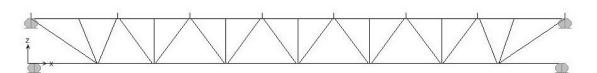
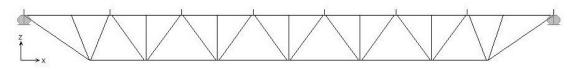
#### **APPENDIX D**

## MODAL TEST RESULTS- SINGLE SPAN FOOTBRIDGE

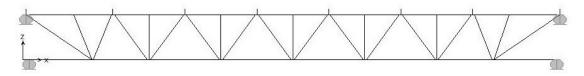
# APPENDIX D MODAL TEST RESULTS- SINGLE SPAN FOOTBRIDGE



**Stage 1: Bottom Chord Extensions In Place** 



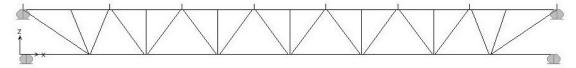
**Stage 2: Bottom Chord Extensions Removed** 



Stage 3: Bottom Chord Extensions Re-installed

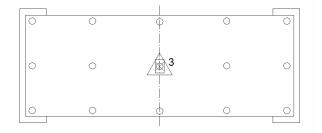


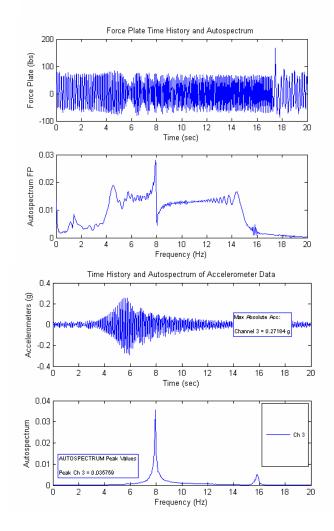
## **Stage 1: Bottom Chord Extensions in Place**

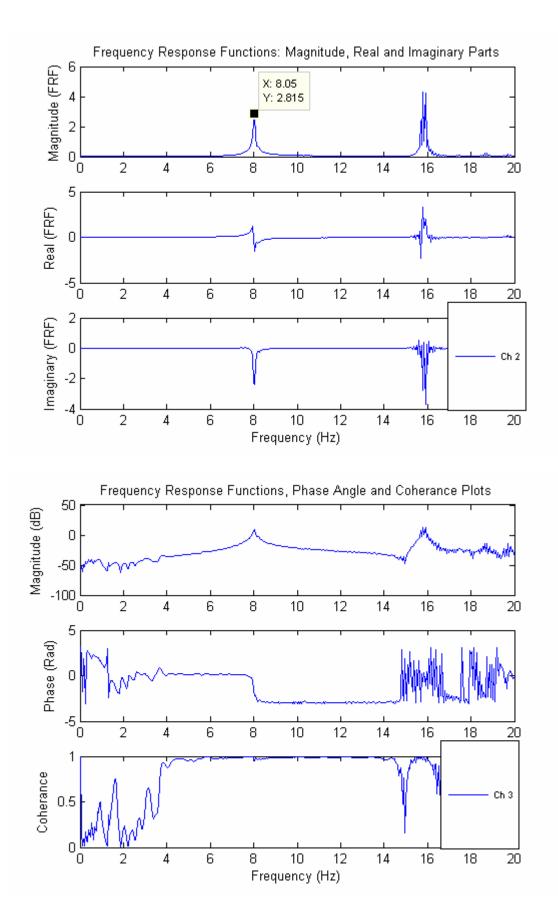


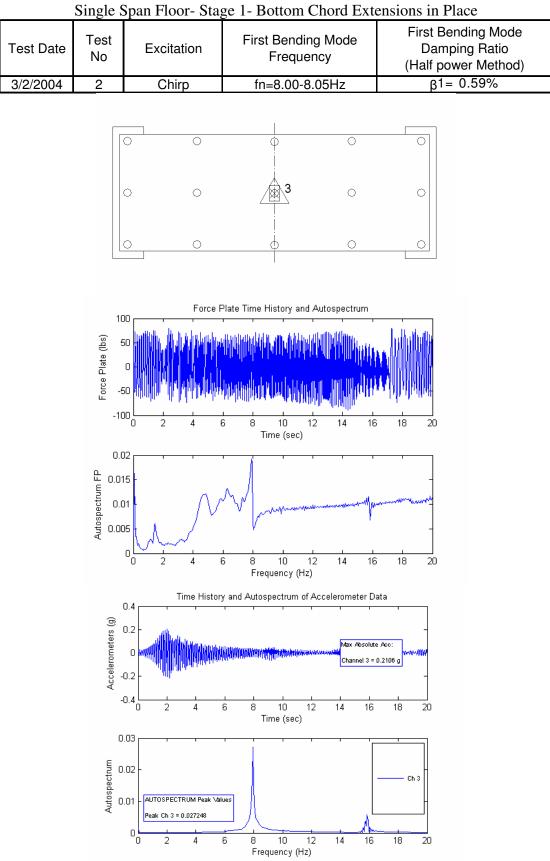
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)
3/2/2004	2004 1 Chirp		fn=8.00-8.05Hz	β1= 0.49%

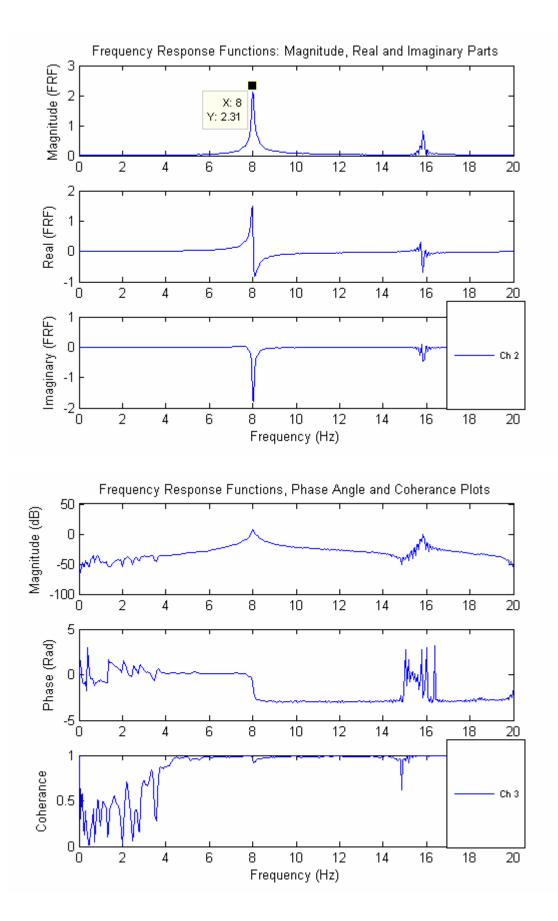


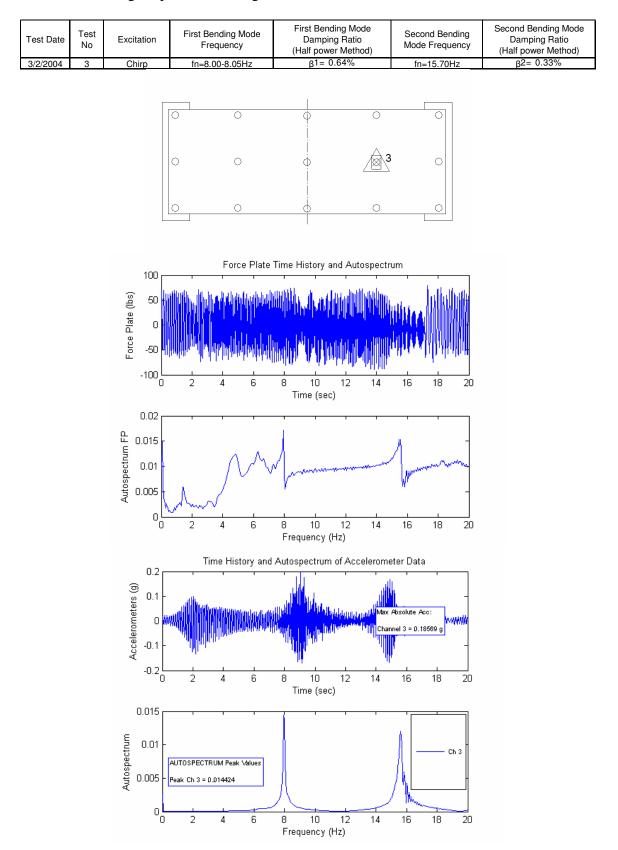


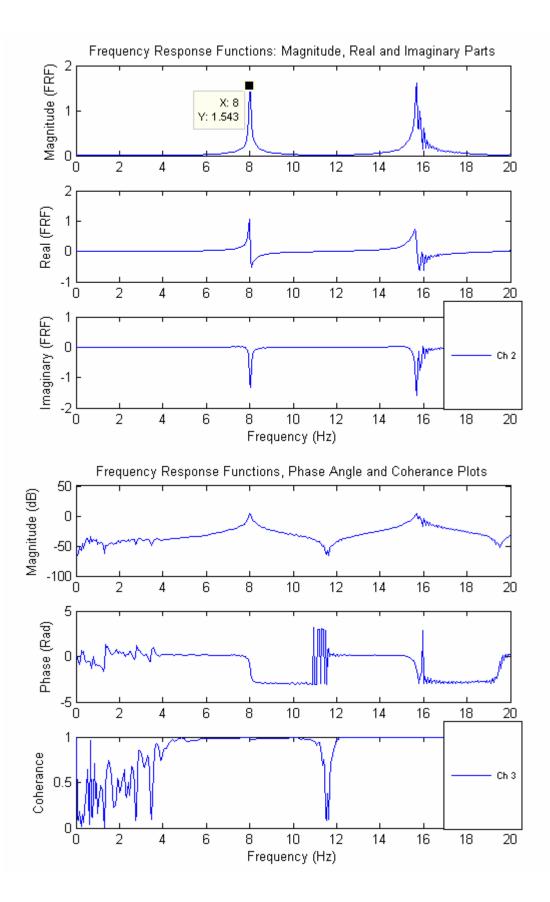


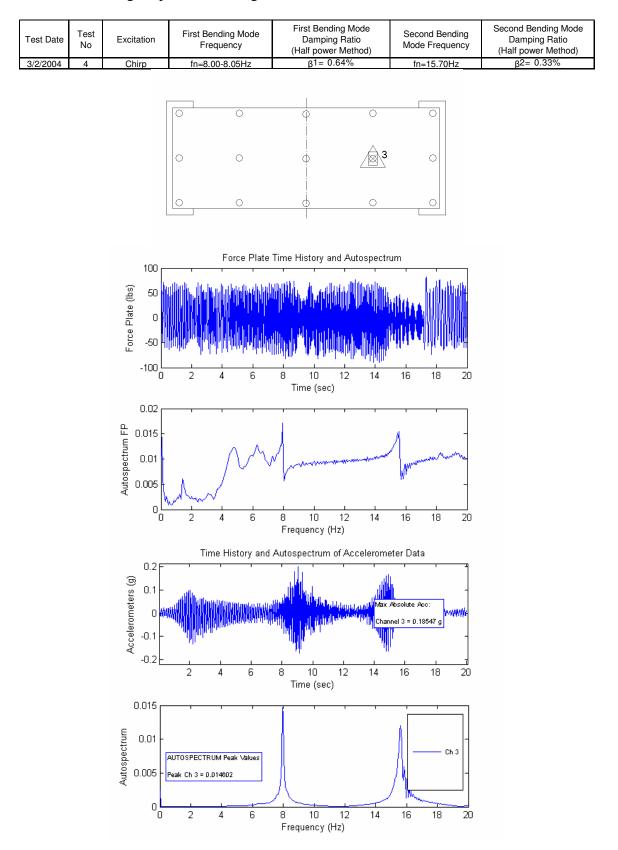


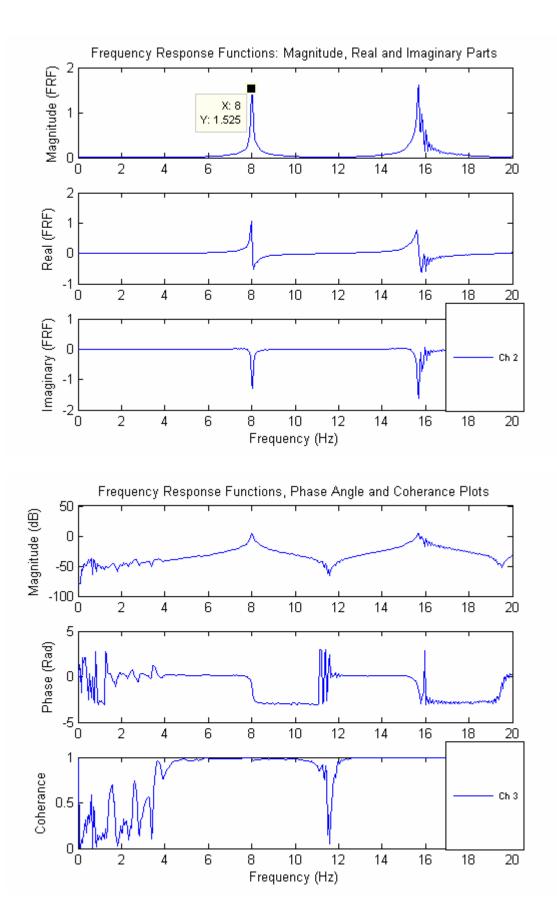
Si	ing	le	S	ban	Floor-	Stage	1-	Bottom	Chord	Extens	sions	in Pla	ace
-			~			~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~							

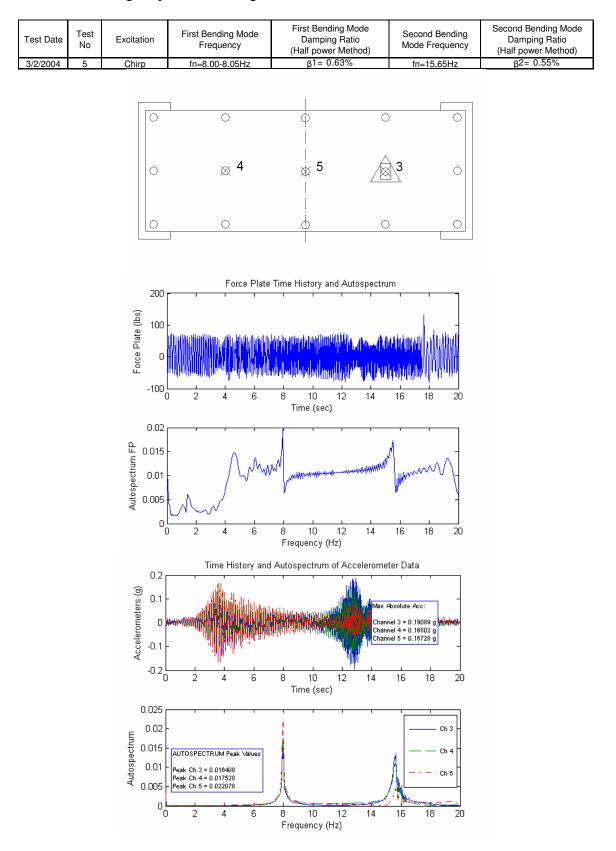


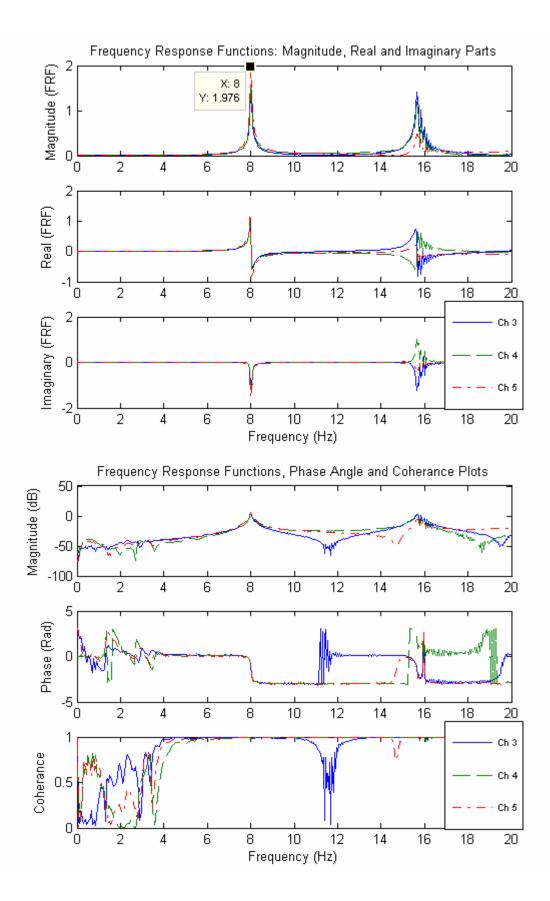


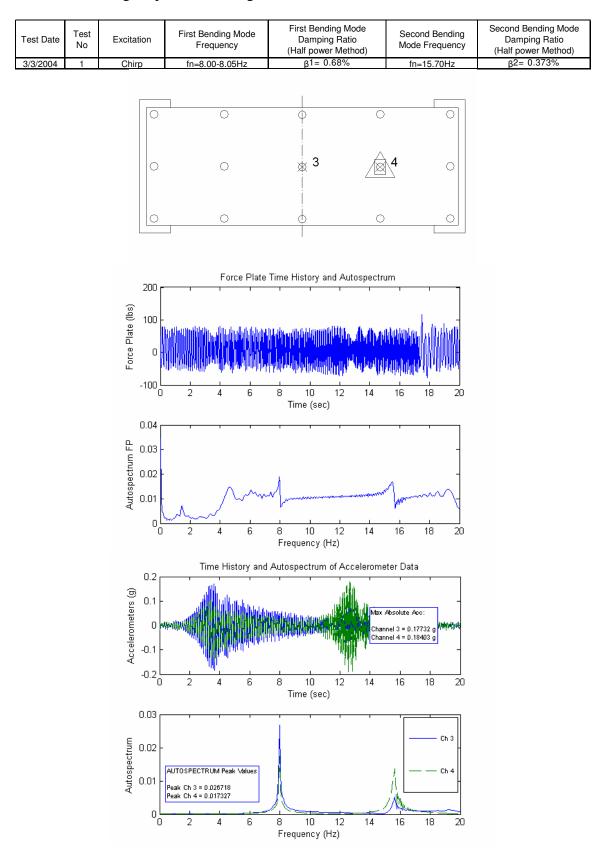


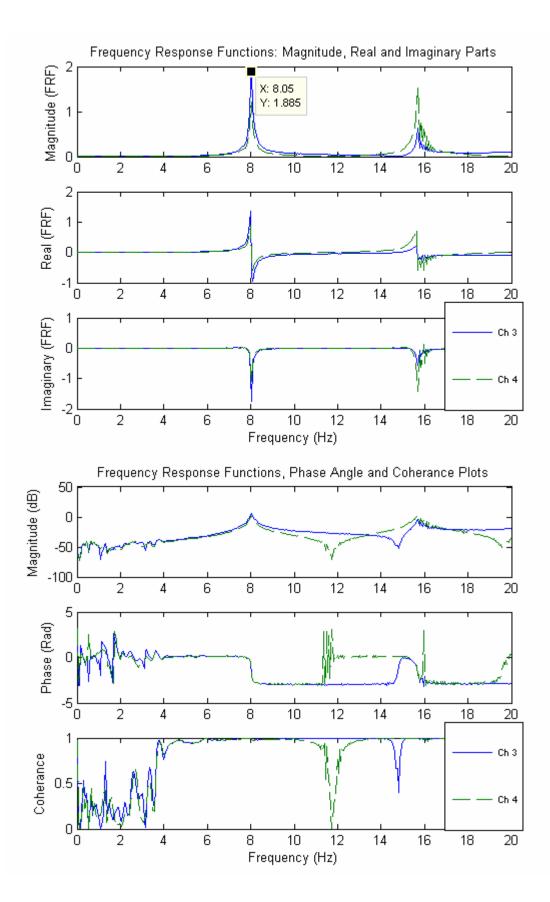


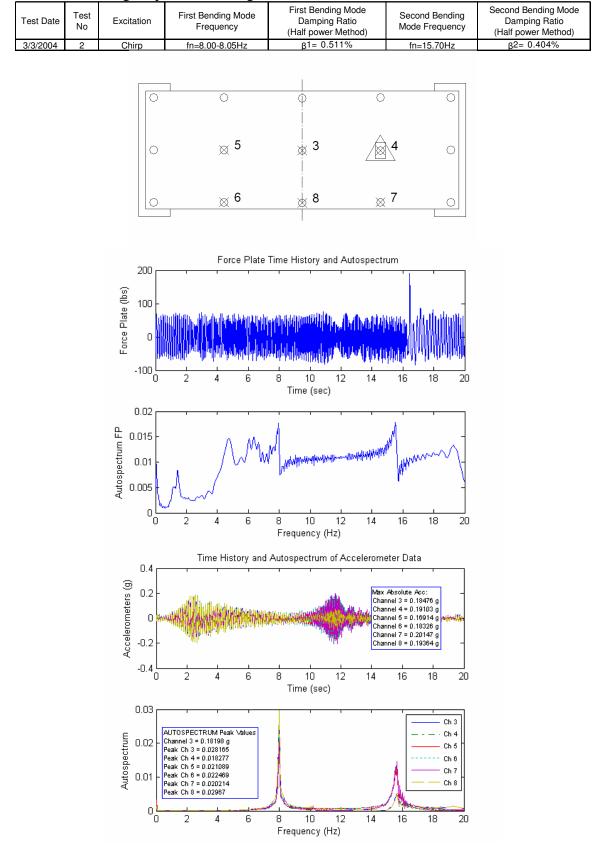




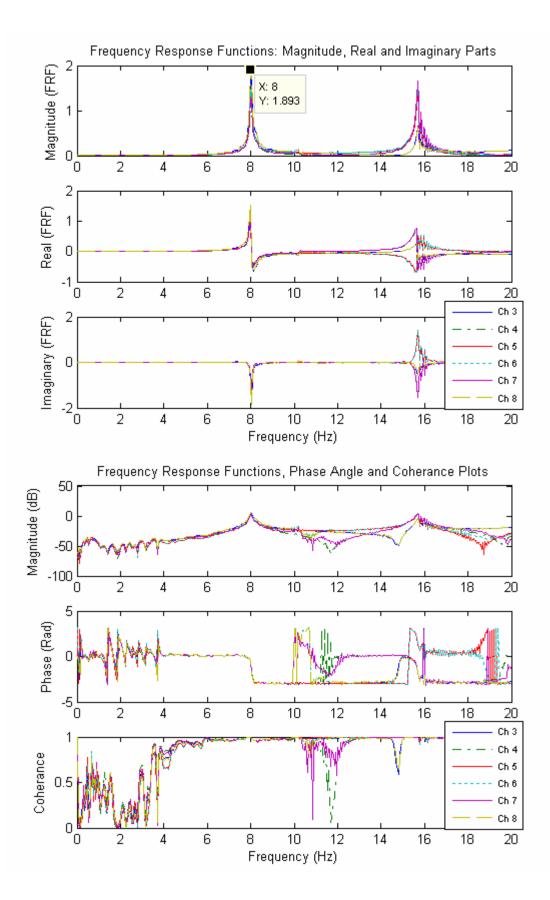


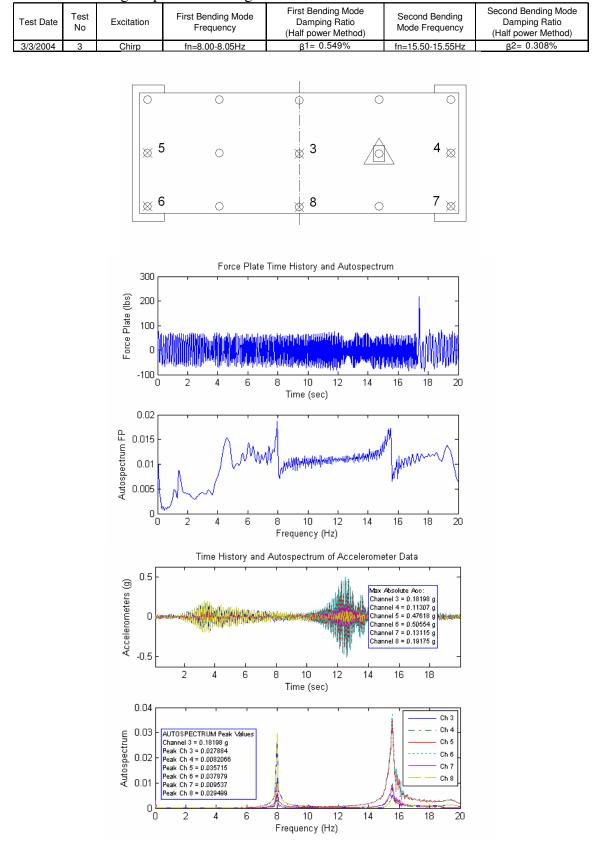




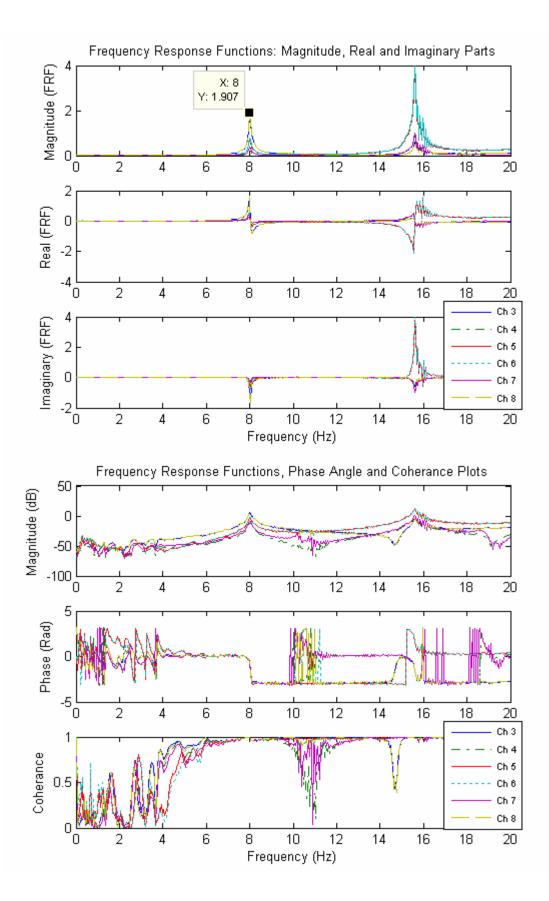


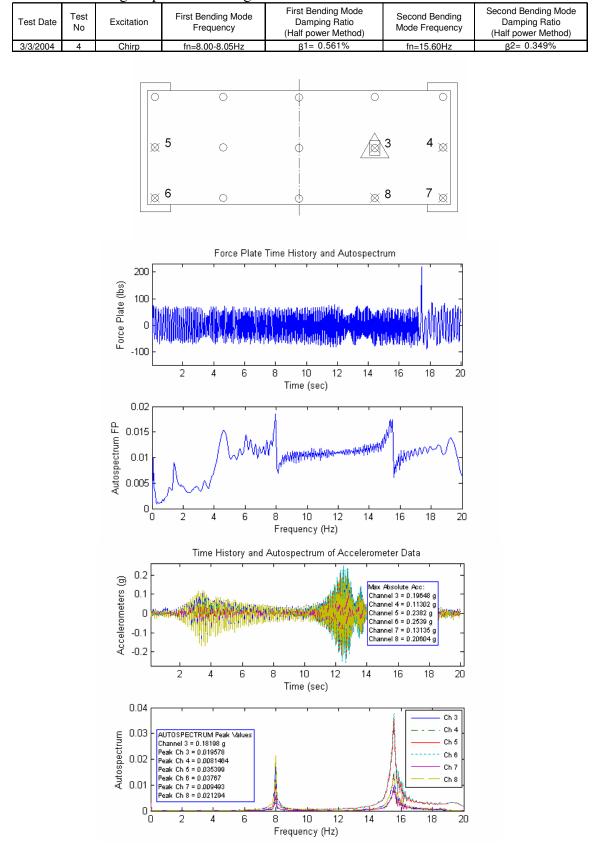
Single Span	Floor- Stage	1- Bottom	Chord Exte	nsions in Plac	ce



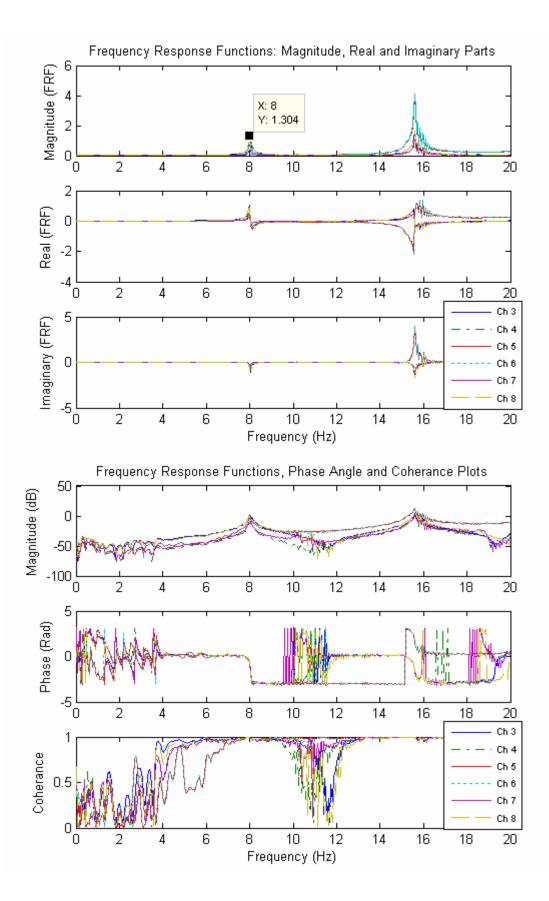


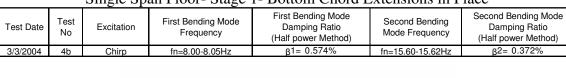
Single Span Floor- Stage 1- Bottom Chord Extensions in Place



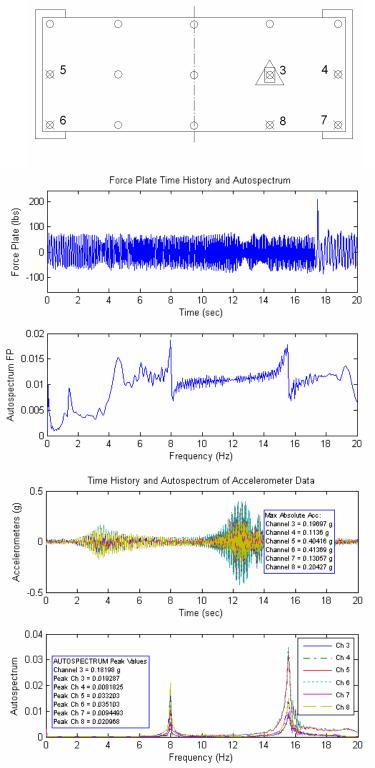


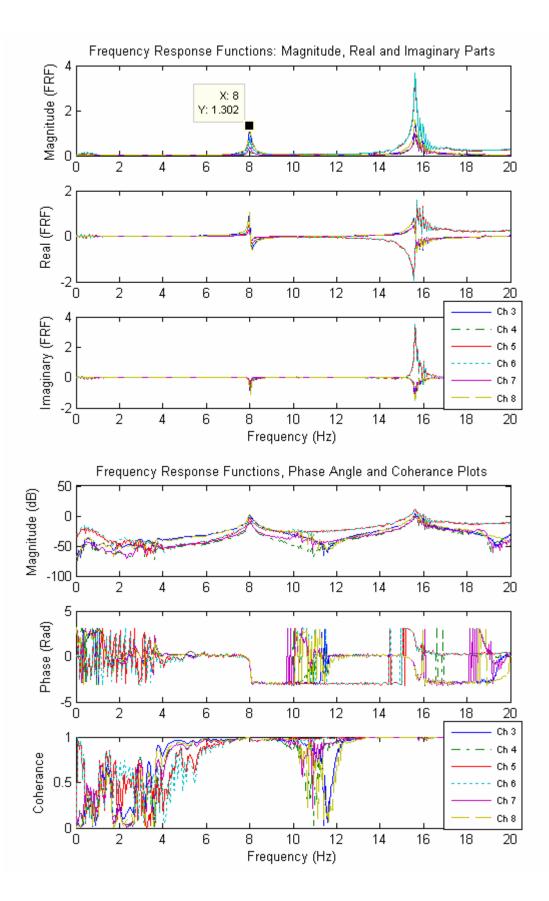
Single Span Floor- Stage 1- Bottom Chord Extensions in Place





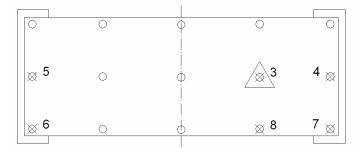
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

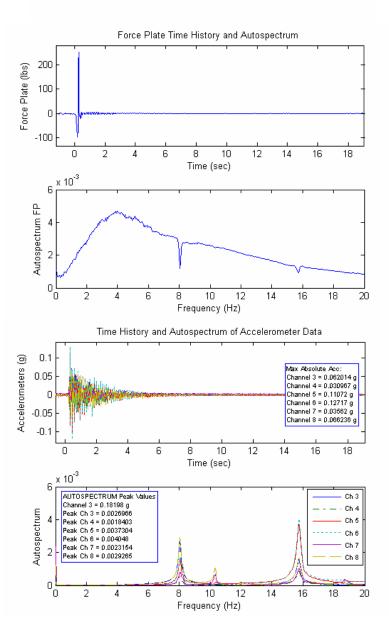


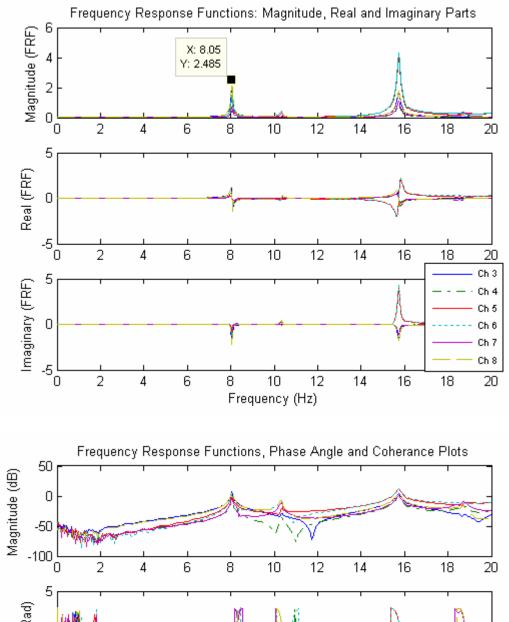


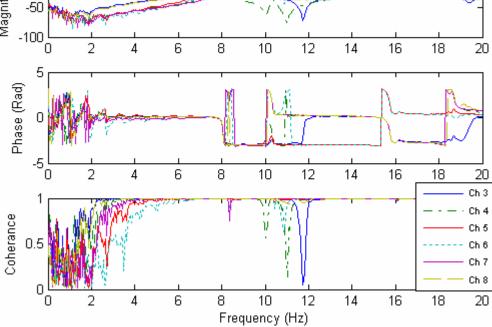
Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)	Second Bending Mode Frequency	Second Bending Mode Damping Ratio (Half power Method)	First Torsional Mode Frequency
3/3/2004	3/3/2004 5 Heeldrops fn=8.		fn=8.00-8.05Hz	β1= 0.453%	fn=15.75Hz	β2= 0.521%	10.35Hz

Single Span Floor- Stage 1- Bottom Chord Extensions in Place



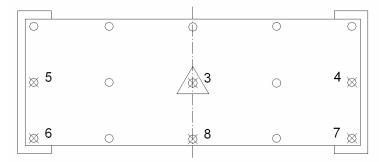


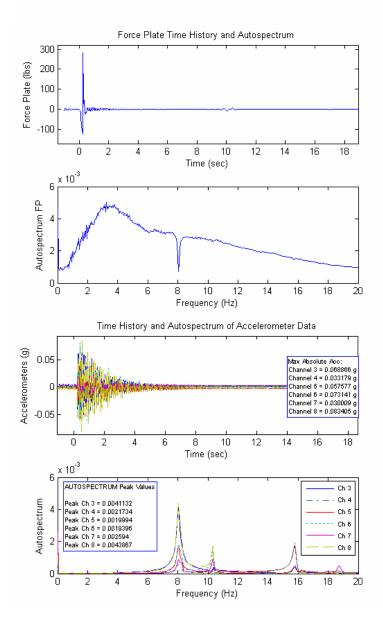


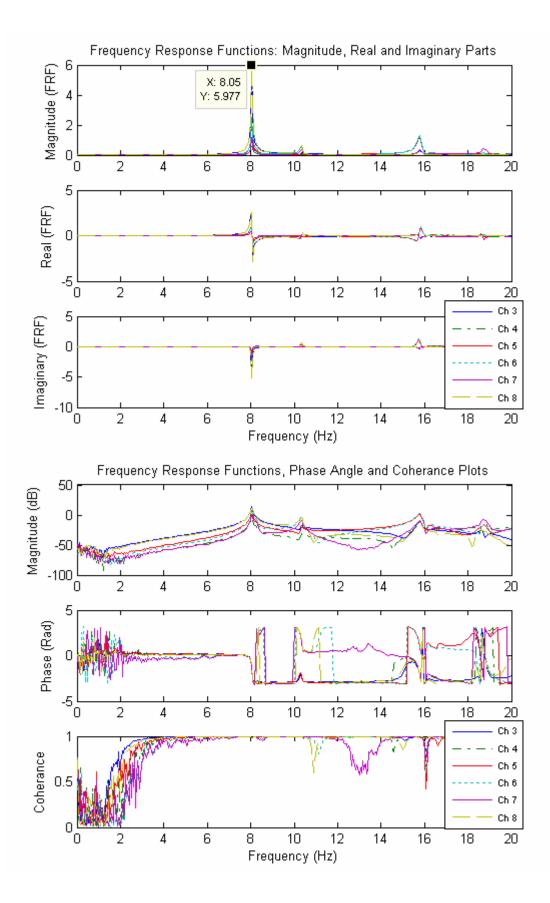


Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)	Second Bending Mode Frequency	Second Bending Mode Damping Ratio (Half power Method)		Second Torsional Mode Frequency
3/3/2004	6	Heeldrops	fn=8.00-8.05Hz	β1= 0.348%	fn=15.75-15.80Hz	β2= 0.564%	10.35Hz	18.75Hz

Single Span Floor- Stage 1- Bottom Chord Extensions in Place

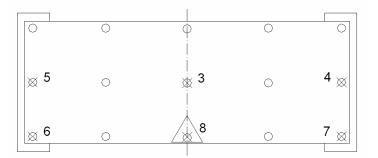


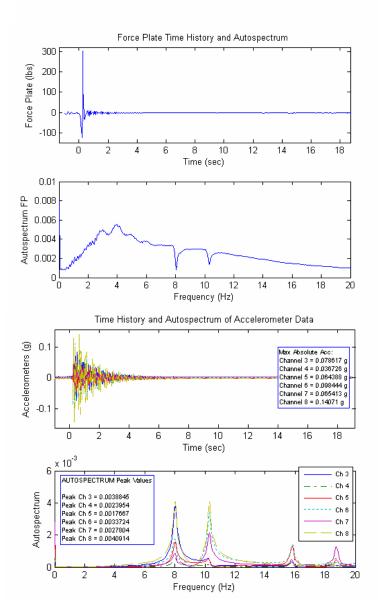


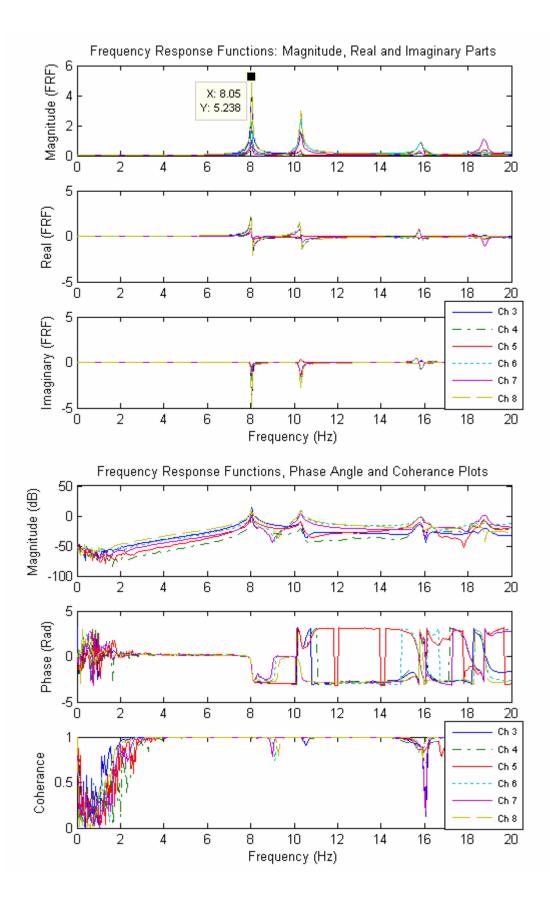


									Iuce		
	Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)	Modo Eroquonov	Second Bending Mode Damping Ratio (Half power Method)	First Torsional Mode Frequency		Modo Eroquonov	
	3/3/2004	7	Heeldrops	fn=8.00-8.05Hz	β1= 0.366%	fn=15.75-15.80Hz	β2= 0.508%	10.35Hz	0.62%	18.75Hz	0.57%

Single Span Floor- Stage 1- Bottom Chord Extensions in Place



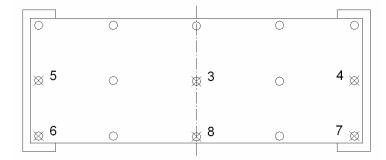


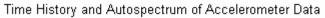


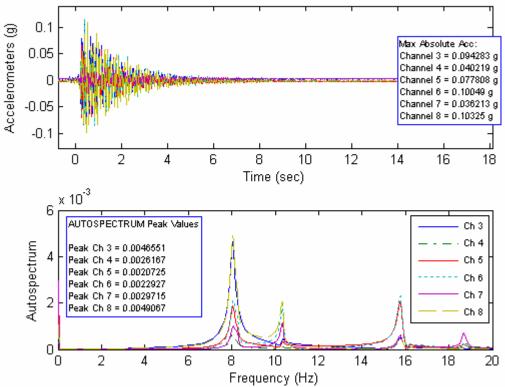
Single Span Hoor Stage i Dottom Chora Extensions in Flace										
Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)	Second Bending Mode Frequency	Second Bending Mode Damping Ratio (Half power Method)	Mode	Second Torsional Mode Frequency		
3/3/2004	8	Heeldrops	fn=8.05-8.10Hz	No Force Plate, No FRF	fn=15.75-15.80Hz	NO FRF	10.35Hz	18.75Hz		
		-			-		-	-		

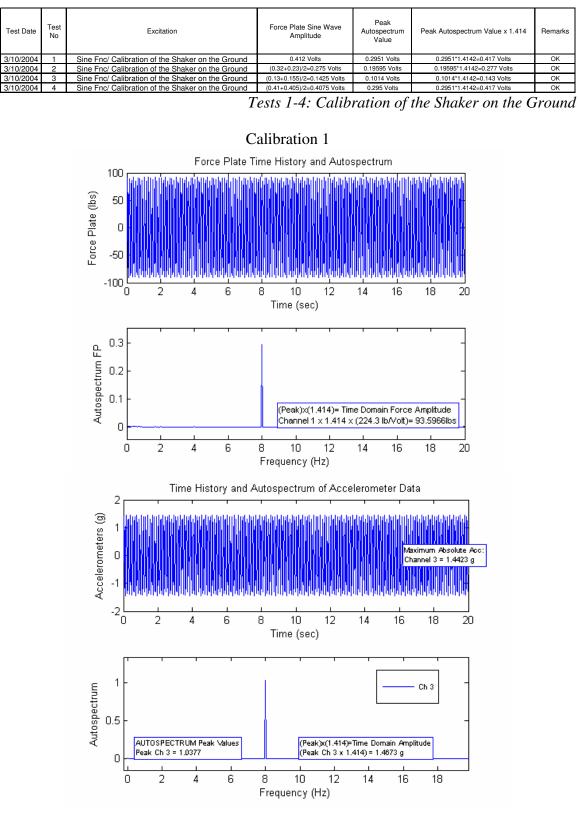
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

Heeldrops performed without a force plate, so there is NO transfer function for this test.

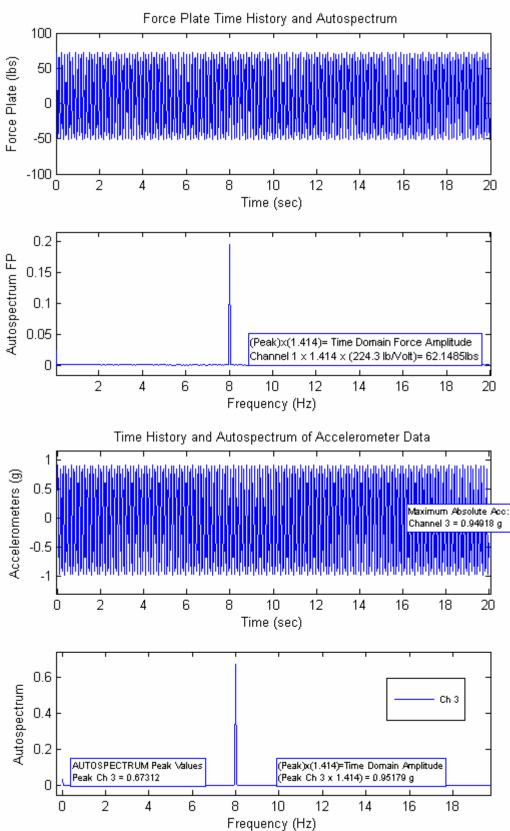


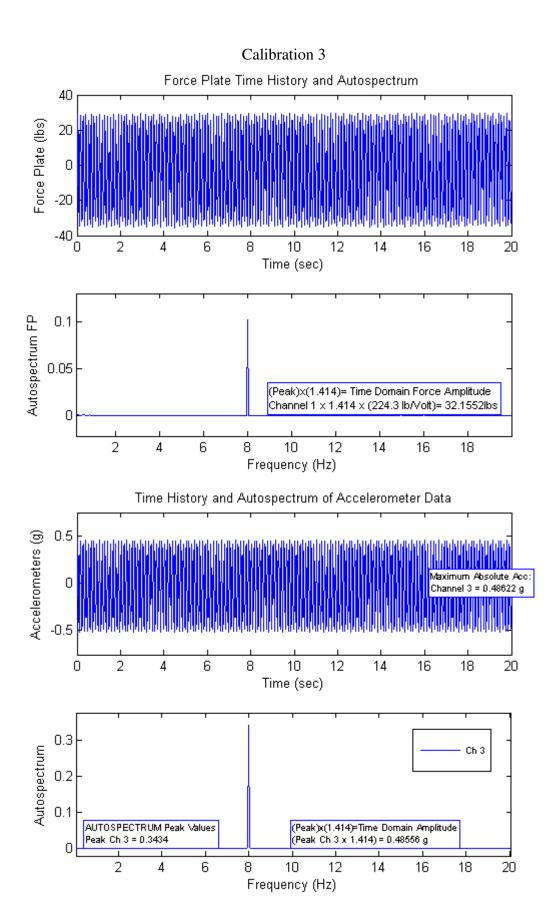


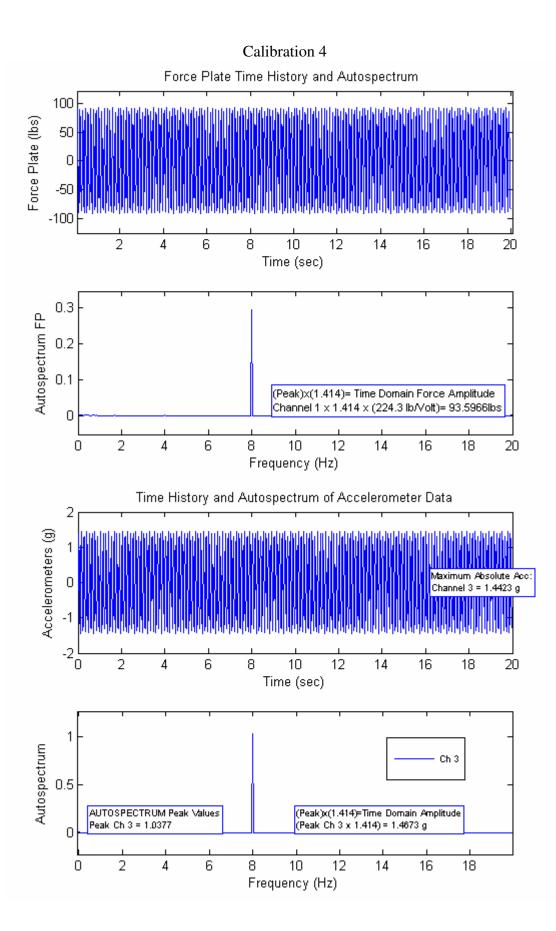


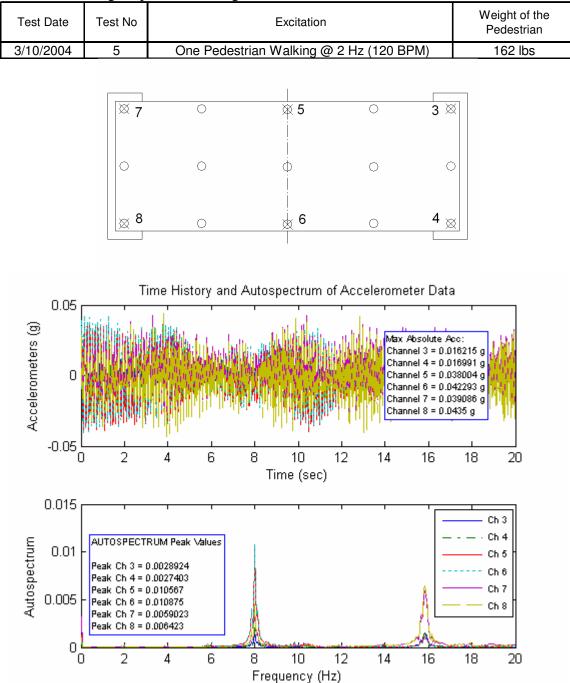




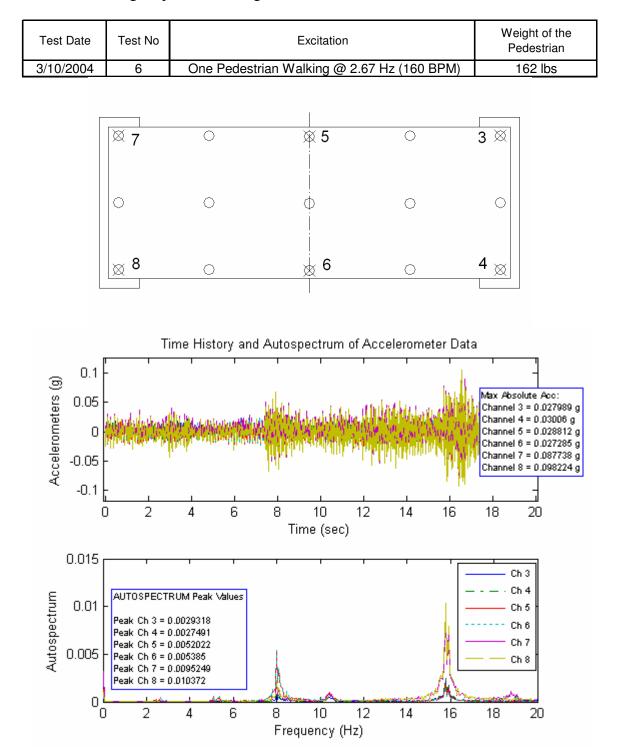


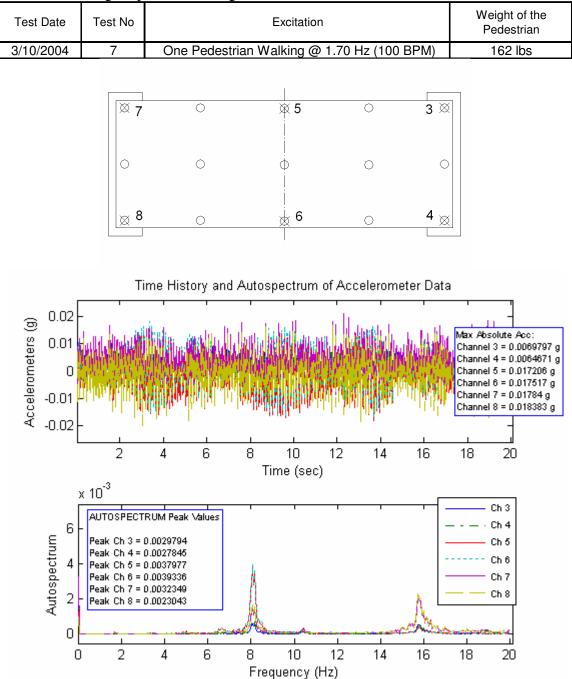




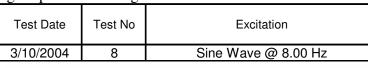


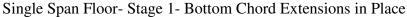
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

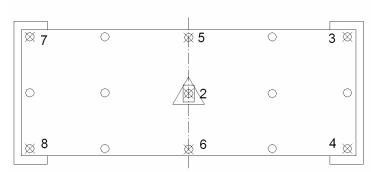


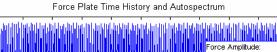


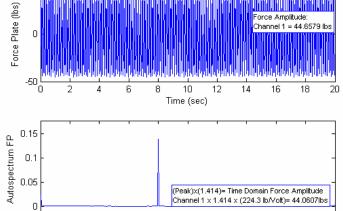
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

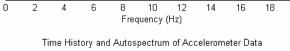


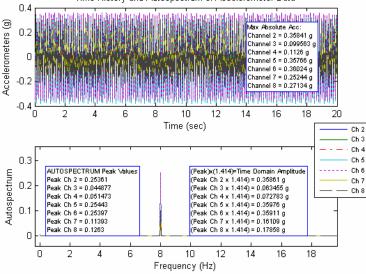


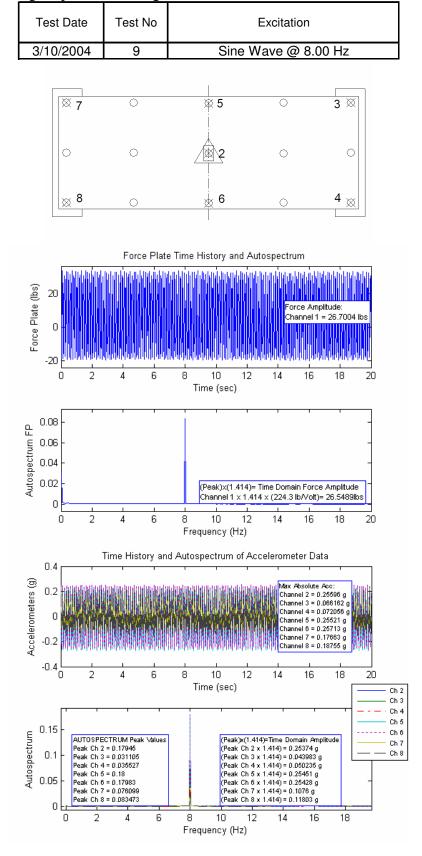




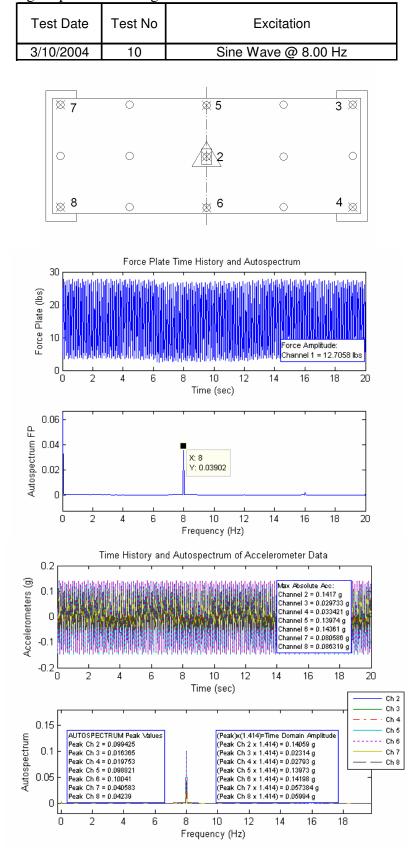




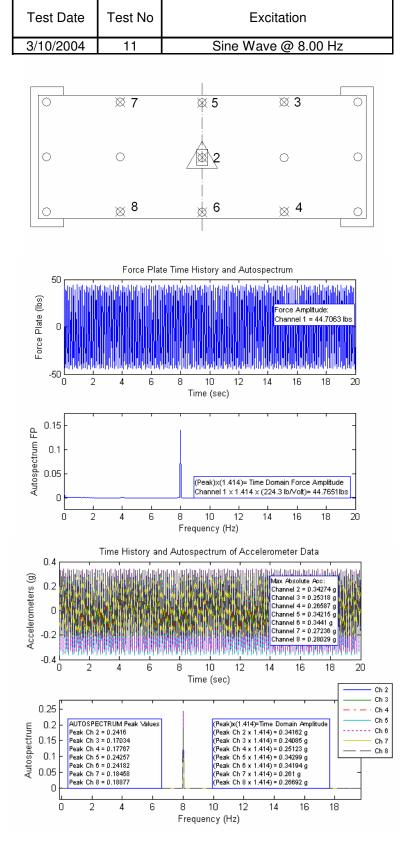




Single Span Floor- Stage 1- Bottom Chord Extensions in Place



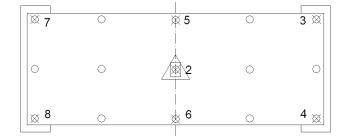
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

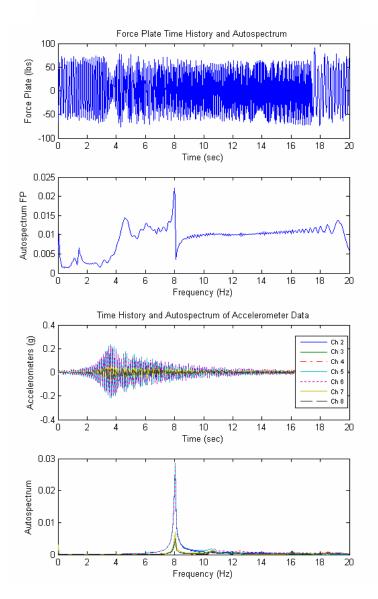


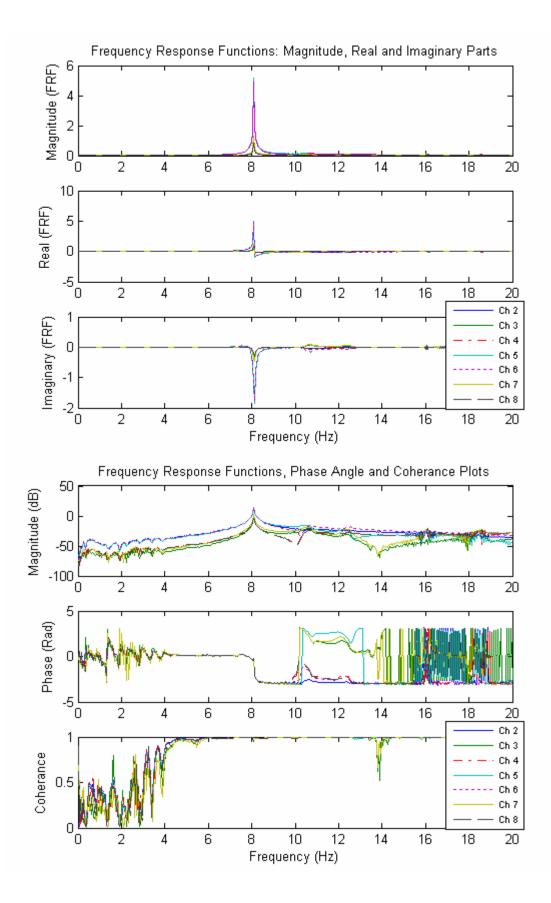
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

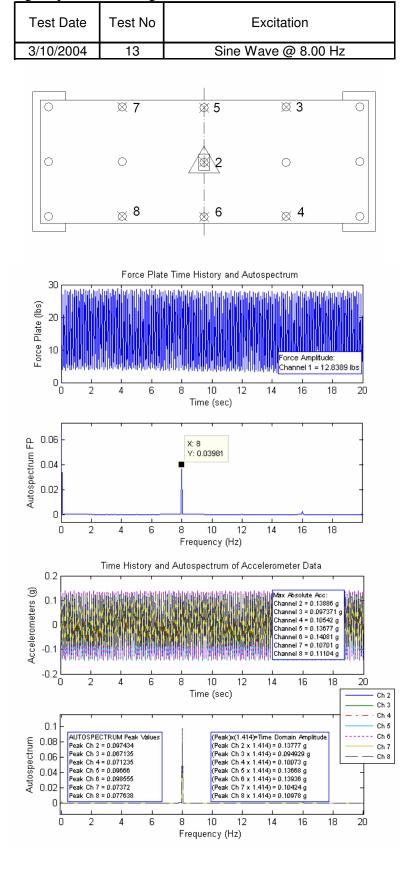
Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)
3/10/2004	12	Chirp	fn=8.10Hz	β1= 0.277%

Single Span Floor- Stage 1- Bottom Chord Extensions in Place



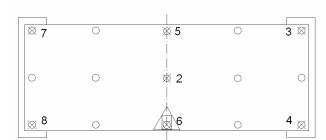


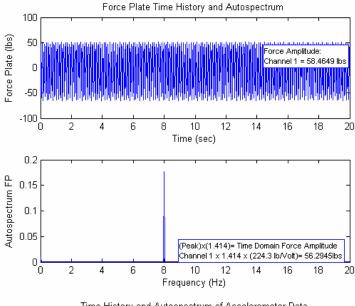


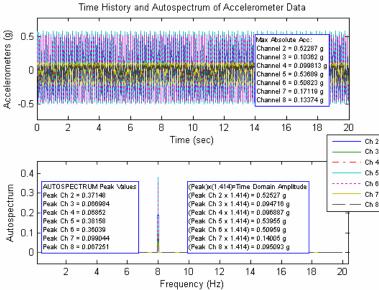


Single Span Floor- Stage 1- Bottom Chord Extensions in Place

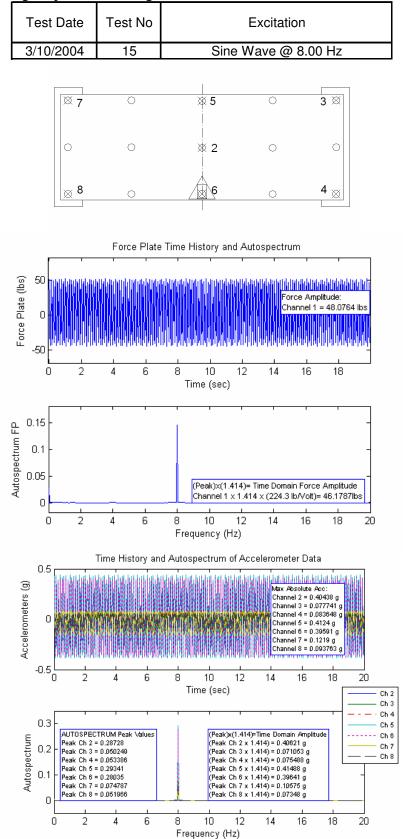
Test DateTest NoExcitation3/10/200414Sine Wave @ 8.00 Hz



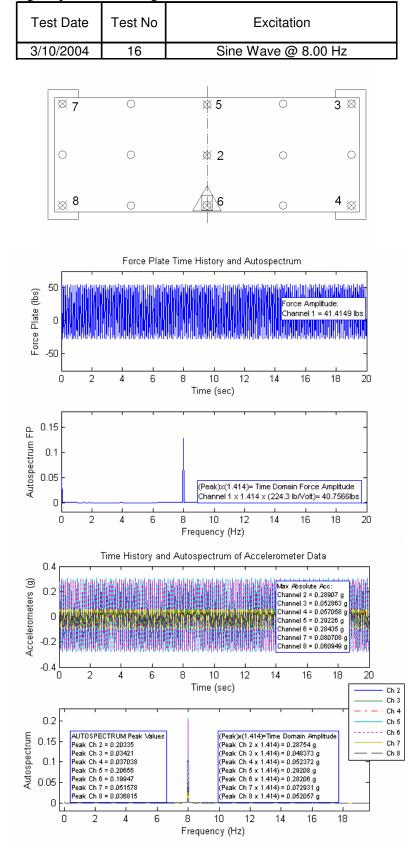




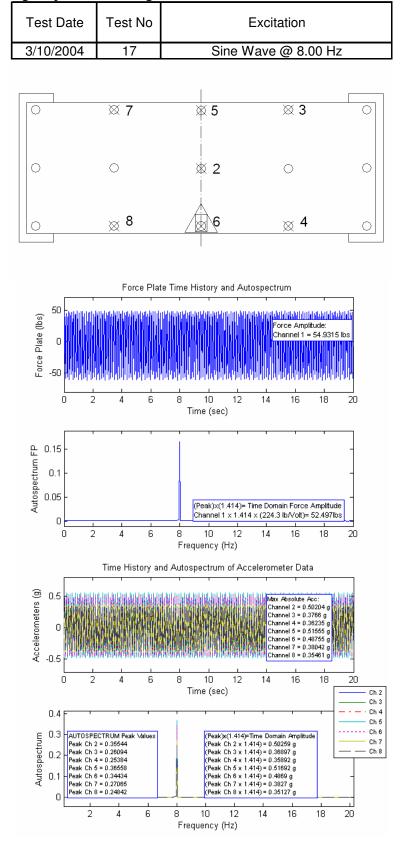
Single Span Floor- Stage 1- Bottom Chord Extensions in Place



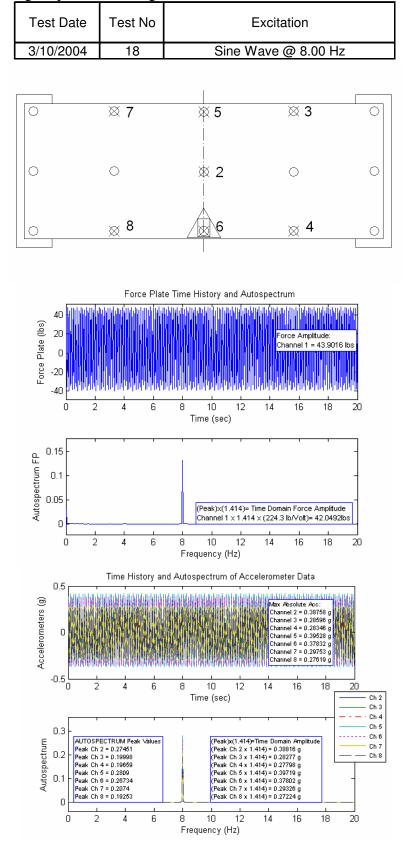
Single Span Floor- Stage 1- Bottom Chord Extensions in Place



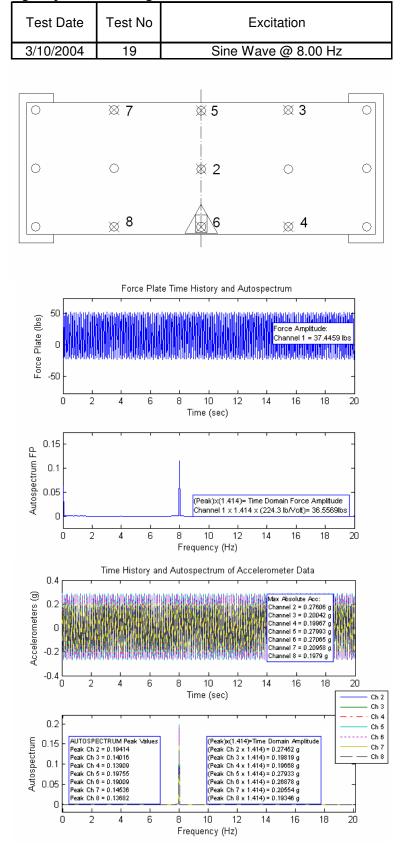
Single Span Floor- Stage 1- Bottom Chord Extensions in Place



Single Span Floor- Stage 1- Bottom Chord Extensions in Place



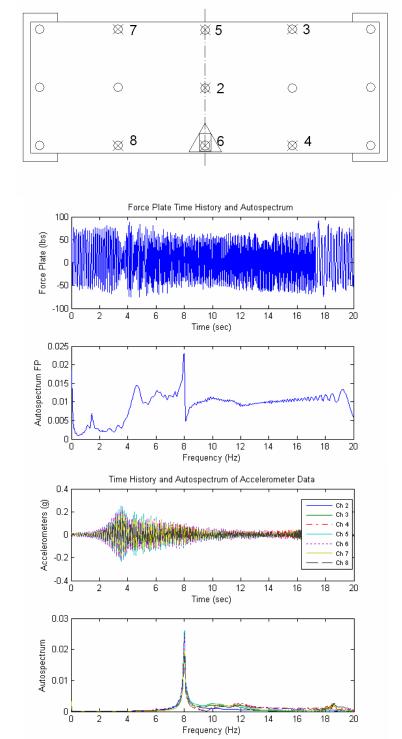
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

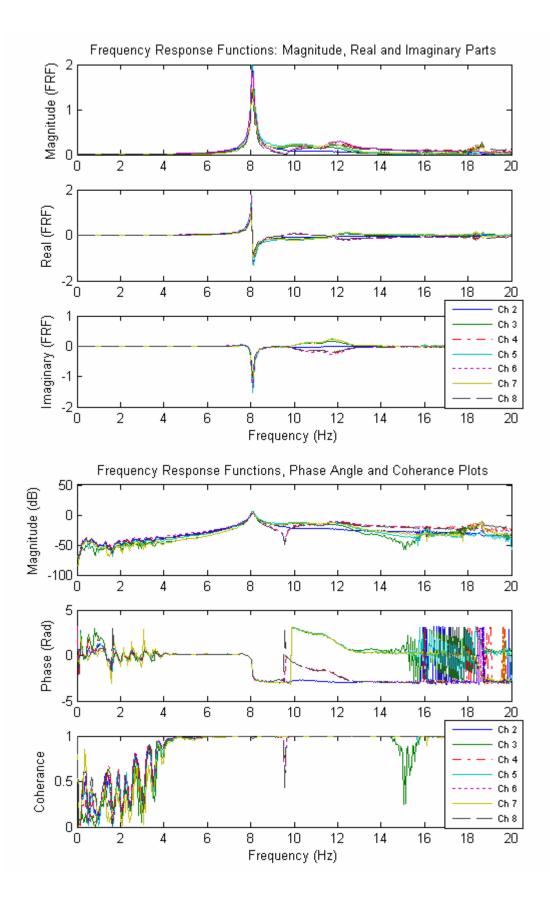


Single Span Floor- Stage 1- Bottom Chord Extensions in Place

Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)
3/10/2004	20	Chirp for Torsion	fn=8.05-8.10Hz	β1= 0.63%

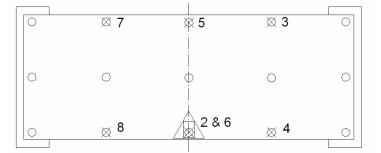
Single Span Floor- Stage 1- Bottom Chord Extensions in Place

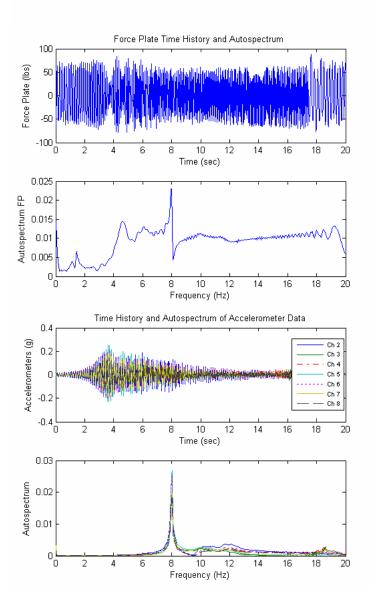


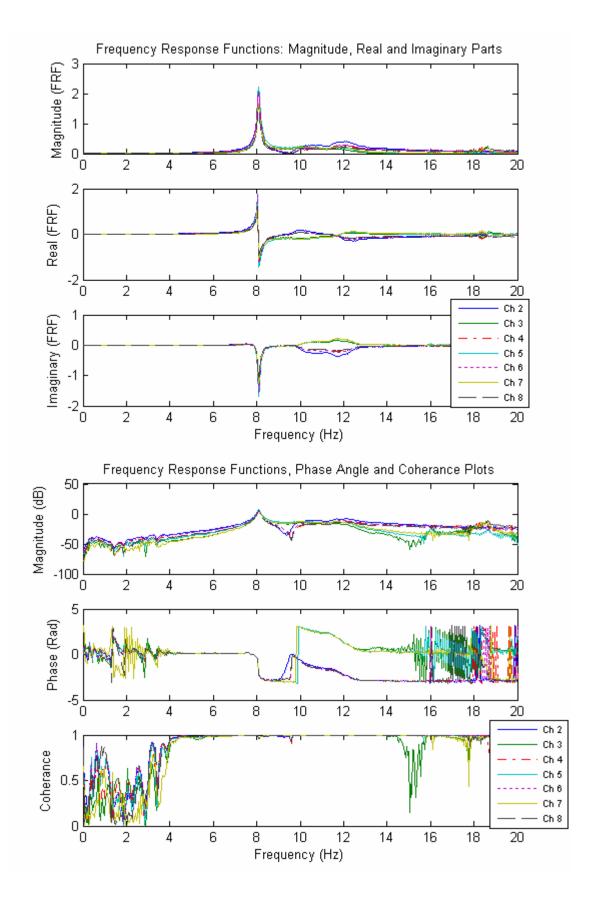


Test Date	Test No	Excitation	First Bending Mode Frequency	First Bending Mode Damping Ratio (Half power Method)
3/10/2004	21	Chirp for Torsion	fn=8.05-8.15Hz	β1= 0.63%

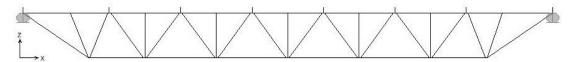
Single Span Floor- Stage 1- Bottom Chord Extensions in Place



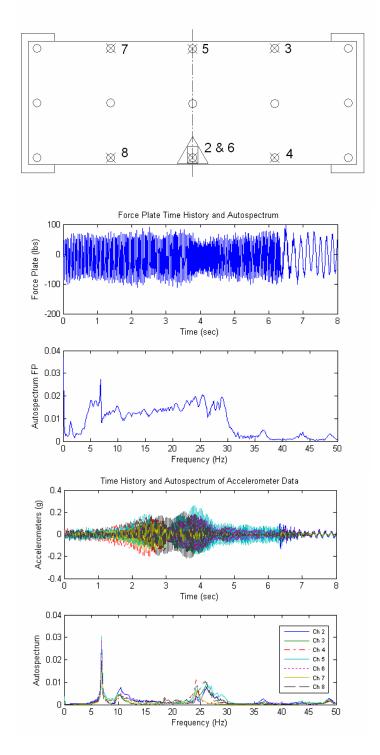


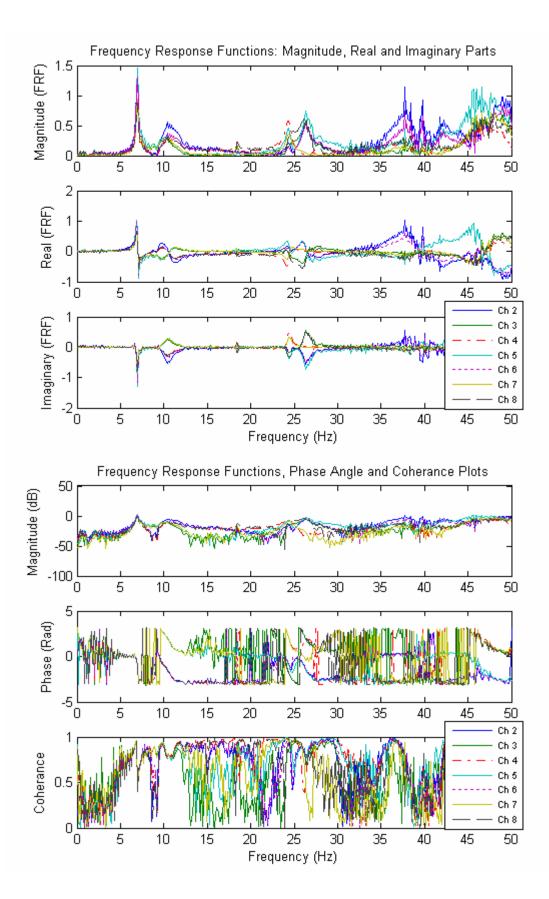


## **Stage 2: Bottom Chord Extensions Removed**

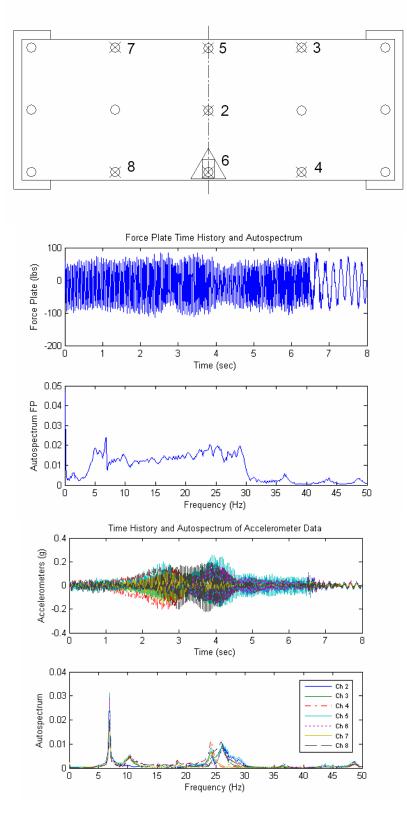


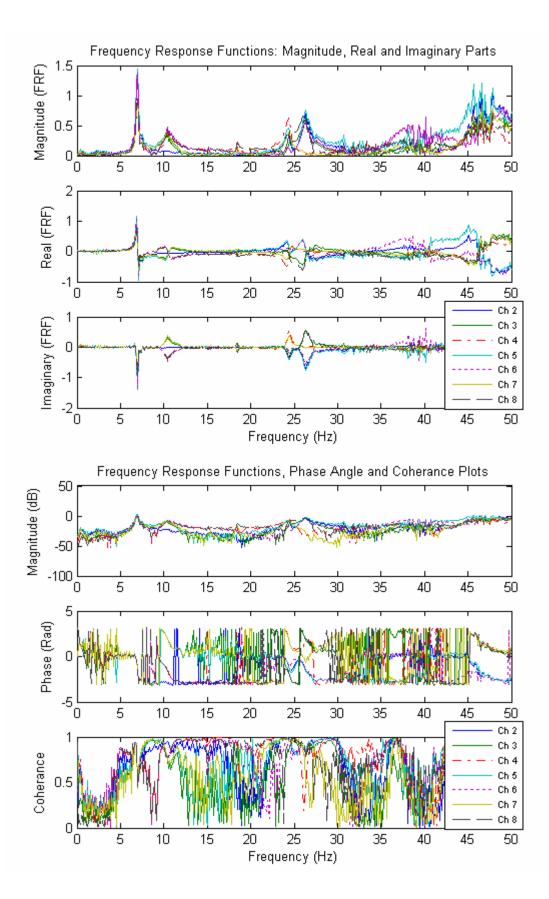
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 1



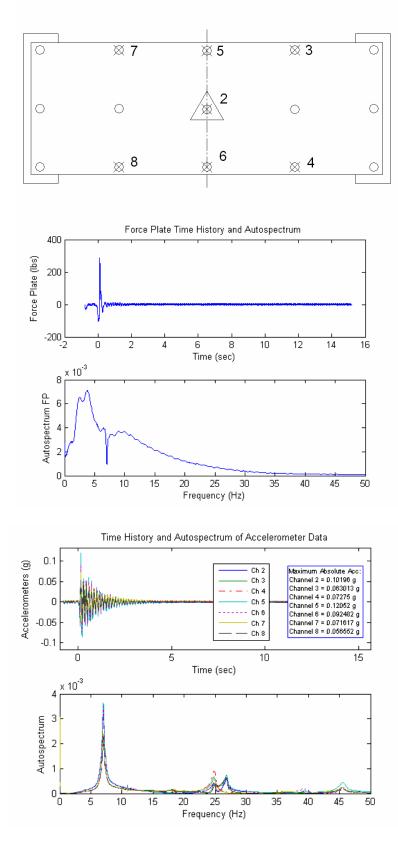


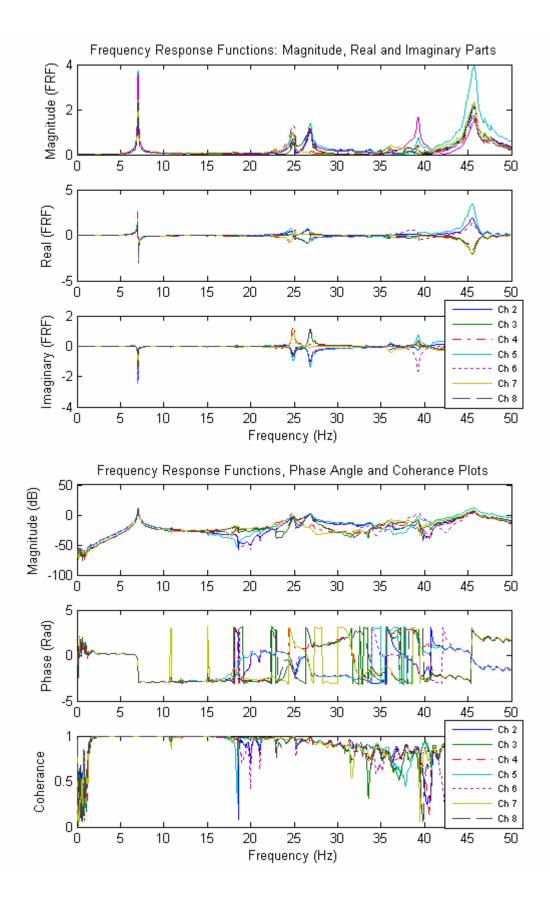


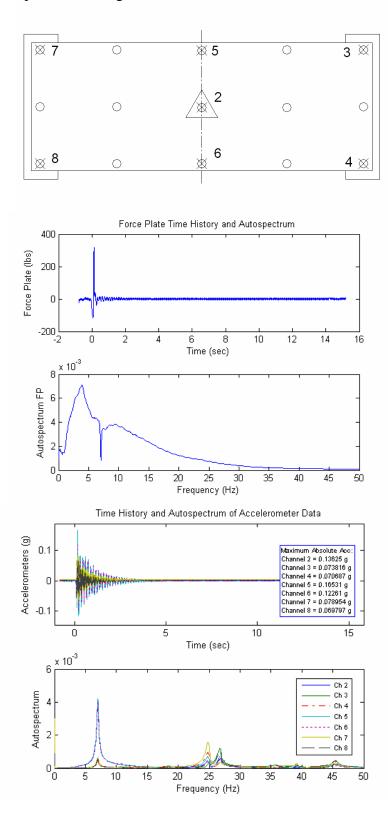


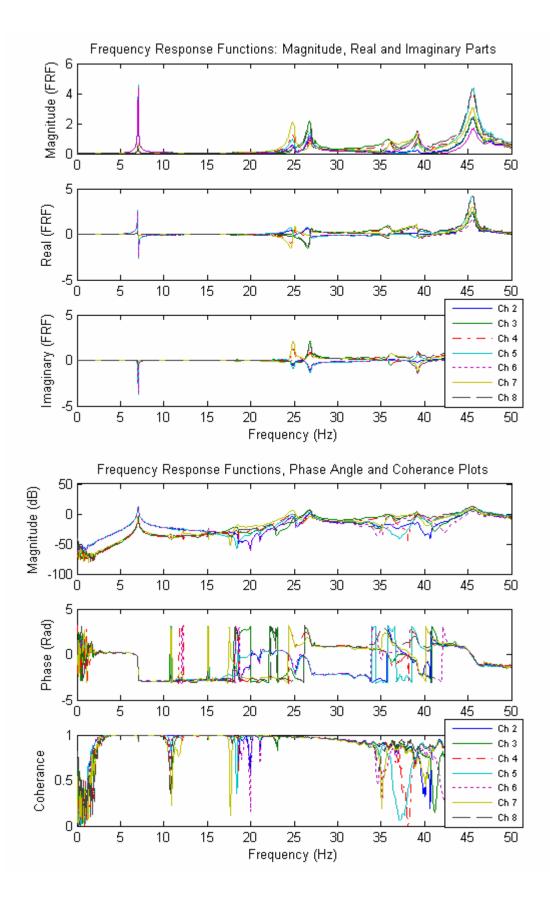


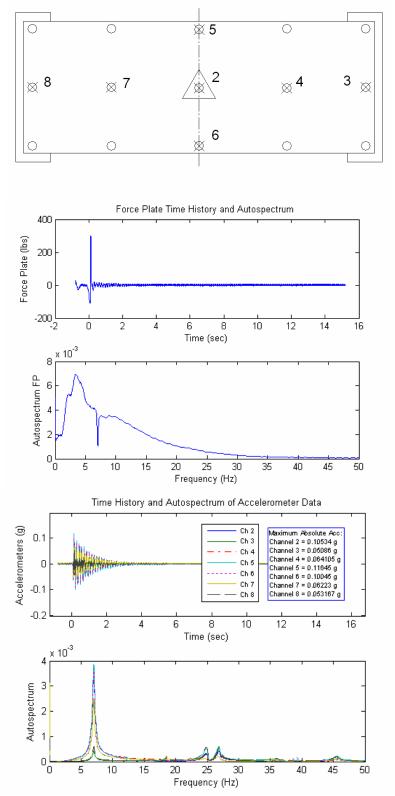


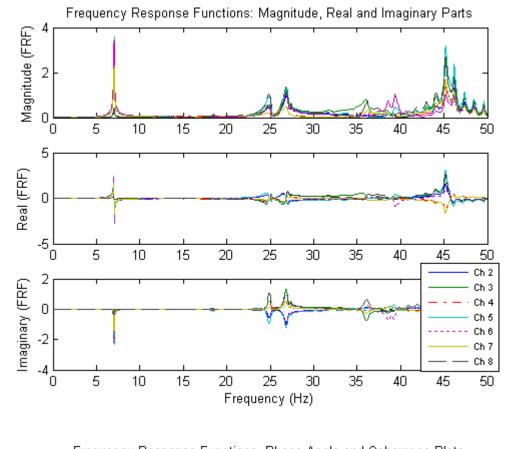


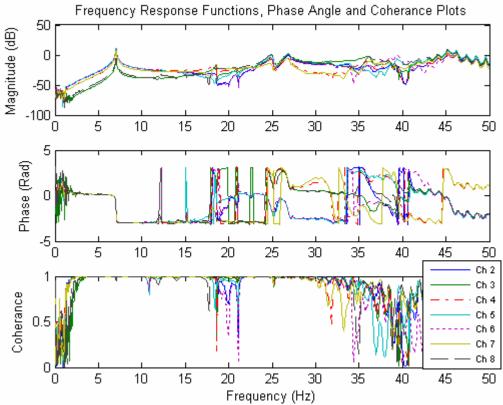


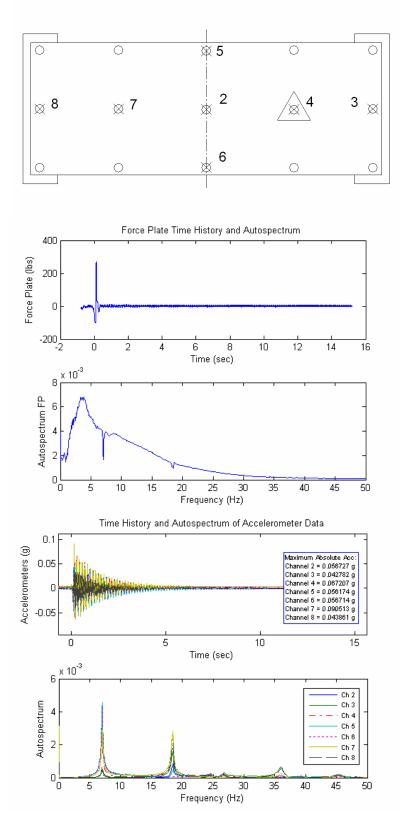


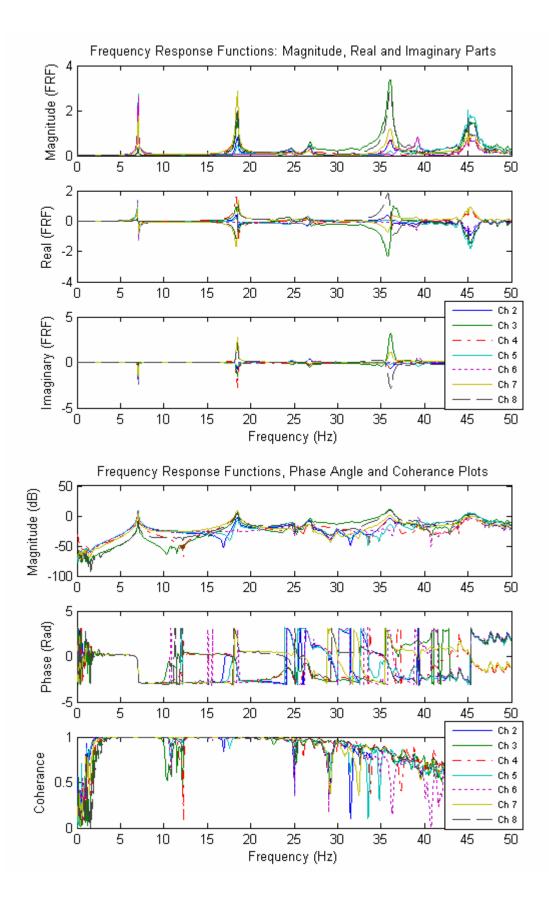


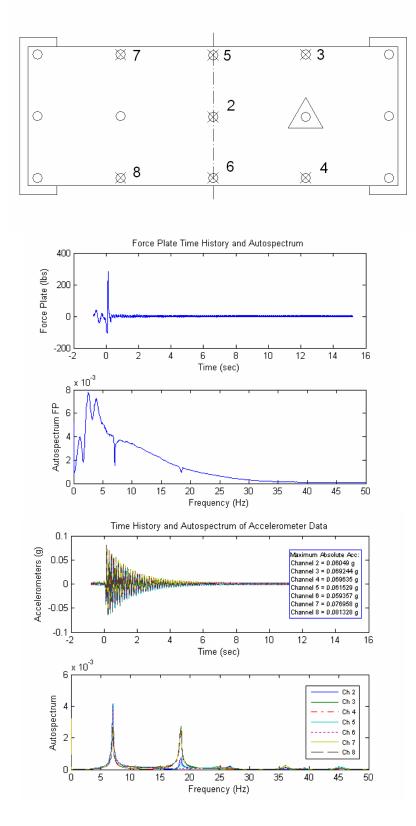


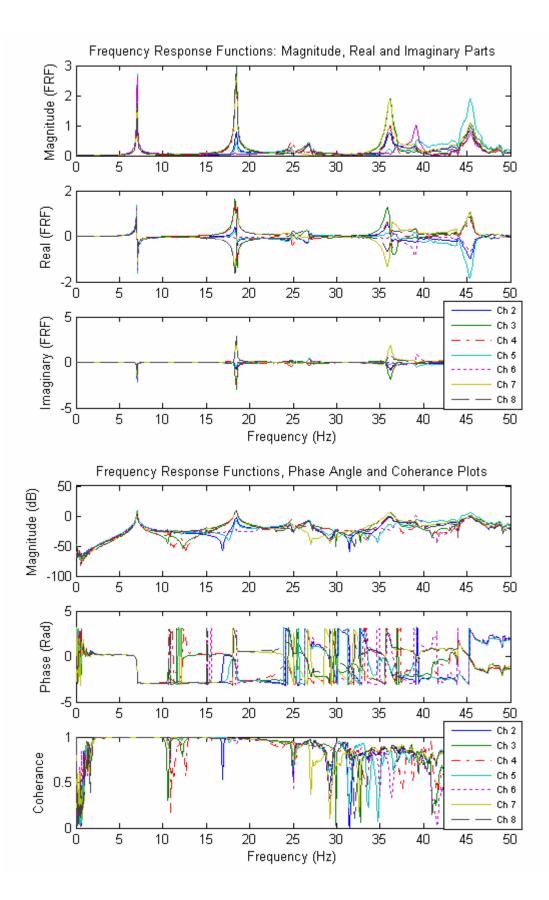


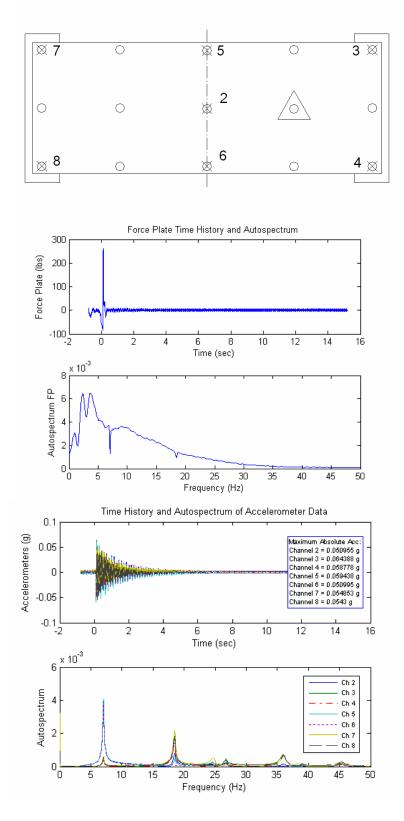


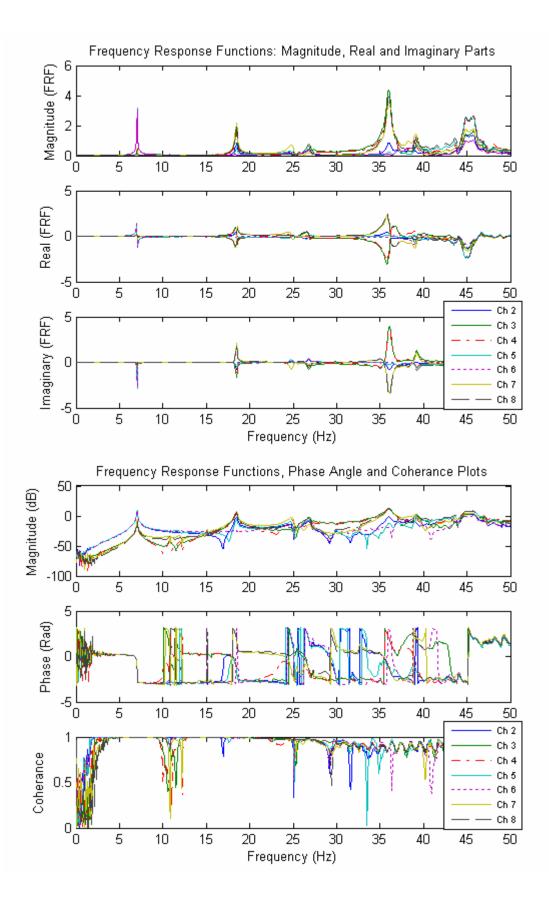


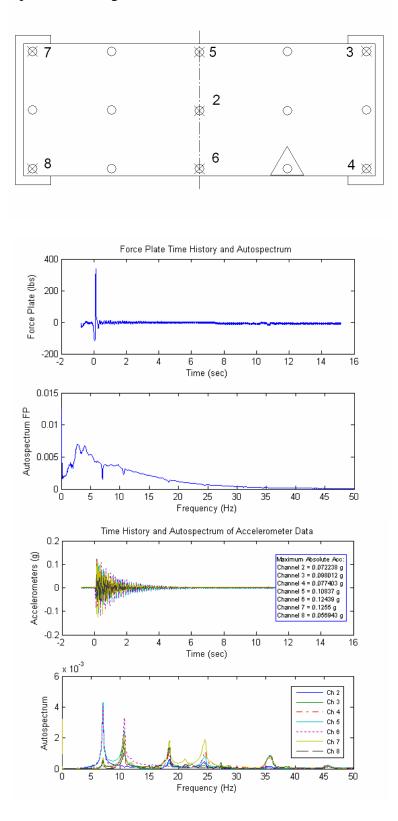


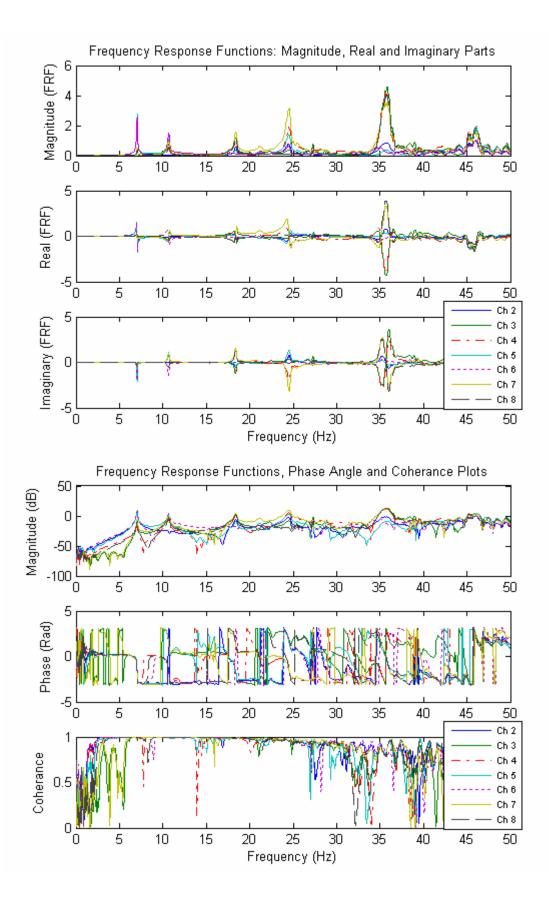


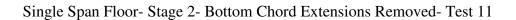


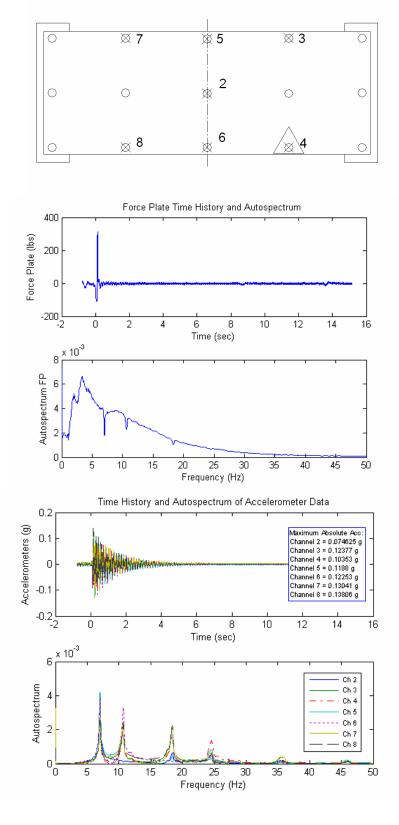


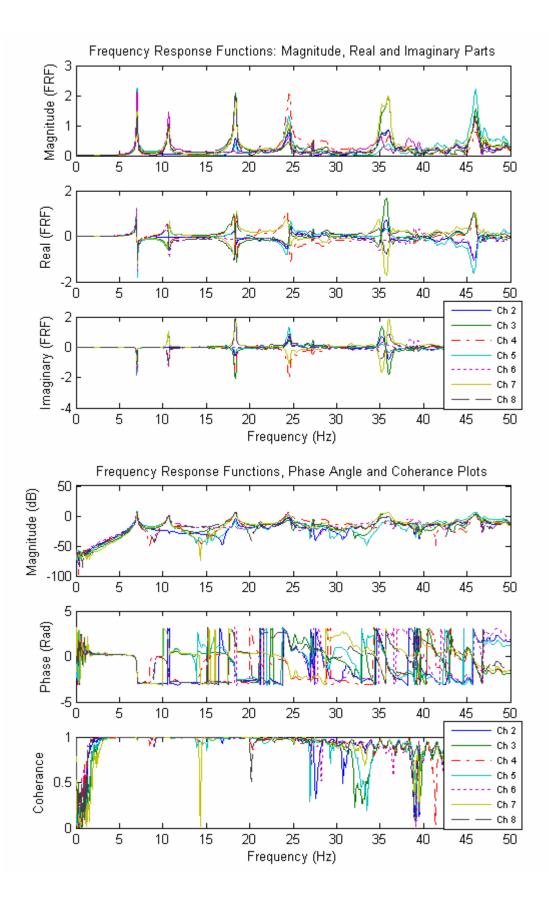


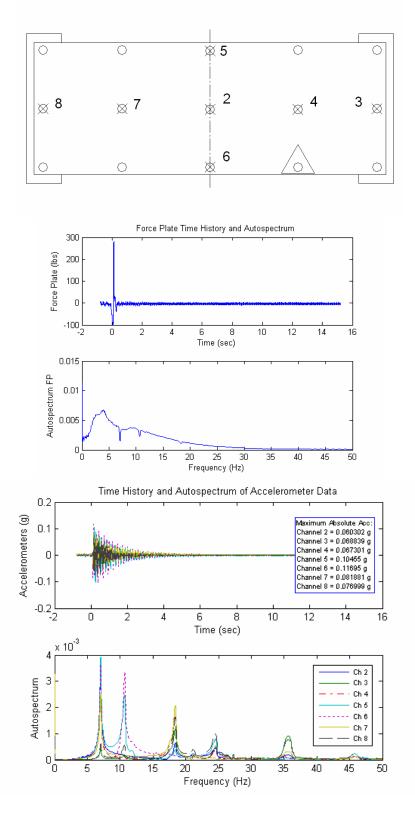


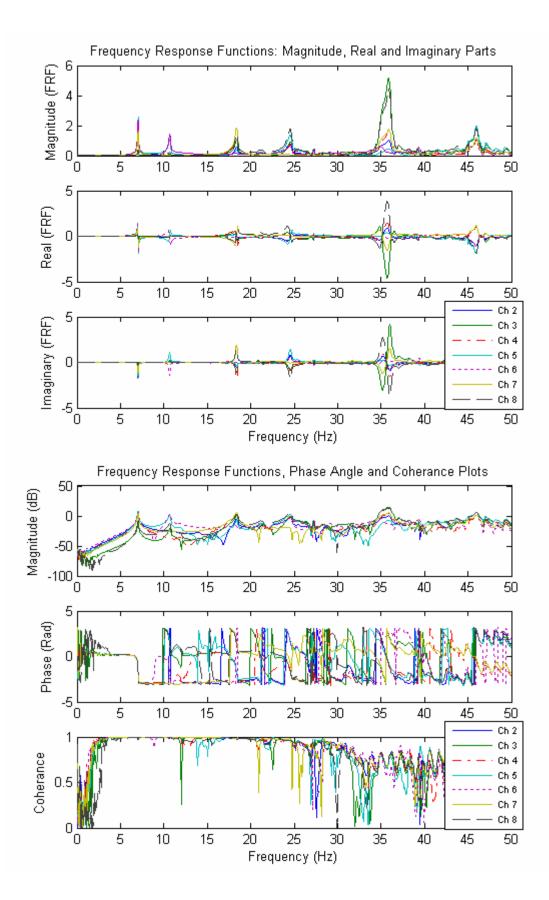


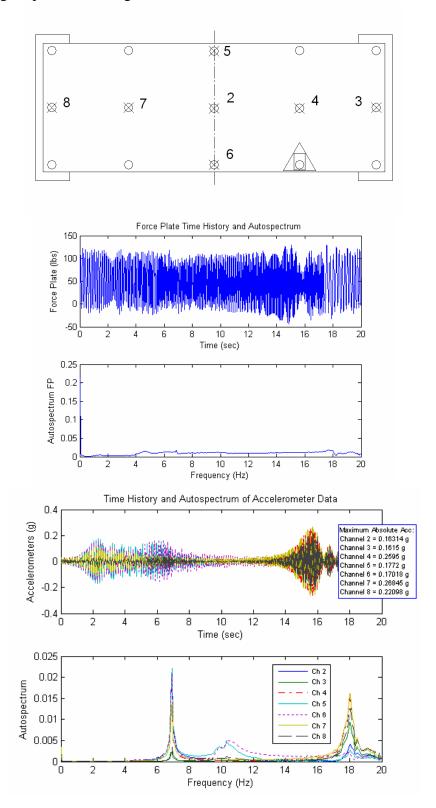




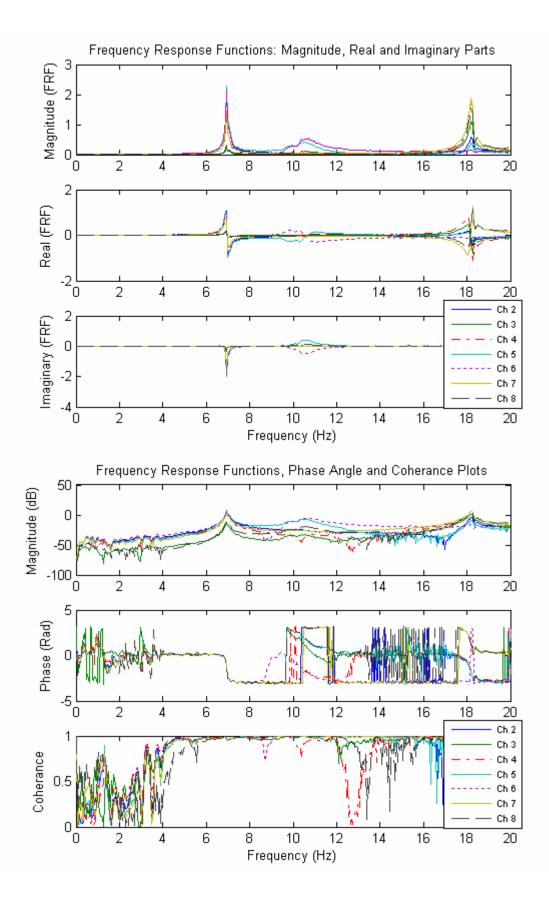


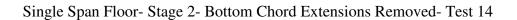


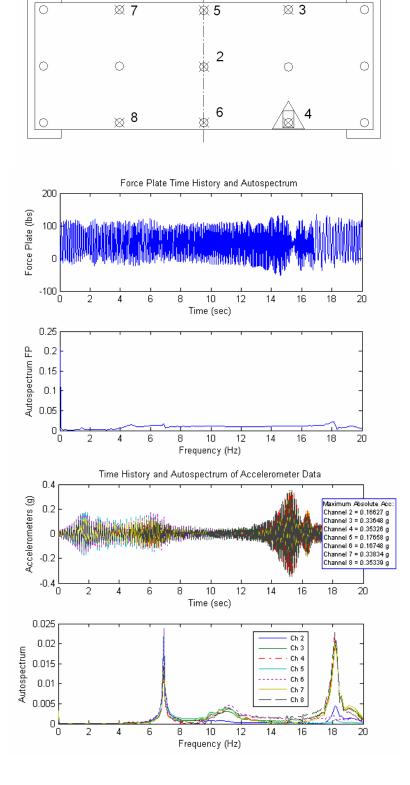


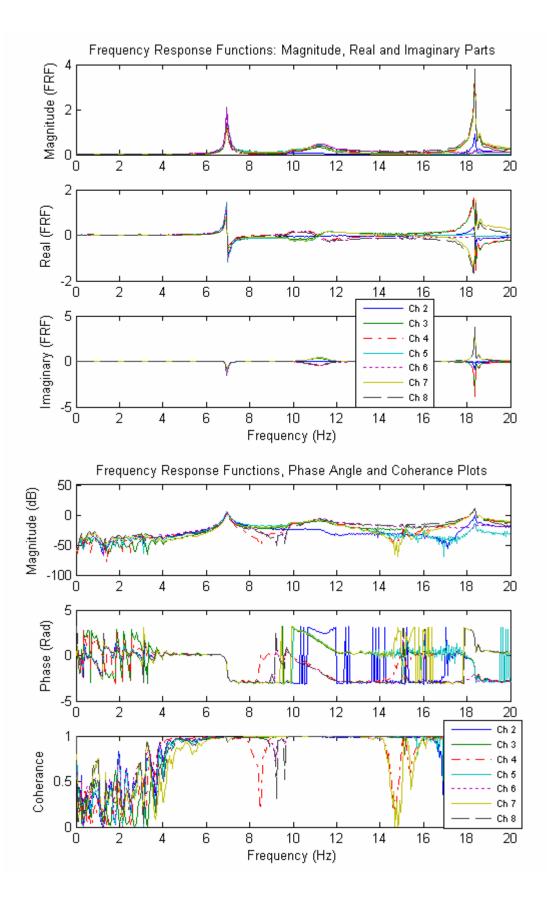


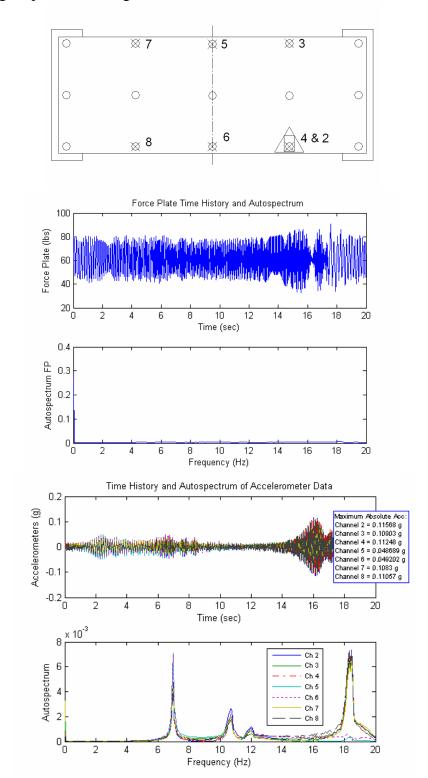
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 13



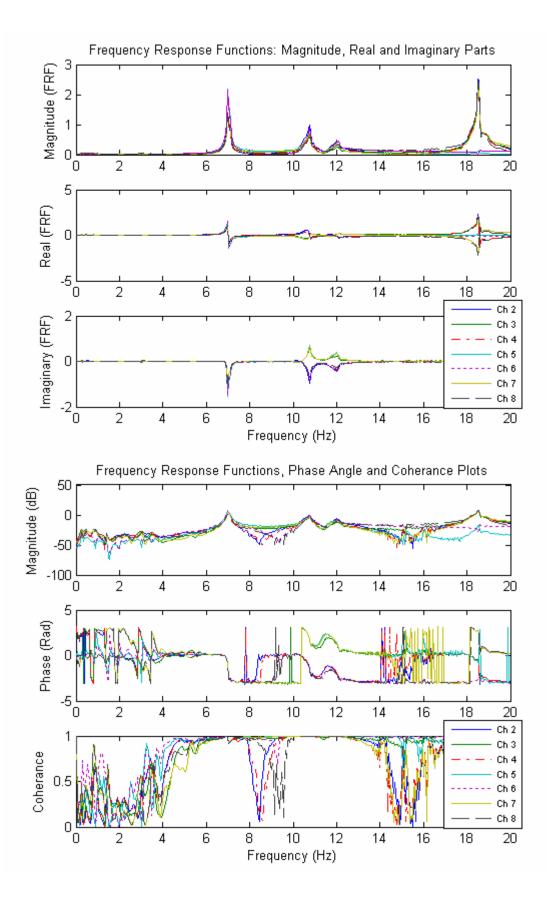


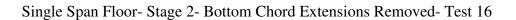


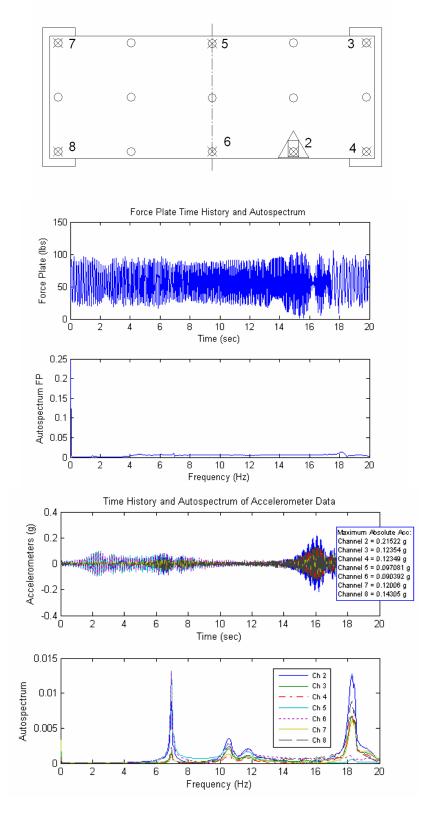


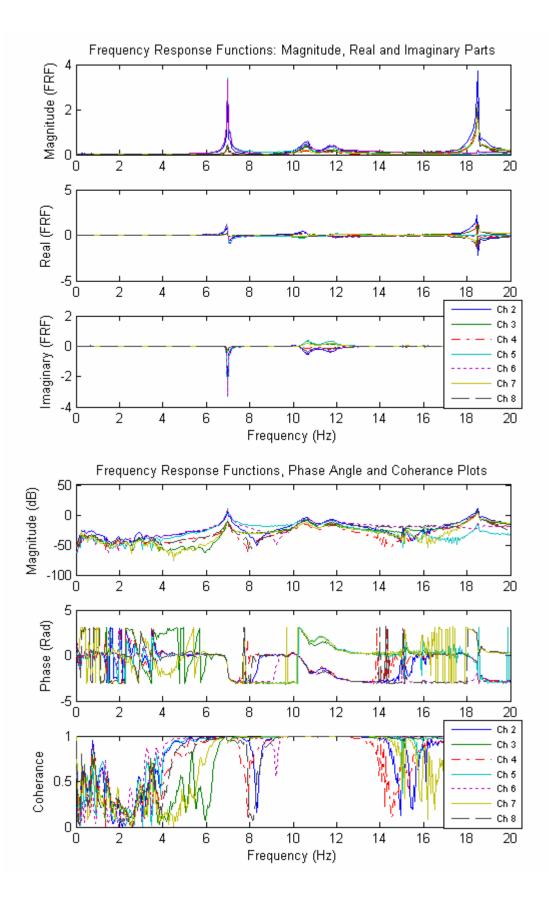


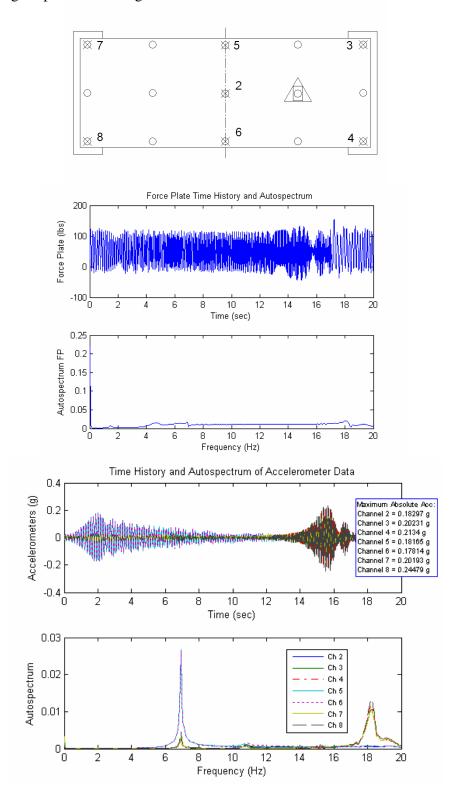
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 15

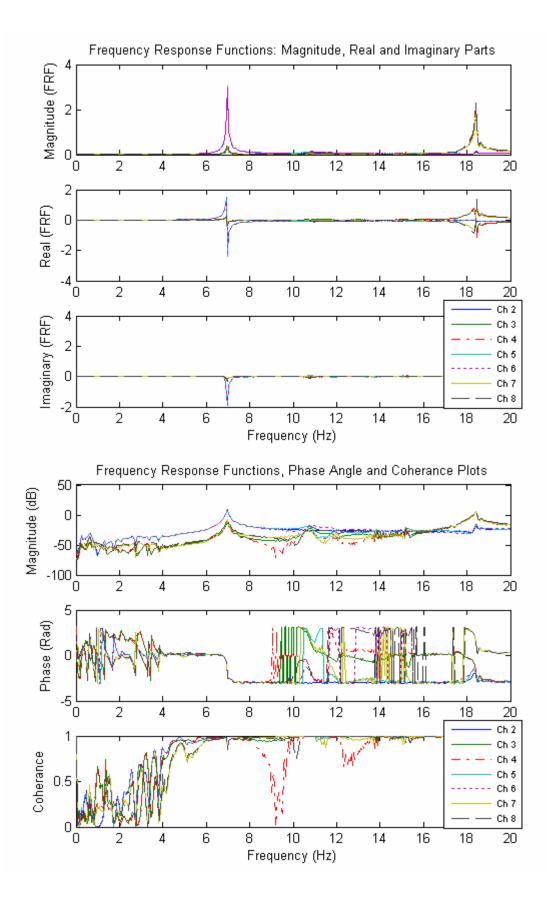


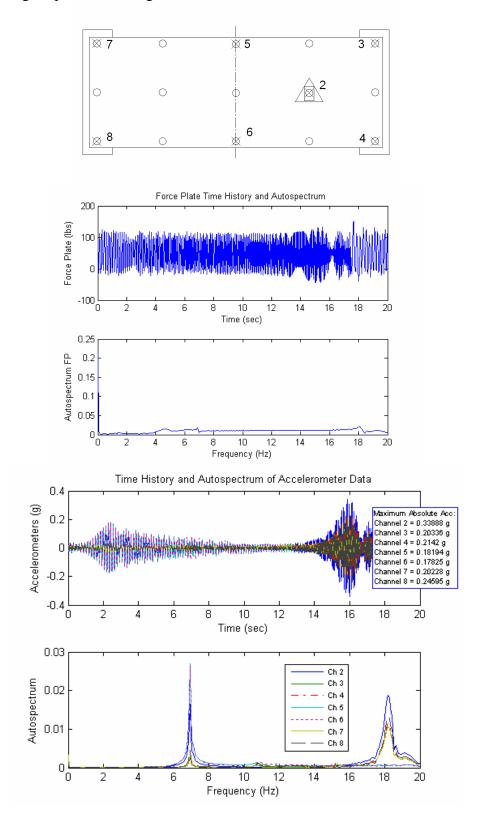




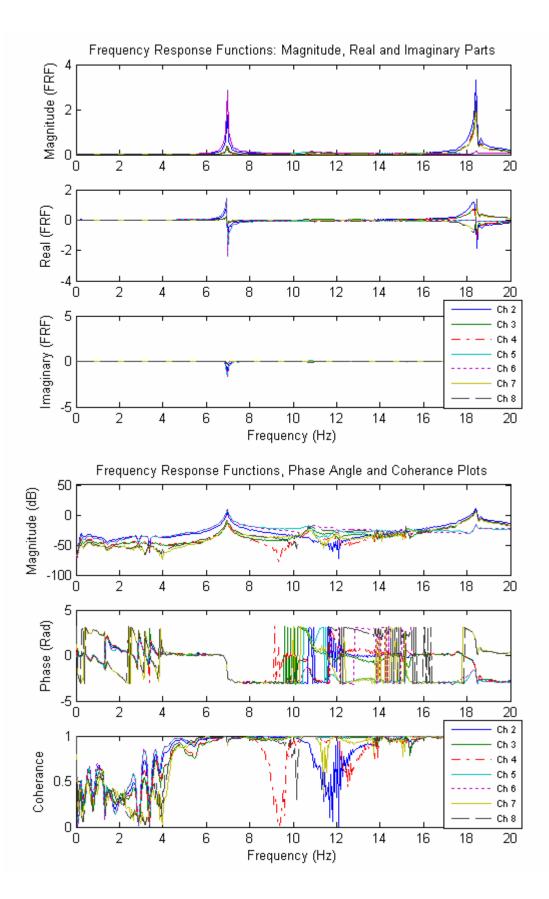


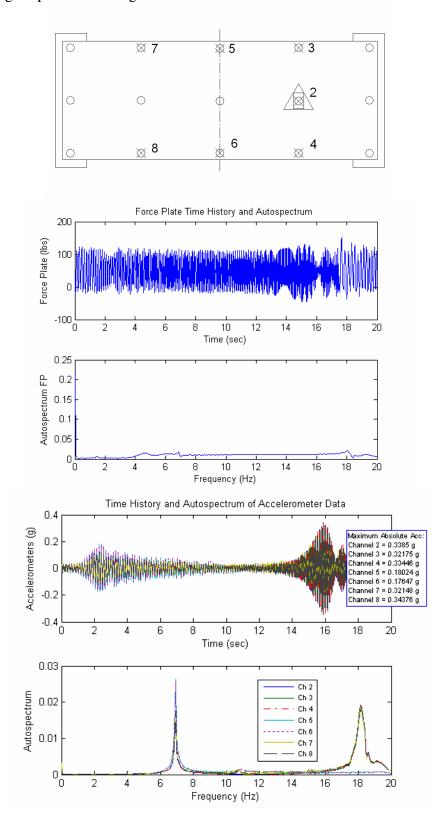




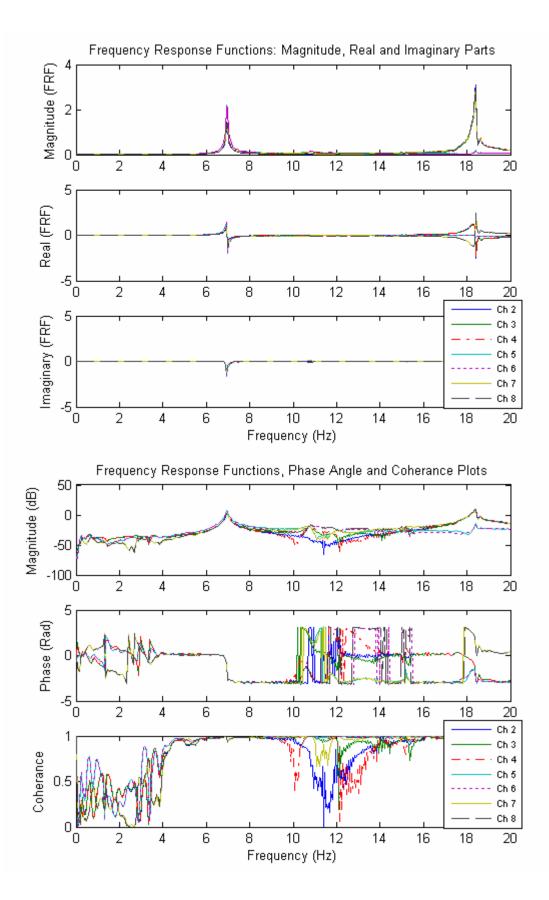


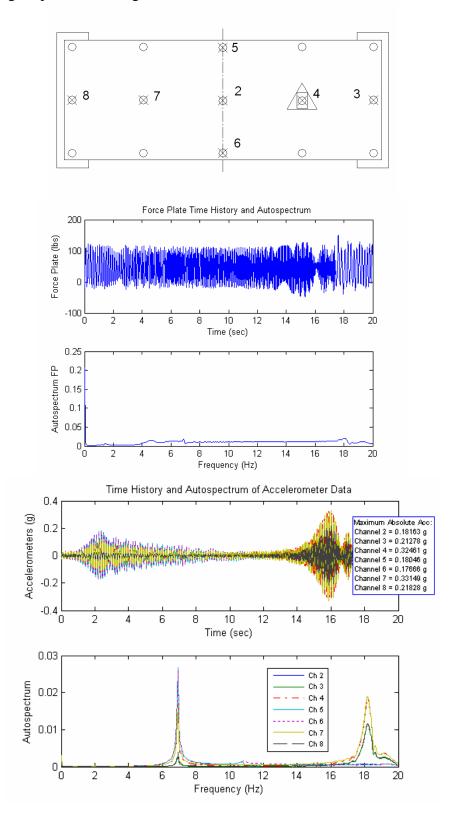
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 18



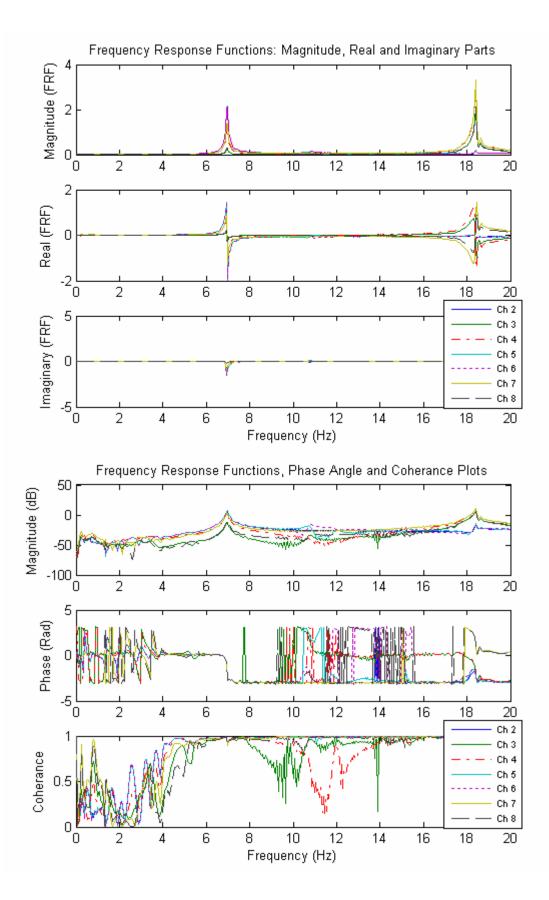


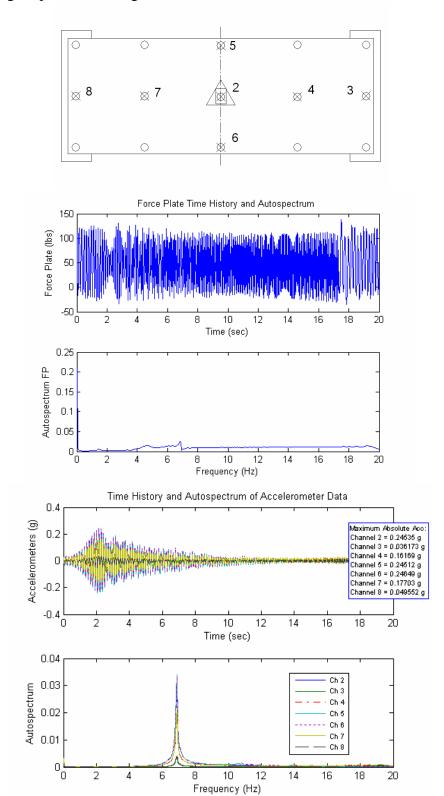
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 19



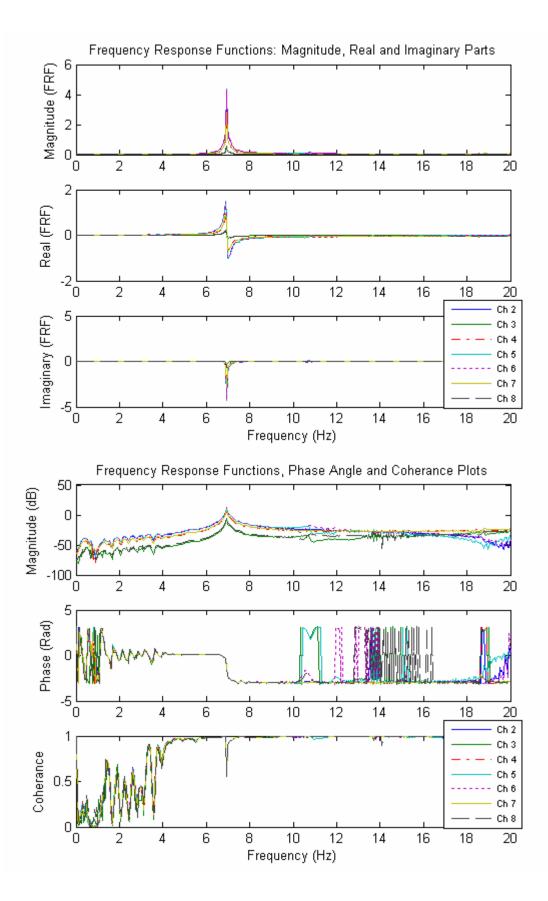


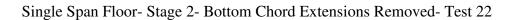
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 20

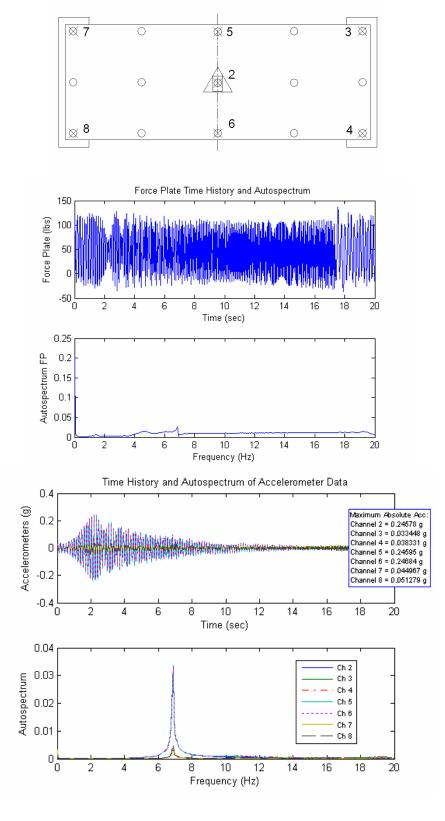


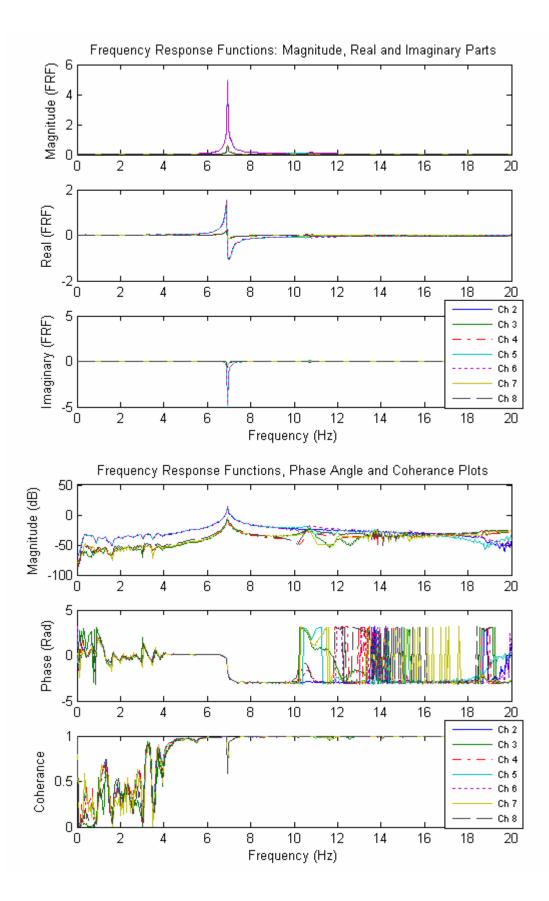


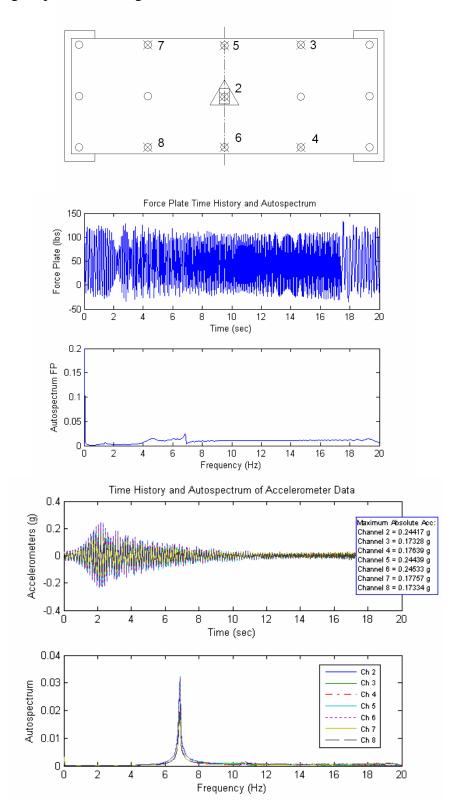
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 21



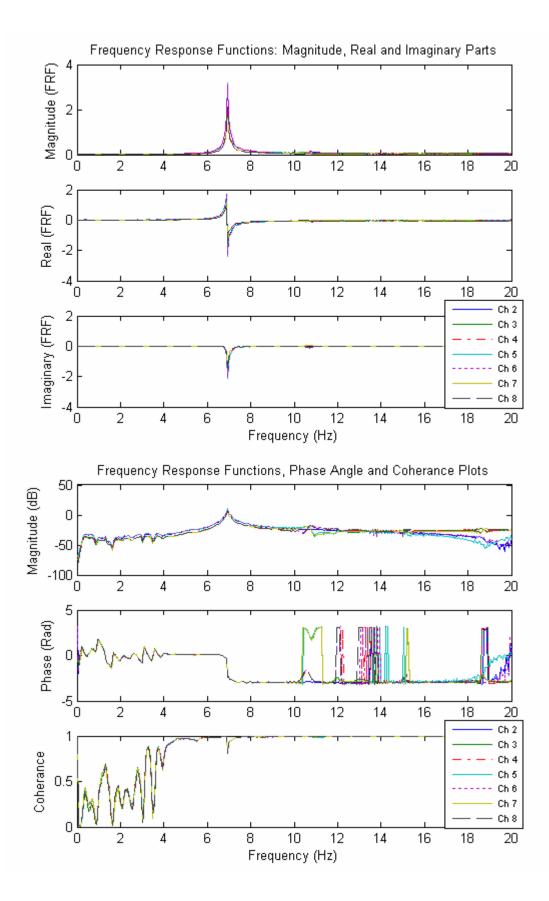


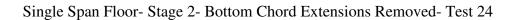


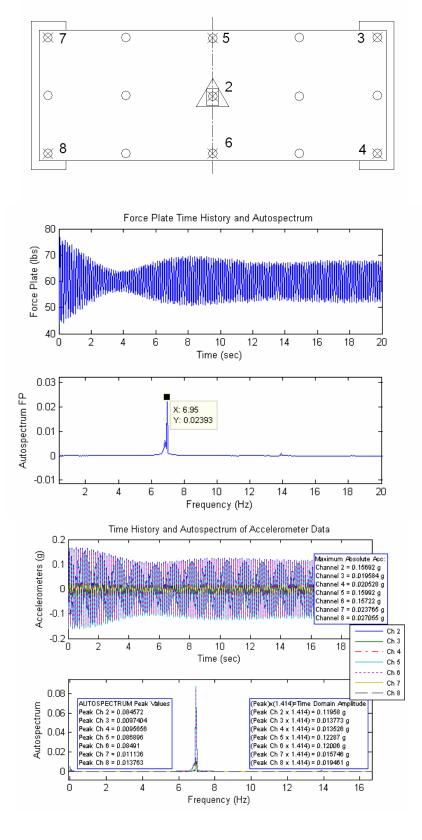


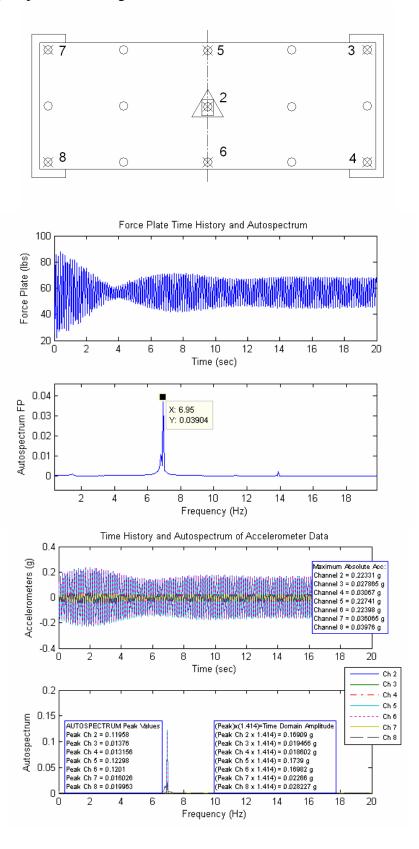


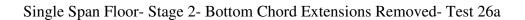
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 23

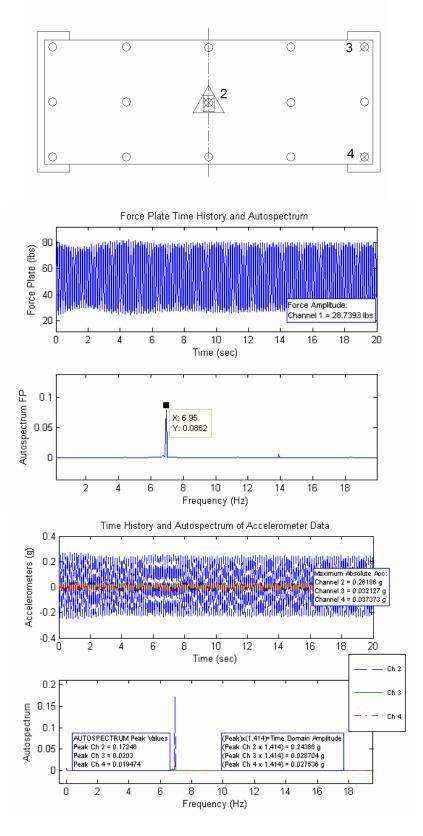


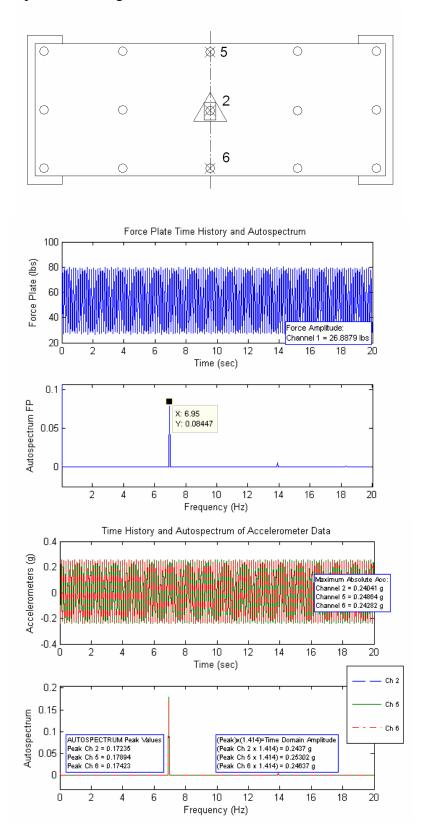




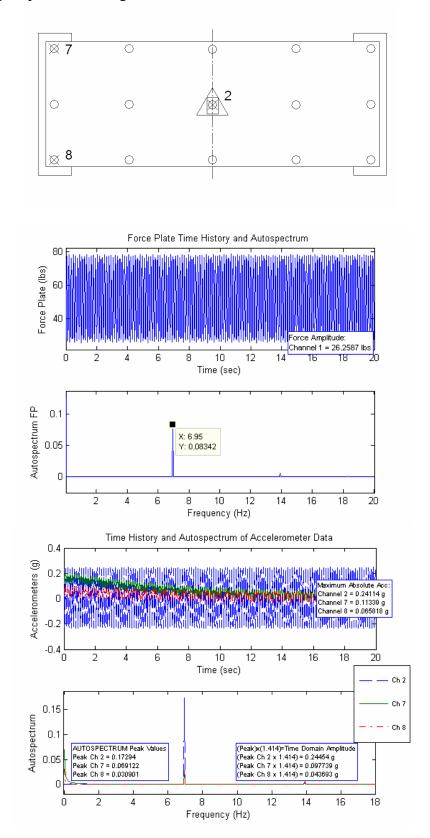




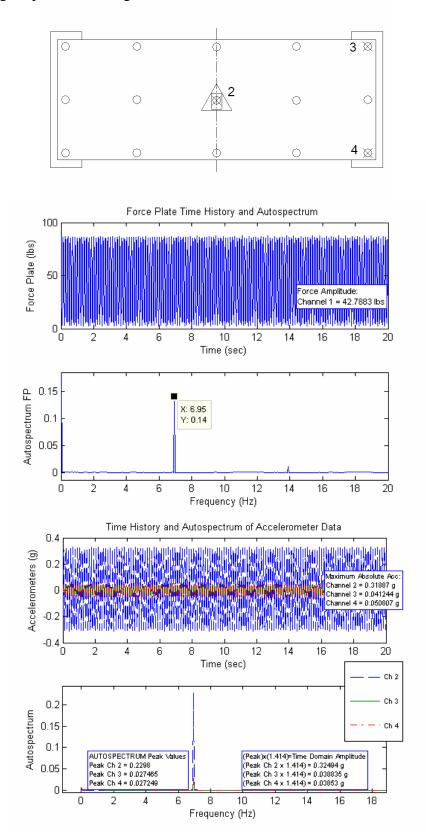




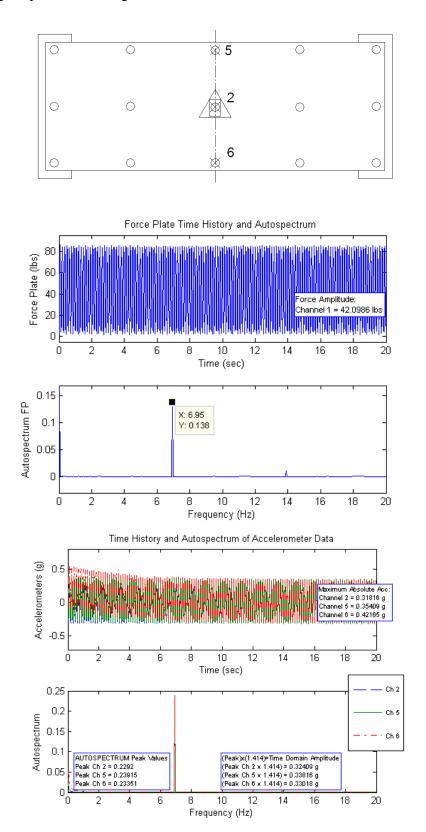
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 26b



Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 26c

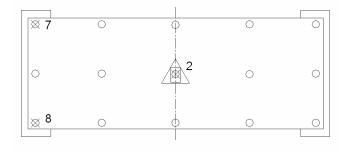


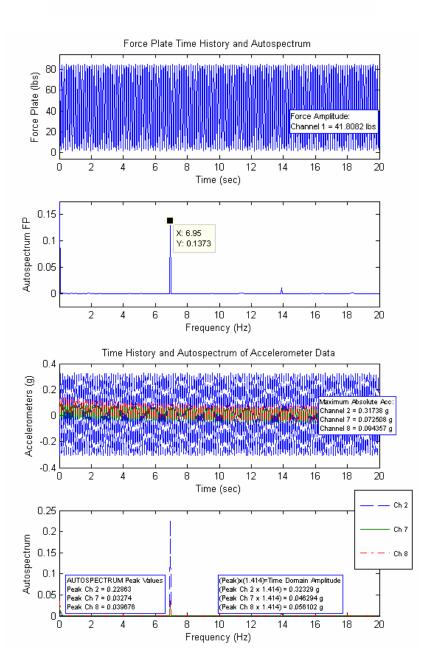
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 27a



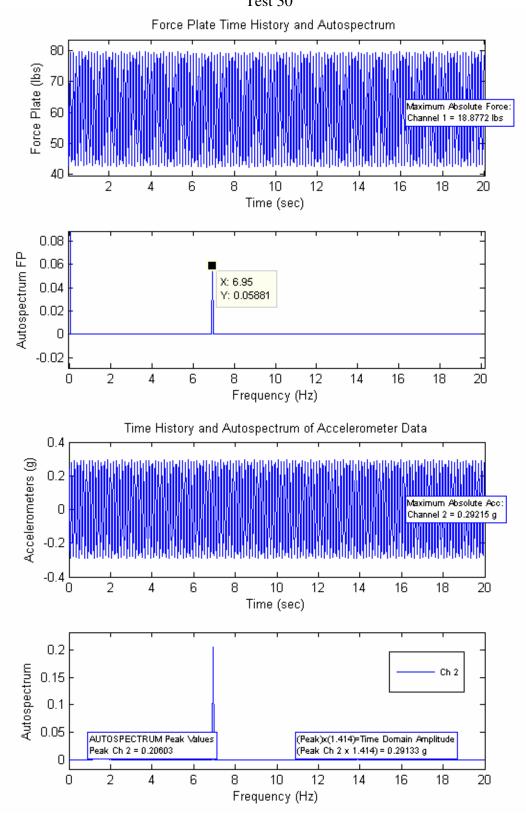
Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 27b

Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 27c

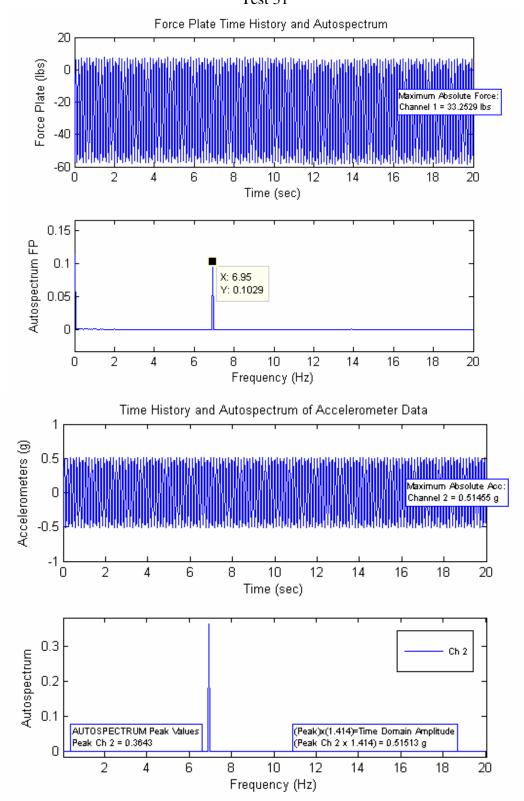


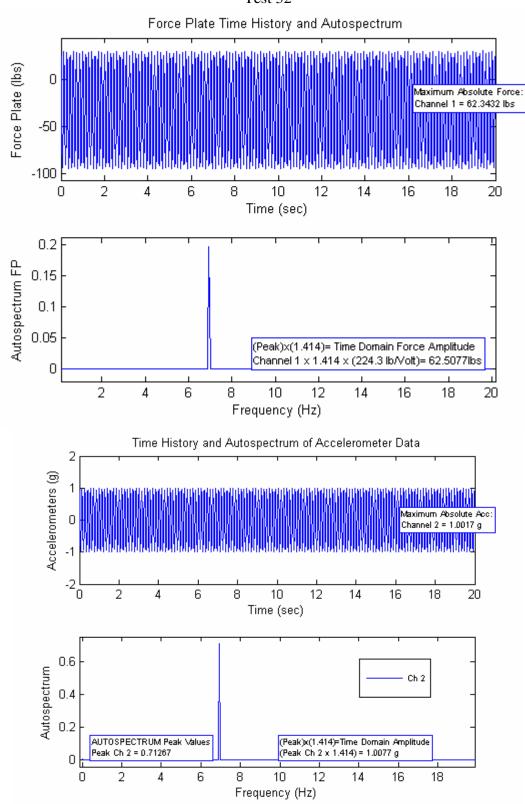


## Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Tests 30-35 (Tests 30-35: Shaker Calibration) Test 30

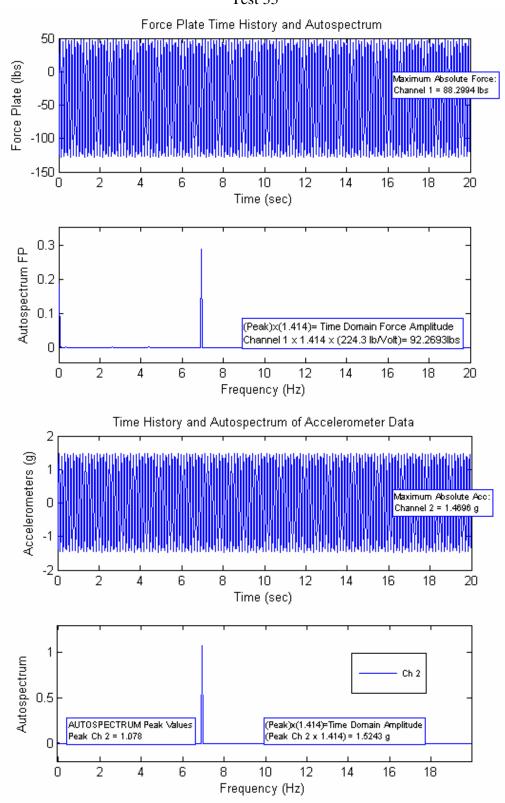


## Single Span Floor- Stage 2- Bottom Chord Extensions Removed 30-35 Shaker Calibration Test 31

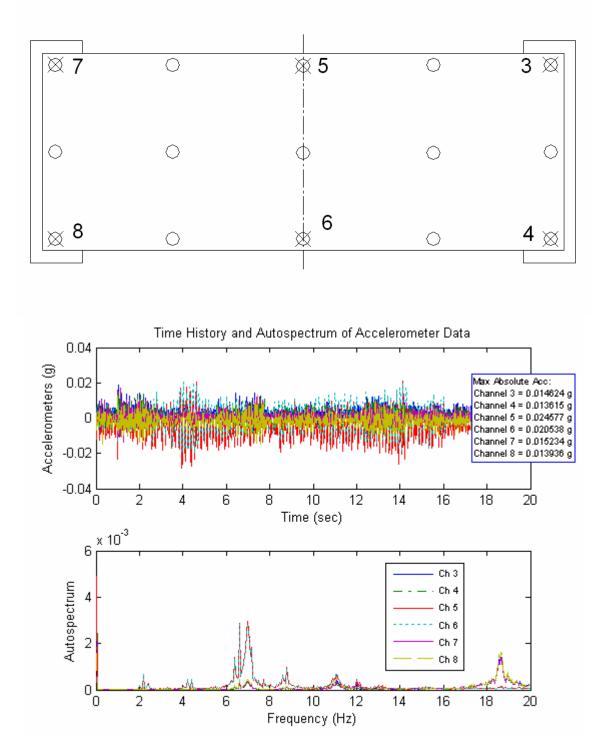




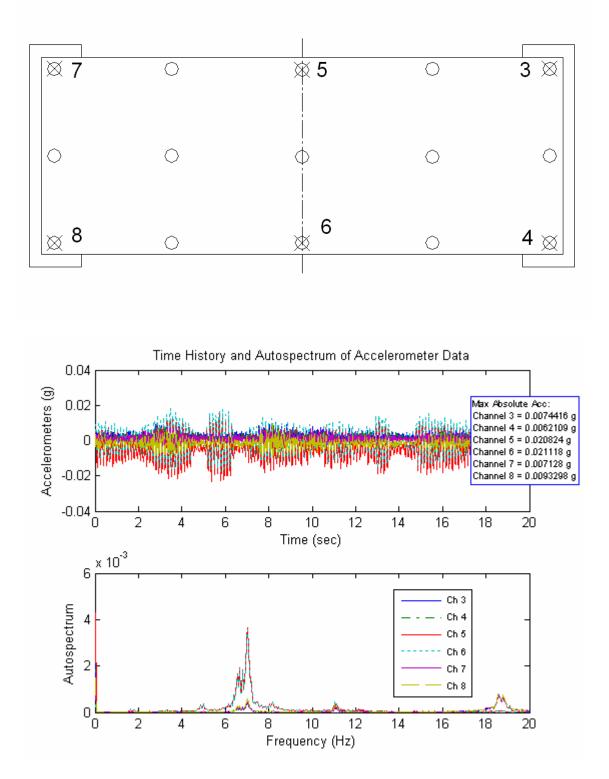
Single Span Floor- Stage 2- Bottom Chord Extensions Removed 30-35 Shaker Calibration Test 32



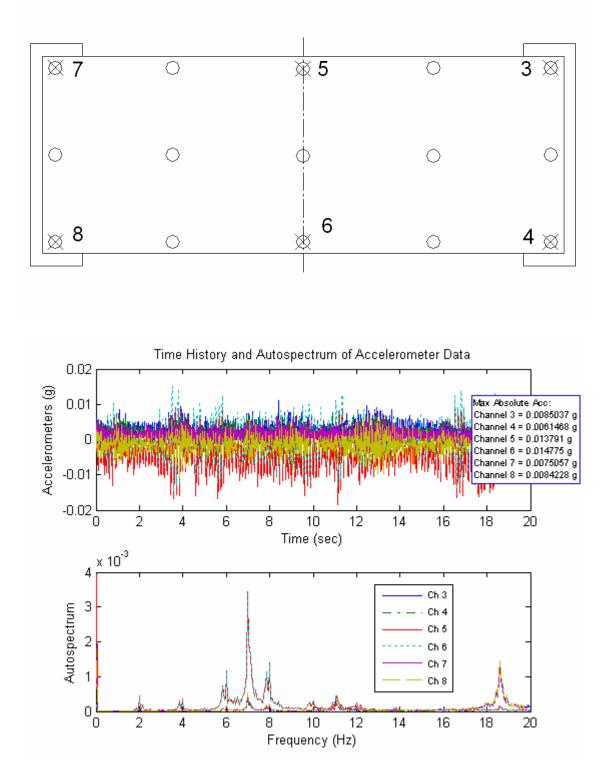
## Single Span Floor- Stage 2- Bottom Chord Extensions Removed 30-35 Shaker Calibration Test 33



Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 36

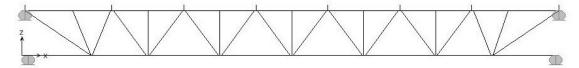


Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 37

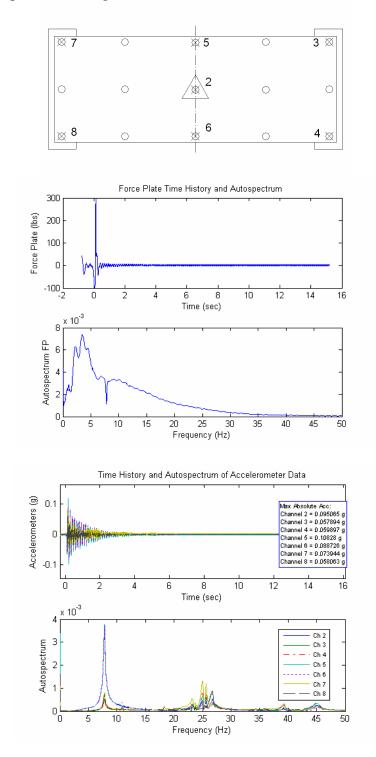


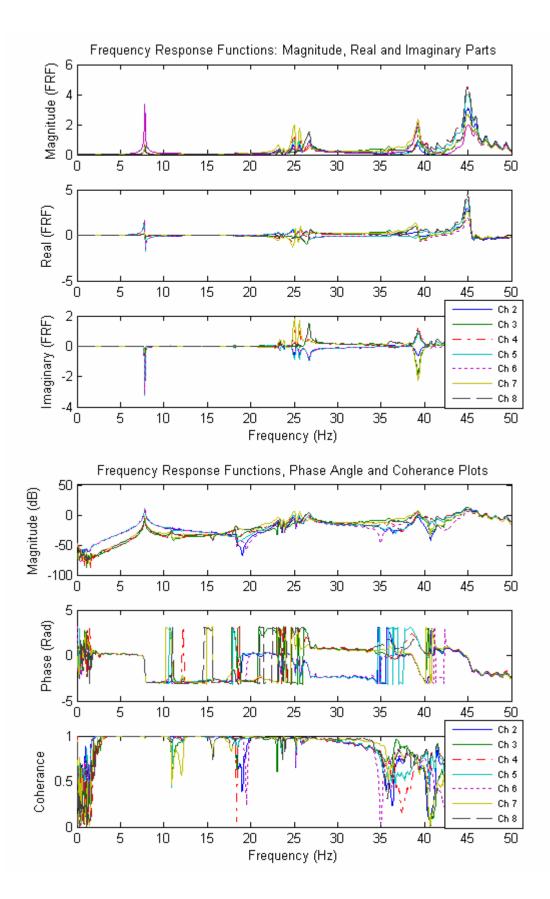
## Single Span Floor- Stage 2- Bottom Chord Extensions Removed- Test 38

## Stage 3: Bottom Chord Extensions Re-installed

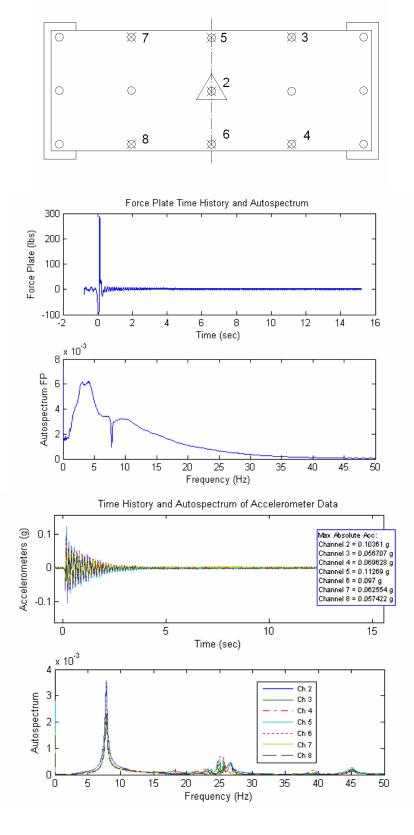


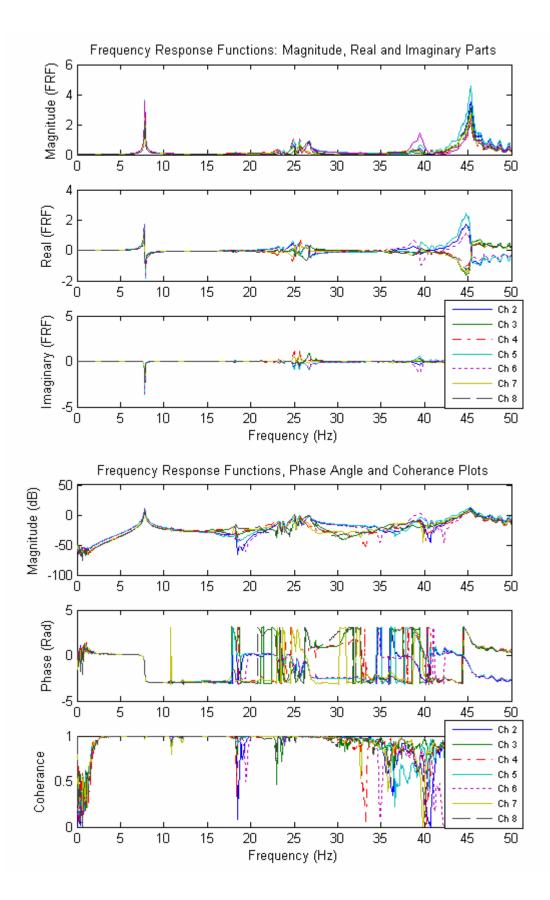
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 1

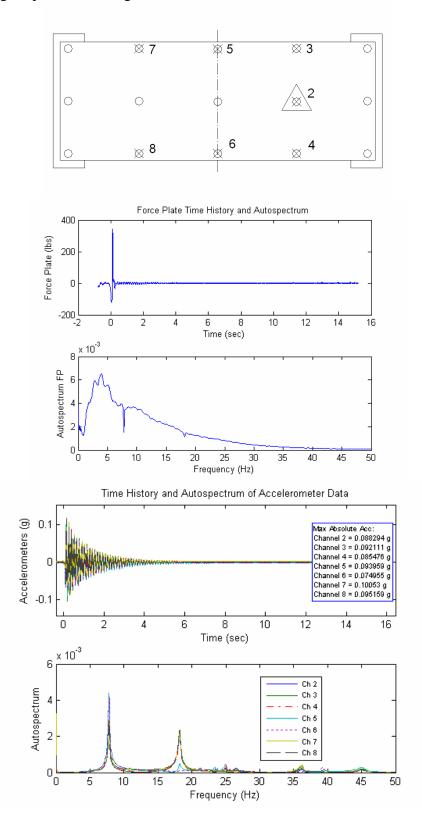




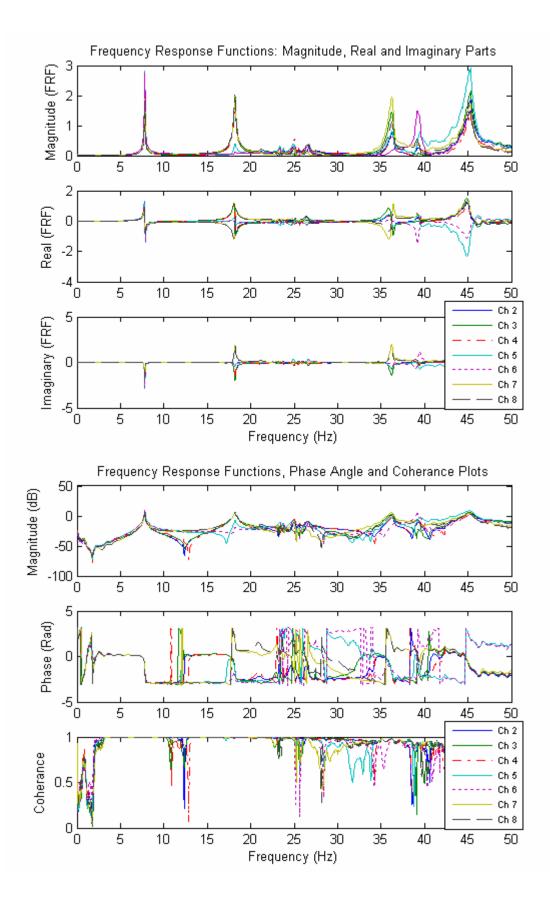


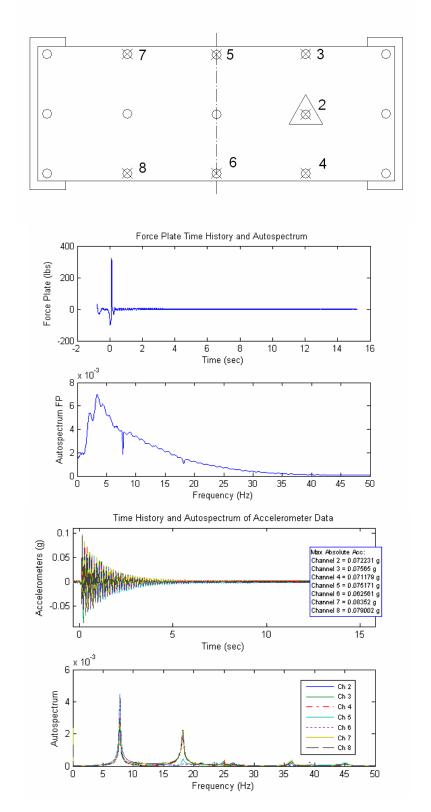




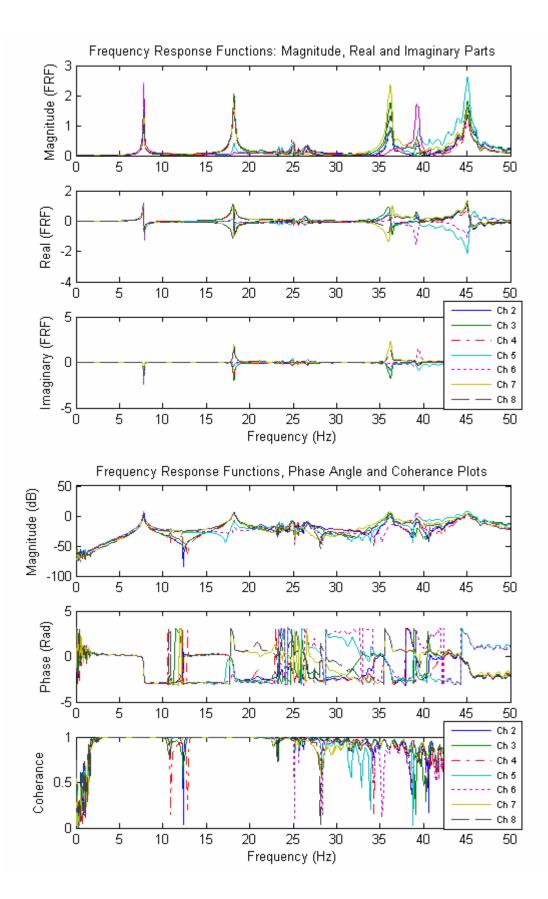


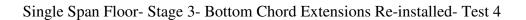
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 3

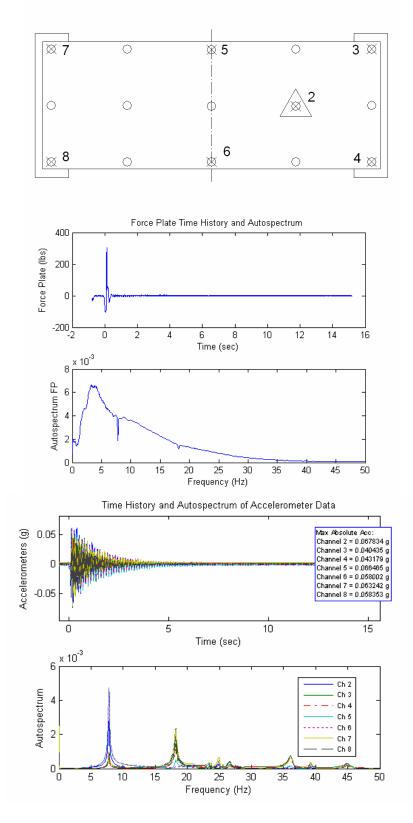


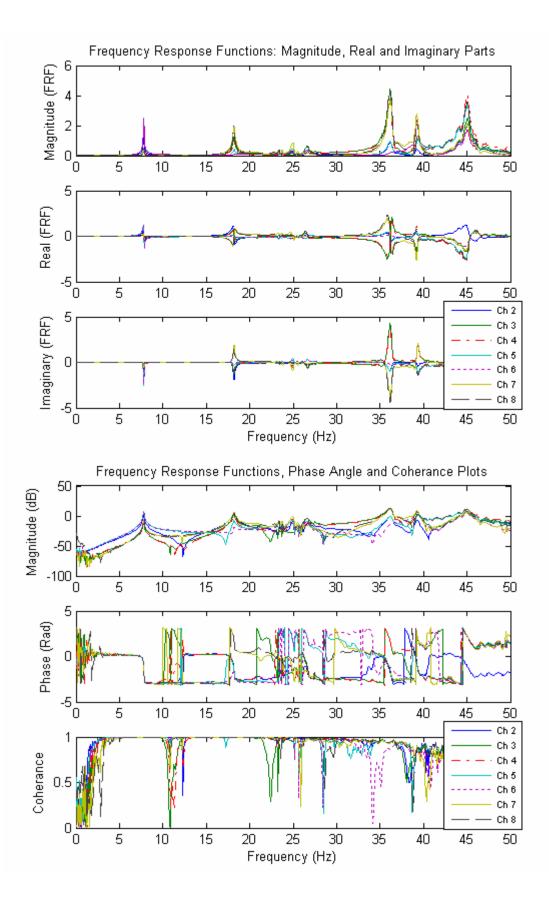


Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 3a

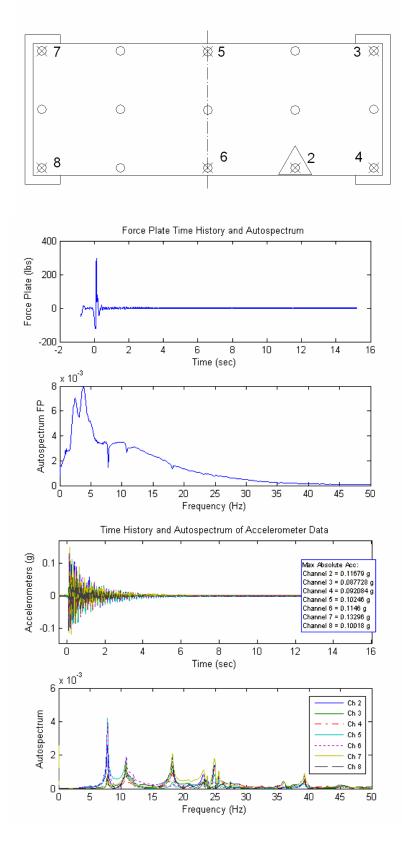


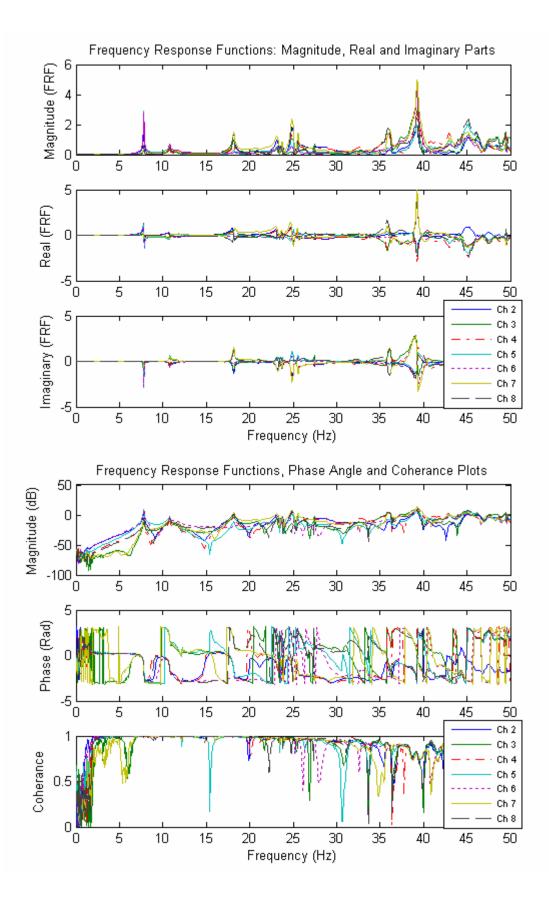


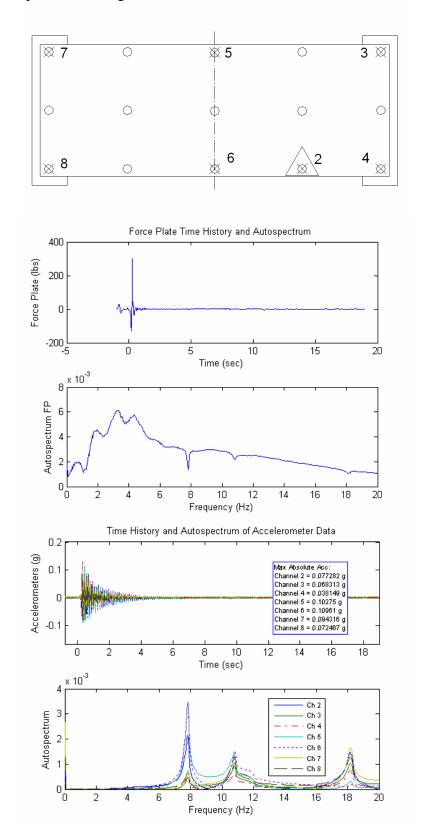




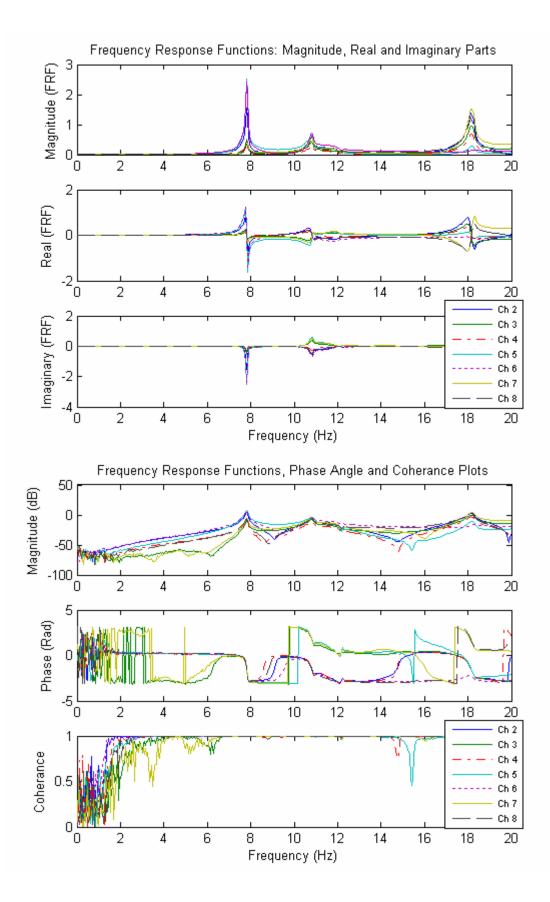


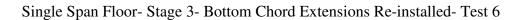


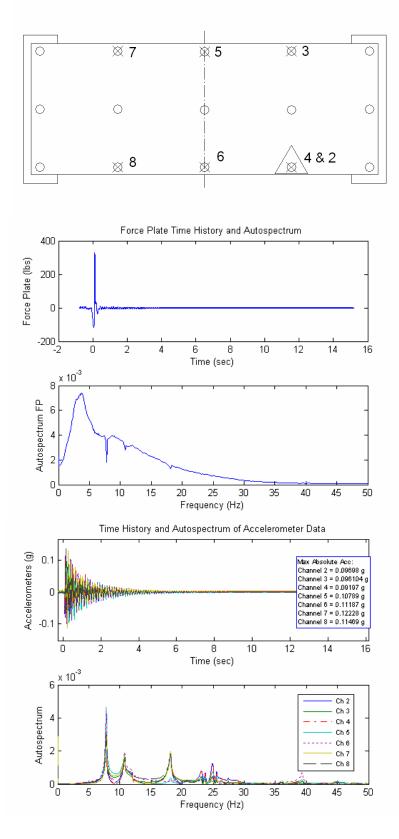


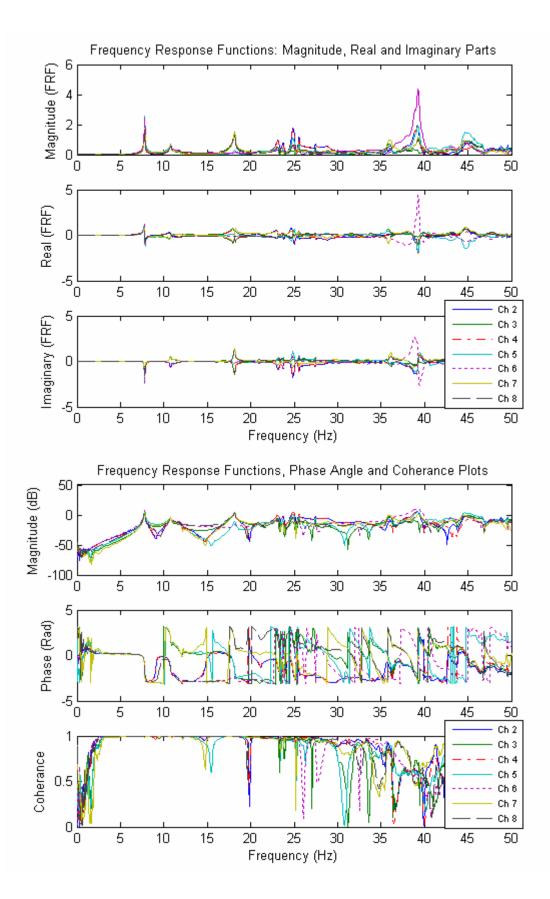


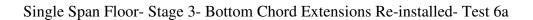
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 5a

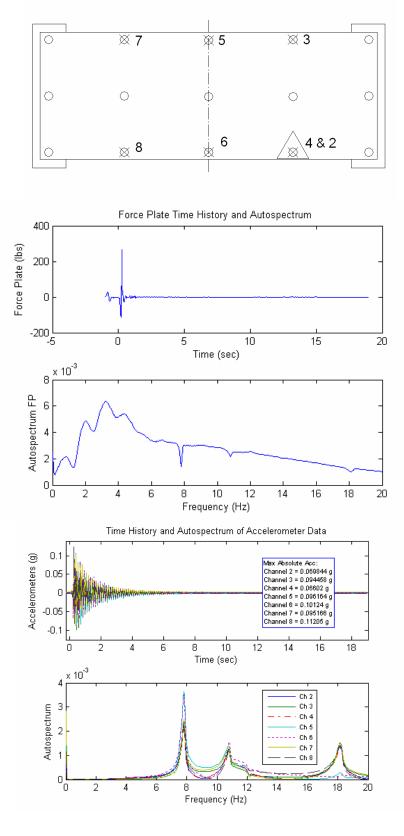


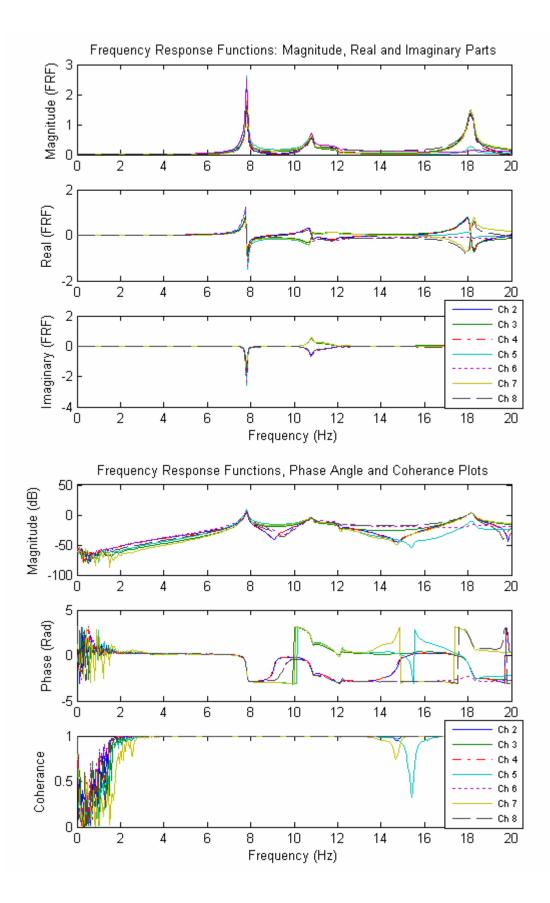


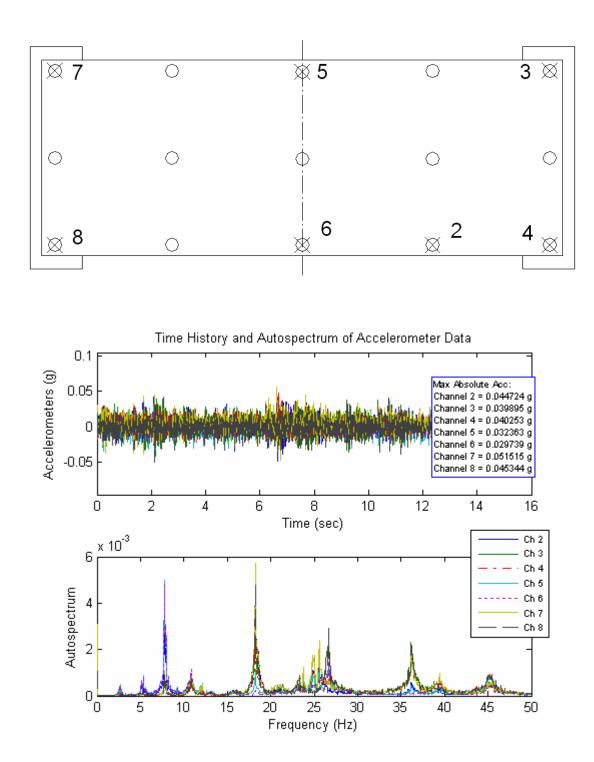




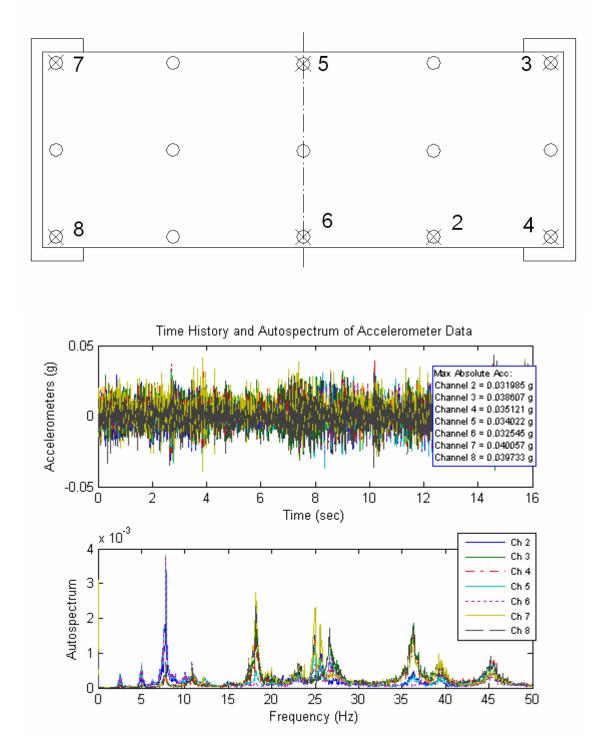






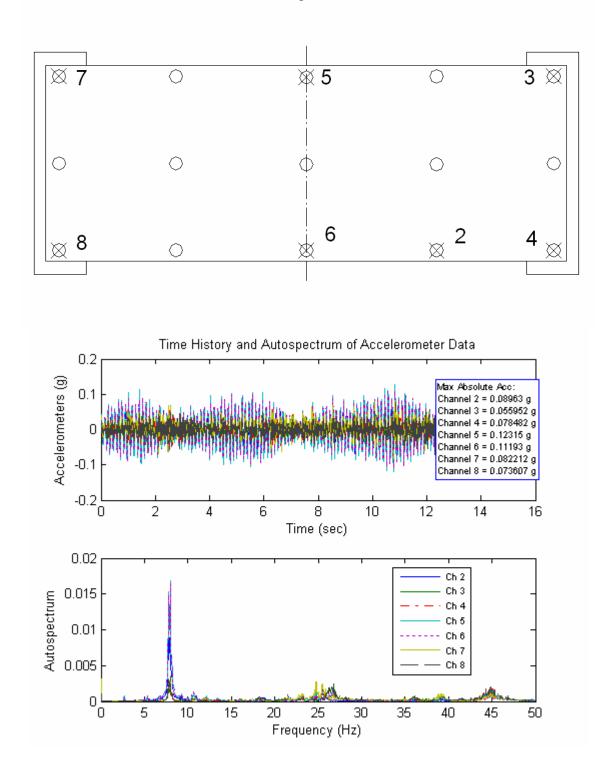


Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 7 Walking



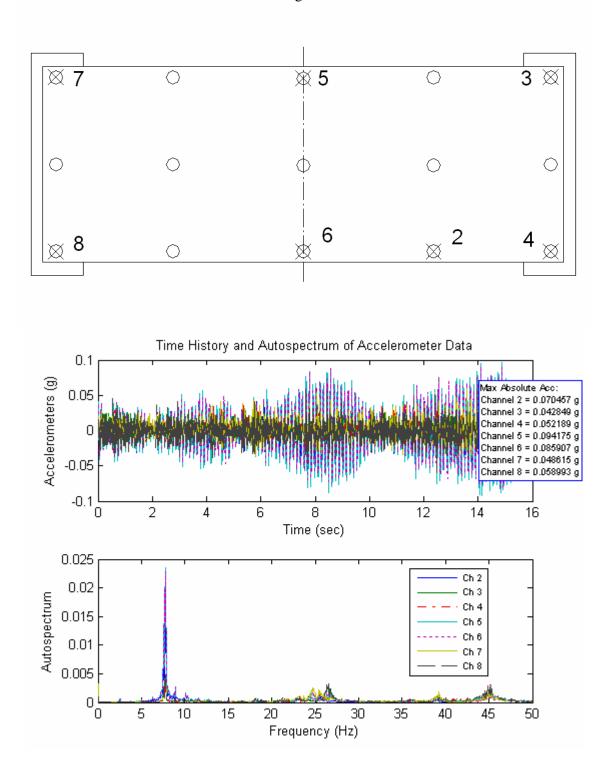
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 8

Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 9

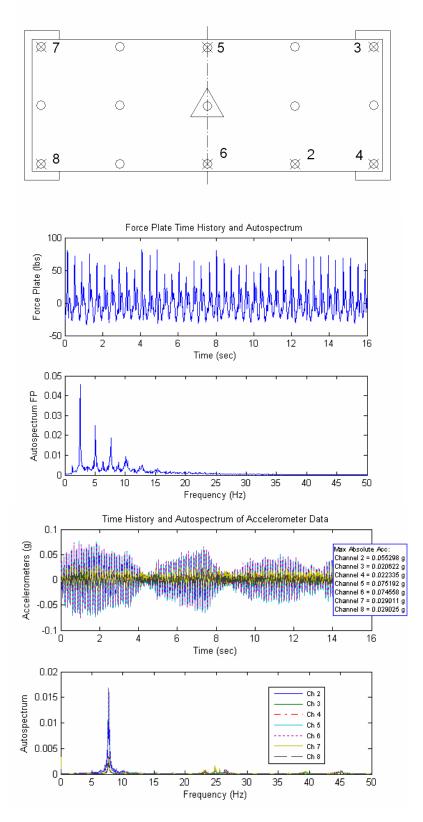


Marching not on FP

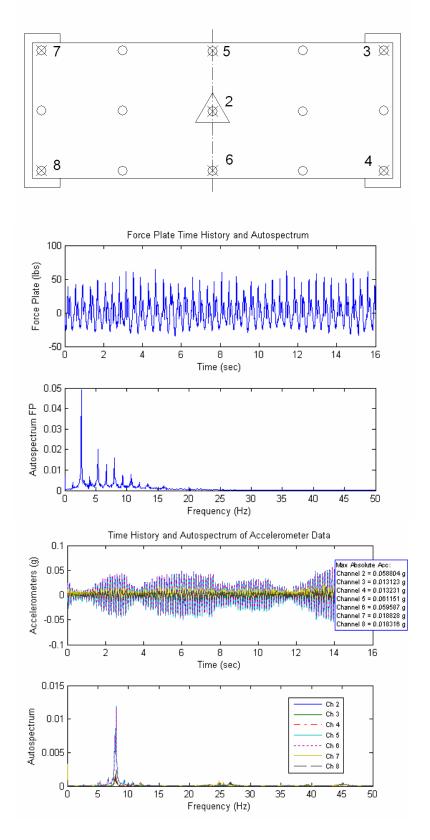
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 10



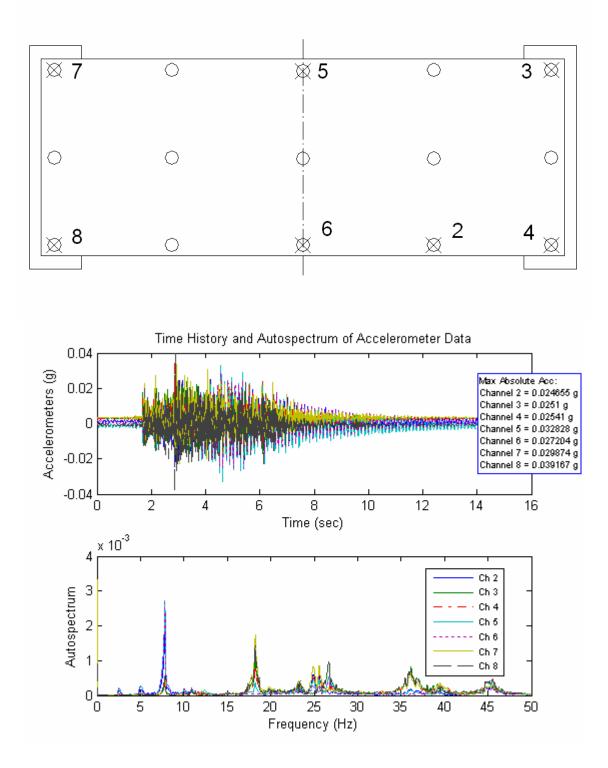
Marching not on FP



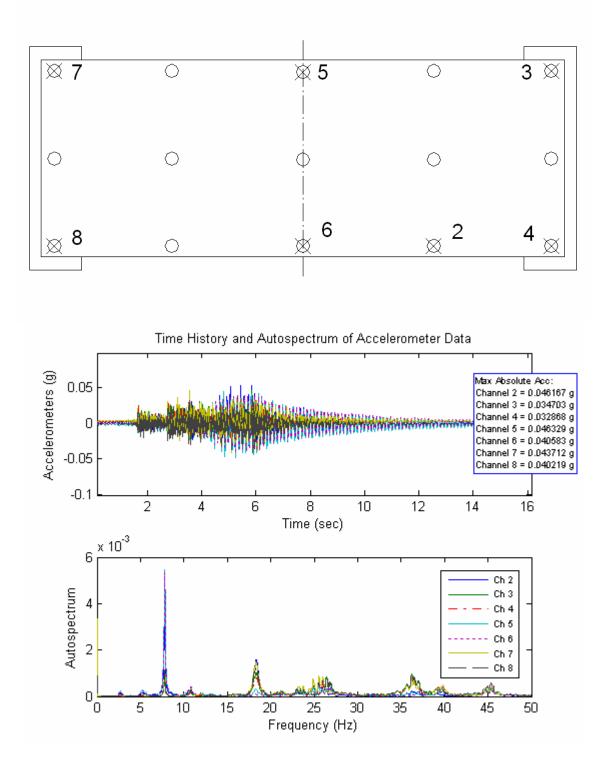
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 11 Marching on FP



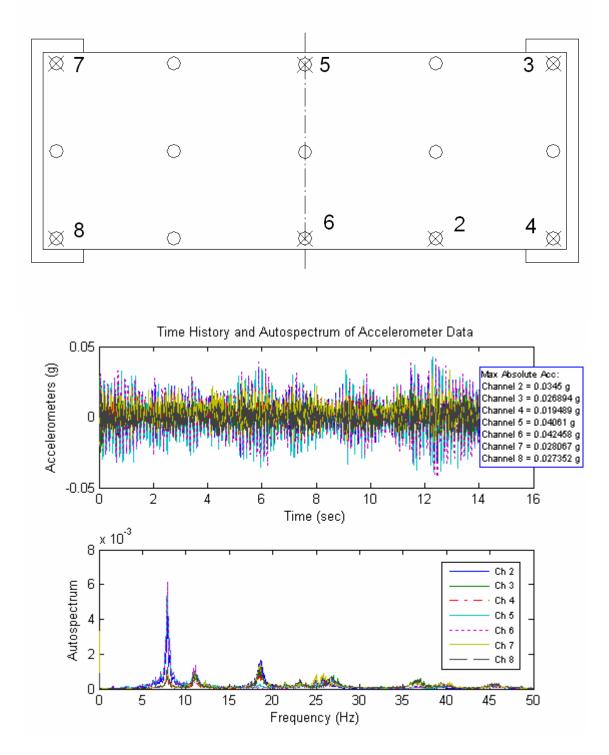
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 12 Marching on FP



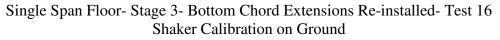
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 13

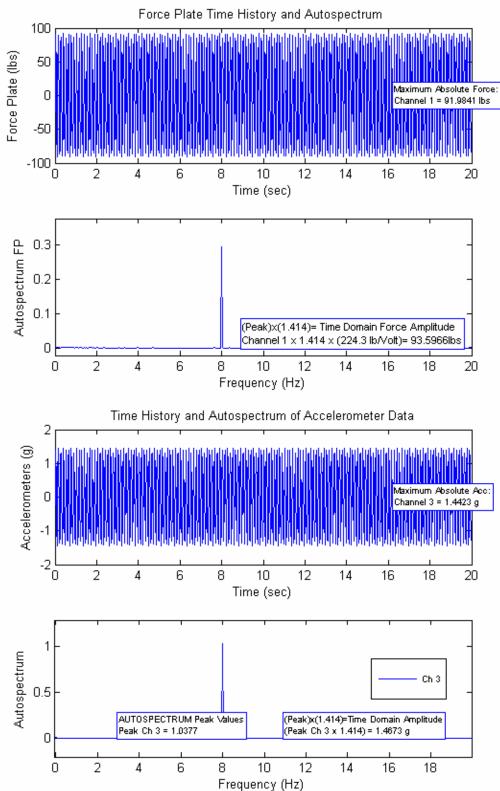


Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 14

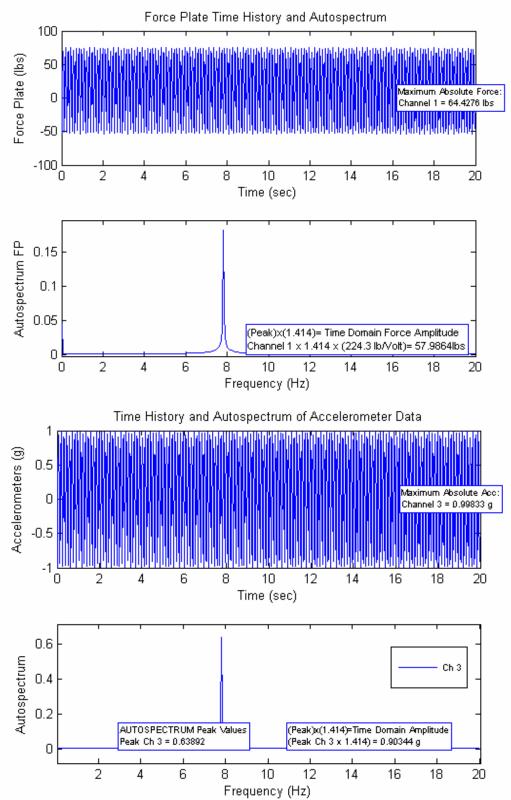


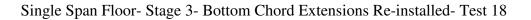
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 15 4 People Walking Randomly

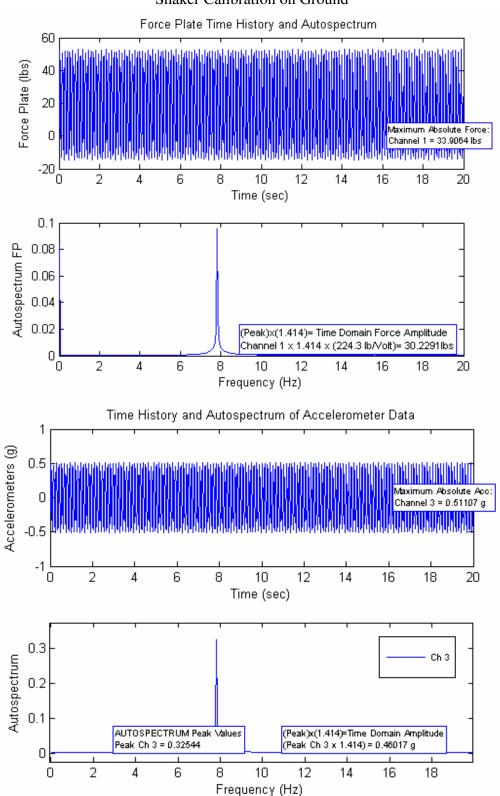




Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 17 Shaker Calibration on Ground

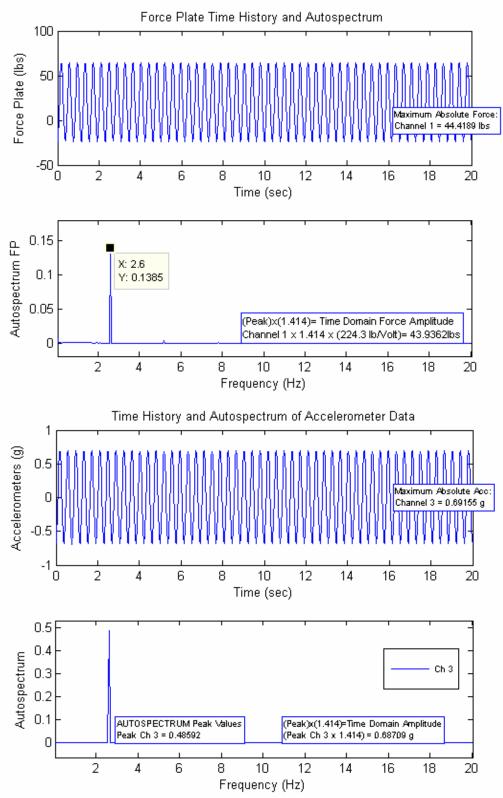




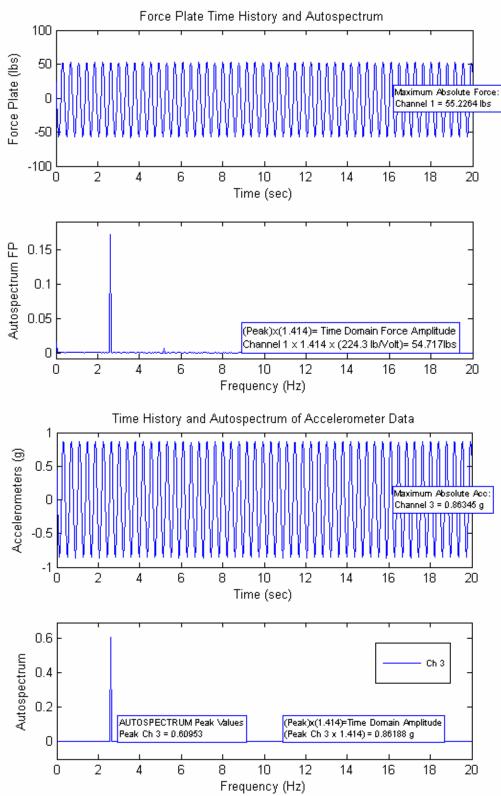


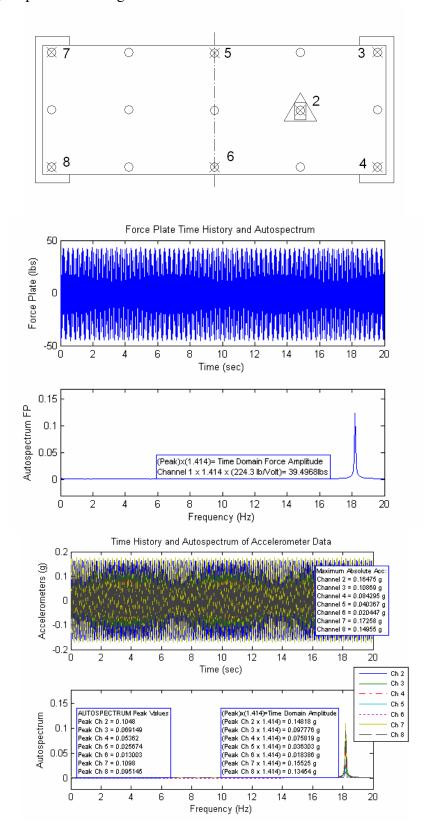
Shaker Calibration on Ground

Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 19 Shaker Calibration on Ground



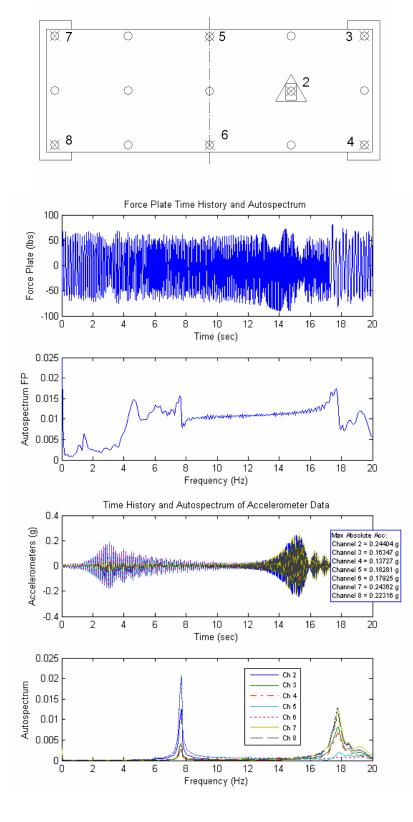
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 20 Shaker Calibration on Ground

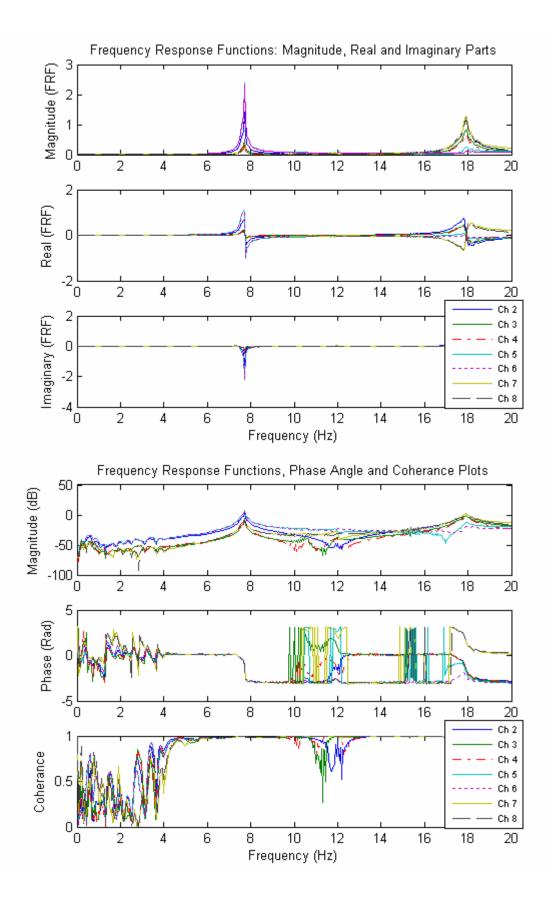


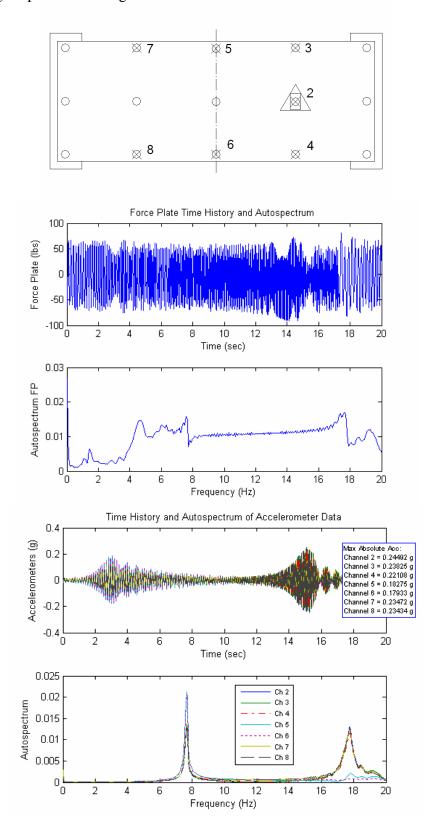


Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 21

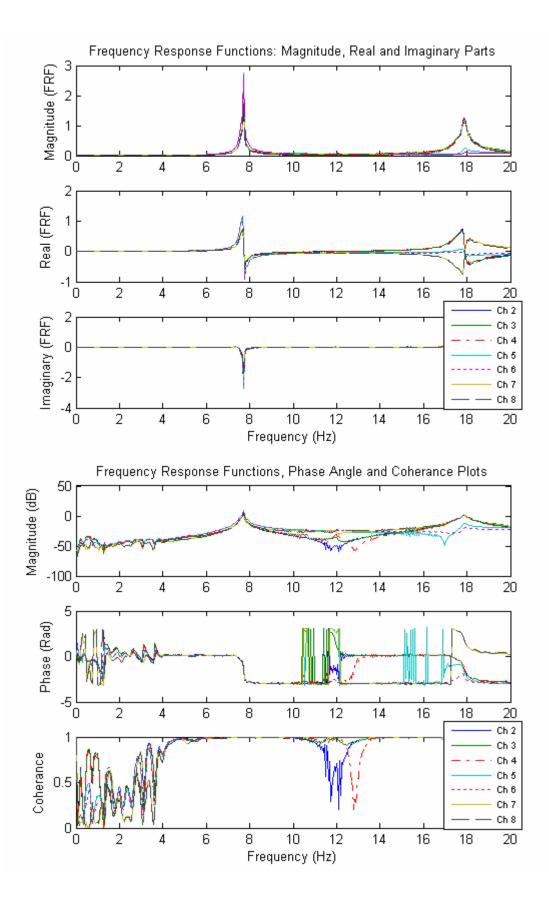


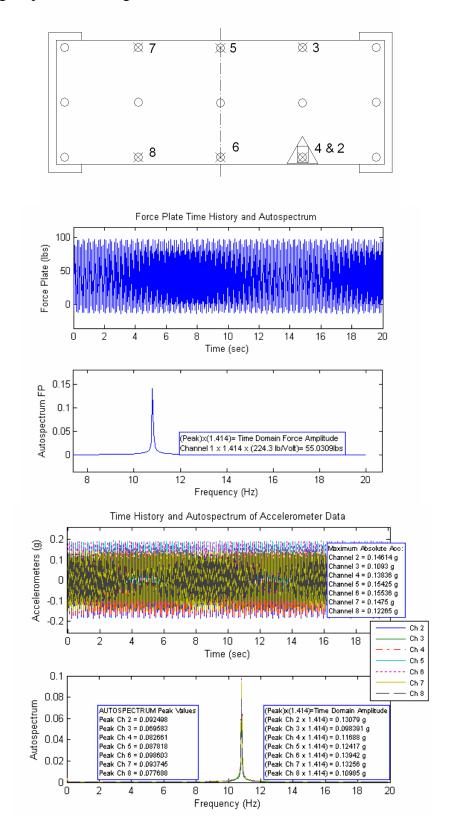




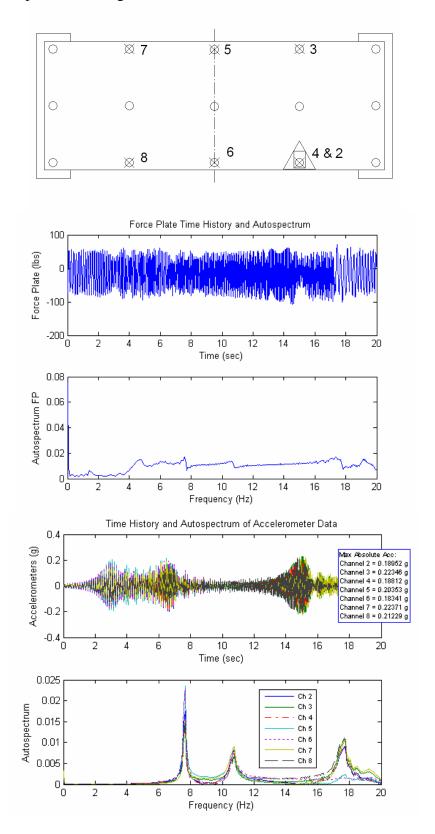


Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 24

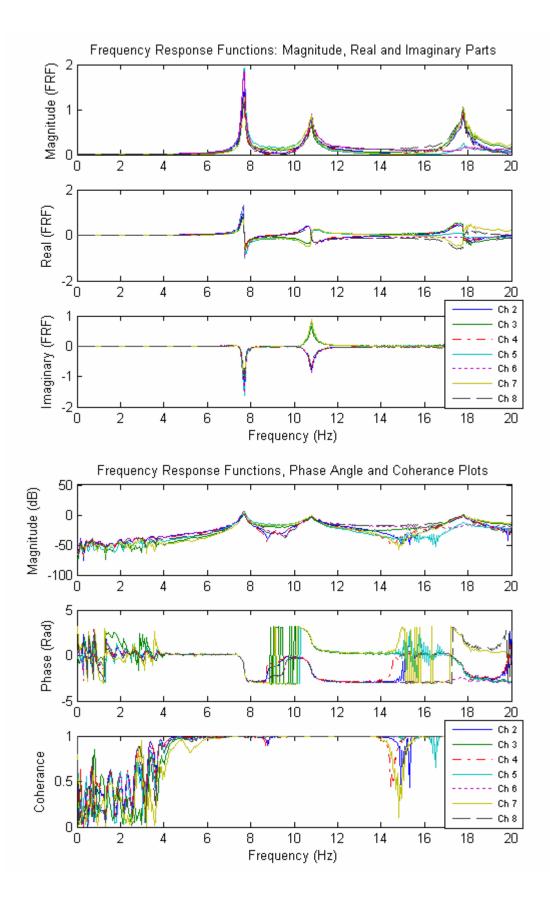


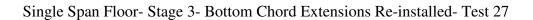


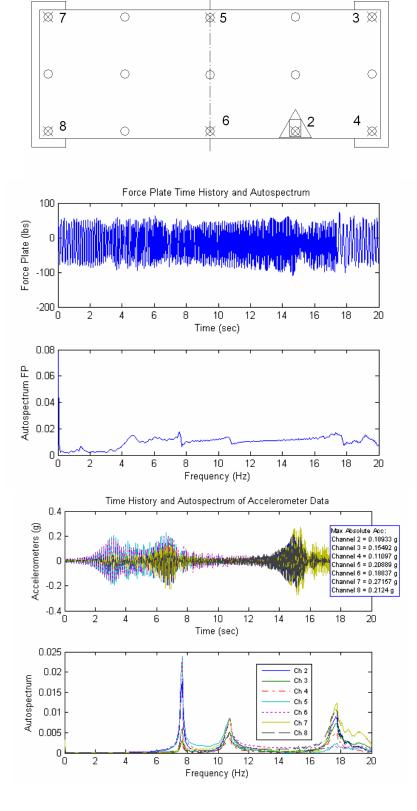
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 25

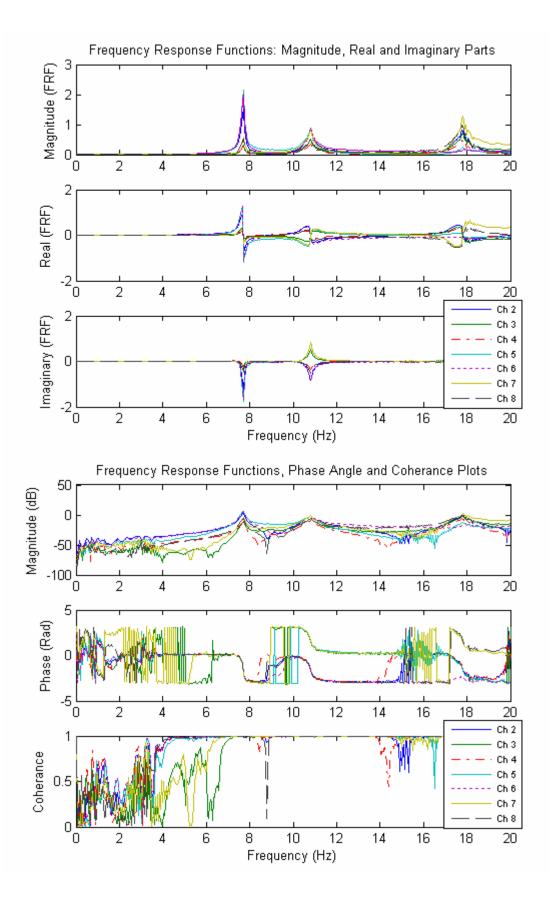


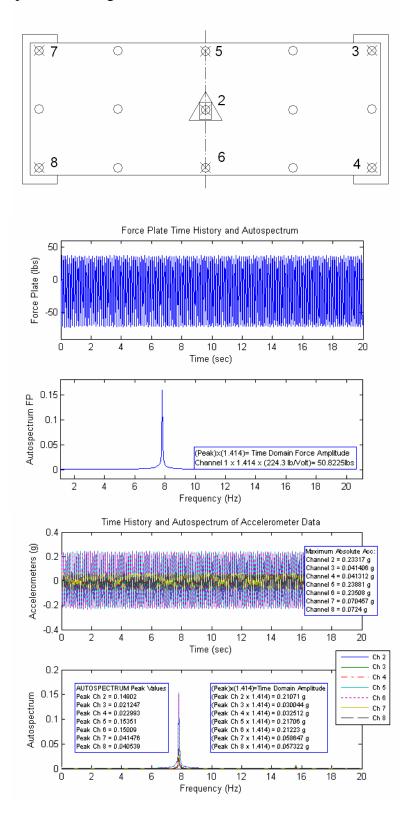
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 26



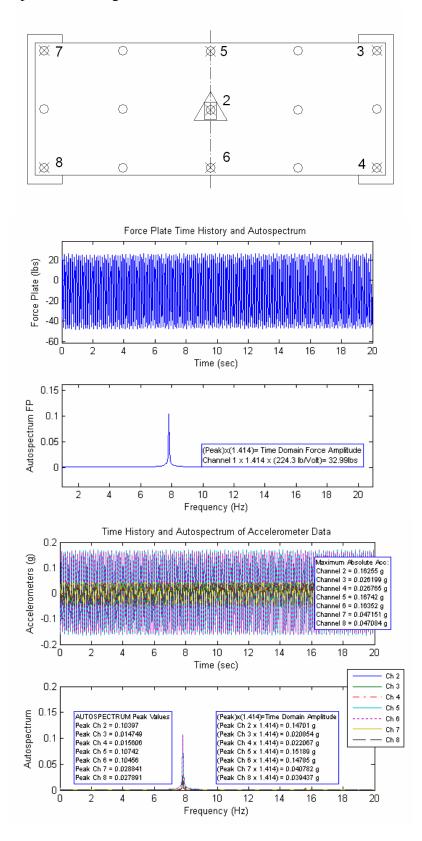




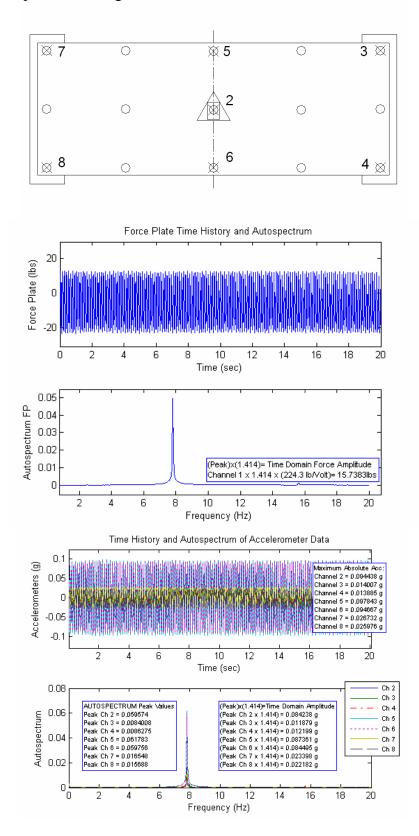




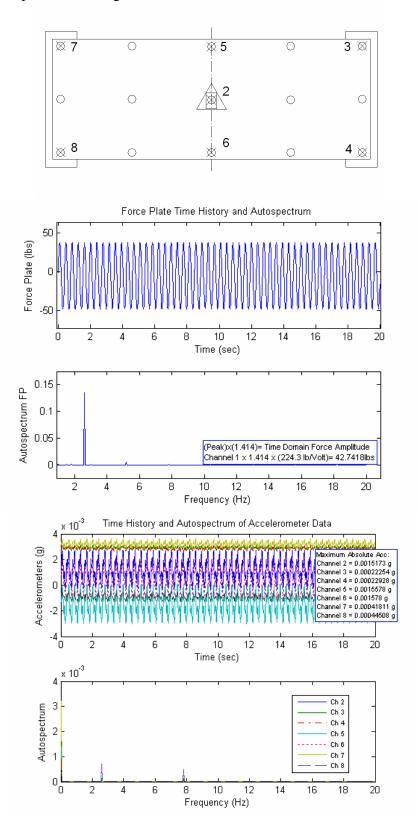
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 28



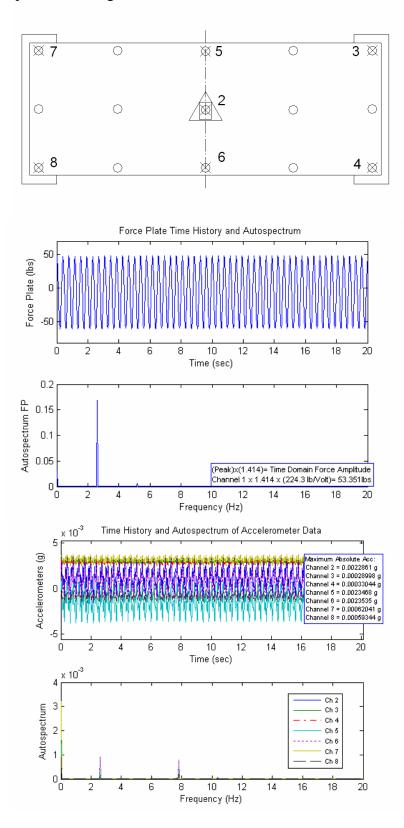
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 29



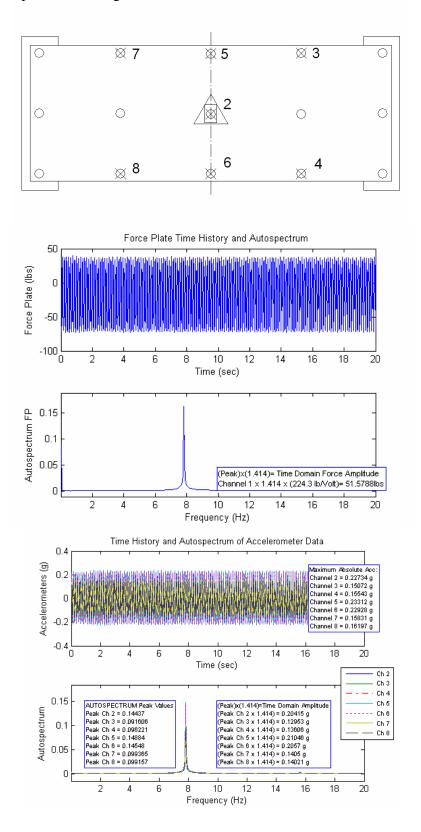
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 30



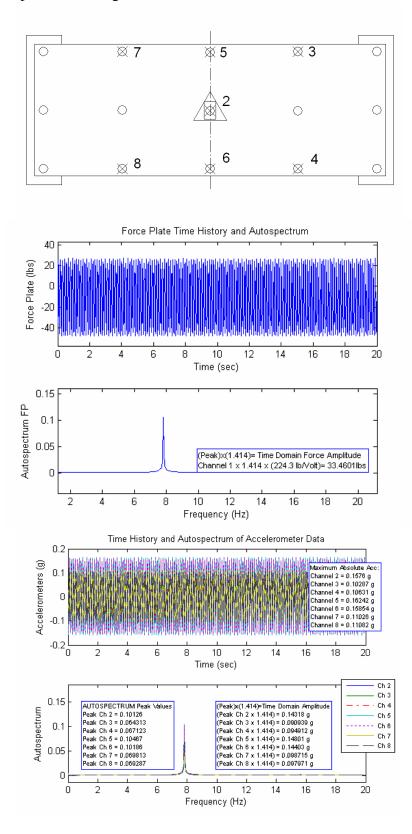
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 31



Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 32

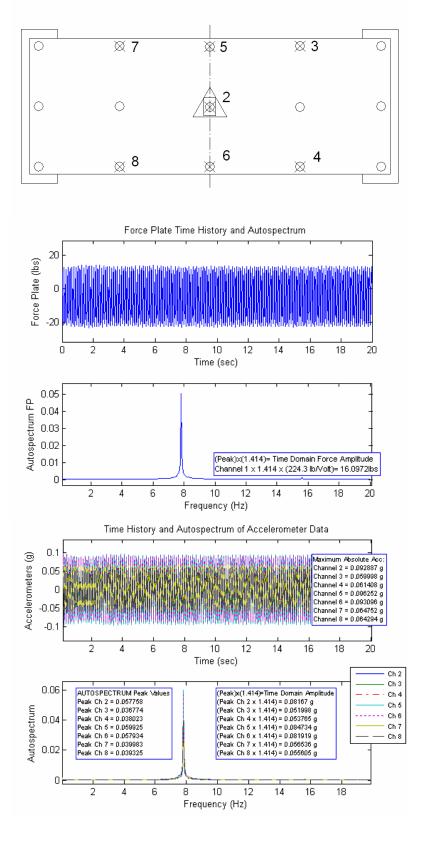


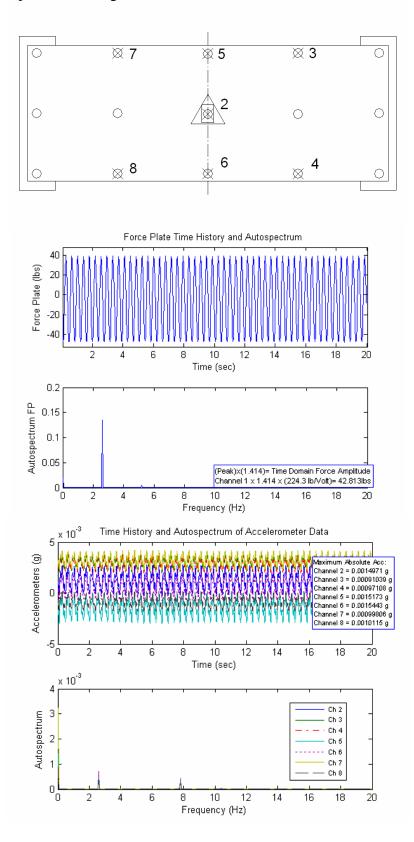
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 33



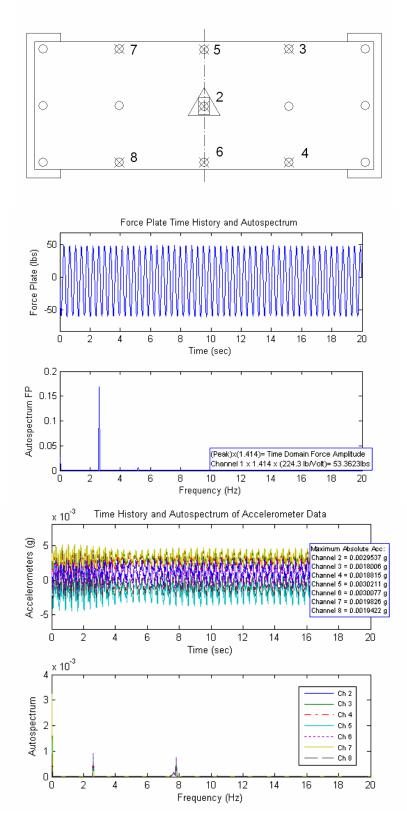
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 34



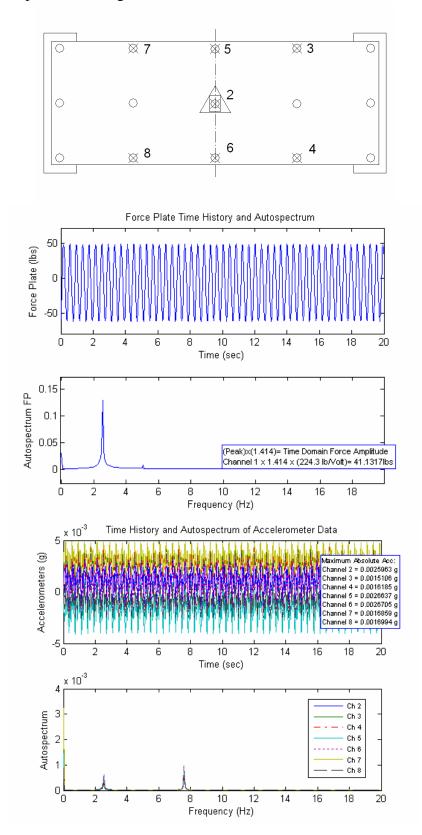




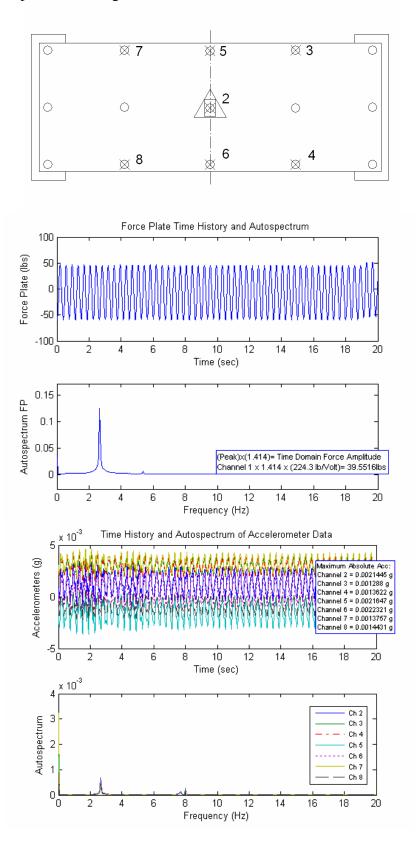
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 36



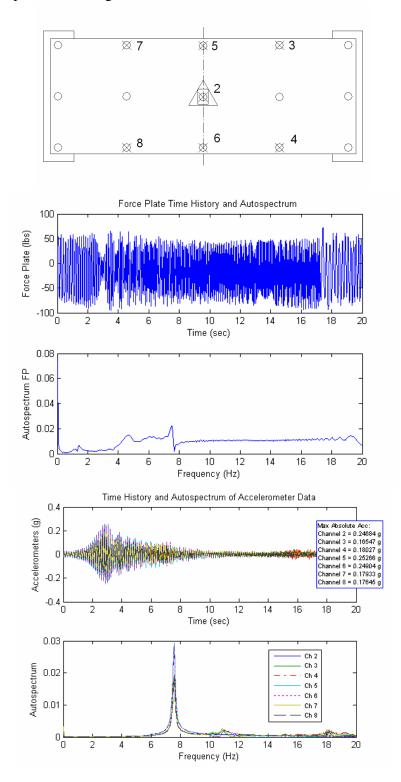
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 37



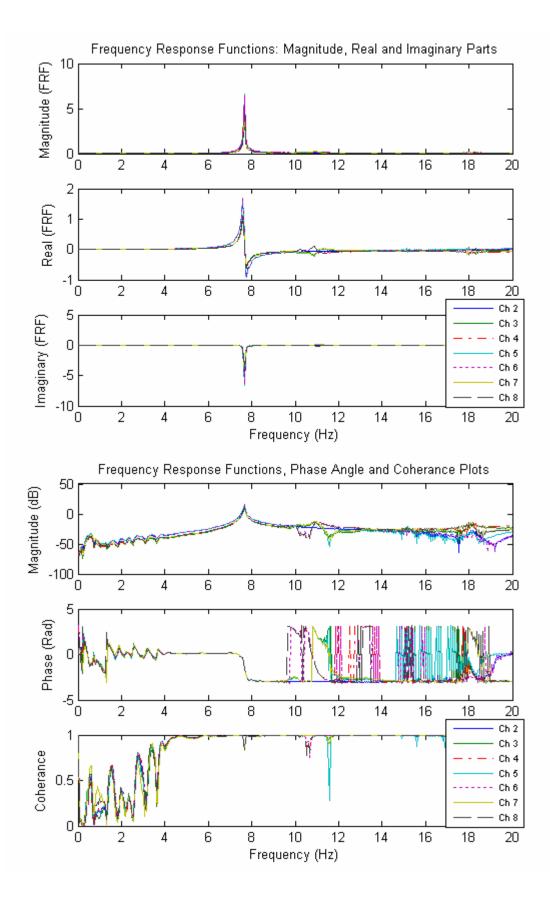
Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 38

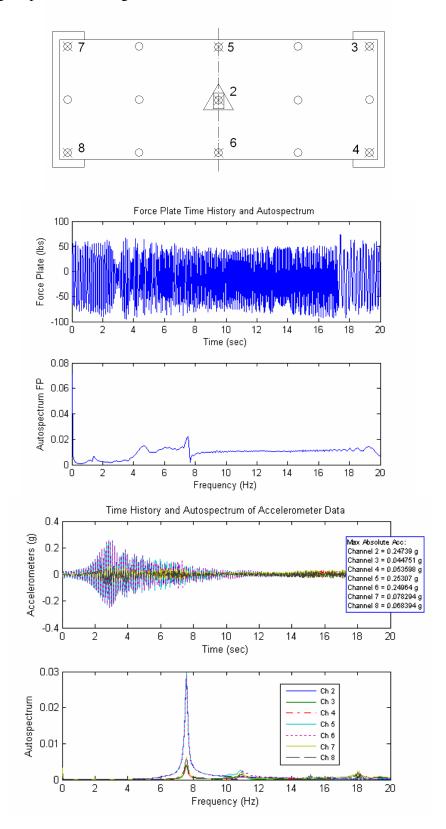


Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 39



Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 40





Single Span Floor- Stage 3- Bottom Chord Extensions Re-installed- Test 41

