



Cerreto d'Esì il 09 dicembre 2010
Comm.: Hotel Arlecchino
Cant.: Viale Trieste – San Benedetto del Tronto (AP)
Indagine HVSR - N°: 1 del: 07/12/2010

Comm: Hotel Arlecchino - Cant.: Viale Trieste – San Benedetto Del Tronto (AP)

Instrument: TEP-0040/01-09

Start recording: 07/12/10 12:46:15 End recording: 07/12/10 13:00:16

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS location: 013°53.2430 E, 42°56.8540 N (1.1 m)



UTC time (synchronized to the first recording sample): not available in this acquisition mode + 0 samples
Satellite no.: 04

Trace length: 0h14'00". Analysis performed on the entire trace.

Sampling frequency: 128 Hz

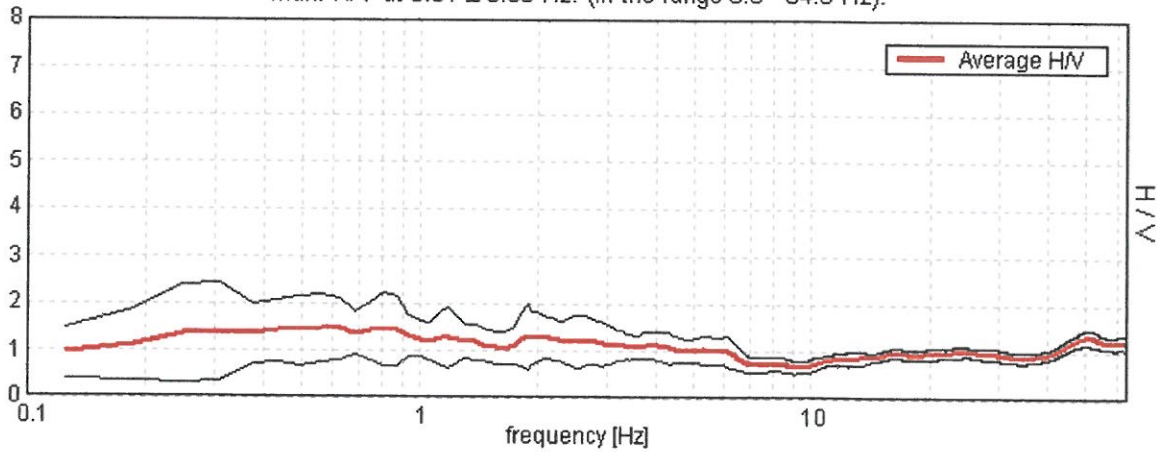
Window size: 15 s

Smoothing window: Triangular window

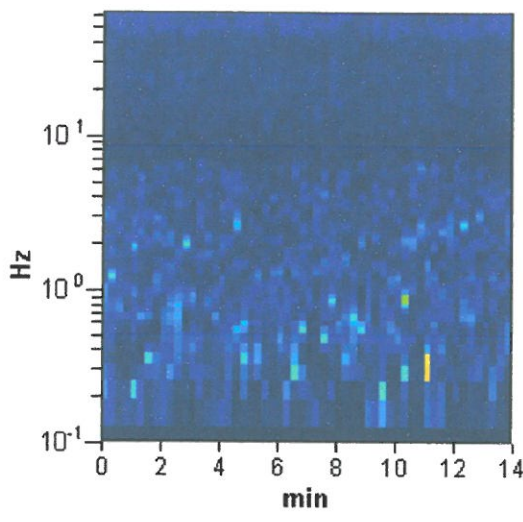
Smoothing: 10%

HORIZONTAL TO VERTICAL SPECTRAL RATIO

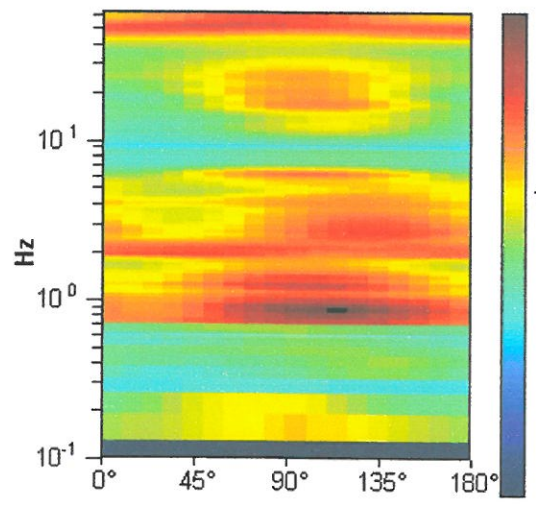
Max. H/V at 0.81 ± 0.06 Hz. (In the range 0.0 - 64.0 Hz).



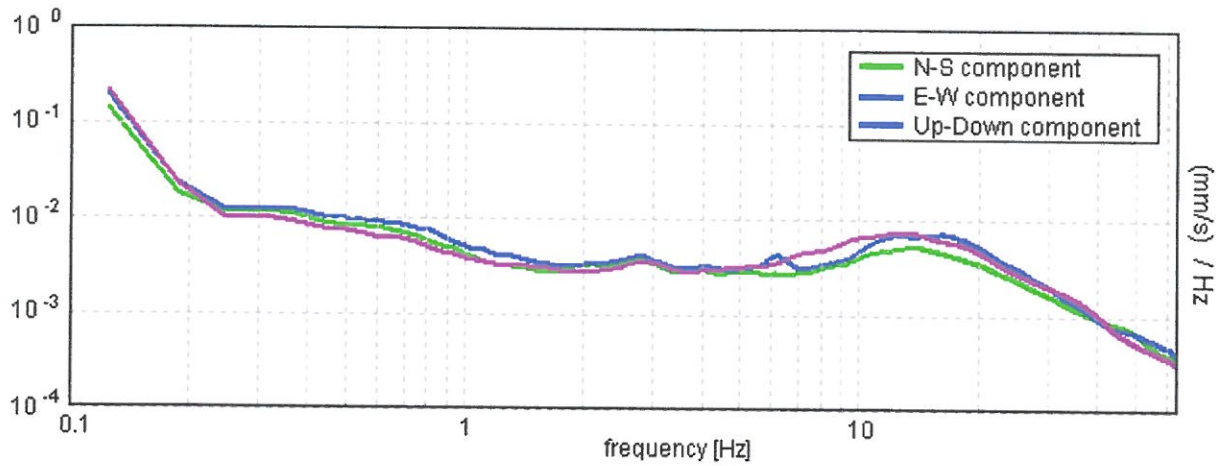
H/V TIME HISTORY



DIRECTIONAL H/V

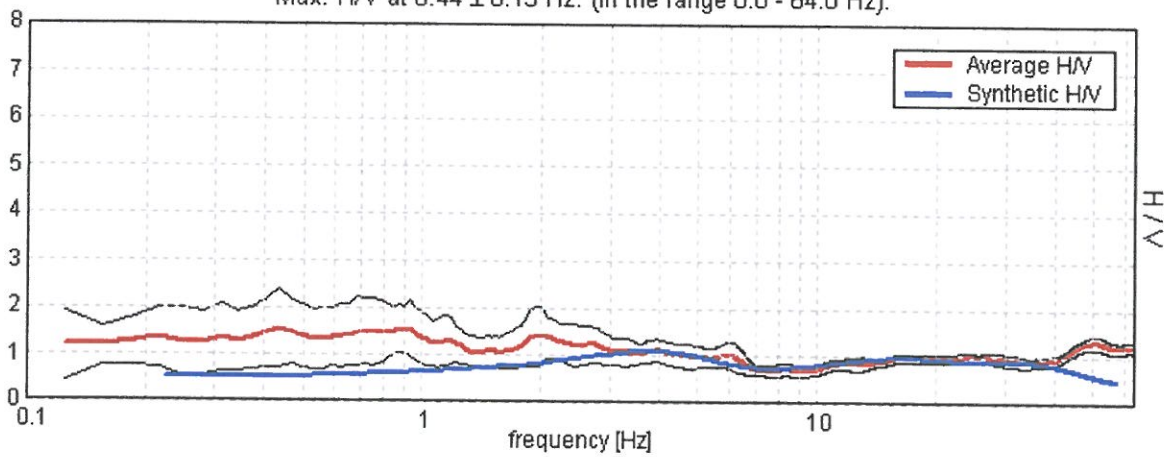


SINGLE COMPONENT SPECTRA



EXPERIMENTAL VS. SYNTHETIC H/V

Max. H/V at 0.44 ± 0.15 Hz. (In the range 0.0 - 64.0 Hz).



Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]	Poisson ratio
1.00	1.00	150	0.35
4.00	3.00	245	0.35
7.00	3.00	310	0.35
11.00	4.00	320	0.35
15.00	4.00	280	0.35
23.00	8.00	430	0.36
38.00	15.00	450	0.35
inf.	inf.	470	0.35

Vs(0.0-30.0)=335m/s

[According to the Sesame, 2005 guidelines. Please read carefully the *Grilla* manual before interpreting the following tables.]

Max. H/V at 0.81 ± 0.06 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable HVSR curve

[All 3 should be fulfilled]

$f_0 > 10 / L_w$	$0.81 > 0.67$	OK	
$n_c(f_0) > 200$	$682.5 > 200$	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5\text{Hz}$ $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5\text{Hz}$	Exceeded 0 out of 20 times	OK	

Criteria for a clear HVSR peak

[At least 5 out of 6 should be fulfilled]

Exists f^- in $[f_0/4, f_0]$ $A_{H/V}(f^-) < A_0 / 2$			NO
Exists f^+ in $[f_0, 4f_0]$ $A_{H/V}(f^+) < A_0 / 2$			NO
$A_0 > 2$	$1.45 > 2$		NO
$f_{\text{peak}}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$ 0.03574 < 0.05$	OK	
$\sigma_f < \varepsilon(f_0)$	$0.02904 < 0.12188$	OK	
$\sigma_A(f_0) < \theta(f_0)$	$0.3877 < 2.0$	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{\log H/V}(f)$	standard deviation of $\log A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$

Freq.range [Hz]	< 0.2	0.2 - 0.5	0.5 - 1.0	1.0 - 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	$0.25 f_0$	$0.2 f_0$	$0.15 f_0$	$0.10 f_0$	$0.05 f_0$
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\theta(f_0)$ for $\sigma_{\log H/V}(f_0)$	0.48	0.40	0.30	0.25	0.20