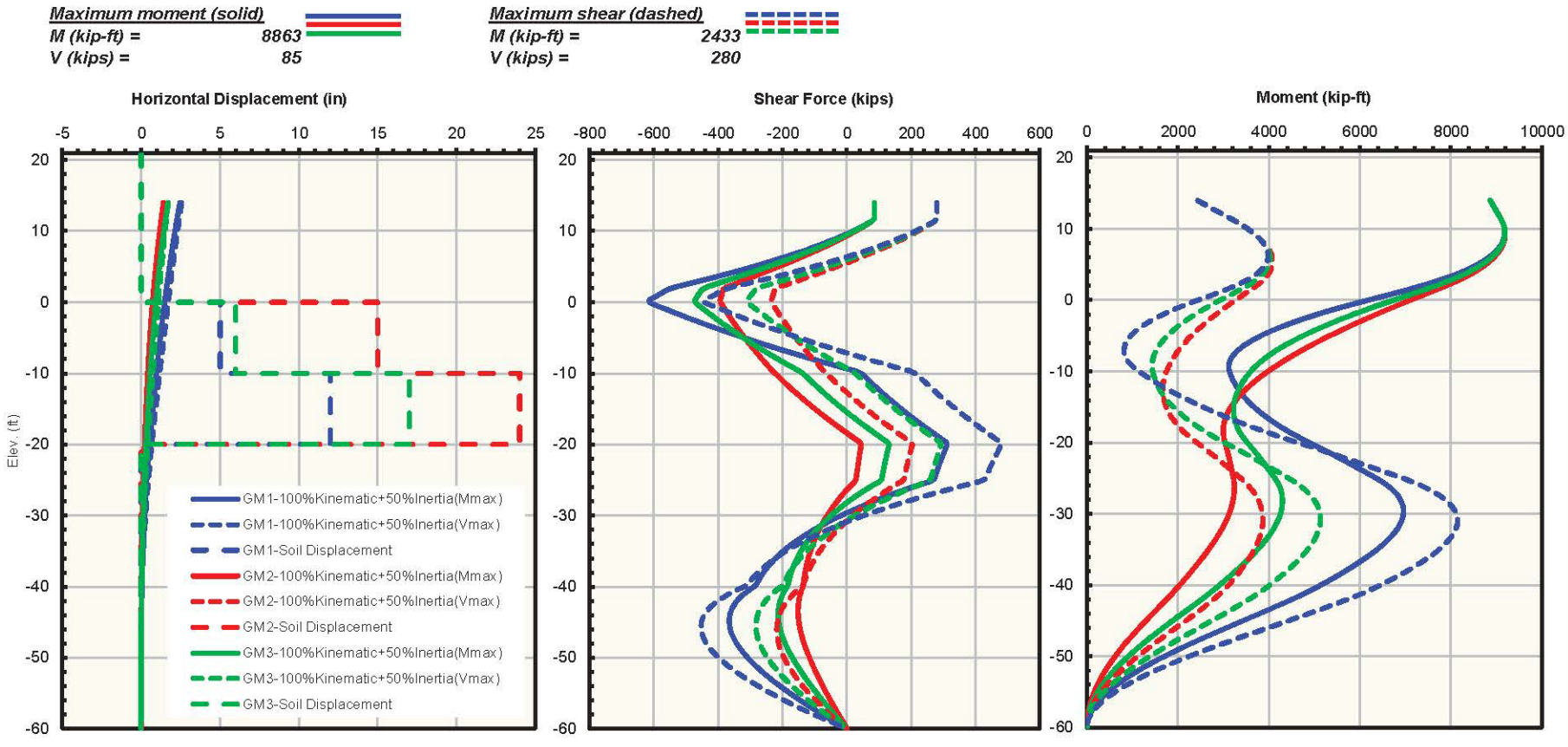


FIGURE 5.5

PILE DISPLACEMENT, SHEAR, AND MOMENT FOR BENT 5
COMPARISON BETWEEN 3 GMS
LIQUEFIED CASE, 100% OF KINEMATIC DEMANDS PLUS 50% OF ELASTIC INERTIAL DEMANDS

Pile Displacement

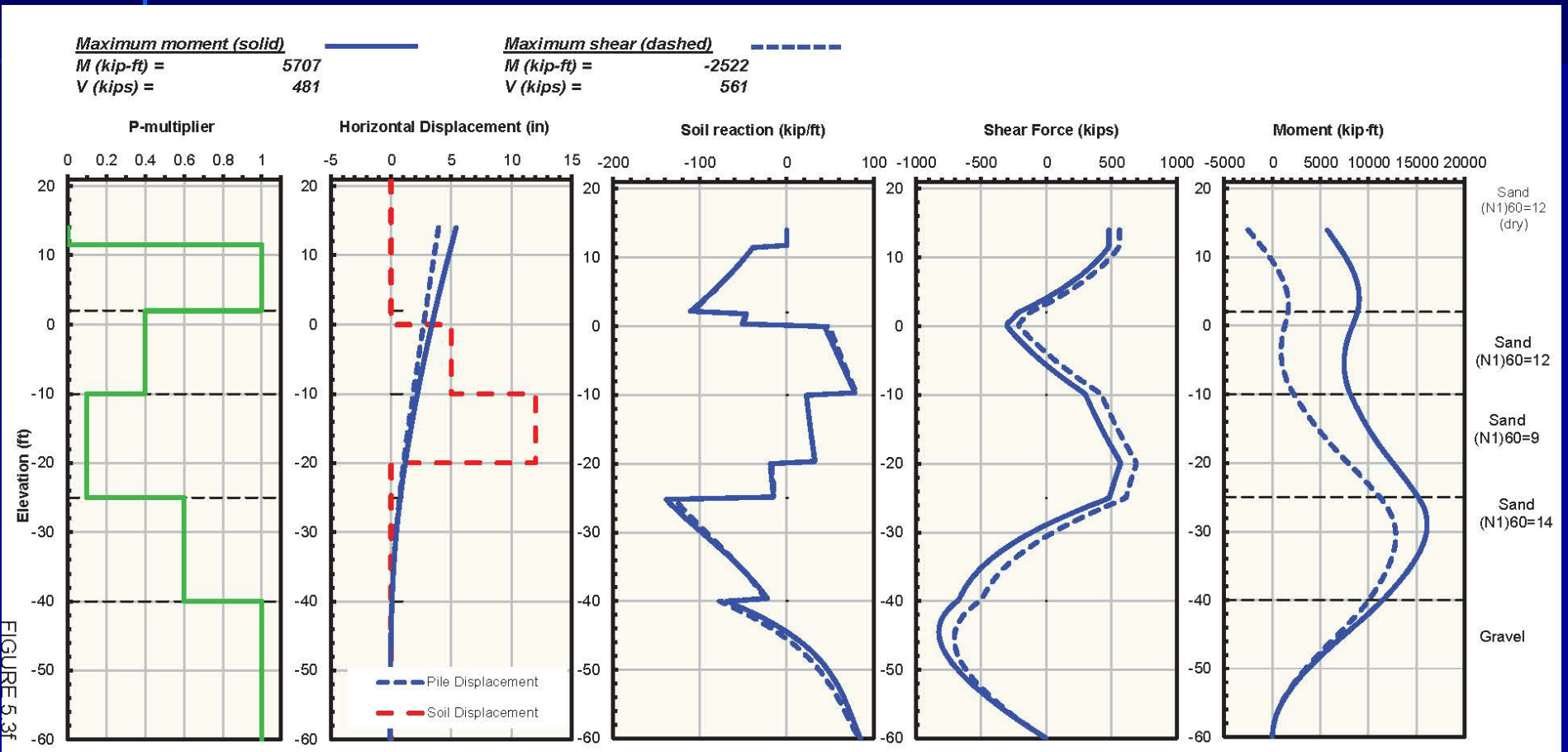
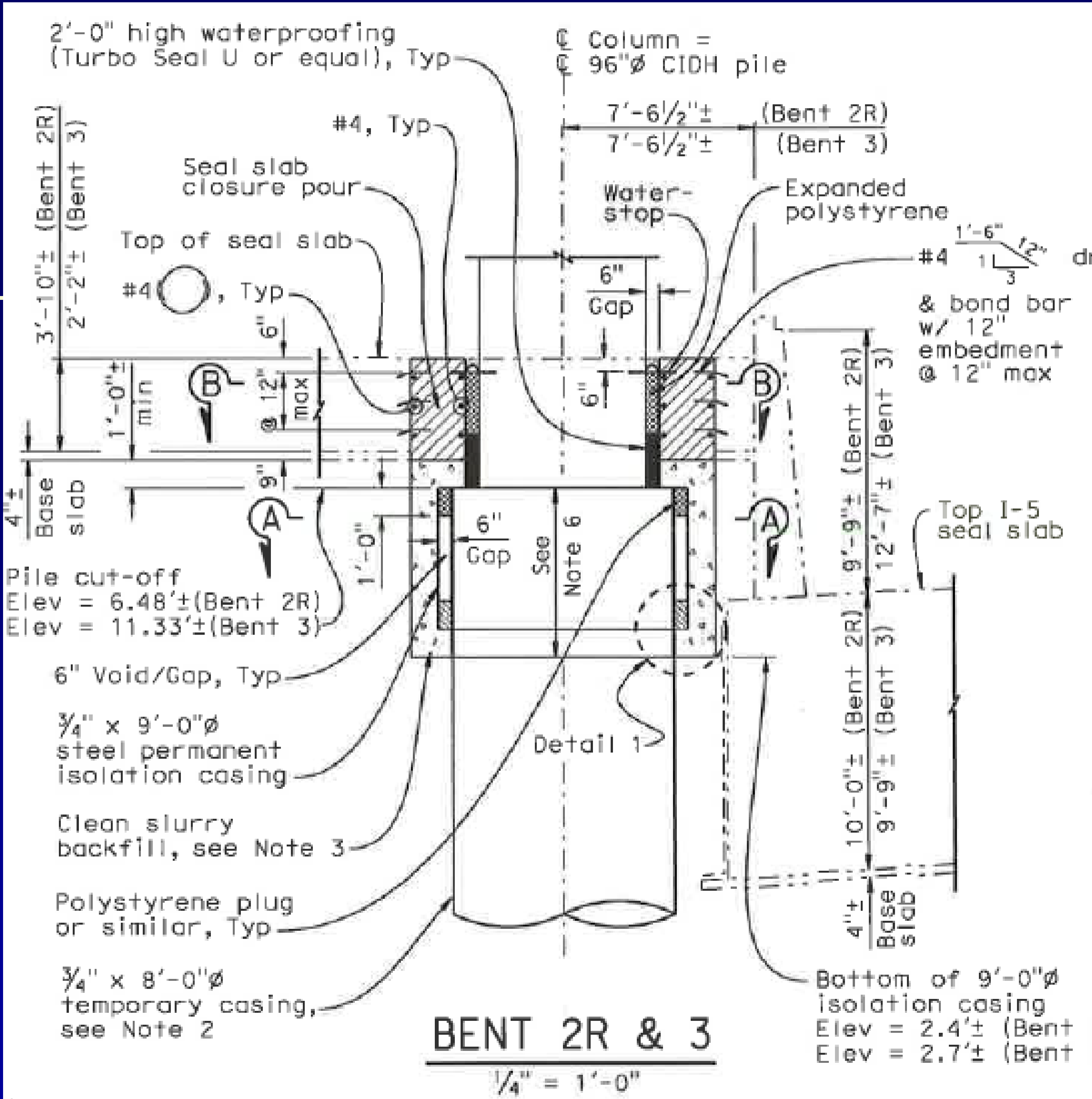


FIGURE 5.3f

PILE DISPLACEMENT, SHEAR, AND MOMENT FOR BENT 5
LIQUEFIED CASE, 100% OF KINEMATIC DEMANDS BASED ON GM1, 100% OF PLASTIC DEMANDS



2'-0" high waterproofing (Turbo Seal U or equal), Typ
℄ Column = ℄ 96"Ø CIDH pile
#4, Typ
7'-6½"± (Bent 2R)
7'-6½"± (Bent 3)
Seal slab closure pour
Water-stop
Expanded polystyrene
Top of seal slab
#4, Typ
6" Gap
#4 & bond bar w/ 12" embedment @ 12" max
3'-10"± (Bent 2R)
2'-2"± (Bent 3)
1'-0" min
@ 12" max
6"
9"
4"± Base slab
1'-0"
6" Gap
See Note 6
9'-9"± (Bent 2R)
12'-7"± (Bent 3)
Top I-5 seal slab
Pile cut-off
Elev = 6.48'±(Bent 2R)
Elev = 11.33'±(Bent 3)
6" Void/Gap, Typ
¾" x 9'-0"Ø steel permanent isolation casing
Clean slurry backfill, see Note 3
Polystyrene plug or similar, Typ
¾" x 8'-0"Ø temporary casing, see Note 2
Detail 1
10'-0"± (Bent 2R)
9'-9"± (Bent 3)
4"± Base slab
Bottom of 9'-0"Ø isolation casing
Elev = 2.4'± (Bent 2
Elev = 2.7'± (Bent 3
BENT 2R & 3
¼" = 1'-0"

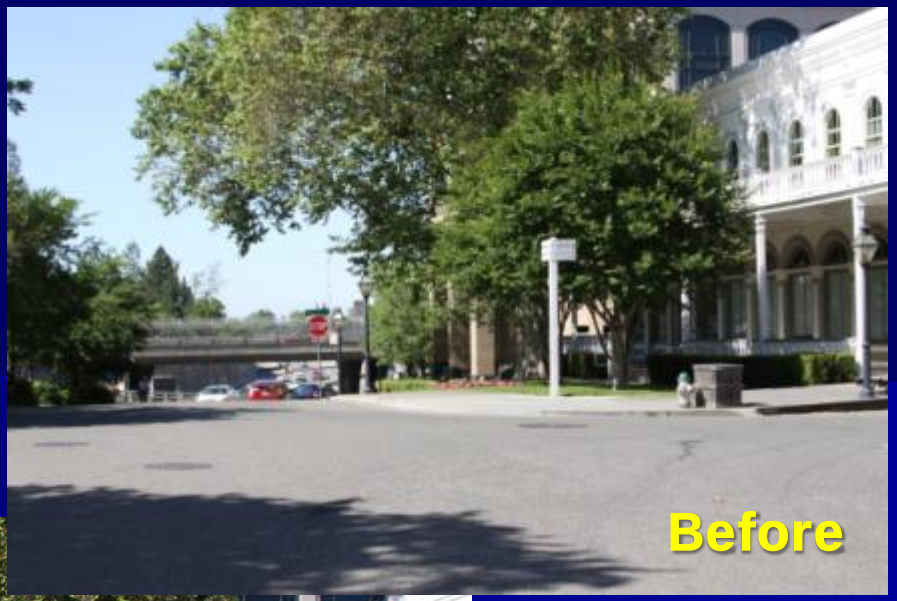

Holiday Inn
ROAD
CLOSED

Construction Site

WSP | PARSONS BRINCKERHOFF

Bridge Aesthetics

2nd Street @ L Street



2nd Street Bridge

WSP | PARSONS BRINCKERHOFF

2nd Street Connection @ Neasham Circle

2nd Street @ Neasham Circle

2nd Street Architectural Treatment

WSP | PARSONS BRINCKERHOFF

2nd street Connection, view from Neasham Circle

Q & A

WSP | PARSONS BRINCKERHOFF