



## **New Plant Seismic Issues Resolution Program**

**Structural Tasks Working Meetings  
Task S2.1 – Effect of Seismic Wave Incoherence on  
Foundation and Building Response**

by

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B-13

## Agenda

- **Welcome – Introductions (Hardy)**
  - **Summary of June Meeting Results/Actions for S2.1 – (Hardy)**
  - **NRC June Meeting Feedback on S2.1 (Murphy)**
  - **S2.1 Coherency Function Refinement– (Abrahamson)**
  - **S2.1 Benchmark Problem Comparison – (Short)**
  - **Results from Analysis Cases – (Short)**
  - **Bechtel Use of Coherency for DOE – (Ostadan)**
  - **S2.1 Next Steps, Schedule and Milestones – (Johnson)**
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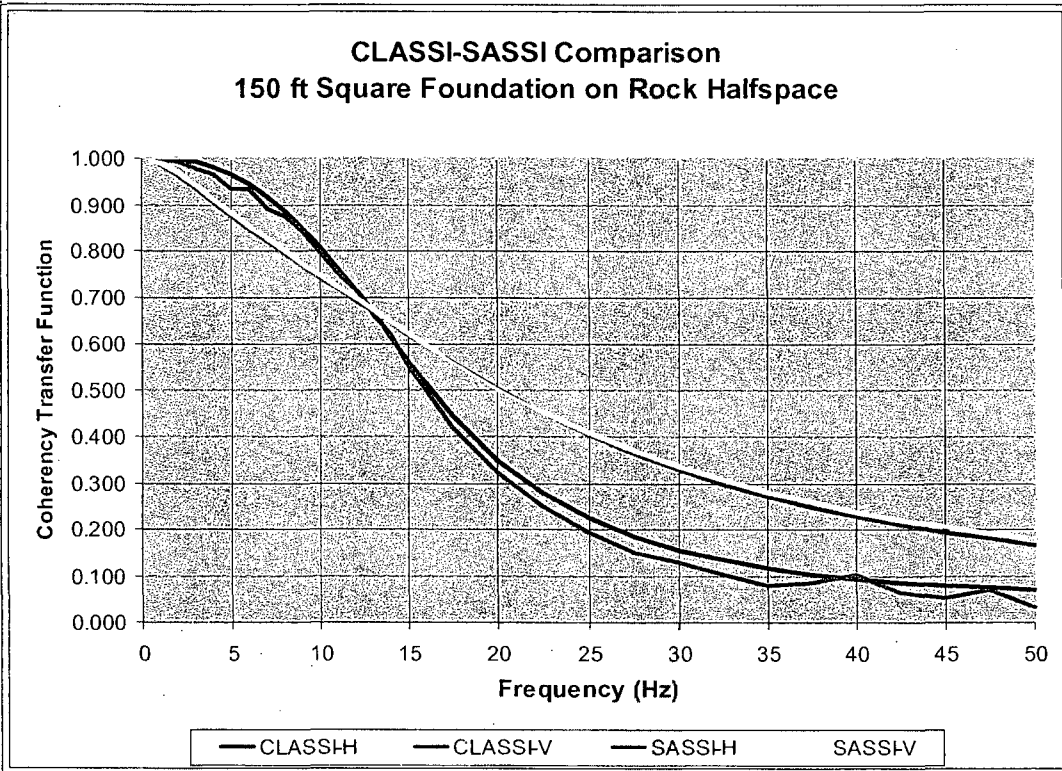
## Coherency Function

- Median coherency function has been used for most analyses
  - 84 percentile coherency function is now available for horizontal motion. A parametric case will be performed.
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## Benchmark Problem Comparison

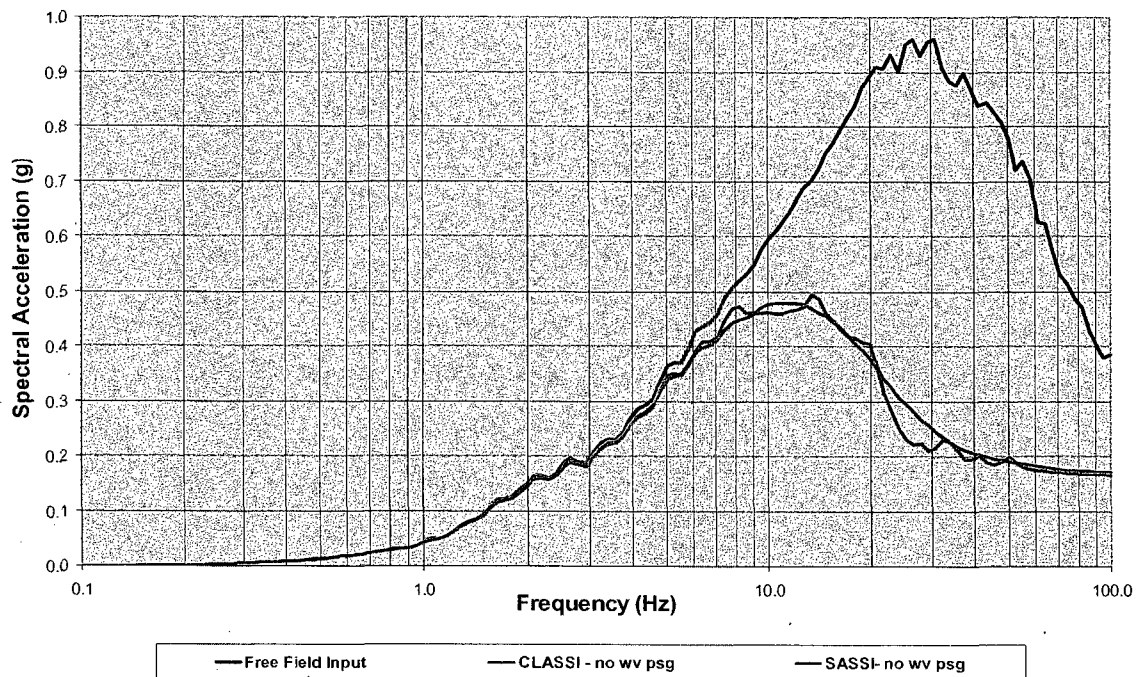
- The effect of incoherent ground motion has been evaluated by:
    - 2 different programs; CLASSI and SASSI
    - 2 different algorithms; CLASSI-stochastic method and SASSI eigen decomposition method
  - Determine motion of a rigid, massless foundation on a rock halfspace
    - 150 x 150 ft square foundation footprint
    - 6300 fps rock
  - Excellent agreement is obtained for both coherency transfer functions and spectra reductions
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# Coherency Transfer Function Comparison

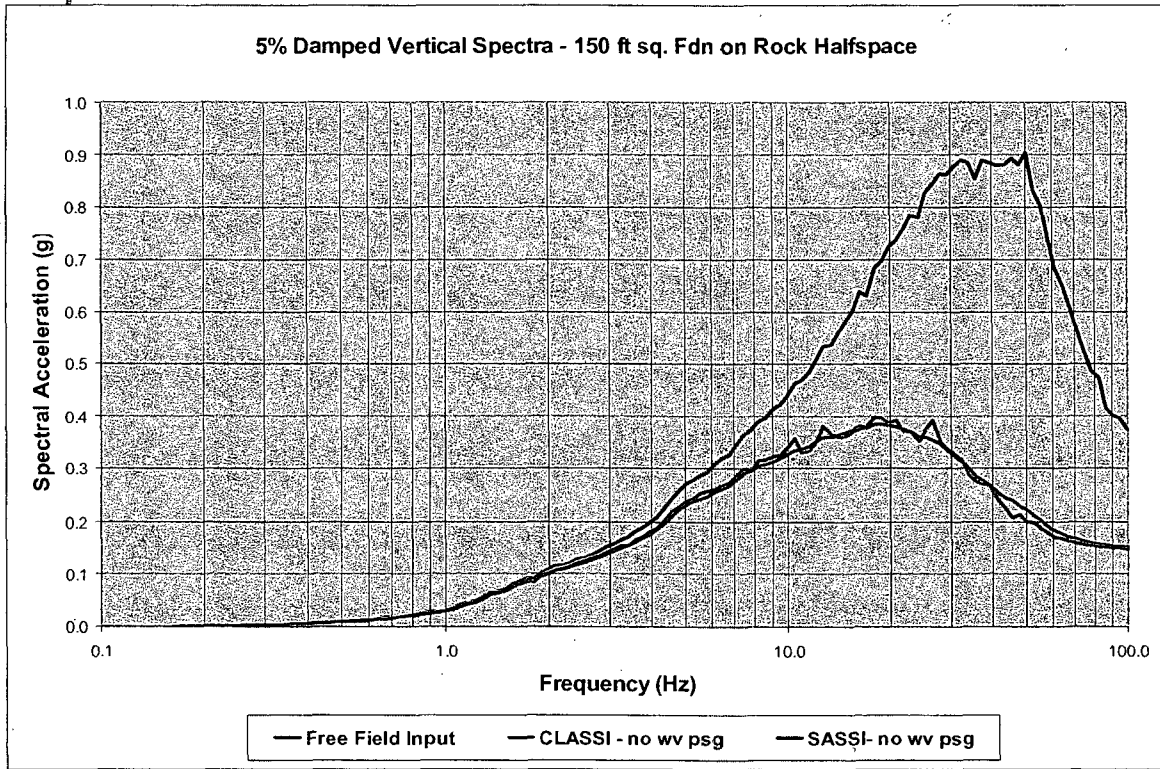


# Spectra Reduction Comparison-Horizontal

5% Damped Horizontal Spectra - 150 ft sq. Fdn on Rock Halfspace



# Spectra Reduction Comparison-Vertical



## Analysis Cases

- Parameters
    - Rock Site Profile and High Frequency Spectra
    - Soil Site Profile and Lower Frequency Spectra
    - Foundation Shape, Constant Area
      - 150 foot square footprint
      - 100x225 ft rectangle footprint
    - Foundation Size
      - 75 foot square footprint
      - 150 foot square footprint
      - 300 foot square footprint
    - Coherency Transfer Function and Spectra Reduction
    - Median and 84 percentile Coherency
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## Bechtel Use of Coherency for DOE

- Application to Hanford Waste Treatment Plant and Yucca Mountain Repository
  - Presentation on Hanford Work to Defense Board in July
  - SMIRT paper presented in August in China
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