anas
GRUPPO FS ITALIANE

Direzione Progettazione e Realizzazione Lavori

VARIANTE ALLA S.S. 1 "VIA AURELIA"
Viabilità di accesso all'hub portuale di La Spezia
Lavori di costruzione della variante alla S.S. 1 Via Aurelia - 3°Lotto

2° Stralcio Funzionale B dallo Svincolo di Buon Viaggio allo Svincolo di San Venerio
COMPLETAMENTO

PRECEDENTI LIVELLI DI PROGETTAZIONE DELL'APPALTO INTEGRATO ORIGINALE

PD n°1861 del 09/07/03 aggiornato al 10/12/08 - Delibera CIPE n°60 del 02/04/08
PE n° 103 del 14/07/2011 - D.A. CDG-103321-P del 20/07/11
PVT n°112 del 21/01/16 aggiornata al 28/10/16 - D.A. CDG-92950-P del 21/02/17
Progetto Esecutivo Cantierabile Opere da Completare

PROGETTO ESECUTIVO

COD. GE266

PROGETTAZIONE: ANAS - DIREZIONE PROGETTAZIONE E REALIZZAZIONE LAVORI

PROGETTISTA:
Dott. Ing. Antonio Scalamandrè
Ordine Ing. di Frosinone n. 1063

IL GEOLOGO
Dott. Geol. Flavio Capozucca
Ordine Geol. del Lazio n. 1599

COORDINATORE DELLA SICUREZZA IN FASE DI PROGETTAZIONE
Geom. Emiliano Paiella

ViSTO IL RESPONSABILE DEL PROCEDIMENTO
Dott. Ing. Fabrizio Cardone

PROTOCOLLO | DATA

STUDI, INDAGINI E RELAZIONI SPECIALISTICHE
INDAGINI GEOGNOSTICHE

INDAGINI PROGETTO ESECUTIVO (2010-2011)
Allegato indagini geofisiche

CODICE PROGETTO	NOME FILE	REVISIONE	SCALA
PROGETTO: DPGE0266 — LIV. PROG.: E 20	T00GE00GEORE09A.dwg		
	CODICE ELAB.: T00GE00GEORE09	A	-

REV.	DESCRIZIONE	DATA	REDATTO	VERIFICATO	APPROVATO
D					
C					
B					
A	COMMENTI	2020	Geol. Paone M.	Geol. Capozucca F.	Geol. Capozucca F.

Anas SpA

40

Compartimento della Viabilita' per la Liguria

COMUNE DELLA SPEZIA

VARIANTE ALLA SS N° 1 AURELIA (AURELIA BIS)
VIABILITA' DI ACCESSO ALL' HUB PORTUALE DI LA SPEZIA
INTERCONNESSIONE TRA I CASELLI DELLA A-12 ED IL PORTO DI LA SPEZIA

LAVORI DI COSTRUZIONE DELLA VARIANTE ALLA S.S. 1 AURELIA - 3° LOTTO TRA FELETTINO ED IL RACCORDO AUTOSTRADALE

PROGETTO ESECUTIVO

REV.	DATA	DESCRIZIONE	REDATTO	VERIFICATO	APPROVATO
–	–	–	–	–	–
–	–	–	–	–	–
A	MARZO.2011	EMISSIONE_PER_CONSEGNA	GIORGI	BALDI	FIMIANI

TITOLO ELABORATO:

3.STUDI_INDAGINI_E_RELAZIONI_SPECIALISTICHE

3.1.ELABORATI_COMUNI

ALLEGATO_INDAGINI_GEOFISICHE

Visto: Il Responsabile Unico del Procedimento

CODICE PROGETTO	CODICE ELABORATO
L0902A-E-1001	T00-GE00-GET-RE05-A

SCALA:	DATA: MARZO.2011	COMMESSA: C287A	NOME FILE: T00GE00GETRE05_A .DOC

RAGGRUPPAMENTO TEMPORANEO DI IMPRESE

MANDATARIA: SO.ES.TRA S.p.A. Direttore Tecnico (Ing. Marco [illegible])

MANDANTE: CONSORZIO ETRURIA

MANDANTE: SECOL

PROGETTISTA INDICATO

C. LOTTI & ASSOCIATI
SOCIETA' DI INGEGNERIA S.p.A.– ROMA

IL PROGETTISTA: Dott. Ing. [illegible] FIMIANI, Ordine Ingegneri Roma

IL GEOLOGO

COORDINATORE DELLA SICUREZZA IN FASE DI PROGETTAZIONE

3 . STUDI INDAGINI E RELAZIONI SPECIALISTICHE

3.1. ELABORATI COMUNI

ALLEGATO INDAGINI GEOFISICHE

N° PROGETTO: **C287.A**			ELABORATO: T00GE00GETRE05_A		
0	Marzo 2011	EMISSIONE	Giorgi	Baldi	Finiani
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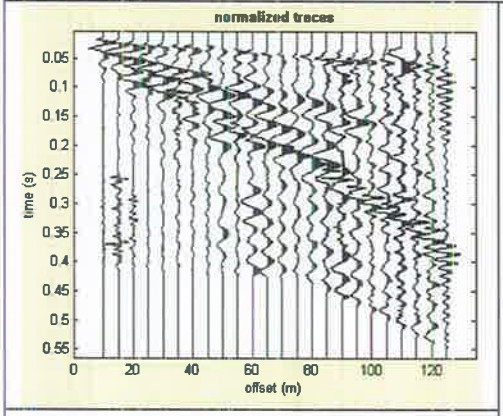
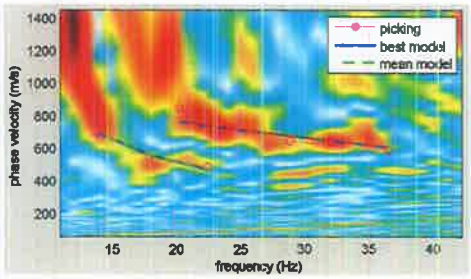
2					
3					
4					
revisione	***data***	***descrizione***	***redatto***	***controllato***	***approvato***

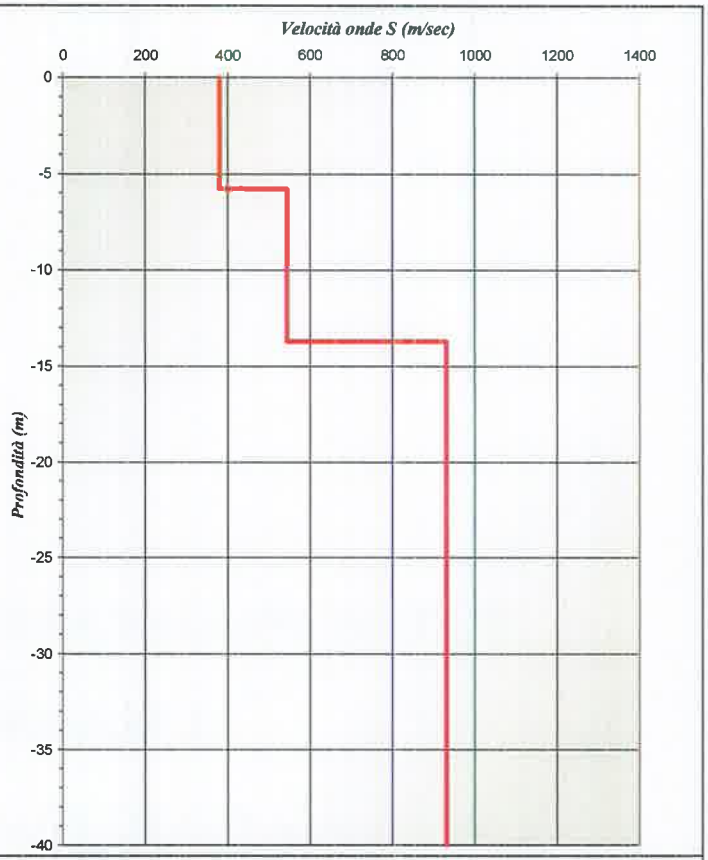
MASW 150



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

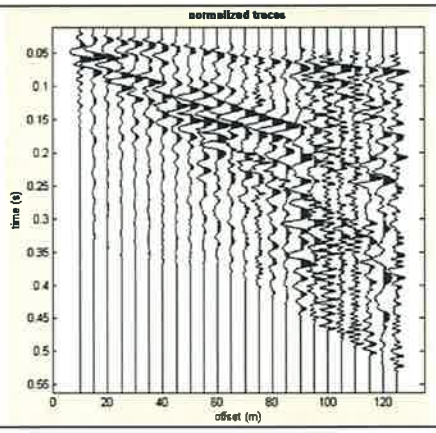


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

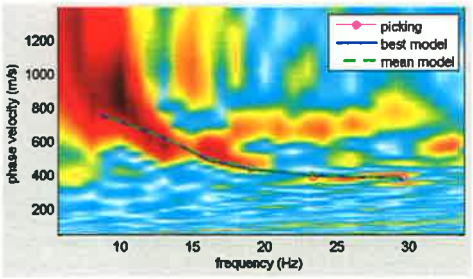
Profondità da P.C (m)		Velocità Onde S (m/s)
0	5.8	382
5.8	13.7	545
13.7	40	932

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***637 m/s***).

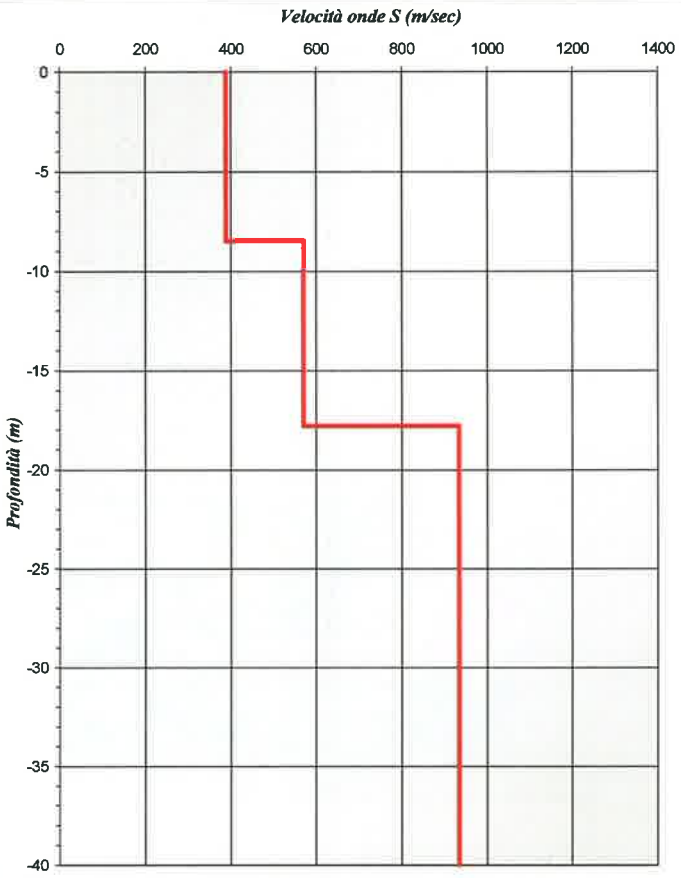
MASW 151a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

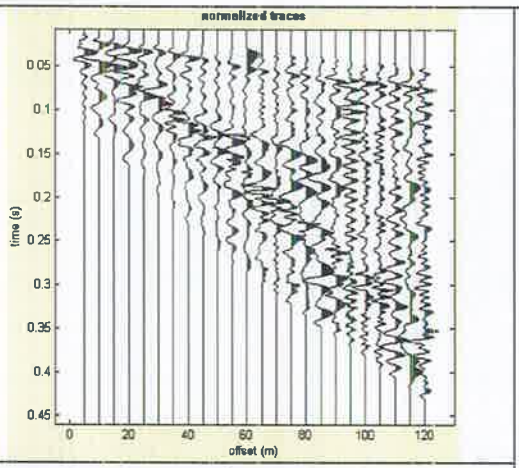


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

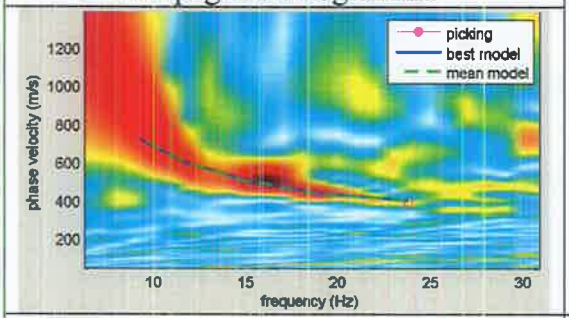
Profondità da P.C (m)		Velocità Onde S (m/s)
0	8.5	389
8.5	17.8	571
17.8	40	935

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***586 m/s)***.

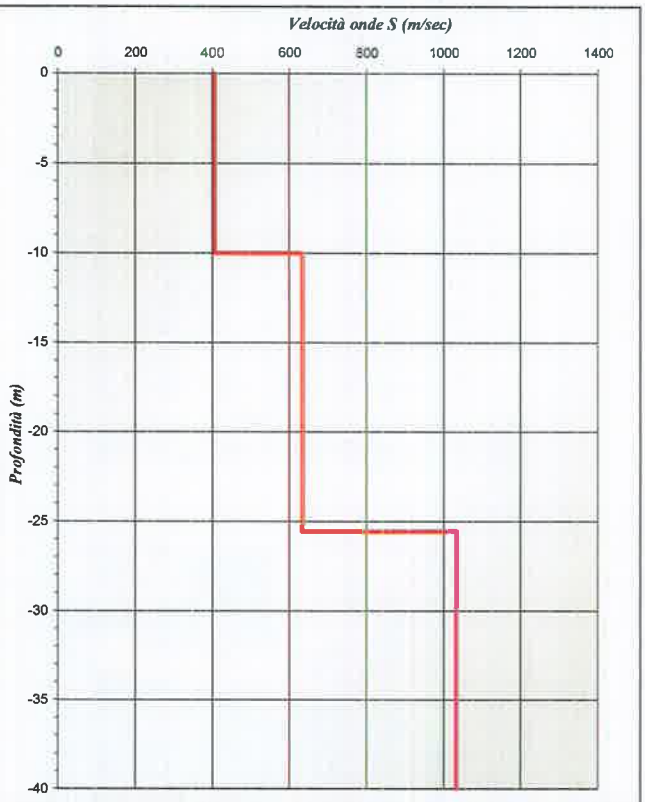
MASW 151b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

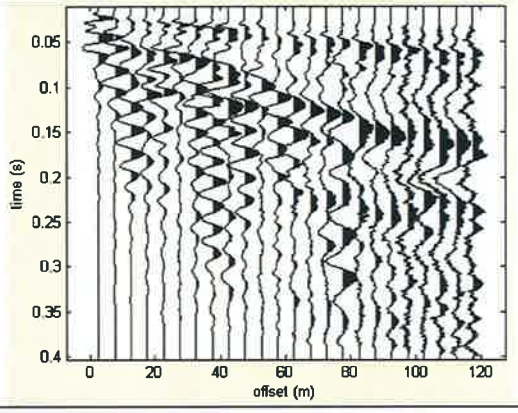


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

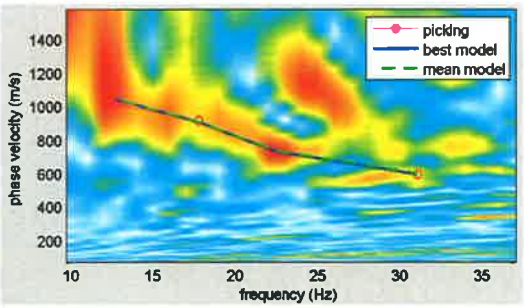
Profondità da P.C (m)		Velocità Onde S (m/s)
0	10.0	407
10	25.6	636
25.6	40	1034

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***560 m/s***).

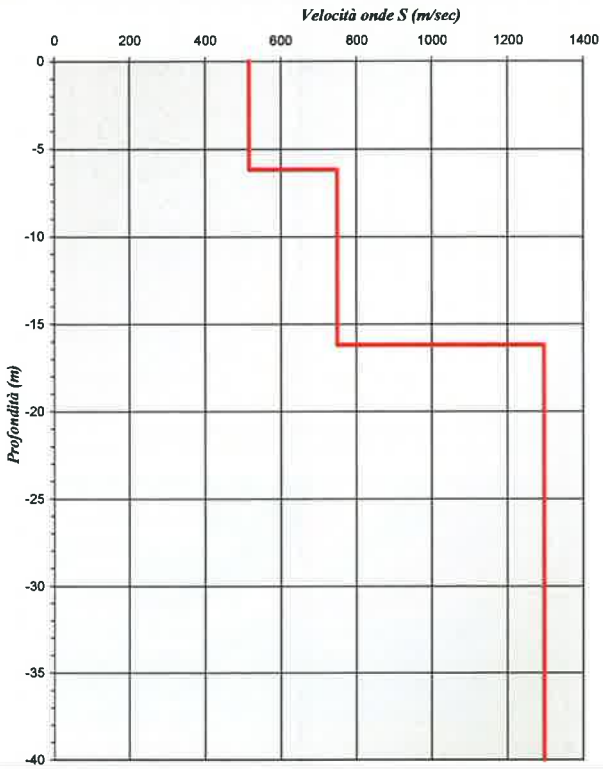
MASW 152a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

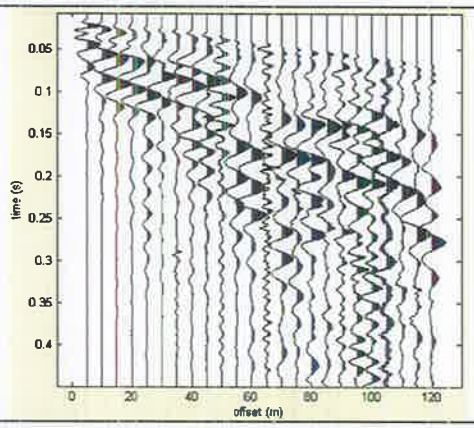


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

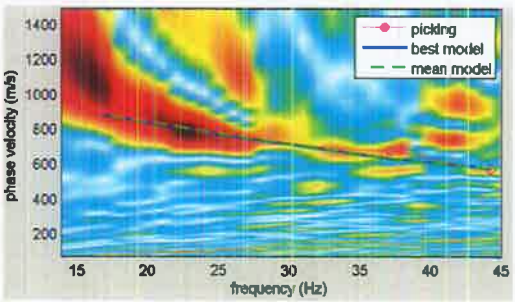
Profondità da P.C (m)		Velocità Onde S (m/s)
0	6.2	518
6.2	16.2	750
16.2	40	1297

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***831 m/s***).

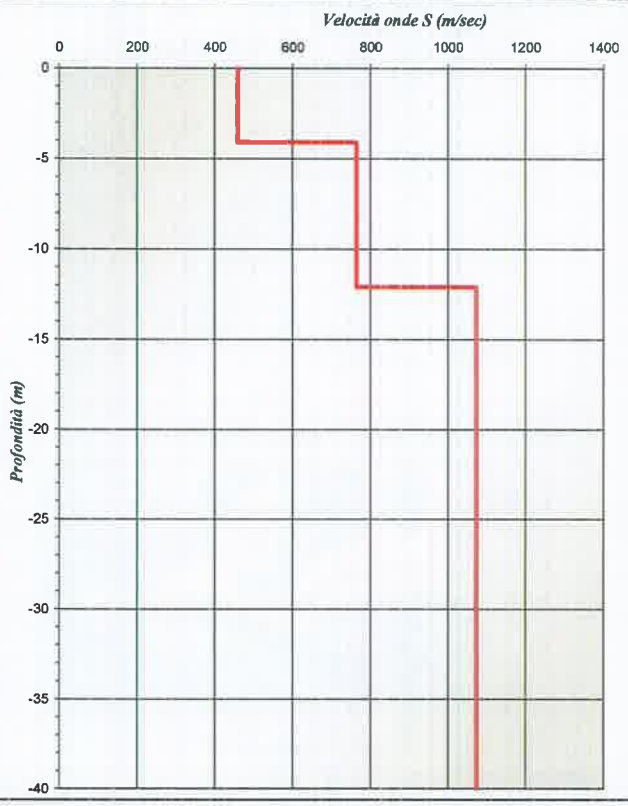
MASW 152b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

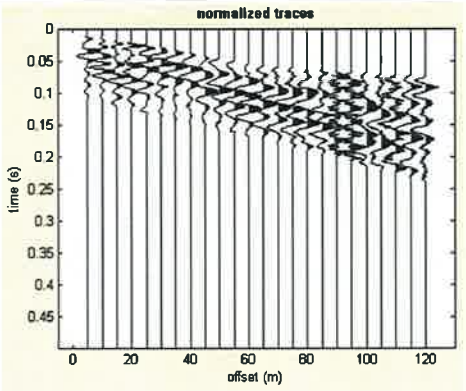


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

Profondità da P.C (m)		Velocità Onde S (m/s)
0	4.1	462
4.1	12.1	765
12.1	40	1074

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***835 m/s***).

MASW 153a



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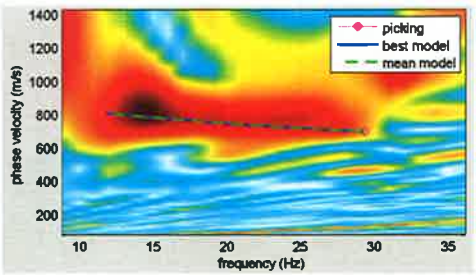
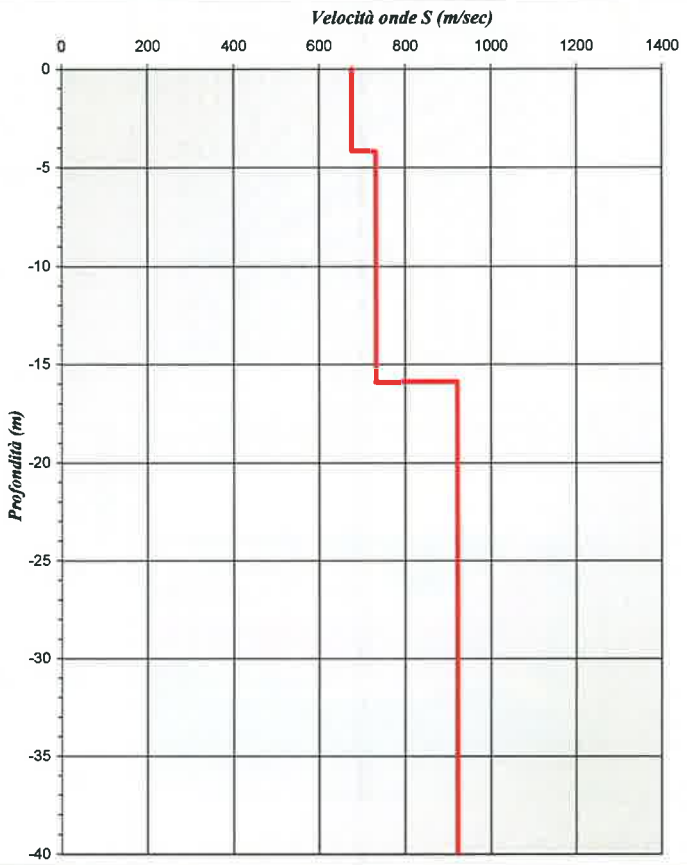


Spettro di velocità e curva di dispersione

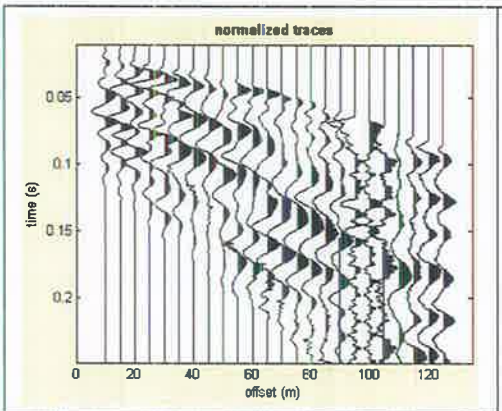


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

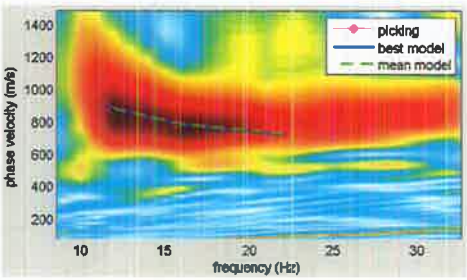
Profondità da P.C (m)		Velocità Onde S (m/s)
0	4.2	678
4.2	15.9	733
15.9	40	923

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***804 m/s***).

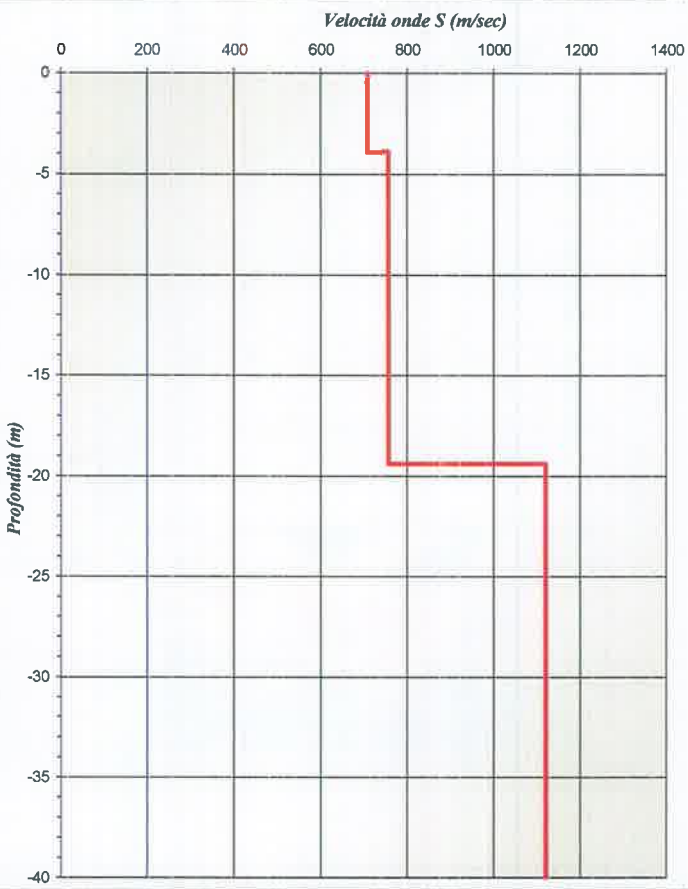
MASW 153b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

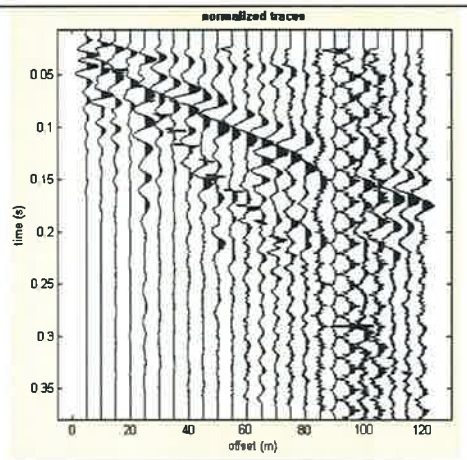


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

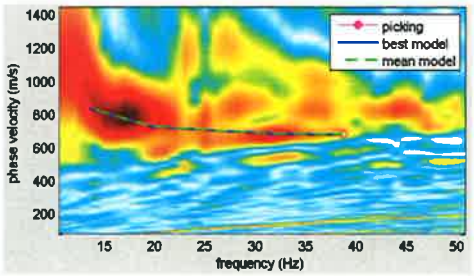
Profondità da P.C (m)		Velocità Onde S (m/s)
0	3.9	711
3.9	19.4	758
19.4	40	1120

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***806 m/s***).

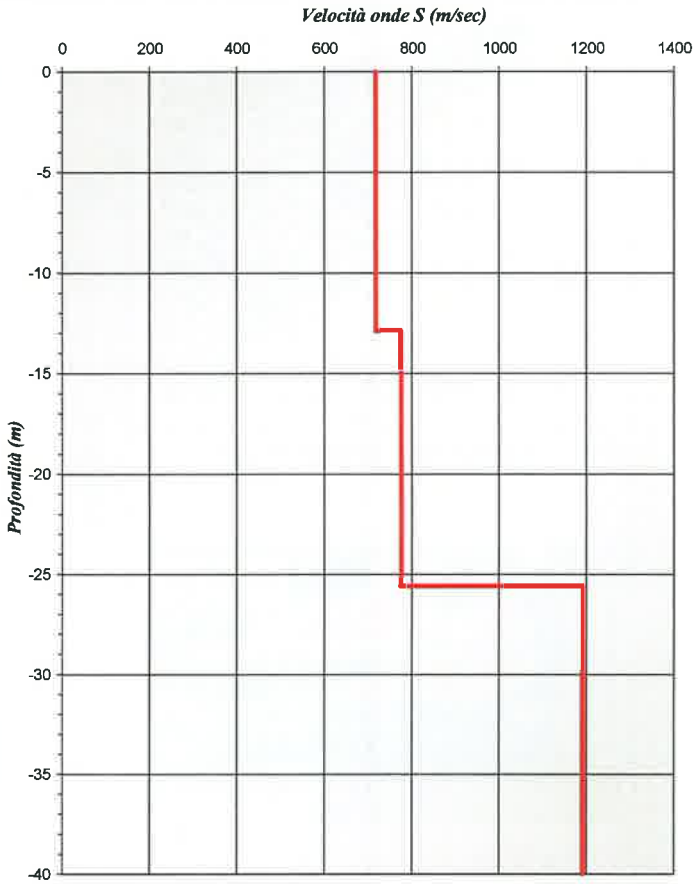
MASW 154



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

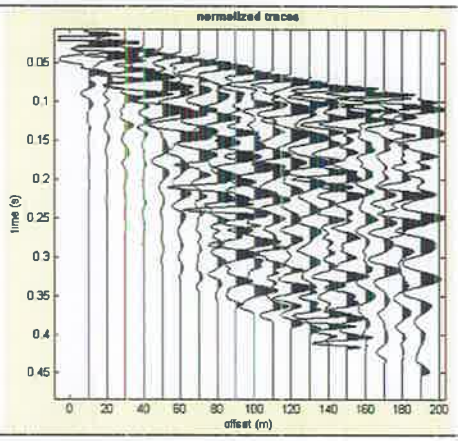


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

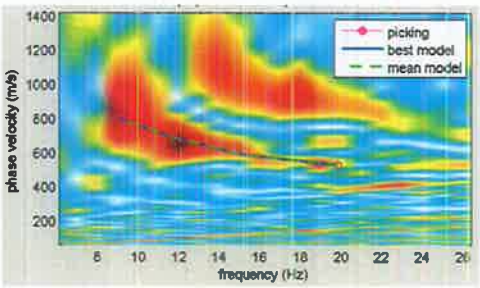
Profondità da P.C (m)		Velocità Onde S (m/s)
0	12.9	718
12.9	25.6	776
25.6	40	1191

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***789 m/s***).

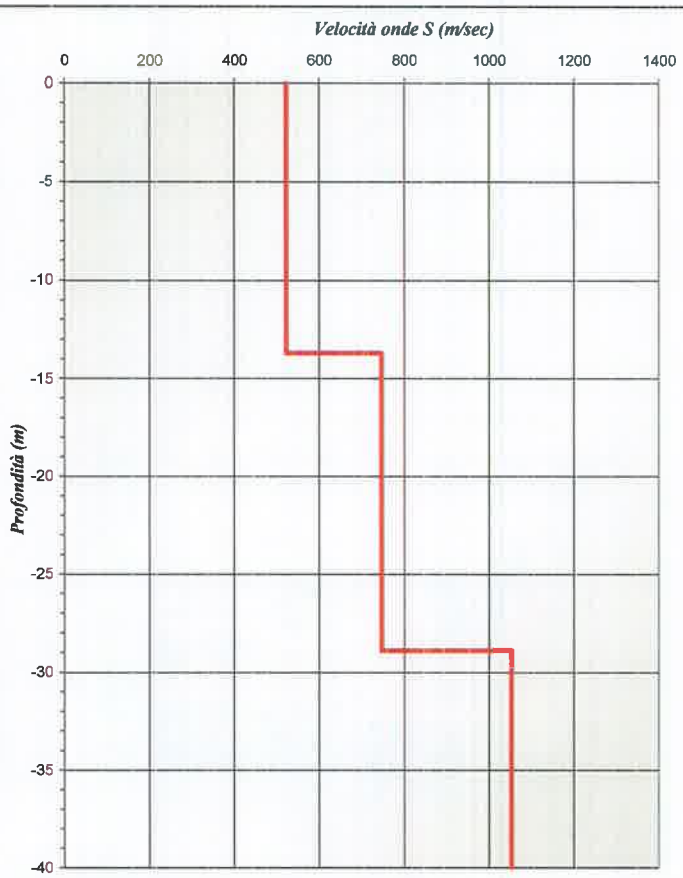
MASW 170aa



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

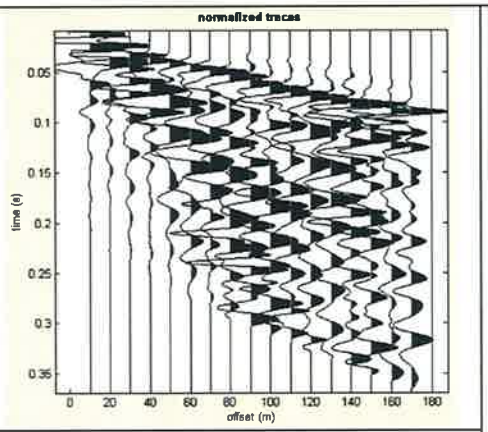


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

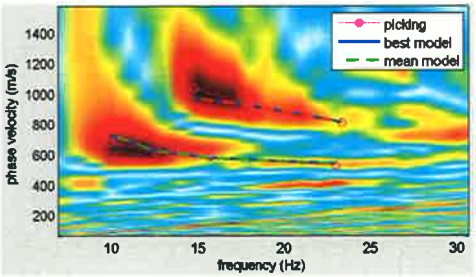
Profondità da P.C (m)		Velocità Onde S (m/s)
0	13.7	524
13.7	28.9	748
28.9	40	1053

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***630 m/s***).

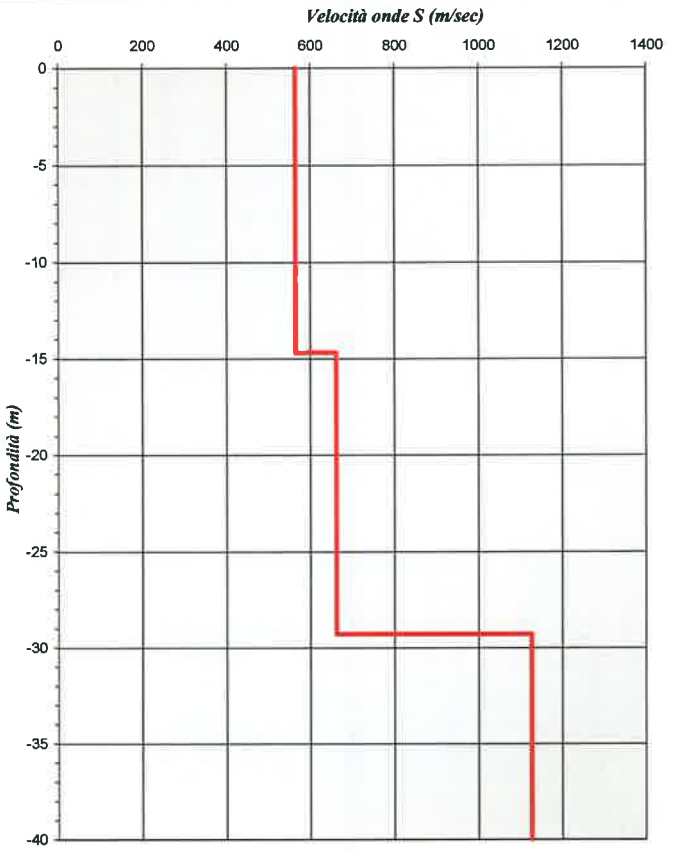
MASW 170ab



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

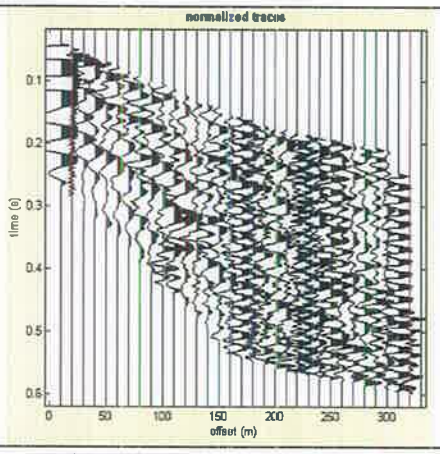


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

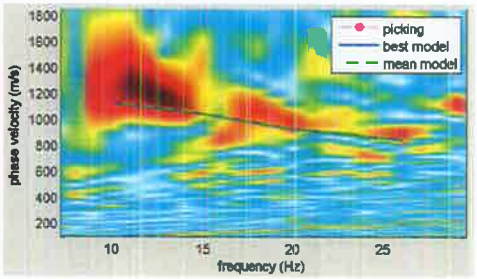
Profondità da P.C (m)		Velocità Onde S (m/s)
0	14.7	566
14.7	29.3	662
29.3	40	1127

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***616 m/s***).

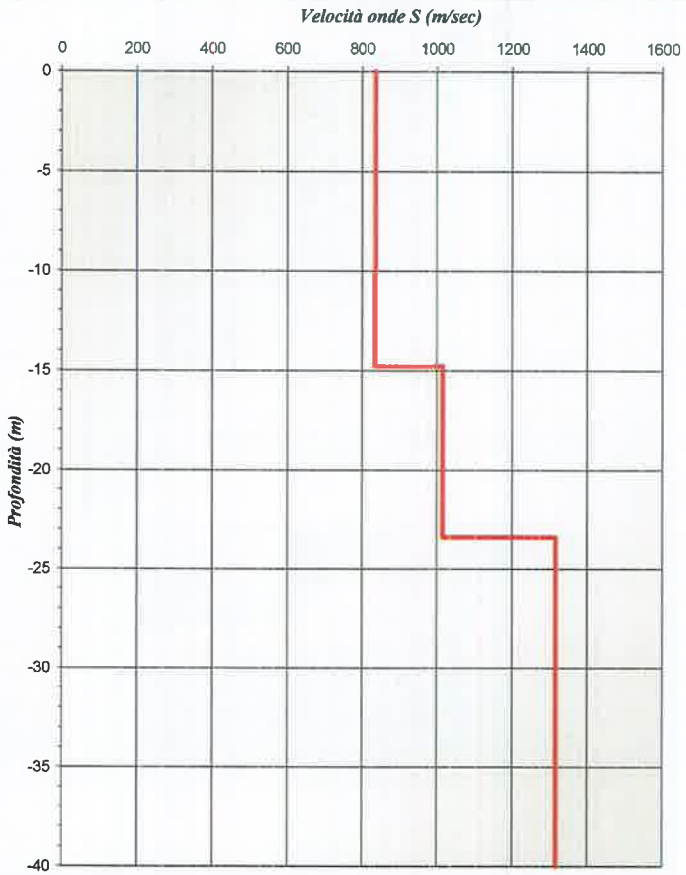
MASW 170ba



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

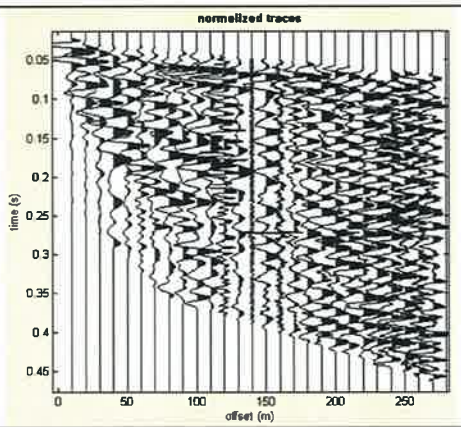


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

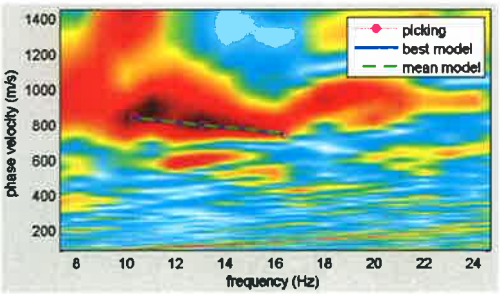
Profondità da P.C (m)		Velocità Onde S (m/s)
0	14.8	836
14.8	23.4	1016
23.4	40	1317

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***961 m/s***).

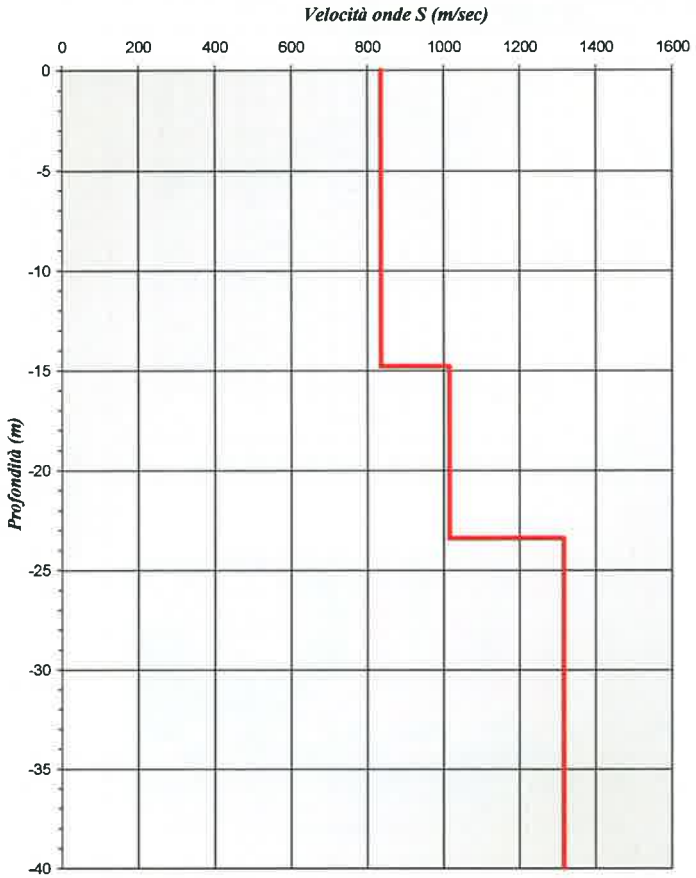
MASW 170bb



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

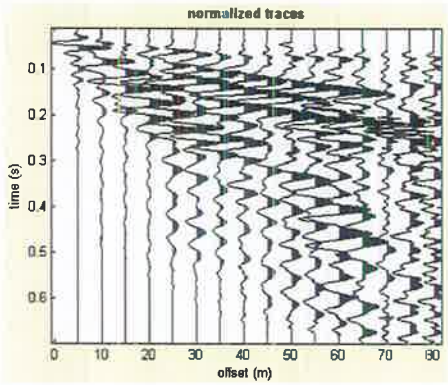


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

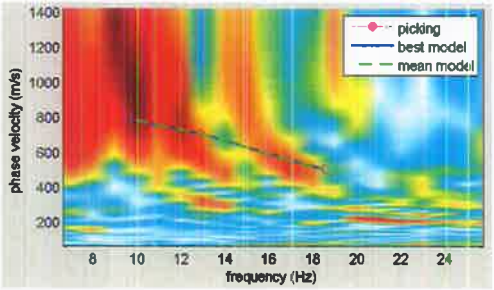
Profondità da P.C (m)		Velocità Onde S (m/s)
0	8.8	669
8.8	23.8	776
23.8	40	1001

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***779 m/s***).

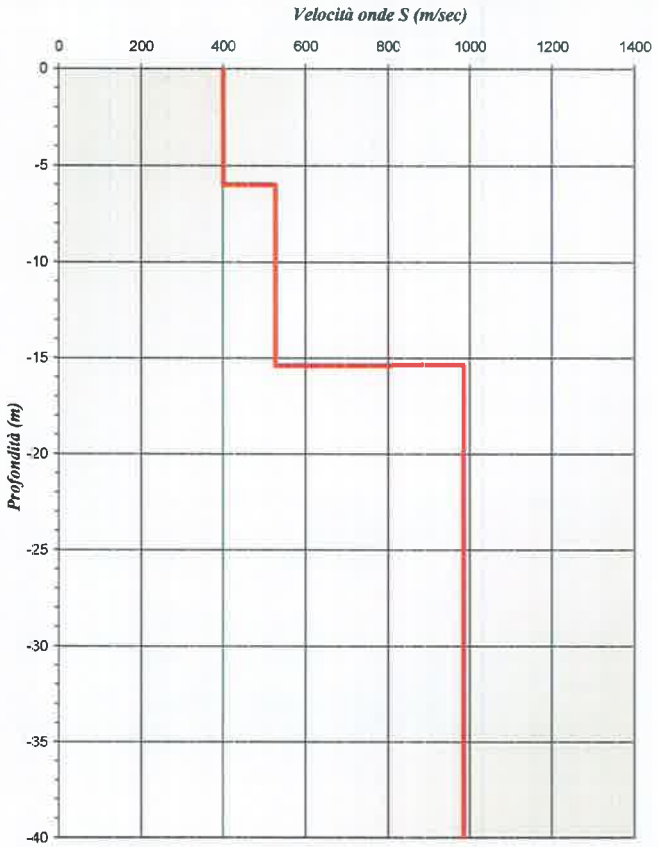
MASW 250



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

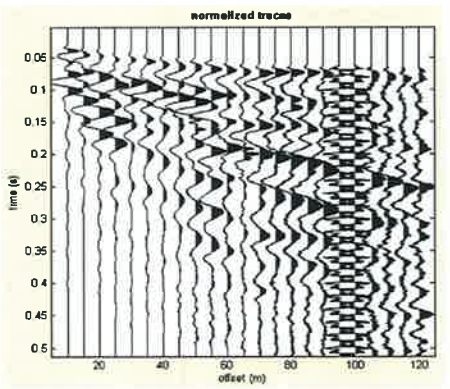


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

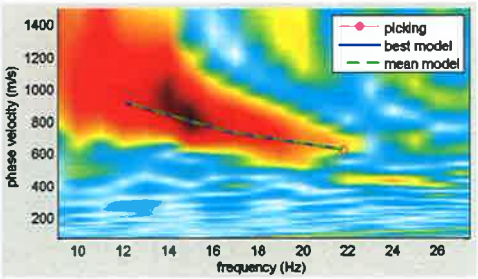
Profondità da P.C (m)		Velocità Onde S (m/s)
0	6.0	402
6.0	15.4	528
15.4	40	985

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***631 m/s***).

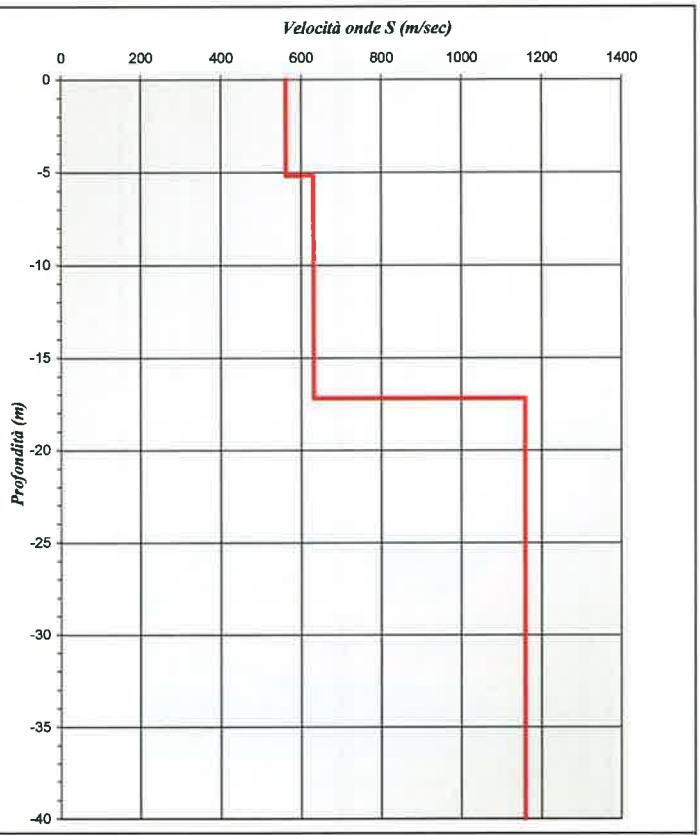
MASW 251



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

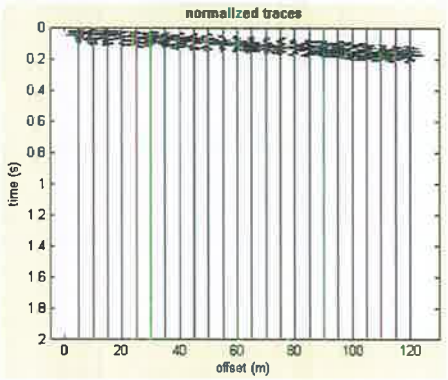


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

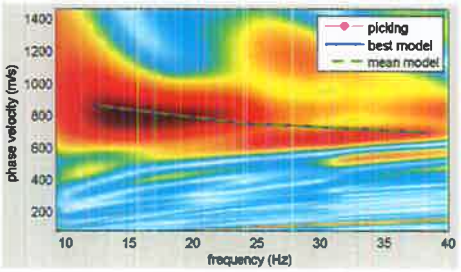
Profondità da P.C (m)		Velocità Onde S (m/s)
0	5.2	563
5.2	17.2	632
17.2	40	1159

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***765 m/s***).

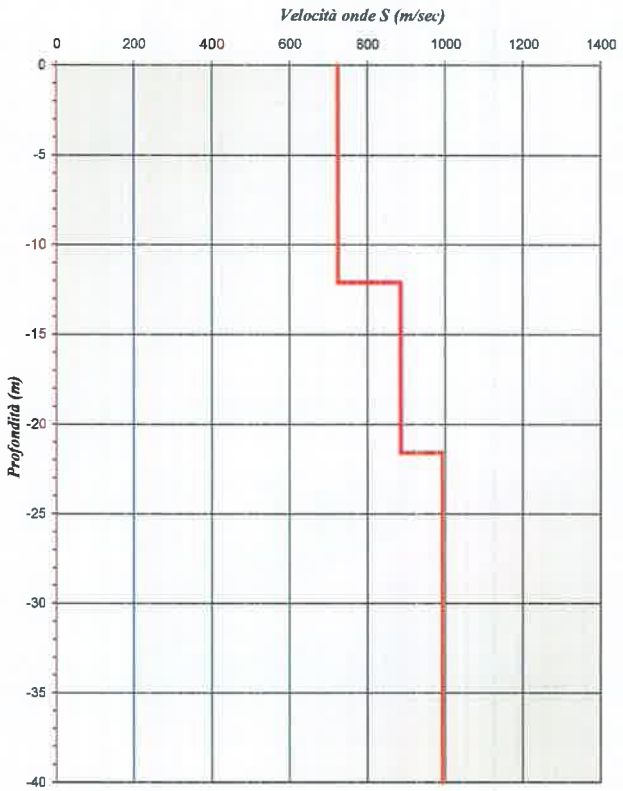
MASW 252



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

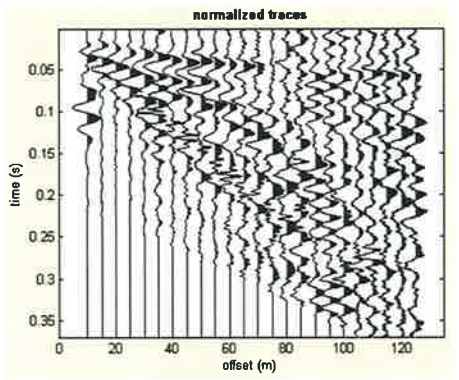


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

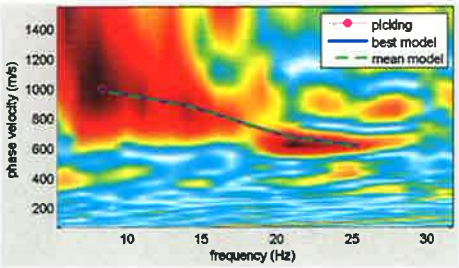
Profondità da P.C (m)		Velocità Onde S (m/s)
0	12.1	725
12.1	21.6	887
21.6	40	995

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***837 m/s***).

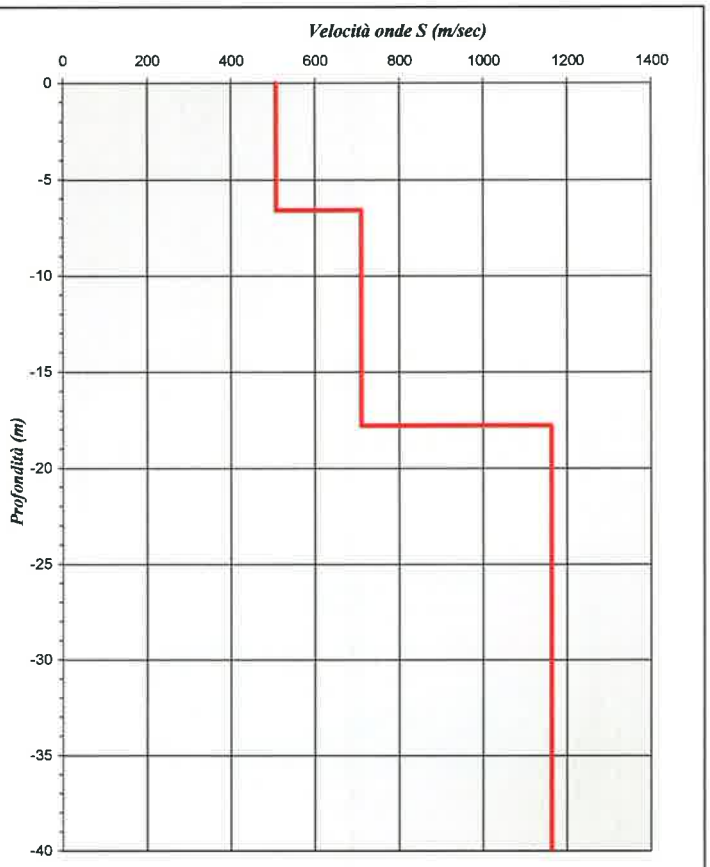
MASW 253a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

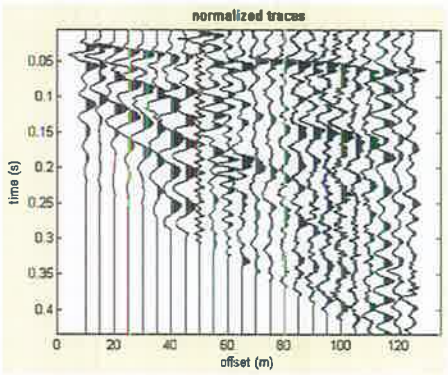


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

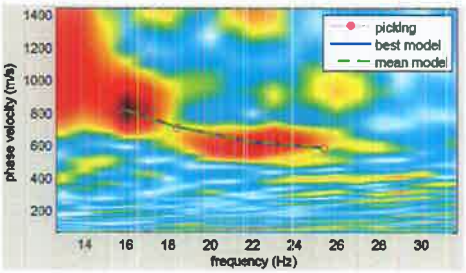
Profondità da P.C (m)		Velocità Onde S (m/s)
0	6.6	509
6.6	17.8	711
17.8	40	1163

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***773 m/s***).

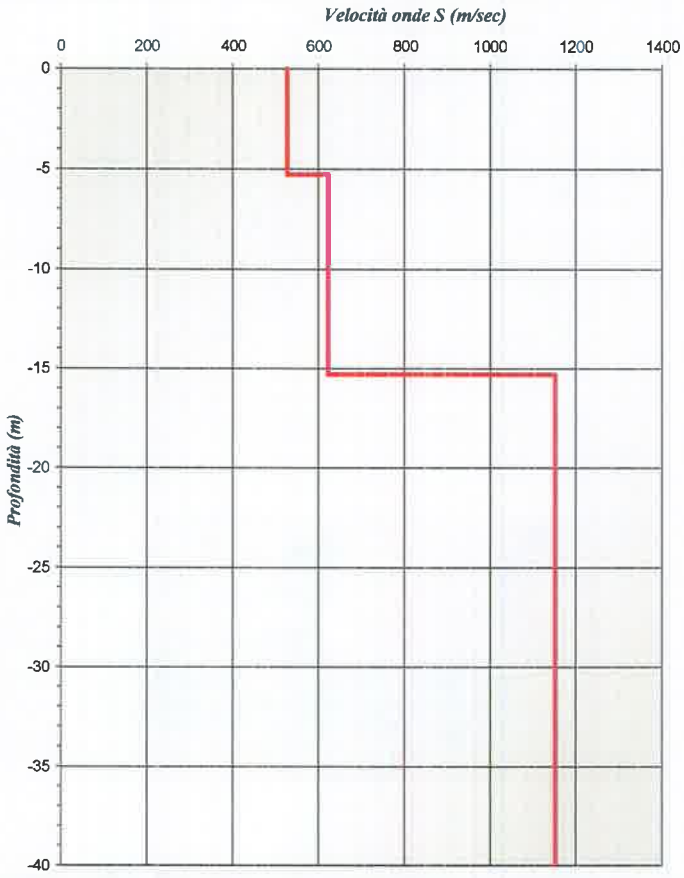
MASW 253b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

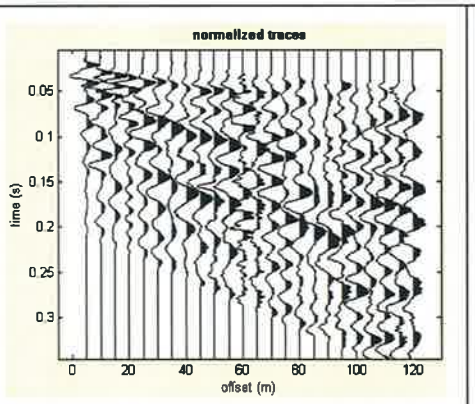


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

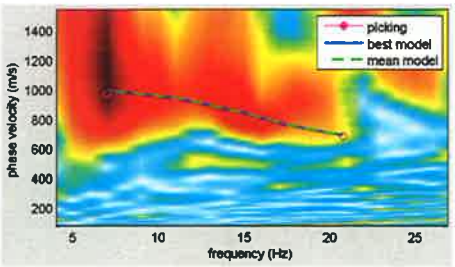
Profondità da P.C (m)		Velocità Onde S (m/s)
0	5.3	528
5.3	15.3	623
15.3	40	1153

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***775 m/s***).

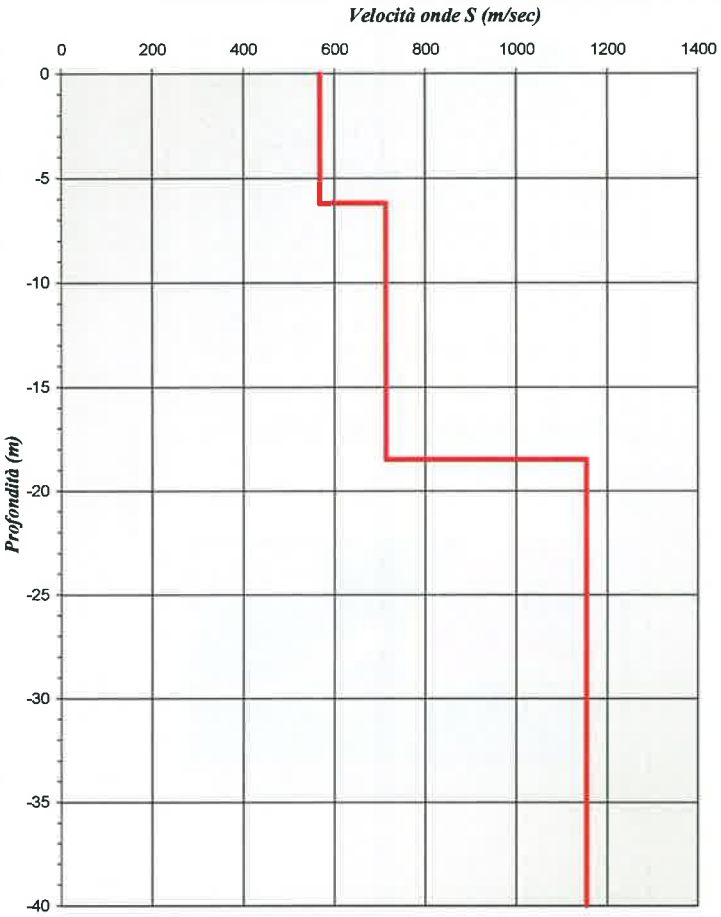
MASW 254a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

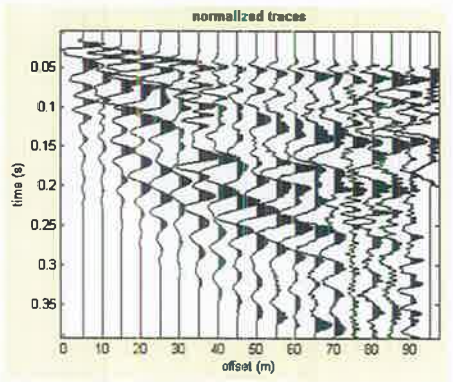


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

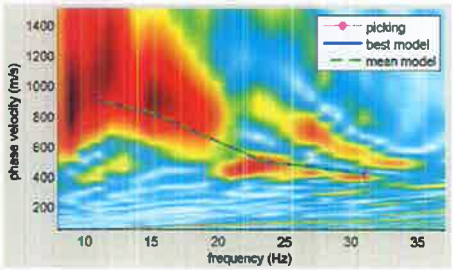
Profondità da P.C (m)		Velocità Onde S (m/s)
0	6.2	569
6.2	18.5	714
18.5	40	1155

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***787 m/s***).

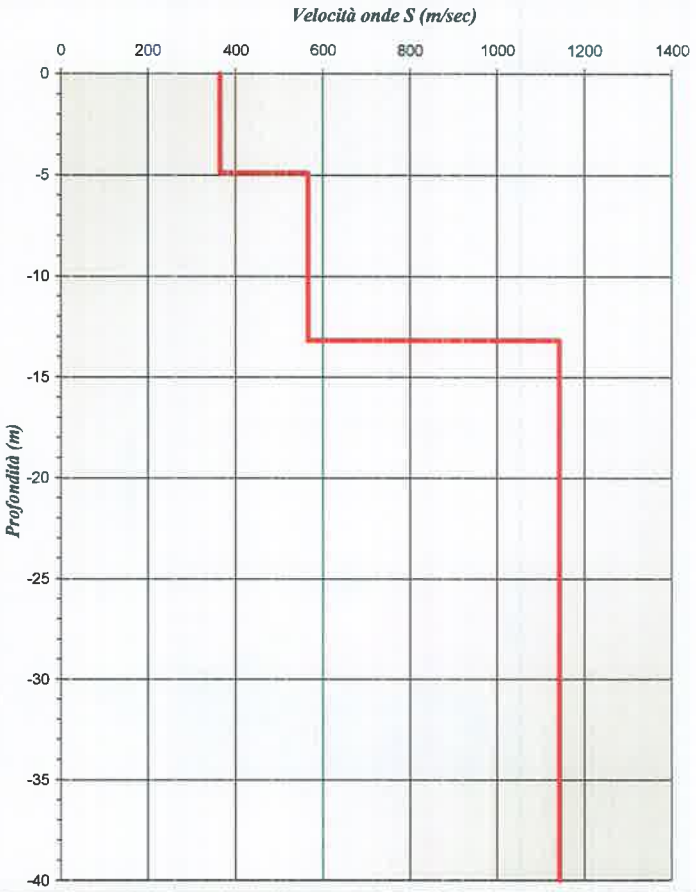
MASW 254b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

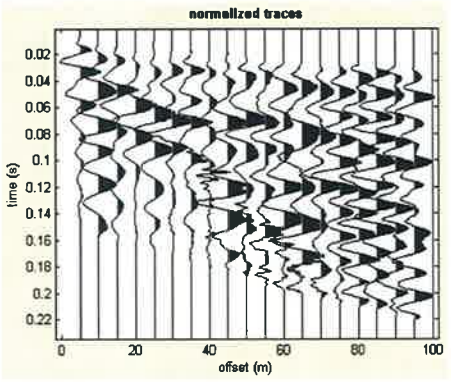


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

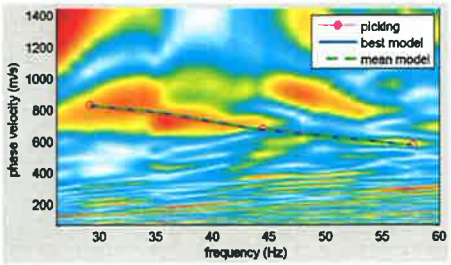
Profondità da P.C (m)		Velocità Onde S (m/s)
0	4.9	366
4.9	13.2	567
13.2	40	1144

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***703 m/s***).

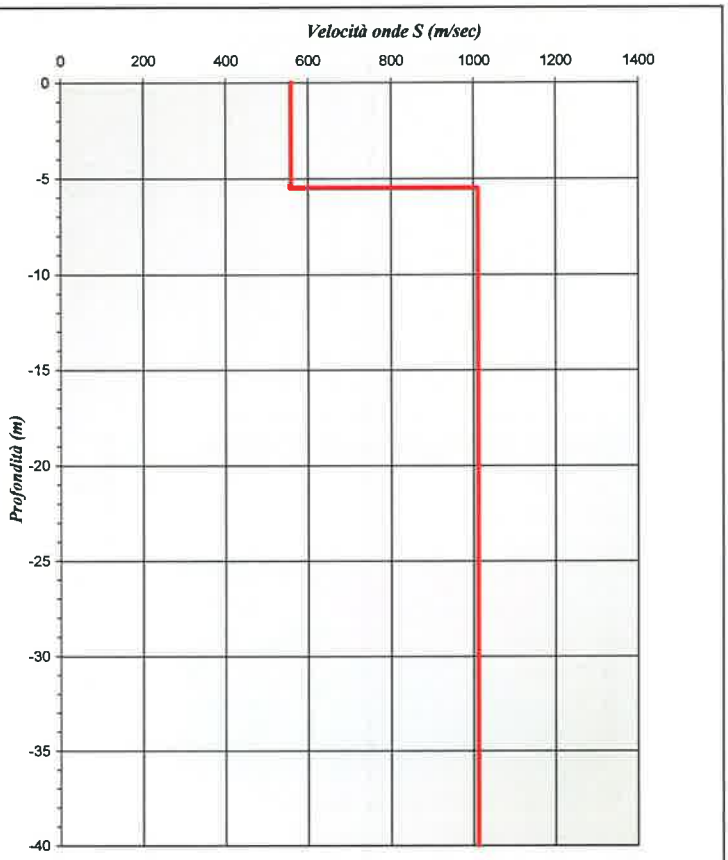
MASW 255a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

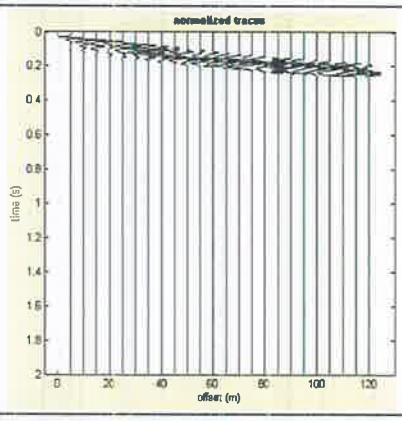


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

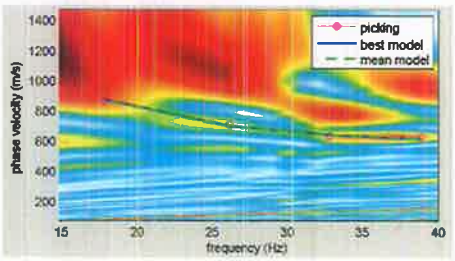
Profondità da P.C (m)		Velocità Onde S (m/s)
0	5.5	560
5.5	40	1012

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***881 m/s***).

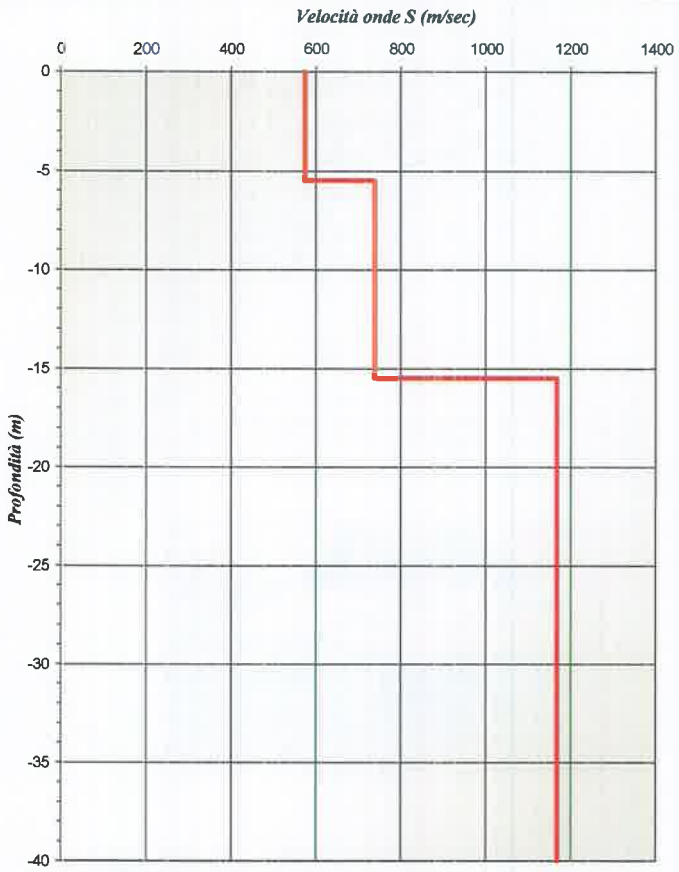
MASW 255b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

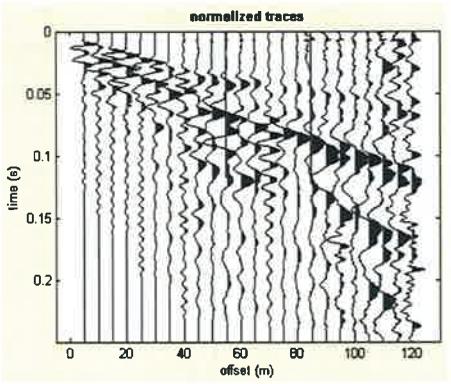


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

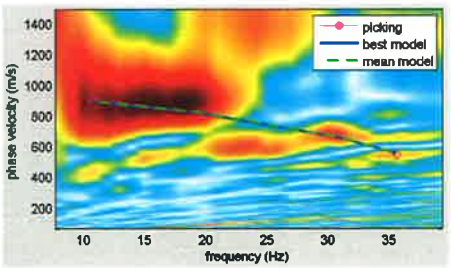
Profondità da P.C (m)		Velocità Onde S (m/s)
0	5.5	575
5.5	15.5	740
15.5	40	1168

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***847 m/s***).

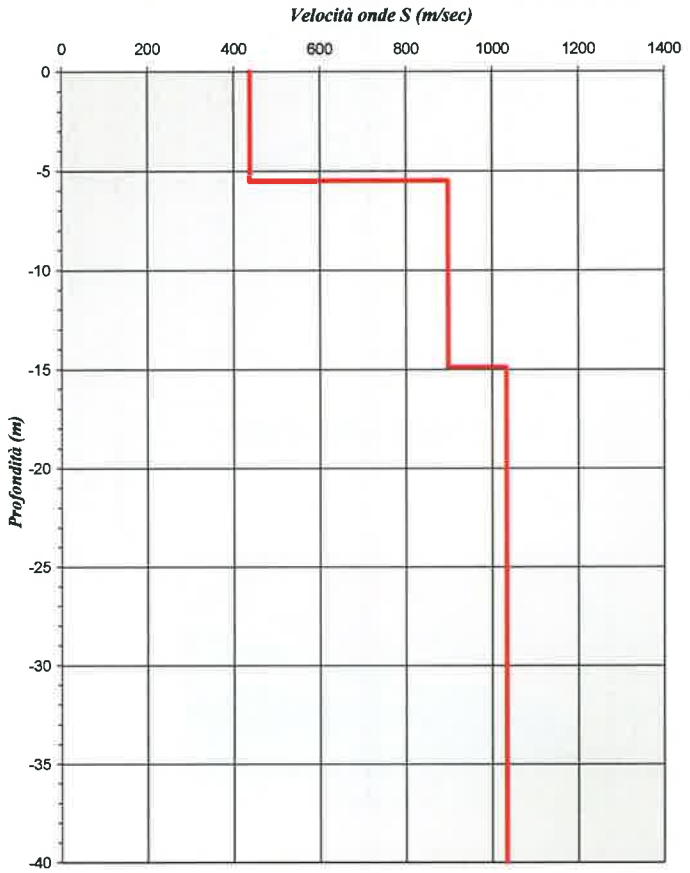
MASW 256a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

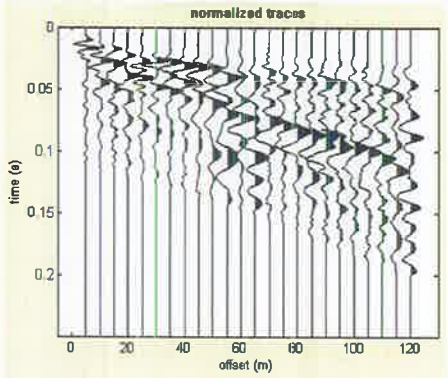


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

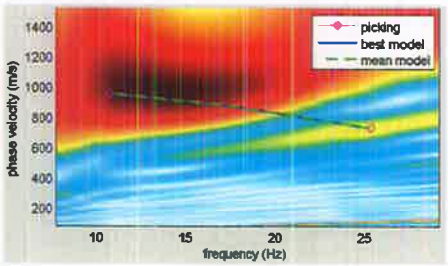
Profondità da P.C (m)		Velocità Onde S (m/s)
0	5.5	439
5.5	14.9	899
14.9	40	1033

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***797 m/s***).

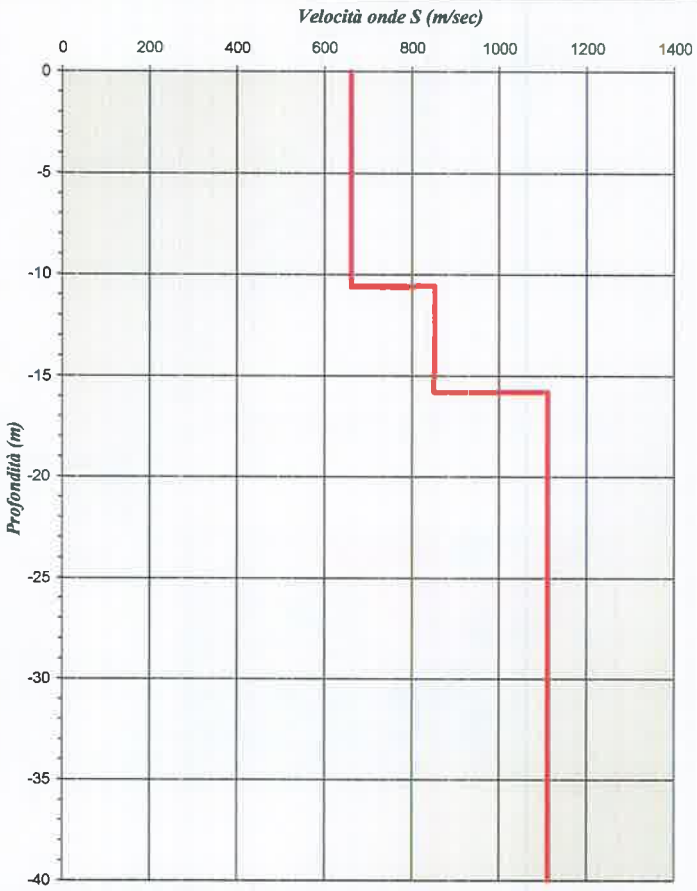
MASW 256b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

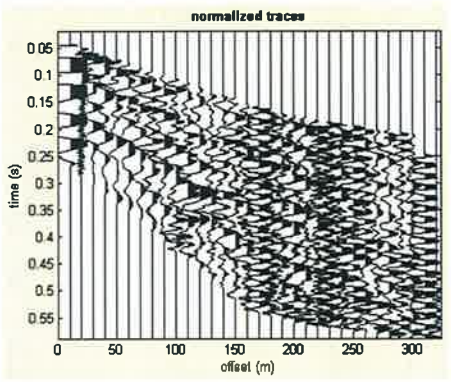


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

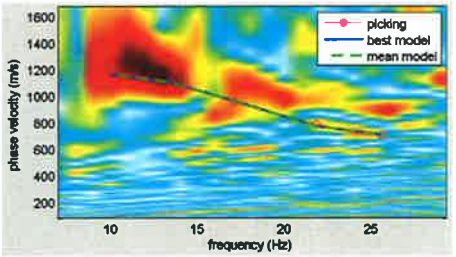
Profondità da P.C (m)		Velocità Onde S (m/s)
0	10.6	662
10.6	15.8	853
15.8	40	1112

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***860 m/s***).

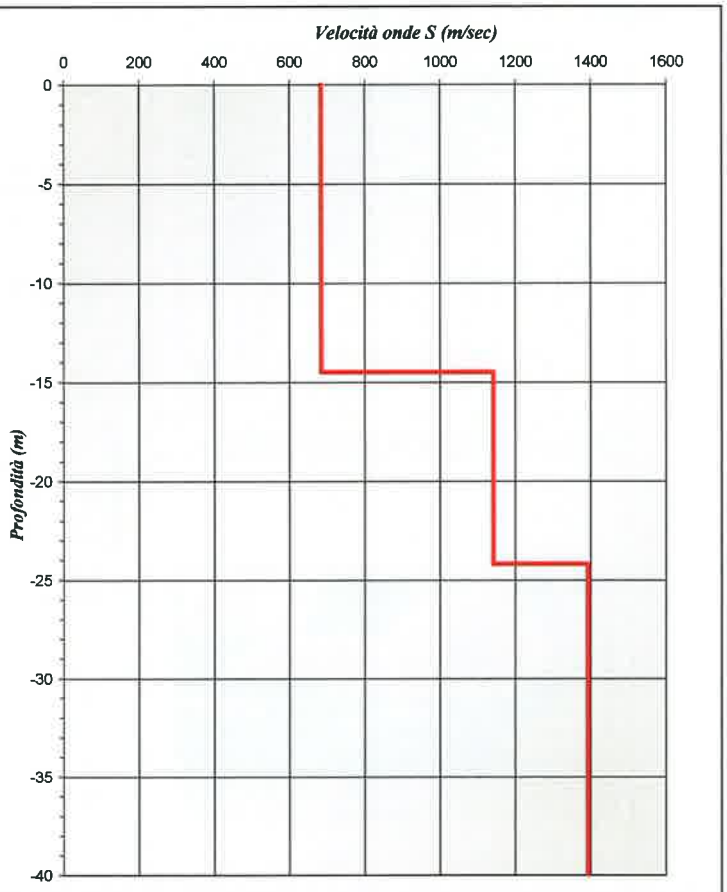
MASW 370a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

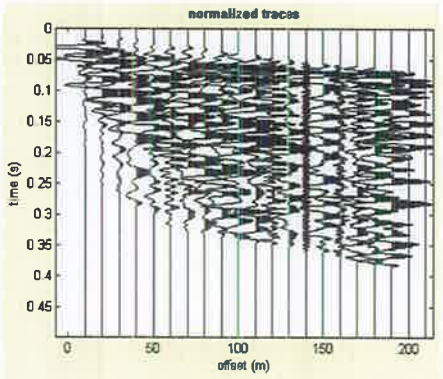


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

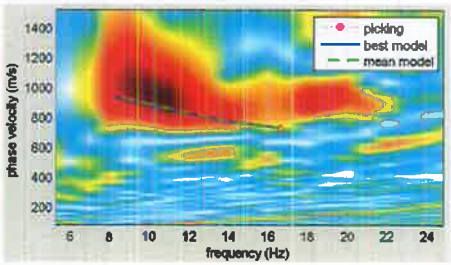
Profondità da P.C (m)		Velocità Onde S (m/s)
0	14.5	685
14.5	24.2	1141
24.2	40	1393

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***889 m/s***).

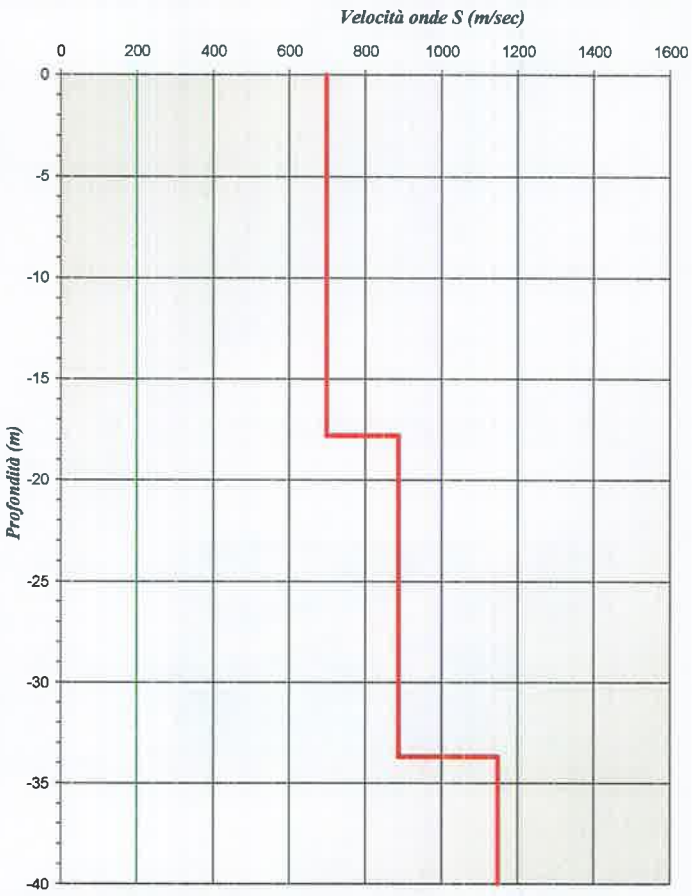
MASW 370b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

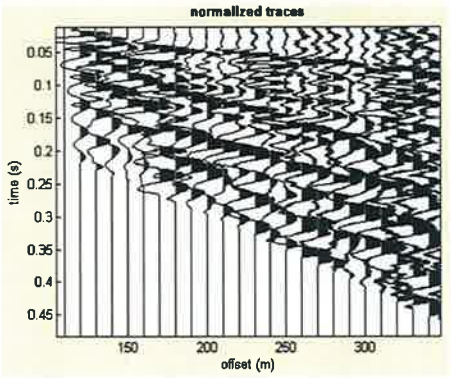


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

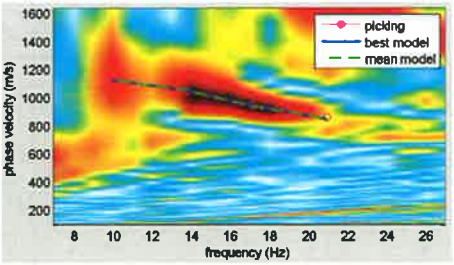
Profondità da P.C (m)		Velocità Onde S (m/s)
0	17.8	699
17.8	33.7	888
33.7	40	1148

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***765 m/s***).

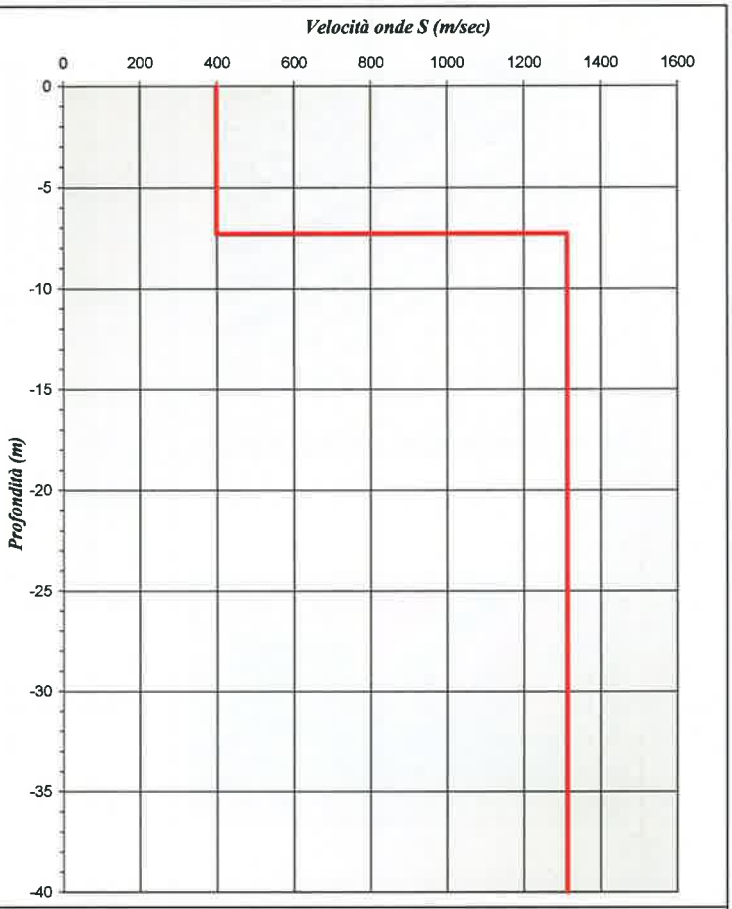
MASW 450a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

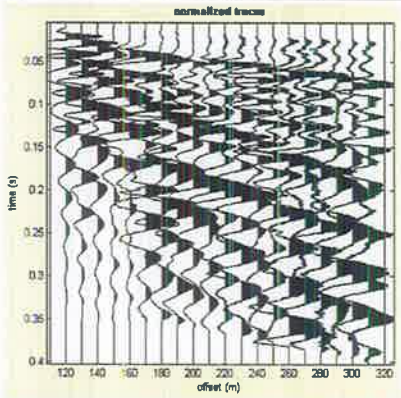


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

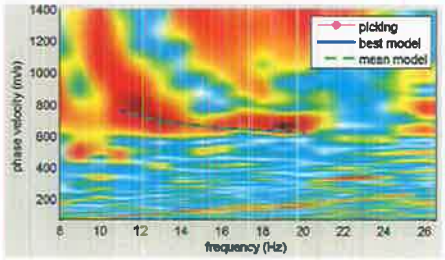
Profondità da P.C (m)		Velocità Onde S (m/s)
0	7.3	400
7.3	40	1313

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***928 m/s***).

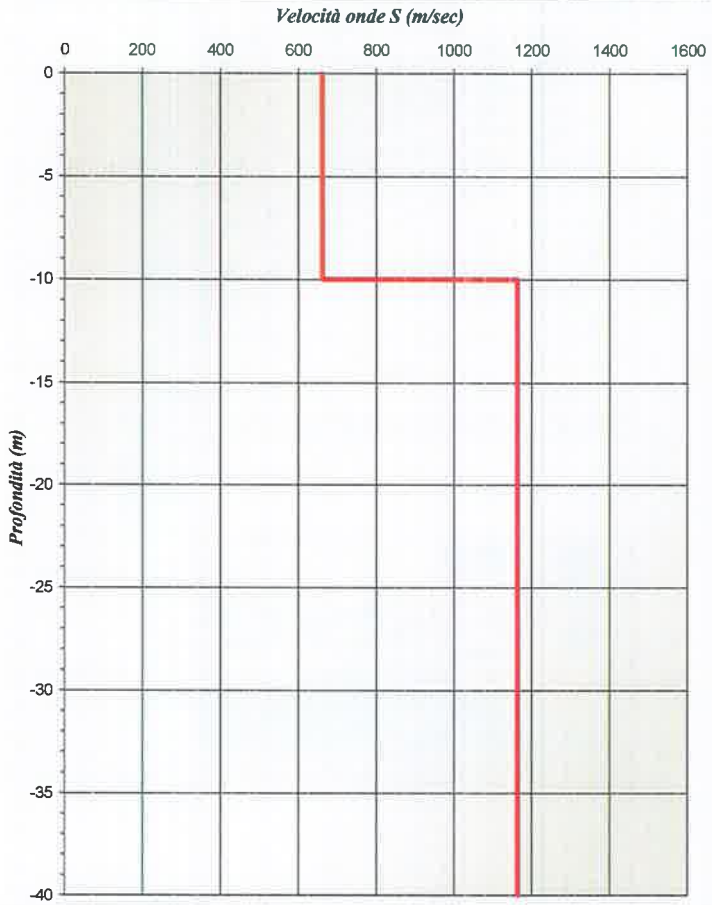
MASW 450b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

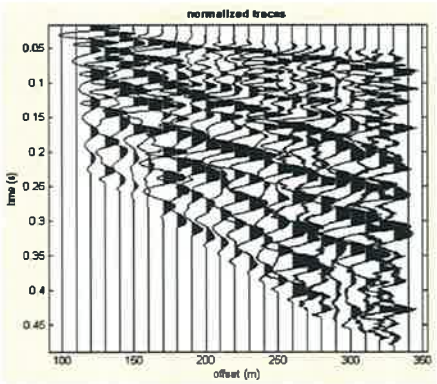


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

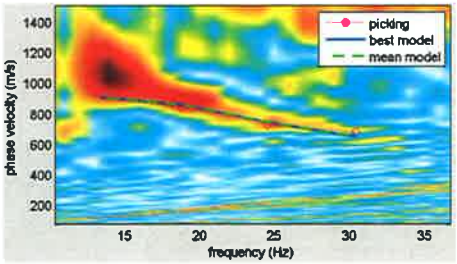
Profondità da P.C (m)		Velocità Onde S (m/s)
0	10.0	663
10.0	40	1165

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***930 m/s***).

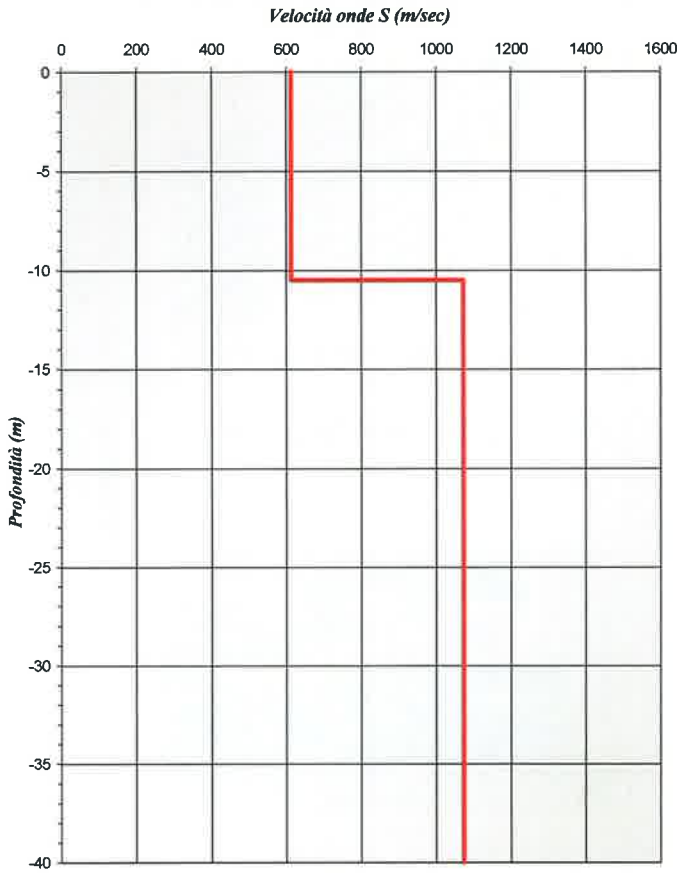
MASW 450c



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

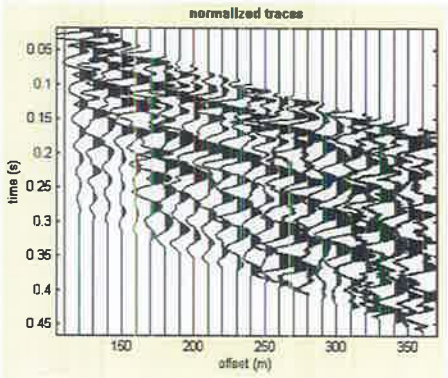


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

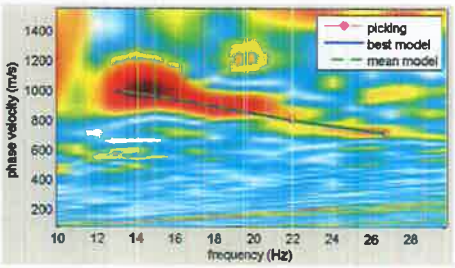
Profondità da P.C (m)		Velocità Onde S (m/s)
0	10.5	613
10.5	40	1073

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***852 m/s***).

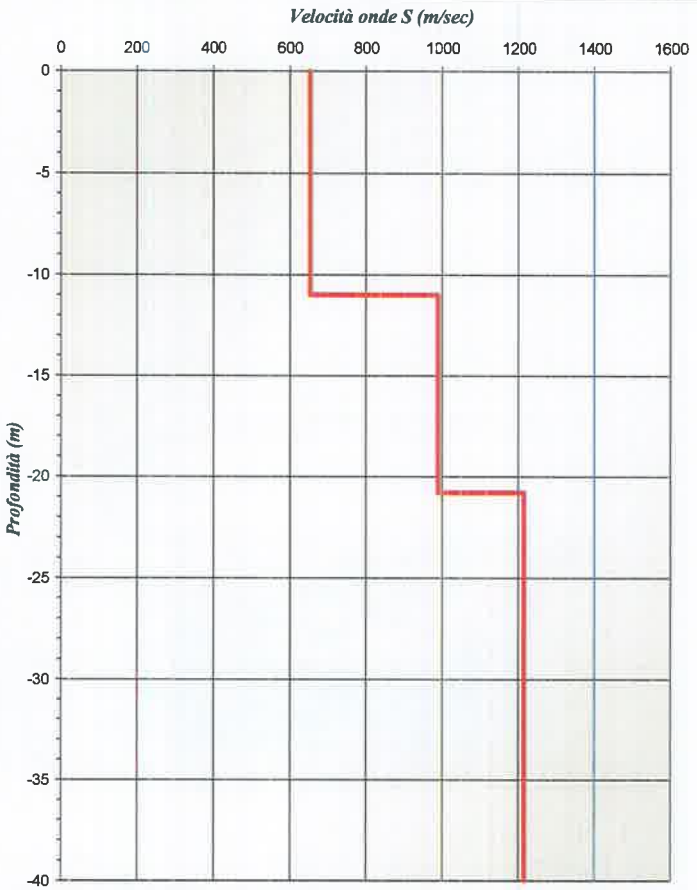
MASW 450d



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

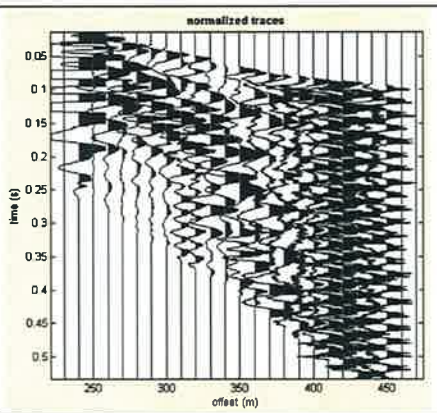


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

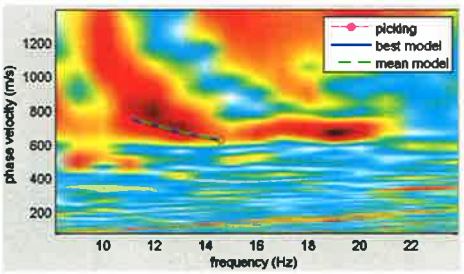
Profondità da P.C (m)		Velocità Onde S (m/s)
0	11.0	655
11.0	20.8	991
20.8	40	1215

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***868 m/s***).

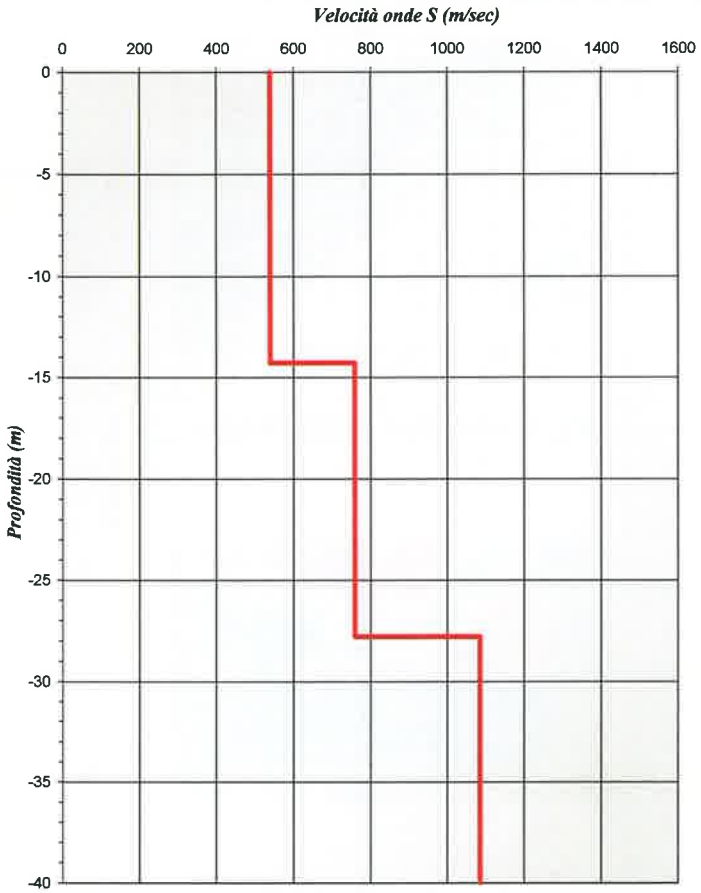
MASW 570a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

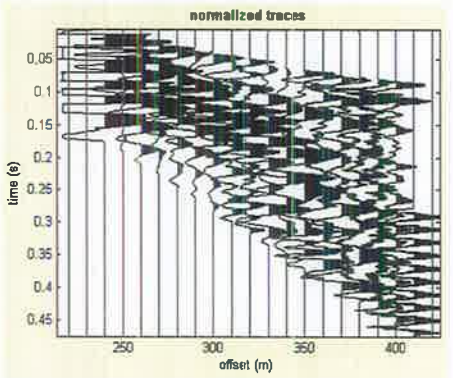


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

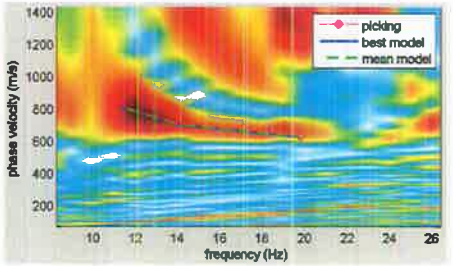
Profondità da P.C (m)		Velocità Onde S (m/s)
0	14.3	540
14.3	27.8	760
27.8	40	1085

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***652 m/s***).

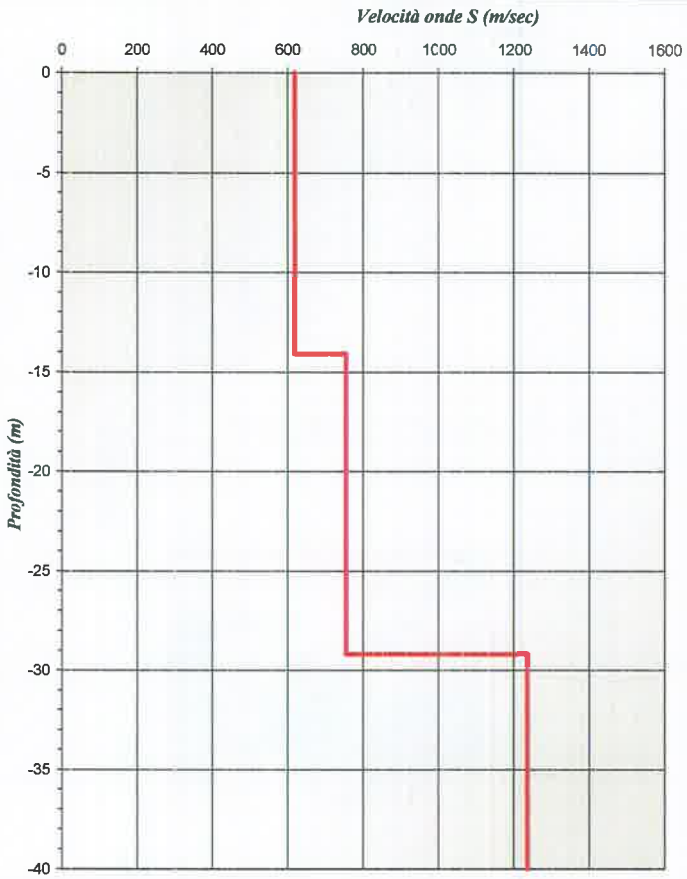
MASW 570b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

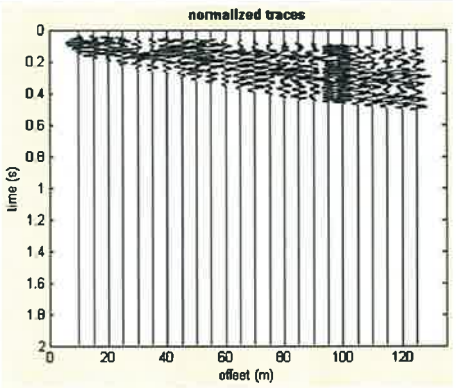


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

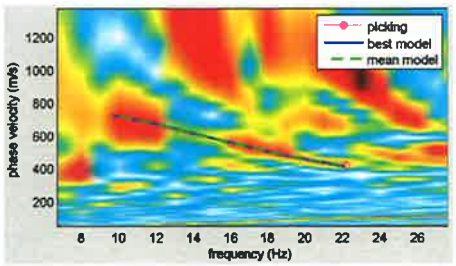
Profondità da P.C (m)		Velocità Onde S (m/s)
0	14.1	620
14.1	29.2	756
29.2	40	1236

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***692 m/s***).

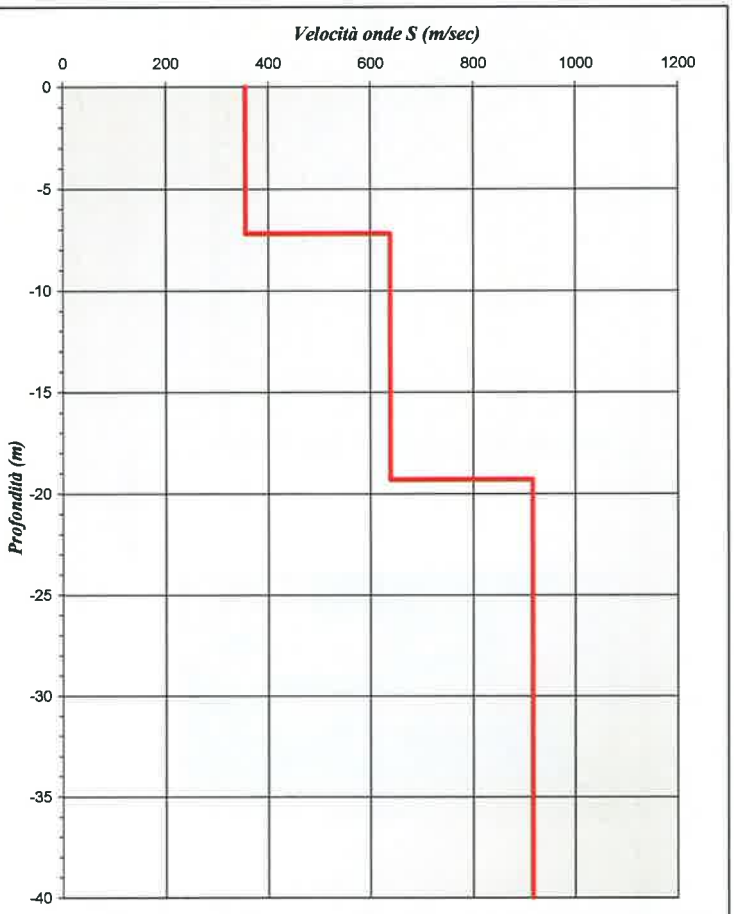
MASW 550



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

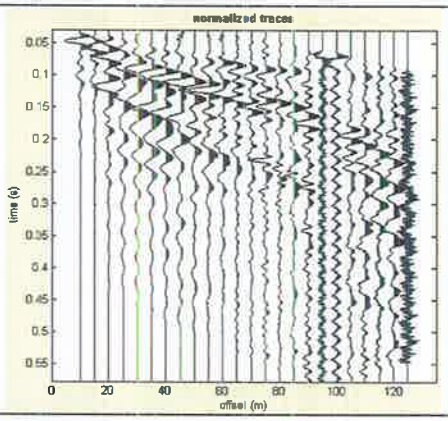


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

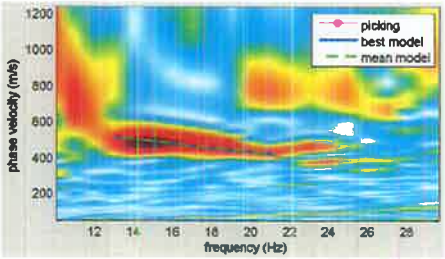
Profondità da P.C (m)		Velocità Onde S (m/s)
0	7.2	356
7.2	19.3	639
19.3	40	916

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***589 m/s***).

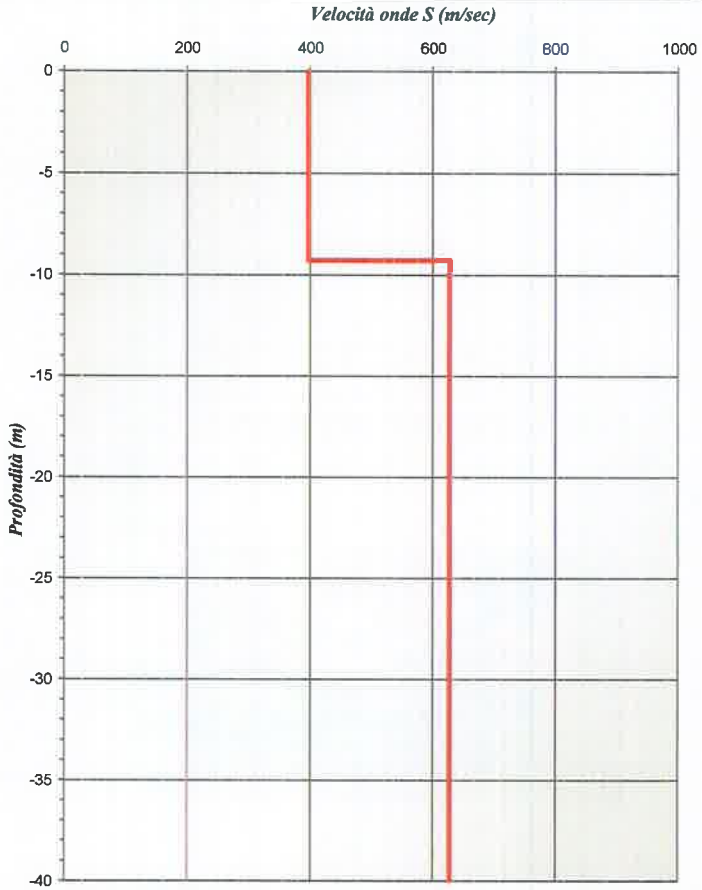
MASW 650



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

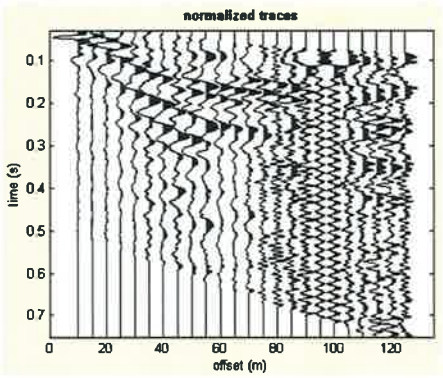


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

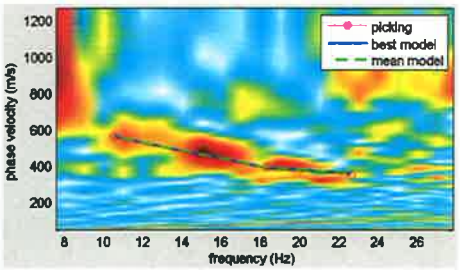
Profondità da P.C (m)		Velocità Onde S (m/s)
0	9.3	398
9.3	40	628

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***534 m/s***).

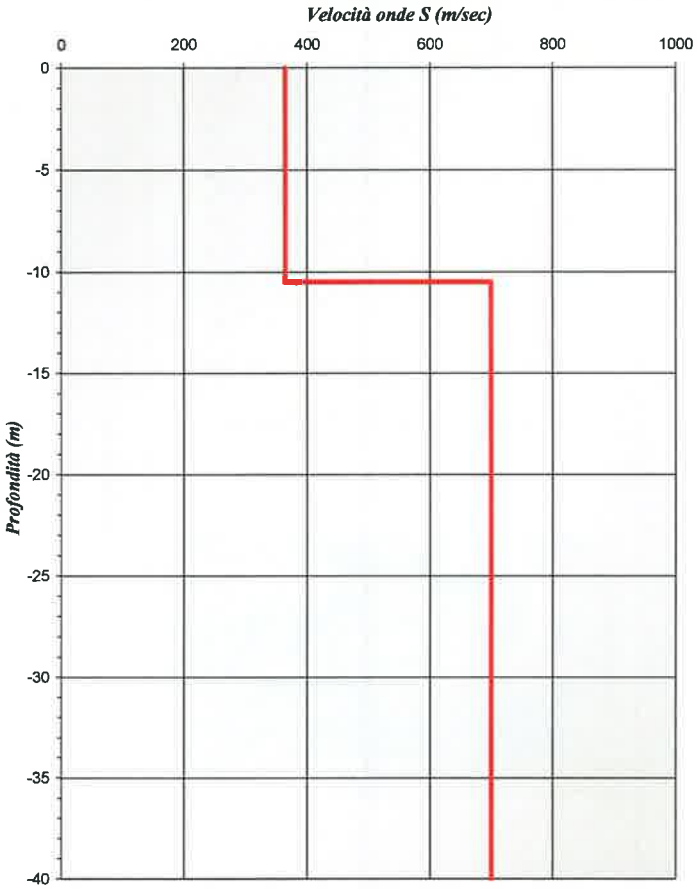
MASW 651



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

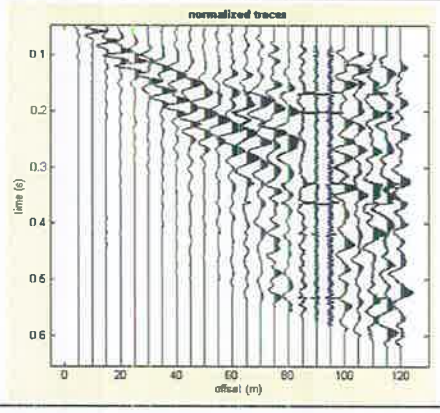


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

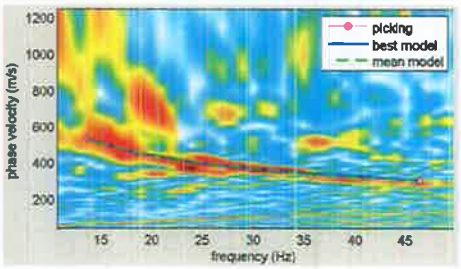
Profondità da P.C (m)		Velocità Onde S (m/s)
0	10.5	365
10.5	40	701

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***530 m/s***).

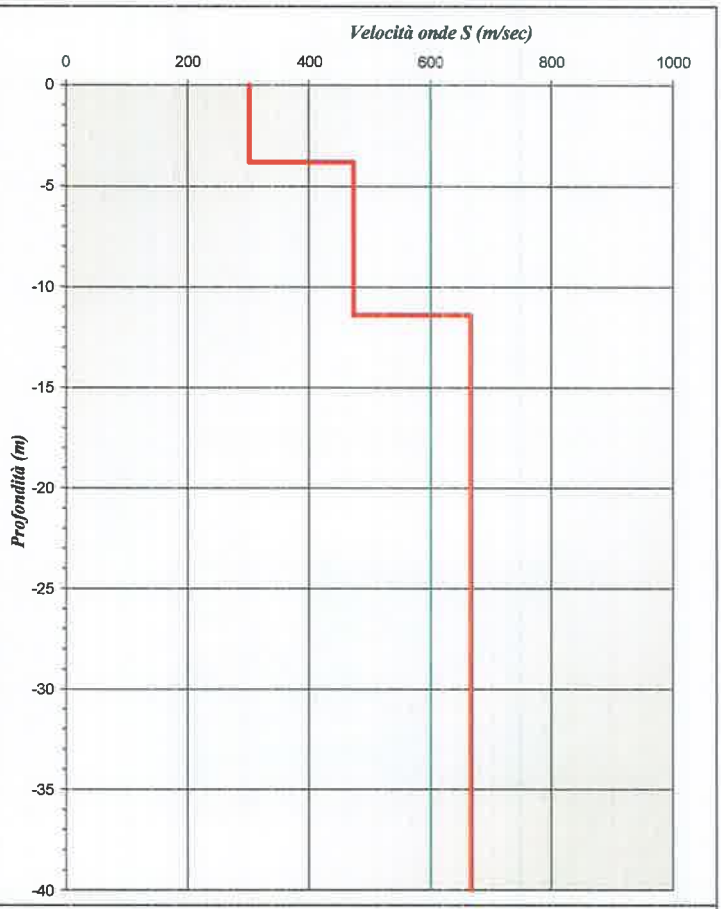
MASW 652a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

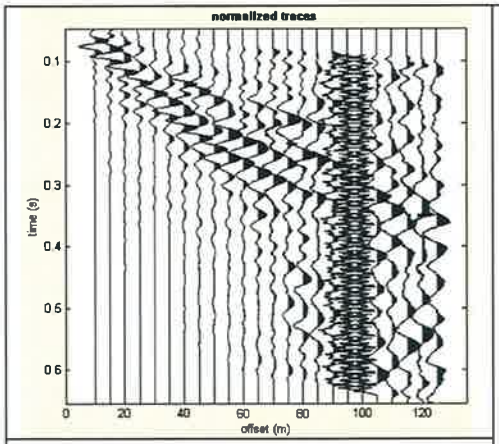


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

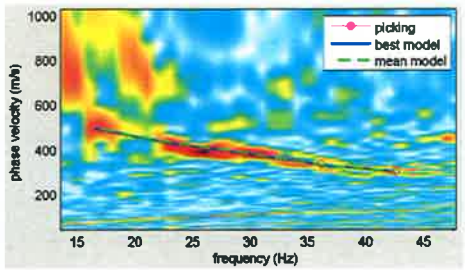
Profondità da P.C (m)		Velocità Onde S (m/s)
0	3.8	303
3.8	11.4	474
11.4	40	667

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***539 m/s***).

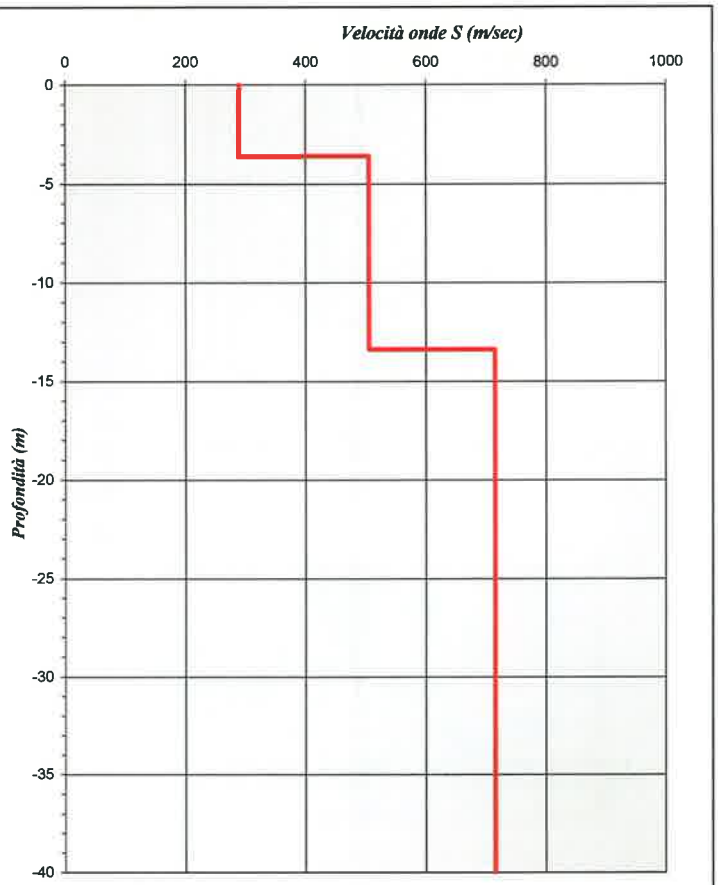
MASW 652b



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

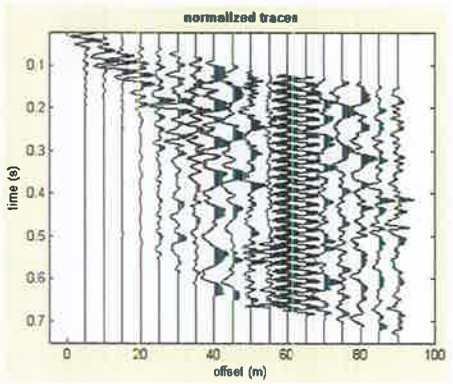


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

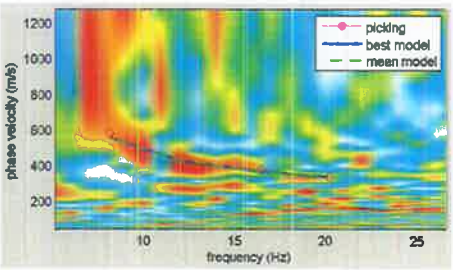
Profondità da P.C (m)		Velocità Onde S (m/s)
0	3.6	290
3.6	13.4	506
13.4	40	715

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***547 m/s***).

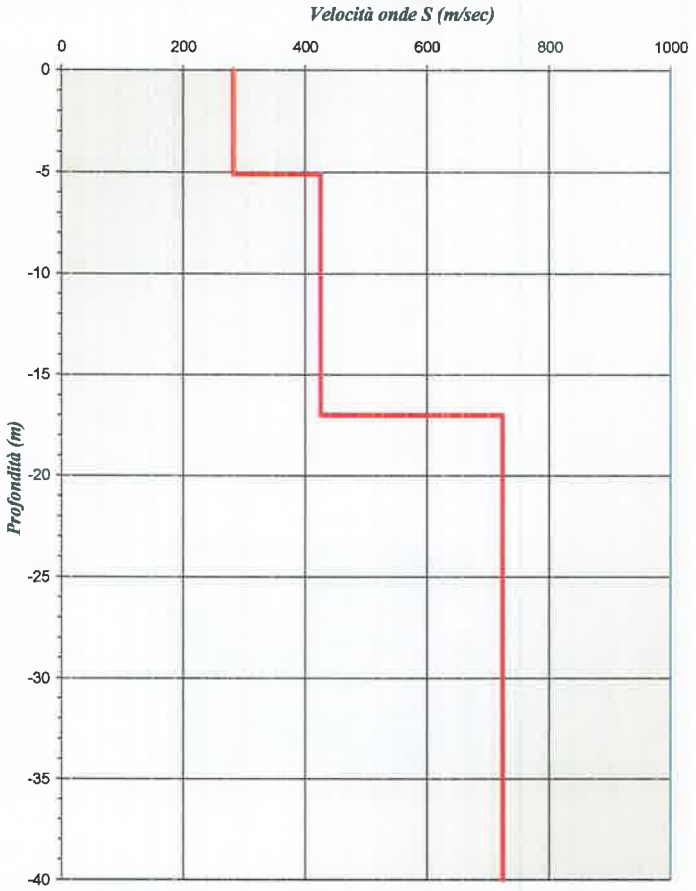
MASW 653a



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

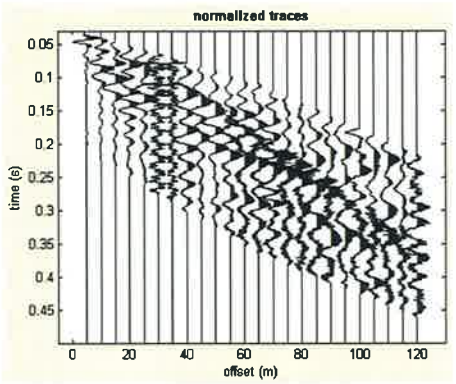


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

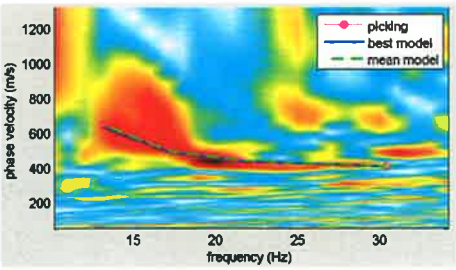
Profondità da P.C (m)		Velocità Onde S (m/s)
0	5.1	283
5.1	17.0	426
17.0	40	724

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***470 m/s***).

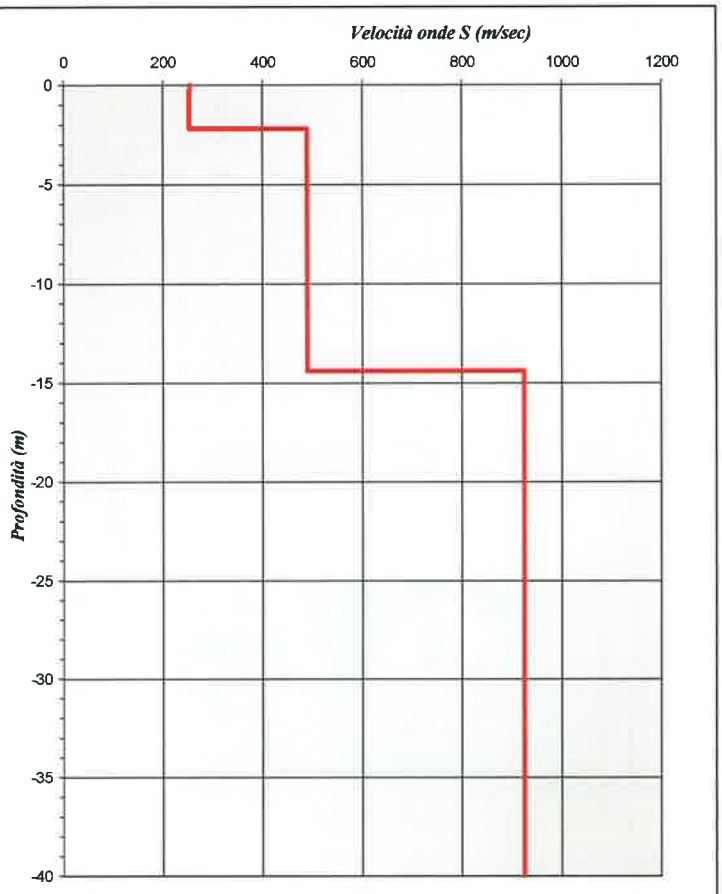
MASW 653ba



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

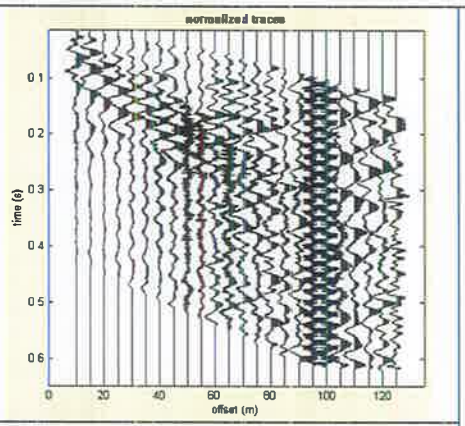


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

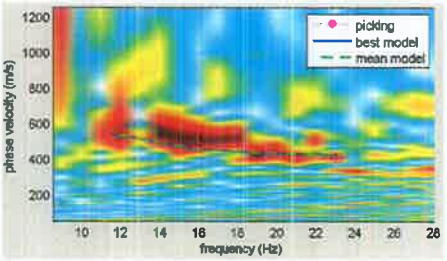
Profondità da P.C (m)		Velocità Onde S (m/s)
0	2.2	255
2.2	14.4	490
14.4	40	925

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***588 m/s***).

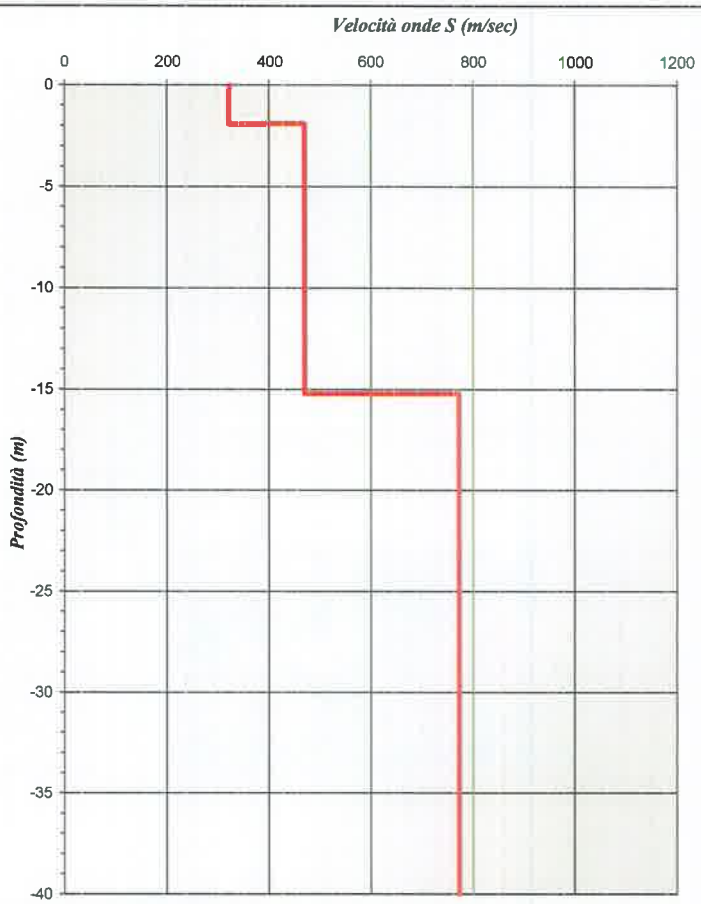
MASW 653bb



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

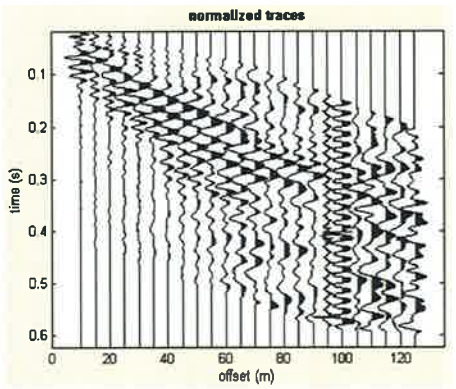


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

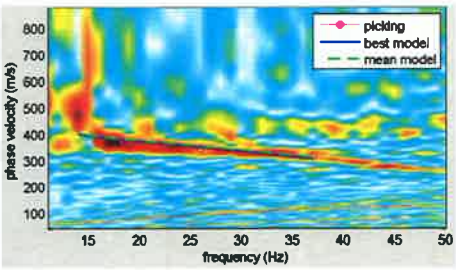
Profondità da P.C (m)		Velocità Onde S (m/s)
0	1.9	324
1.9	15.2	471
15.2	40	773

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***546 m/s***).

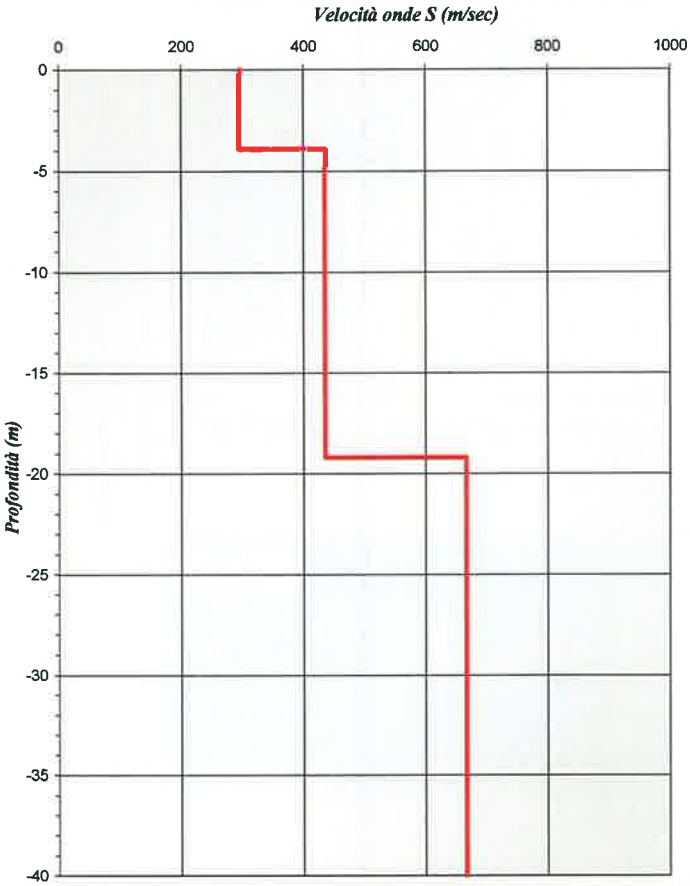
MASW 653ca



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

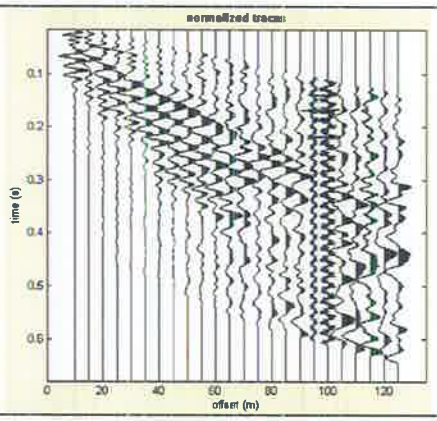


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

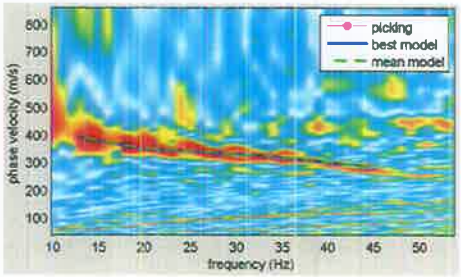
Profondità da P.C (m)		Velocità Onde S (m/s)
0	3.9	297
3.9	19.2	436
19.2	40	667

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***470 m/s***).

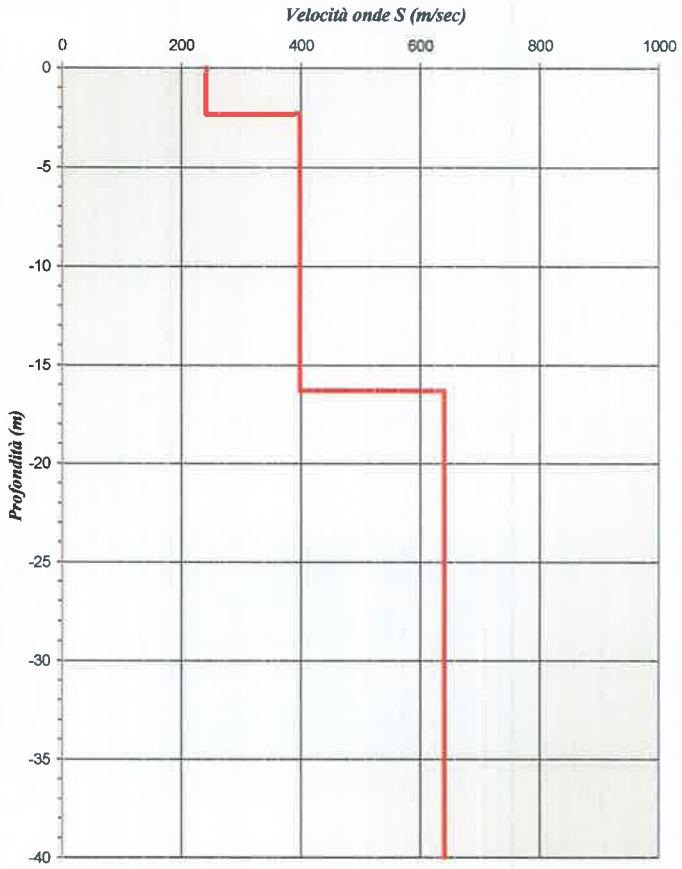
MASW 653cb



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione

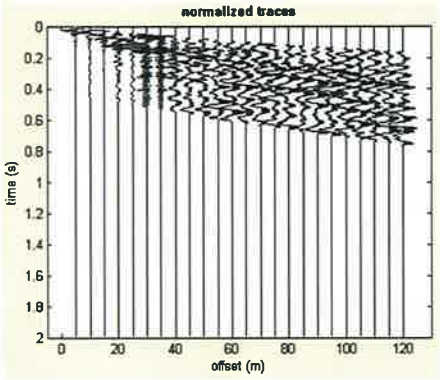


Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

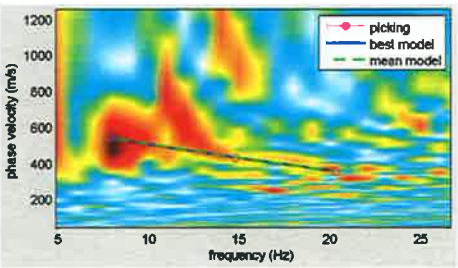
Profondità da P.C (m)		Velocità Onde S (m/s)
0	2.3	243
2.3	16.3	399
16.3	40	641

Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***456 m/s***).

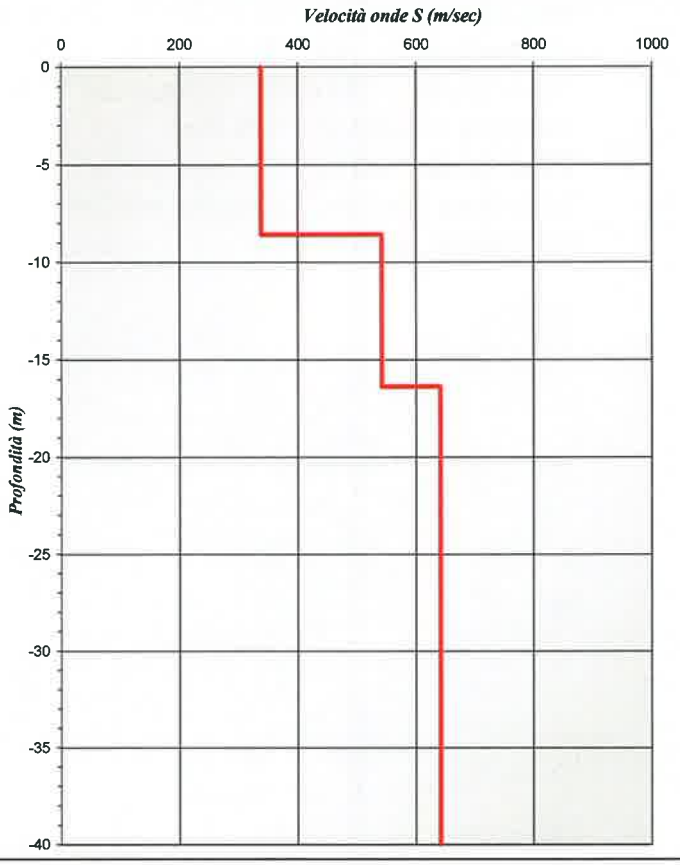
MASW 653d



Dato di campagna sismogramma



Spettro di velocità e curva di dispersione



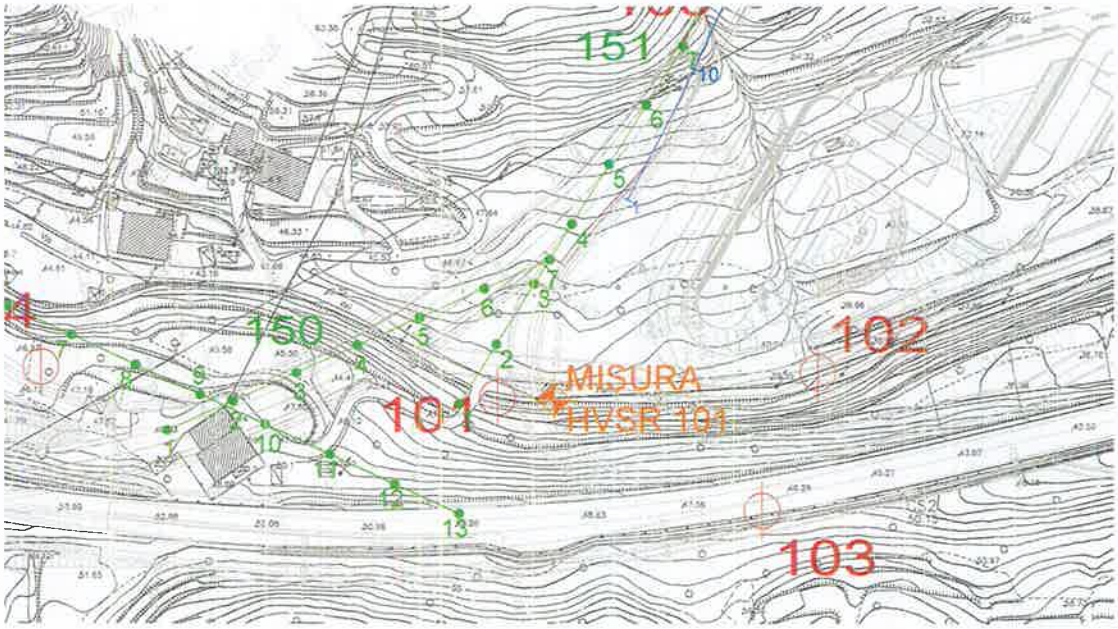
Risultati del profilo verticale Vs identificato (vedi anche Tabella 1)

Profondità da P.C (m)		Velocità Onde S (m/s)
0	8.6	339
8.6	16.4	543
16.4	40	642

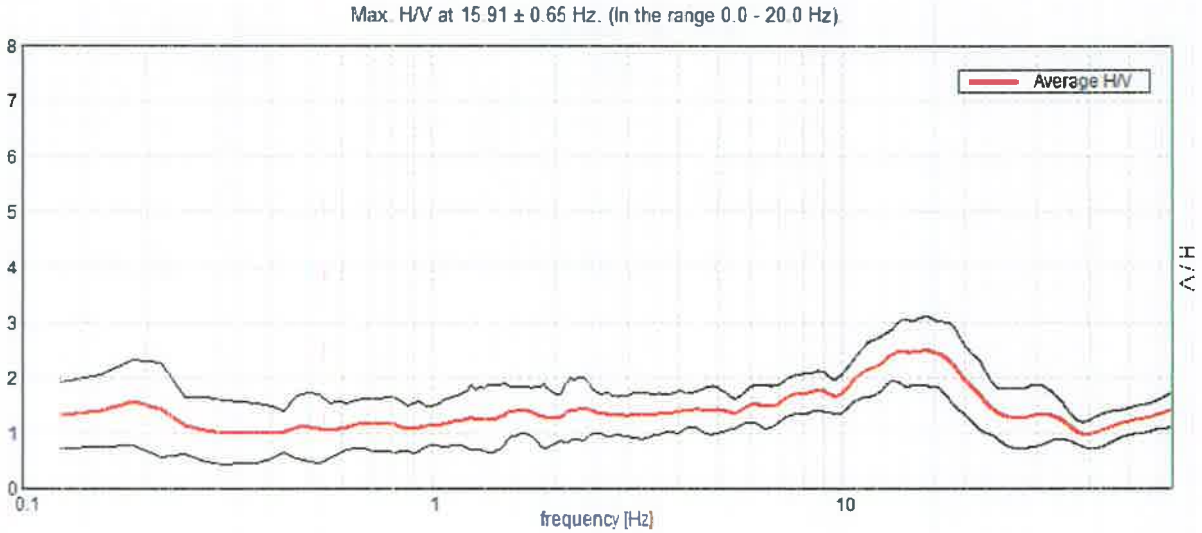
Tab. 1. Modello medio individuato (Vs_{30} dal p.c.: ***493 m/s***).

MISURA HVSR 101

Start recording: 06/12/10 14:26:09 End recording: 06/12/10 14:42:34
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN
Trace length: 0h16'00". Analyzed 85% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

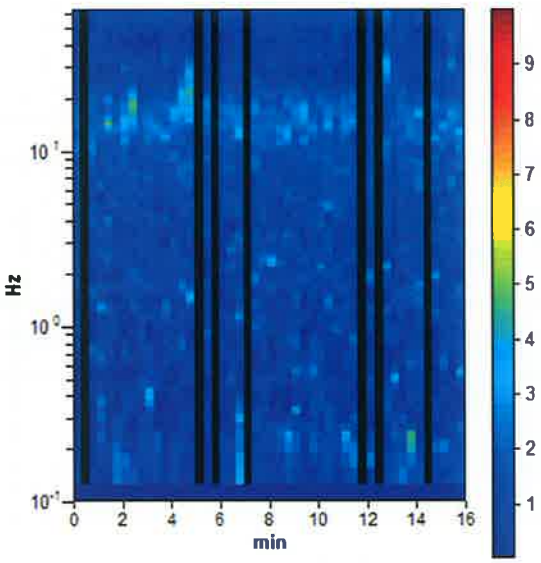


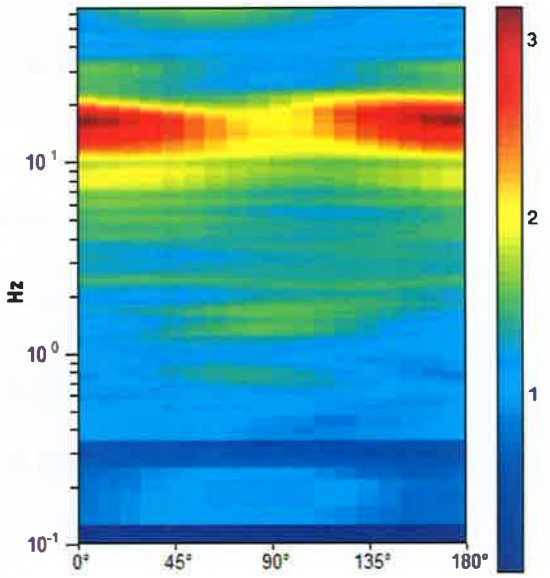
HORIZONTAL TO VERTICAL SPECTRAL RATIO



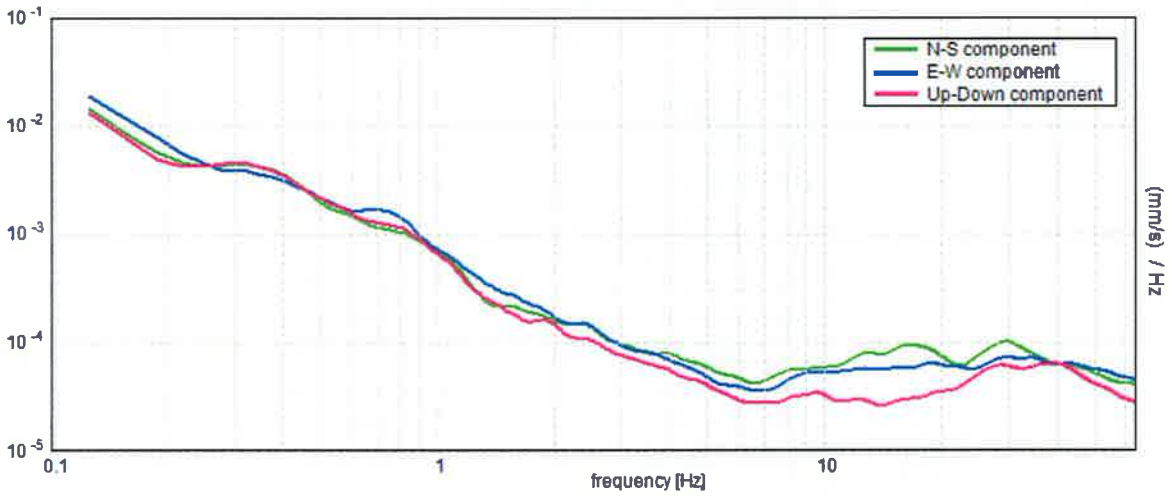
H/V TIME HISTORY

DIRECTIONAL H/V





SINGLE COMPONENT SPECTRA



Max. H/V at 15.91 ± 0.65 Hz (in the range 0.0 - 20.0 Hz).

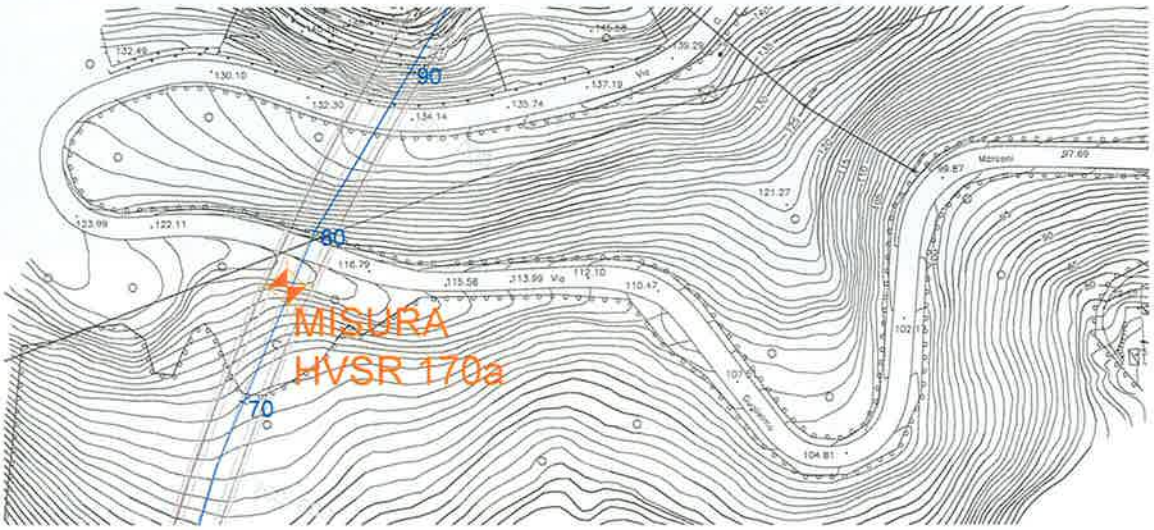
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	15.91 > 0.50	**OK**	
$n_c(f_0) > 200$	13043.1 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 764 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0] \mid A_{H/V}(f^-) < A_0 / 2$			**NO**
Exists f^+ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0 / 2$	34.25 Hz	**OK**	
$A_0 > 2$	2.49 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.01984| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.31556 < 0.79531	**OK**	
$\sigma_A(f_0) < \theta(f_0)$	0.3051 < 1.58	**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
$\sigma_{logH/V}(f)$	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 $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

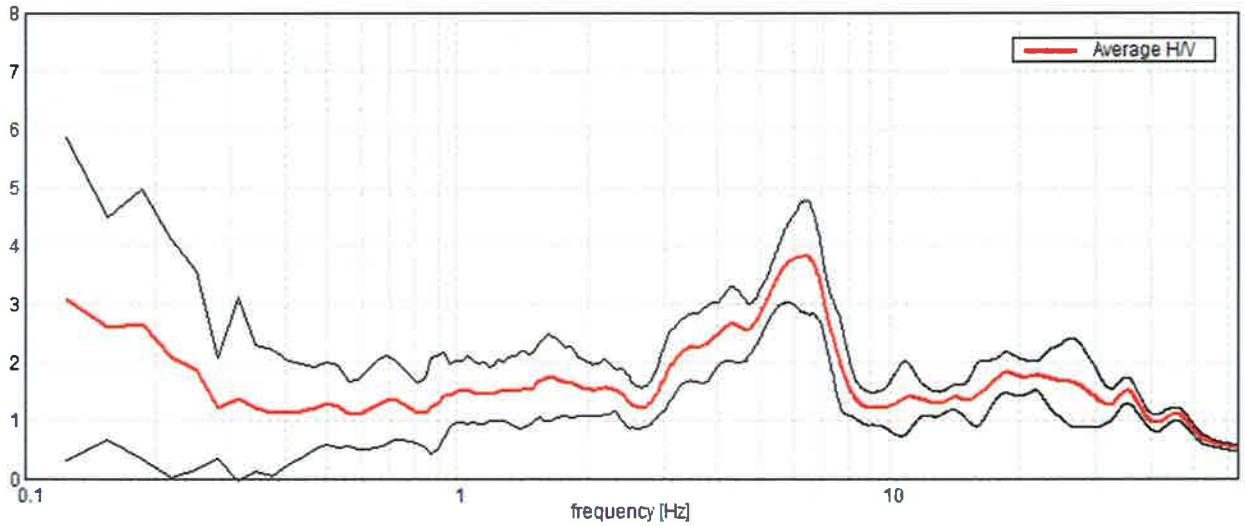
MISURA HVSR 170A

Start recording: 06/12/10 14:54:27 End recording: 06/12/10 15:10:41
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN;
Trace length: 0h16'00". Analyzed 65% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

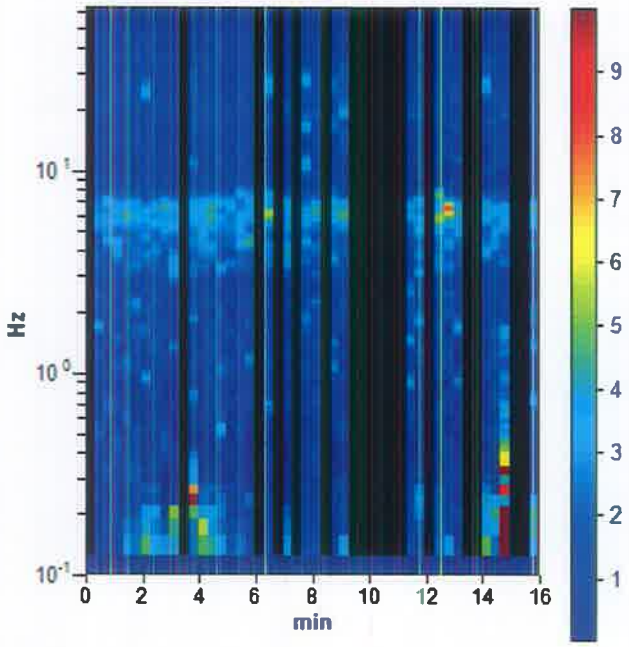


HORIZONTAL TO VERTICAL SPECTRAL RATIO

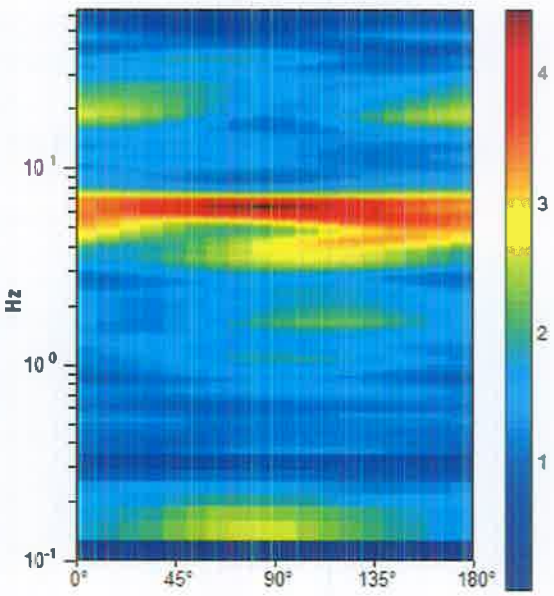
Max. H/V at 6.38 ± 0.36 Hz. (In the range 0.0 - 20.0 Hz).



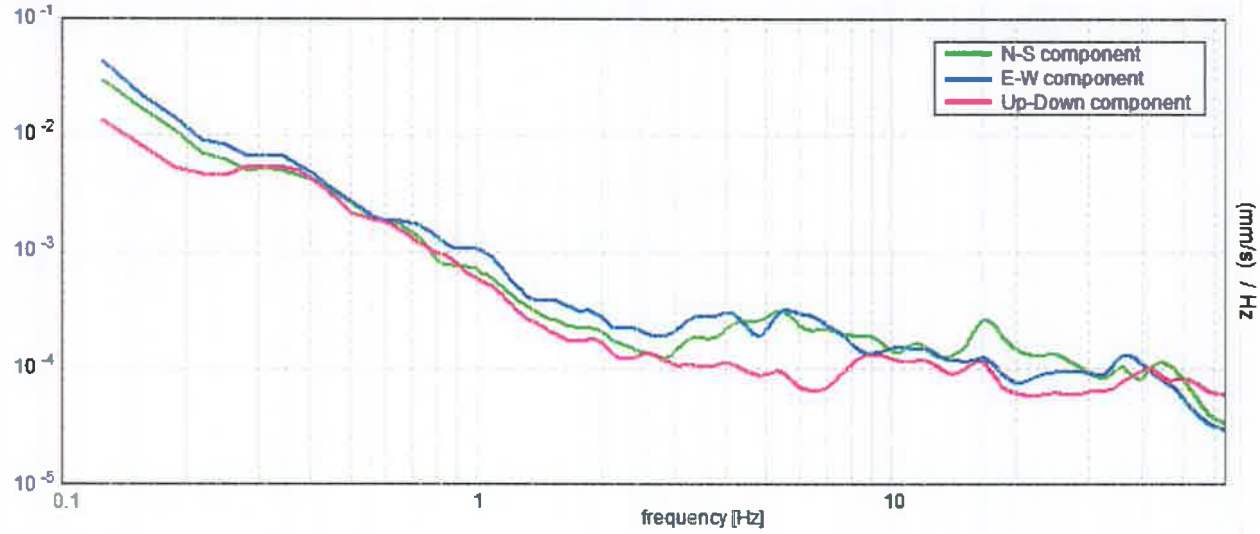
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 6.38 ± 0.36 Hz (in the range 0.0 - 20.0 Hz).

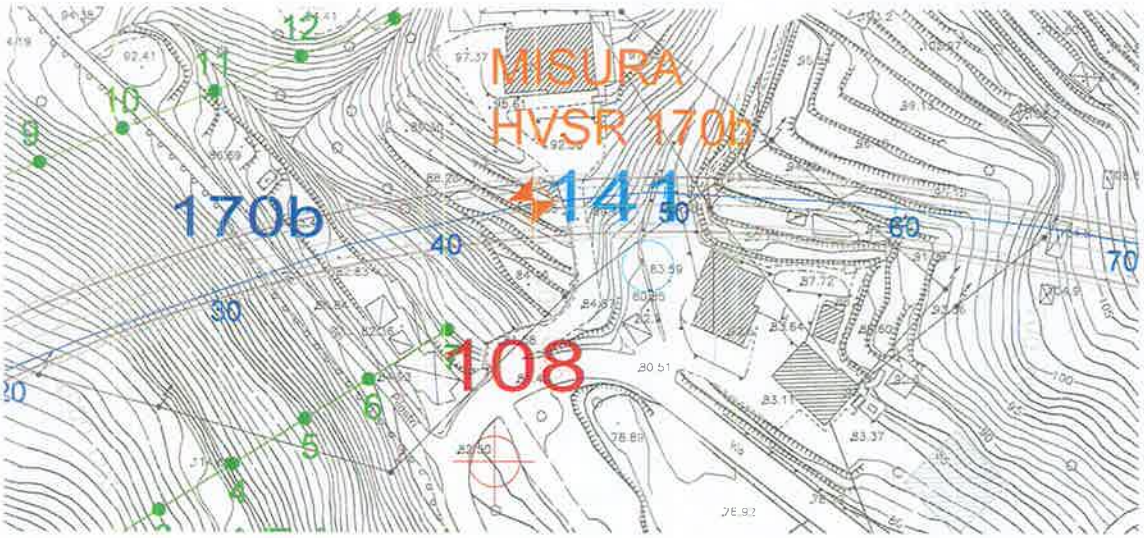
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	6.38 > 0.50	**OK**	
$n_c(f_0) > 200$	3952.5 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 307 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	3.063 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	7.781 Hz	**OK**	
$A_0 > 2$	3.82 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.02693| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.17169 < 0.31875	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.4639 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

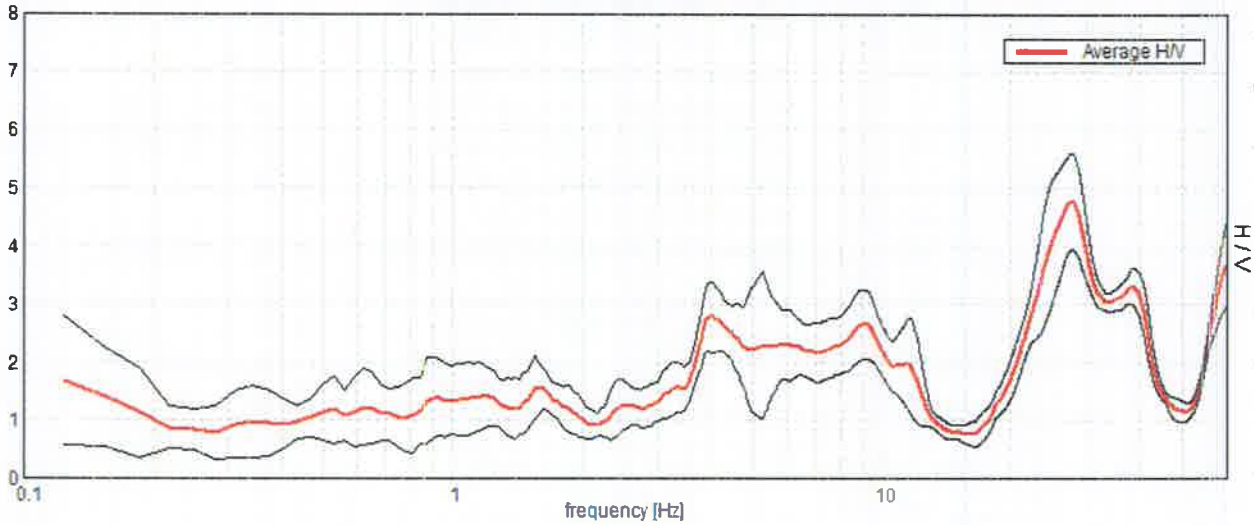
MISURA HVSR 170B

Instrument: TEP-0026/01-09
Start recording: 06/12/10 15:21:02 End recording: 06/12/10 15:38:16
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 40% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

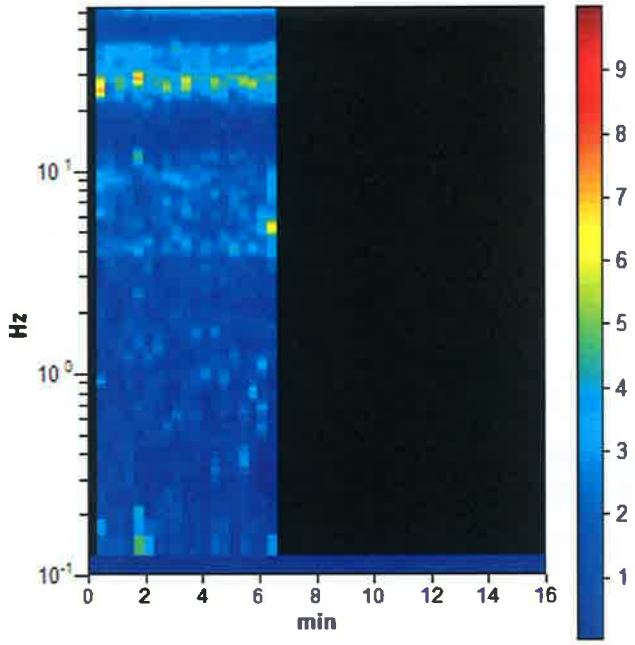


HORIZONTAL TO VERTICAL SPECTRAL RATIO

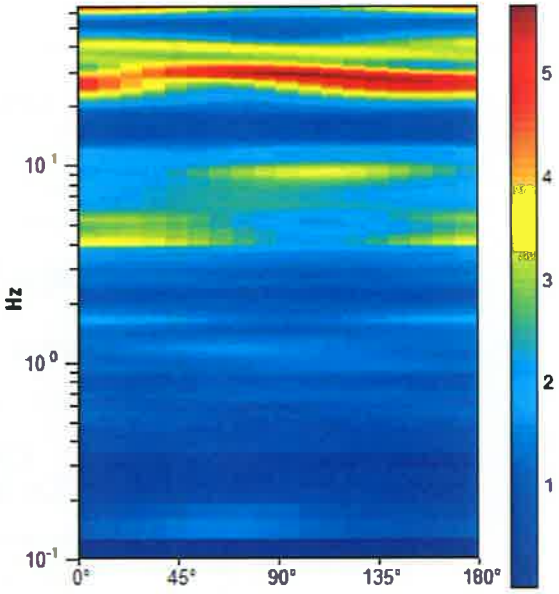
Max. H/V at 9.03 ± 0.06 Hz. (In the range 8.0 - 20.0 Hz)



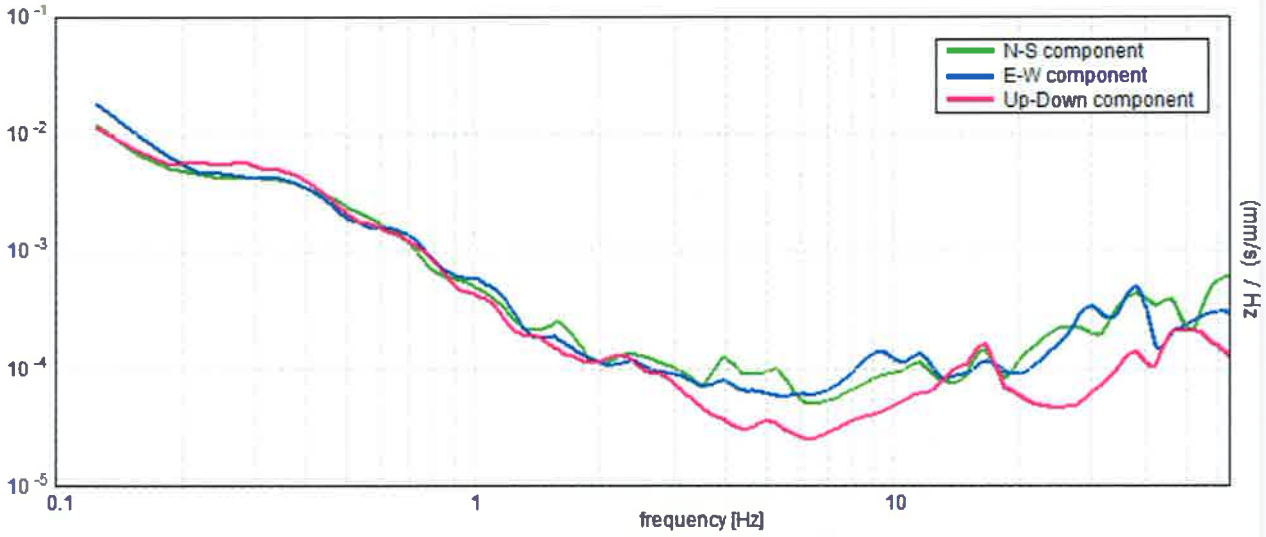
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 9.03 ± 0.06 Hz (in the range 8.0 - 20.0 Hz).

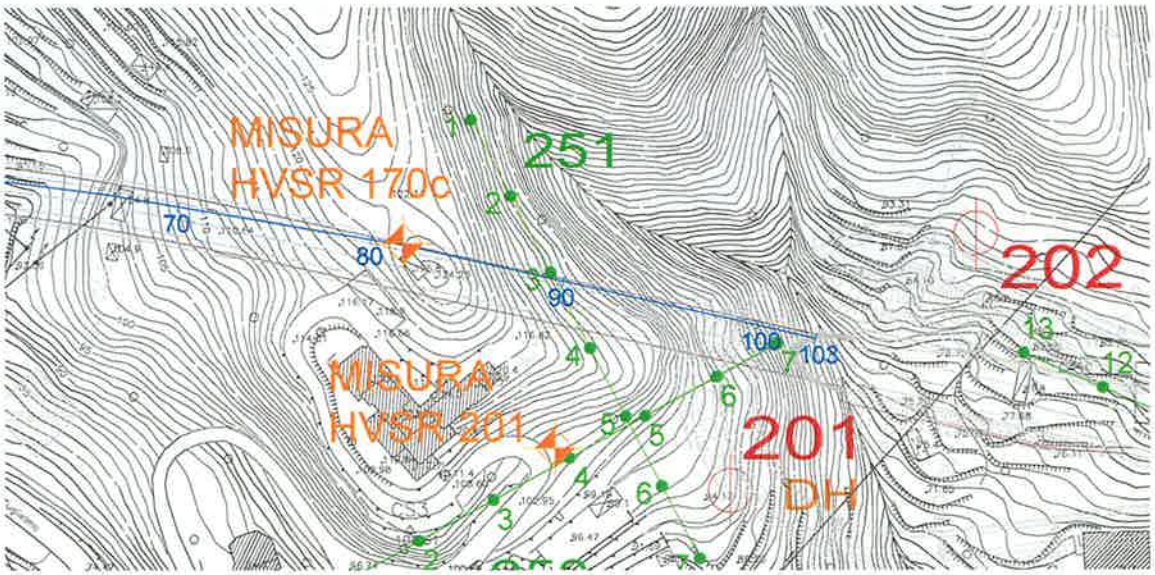
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	9.03 > 0.50	**OK**	
$n_c(f_0) > 200$	3431.9 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz**	Exceeded 0 out of 434 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	2.969 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	12.625 Hz	**OK**	
$A_0 > 2$	2.65 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.0031| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.02796 < 0.45156	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.277 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

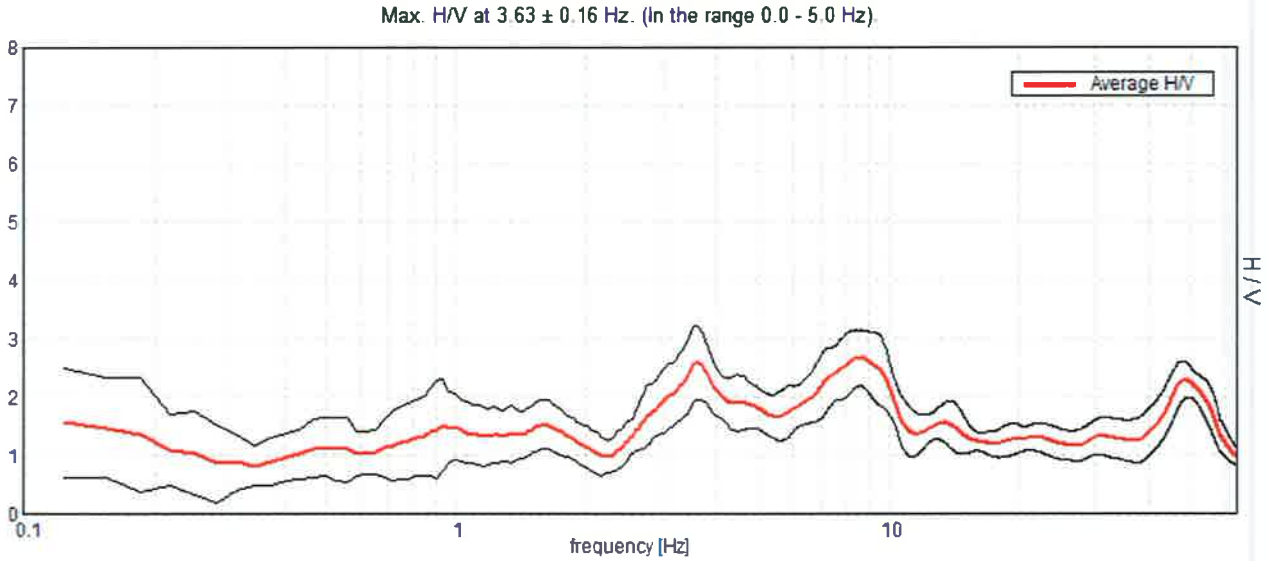
Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

MISURA HVSR 170C

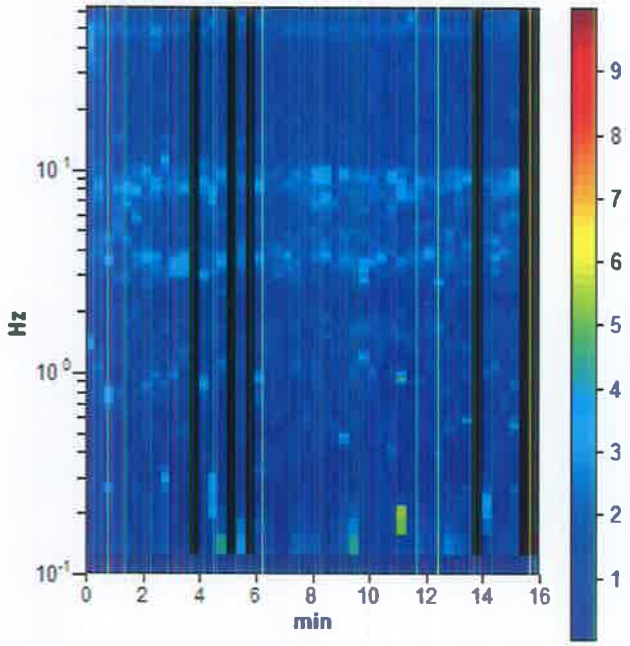
Start recording: 06/12/10 15:57:57 End recording: 06/12/10 16:14:22
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN
Trace length: 0h16'00". Analyzed 88% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%



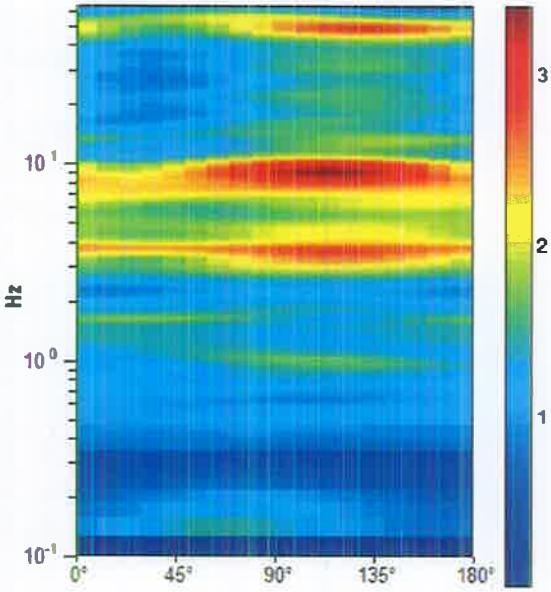
HORIZONTAL TO VERTICAL SPECTRAL RATIO



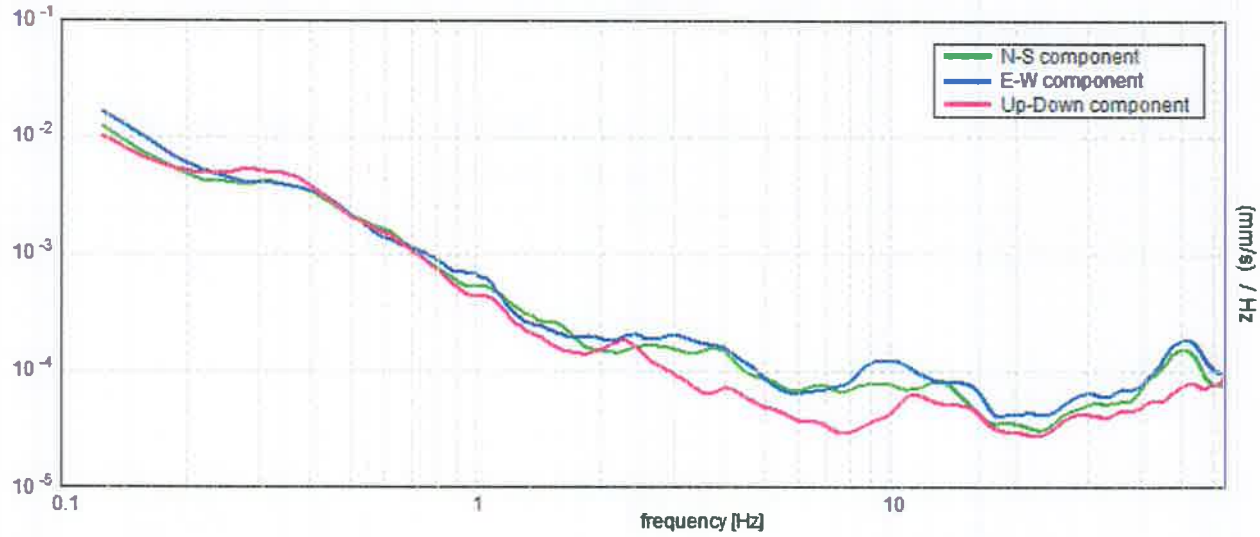
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 3.63 ± 0.16 Hz (in the range 0.0 - 5.0 Hz).

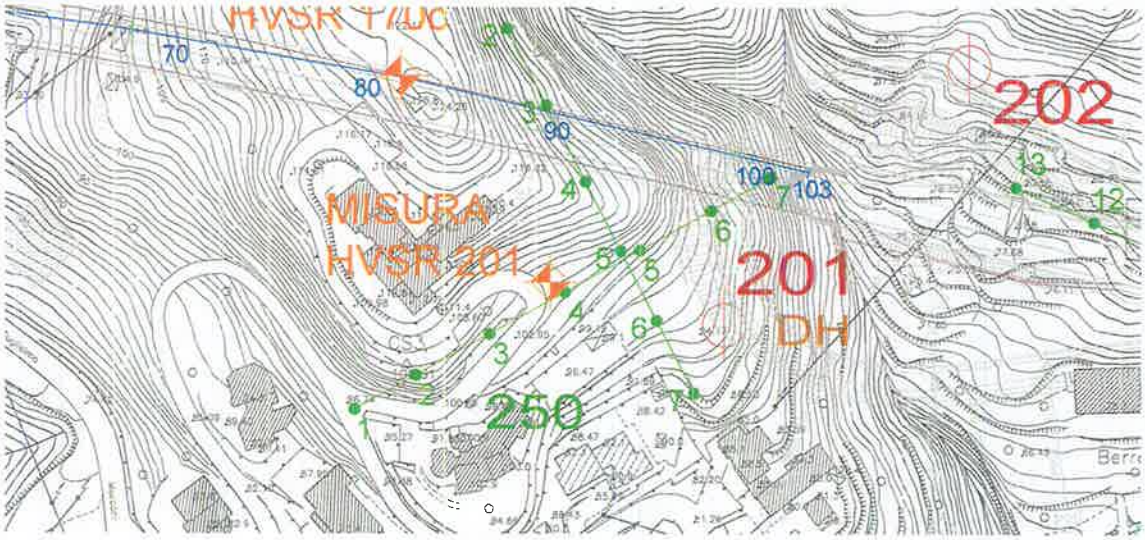
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	3.63 > 0.50	**OK**	
$n_c(f_0) > 200$	3045.0 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 175 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	2.5 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$			**NO**
$A_0 > 2$	2.58 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.02199| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.07972 < 0.18125	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.306 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

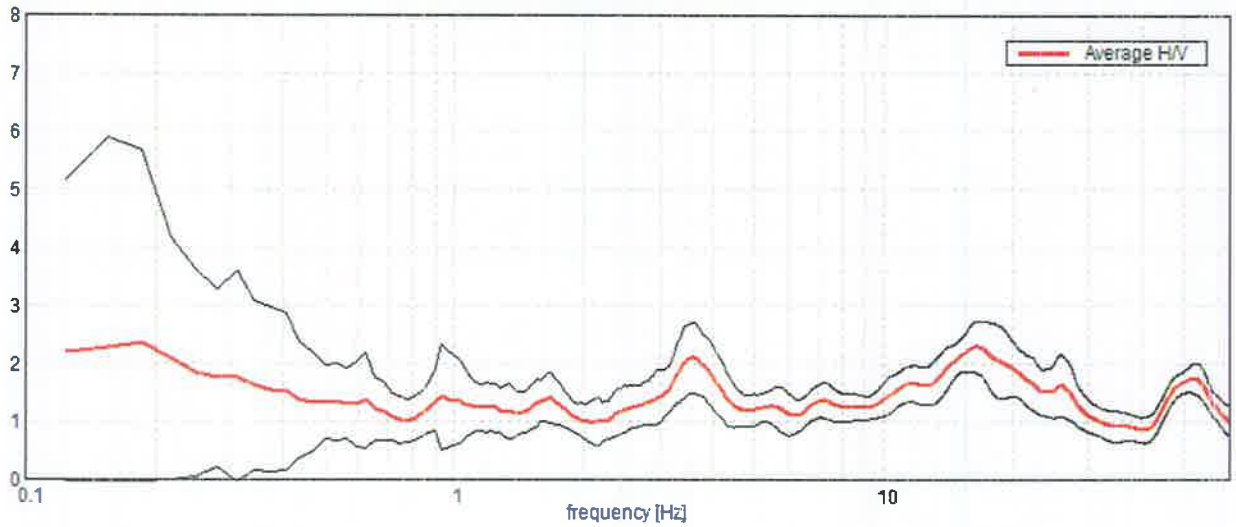
MISURA HVSR 201

Start recording: 05/01/11 12:25:00 End recording: 05/01/11 12:41:26
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN
Trace length: 0h16'00". Analyzed 88% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

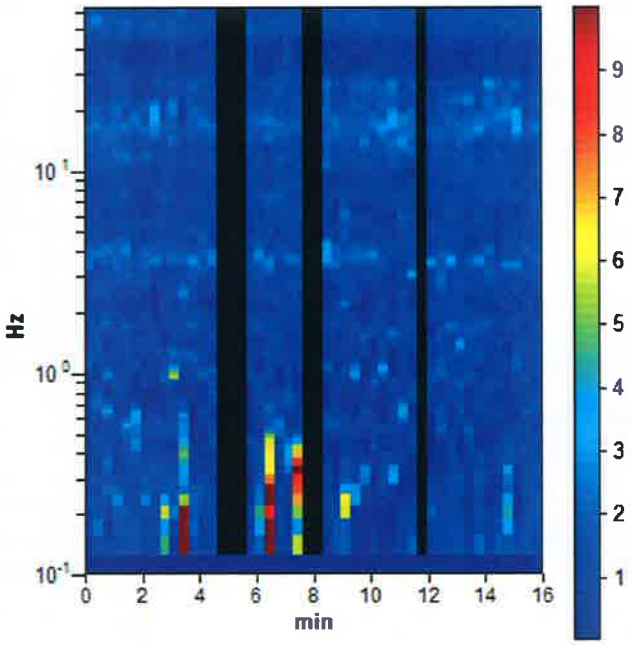


HORIZONTAL TO VERTICAL SPECTRAL RATIO

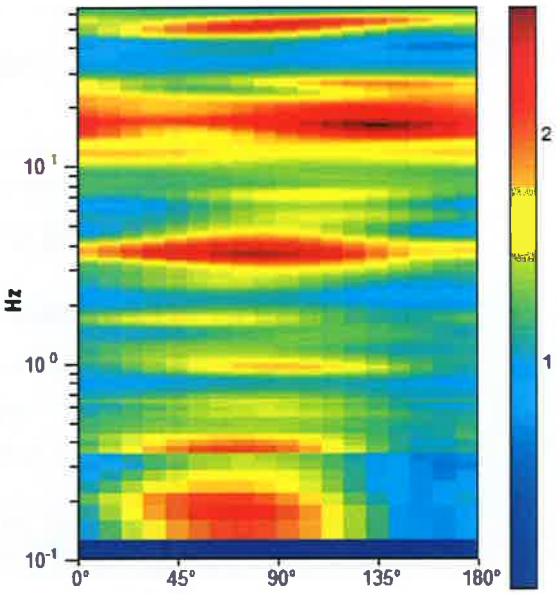
Max. H/V at 16.38 ± 0.03 Hz. (In the range 10.0 - 20.0 Hz)



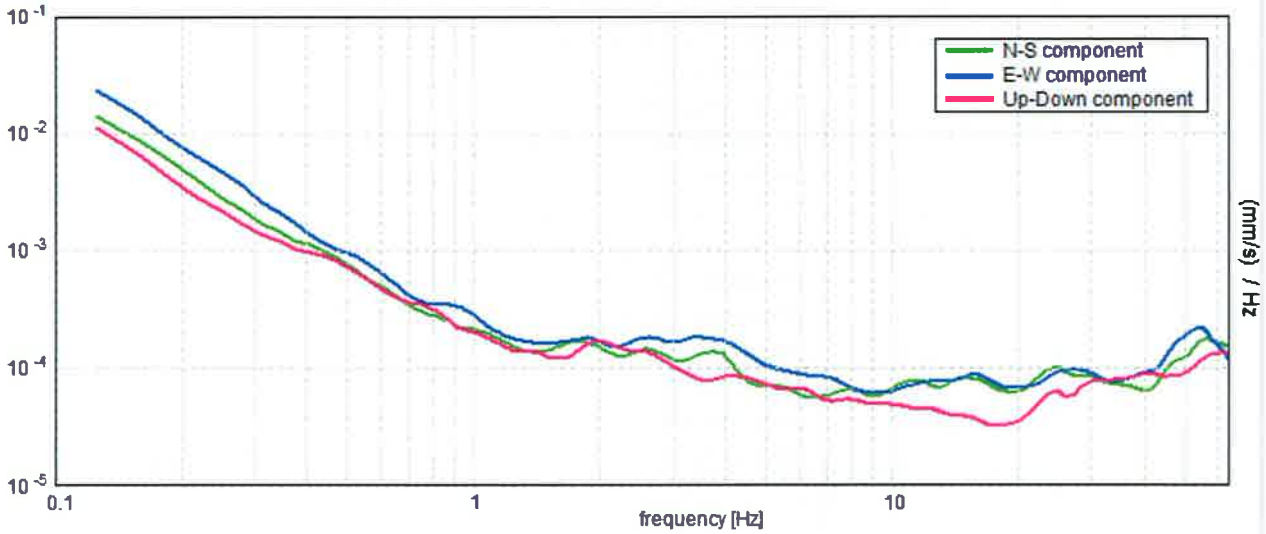
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 16.38 ± 0.03 Hz (in the range 10.0 - 20.0 Hz).

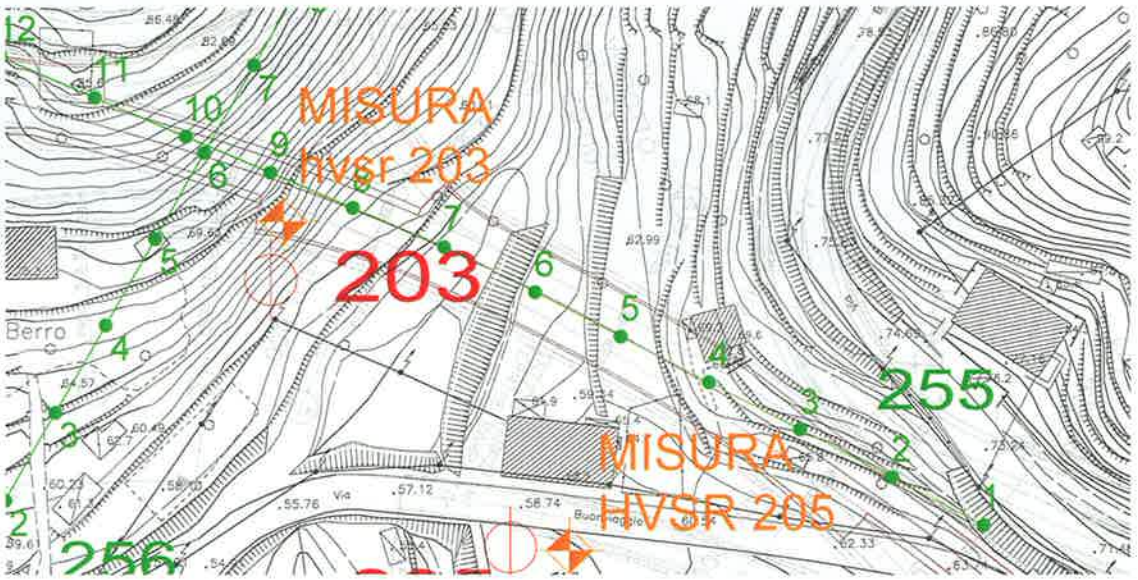
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	16.38 > 0.50	**OK**	
$n_c(f_0) > 200$	13755.0 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 787 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	6.438 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	29.594 Hz	**OK**	
$A_0 > 2$	2.30 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.00094| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.01534 < 0.81875	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.2135 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

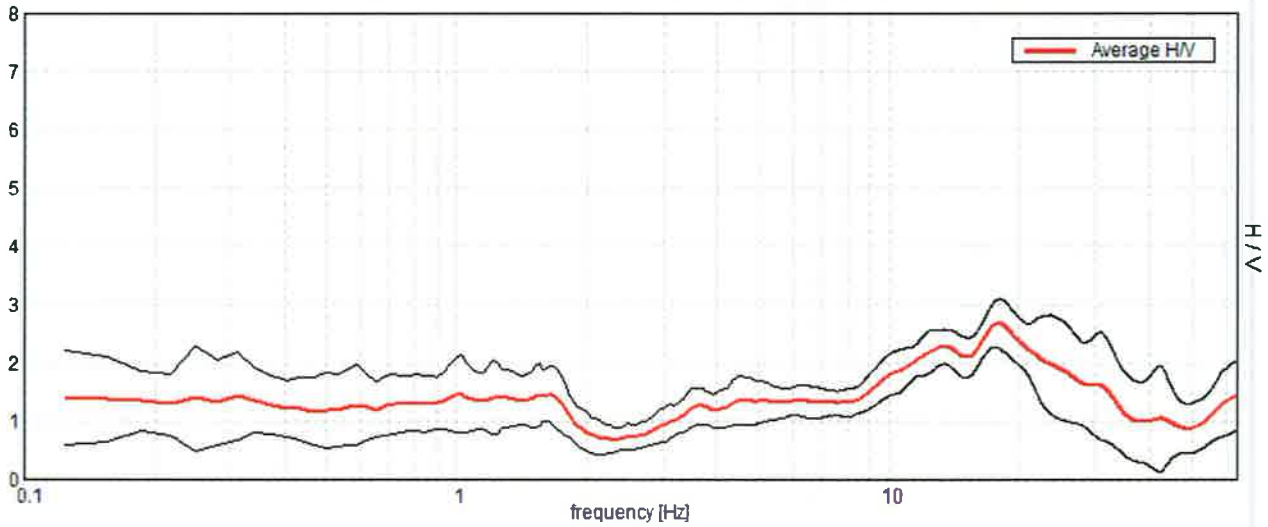
MISURA HVSR 203

Start recording: 05/01/11 15:17:16 End recording: 05/01/11 15:33:53
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 94% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

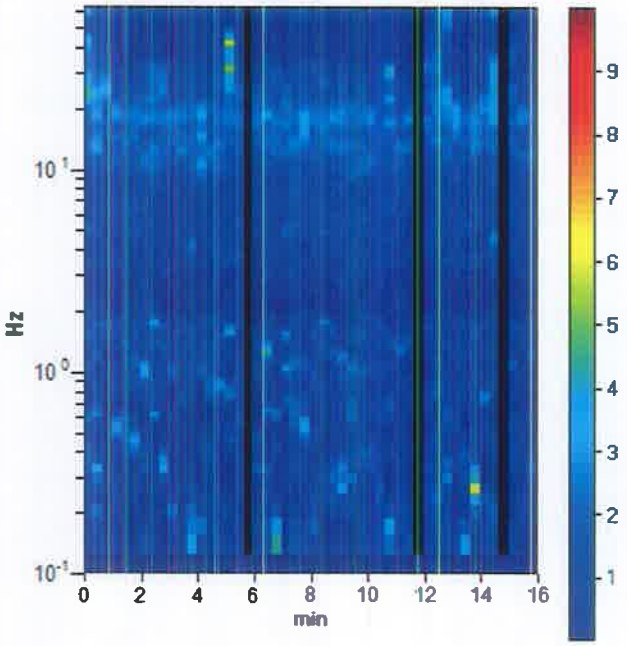


HORIZONTAL TO VERTICAL SPECTRAL RATIO

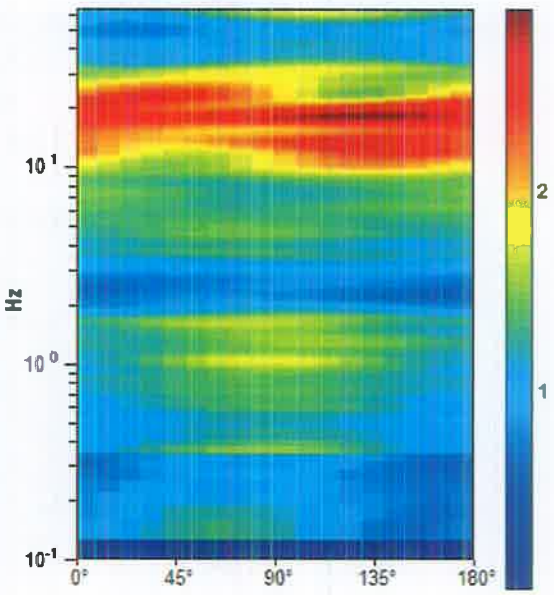
Max. H/V at 17.81 ± 0.82 Hz. (In the range 0.0 - 20.0 Hz).



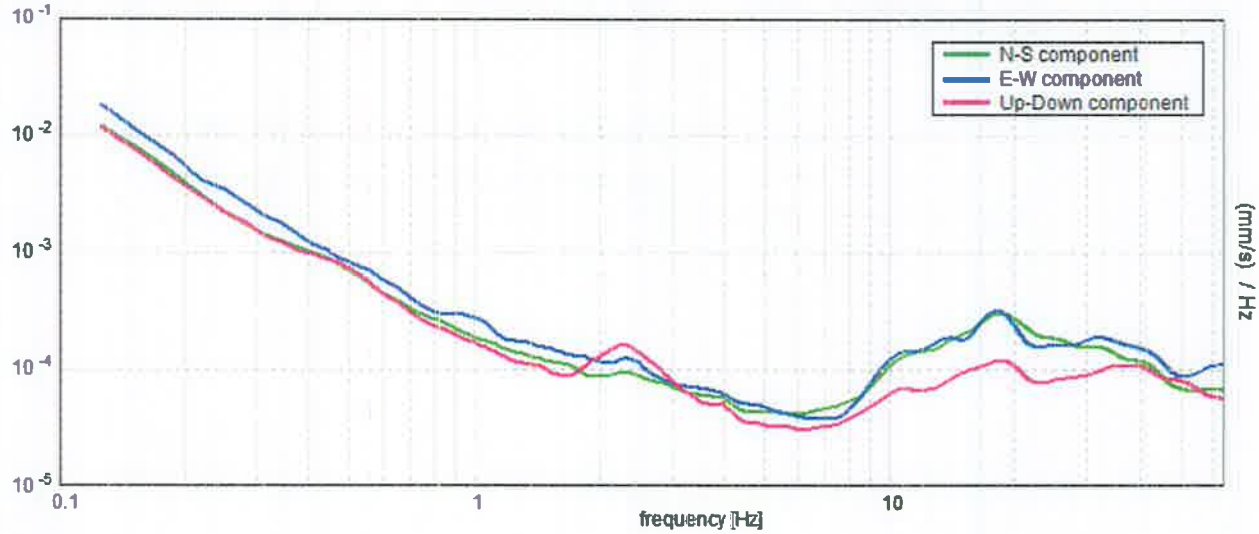
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 17.81 ± 0.82 Hz (in the range 0.0 - 20.0 Hz).

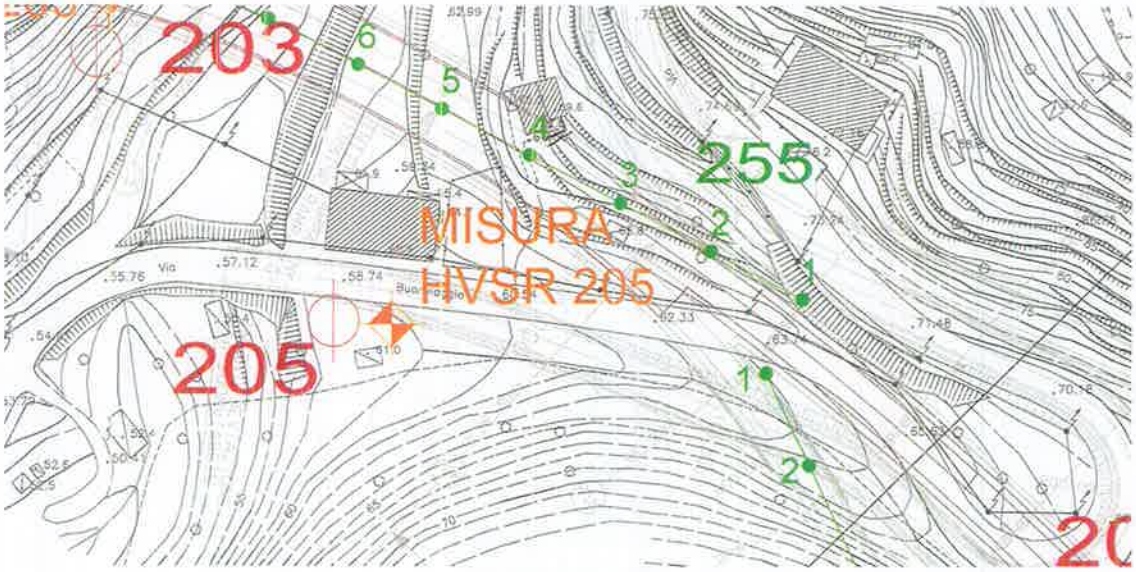
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	17.81 > 0.50	**OK**	
$n_c(f_0) > 200$	16031.3 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 856 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	8.219 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	33.469 Hz	**OK**	
$A_0 > 2$	2.68 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.02256| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.40181 < 0.89063	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.2003 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

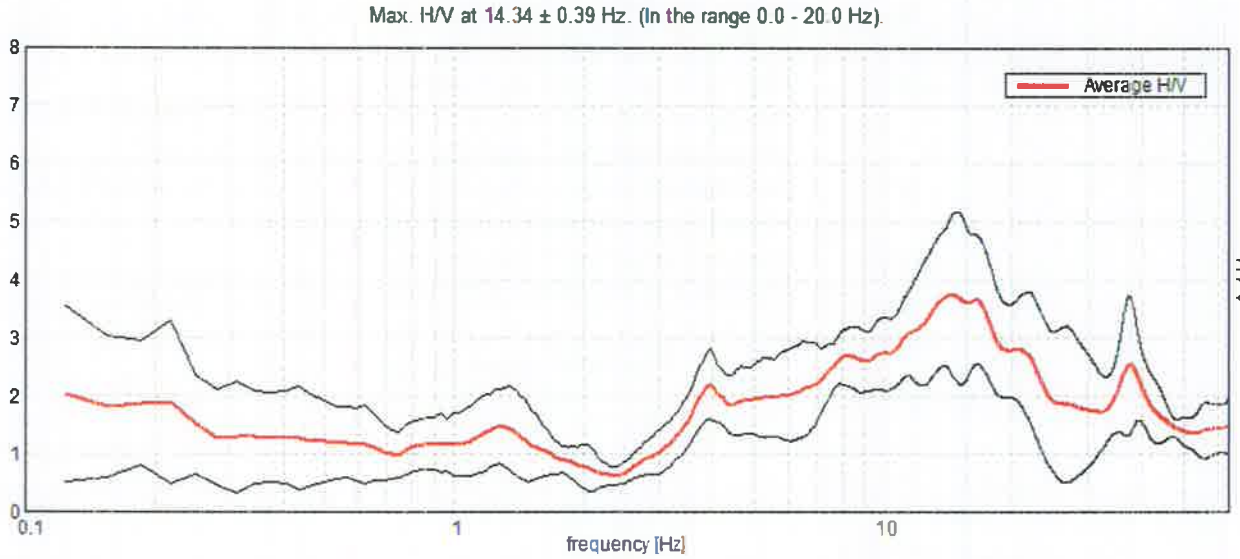
Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

MISURA HVSR 205

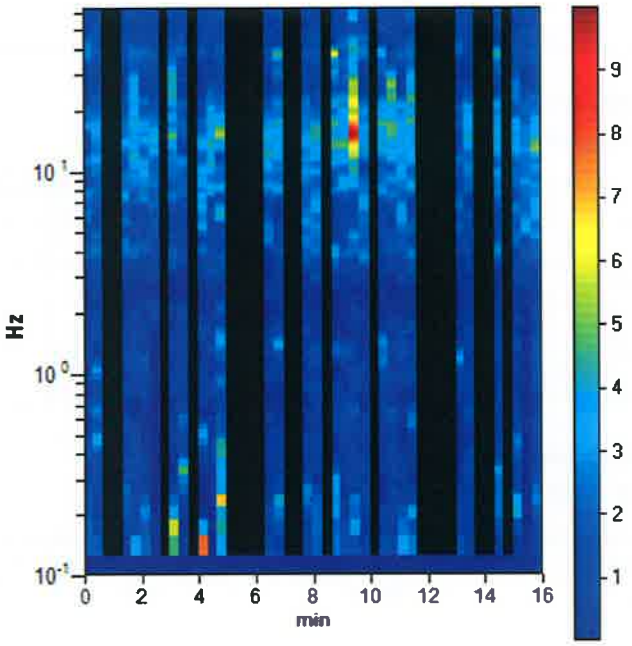
Start recording: 05/01/11 11:40:34 End recording: 05/01/11 11:56:48
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 60% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%



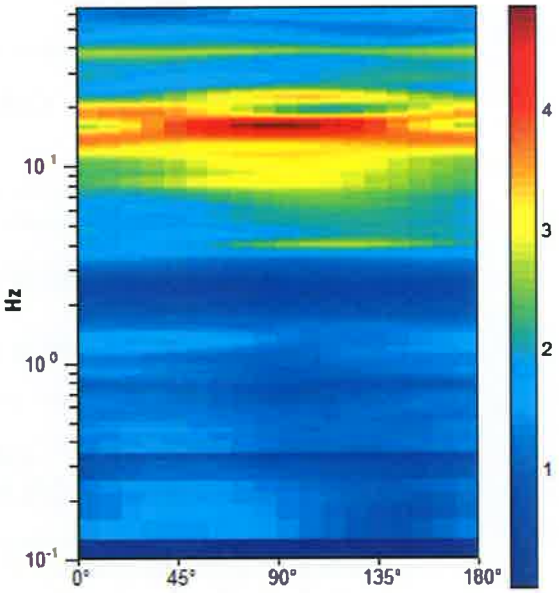
HORIZONTAL TO VERTICAL SPECTRAL RATIO



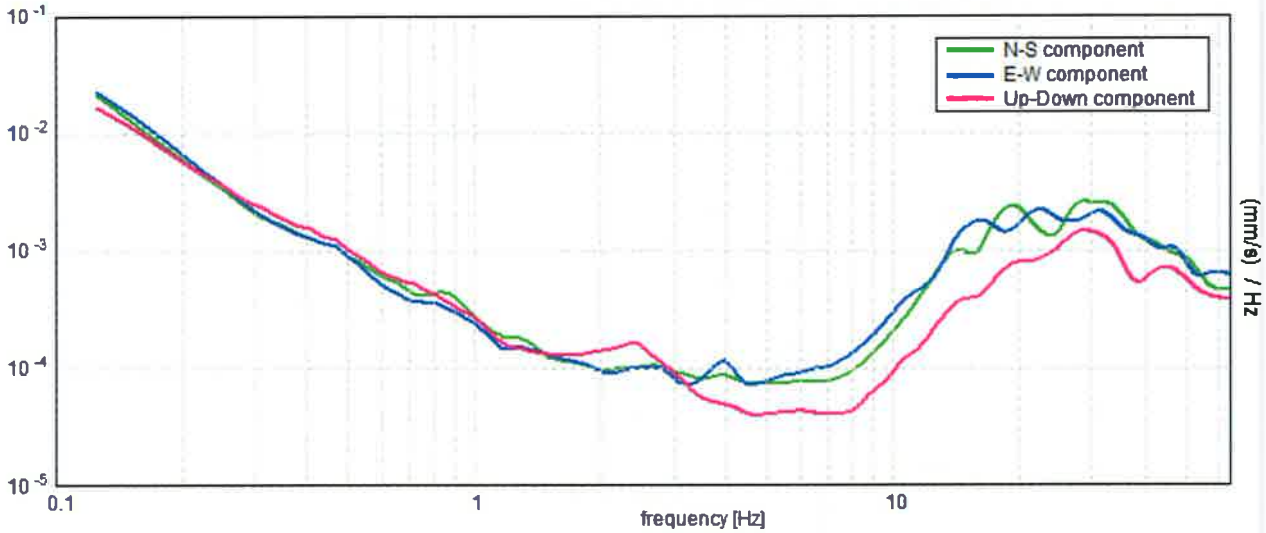
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 14.34 ± 0.39 Hz (in the range 0.0 - 20.0 Hz).

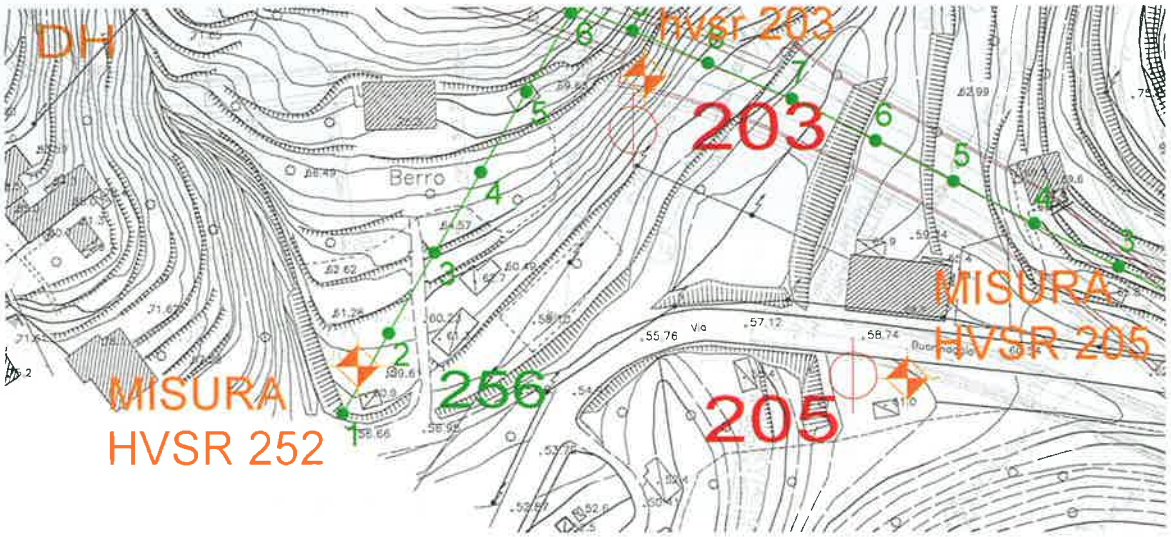
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	14.34 > 0.50	**OK**	
$n_c(f_0) > 200$	8319.4 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 690 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	4.5 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	25.469 Hz	**OK**	
$A_0 > 2$	3.74 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.01312| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.18818 < 0.71719	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.6317 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

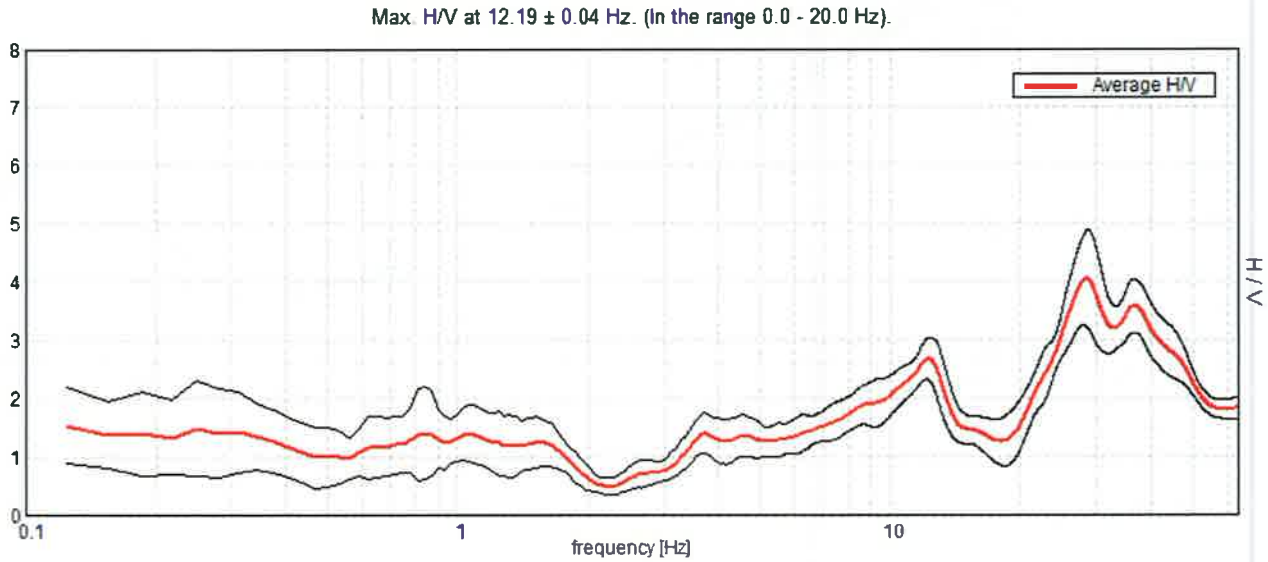
Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

MISURA HVSR 252

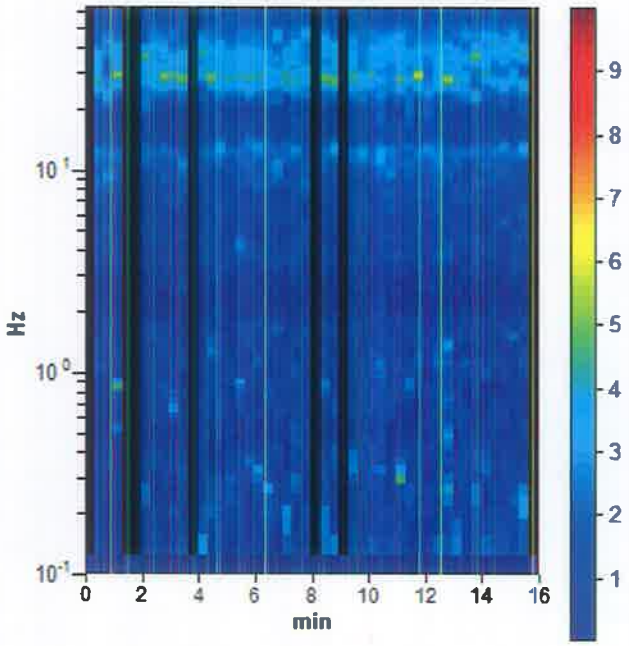
Start recording: 11/12/10 14:29:22 End recording: 11/12/10 14:45:35
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 85% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%



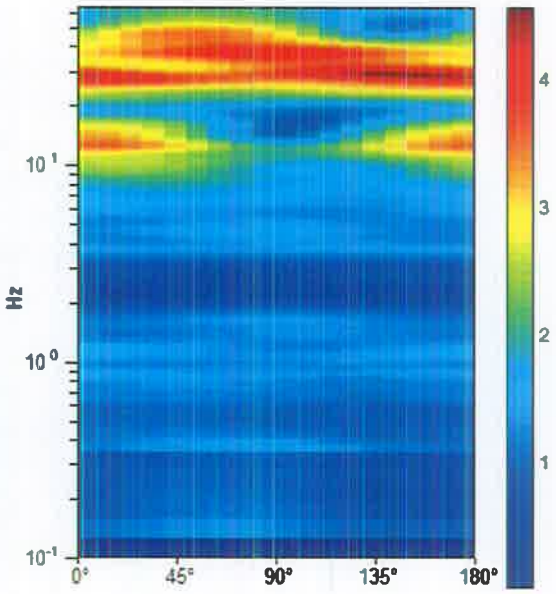
HORIZONTAL TO VERTICAL SPECTRAL RATIO



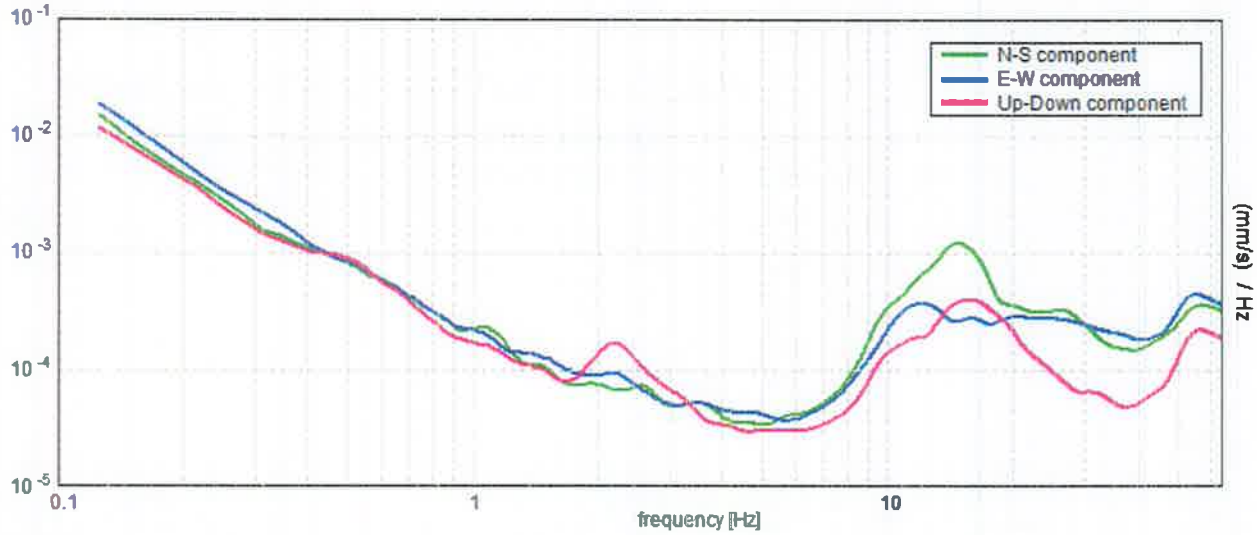
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 12.19 ± 0.04 Hz (in the range 0.0 - 20.0 Hz).

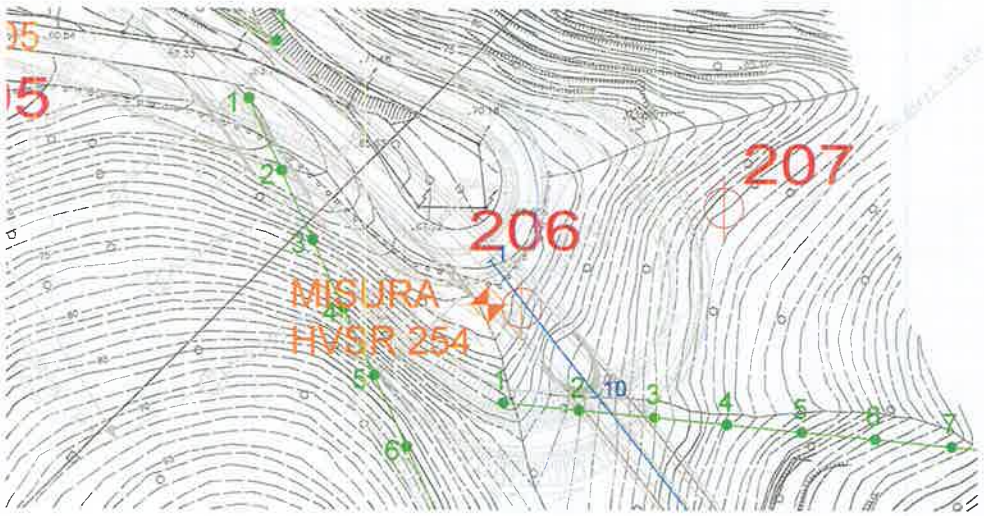
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	12.19 > 0.50	**OK**	
$n_c(f_0) > 200$	9993.8 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 586 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	5.844 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	16.938 Hz	**OK**	
$A_0 > 2$	2.68 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.0016| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.01948 < 0.60938	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.1736 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

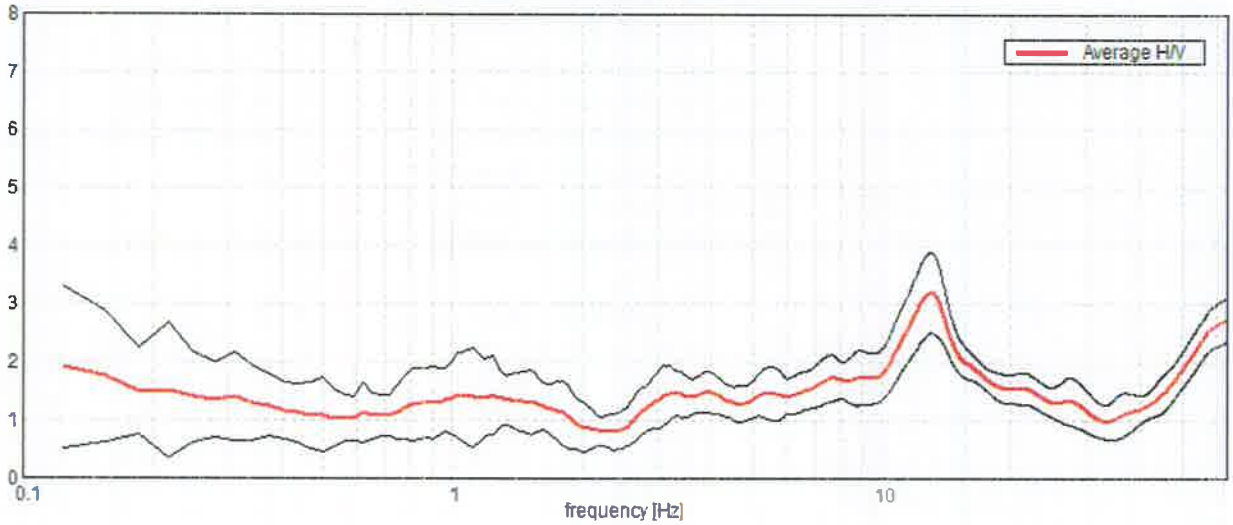
MISURA HVSR 254

Start recording: 11/12/10 13:26:23 End recording: 11/12/10 13:42:37
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 77% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

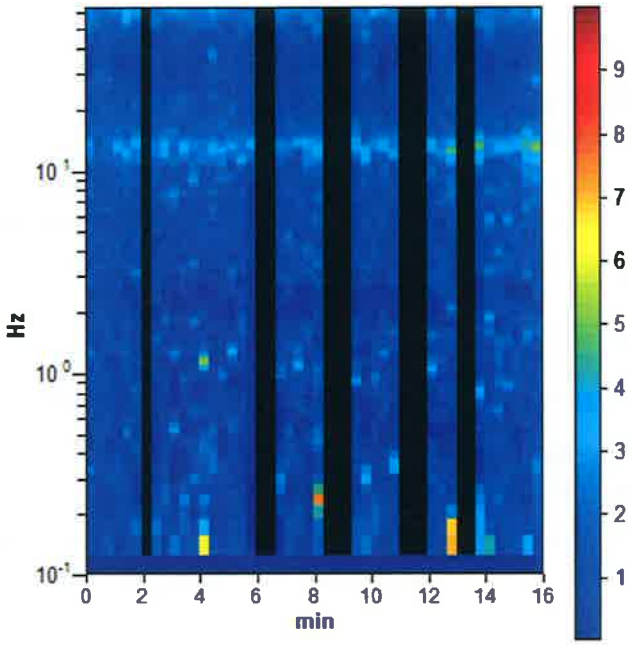


HORIZONTAL TO VERTICAL SPECTRAL RATIO

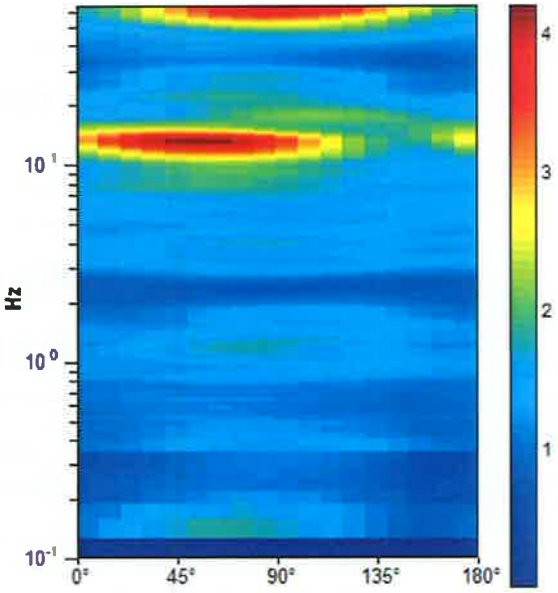
Max. H/V at 13.09 ± 0.07 Hz. (In the range 0.0 - 20.0 Hz).



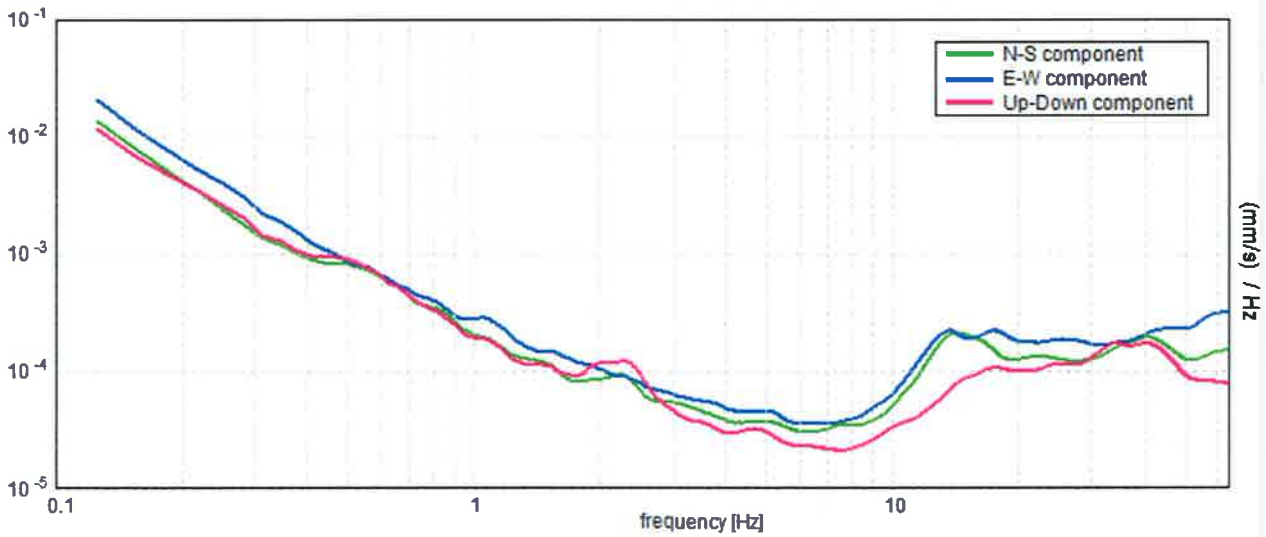
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 13.09 ± 0.07 Hz (in the range 0.0 - 20.0 Hz).

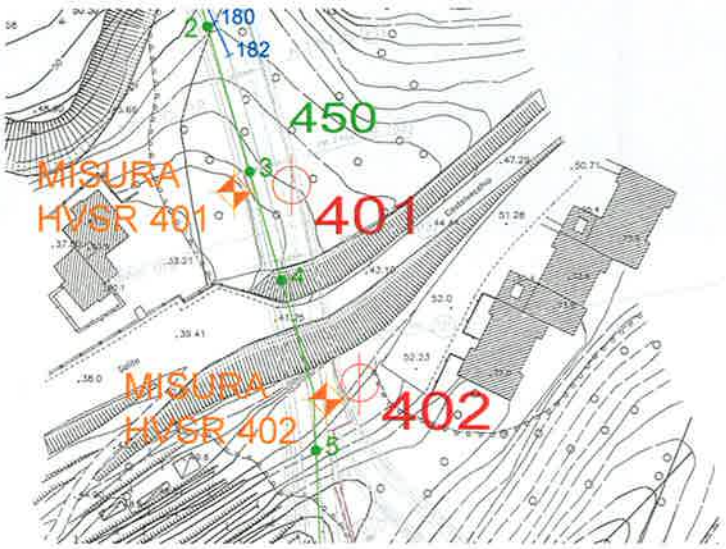
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	13.09 > 0.50	**OK**	
$n_c(f_0) > 200$	9689.4 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 630 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0] \mid A_{H/V}(f^-) < A_0 / 2$	7.063 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0 / 2$	18.563 Hz	**OK**	
$A_0 > 2$	3.20 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.00266| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.03484 < 0.65469	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.3368 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

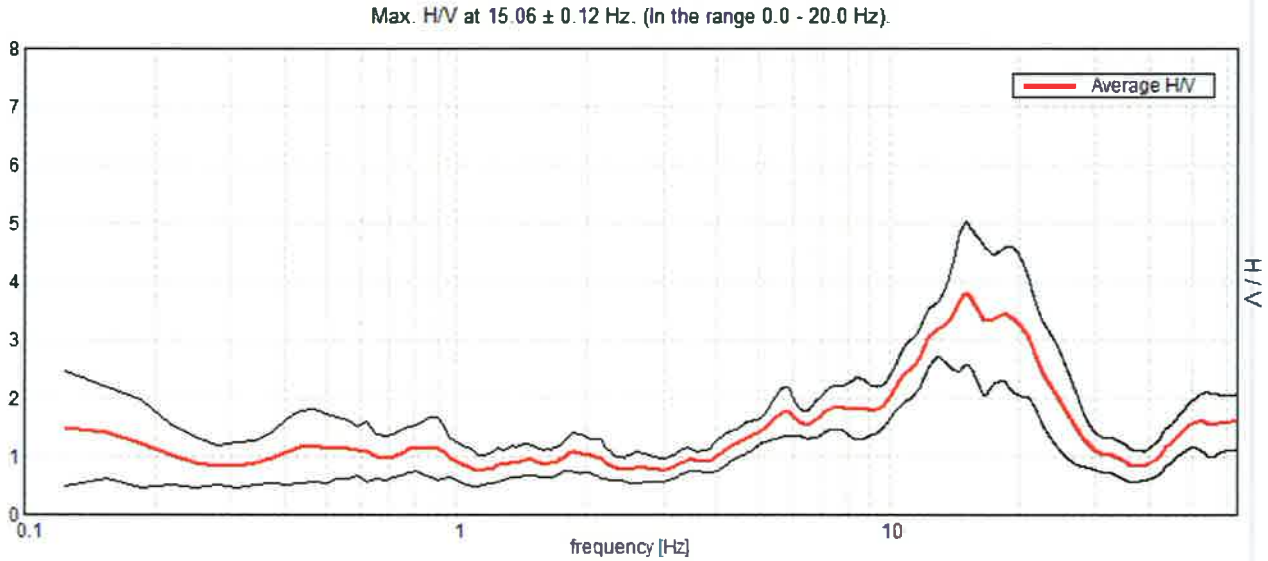
Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

MISURA HVSR 401

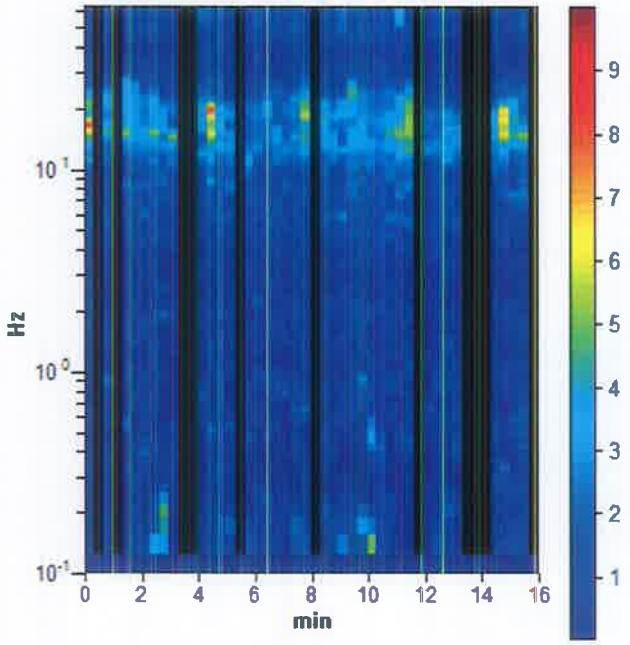
Start recording: 06/12/10 16:32:02 End recording: 06/12/10 16:48:16
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 77% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%



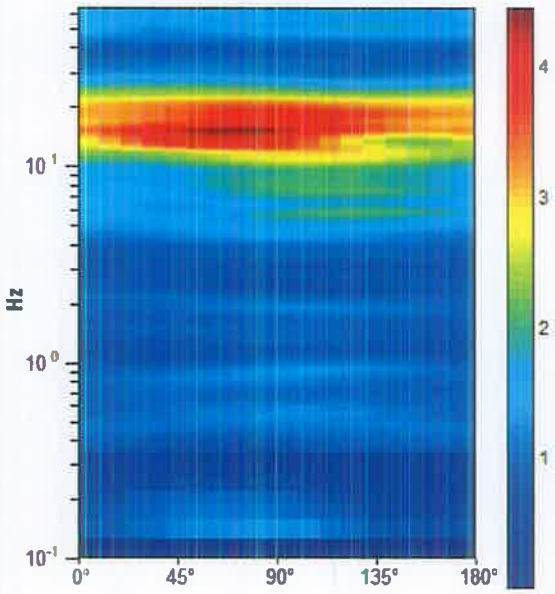
HORIZONTAL TO VERTICAL SPECTRAL RATIO



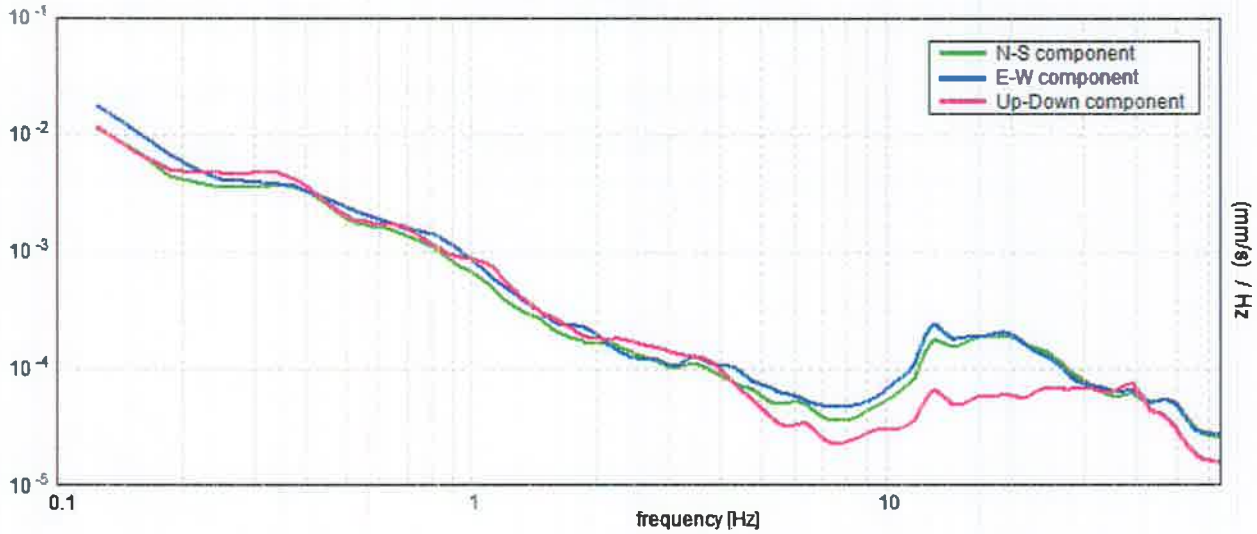
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 15.06 ± 0.12 Hz (in the range 0.0 - 20.0 Hz).

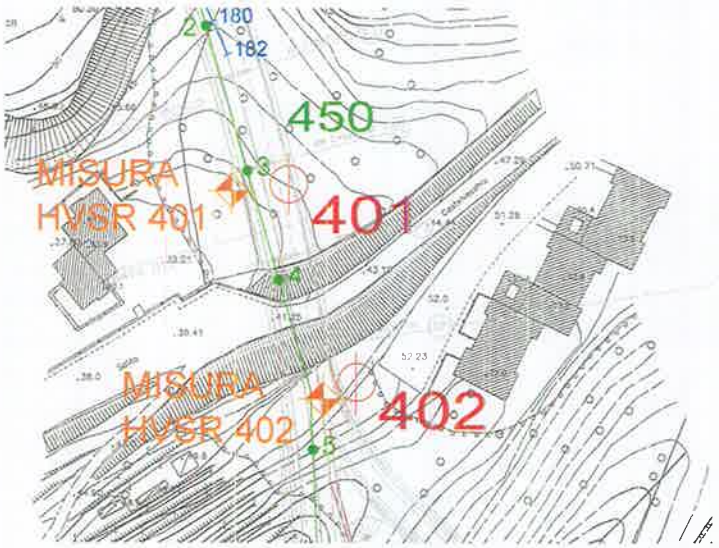
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	15.06 > 0.50	**OK**	
$n_c(f_0) > 200$	11146.3 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 724 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0] \mid A_{H/V}(f^-) < A_0 / 2$	9.75 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0 / 2$	25.156 Hz	**OK**	
$A_0 > 2$	3.80 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.00385| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.05799 < 0.75313	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.5899 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

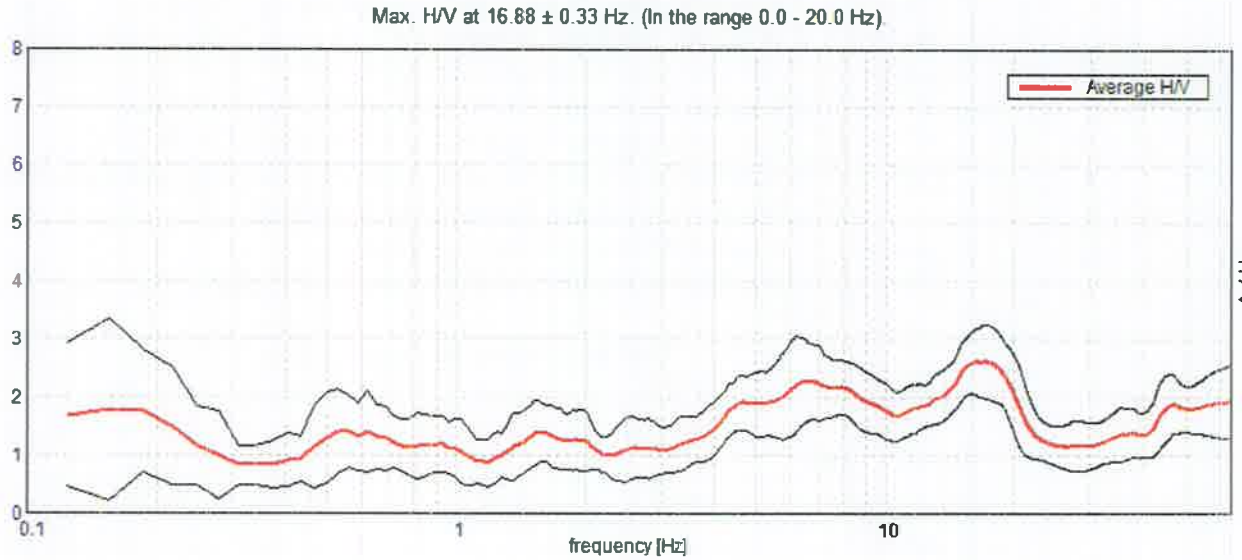
Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

MISURA HVSR 402

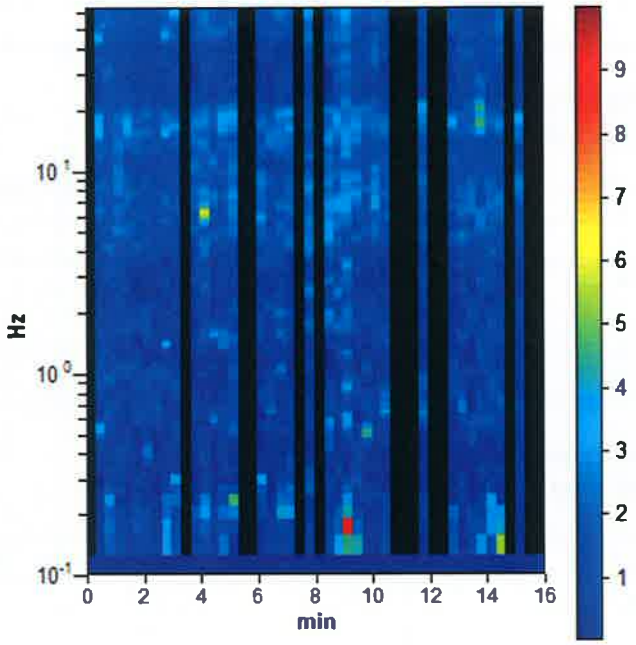
Start recording: 06/12/10 16:52:38 End recording: 06/12/10 17:08:52
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 71% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%



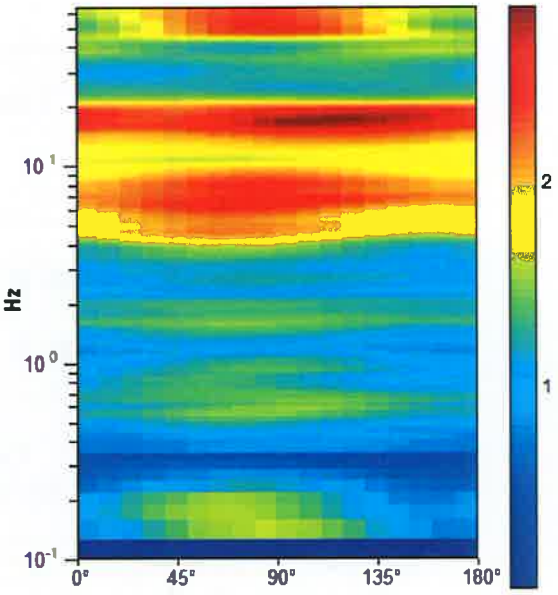
HORIZONTAL TO VERTICAL SPECTRAL RATIO



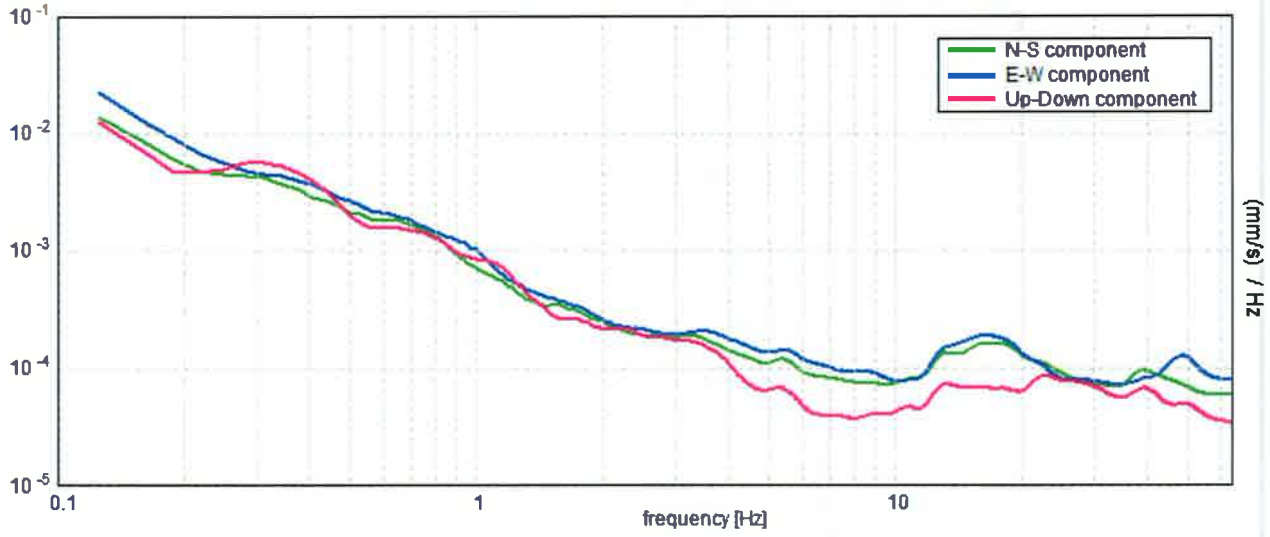
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 16.88 ± 0.33 Hz (in the range 0.0 - 20.0 Hz).

Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	16.88 > 0.50	**OK**	
$n_c(f_0) > 200$	11475.0 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz**	Exceeded 0 out of 811 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 $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	22.781 Hz	**OK**	
$A_0 > 2$	2.62 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.00946| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.15956 < 0.84375	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.3035 < 1.58	**OK**	

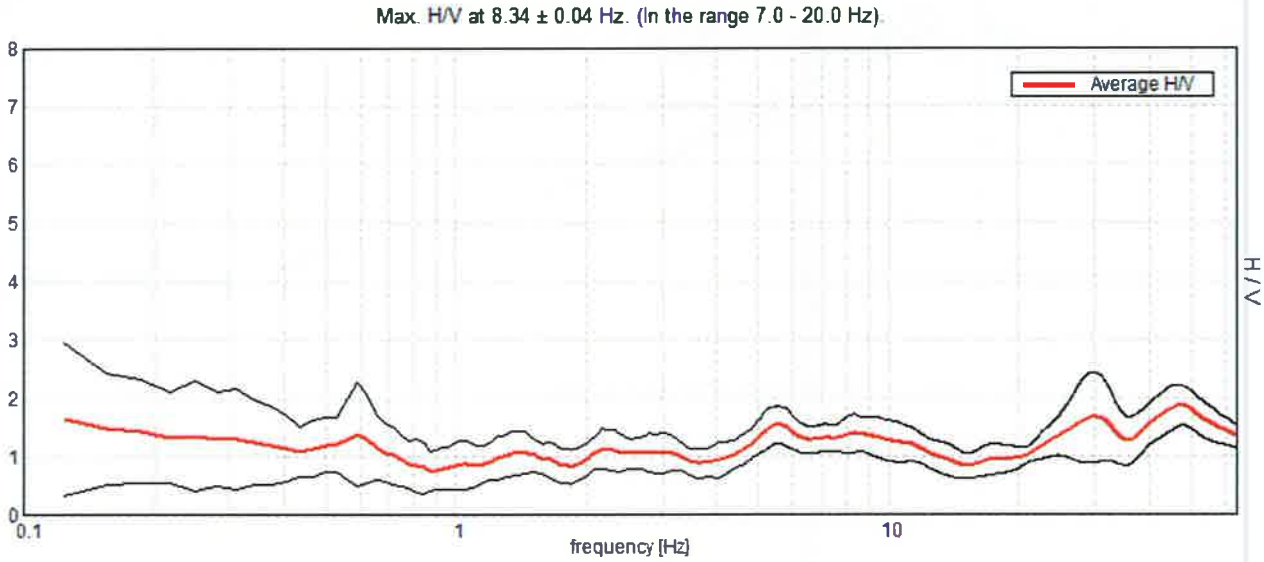
L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak 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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

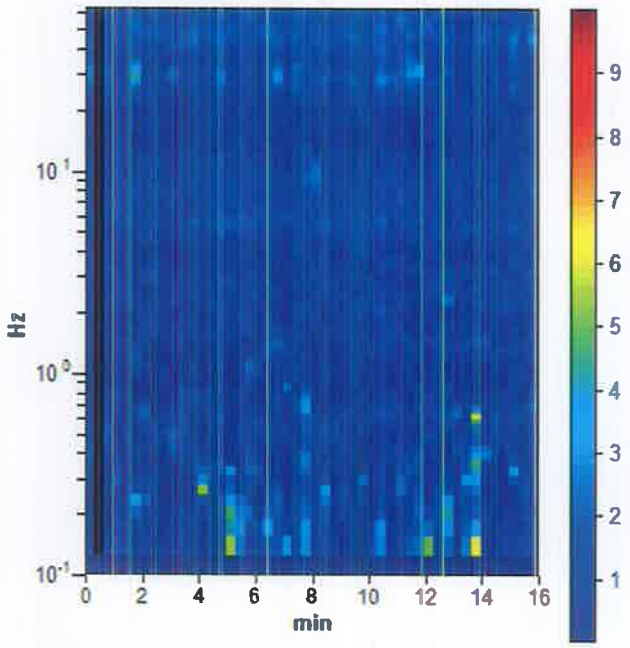
MISURA HVSR 403

Start recording: 10/12/10 18:29:20 End recording: 10/12/10 18:45:45
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 98% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

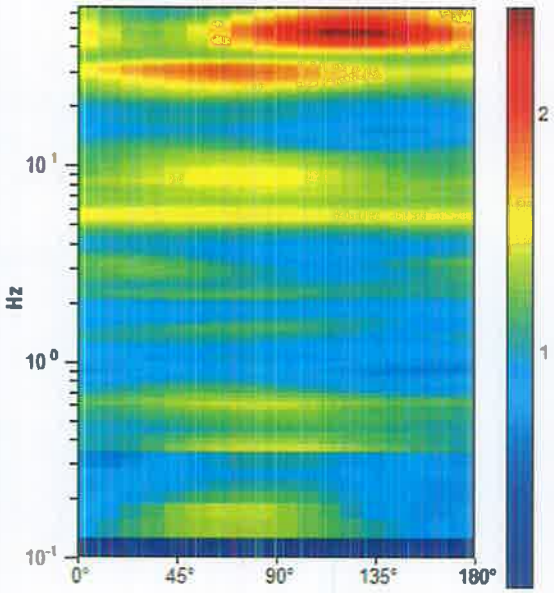
HORIZONTAL TO VERTICAL SPECTRAL RATIO



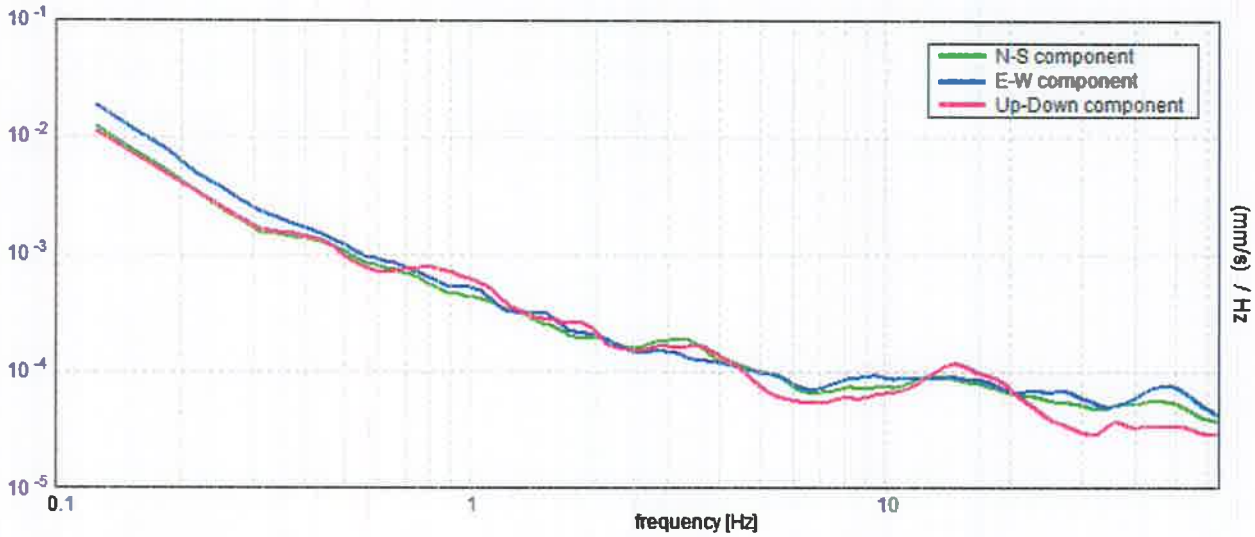
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 8.34 ± 0.04 Hz (in the range 7.0 - 20.0 Hz).

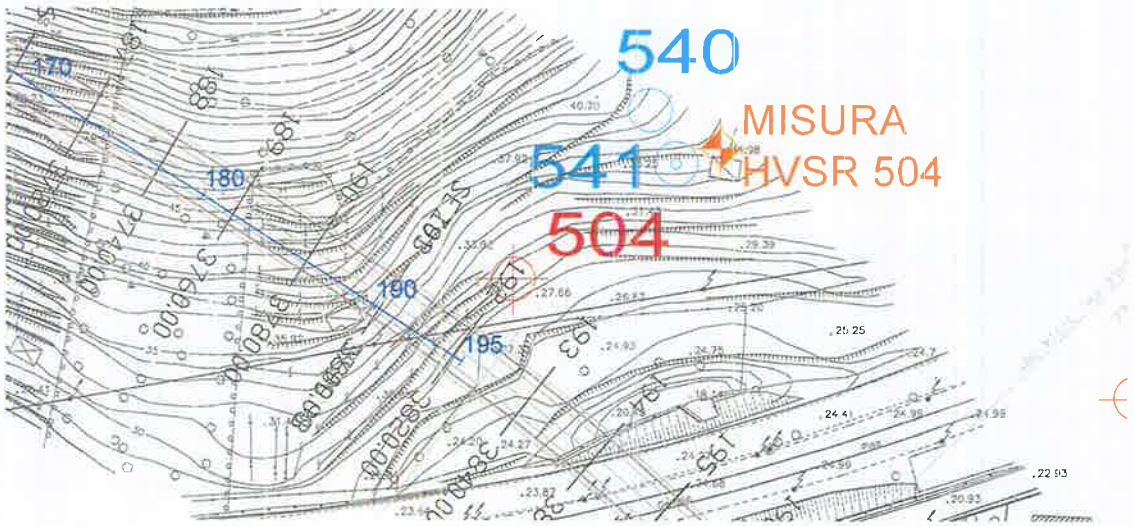
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	8.34 > 0.50	**OK**	
$n_c(f_0) > 200$	7843.1 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 402 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0] \mid A_{H/V}(f^-) < A_0 / 2$			**NO**
Exists f^+ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0 / 2$			**NO**
$A_0 > 2$	1.40 > 2		**NO**
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.00209| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.01744 < 0.41719	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.1608 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

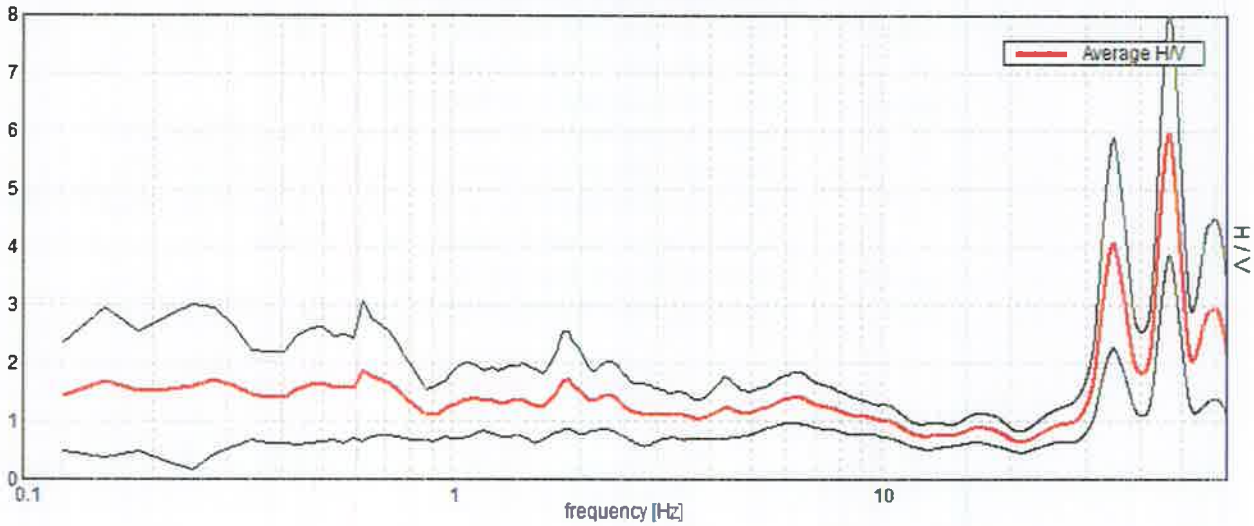
MISURA HVSR 504

Start recording: 10/12/10 18:01:50 End recording: 10/12/10 18:18:40
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 94% trace (manual window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

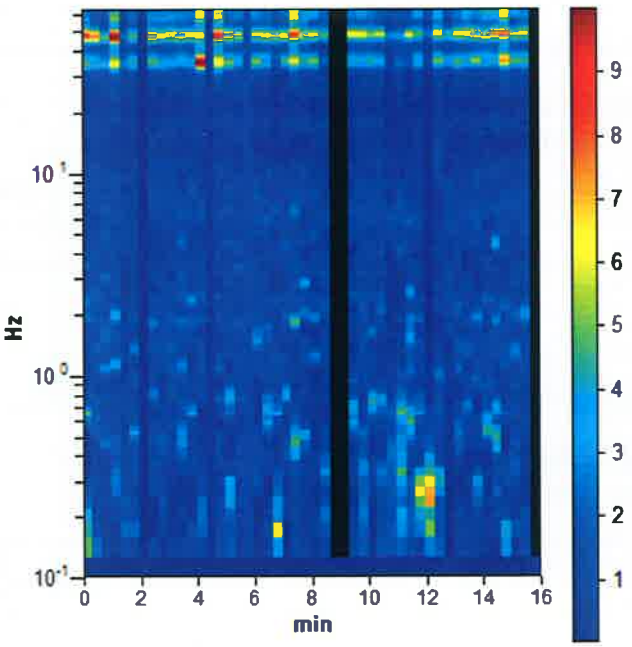


HORIZONTAL TO VERTICAL SPECTRAL RATIO

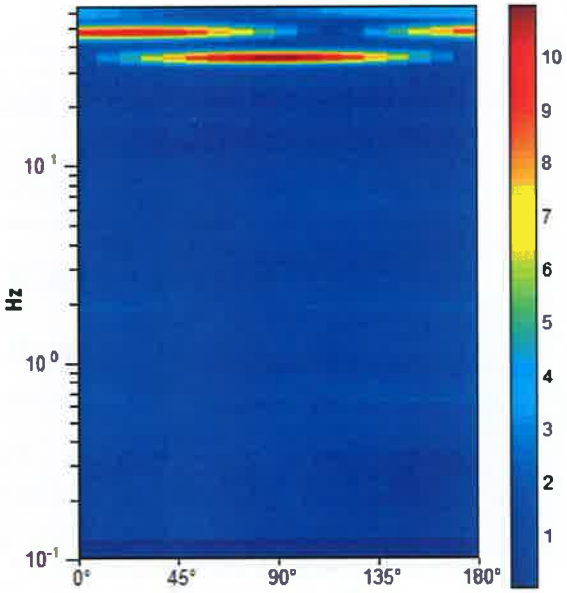
Max. H/V at 0.63 ± 0.25 Hz (In the range 0.0 - 20.0 Hz).



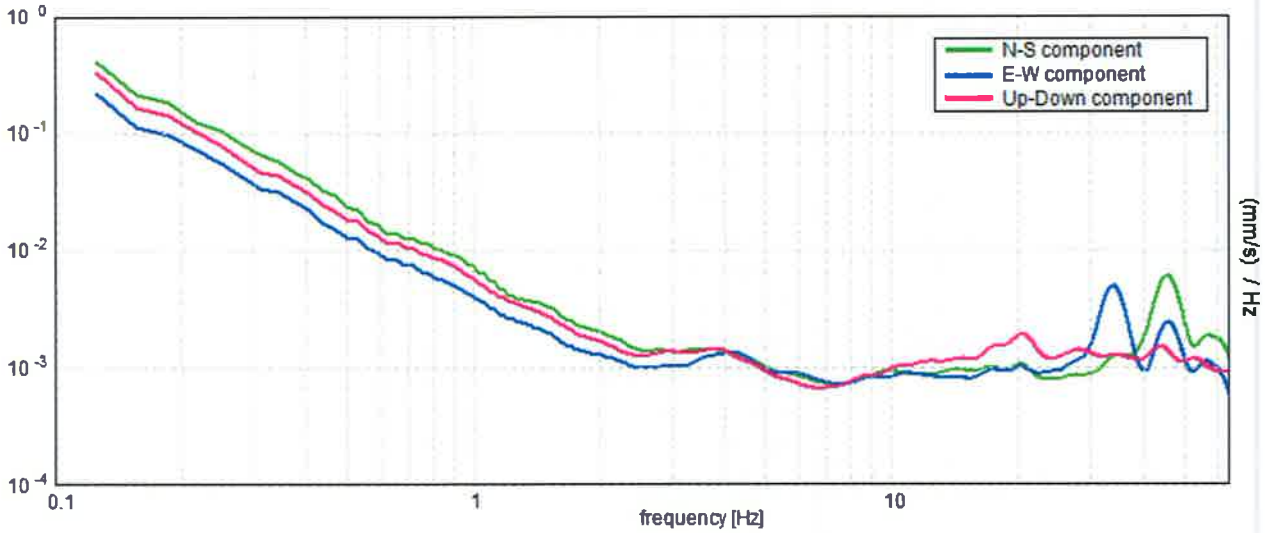
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 0.63 ± 0.25 Hz (in the range 0.0 - 20.0 Hz).

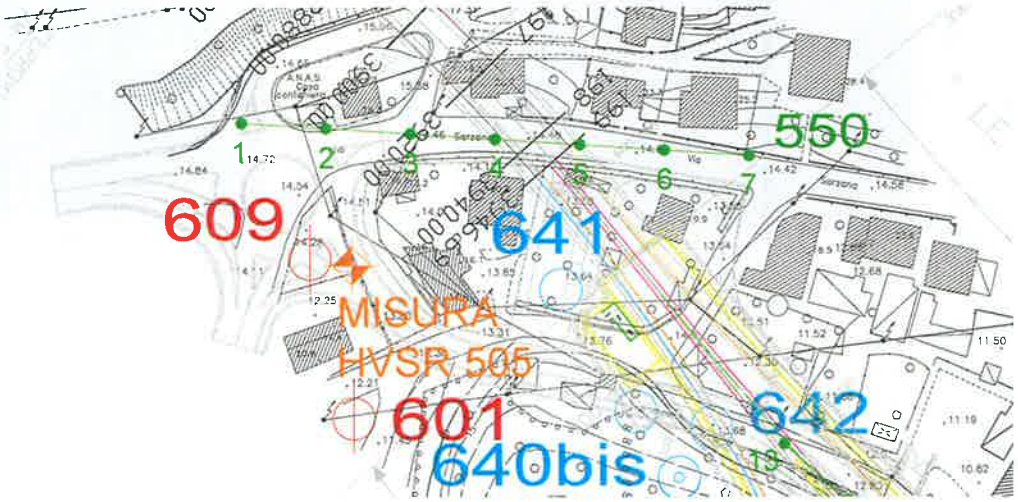
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	0.63 > 0.50	**OK**	
$n_c(f_0) > 200$	562.5 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz**	Exceeded 0 out of 31 times	**OK**	
Criteria 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**
$A_0 > 2$	1.86 > 2		**NO**
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.199| < 0.05		**NO**
$\sigma_f < \varepsilon(f_0)$	0.12437 < 0.09375		**NO**
$\sigma_A(f_0) < \varepsilon(f_0)$	0.5897 < 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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

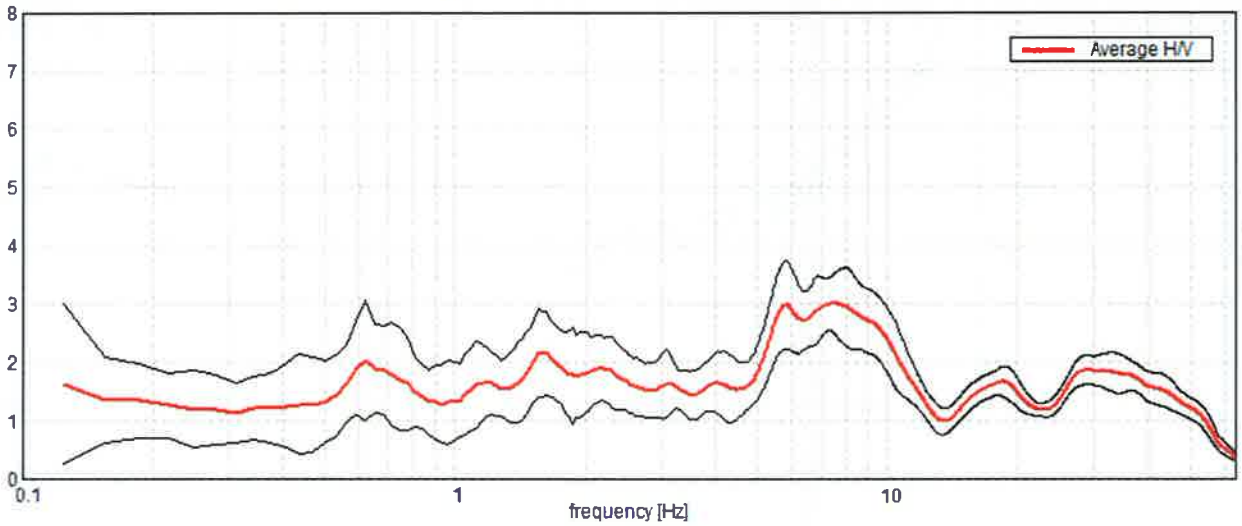
MISURA HVSR 505

Start recording: 10/12/10 17:10:50 End recording: 10/12/10 17:28:40
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 73% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

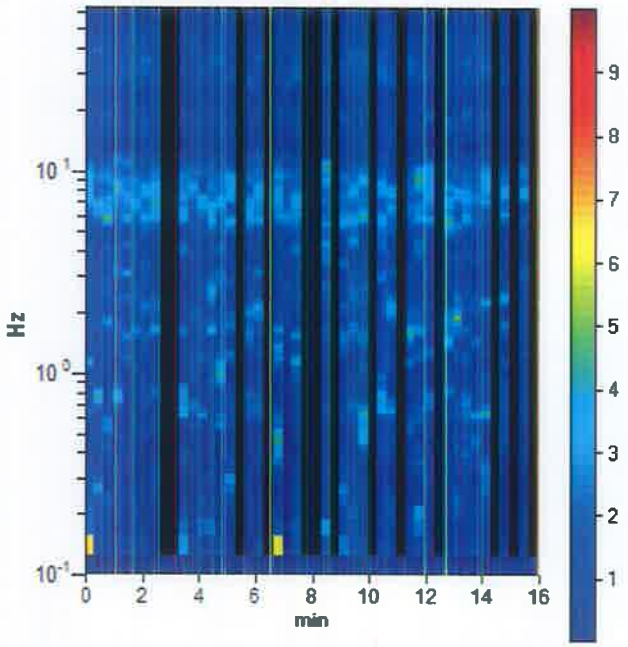


HORIZONTAL TO VERTICAL SPECTRAL RATIO

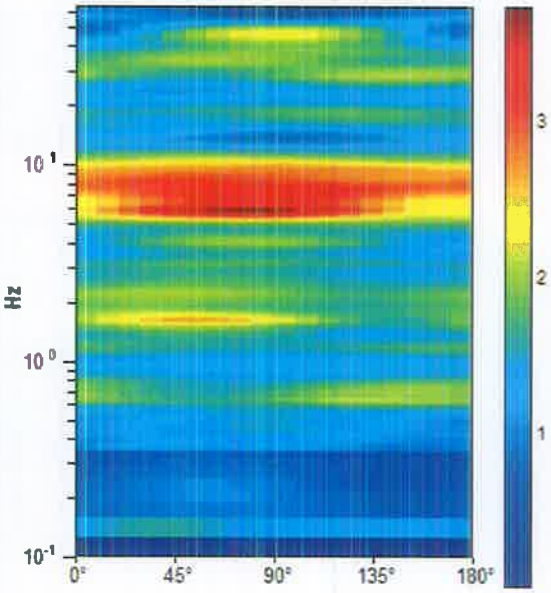
Max. H/V at 7.5 ± 0.72 Hz. (In the range 0.0 - 20.0 Hz).



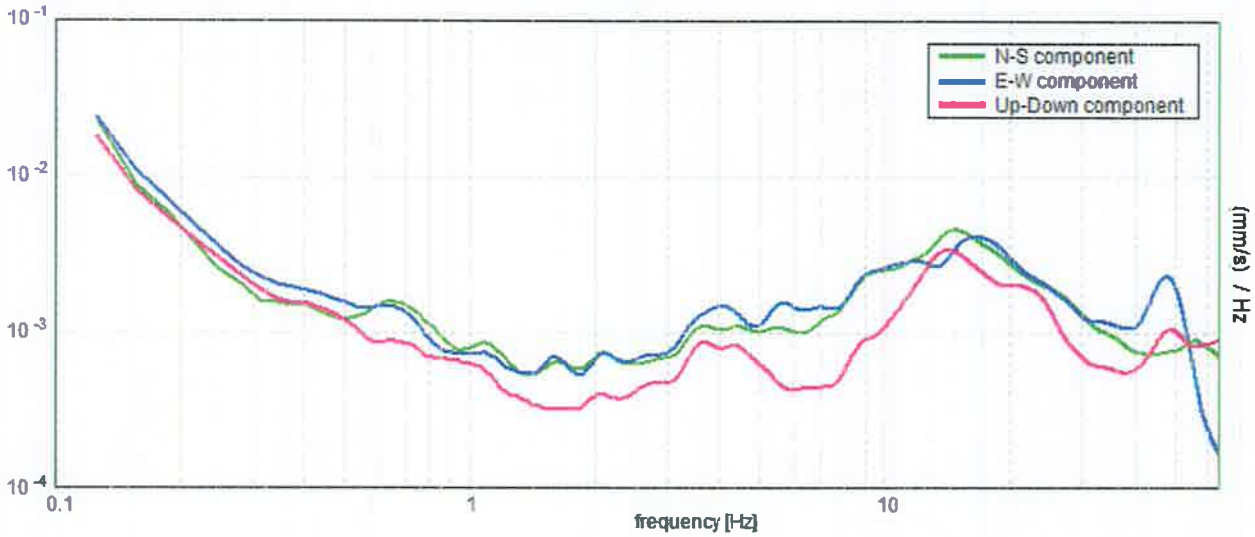
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 7.5 ± 0.72 Hz (in the range 0.0 - 20.0 Hz).

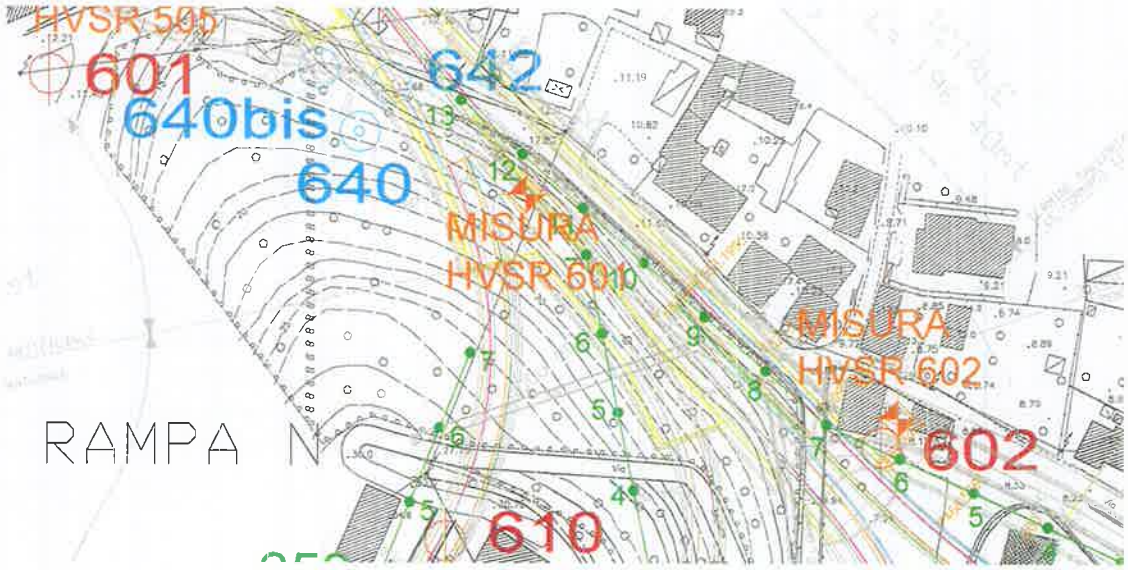
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	7.50 > 0.50	**OK**	
$n_c(f_0) > 200$	5250.0 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 361 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	3.688 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	11.813 Hz	**OK**	
$A_0 > 2$	3.01 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.04658| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.34936 < 0.375	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.2441 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

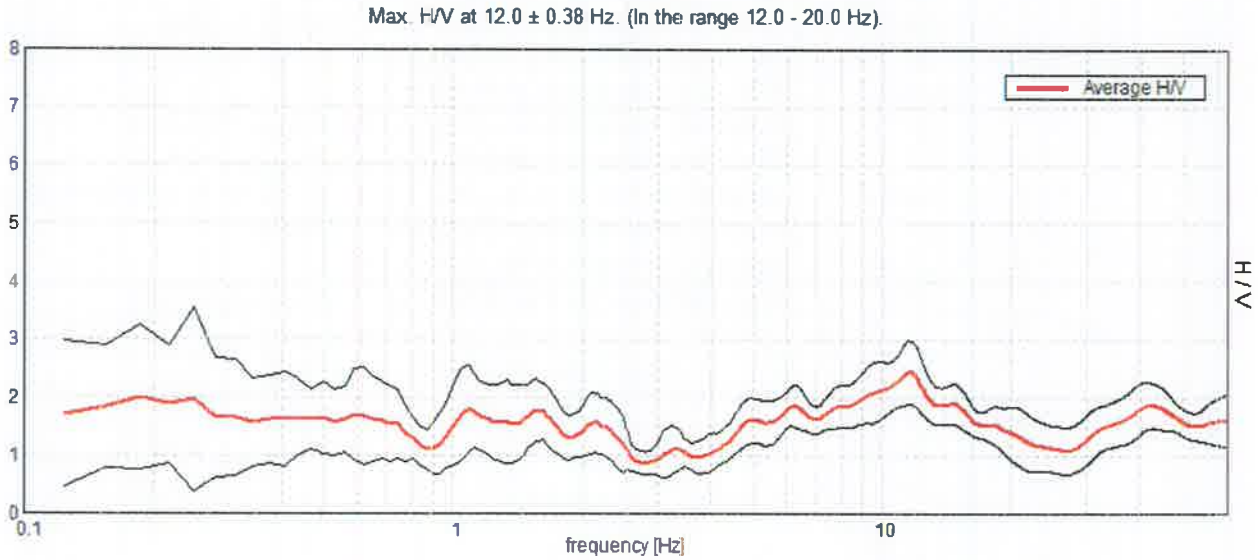
Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

MISURA HVSR 601

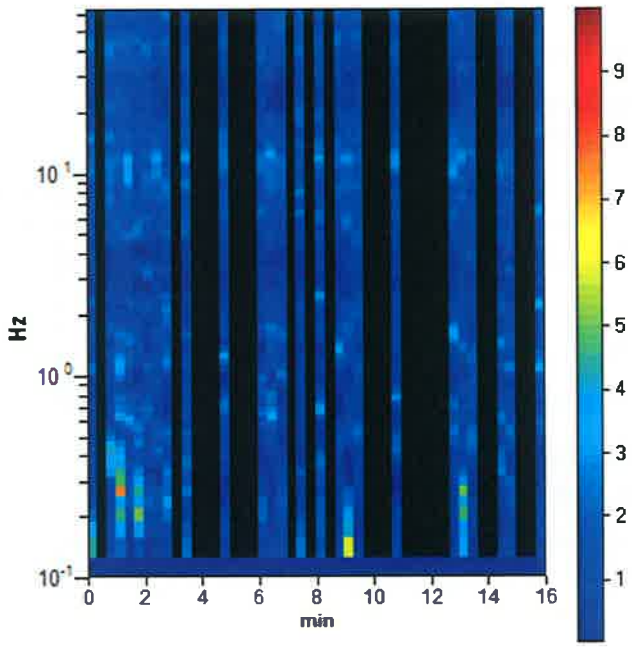
Start recording: 10/12/10 17:34:50 End recording: 10/12/10 17:51:03
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 52% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%



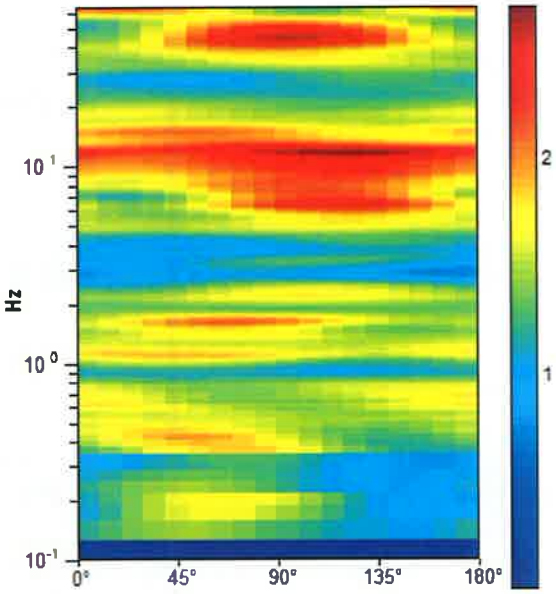
HORIZONTAL TO VERTICAL SPECTRAL RATIO



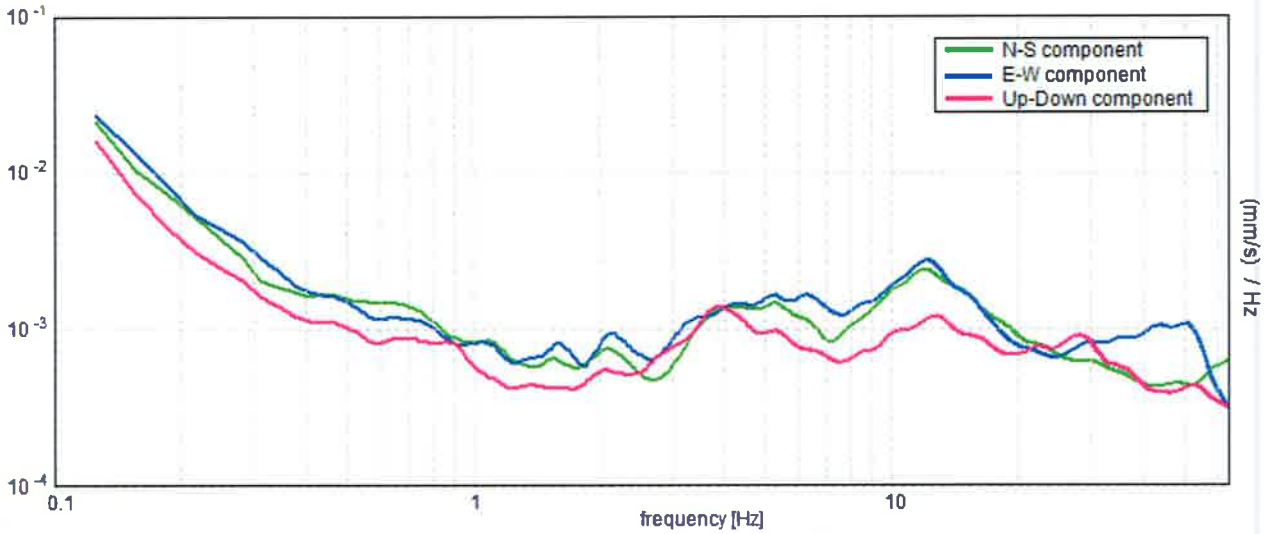
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 12.0 ± 0.38 Hz (in the range 12.0 - 20.0 Hz).

Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	12.00 > 0.50	**OK**	
$n_c(f_0) > 200$	6000.0 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz **$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz**	Exceeded 0 out of 577 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	4.281 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	22.656 Hz	**OK**	
$A_0 > 2$	2.38 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.01511| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.18128 < 0.6	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.2488 < 1.58	**OK**	

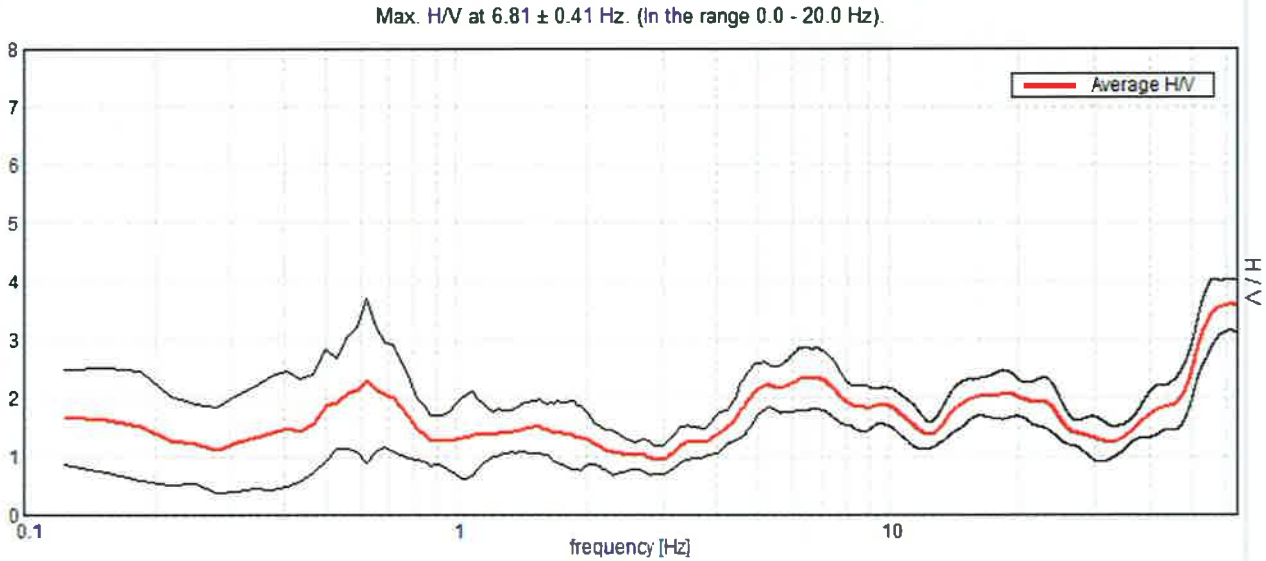
L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak 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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

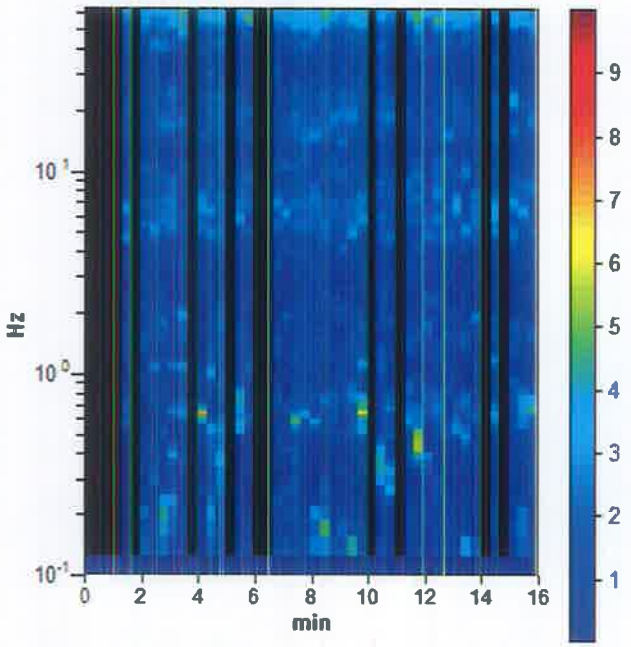
MISURA HVSR 602

Start recording: 06/12/10 12:13:03 End recording: 06/12/10 12:29:28
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 73% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

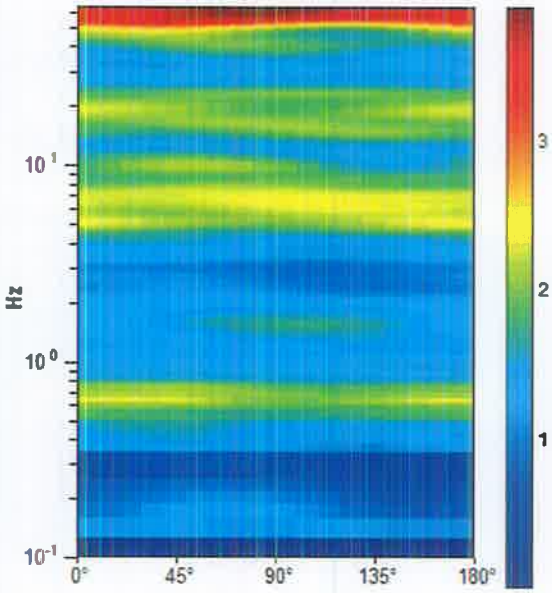
HORIZONTAL TO VERTICAL SPECTRAL RATIO



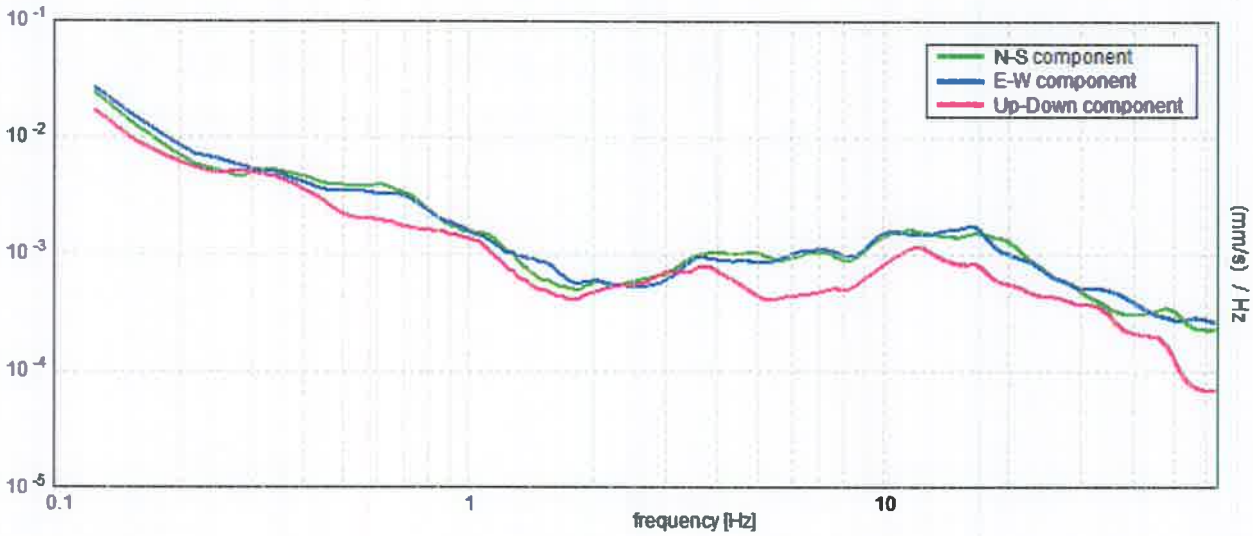
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 6.81 ± 0.41 Hz (in the range 0.0 - 20.0 Hz).

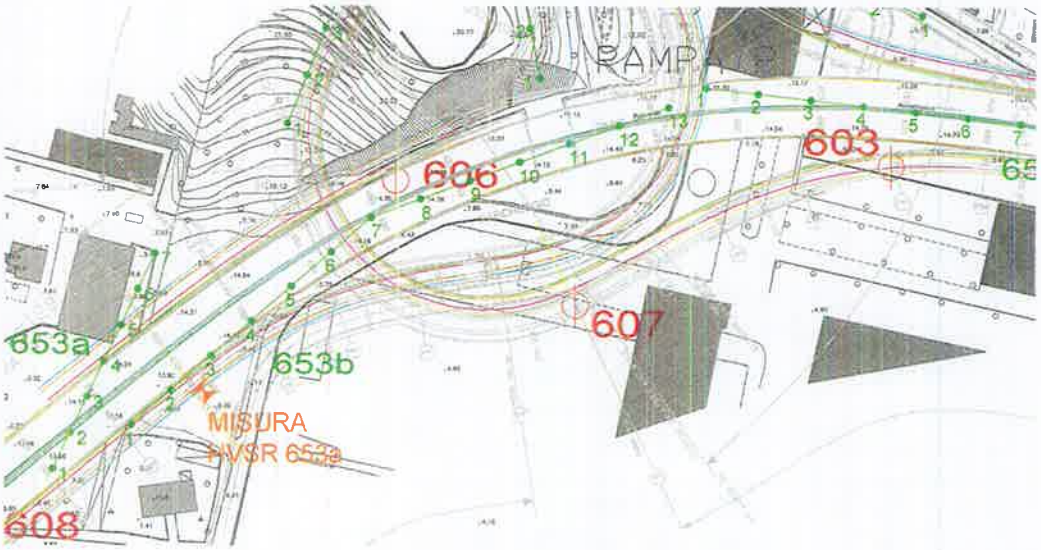
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	6.81 > 0.50	**OK**	
$n_c(f_0) > 200$	4768.8 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 328 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	3.25 Hz	**OK**	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$			**NO**
$A_0 > 2$	2.34 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.02933| < 0.05	**OK**	
$\sigma_f < \sigma(f_0)$	0.19978 < 0.34063	**OK**	
$\sigma_A(f_0) < \sigma(f_0)$	0.255 < 1.58	**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
$\sigma(f_0)$	threshold value for the stability condition $\sigma_f < \sigma(f_0)$
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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\sigma(f_0)$	threshold value for the stability condition $\sigma_A(f) < \sigma(f_0)$

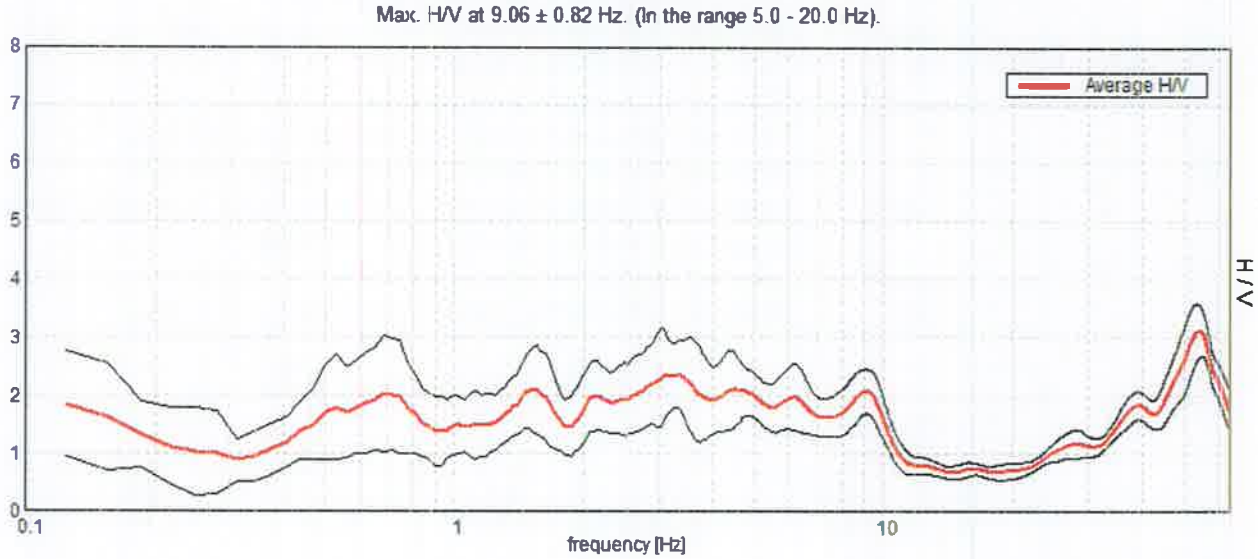
Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\sigma(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\sigma(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\sigma(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

MISURA HVSR 653A

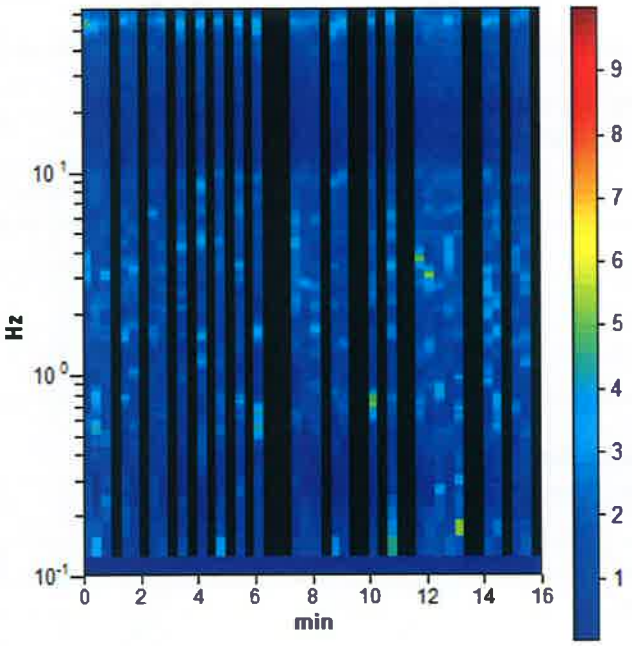
Start recording: 06/12/10 11:15:39 End recording: 06/12/10 11:32:17
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 58% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%



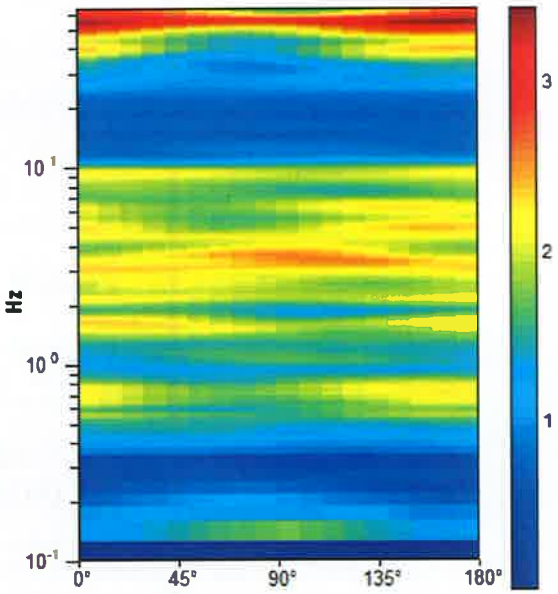
HORIZONTAL TO VERTICAL SPECTRAL RATIO



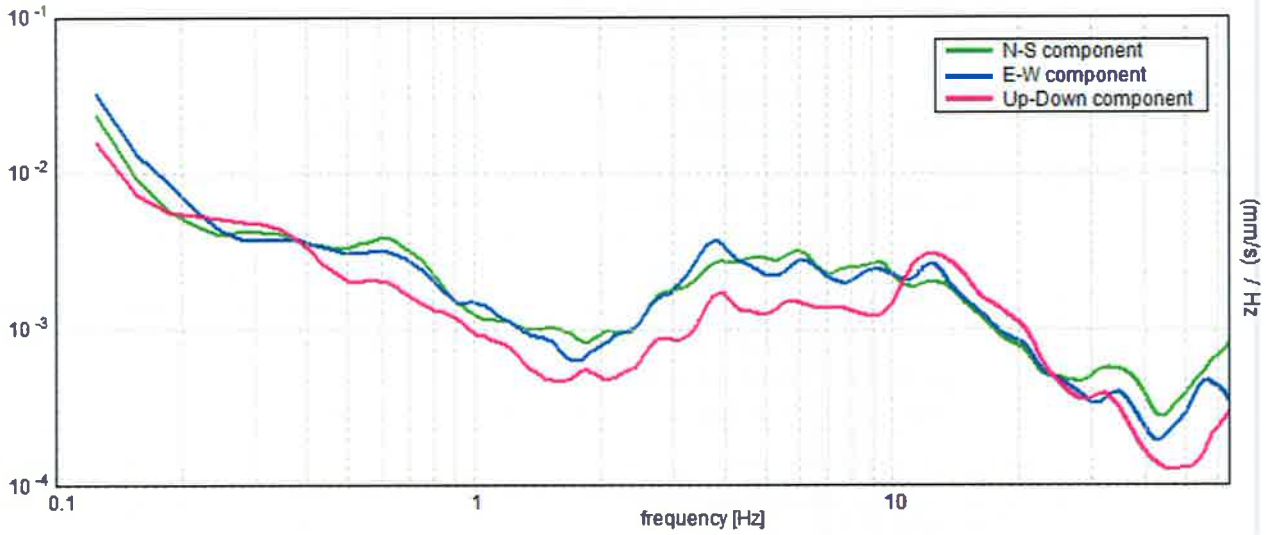
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 9.06 ± 0.82 Hz (in the range 5.0 - 20.0 Hz).

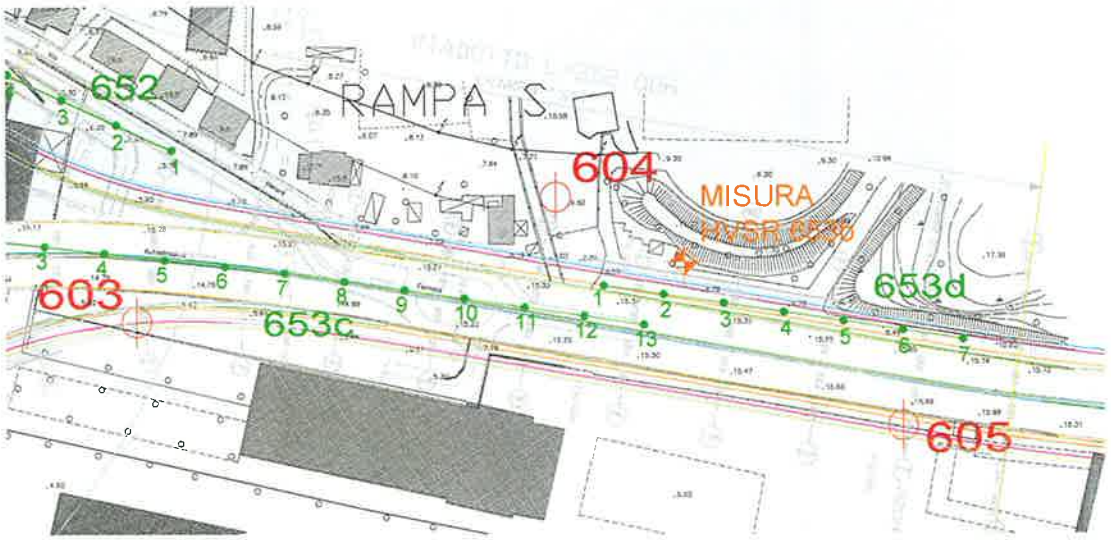
Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	9.06 > 0.50	**OK**	
$n_c(f_0) > 200$	5075.0 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 436 times	**OK**	
Criteria 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 $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	10.813 Hz	**OK**	
$A_0 > 2$	2.08 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.04311| < 0.05	**OK**	
$\sigma_f < \varepsilon(f_0)$	0.39072 < 0.45313	**OK**	
$\sigma_A(f_0) < \varepsilon(f_0)$	0.1826 < 1.58	**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
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_A(f) < \varepsilon(f_0)$

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
$\varepsilon(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\varepsilon(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

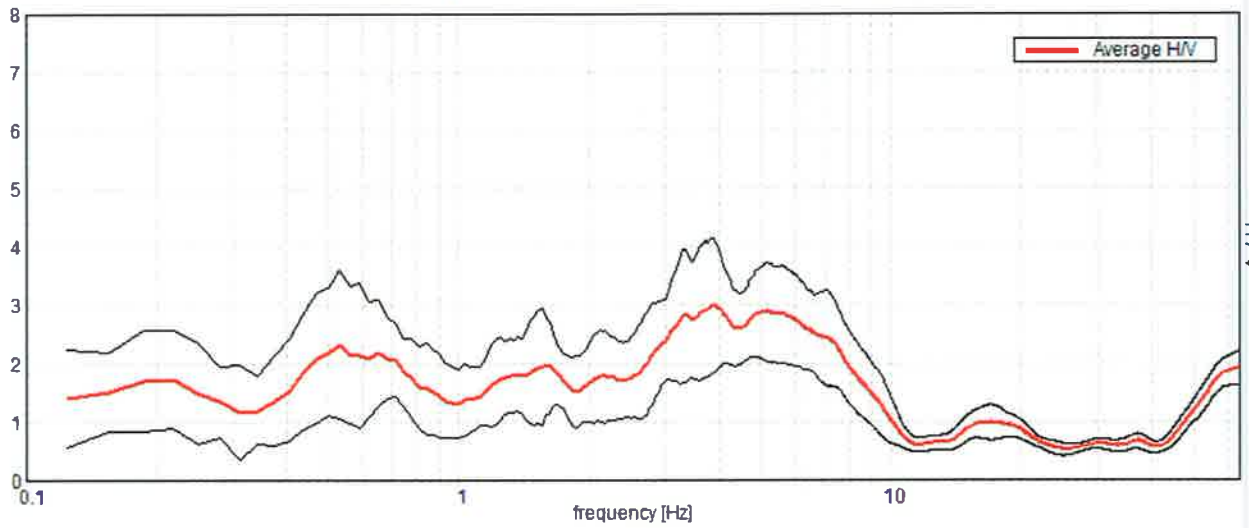
MISURA HVSR 653B

Start recording: 06/12/10 11:46:09 End recording: 06/12/10 12:02:58
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN ;
Trace length: 0h16'00". Analyzed 52% trace (automatic window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

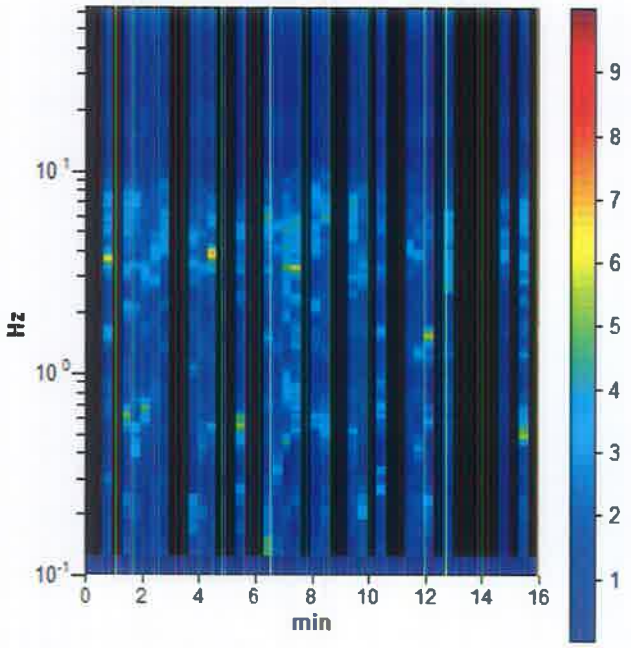


HORIZONTAL TO VERTICAL SPECTRAL RATIO

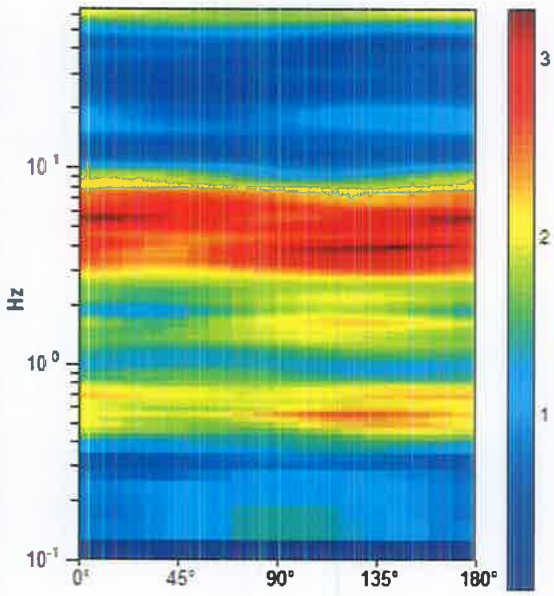
Max. H/V at 5.13 ± 0.31 Hz. (In the range 5.0 - 20.0 Hz).



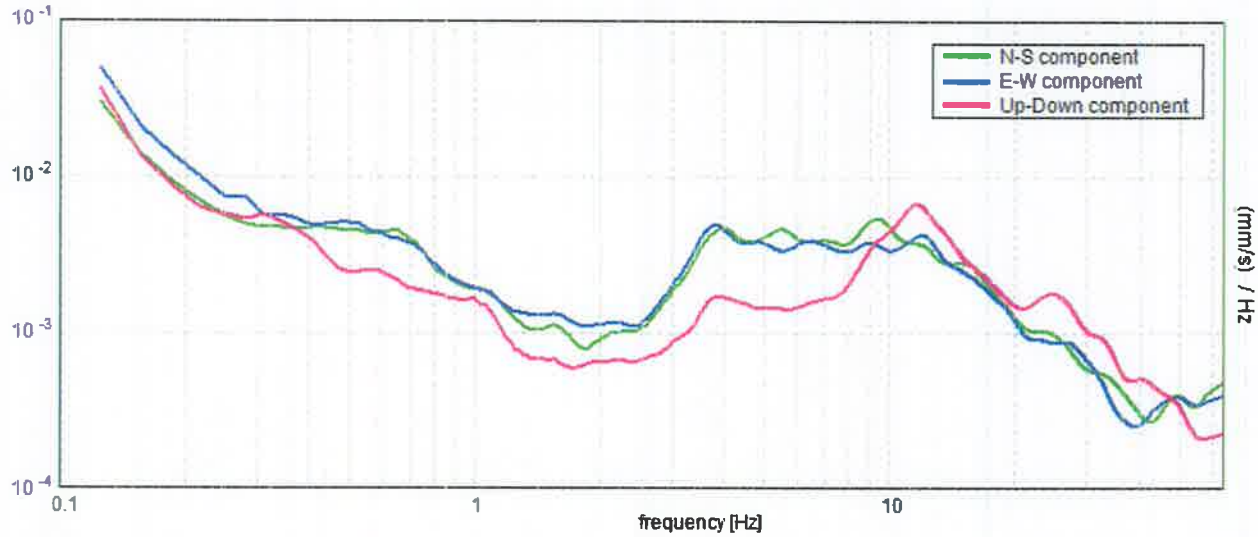
H/V TIME HISTORY



DIRECTIONAL H/V



SINGLE COMPONENT SPECTRA



Max. H/V at 5.13 ± 0.31 Hz (in the range 5.0 - 20.0 Hz).

Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	5.13 > 0.50	**OK**	
$n_c(f_0) > 200$	2562.5 > 200	**OK**	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 247 times	**OK**	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0] \mid A_{H/V}(f^-) < A_0 / 2$			**NO**
Exists f^+ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0 / 2$	9.125 Hz	**OK**	
$A_0 > 2$	2.88 > 2	**OK**	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.02826| < 0.05	**OK**	
$\sigma_f < \theta(f_0)$	0.14483 < 0.25625	**OK**	
$\sigma_A(f_0) < \theta(f_0)$	0.3928 < 1.58	**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
$\theta(f_0)$	threshold value for the stability condition $\sigma_f < \theta(f_0)$
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
$\sigma_{logH/V}(f)$	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
$\theta(f_0)$ [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 $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20