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e0600270

VGD-metingen op een bekleding van ingegoten  
 basaltzuilen aan Het Nollehoofd en de boulevard  
 Bankert te Vlissingen

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## **1 Inleiding**

In dit onderzoek zijn ingegoten basaltbekledingen gekarakteriseerd aan de hand van valgewichtdeflectiemetingen (VGD-metingen). Het idee hierachter is dat de stijfheid van de bekleding een goede parameter kan zijn om een inzicht te krijgen van de sterkte van de bekleding. Deze stijfheid van de bekleding is bepaald aan de hand van de gemeten deflectie en de bekende laagdikte van de bekleding en onderlagen.

De metingen zijn uitgevoerd op de bekleding van basaltzuilen welke is ingegoten met asfaltmastiek.

De onderzochte vakken (4 meetraaien) bestaan uit Het Nollehoofd en de boulevard Bankert te Vlissingen (zie bijlage 1 en 2).

## 2 Opbouw van de bekleding

### 2.1 Boren van kernen uit de bekleding

Voor de bepaling van de laagdikte van de basaltzuilen en de indringing van de asfaltmastiek zijn 10 kernen (Ø 150 mm) geboord. Deze 10 kernen zijn geboord op naden tussen de basaltzuilen. Dit om er zeker van het zijn dat de penetratie van het asfaltmastiek bepaald kan worden. De boorlocaties zijn vooraf uitgezet op de locaties zoals aangegeven op de tekeningen in bijlage 2.

### 2.2 Bepaling van de laagdikten

In onderstaande tabel zijn de laagdikten van de 10 geboorde kernen opgenomen. De laagdikte is op 4 plaatsen met behulp van een liniaal opgemeten.

Tabel 2.2.1: Laagdikten basaltzuilen meetraai 1 (Het Nollehoofd)

Kern	B1		
	totaal	asfaltmastiek	basalt
meting 1	315		315
meting 2	310		310
meting 3	307	10	297
meting 4	325	4	321
<b>gem.</b>	<b>314</b>	<b>7</b>	<b>311</b>

Kern	B2		
	totaal	asfaltmastiek	basalt
meting 1	387	13	374
meting 2	370		370
meting 3	359		359
meting 4	386	3	383
<b>gem.</b>	<b>376</b>	<b>8</b>	<b>372</b>

**Tabel 2.2.2: Laagdikten basaltzuilen meetraai 2 (bovenraai boulevard Bankert)**

Kern	B4		
	totaal	asfaltmestiek	basalt
meting 1	(2940) 361	7	287
meting 2	(266) 356	4	262
meting 3	(258) 353	6	252
meting 4	(256) 367		256
<b>gem.</b>	<b>(269) 359</b>	<b>6</b>	<b>264</b>

Kern	B6		
	totaal	asfaltmestiek	basalt
meting 1	321	21	300
meting 2	383	11 (55)	317
meting 3	380	23	357
meting 4	392	9	383
<b>gem.</b>	<b>369</b>	<b>16</b>	<b>339</b>

Kern	B8		
	totaal	asfaltmestiek	basalt
meting 1	240	25	215
meting 2	387	8	379
meting 3	386	4	382
meting 4	390	24	366
<b>gem.</b>	<b>351</b>	<b>15</b>	<b>336</b>

Kern	B10		
	totaal	asfaltmestiek	basalt
meting 1	355		355
meting 2	320		320
meting 3	322	3	319
meting 4	333	6	327
<b>gem.</b>	<b>333</b>	<b>5</b>	<b>330</b>

**Tabel 2.2.3: Laagdikten basaltzuilen meetraai 3 (onderraai boulevard Bankert)**

Kern	B3		
	totaal	asfaltmestiek	basalt
meting 1	(295) 390		295
meting 2	(283) 375		283
meting 3	(320) 395		320
meting 4	(295) 380		295
<b>gem.</b>	<b>(298) 385</b>		<b>298</b>

Kern	B5		
	totaal	asfaltmestiek	basalt
meting 1	340		340
meting 2	375		375
meting 3	363		363
meting 4	165		165
<b>gem.</b>	<b>311</b>		<b>311</b>

Tabel 2.2.4: Laagdikten basaltzuilen meetraai 4 (onderraai boulevard Bankert)

Kern	B7		
	totaal	asfaltmastiek	basalt
meting 1	305	(16 onder)	289
meting 2	393		393
meting 3	348	(20 onder)	228
meting 4	349		349
<b>gem.</b>	<b>349</b>		<b>315</b>

Kern	B9		
	totaal	asfaltmastiek	basalt
meting 1	404		404
meting 2	179		179
meting 3	354		354
meting 4	369		369
<b>gem.</b>	<b>327</b>		<b>327</b>

In tabel 2.2.5 is de penetratie van het asfaltmastiek opgenomen.

Tabel 2.2.5: Penetratie van het asfaltmastiek

Kern	Meetraai 1		Meetraai 2			Meetraai 3		Meetraai 4		
	B1	B2	B4	B6	B8	B10	B3	B5	B7	B9
meting 1				166	111	80		0		0
meting 2				190	30	45		0		0
meting 3				250	58	75		0		0
<b>gem.</b>	<b>Geheel</b>	<b>Geheel</b>	<b>Geheel</b>	<b>202</b>	<b>66</b>	<b>67</b>	<b>Geheel</b>	<b>0</b>	<b>geheel</b>	<b>0</b>

In tabel 2.2.6: Penetratie uitgedrukt als percentage van de kernlengte.

Kern	Meetraai 1		Meetraai 2			Meetraai 3		Meetraai 4		
	B1	B2	B4	B6	B8	B10	B3	B5	B7	B9
<b>Gem. penetratie (mm)</b>	Geheel	Geheel	Geheel	202	66	67	Geheel	0	geheel	0
<b>Laagdikte (mm)</b>	311	372	264	339	336	330	298	311	315	326
<b>ingieting</b>	1D	1D	1D	0,60D	0,20D	0,20D	1D	0D	1D	0D

Conform de concept toetsmethode van Klein Breteler worden bekledingen als volgt beoordeeld:  
 Tenminste 40 a 60% ingieting en bovendien tenminste 100 mm diep tussen de zuilen → goed  
 20 a 30% ingieting → oppervlakkig ingegoten.

**Meetraai 1:**

Deze meetraai wordt geclassificeerd als goed ingegoten.

**Meetraai 2:**

Deze meetraai wordt gemiddeld geclassificeerd als goed - oppervlakkig ingegoten.

**Meetraai 3:**

Deze meetraai wordt gemiddeld geclassificeerd als goed ingegoten. Echter één van de kernen is niet ingegoten.



**Meetraai 4:**

Deze meetraai wordt gemiddeld geclassificeerd als goed ingegoten. Echter één van de kernen is niet ingegoten.

Tijdens de inspectie van de meetraaien is geconstateerd dat niet overal gietasfalt aanwezig is. Om deze reden is de onderraai gesplitst in 2 meetraaien (3 en 4). Tevens zijn er vakken binnen deze raaien aanwezig met beton of asfalt. Ook zijn er vakken binnen de raaien zonder enige vorm van penetratie. Deze vakken bestaan uit alleen basaltzuilen.

In de onderstaande figuren zijn foto's van de geboorde kernen opgenomen.

**Meetraai 1 (Het Nollehoofd):**

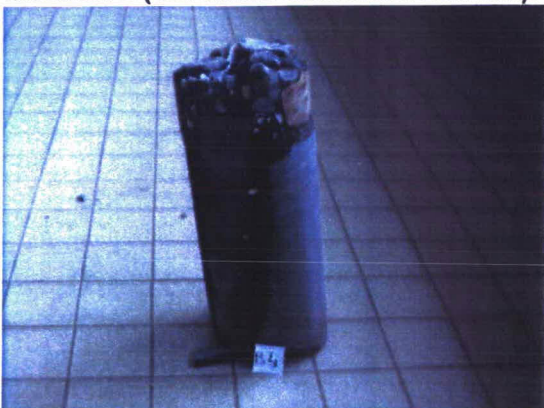
Figuur 2.1: Locatie B1



Figuur 2.2: Locatie B2

De gemiddelde laagdikte bedraagt 345 mm.

De hechting van de zuilen is door de goede penetratie zeer goed.

**Meetraai 2 (bovenraai boulevard Bankert):**

Figuur 2.3: Locatie B4



Figuur 2.4: Locatie B6



Figuur 2.5: Locatie B8



Figuur 2.6: Locatie B10

De gemiddelde laagdikte bedraagt 345 mm.

De hechting van de zuilen B4 en B6 is door de goede penetratie zeer goed. De hechting van de zuilen B8 en B10 is slechter. De penetratie van ca. 66 mm kan niet voorkomen dat de zuilen loskomen.

#### Meetraai 3 (onderraai boulevard Bankert):



Figuur 2.7: Locatie B3



Figuur 2.8: Locatie B5

De gemiddelde laagdikte bedraagt 348 mm.

De hechting van de zuilen is slecht. Ondanks dat de penetratie van B3 volledig is. Tussen de losse zuilen/stukken gietasfalt zijn zand en schelpen aanwezig. Dit duidt op het feit dat het gietasfalt mogelijk later is aangebracht of dat er toch indringing van zand en schelpen heeft plaats gevonden. B5 is niet ingegoten.

**Meetraai 3 (onderraai boulevard Blankert):**



Figuur 2.9: Locatie B7



Figuur 2.10: Locatie B9

De gemiddelde laagdikte bedraagt 338 mm.

De hechting van locatie B7 is goed. B9 is niet ingegoten Tussen de losse zuilen zijn zand en schelpen aanwezig.

### 3 Valgewicht-deflectiemetingen

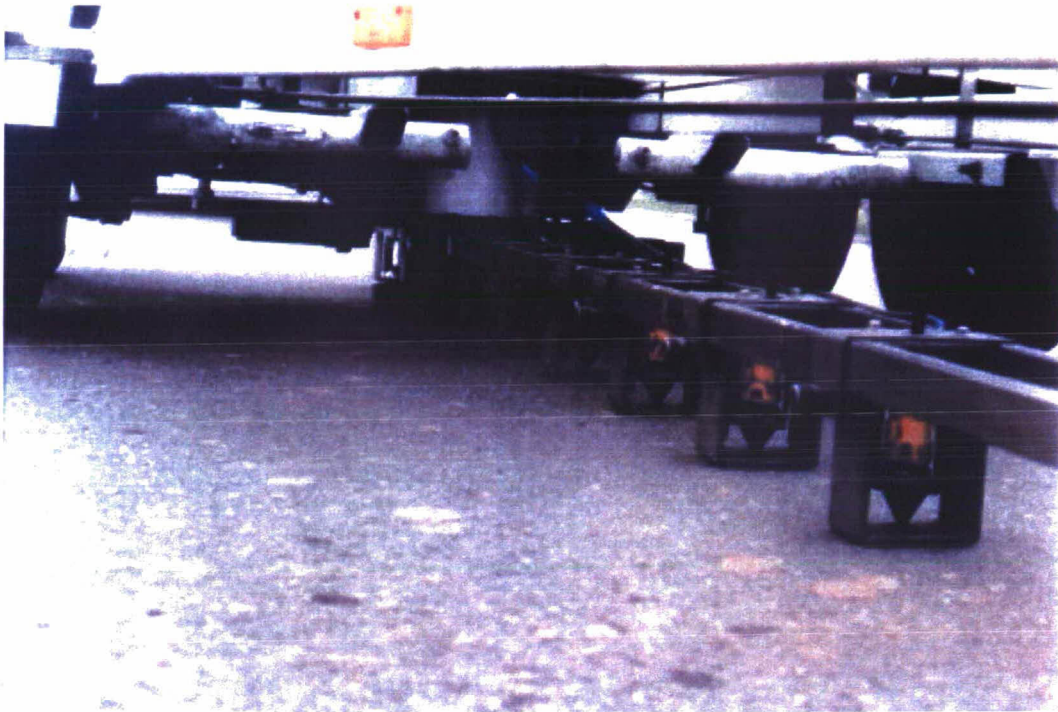
Bij VGD-metingen wordt op bepaalde afstanden van het valgewicht de snelheid gemeten met snelheidsopnemers (geofoons). De snelheid wordt rekenkundig geïntegreerd van snelheid naar verplaatsing. Met deze verplaatsingen en de afstanden tot het valgewicht waarop de verplaatsingen zijn gemeten is de vorm van de deflectiekromme bekend. De vervormingen in de deflectiekrommen zeggen indirect iets over de stijfheid van de bekleding en de ondergrond. De stijfheid of elasticiteitsmodulus is gelijk aan de verhouding tussen de opgelegde kracht en de vervorming. De deflectiekromme kan met behulp van dit principe worden teruggerekend naar een stijfheid voor die locatie. Voor het terugrekenen van stijfheden is gebruik gemaakt van het computerprogramma ELMOD5. Vereiste is wel dat de laagdikte bekend is, in dit geval uit de kernafmetingen.

In figuur 3.1 is een foto opgenomen van het valgewicht.



Figuur 3.1: valgewicht-deflectiemetingen

In figuur 3.2 is een foto opgenomen van de geofoons welke op 0, 300, 600, 900 1200, 1500 en 1800 mm van het lastcetrum de deflectie gedurende 60 ms registeren.



Figuur 3.2: de geofoons

### 3.1 Uitgevoerde metingen

Voor de bepaling van de deflectie is h.o.h. iedere 2 m een meting uitgevoerd. Per meetlocatie worden 3 metingen verricht. Veelal vertoont de eerste meting een onregelmatig beeld omdat het apparaat zich nog moet zetten. De berekeningen worden uitgevoerd met de resultaten van de derde meting, de tweede meting wordt als controle gebruikt. In gevallen waarbij de derde meting een onregelmatig beeld geeft en de eerste of de tweede meting niet, zij de resultaten van de een van deze metingen gebruikt om de stijfheden terug te rekenen. Bij elke klap wordt een kracht (force) van ca. 50 kN op de bekleding uitgeoefend.

Het bemonsterde bekledingen hebben een totale lengte van 1044 m. De metingen zijn verdeeld over 4 meetraaien. Zie de tekeningen van bijlage 2 voor de raaien.

#### Meetraai 1:

Deze bestaat uit het talud aan Het Nollehoofd en is 125 m lang.

#### Meetraai 2:

Deze is de bovenraai aan boulevard Bankert en is 540 m lang.

De raai bevindt zich ca. 2 m boven gemiddeld hoogwater.

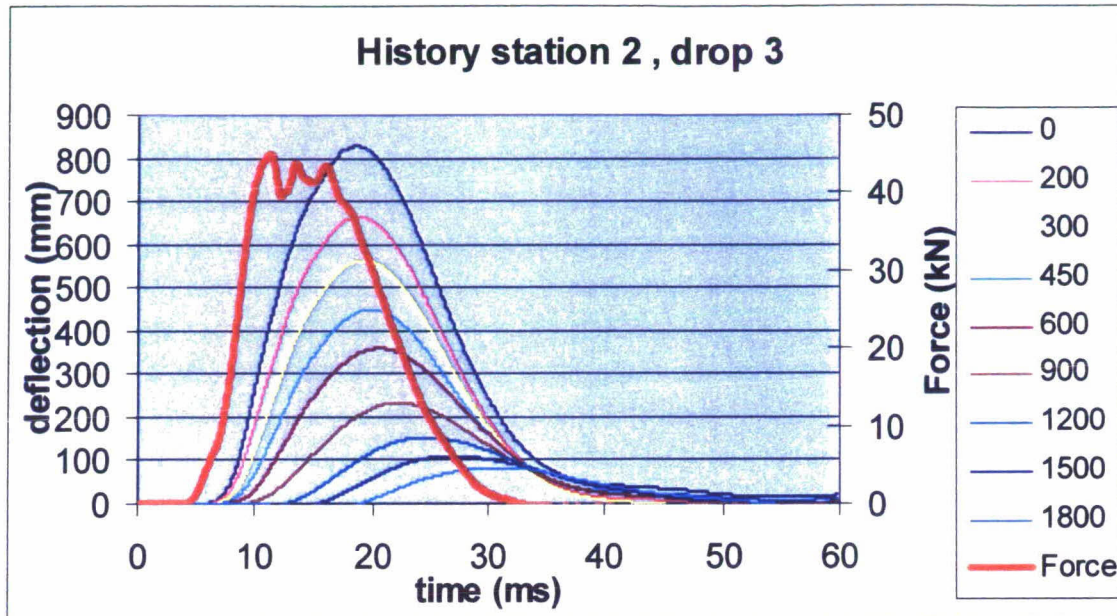
#### Meetraai 3:

Deze is de onderraai aan boulevard Bankert en is 163 m lang. Deze raai start 75 m na het nulpunt van meetraai 2. De raai bevindt zich onder gemiddeld hoogwater.

**Meetraai 4:**

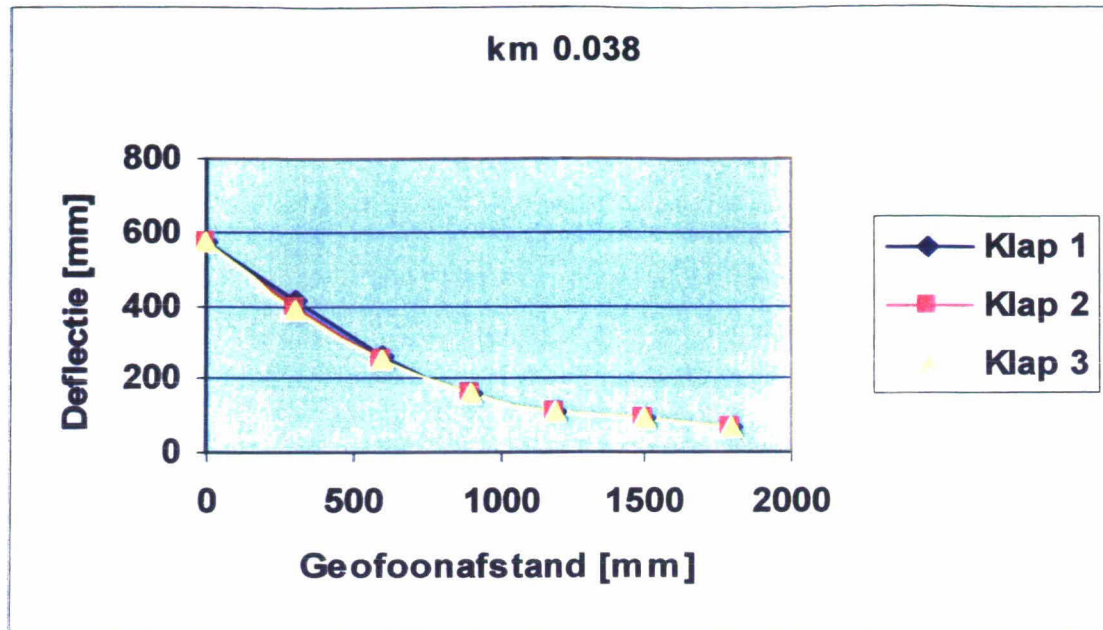
Deze is de onderraai aan boulevard Bankert en is 216 m lang. Deze raai start 324 m na het nulpunt van meetraai 2. De raai bevindt zich onder gemiddeld hoogwater.

In figuur 3.3 is een grafiek opgenomen welke de deflectie en de opgelegde belasting tegen de tijd weergeeft voor de verschillende gefoons.



Figuur 3.3: Grafische weergave van de deflectiegolf.

In figuur 3.3 zijn de maximale deflecties (toppen van de curven, zie figuur 3.3) van een meting uitgezet. Deze maximale deflecties zijn gebruikt bij de bepaling van de deflectiekrommen. In de deflectiekromme van locatie 21 van meetraai 1 zijn de maxima per gefoon uitgezet (zie figuur 3.4).



Figuur 3.4: Deflectiekromme 21<sup>e</sup> meting van meetraai 1

In bijlage 3 is een overzicht gegeven van alle gemeten deflectieprofielen.

### 3.2 Meting van de temperatuur

Op een nabijgelegen locatie is een gat van 12 cm diep geboord in de asfaltmastiek. Hierin is bij aanvang en einde van de metingen de temperatuur in het asfaltmastiek vastgesteld. Tevens is op deze tijdstippen de oppervlaktetemperatuur gemeten. Deze zijn in tabel 3.1 opgenomen.

In tabel 3.1 zijn de gemeten temperaturen opgenomen.

Meetraai	Datum	Tijdstip	Temperatuur (graden C)		Gem temp (graden C)	
			Oppervlakte	Gietasfalt	Oppervlakte	Gietasfalt
1	19-04-2006	12:30	19,2	12,4	17,3	16,2
1	19-04-2006	14:30	15,3	20,0		
2	18-04-2006	16:25	26,3	20,9	19,8	16,5
2	18-04-2006	18:50	20,7	22,4		
2	19-04-2006	8:30	11,4	10,9		
2	19-04-2006	10:00	12,4	10,9		
2	19-04-2006	14:30	20,0	15,3		
2	19-04-2006	15:50	24,9	16,8		
2	19-04-2006	16:40	22,8	18,5		
3	18-04-2006	15:25	26,5	20,7	21,9	16,5
3	18-04-2006	16:20	26,3	20,9		
3	19-04-2006	11:50	15,7	11,8		
3	19-04-2006	12:30	19,2	12,4		
4	19-04-2006	10:00	12,9	10,9	14,3	11,4
4	19-04-2006	11:50	15,7	11,8		

Het bepalen van de temperatuur is van belang omdat deze de stijfheid sterk beïnvloedt. Bij lage temperaturen zal het asfaltmastiek een hogere stijfheid hebben. De bekleding reageert dan meer als een plaat. Bij hogere temperaturen, zoals bij deze metingen, zal het asfaltmastiek een viskeuzer gedrag vertonen. Er zullen dan meer locaties met "afschuiving" teruggevonden worden.

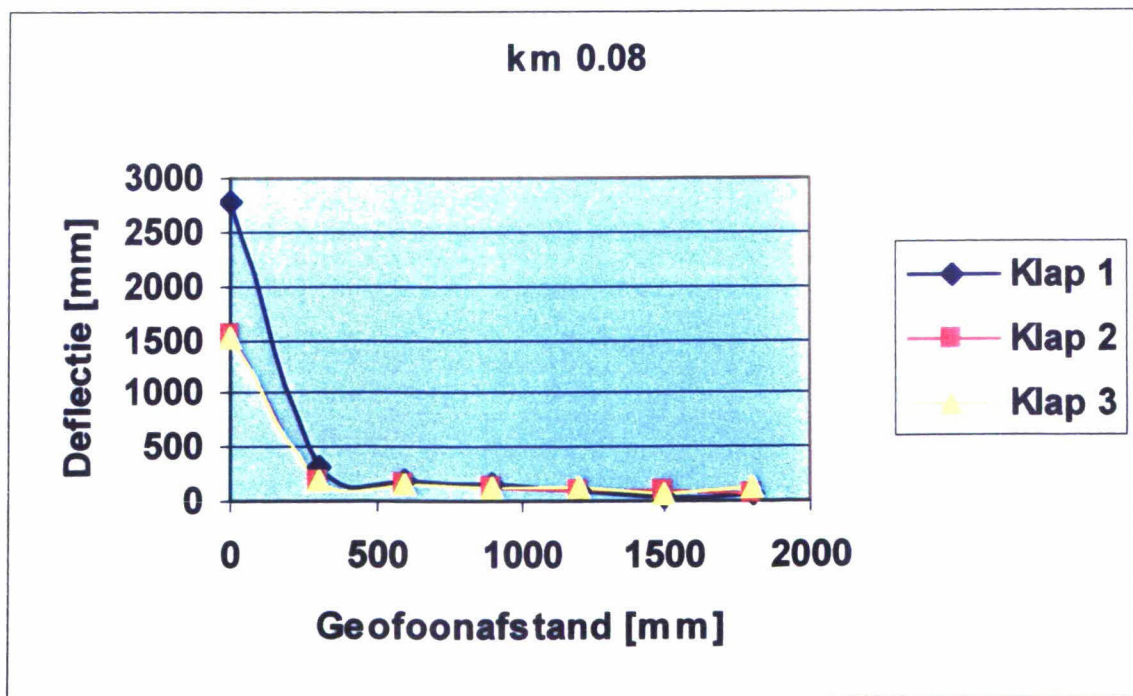
Indien de elasticiteitsmodulus als criterium wordt gebruikt in de veiligheidsbeoordeling, moet de gemeten stijfheid worden genormeerd naar 1 temperatuur, bijvoorbeeld 5 graden Celsius. Om de stijfheid te kunnen corrigeren voor de temperatuur moet de relatie tussen temperatuur en stijfheid worden bepaald. Om deze reden zijn de gemeten stijfheden niet voor de temperatuur gecorrigeerd.

### 3.3 Terugrekenen van de stijfheden

#### 3.3.1 Principe van het terugrekenen

Voor de evaluatie van de metingen is ten eerste de ruwe meetdata van de deflectiemetingen bekeken. Meetdata met meetfouten zijn geheel verwijderd. Dit wordt voornamelijk veroorzaakt door gefoons welke geen of slecht contact hebben met de bekleding. De deflecties van de bekleding zijn uitgezet tegen de afstand van de gefoons tot het lastcentrum. Hierbij zijn duidelijk twee vormen waar te nemen.

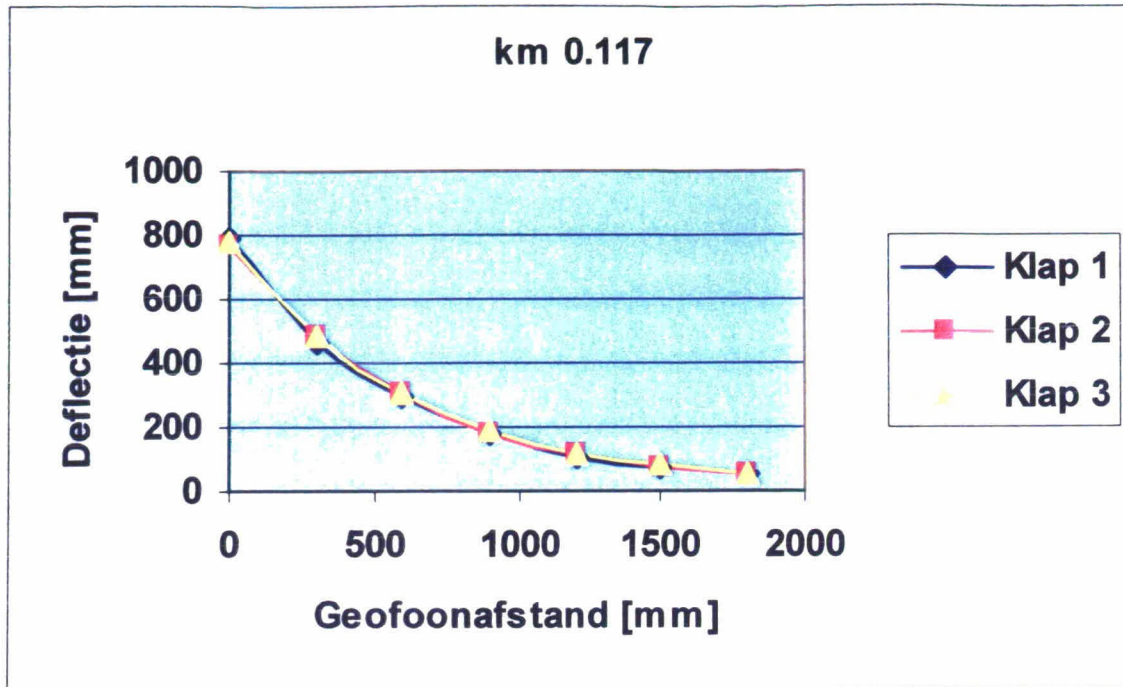
Ten eerste zijn er meetpunten die een zeer grote centrumdeflectie (afschuiving) hebben waarna de deflectie van de volgende gefoons direct sterk teruglopen (zie meting in figuur 3.5).



Figuur 3.5: Deflectiekromme waarbij afschuiving in een voeg optreedt



Ten tweede zijn er meetpunten waarbij de defecties geleidelijker teruglopen (zie figuur 3.6).



Figuur 3.6: Deflectiekromme indien “buiging” dominant is

Dit verschil wordt veroorzaakt door het verschil in samenhang van de bekleding. Uit de figuren 3.5 en 3.6 wordt direct een goed inzicht gekregen in de samenhang van de bekleding. Indien sprake is van plaatwerking tussen de elementen zal de teruggerekende stijfheid van de bovenlaag (van ingegoten basalt) een goede indicatie geven van de mate van samenhang. Algemeen kan er vanuit gegaan worden dat naarmate de stijfheid van de ingegoten basaltbekleding hoger is, de onderlinge samenhang van de zuilen beter is, en de bekleding minder gevoelig is voor verlies van zuilen t.g.v overdruk onder de bekleding.

Het terugrekenen van de stijfheid van de lagen gebeurt op basis van het concept van Boussinesq. Het bepalen van de stijfheid is een iteratief proces. Voor de lagen wordt een aanvangswaarde ingevoerd waarna het programma stijfheden berekend totdat het verschil tussen het gemeten en berekende deflectieprofiel binnen acceptabele grenzen ligt.

### 3.3.2 Surface modulus

Een belangrijk begrip, dat ter ondersteuning van de stijfheidberekeningen wordt gehanteerd, is de surface modulus. De surface moduli geven een indicatie over het stijfheidverloop in de verhardingsconstructie en worden met behulp van de formules van Boussinesq berekend uit de gemeten deflecties. Uit een gemeten deflectie op een bepaalde afstand kan een E-waarde voor zo'n model berekend worden die op dezelfde afstand, dezelfde deflectie zou geven. Deze E-waarde wordt surface modulus genoemd.

De surface modulus geeft een indruk van het stijfheidverloop in de ondergrond en verharding en maakt het mogelijk om het voorkomen van stijvere of juist minder stijve lagen te herkennen.



Voor de berekening van de surface moduli wordt gebruik gemaakt van de formules van Boussinesq:

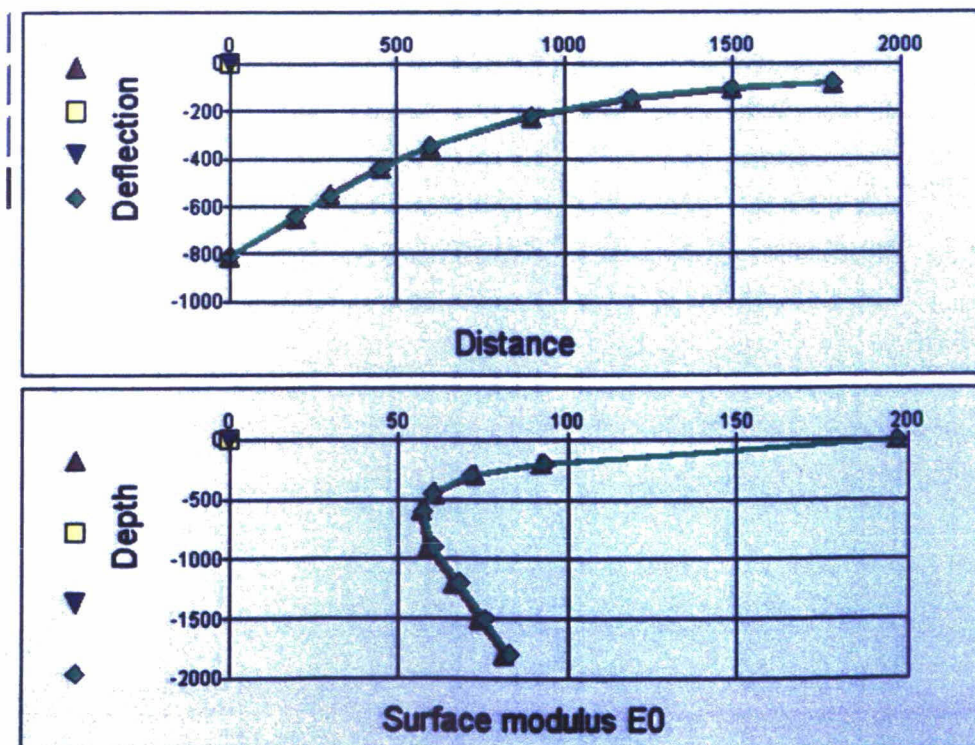
$$E_0(r) = \frac{(1-\nu^2)\sigma_0 a^2}{r \cdot \delta(r)}$$

waarin:

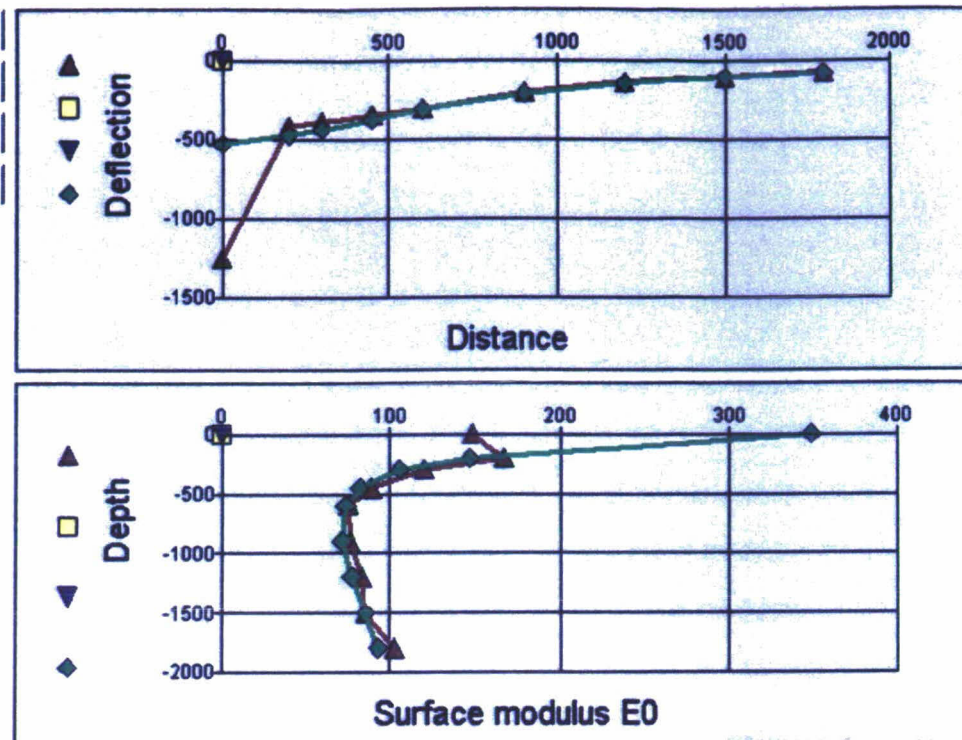
- $E_0(r)$  = surface modulus equivalente diepte  $r$  [MPa];
- $\nu$  = Poissonfactor [-];
- $\sigma_0$  = belasting onder de plaat [N/mm<sup>2</sup>];
- $a$  = straal van de plaat [mm];
- $r$  = afstand gefoon tot het plaatmidden [mm];
- $\delta(r)$  = deflectie op afstand  $r$  van het plaatmidden [ $\mu$ m].

De formules beschrijven de relatie tussen de deflectie en de elasticiteitsmodulus van een oneindige 'halfruimte'.

In de figuren 3.7 en 3.8 zijn 2 voorbeelden gegeven van een deflectieprofiel en het verloop van de surface modulus. De gemeten waarden zijn in het rood aangegeven, de berekende waarden in het groen.



Figuur 3.7: deflectieprofiel en surface modulus, gemeten (rood) en berekend (groen)



Figuur 3.8: deflectieprofiel en surface modulus, gemeten (rood) en berekend (groen)

Om tot een beter resultaat te komen is een tussenlaag ingevoerd met een dikte van 200 mm. In figuur 3.7 geeft het berekende deflectieprofiel een goede benadering van het gemeten deflectieprofiel. Zoals te zien is in figuur 3.8 wordt het gemeten deflectieprofiel niet goed benaderd indien er sprake is van afschuiving in de voegen. Het toch berekenen van de elasticiteitsmoduli resulteert in dit geval in een lage waarde. Hoewel dit geen betrouwbare waarde is voor de buigstijfheid van de toplaag, kan er op deze manier wel eenvoudig onderscheid worden gemaakt tussen metingen waarbij afschuiving is opgetreden (elasticiteitsmodulus < 500 MPa) en metingen waarbij de bekleding volledig als buiglijger fungeert (indicatie: elasticiteitsmodulus > 4.000 MPa). Daarnaast is er een gebied te onderscheiden waarin zowel afschuiving in de voegen als buiging optreden.

Zie bijlage 4 voor alle teruggerekende stijfheden.

## 4 Interpretatie van de resultaten

### 4.1 Buiging en afschuiving

Voor de interpretatie van de resultaten is onderscheid gemaakt tussen:

- Onbruikbare metingen;
- Metingen waarbij (volledige) afschuiving is opgetreden;
- Metingen waarbij de bekleding als buiglijger heeft gefungeerd.

In de tabellen 4.1 t/m 4.4 is aangegeven om welke aantallen het gaat. In tabel 4.5 zijn de gegevens voor alle metingen samengevat.

Tabel 4.1: Gegevens meetraai 1

	Aantal	percentage
Aantal uitgevoerde metingen	62	
Aantal gebruikte metingen	56	90%
Aantal metingen met afschuiving	21	37,5 %

Tabel 4.2: Gegevens meetraai 2

	Aantal	percentage
Aantal uitgevoerde metingen	273	
Aantal gebruikte metingen	234	85,7%
Aantal metingen met afschuiving	94	40,5%

Tabel 4.3: Gegevens meetraai 3

	Aantal	percentage
Aantal uitgevoerde metingen	80	
Aantal gebruikte metingen	68	85,0%
Aantal metingen met afschuiving	23	33,8%

Tabel 4.4: Gegevens meetraai 4

	Aantal	percentage
Aantal uitgevoerde metingen	106	
Aantal gebruikte metingen	95	89.6%
Aantal metingen met afschuiving	59	62.1%

Tabel 4.5: Totale gegevens

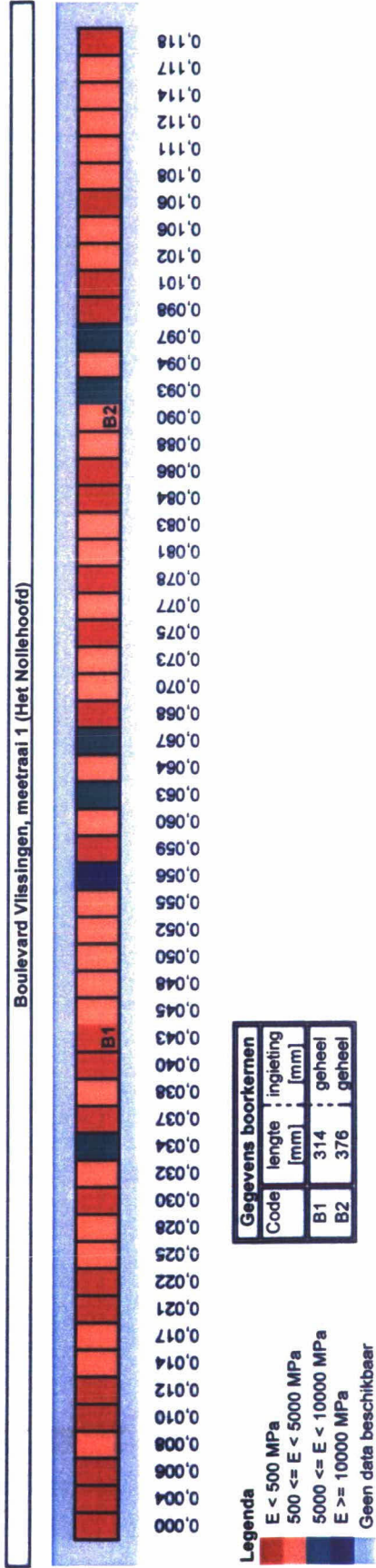
	Aantal	percentage
Aantal uitgevoerde metingen	521	
Aantal gebruikte metingen	453	86.9%
Aantal metingen met afschuiving	197	43.5%

Het volgende valt op:

- 87% van de metingen levert bruikbare data op. Dit percentage is over de 4 meetraaien gekeken gelijk.
- Bij 43.5% van de metingen treedt afschuiving op in de voegen bij de opgelegde belasting. Dit zijn locaties die tijdens een storm naar verwachting eerder zullen bezwijken dan locaties waar de bekleding als buiglijger fungeert.
- Het percentage afschuiving is vooral in meetraai 4 zeer hoog. In deze meetraai en ook in meetraai 2 zijn vakken zonder enige vorm van penetratie aanwezig.

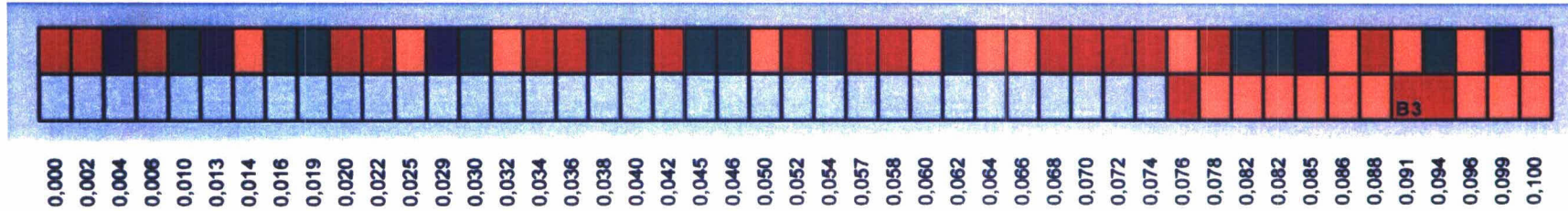
#### **4.2 Stijfheden**

In de onderstaande grafieken is een overzicht gemaakt van de meetlocaties. Deze zijn uitgezet als functie van de ligging (km) tegen de stijfheid. Hierbij is de stijfheid in 4 klassen ingedeeld.



Figuur 4.1: Overzicht stijfheden meetraai 1

Boulevard Vlissingen, meetraai 2 en 3



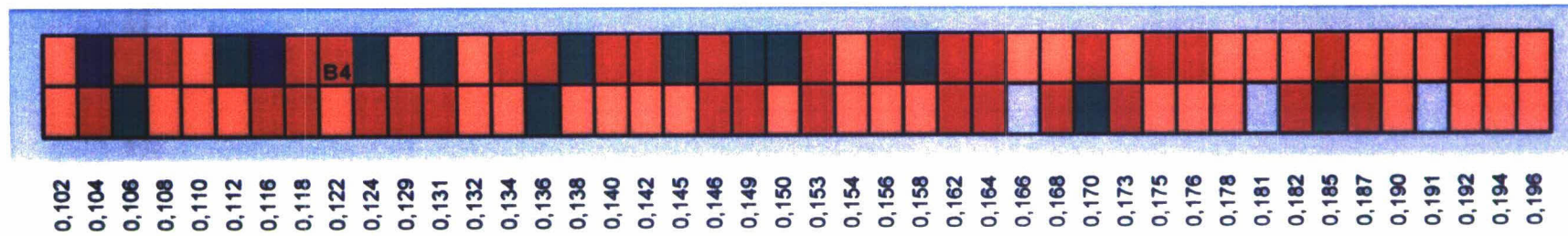
Legenda

- E < 500 MPa
- 500 ≤ E < 5000 MPa
- 5000 ≤ E < 10000 MPa
- E ≥ 10000 MPa
- Geen data beschikbaar

Gegevens boorkernen		
Code	lengte [mm]	ingieting [mm]
B3	385	geheel

Figuur 4.2: Overzicht stijfheden meetraai 2 en 3 (0 - 100 m)

Boulevard Vlissingen, meetraai 2 en 3



Legenda

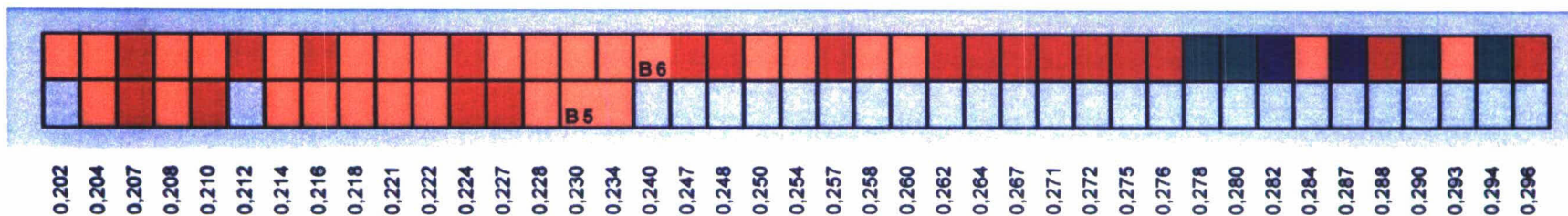
- E < 500 MPa
- 500 ≤ E < 5000 MPa
- 5000 ≤ E < 10000 MPa
- E ≥ 10000 MPa
- Geen data beschikbaar

Gegevens boorkernen		
Code	lengte [mm]	ingieting [mm]
B4	359	geheel

Figuur 4.3: Overzicht stijfheden meetraai 2 en 3 (100 - 200 m)



Boulevard Vlissingen, meetraai 2 en 3



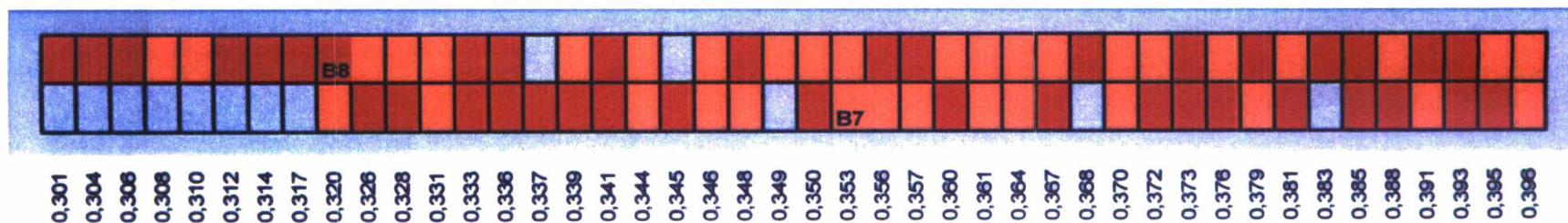
Legenda

- E < 500 MPa
- 500 ≤ E < 5000 MPa
- 5000 ≤ E < 10000 MPa
- E ≥ 10000 MPa
- Geen data beschikbaar

Gegevens boorkernen		
Code	lengte [mm]	ingieting [mm]
B5	311	0
B6	369	202

Figuur 4.4: Overzicht stijfheden meetraai 2 en 3 (200 - 300 m)

Boulevard Vlissingen, meetraai 2 en 4



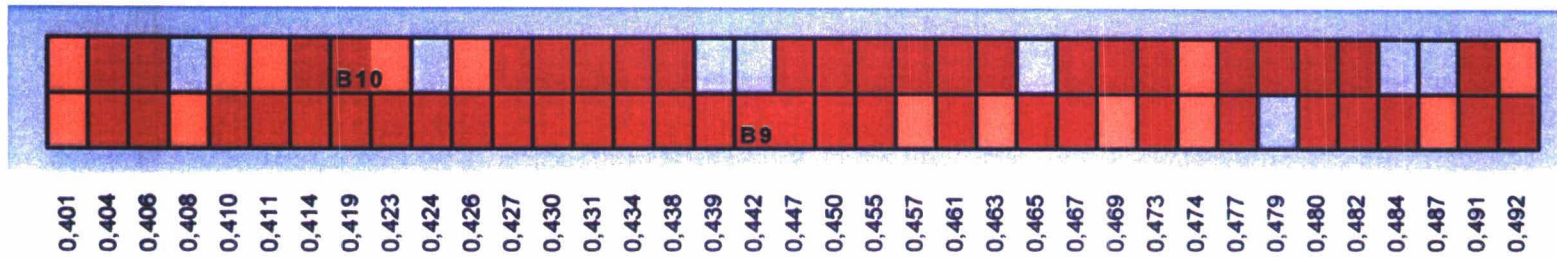
Legenda

- E < 500 MPa
- 500 ≤ E < 5000 MPa
- 5000 ≤ E < 10000 MPa
- E ≥ 10000 MPa
- Geen data beschikbaar

Gegevens boorkernen		
Code	lengte [mm]	ingieting [mm]
B7	349	geheel
B8	351	66

Figuur 4.5: Overzicht stijfheden meetraai 2 en 4 (300 - 400 m)

Boulevard Vlissingen, meetraai 2 en 4



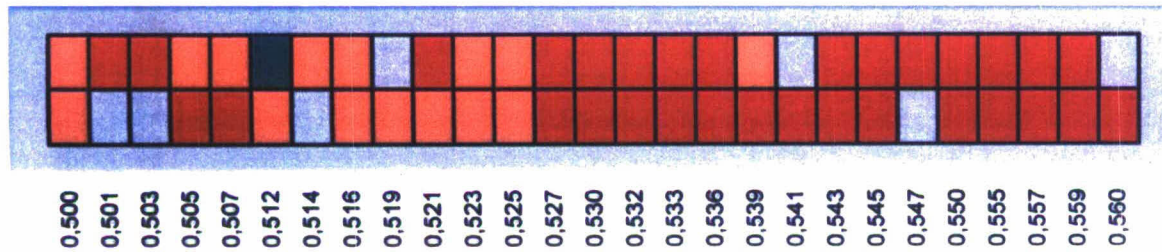
Legenda

- E < 500 MPa
- 500 ≤ E < 5000 MPa
- 5000 ≤ E < 10000 MPa
- E ≥ 10000 MPa
- Geen data beschikbaar

Gegevens boorkernen		
Code	lengte [mm]	ingieting [mm]
B9	327	geen
B2	333	67

Figuur 4.6: Overzicht stijfheden meetraai 2 en 4 (400 - 500 m)

Boulevard Vlissingen, meetraai 2 en 4



Legenda

- E < 500 MPa
- 500 ≤ E < 5000 MPa
- 5000 ≤ E < 10000 MPa
- E ≥ 10000 MPa
- Geen data beschikbaar

Figuur 4.7: Overzicht stijfheden meetraai 2 en 4 (500 - 562 m)



Op de locatie zijn verschillende typen ingietingen waargenomen. Zowel penetratie met beton als asfaltmastiek komen voor. Daarnaast zijn gedeelten niet ingegoten. Dit veroorzaakt verschillen in de deflectieprofielen. In de tabellen 4.1 en 4.2 zijn de verschillende vakken op basis van type ingieting gegeven.

Tabel 4.1: Vakindeling meetraai 2 op basis van ingieting

<b>Begin vak t.o.v. nulpunt meetraai 2 (km)</b>	<b>Type ingieting</b>
0.000	Asfaltmastiek
0.320	Geen
0.336	Asfaltmastiek
0.373	Beton
0.411	Asfaltmastiek
0.422	Beton
0.432	Geen
0.475	Asfaltmastiek en beton
0.502	Asfaltmastiek
0.535	Beton
0.543	Geen

Tabel 4.2: Vakindeling meetraai 4 op basis van ingieting

<b>Begin vak t.o.v. nulpunt meetraai 2 (km)</b>	<b>Type ingieting</b>
0.324	Geen
0.342	Asfaltmastiek
0.412	Geen
0.449	(gedeeltelijk) beton
0.484	Asfaltmastiek en beton
0.498	Asfaltmastiek
0.532	Geen

**Bijlage 1**

Overzicht meetlocaties te Vlissingen



**Bijlage 2**

Tekeningen met boorlocaties

OP TE NEMEN EN TE HERSTRATEN TEGELBESTRATING

OP TE NEMEN EN IN KEPERVERBAND TE HERSTRATEN KLINKERBESTRATING

Britannia Grand Hotel

Scheldeflat  
RIOLERING Ø 0.40

Wooldhuys

Boulevard Evertsen  
ONDERBROKEN

BETONBANDEN

TE SLOPEN KEERMUUR

TE MAKEN VOETPAD

VOETBREEDTE MUUR 2.50

TE SLOPEN KEERMUUR

Schaal 1:1000

B1  
B2

VOETBR 2.50  
FINDE KEERMUUR

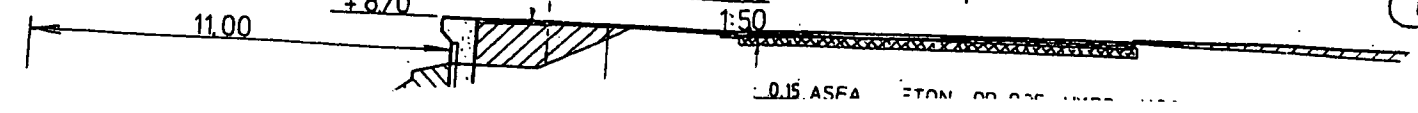
7a

6a  
meetsaai 1

meetsaai 1  
HOUTEN DAMWAND

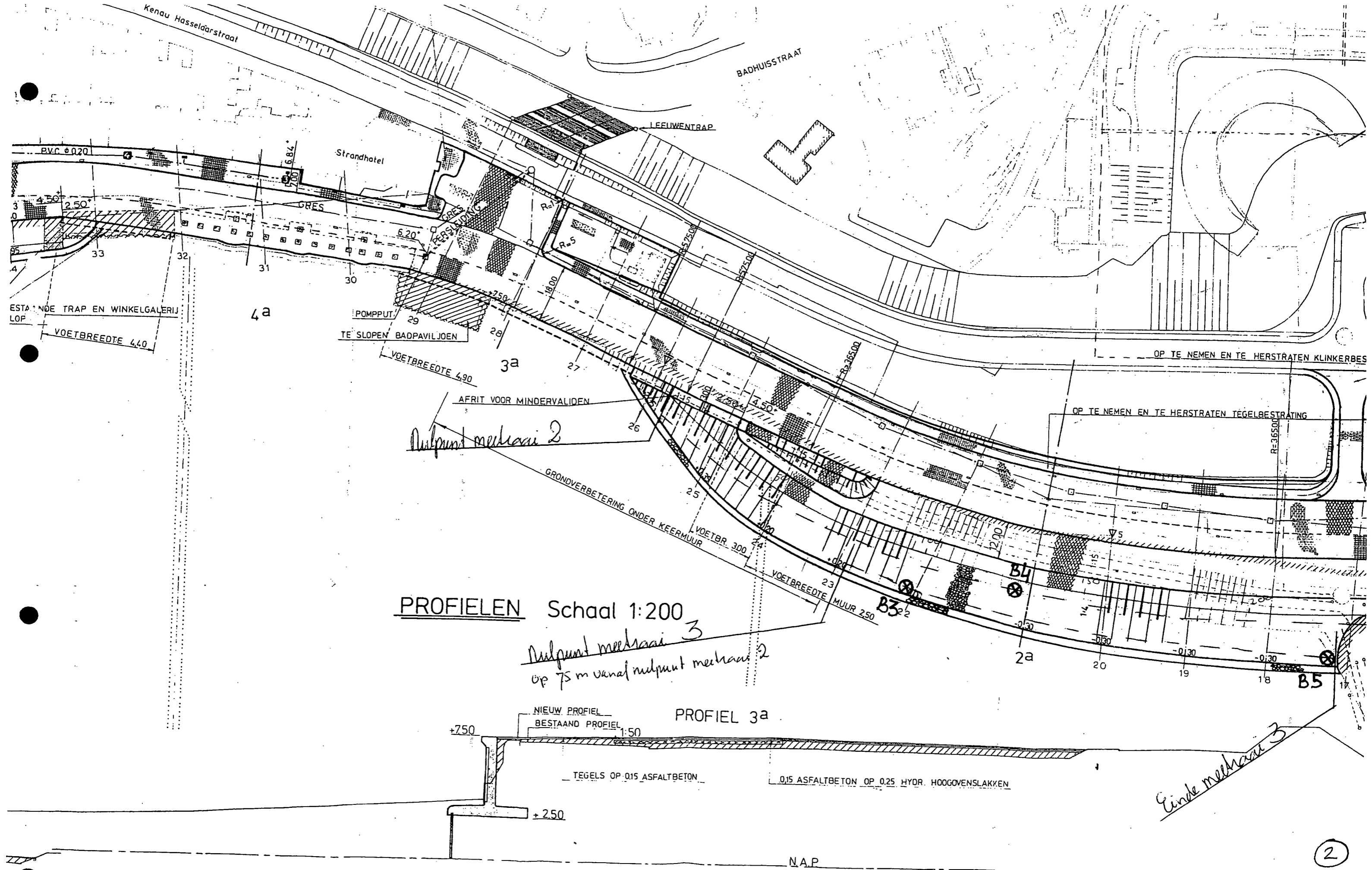
NIEUW PROFIEL  
BESTAAND PROFIEL

PROFIEL 7a



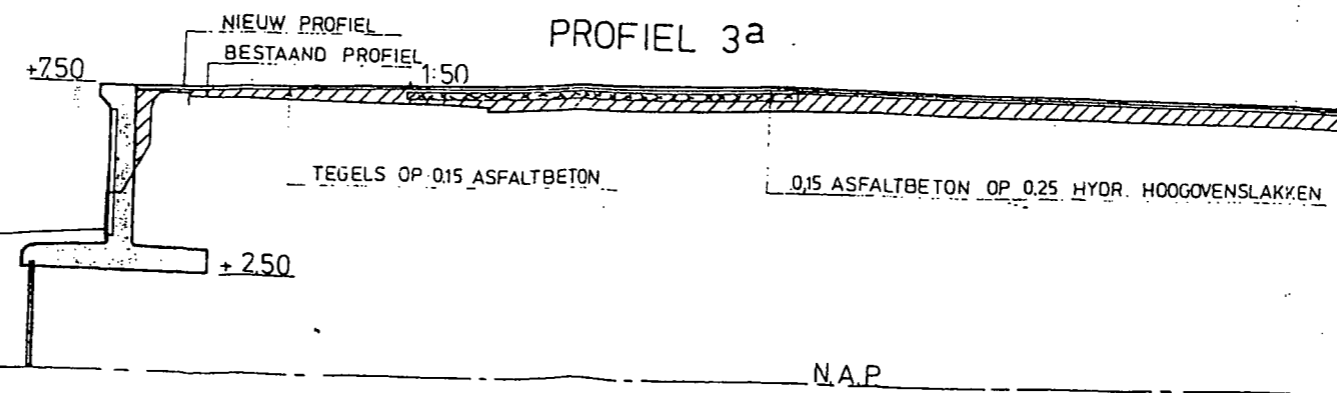
0.15 ASFA

1



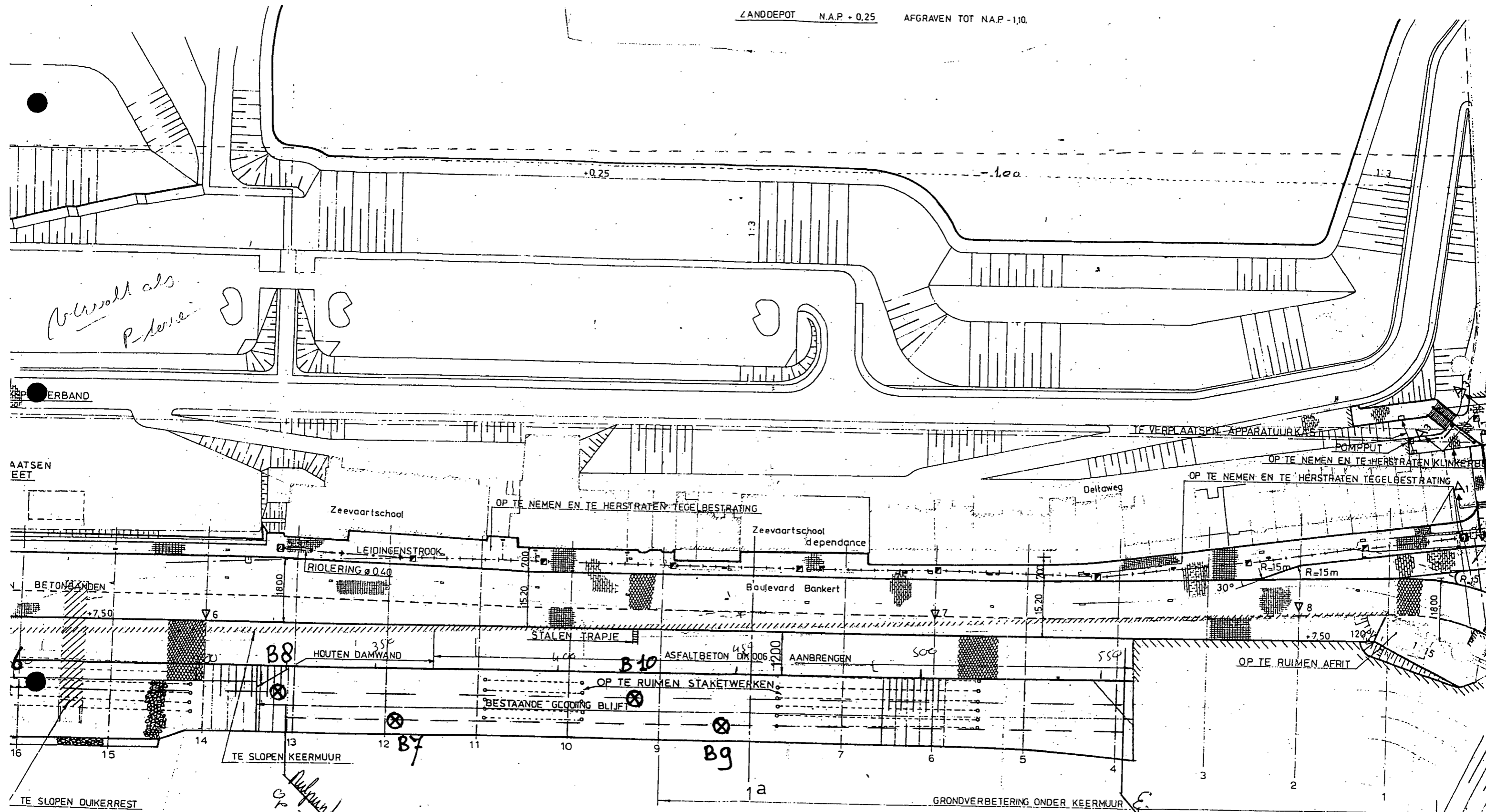
**PROFIELEN** Schaal 1:200

*Uitpunt meetraai 3  
op 75 m vanaf uitpunt meetraai 2*



*Einde meetraai 3*



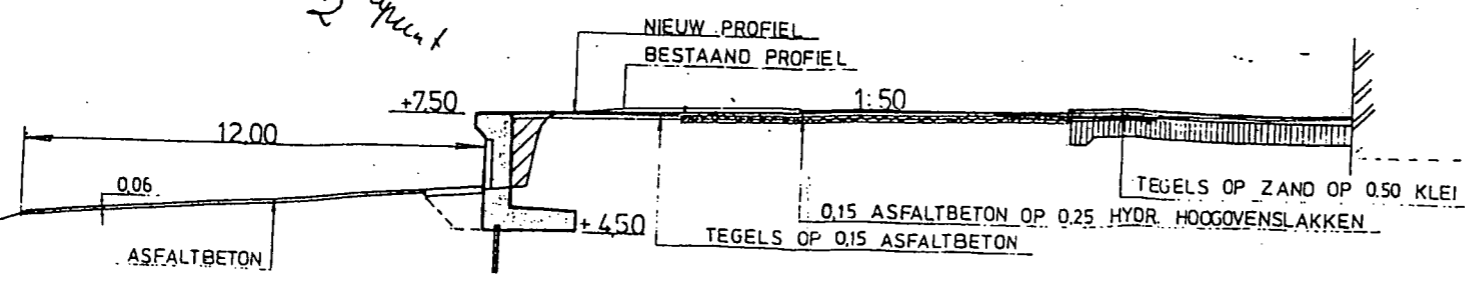


*Boulevard als P-deuren*

*Op 324 m vanaf nu punt metkassa 2*

*Einde metkassa*

PROFIEL 1a

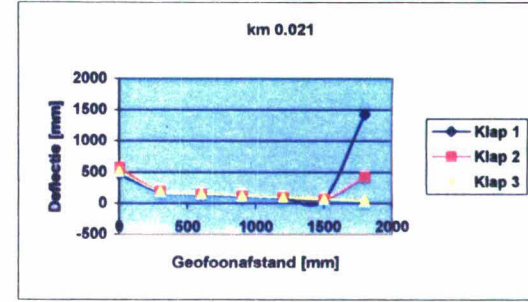
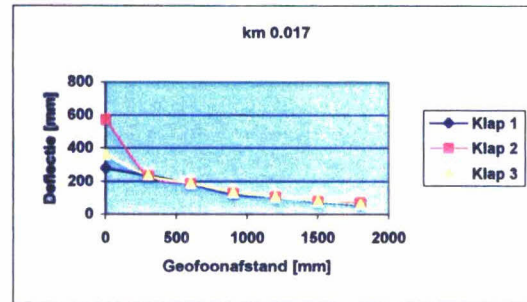
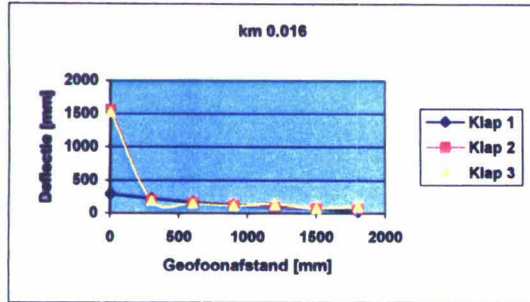
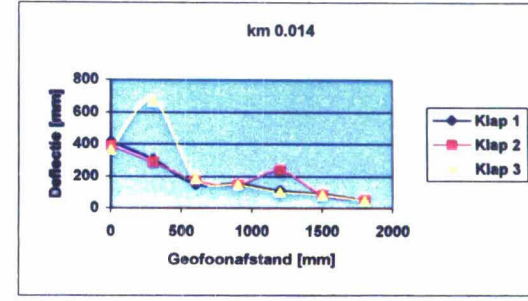
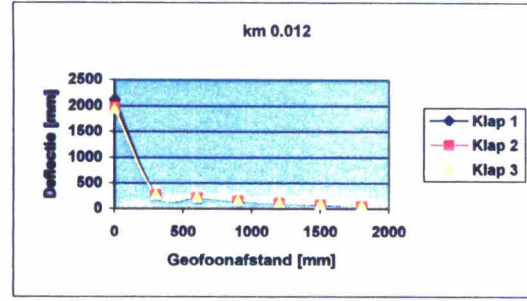
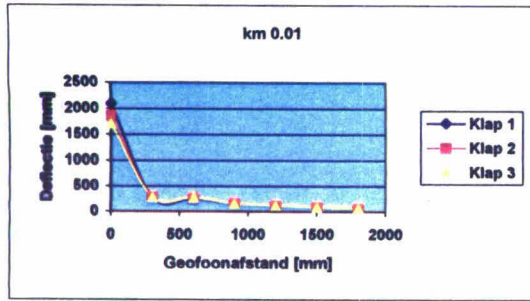
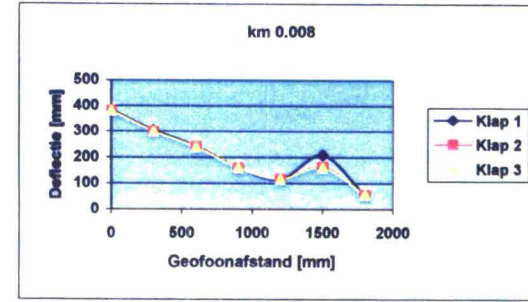
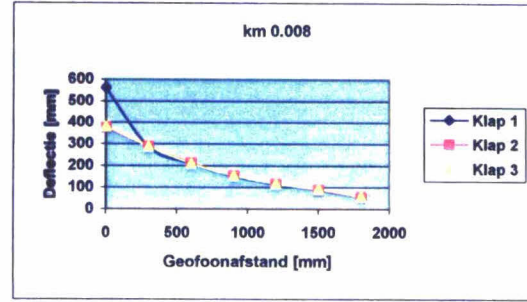
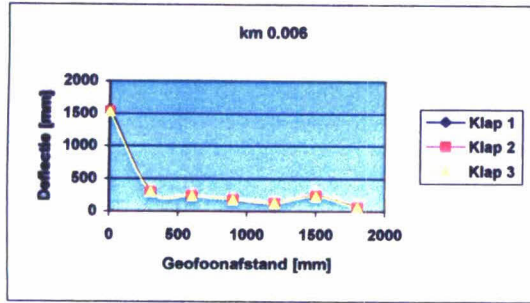
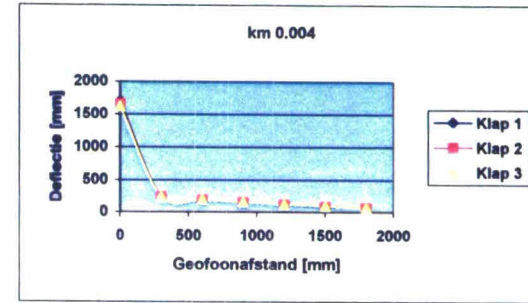
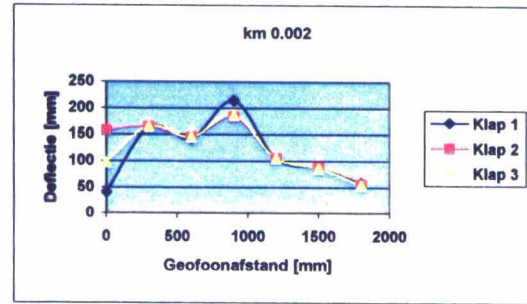
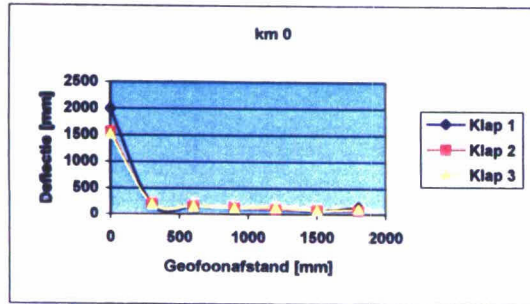


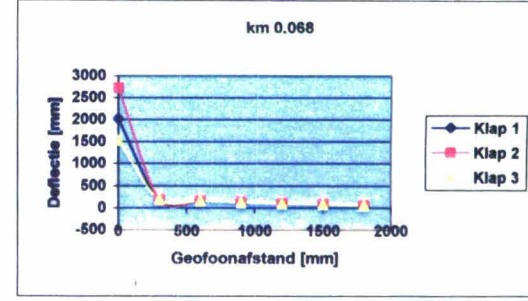
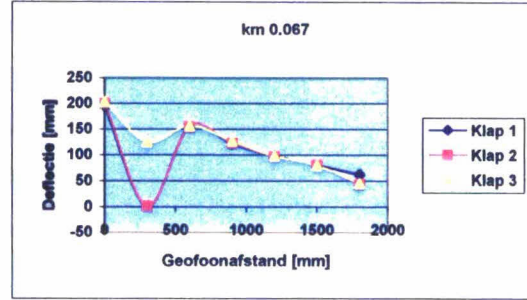
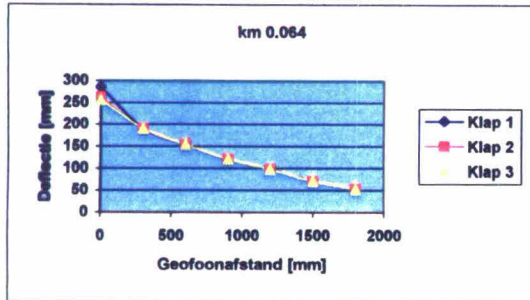
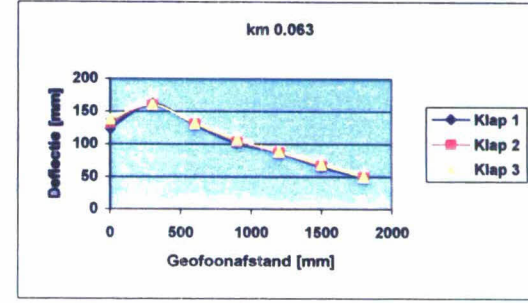
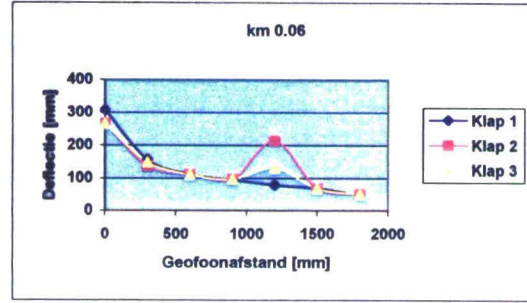
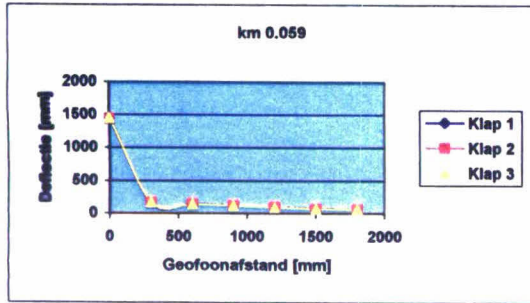
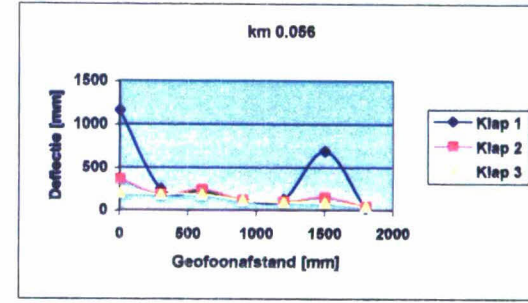
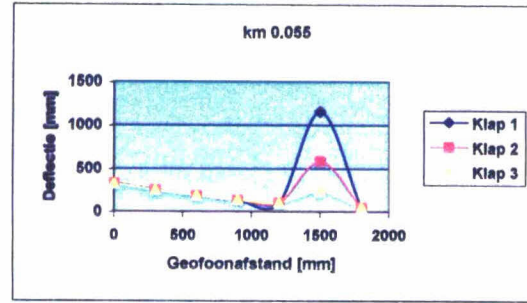
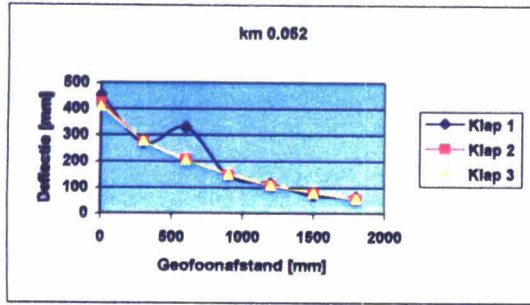
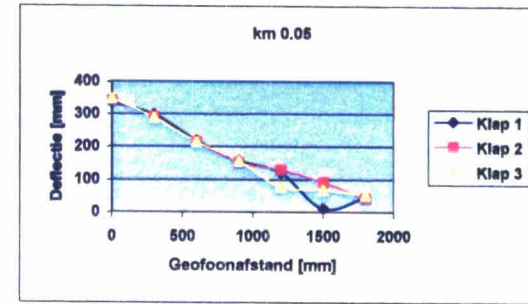
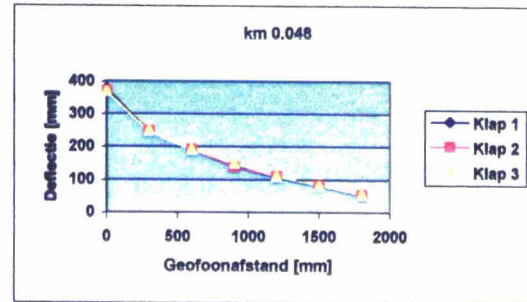
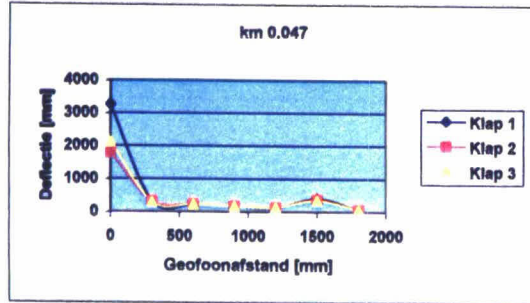
TOELICHTING OP SITUATIE

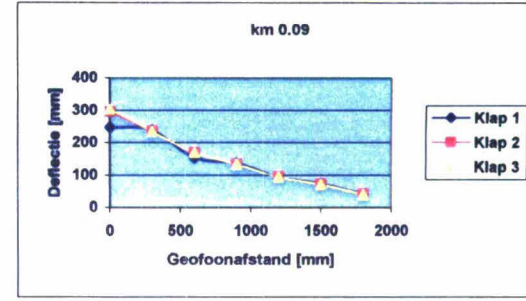
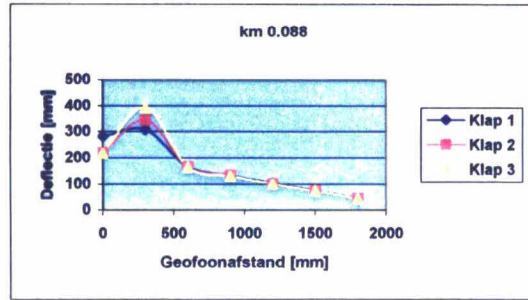
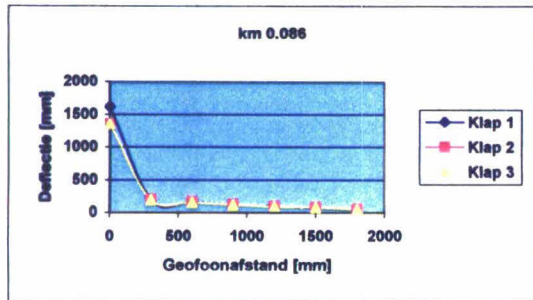
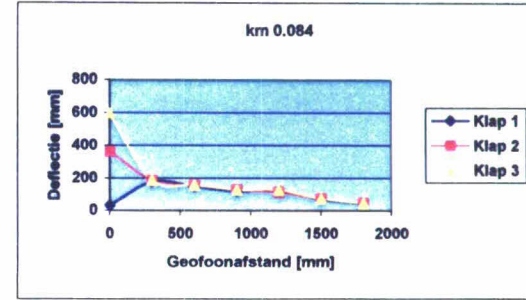
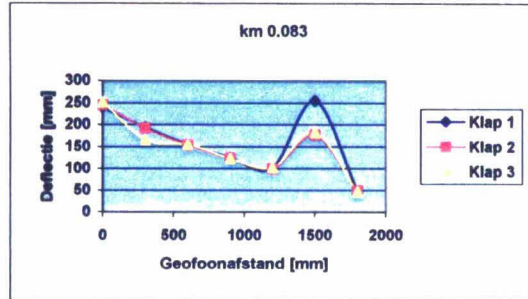
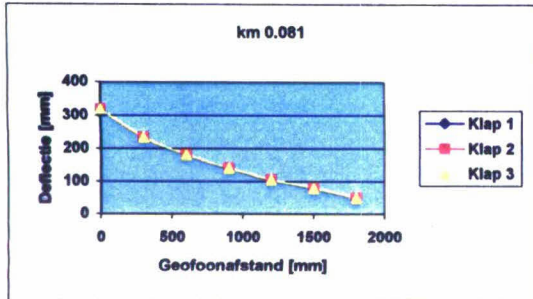
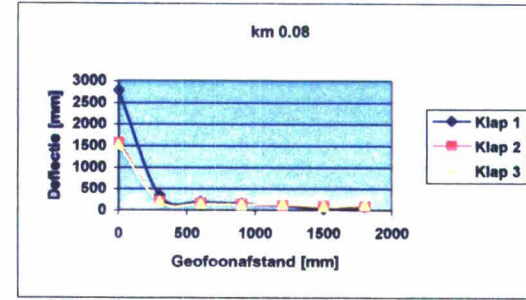
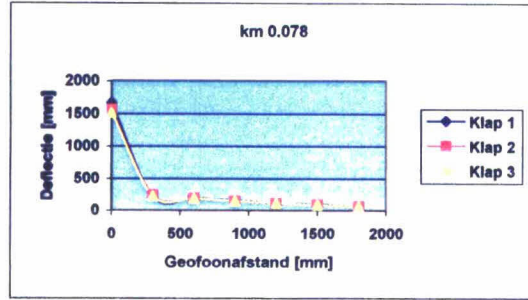
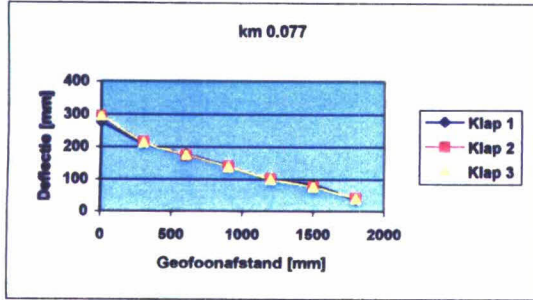
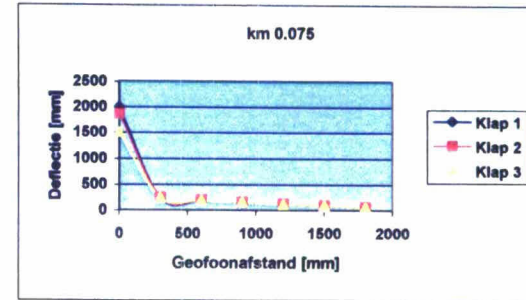
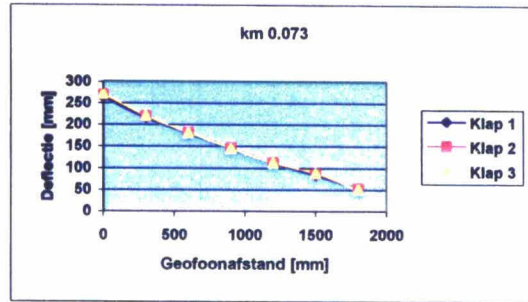
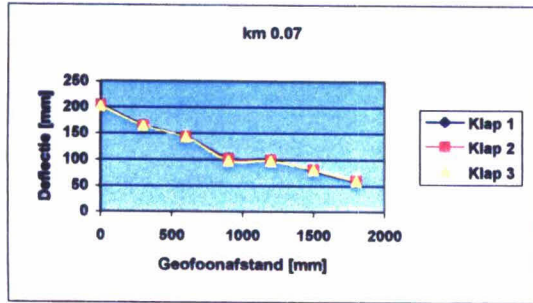
- BESTAANDE TOESTAND
- TE MAKEN WERK
- ▨ TE SLOPEN KEERMUUR EN BOUWWERKEN
- ▩ ASFALTBETON
- ▧ BETONGEGELS
- ▦ DOORGROEISTEEN

**Bijlage 3****Deflectiekrommen**

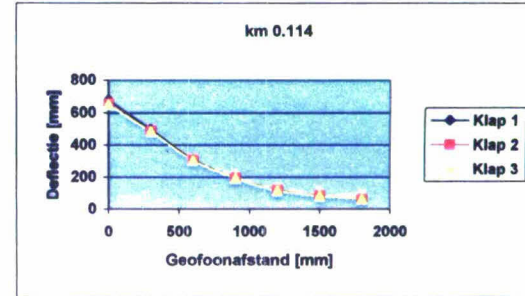
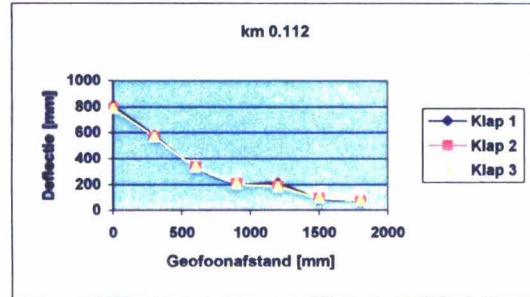
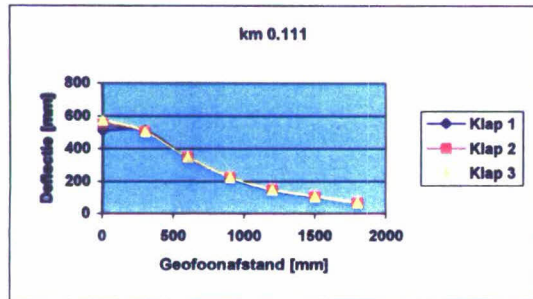
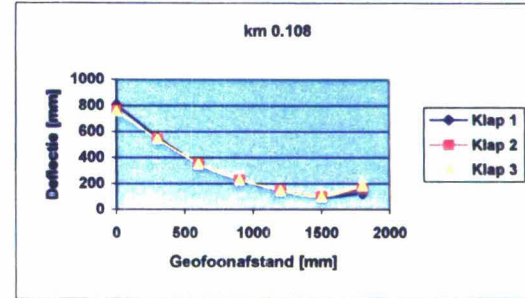
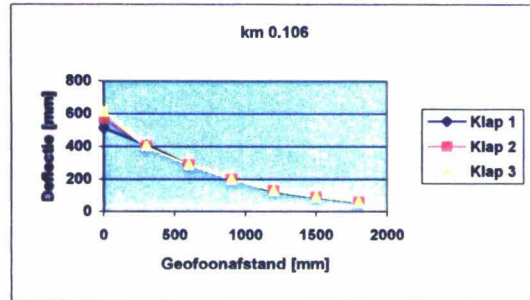
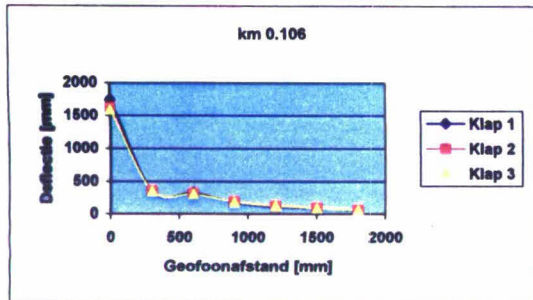
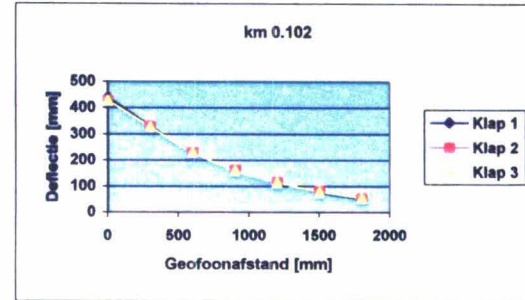
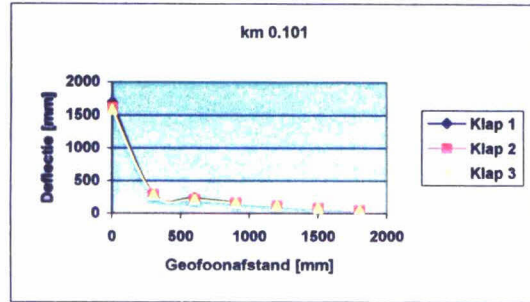
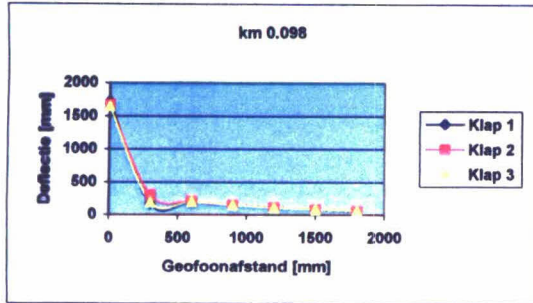
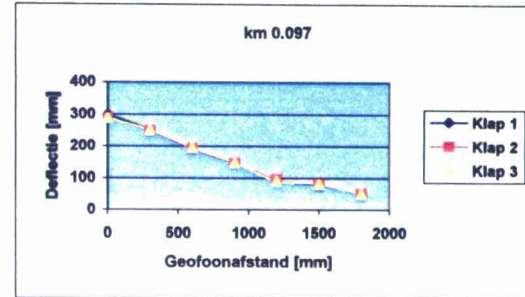
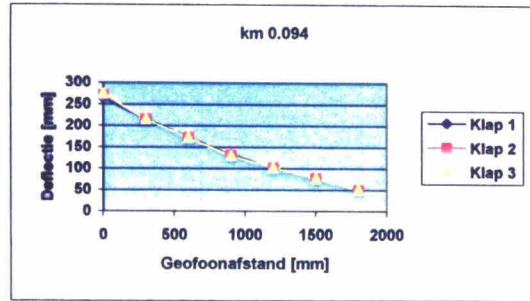
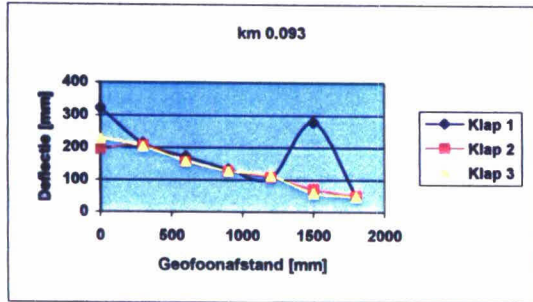
**Meetraai 1**



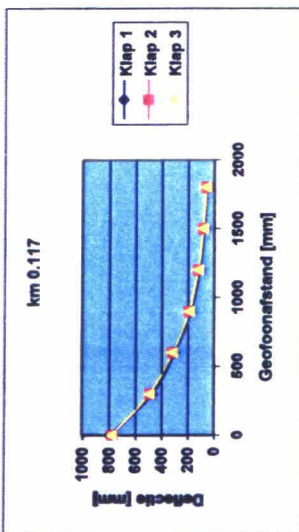
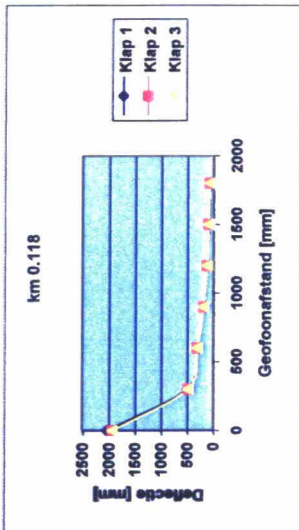




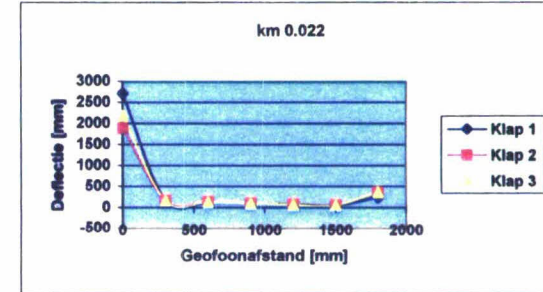
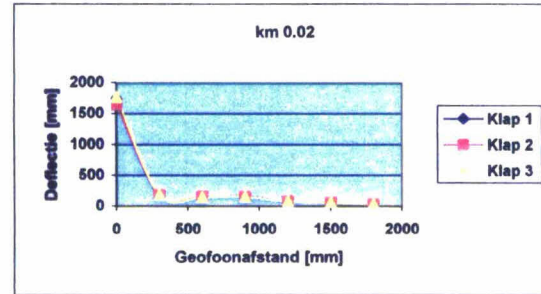
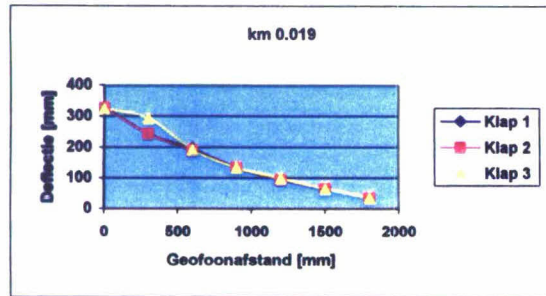
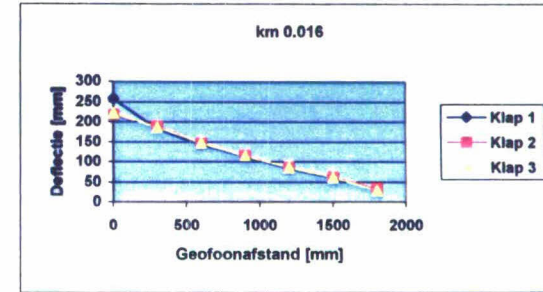
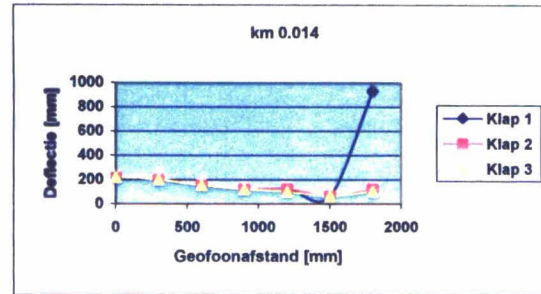
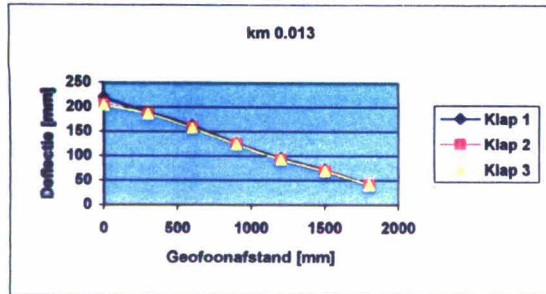
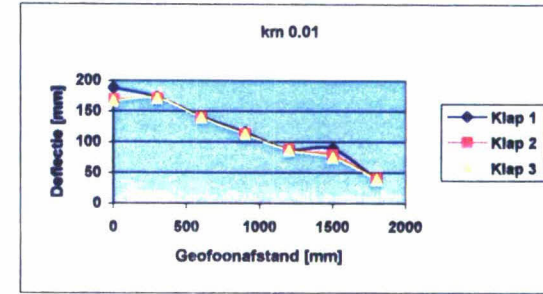
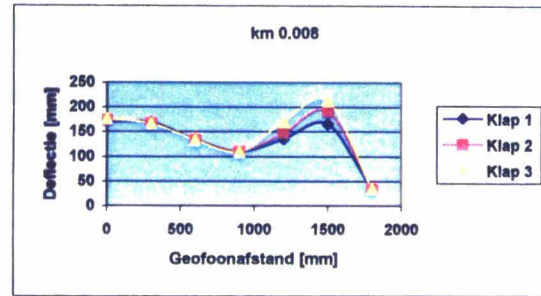
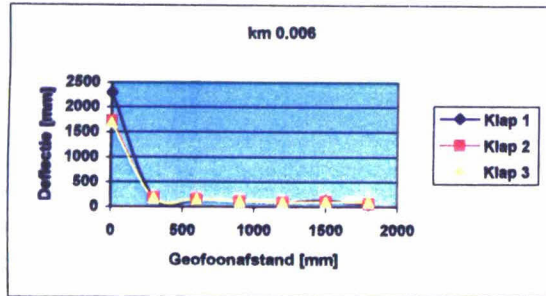
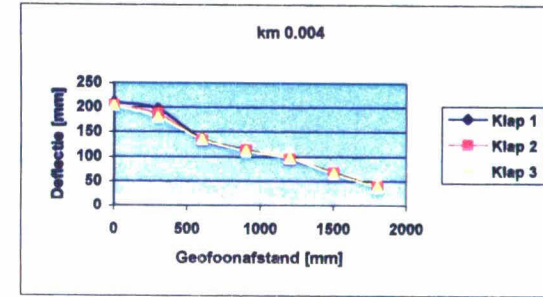
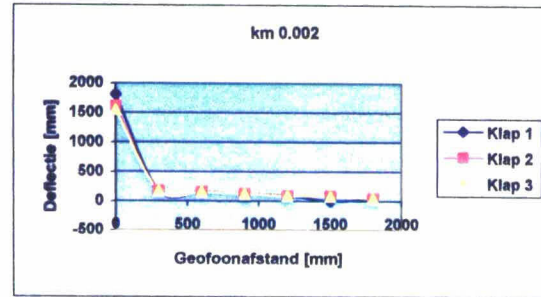
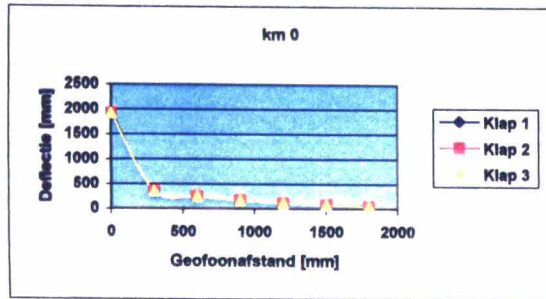


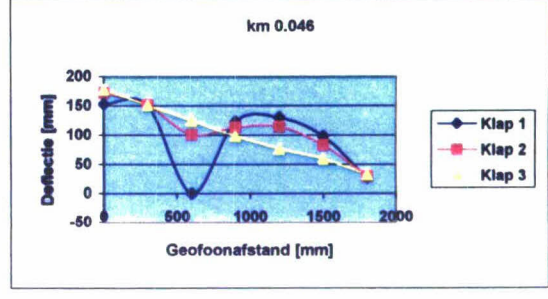
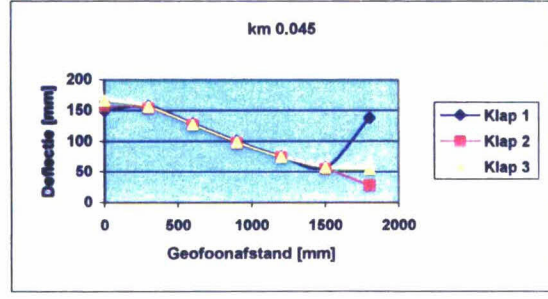
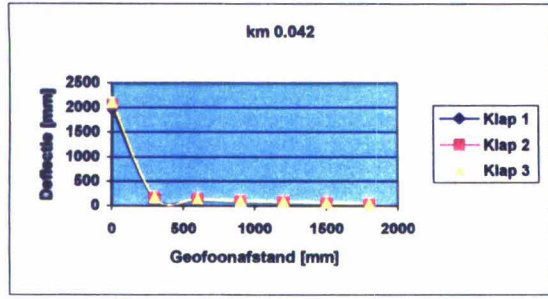
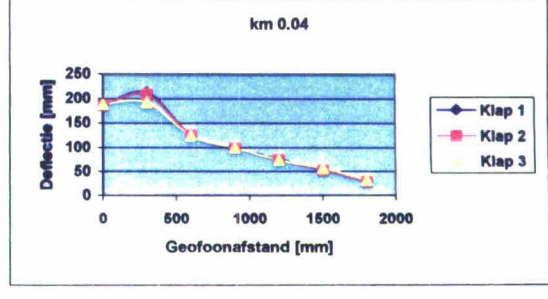
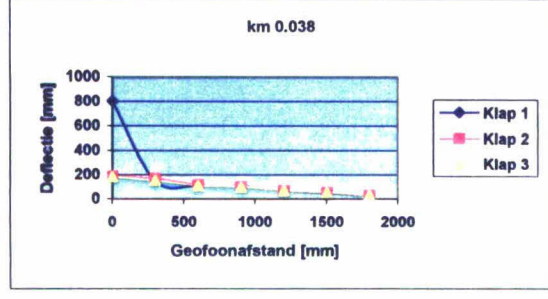
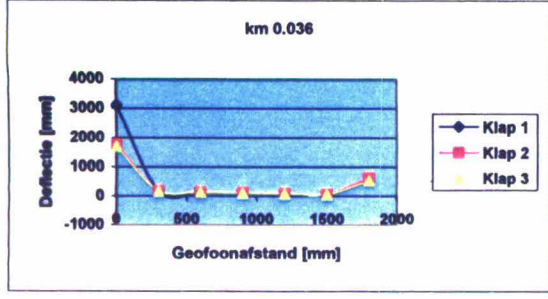
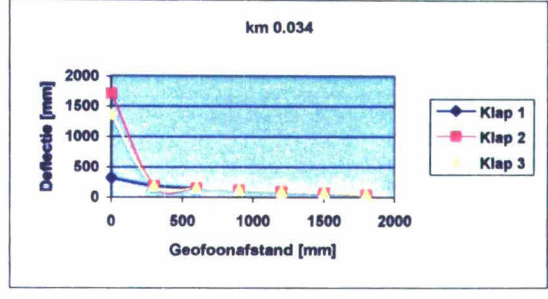
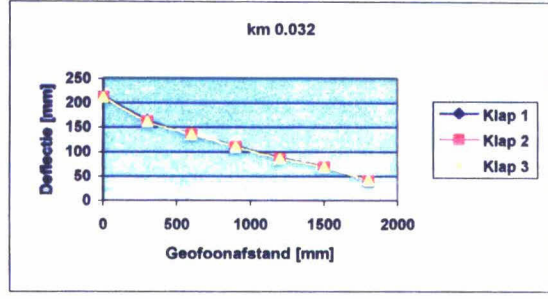
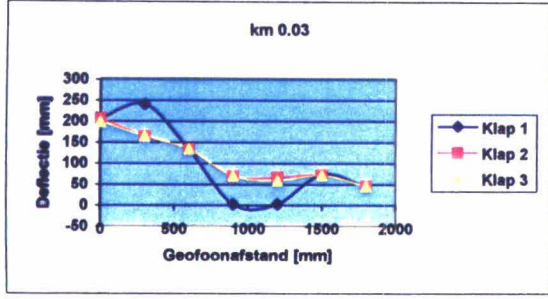
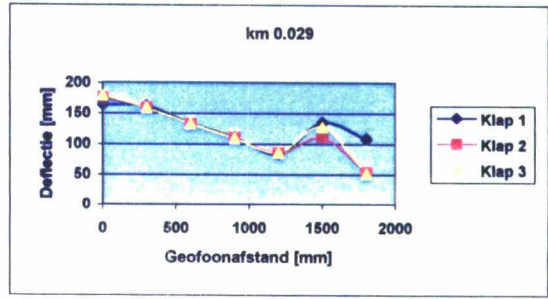
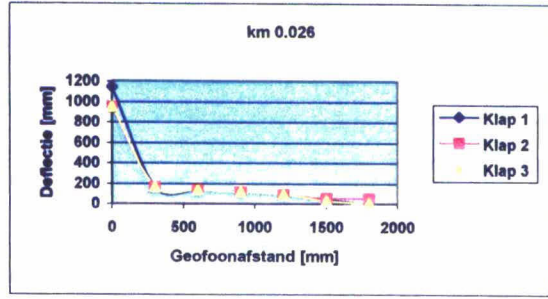
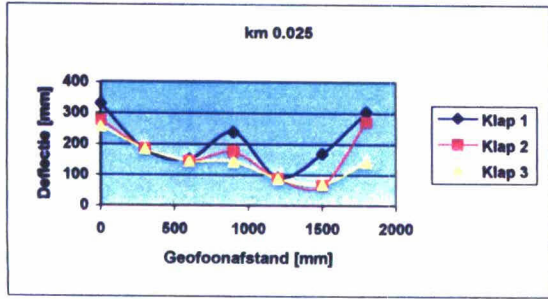


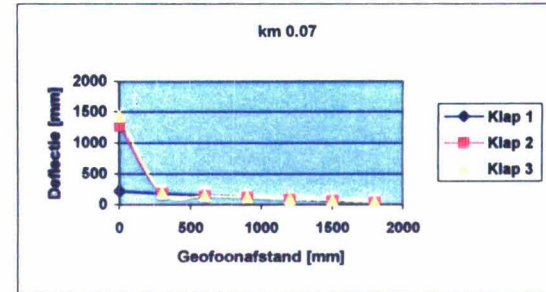
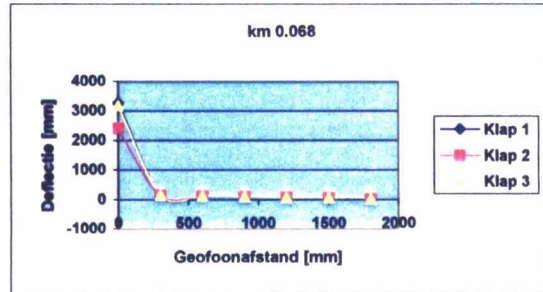
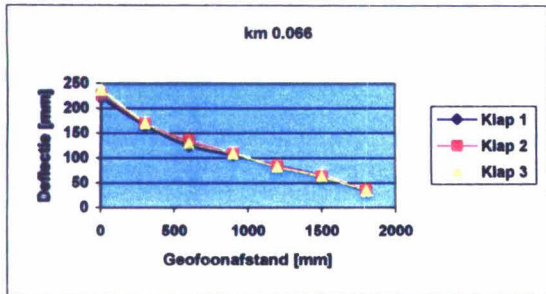
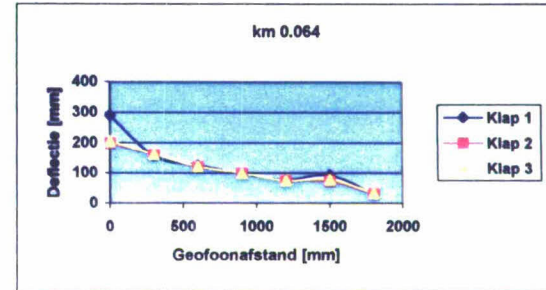
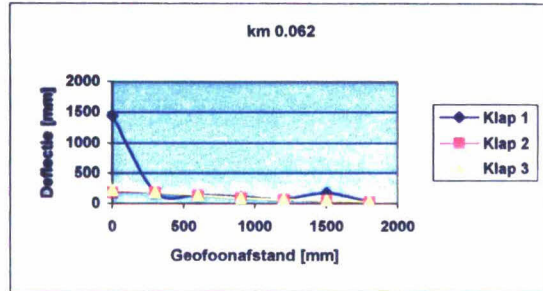
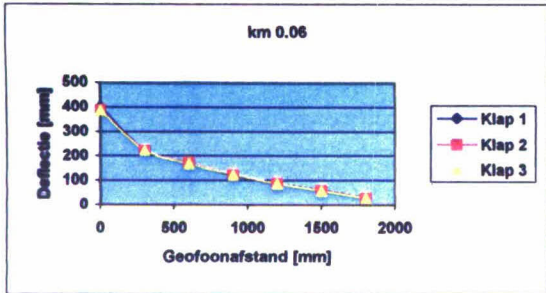
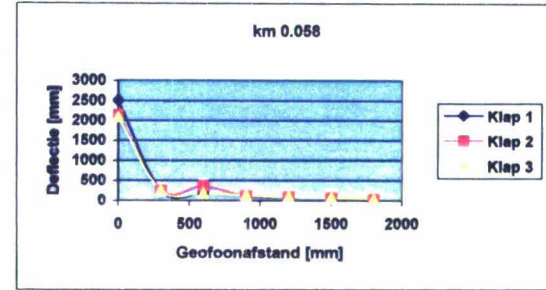
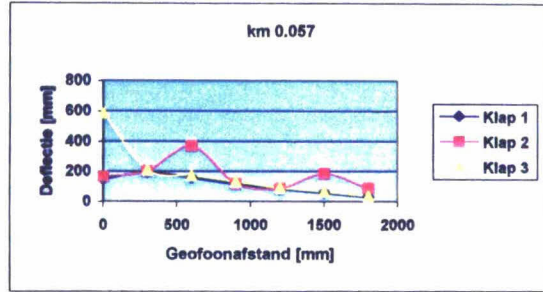
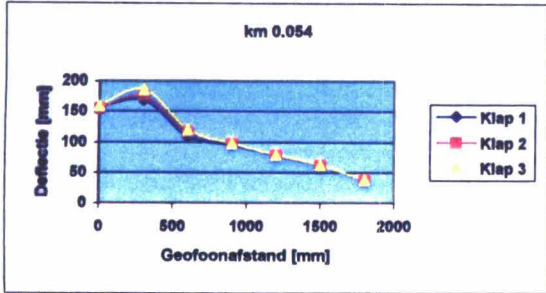
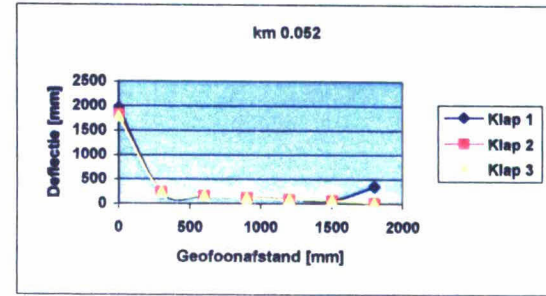
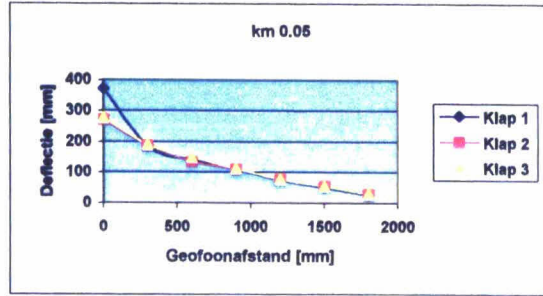
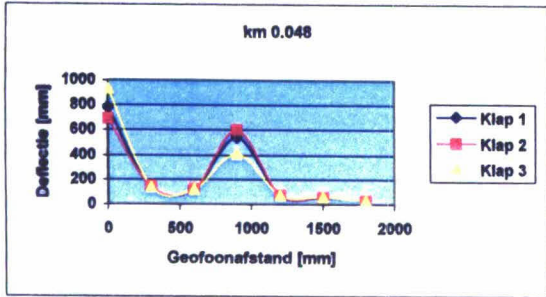


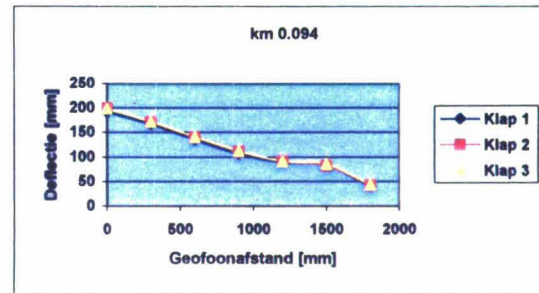
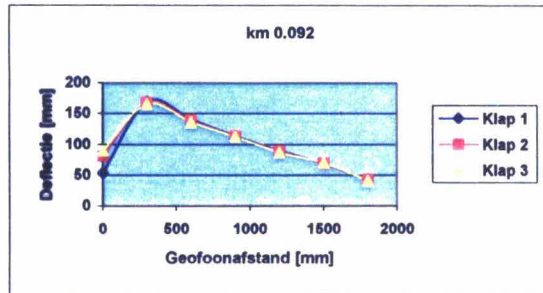
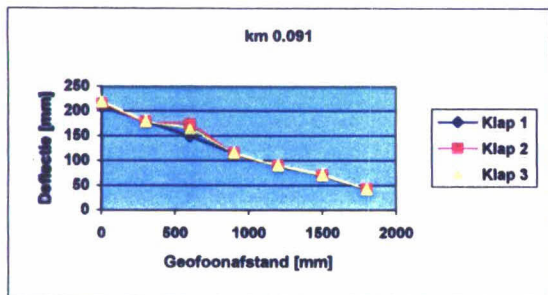
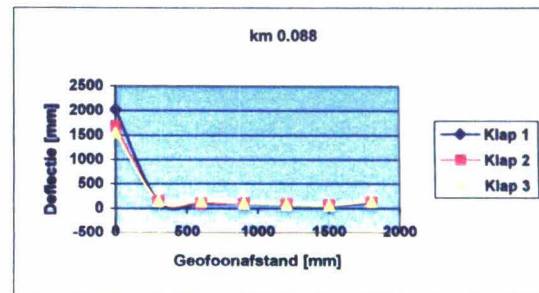
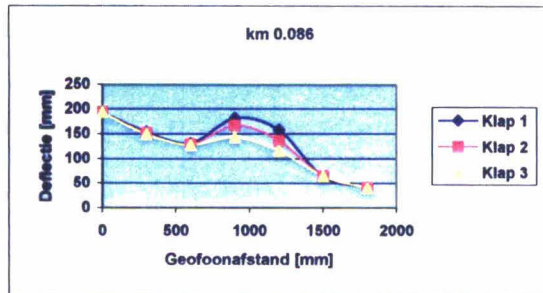
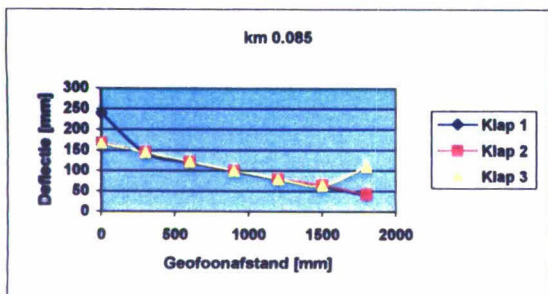
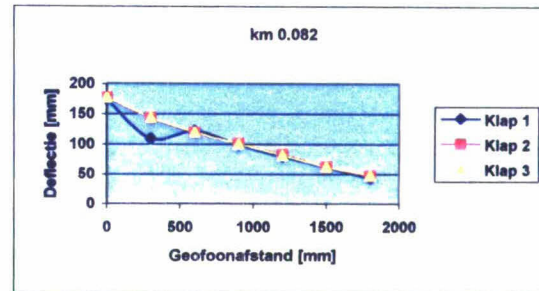
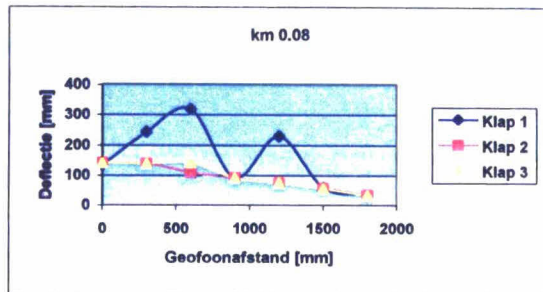
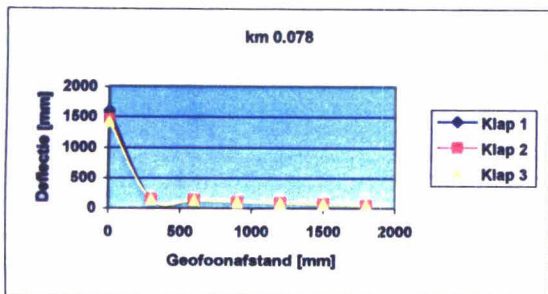
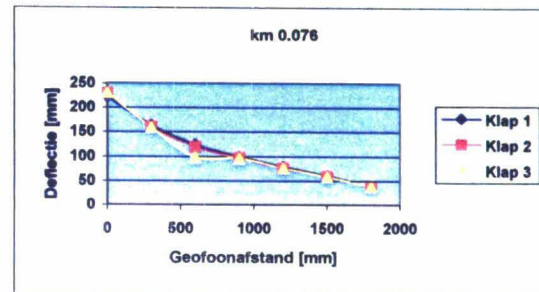
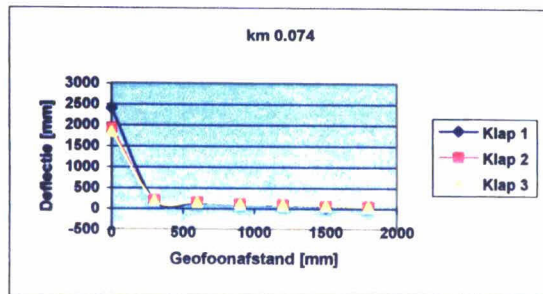
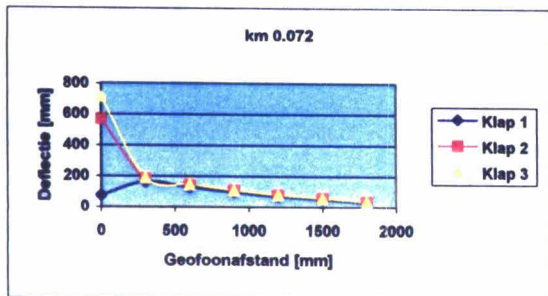


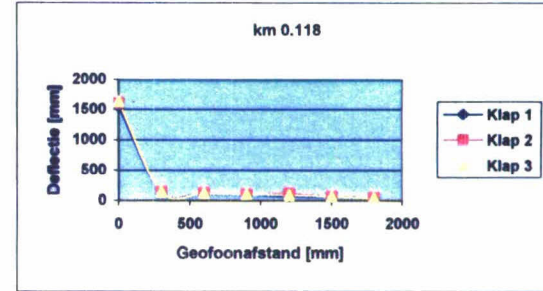
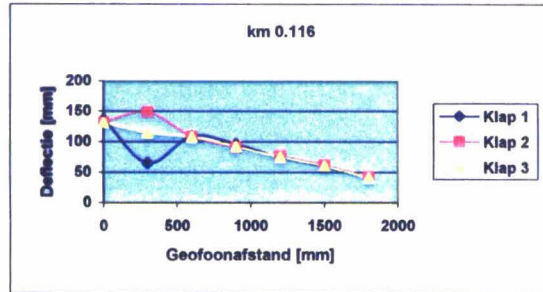
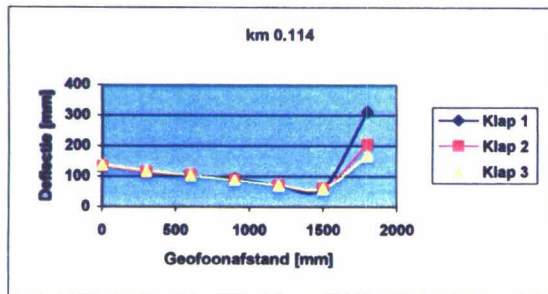
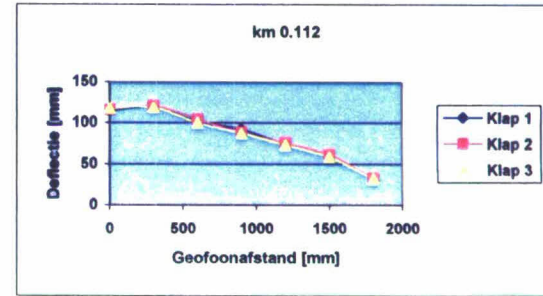
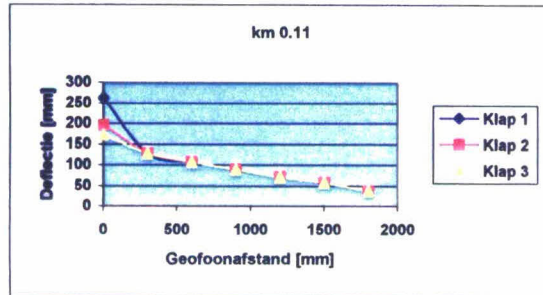
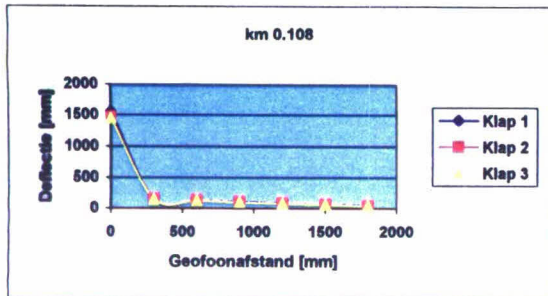
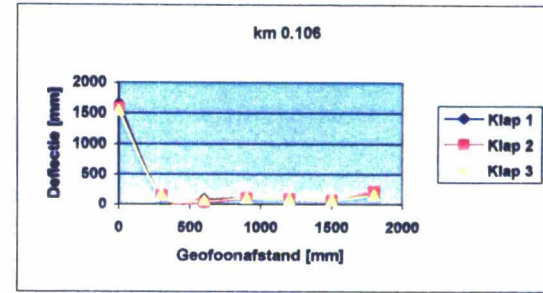
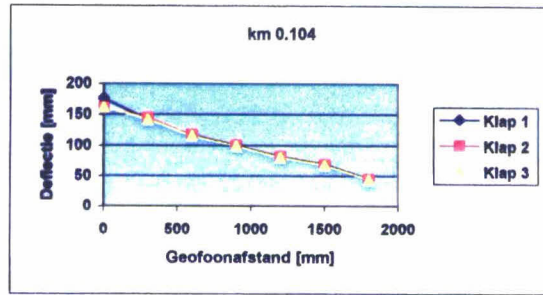
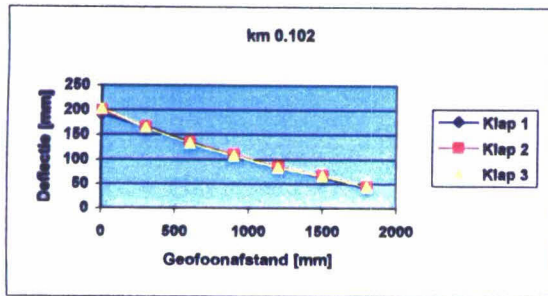
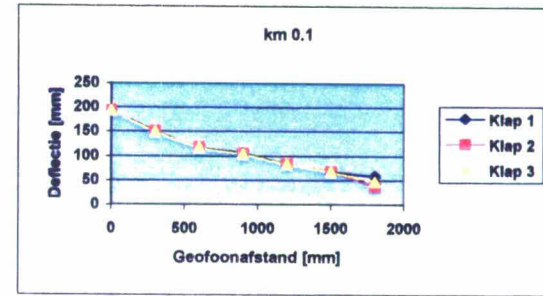
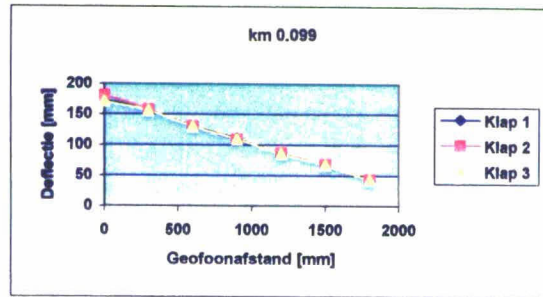
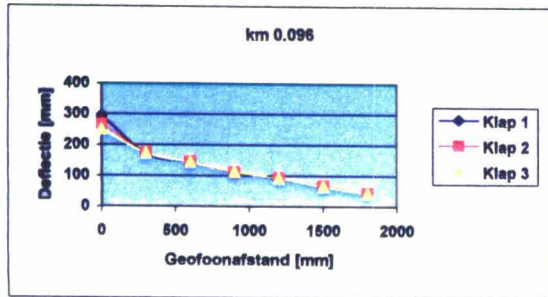
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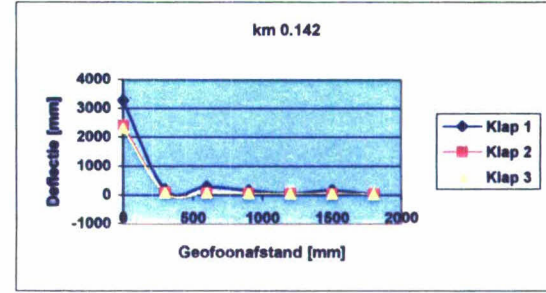
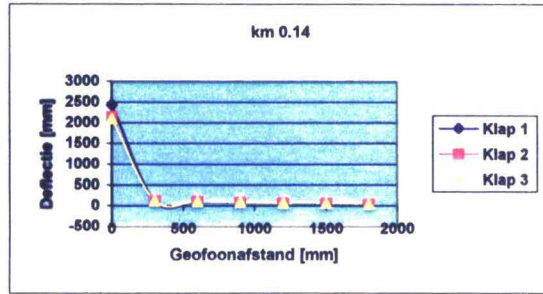
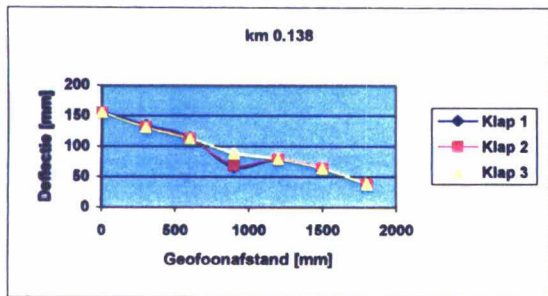
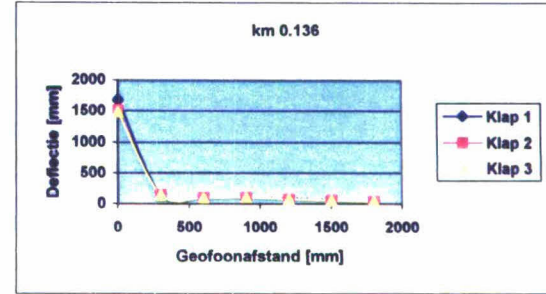
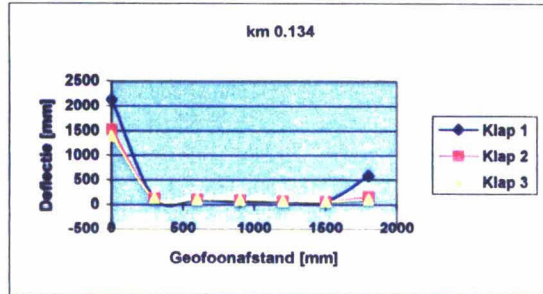
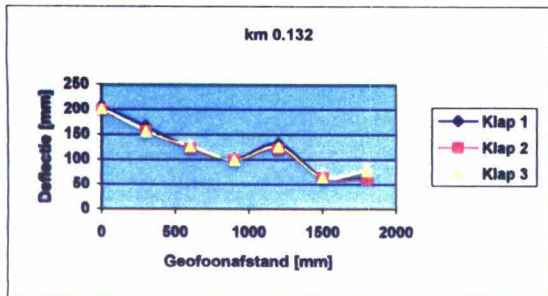
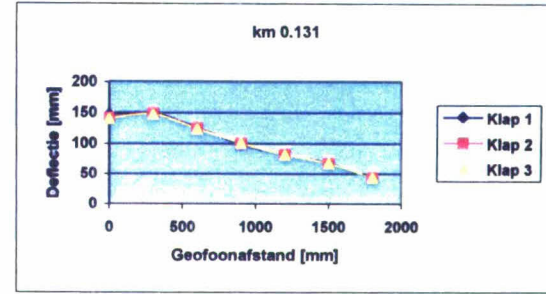
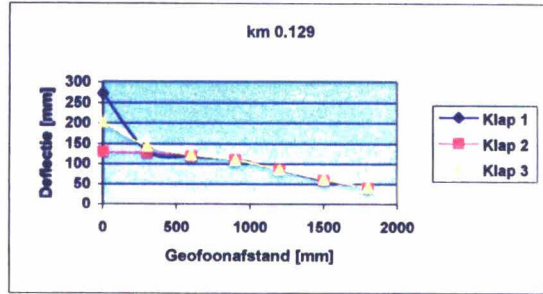
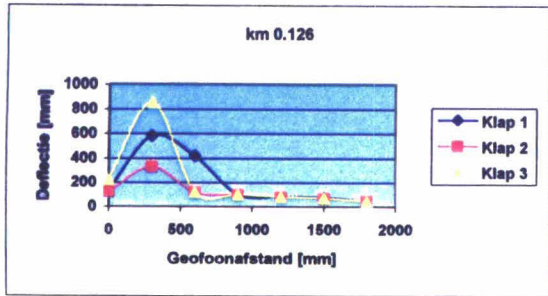
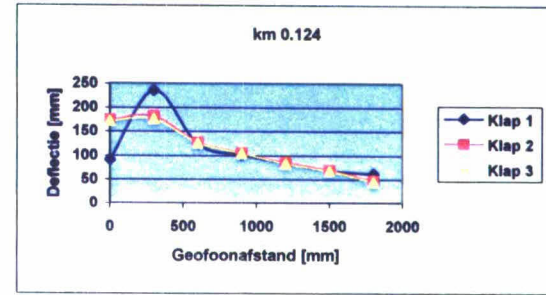
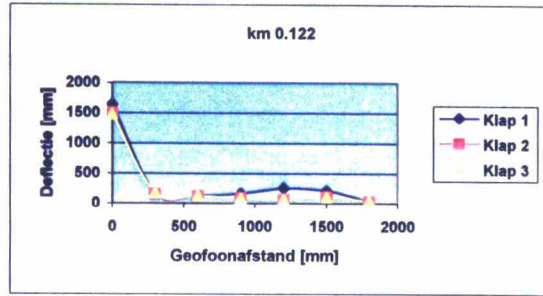
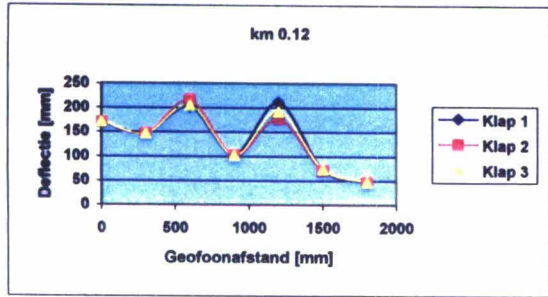




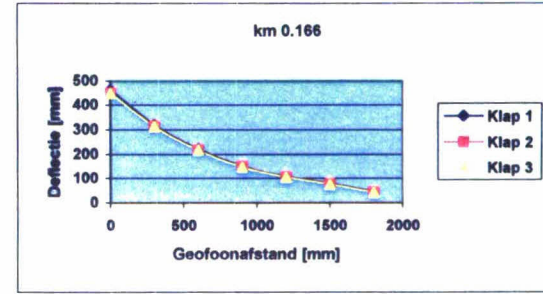
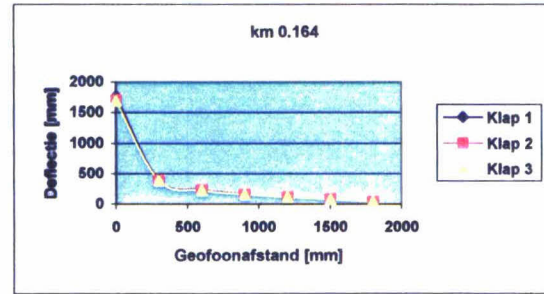
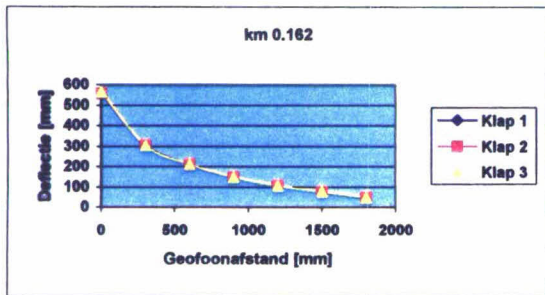
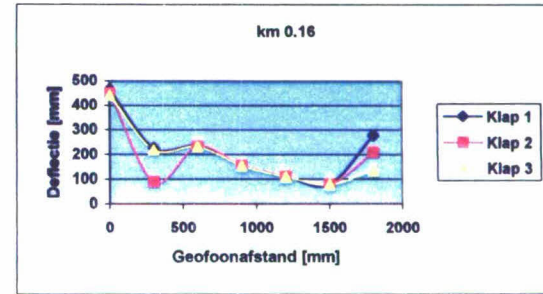
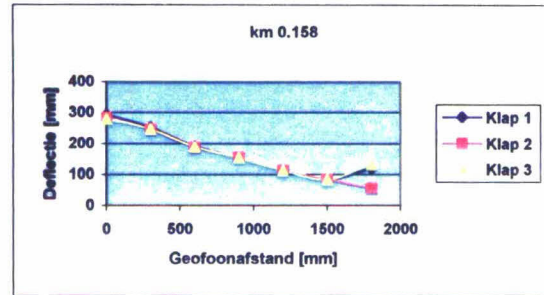
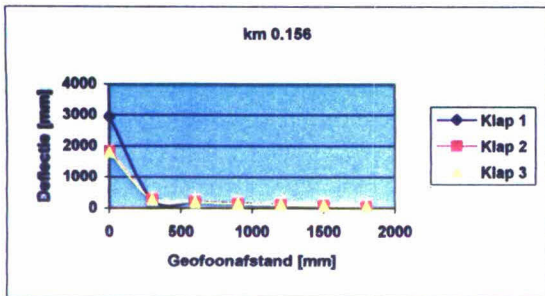
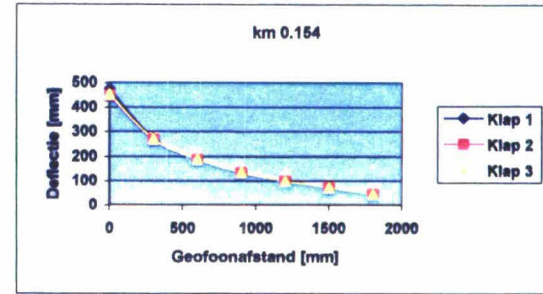
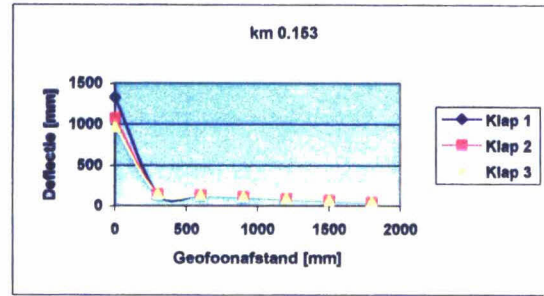
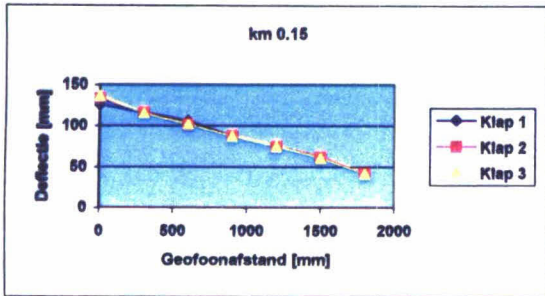
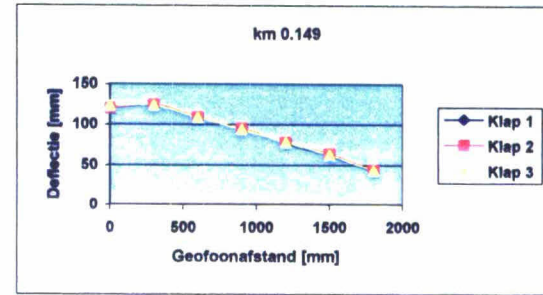
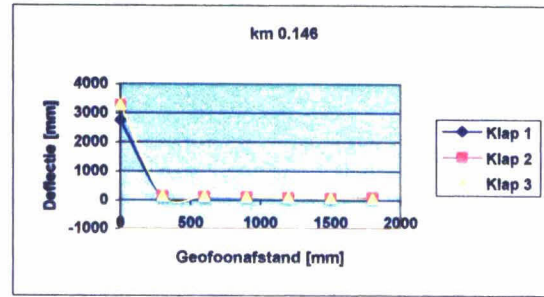
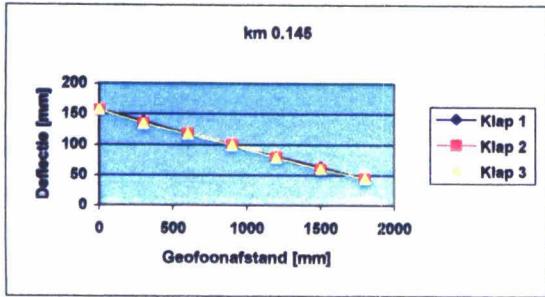


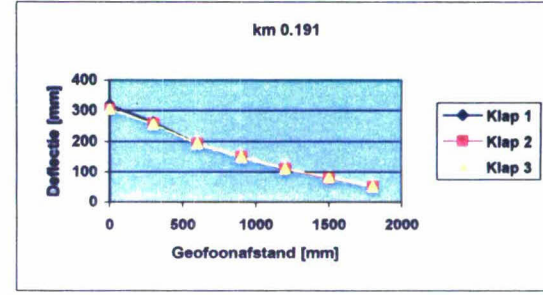
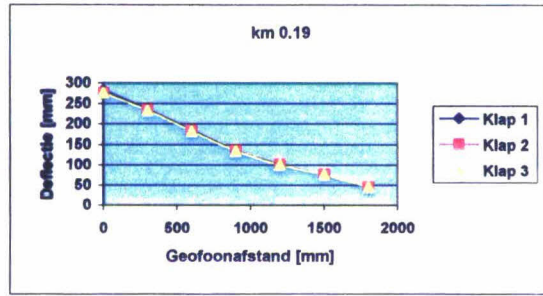
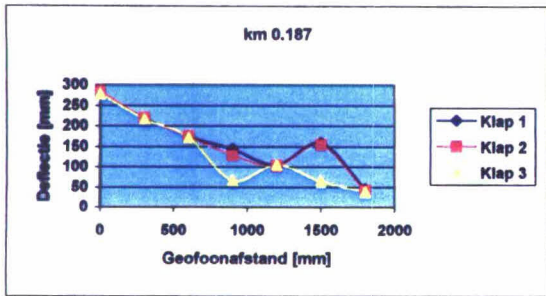
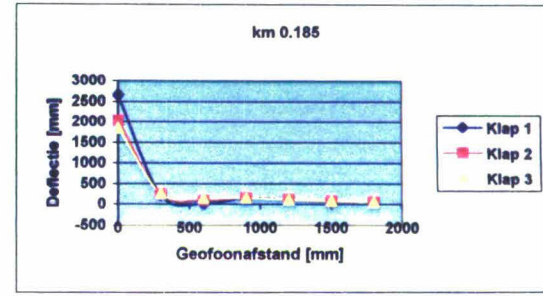
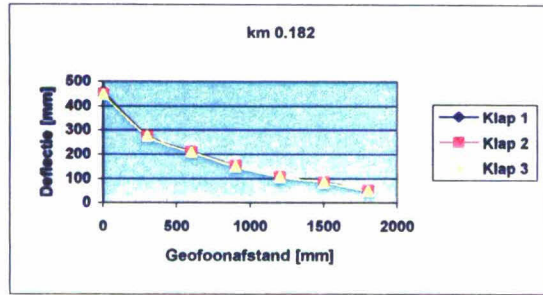
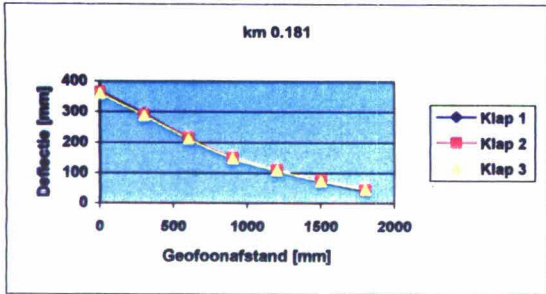
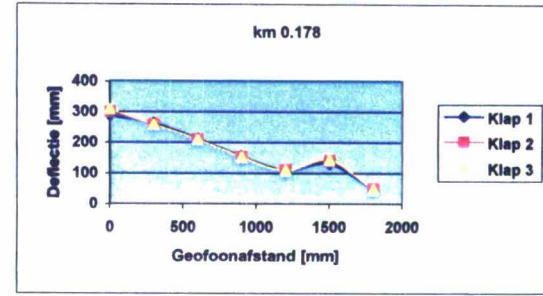
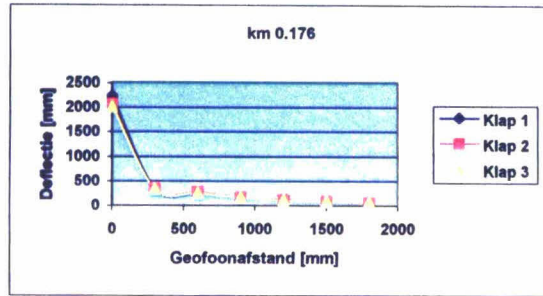
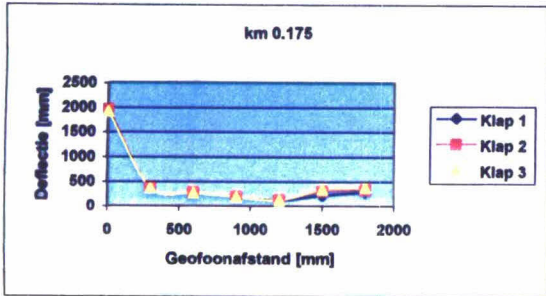
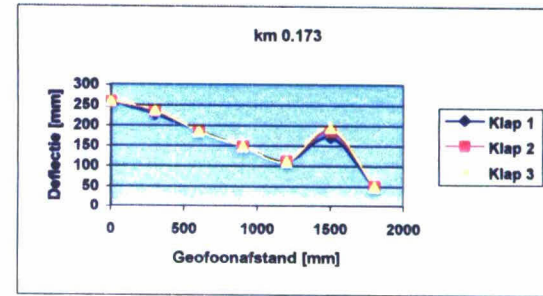
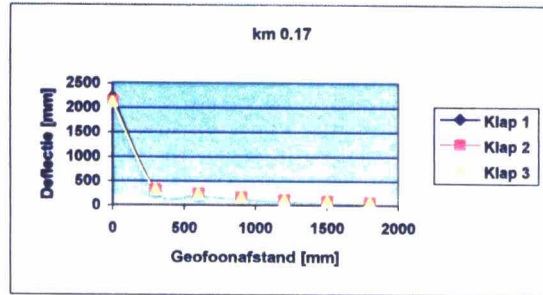
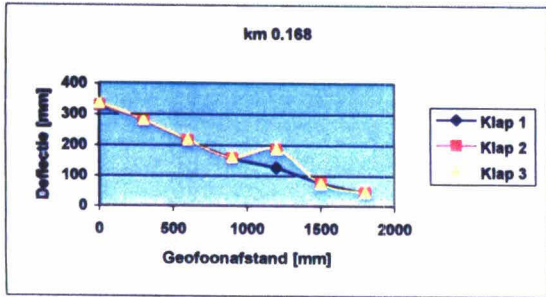


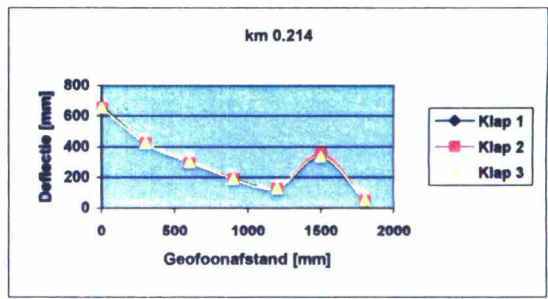
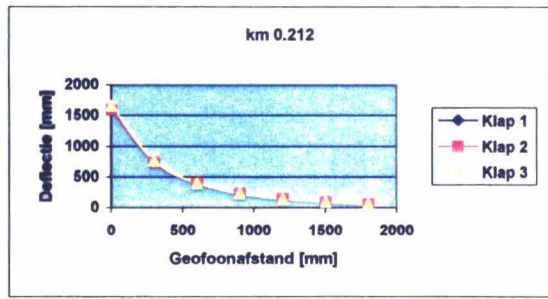
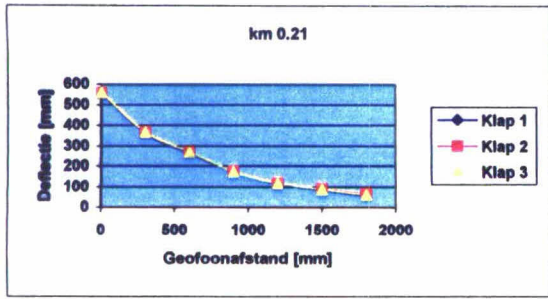
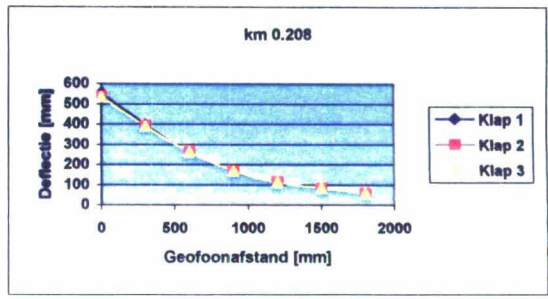
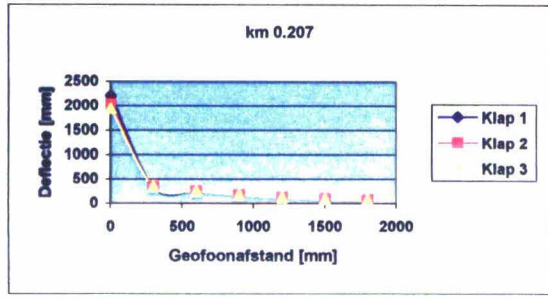
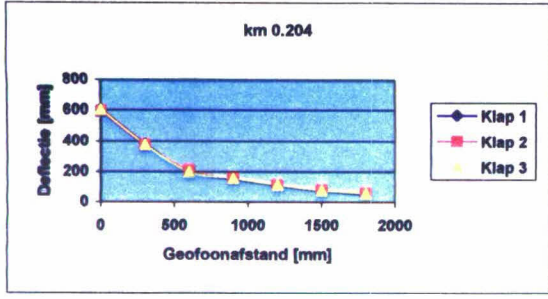
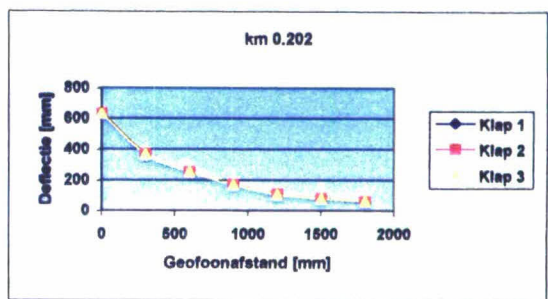
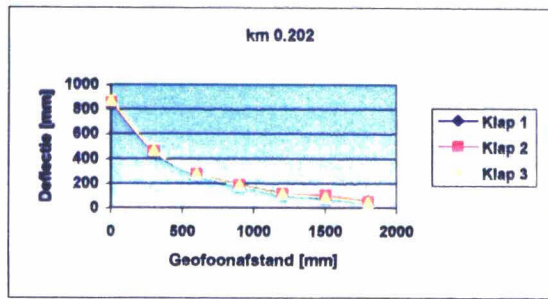
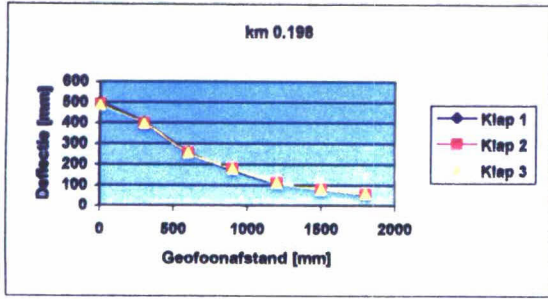
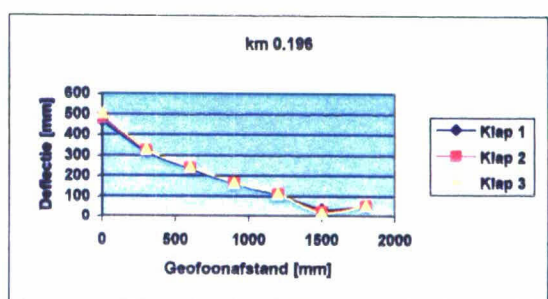
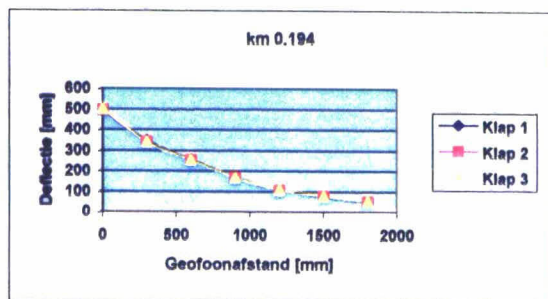
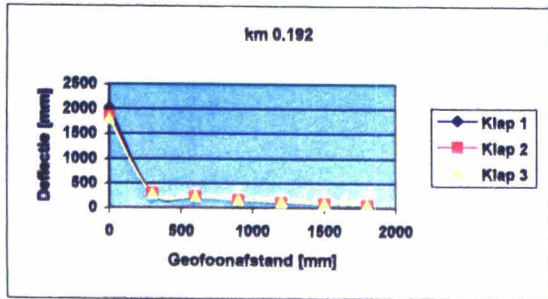


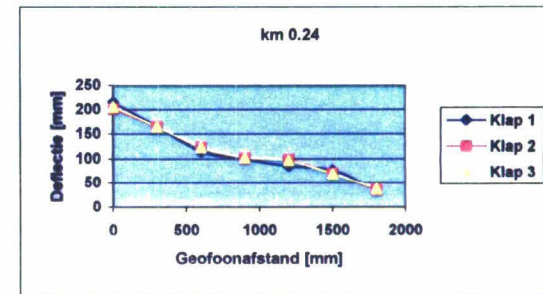
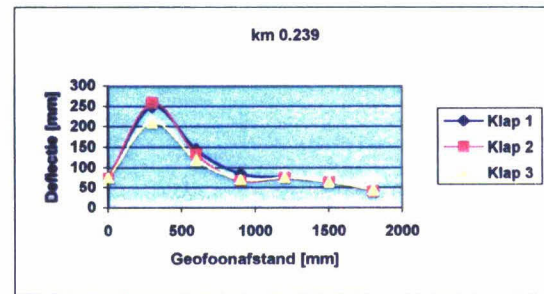
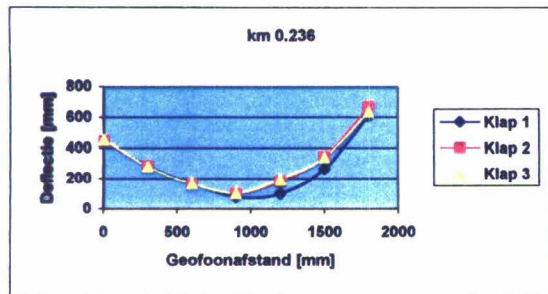
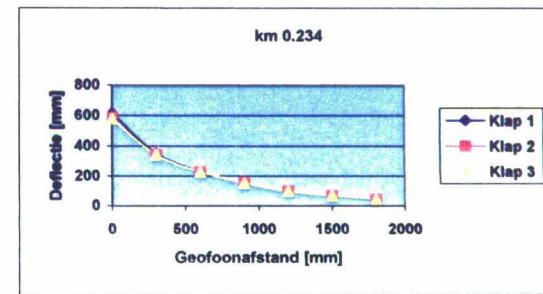
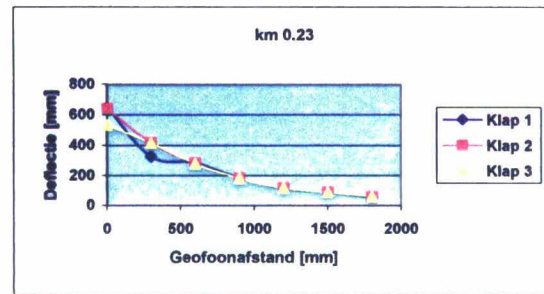
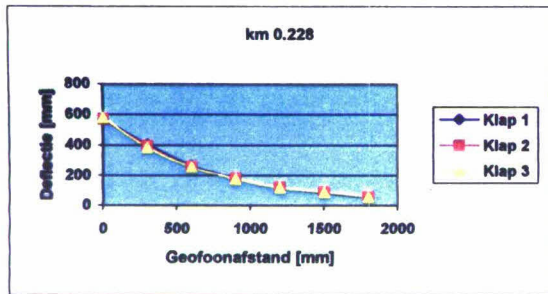
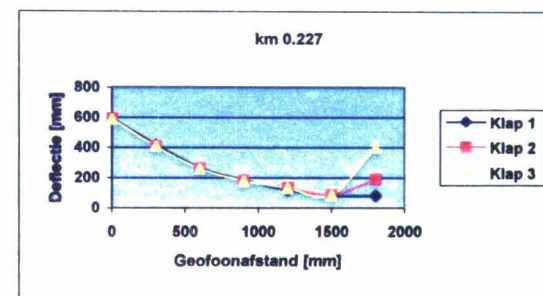
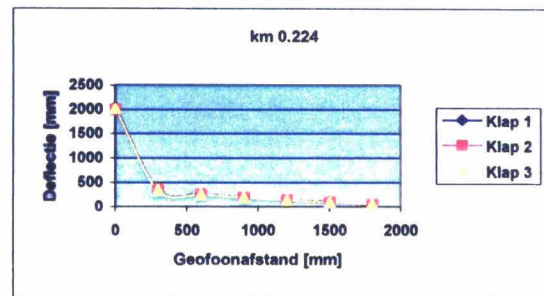
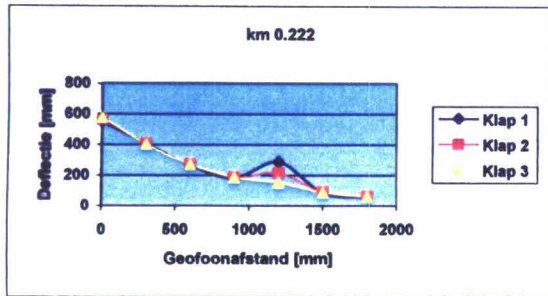
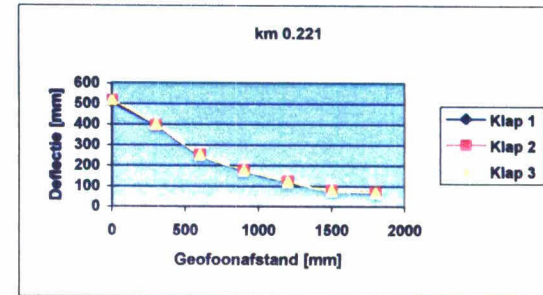
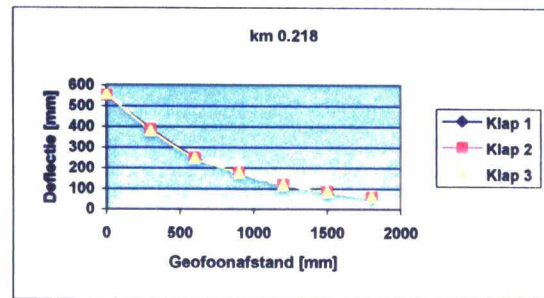
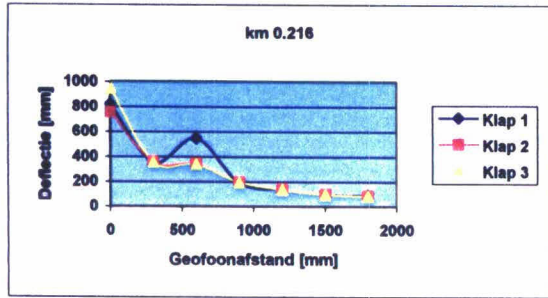


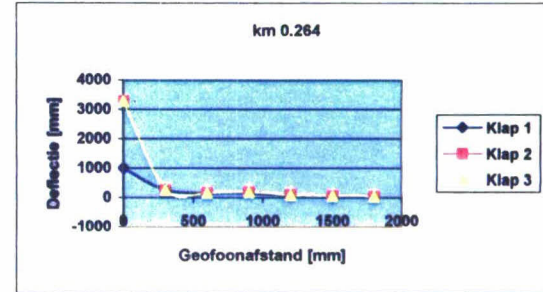
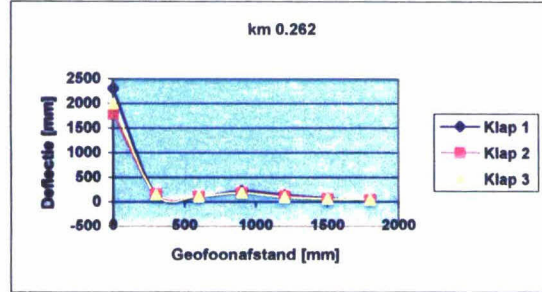
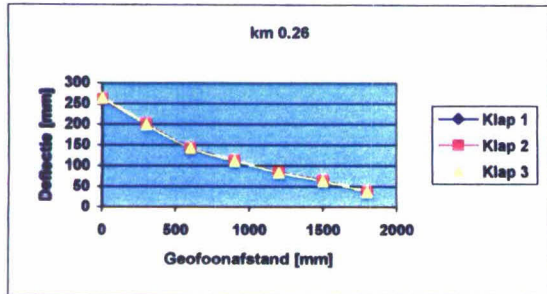
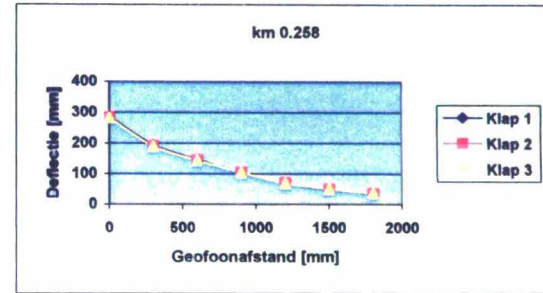
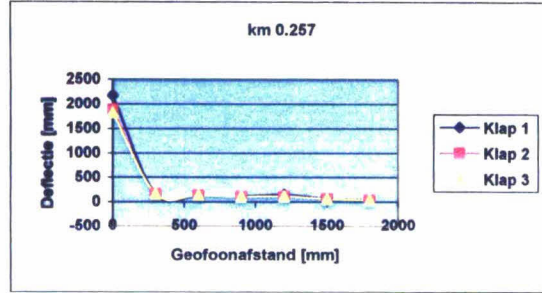
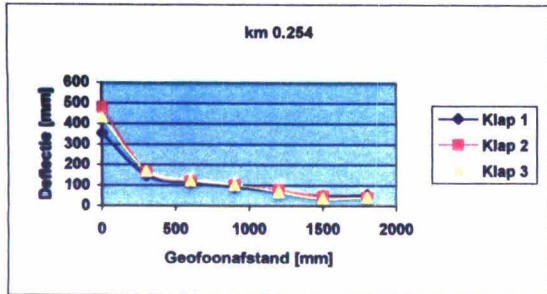
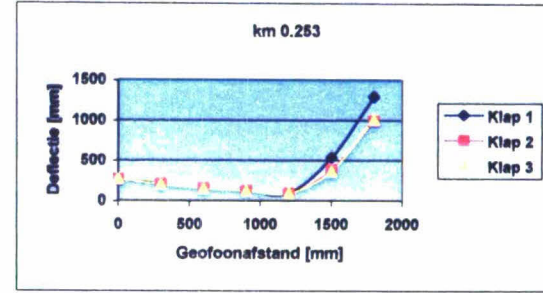
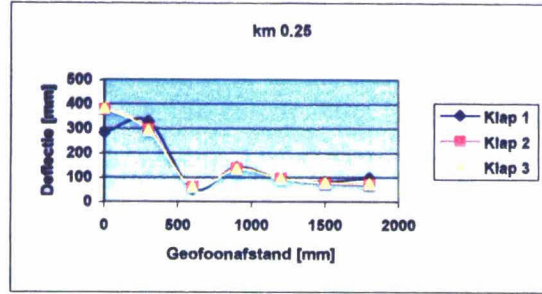
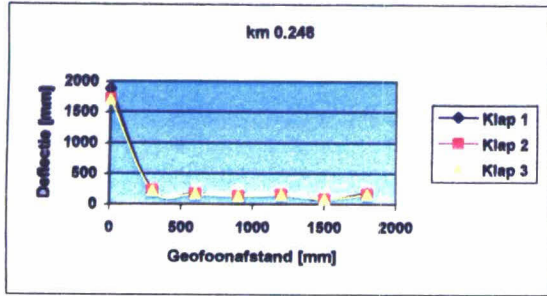
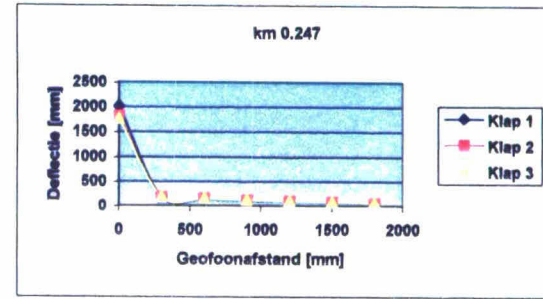
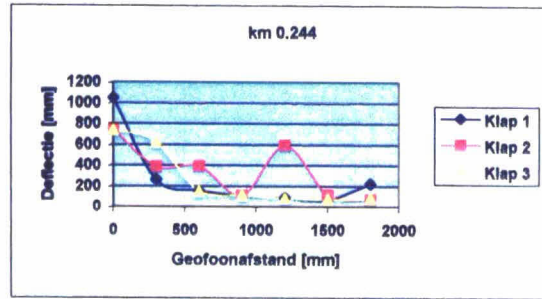
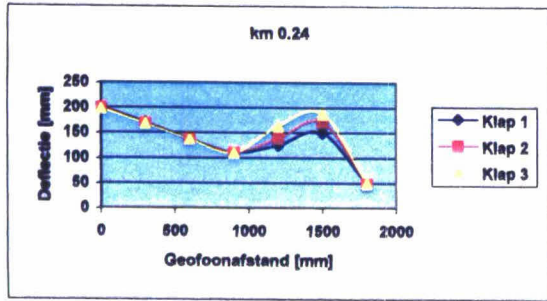


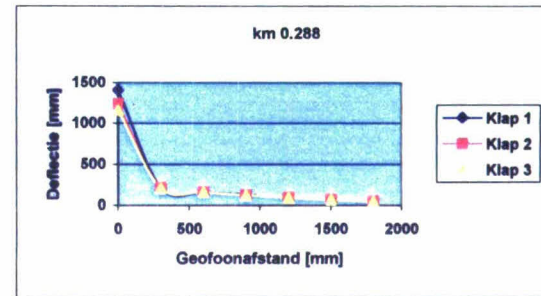
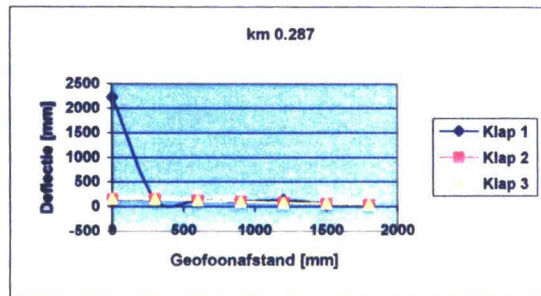
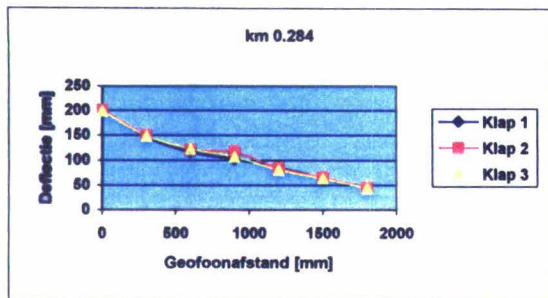
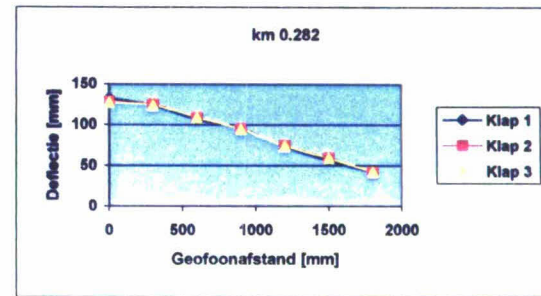
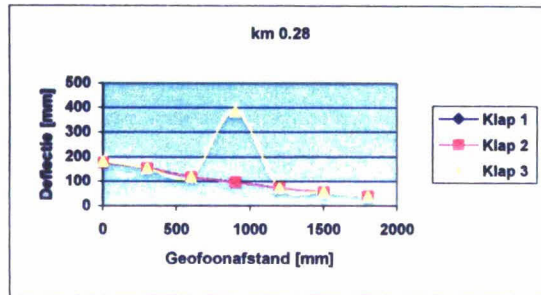
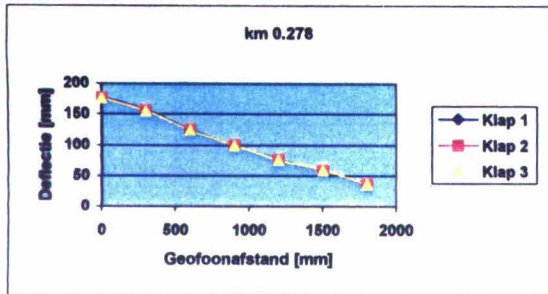
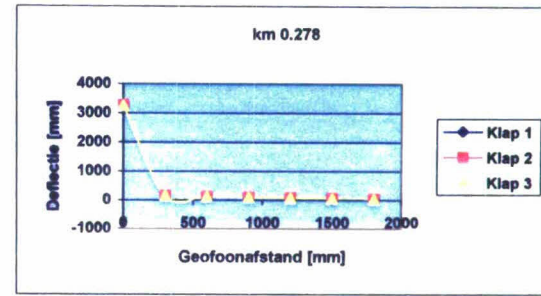
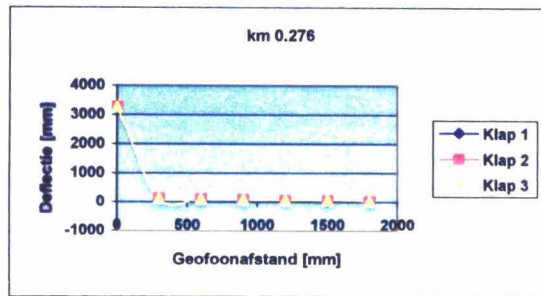
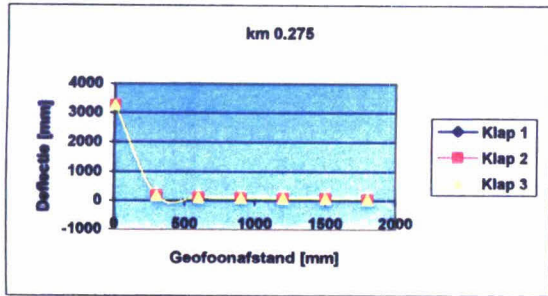
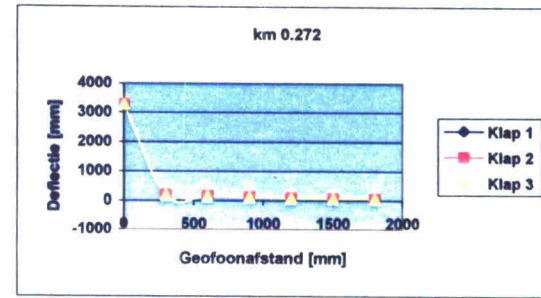
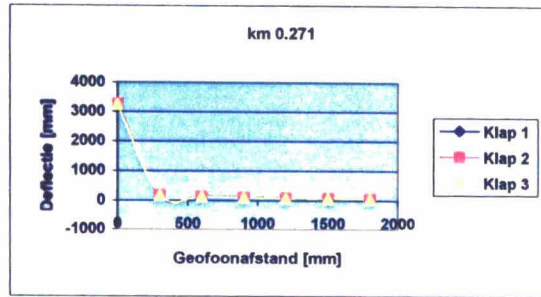
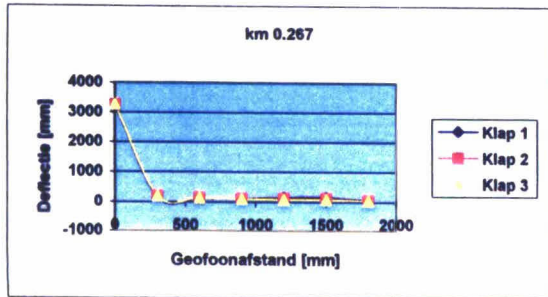


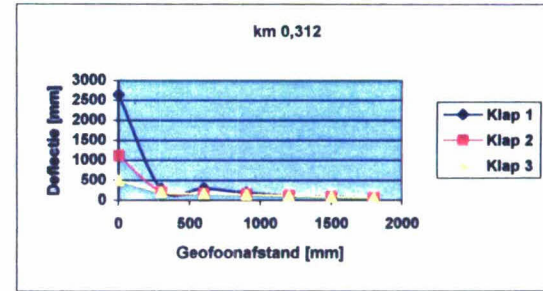
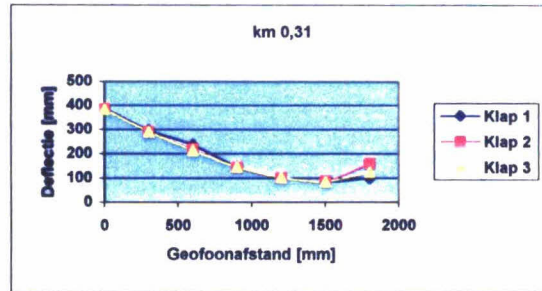
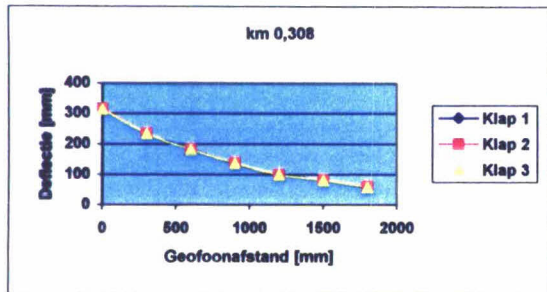
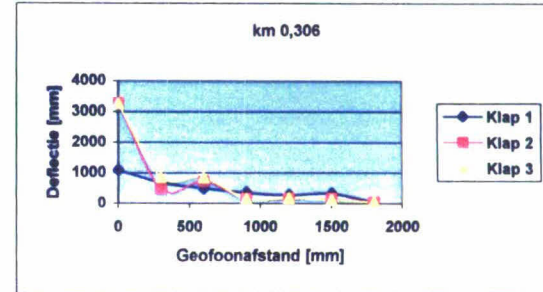
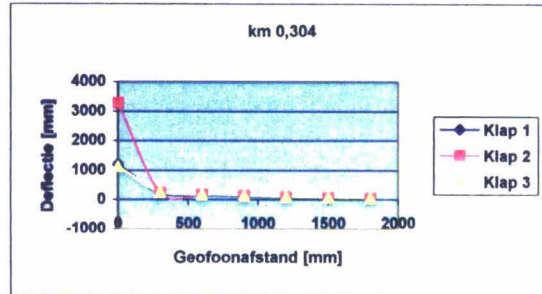
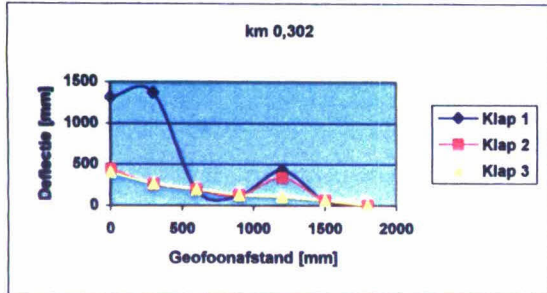
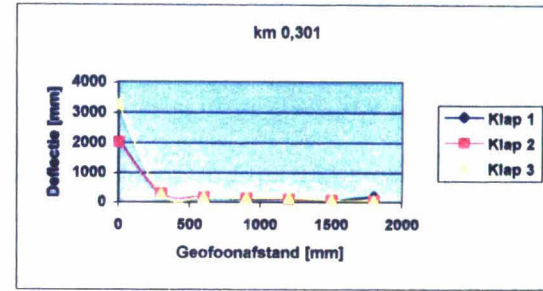
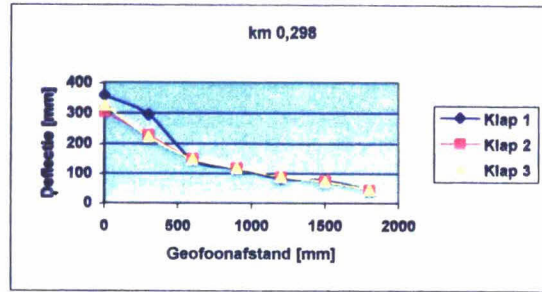
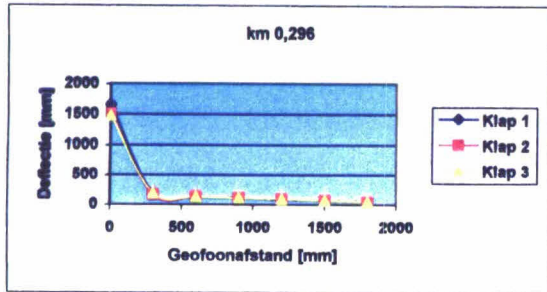
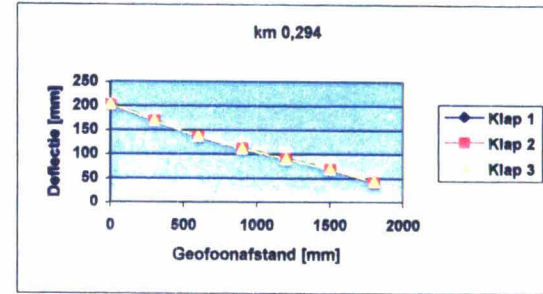
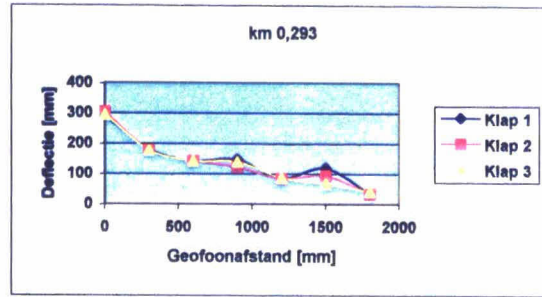
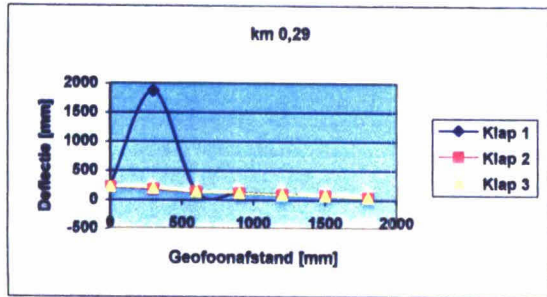


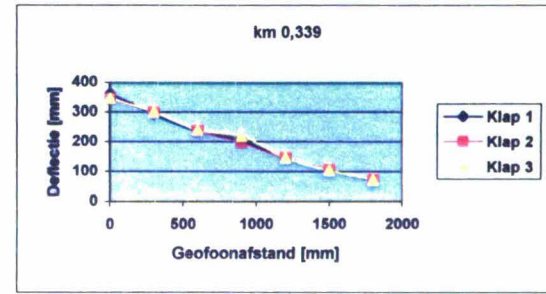
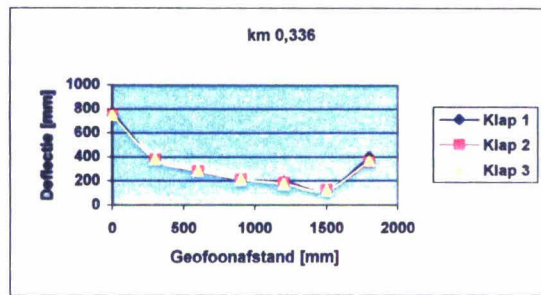
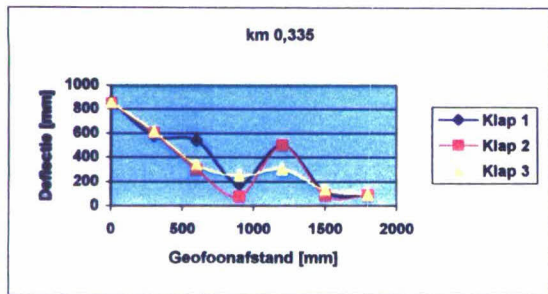
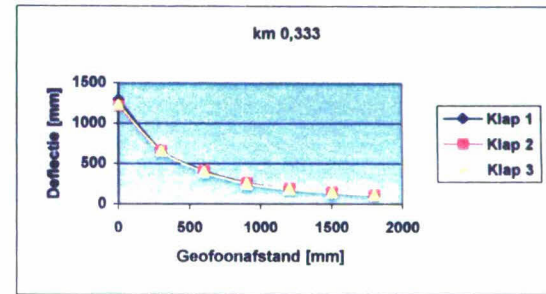
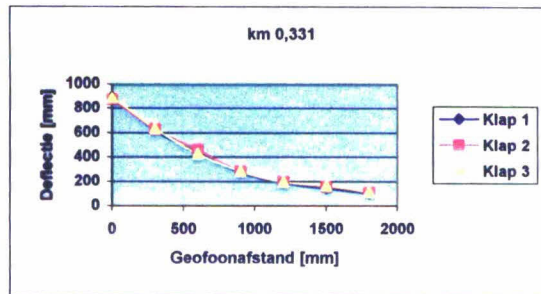
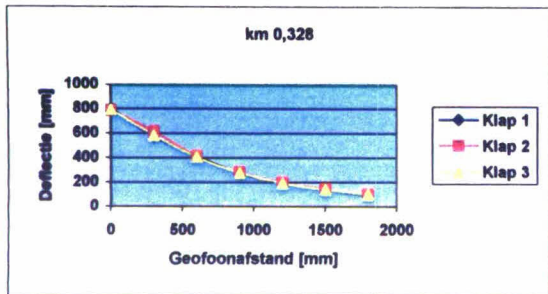
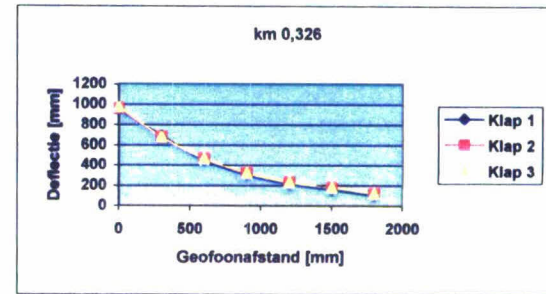
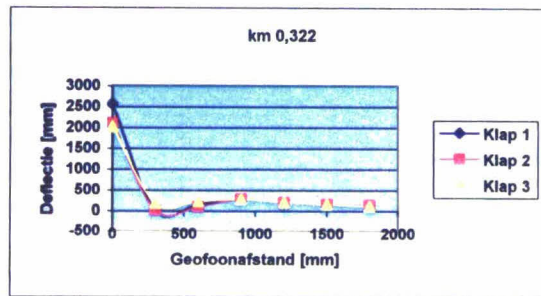
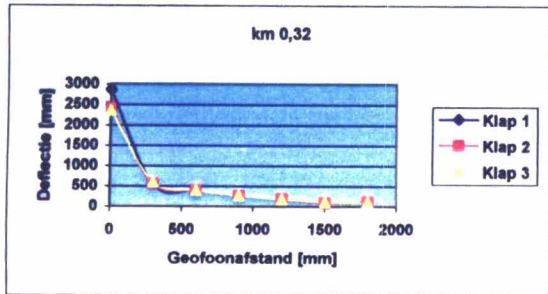
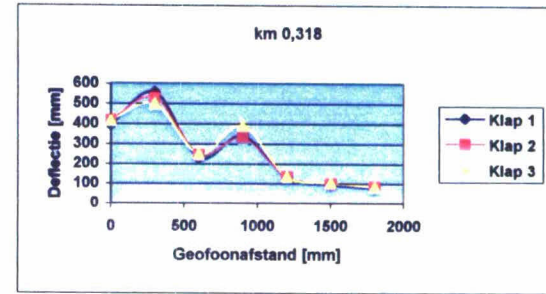
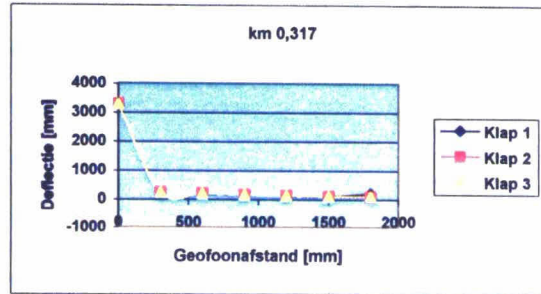
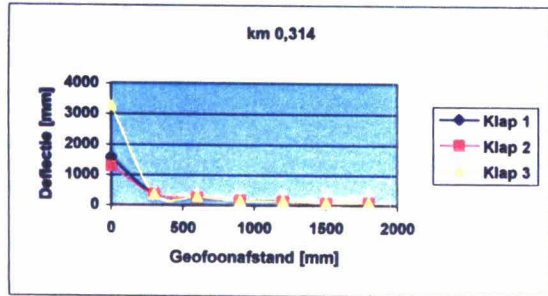




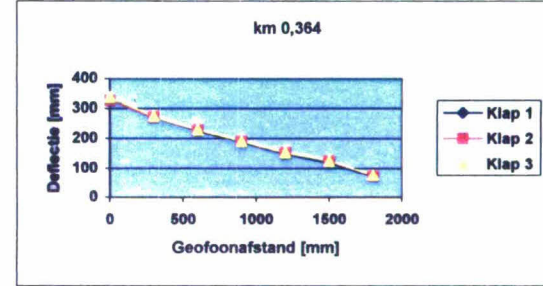
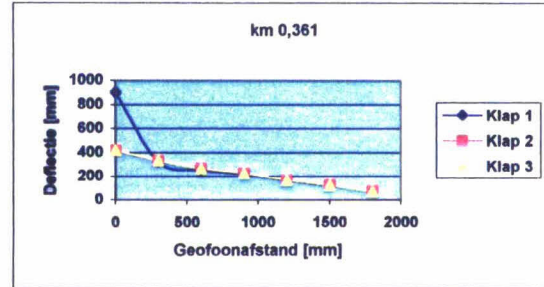
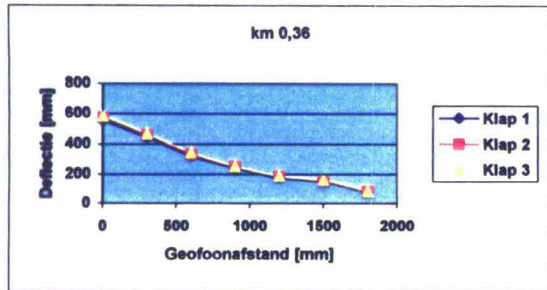
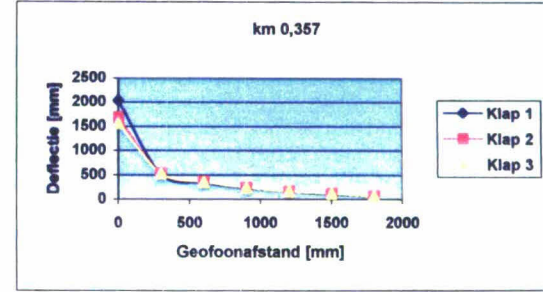
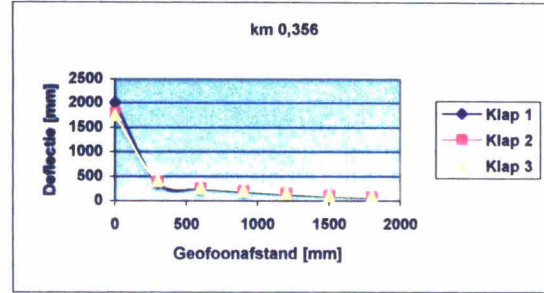
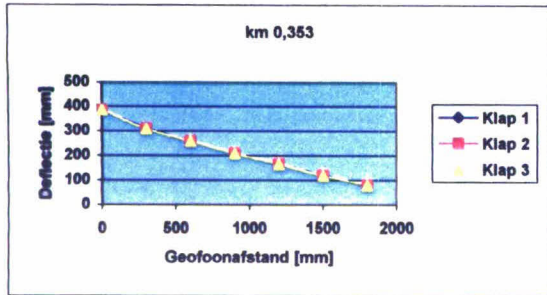
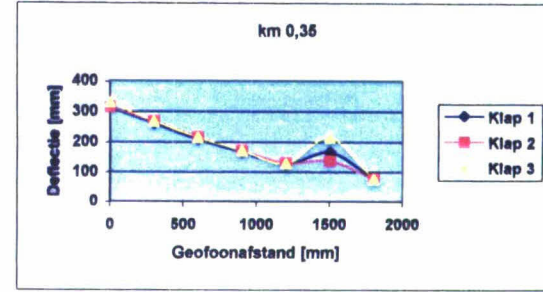
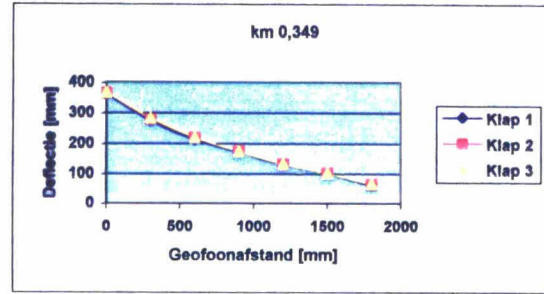
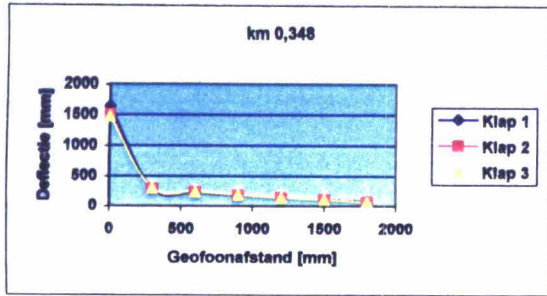
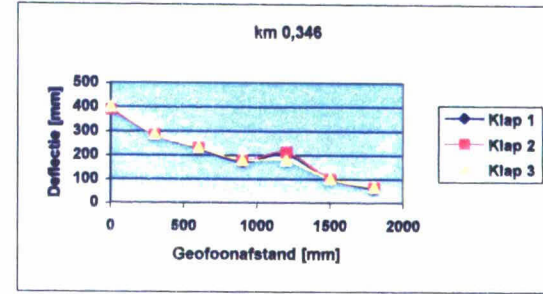
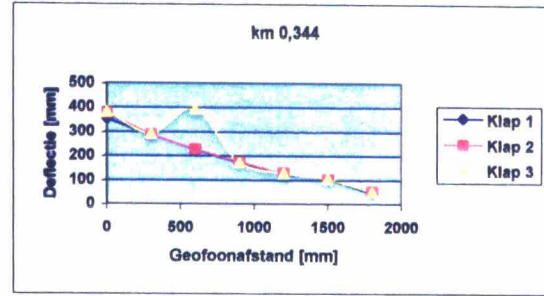
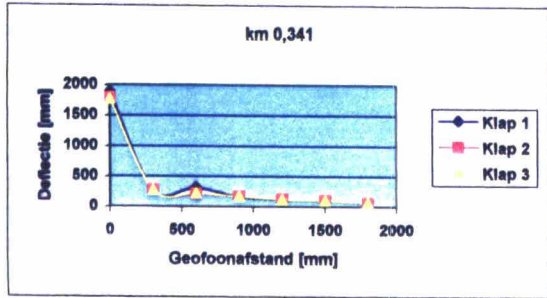


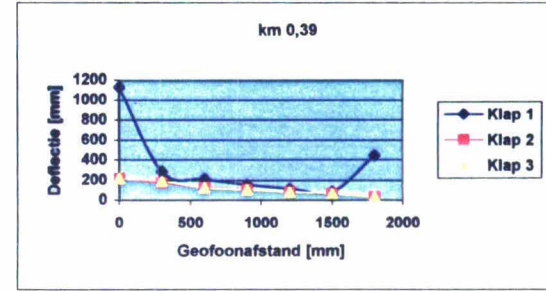
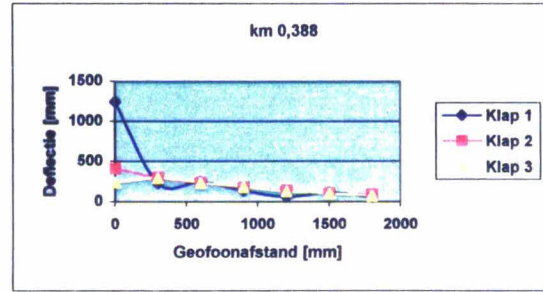
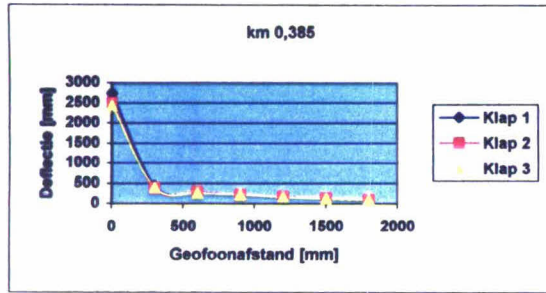
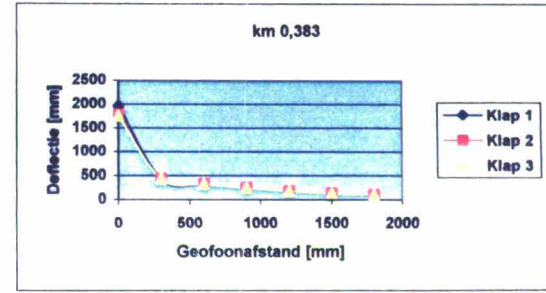
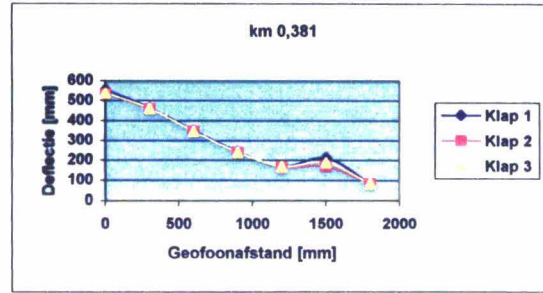
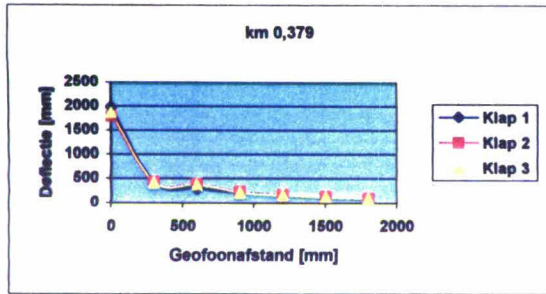
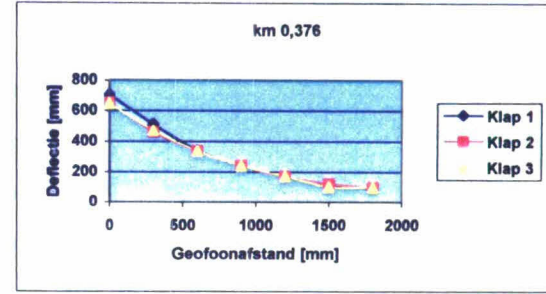
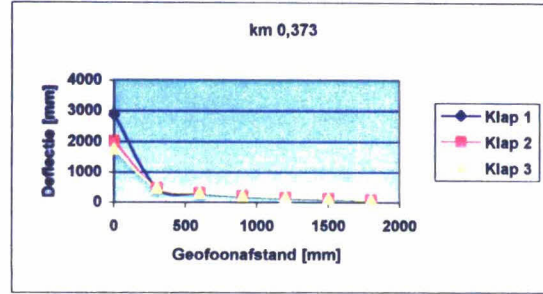
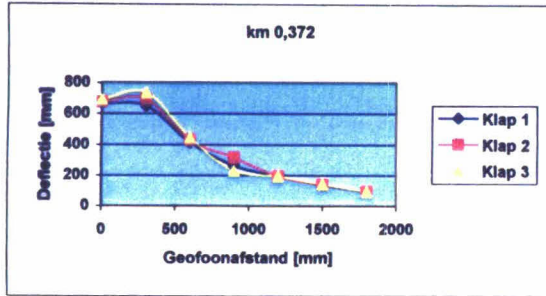
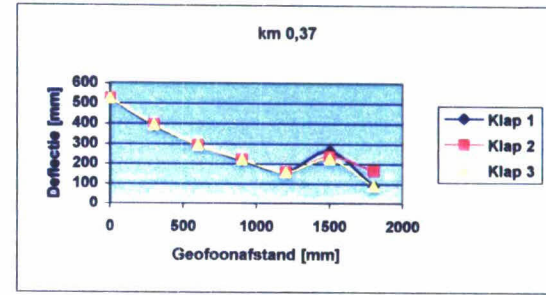
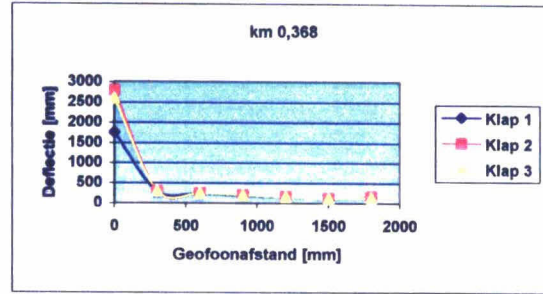
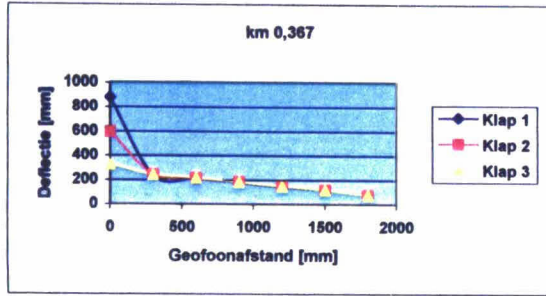


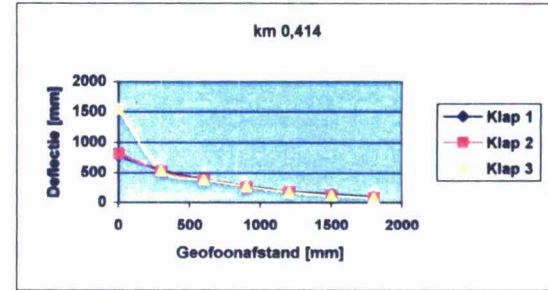
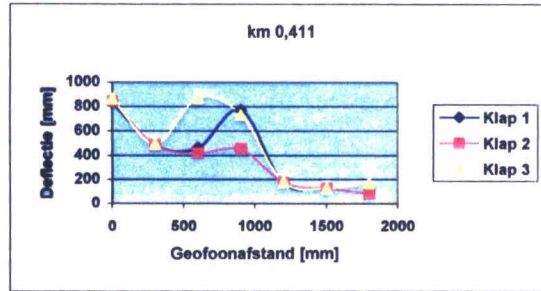
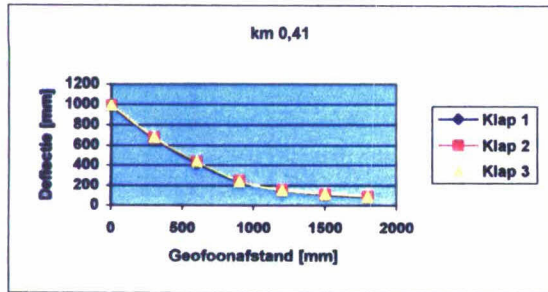
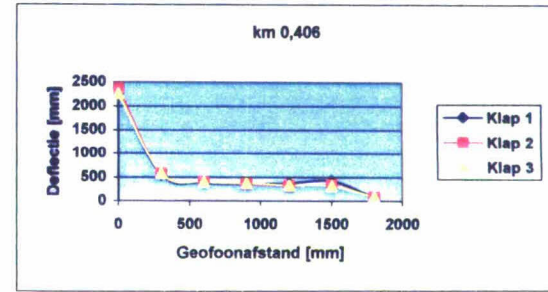
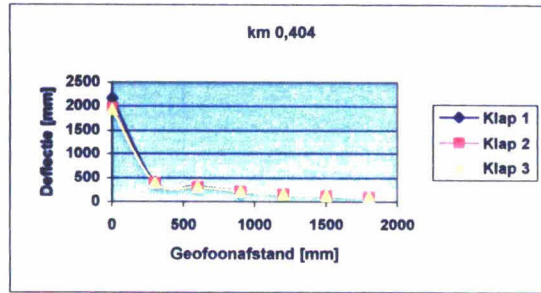
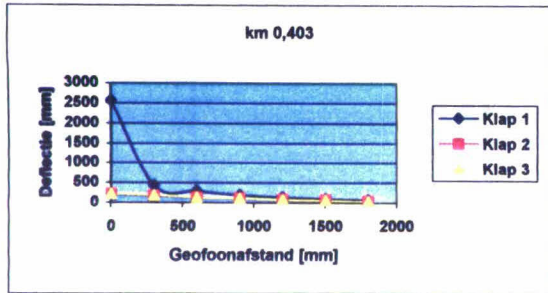
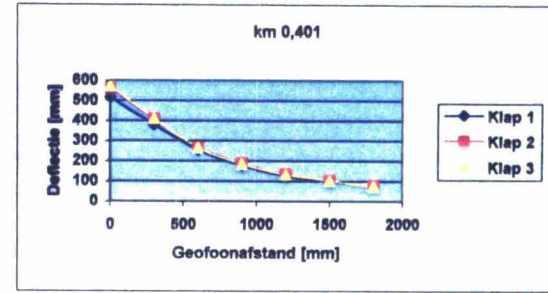
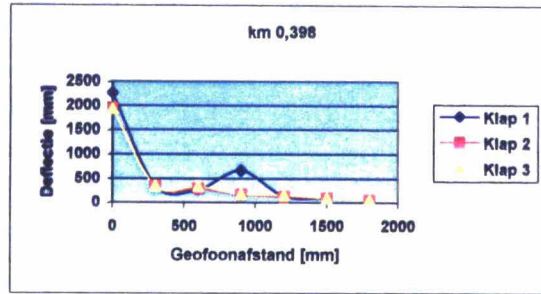
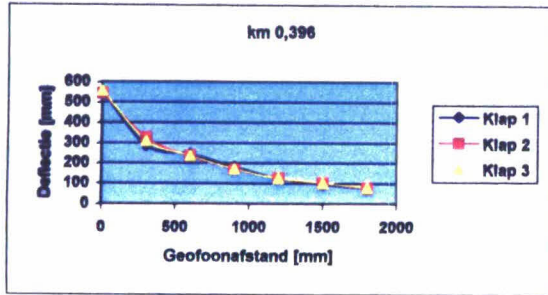
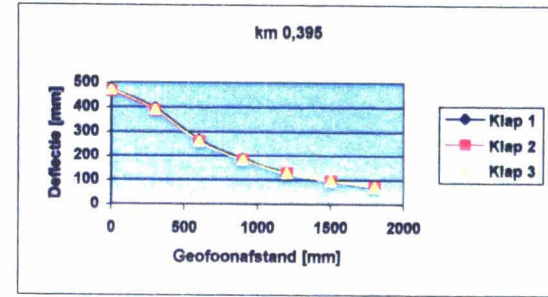
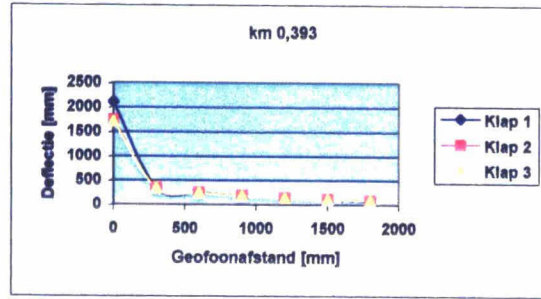
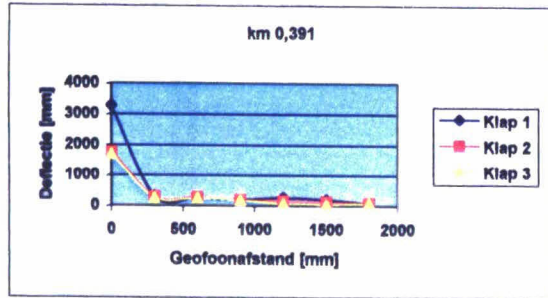


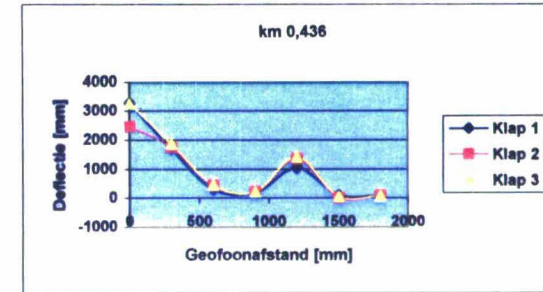
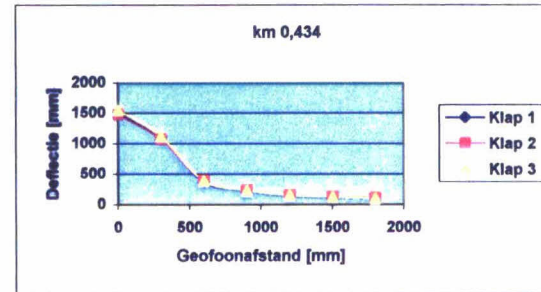
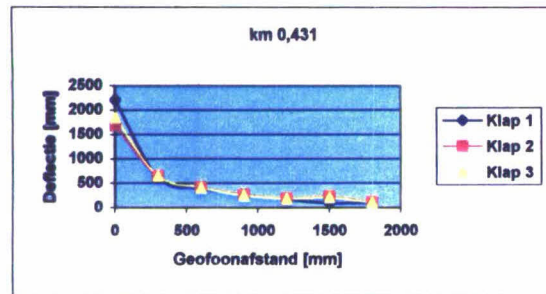
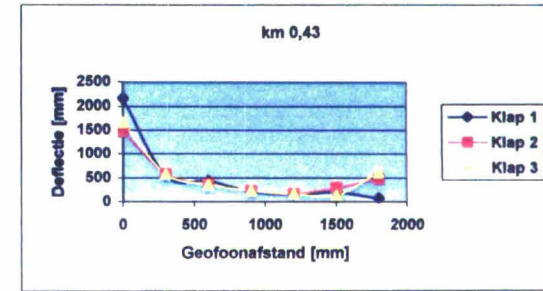
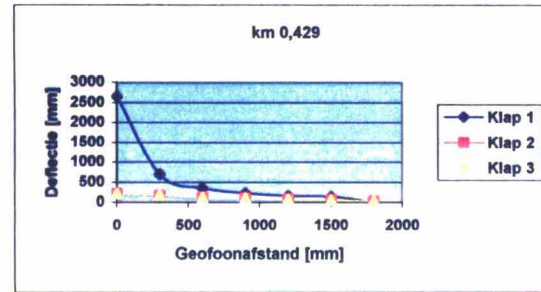
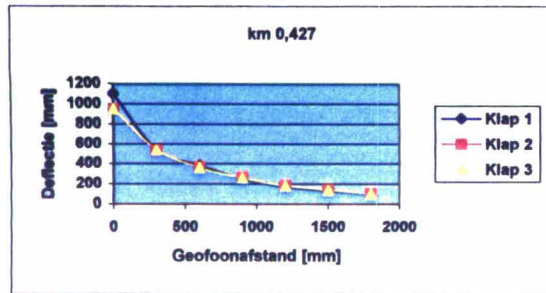
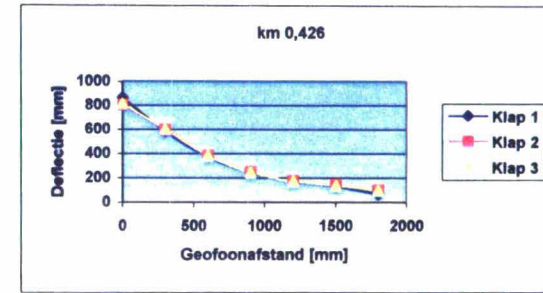
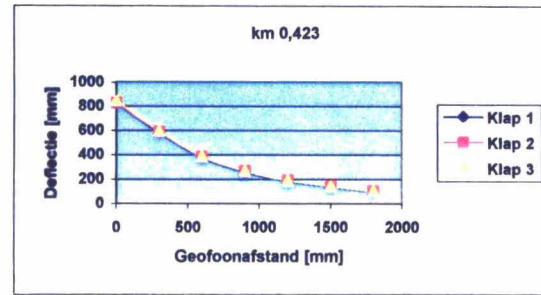
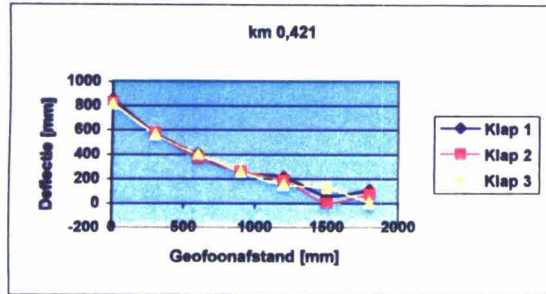
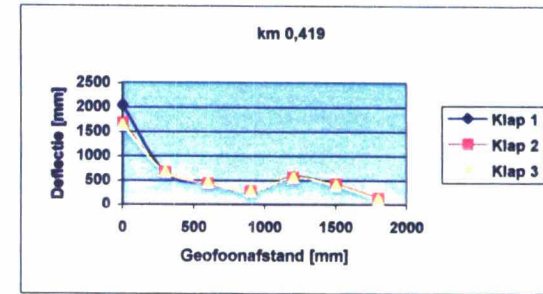
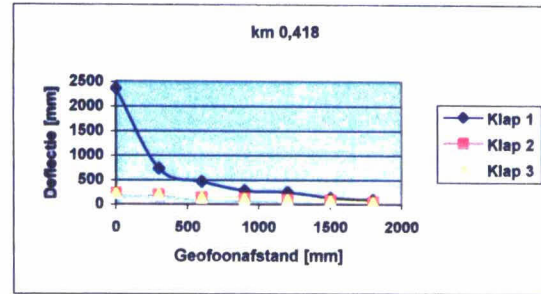
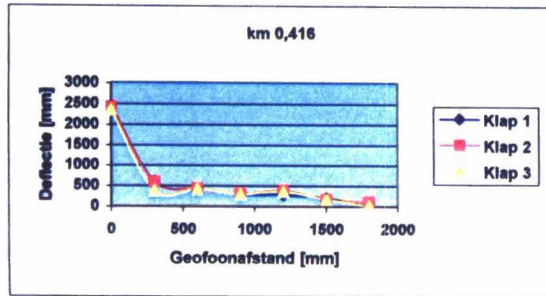


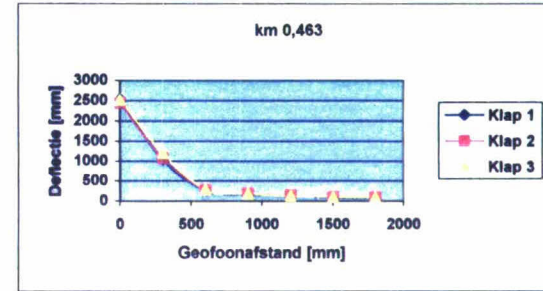
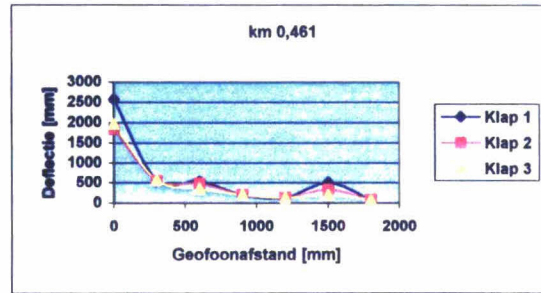
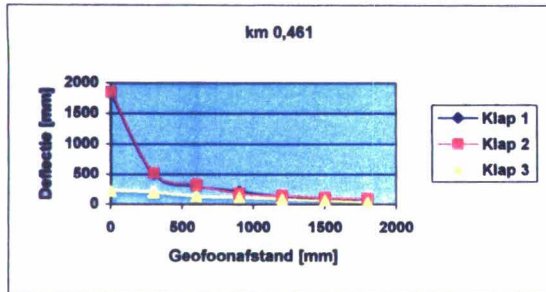
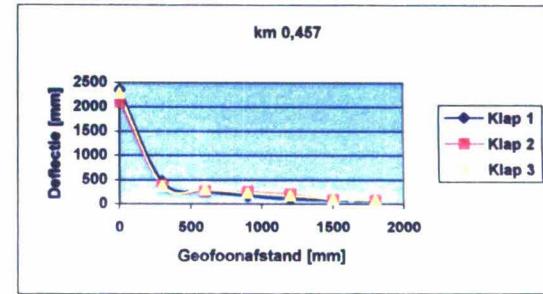
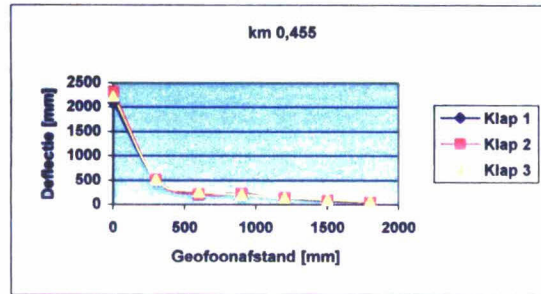
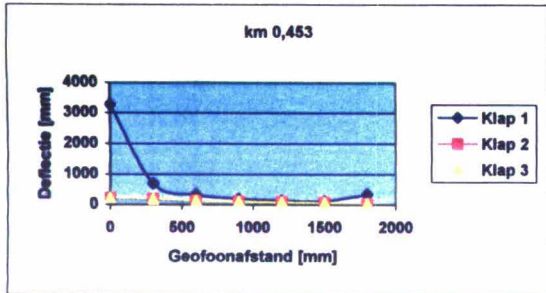
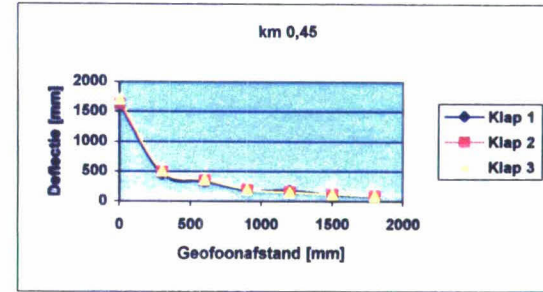
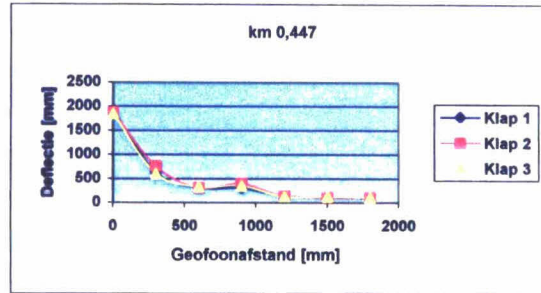
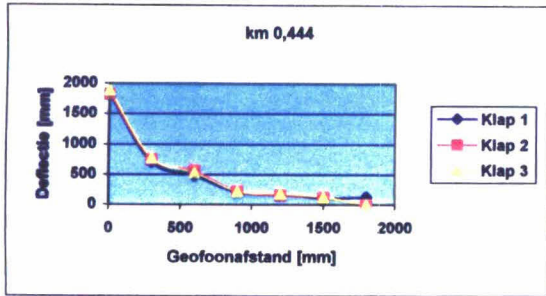
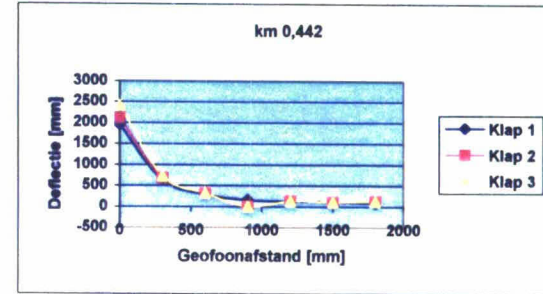
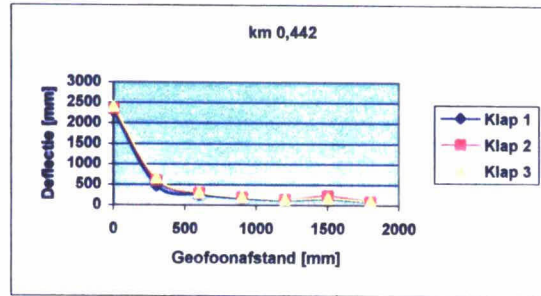
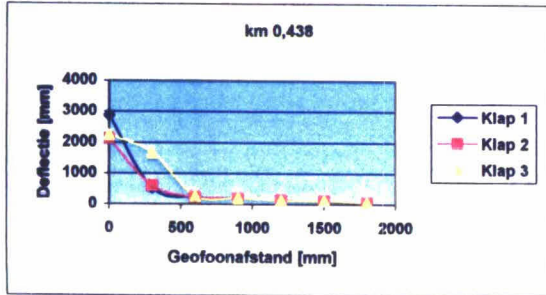


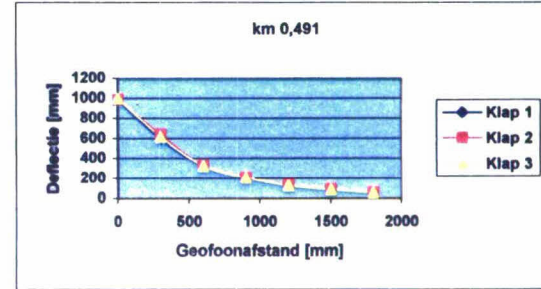
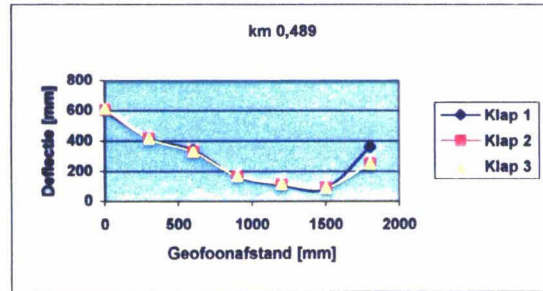
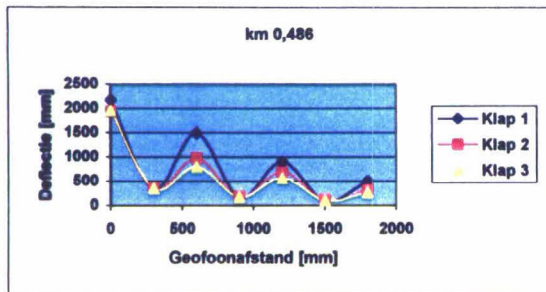
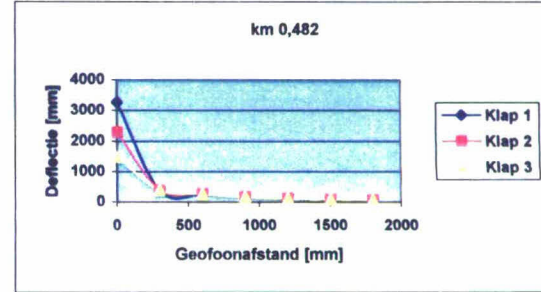
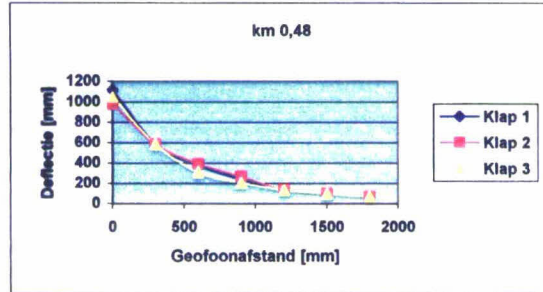
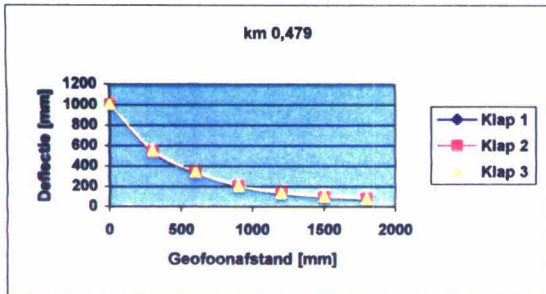
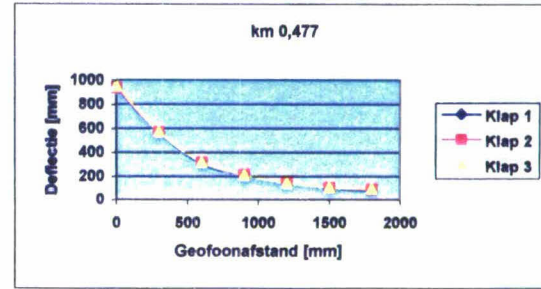
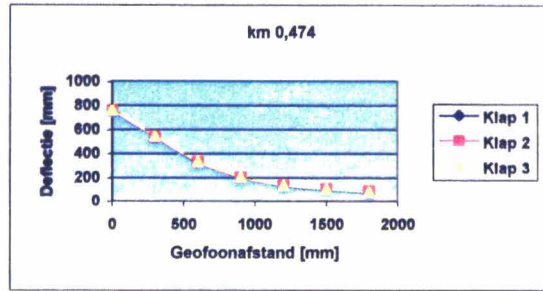
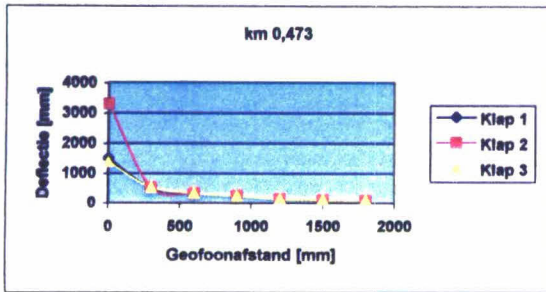
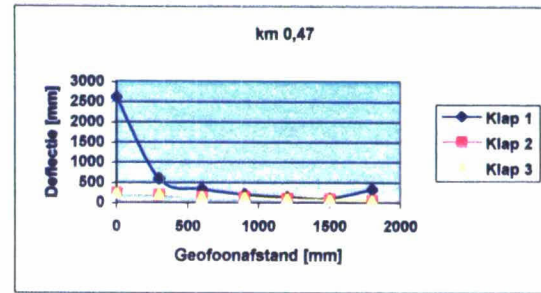
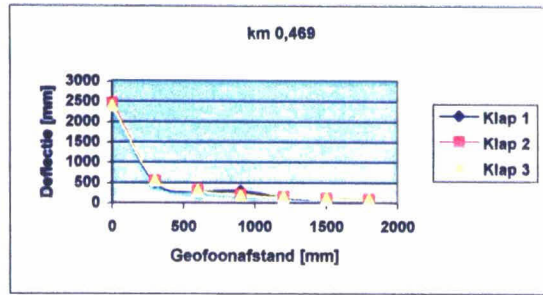
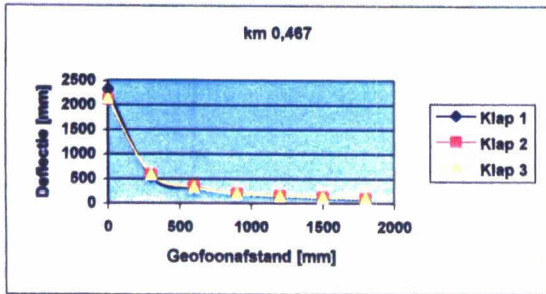




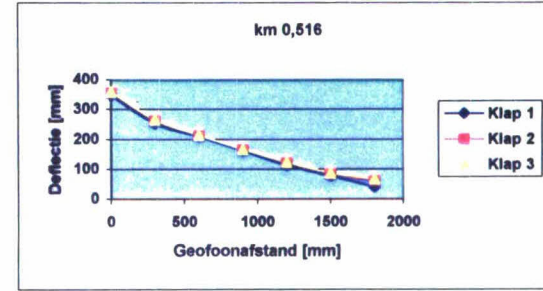
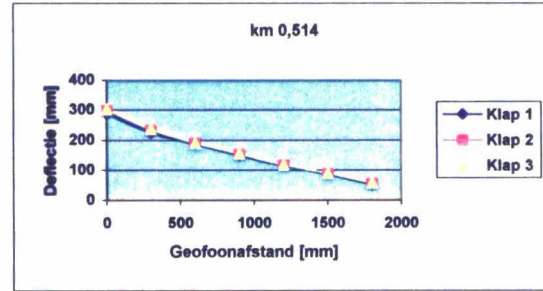
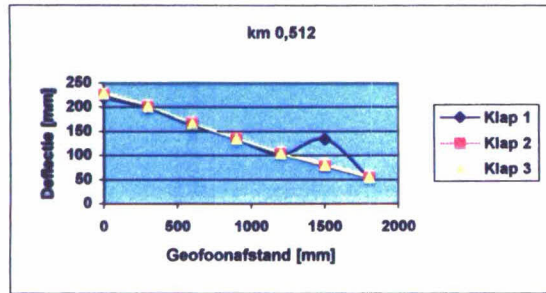
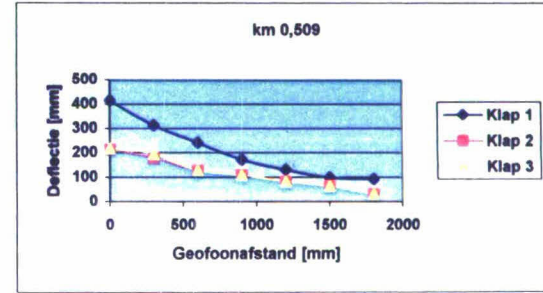
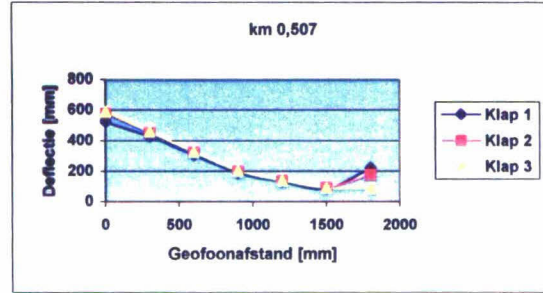
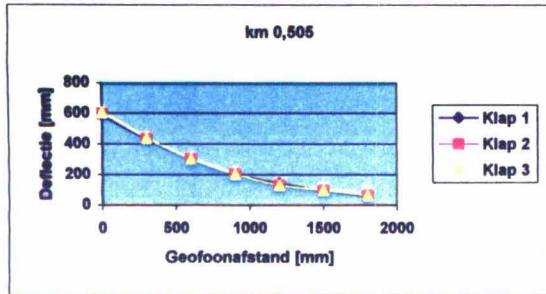
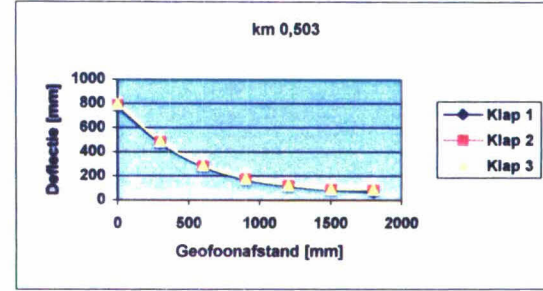
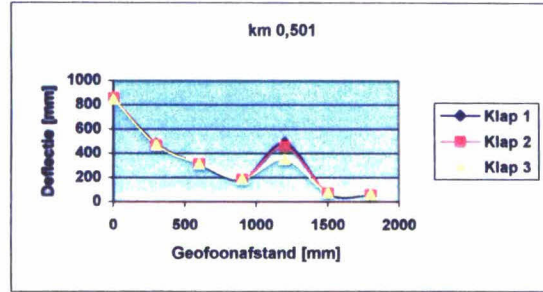
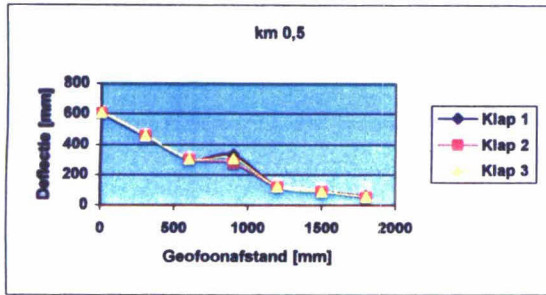
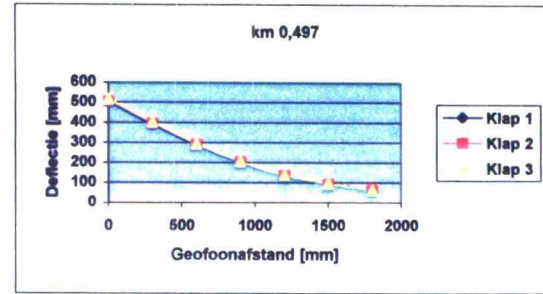
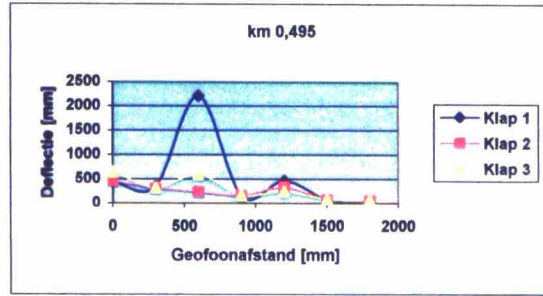
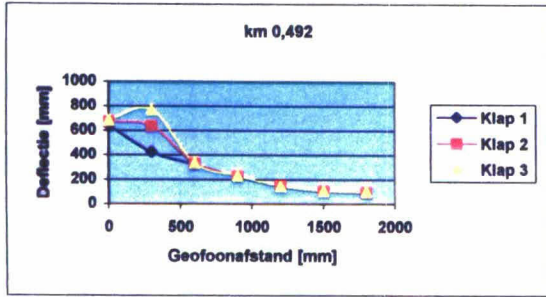




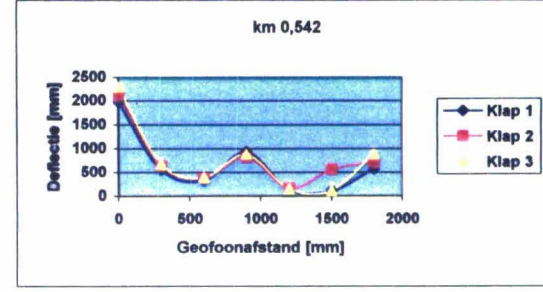
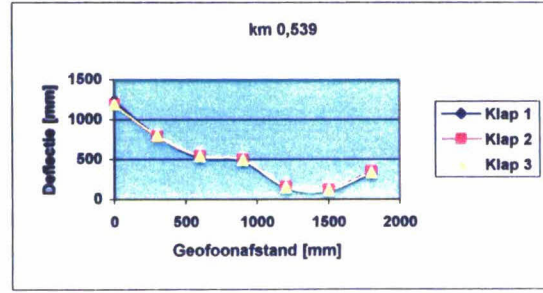
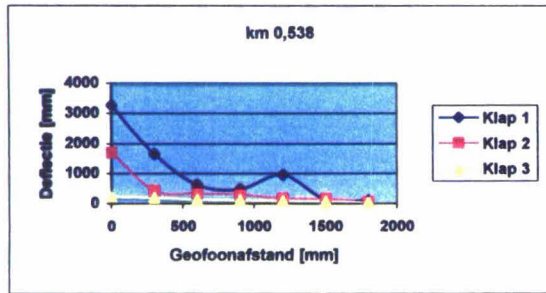
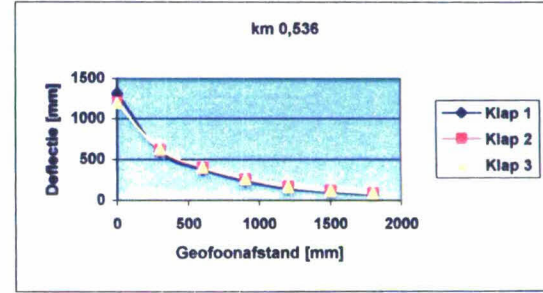
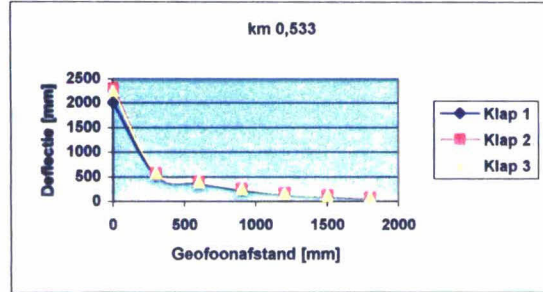
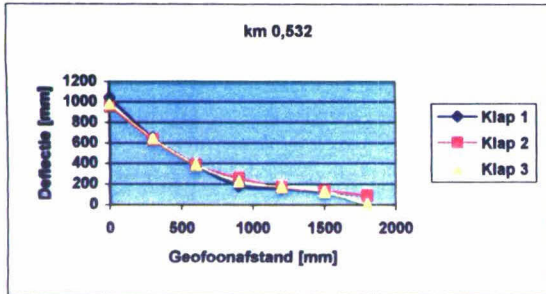
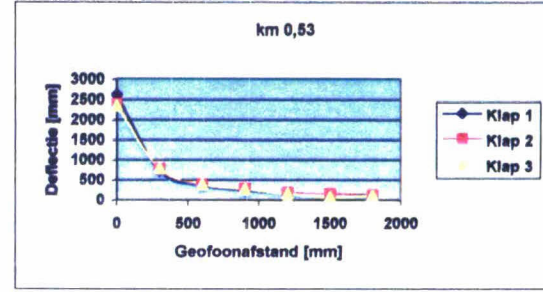
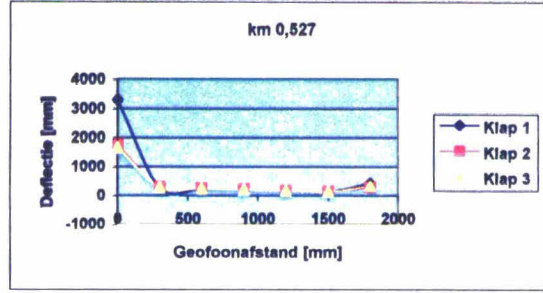
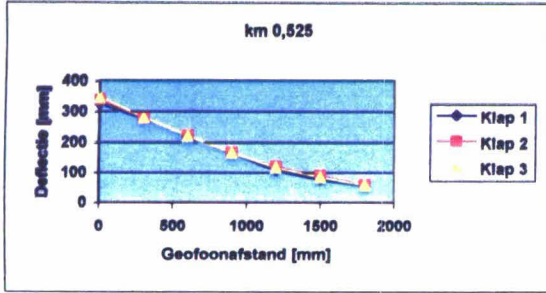
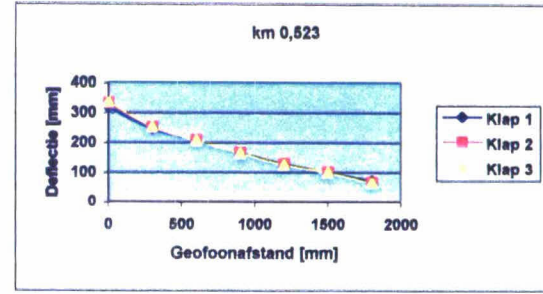
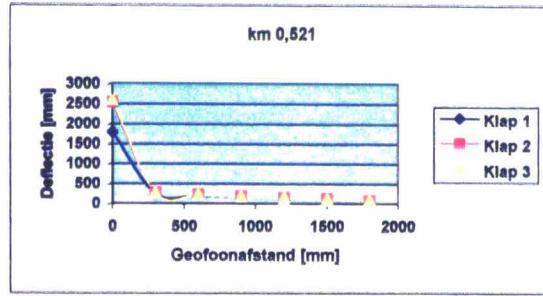
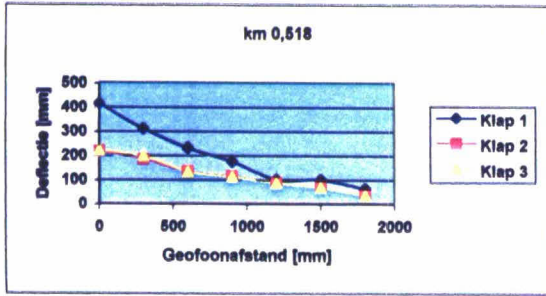


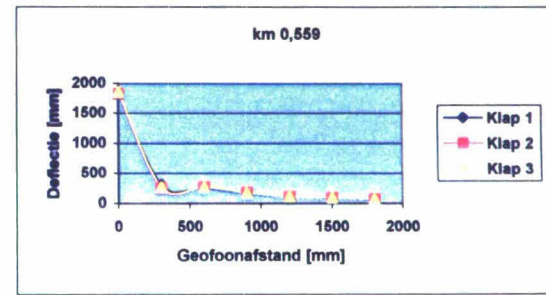
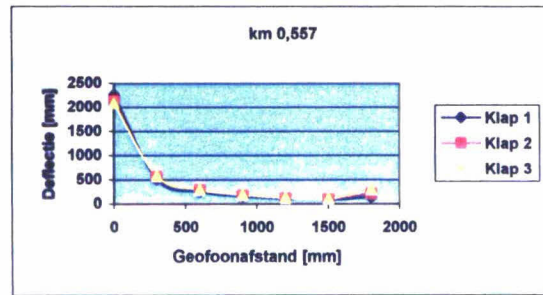
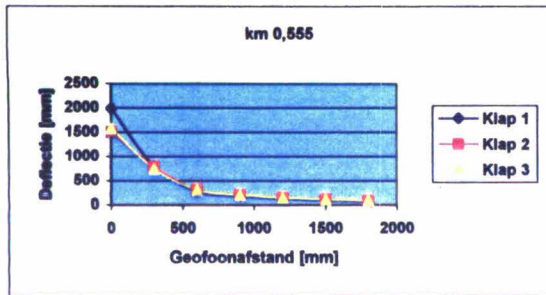
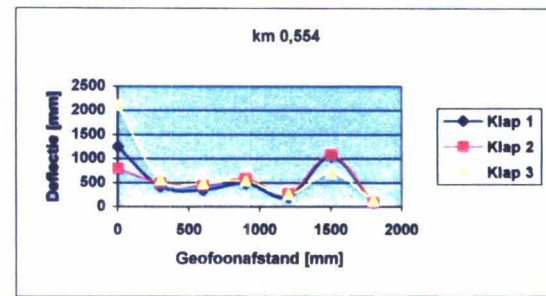
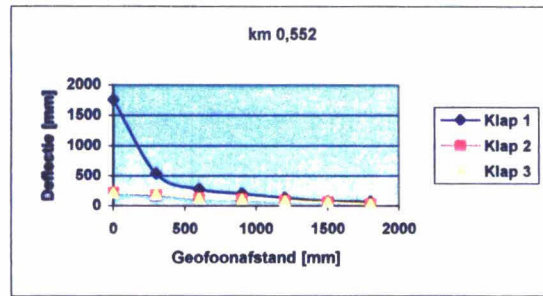
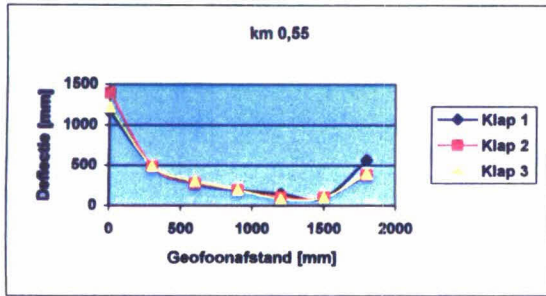
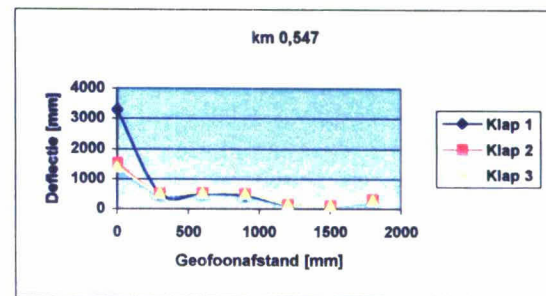
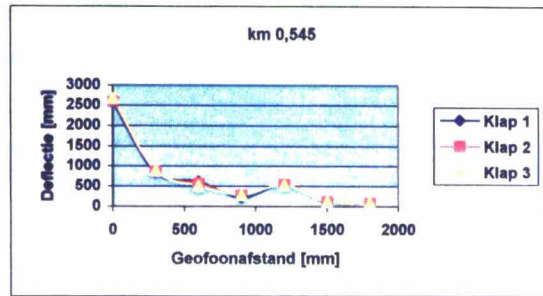
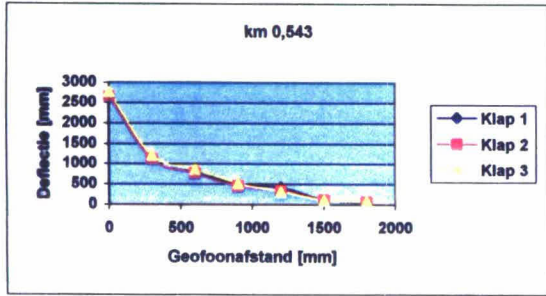




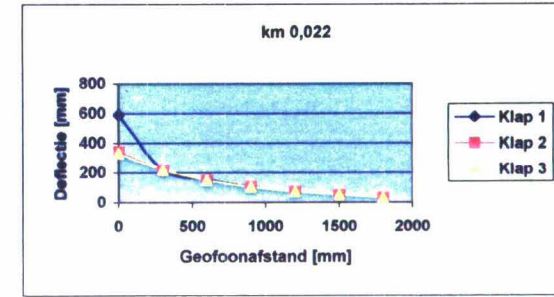
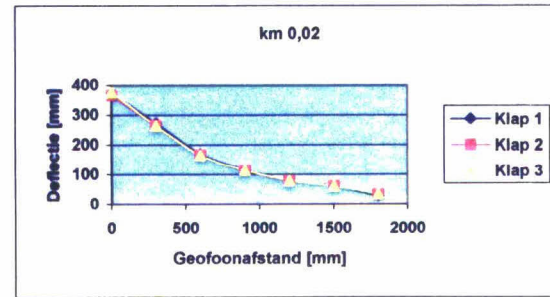
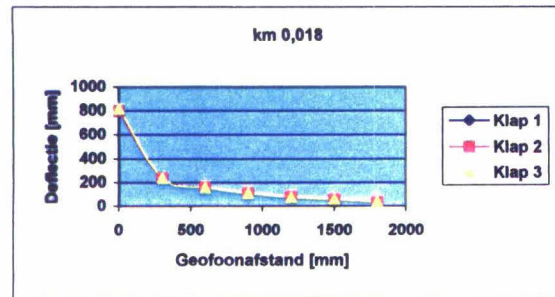
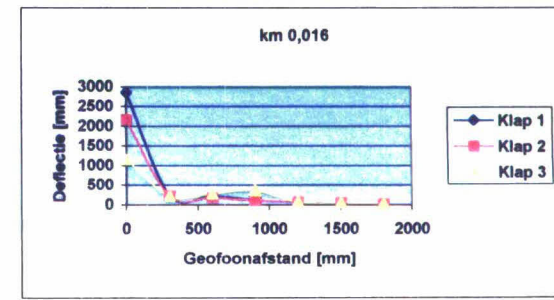
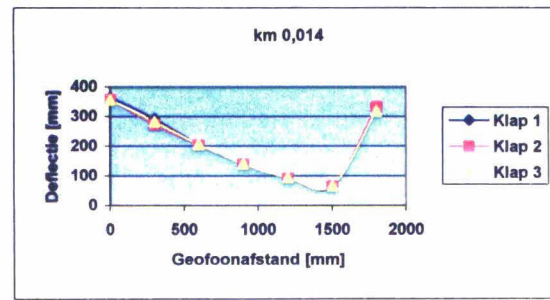
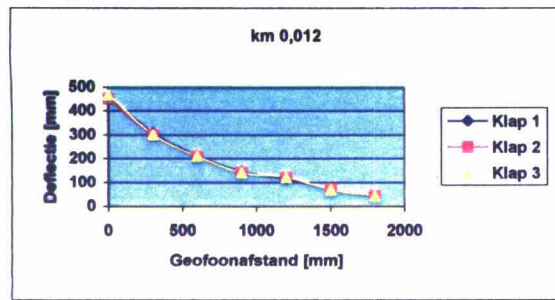
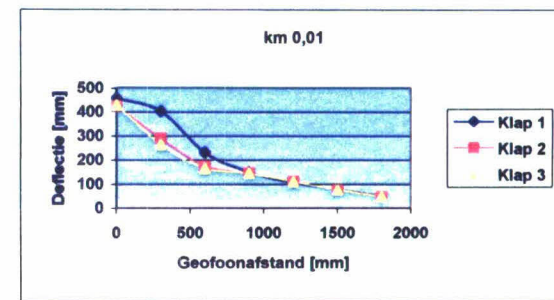
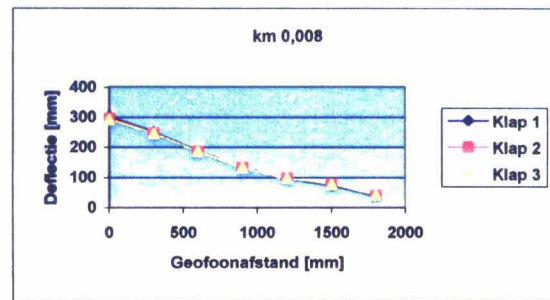
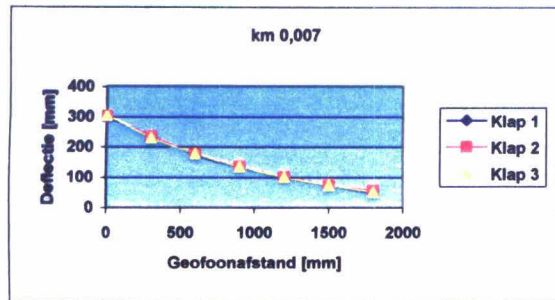
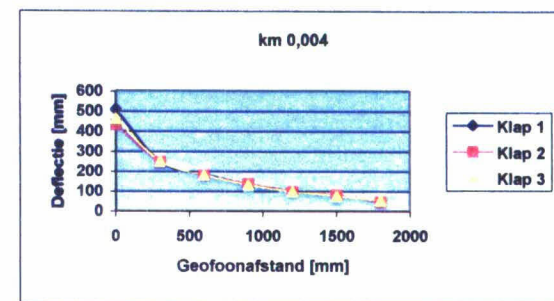
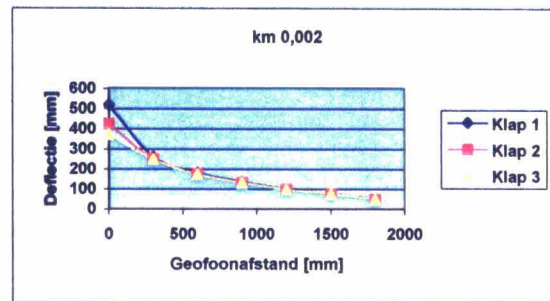
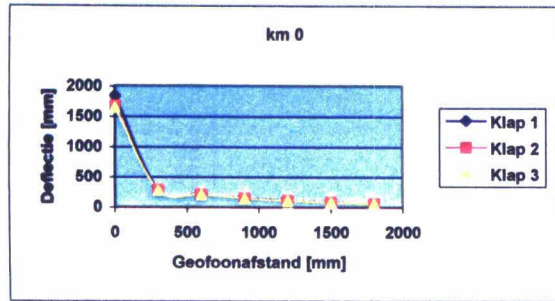


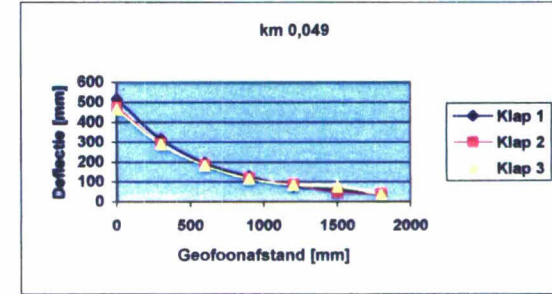
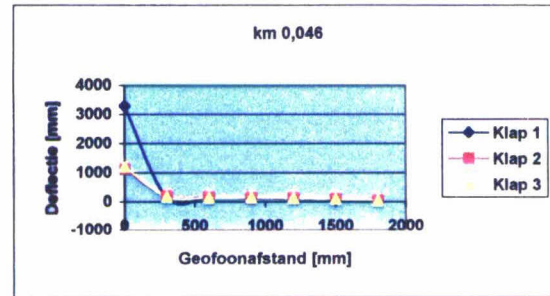
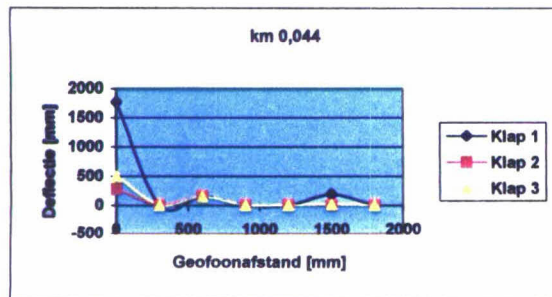
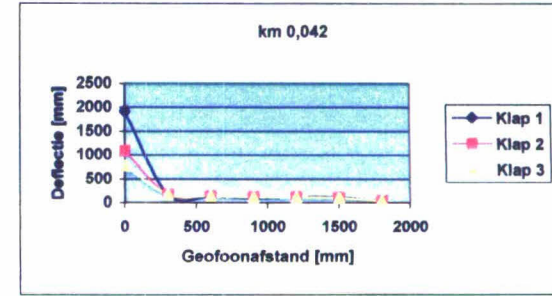
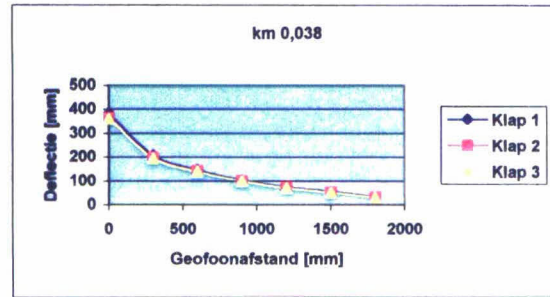
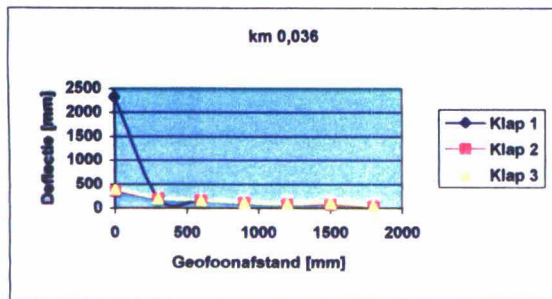
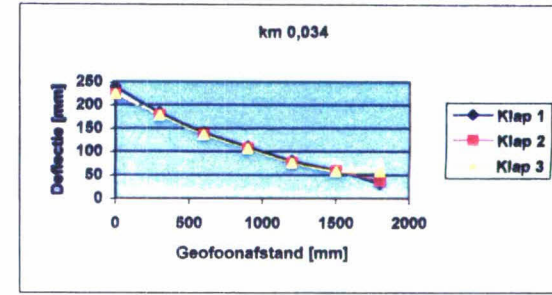
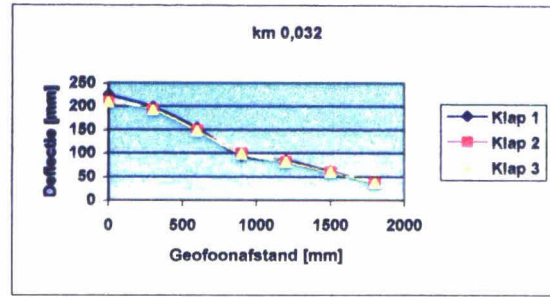
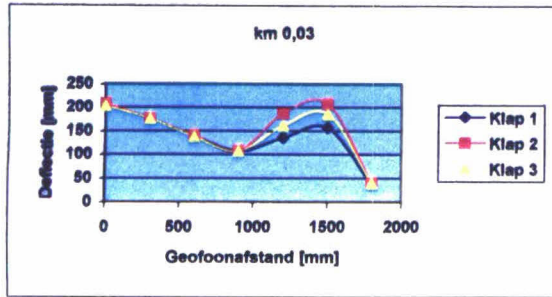
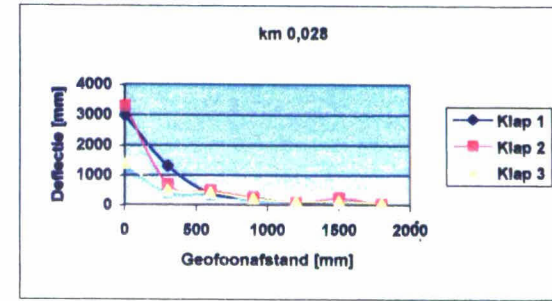
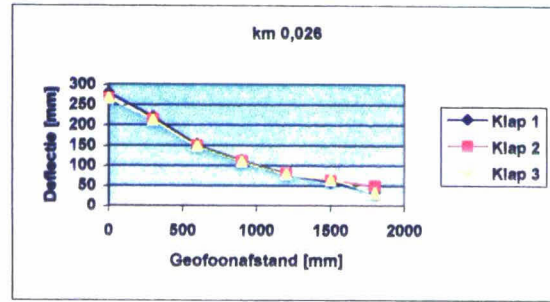
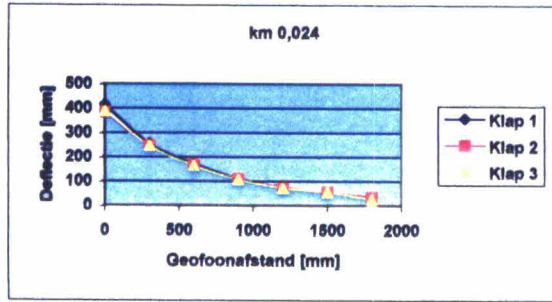


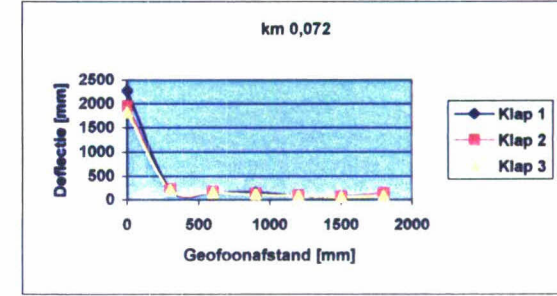
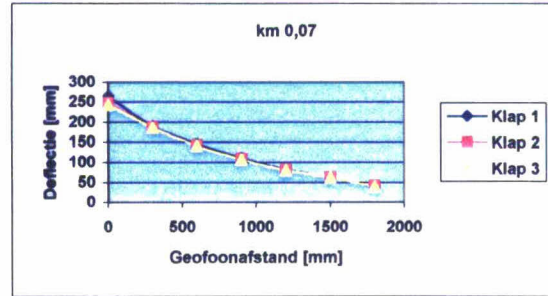
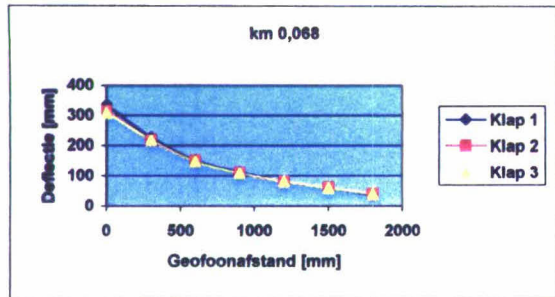
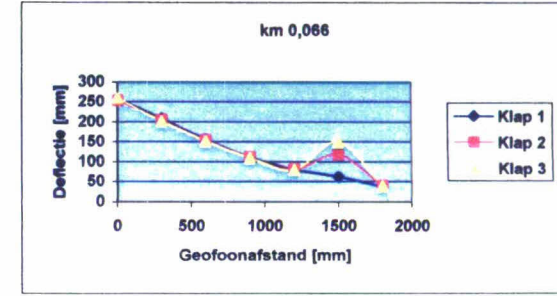
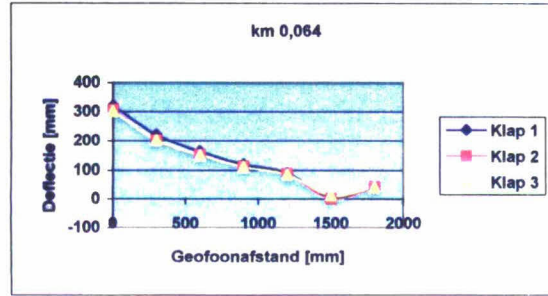
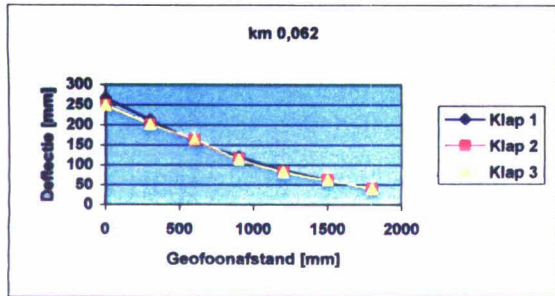
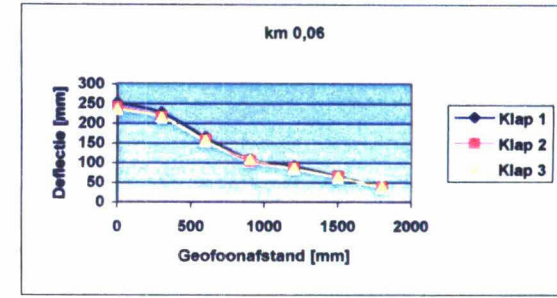
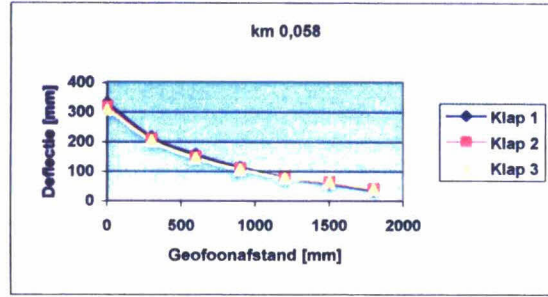
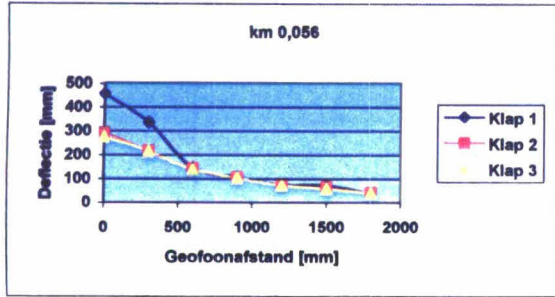
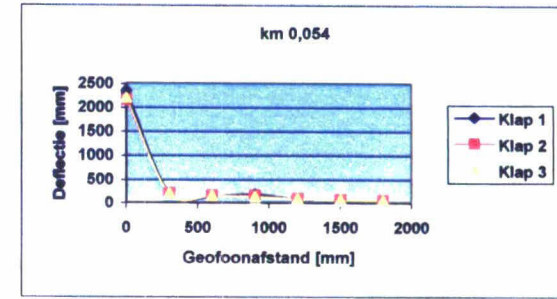
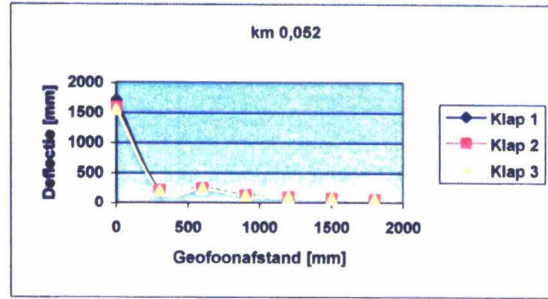
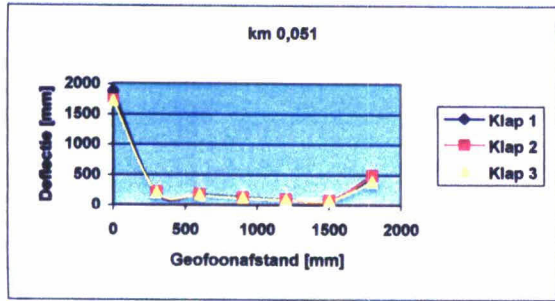


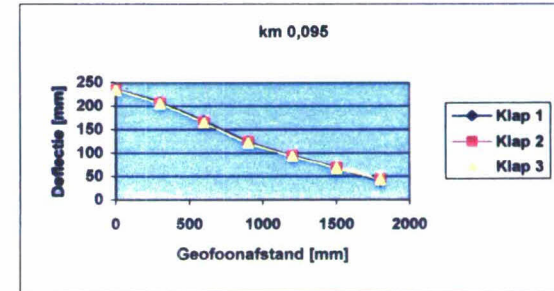
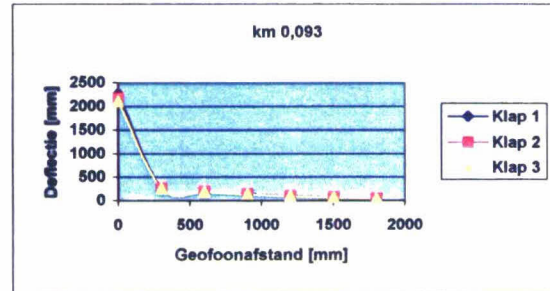
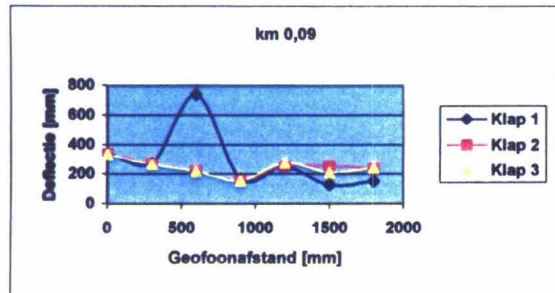
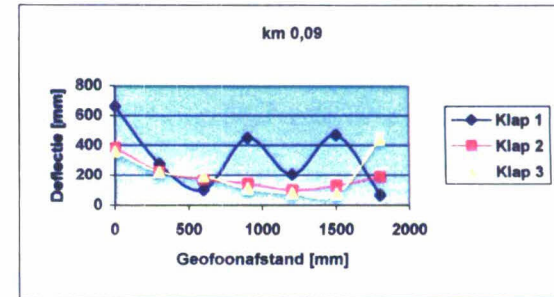
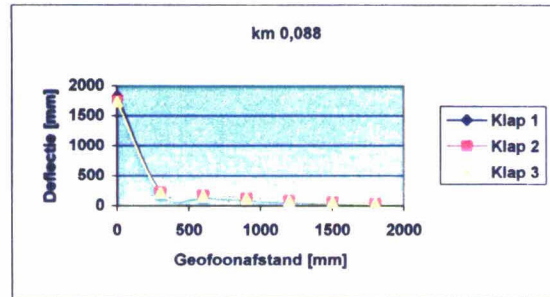
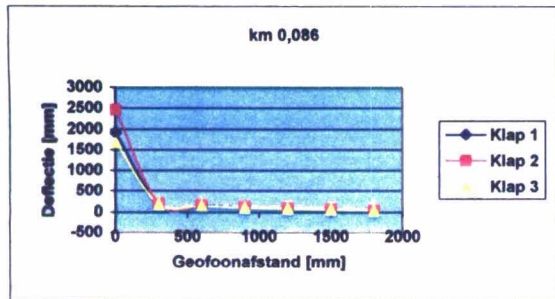
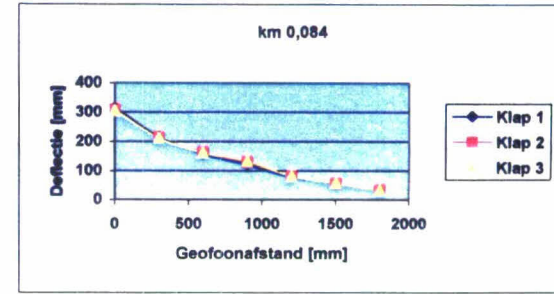
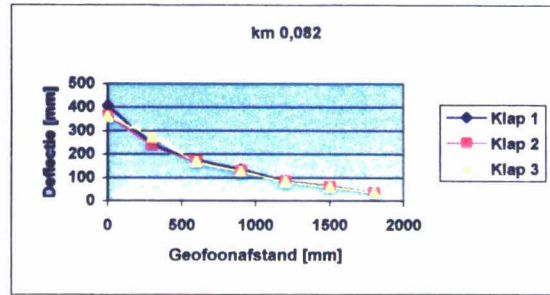
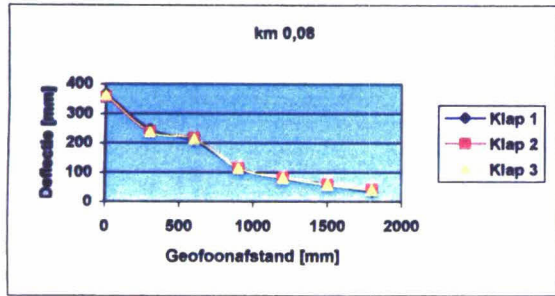
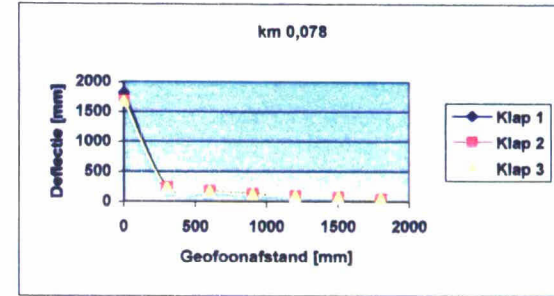
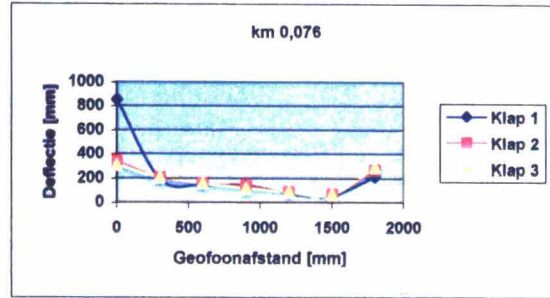
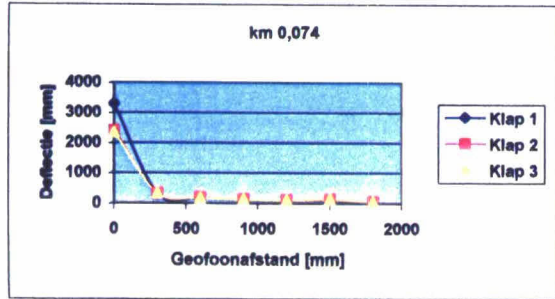


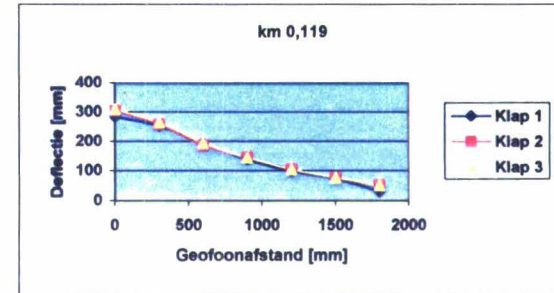
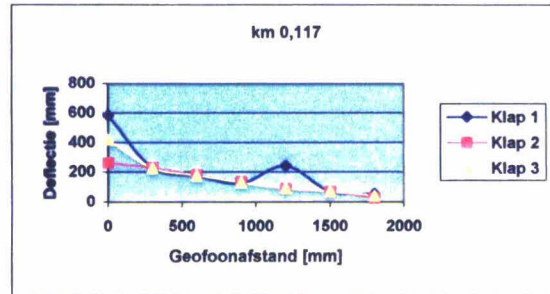
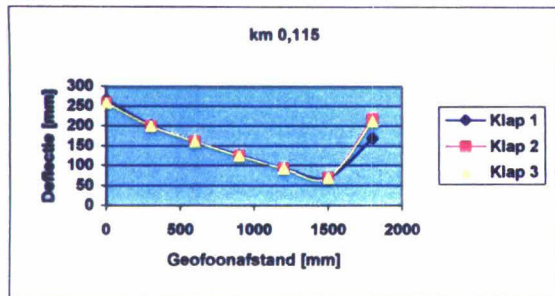
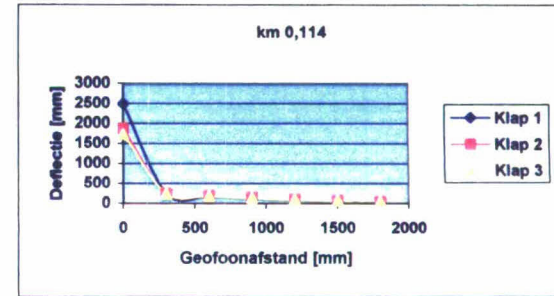
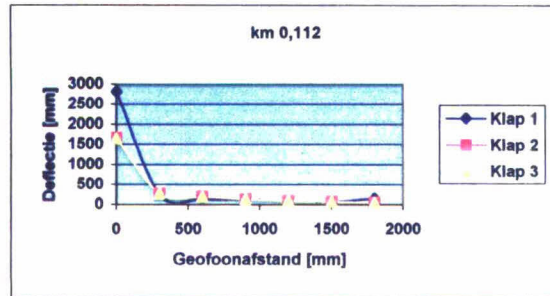
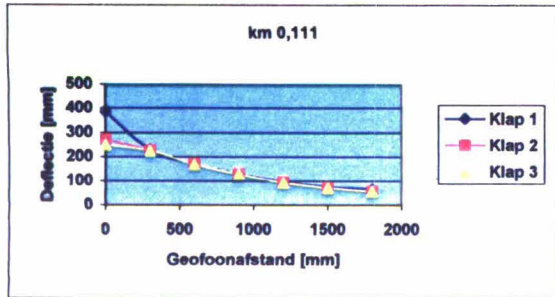
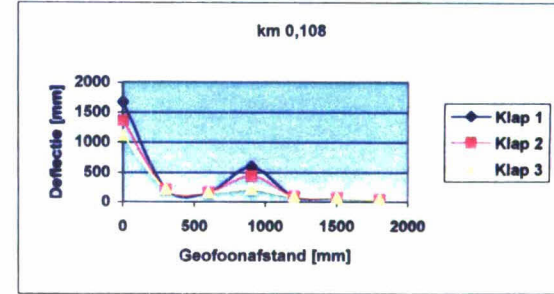
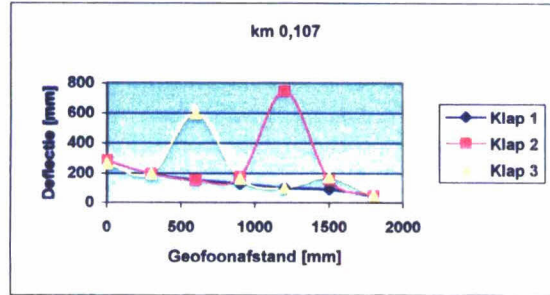
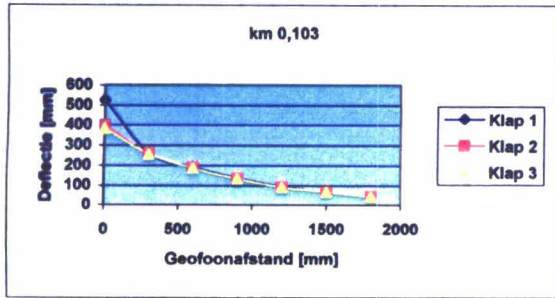
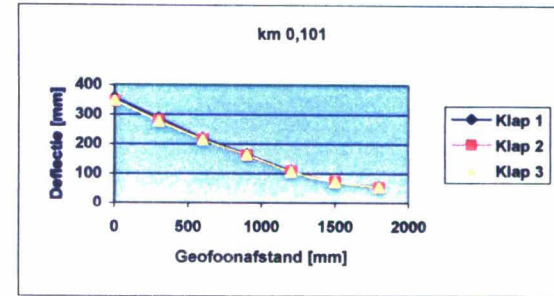
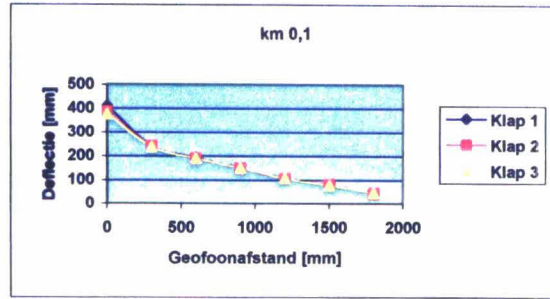
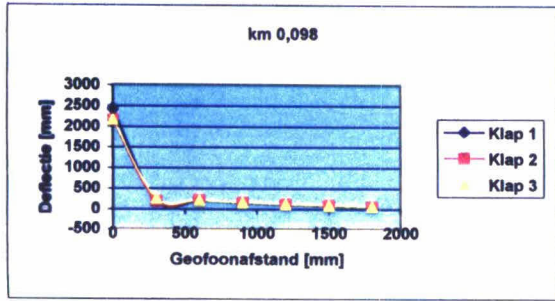
**Meetraai 3**



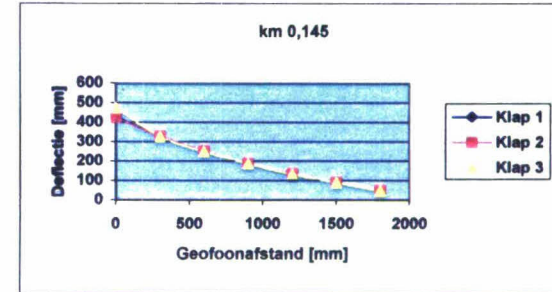
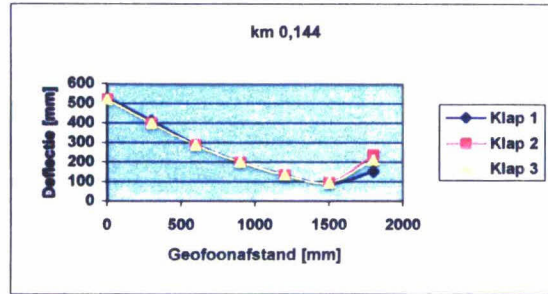
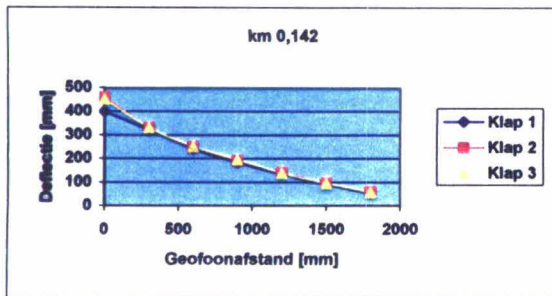
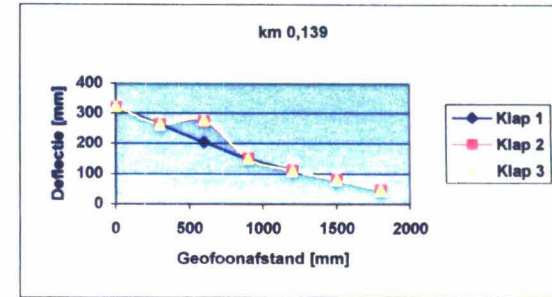
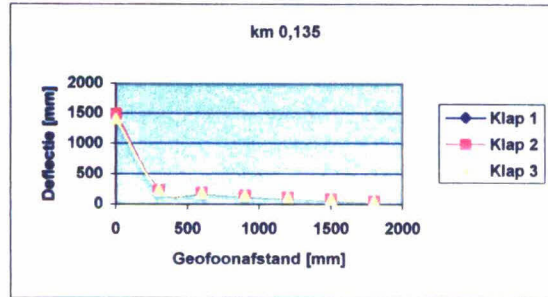
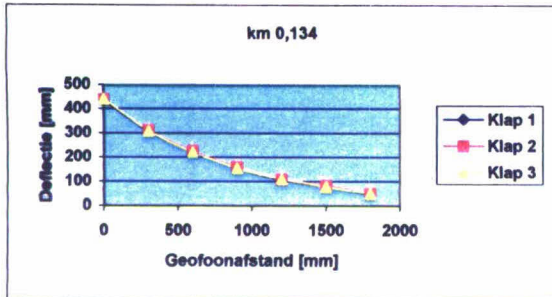
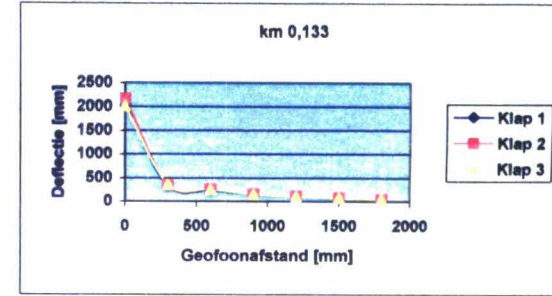
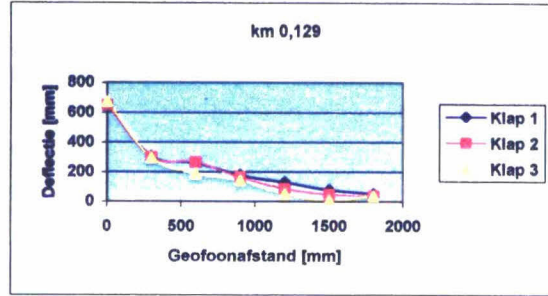
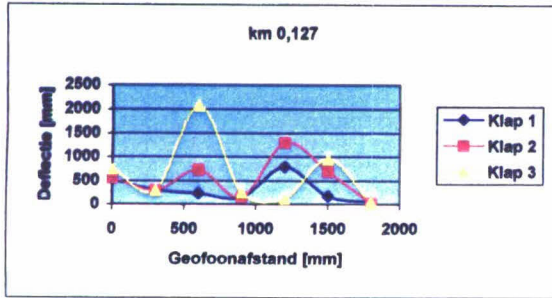
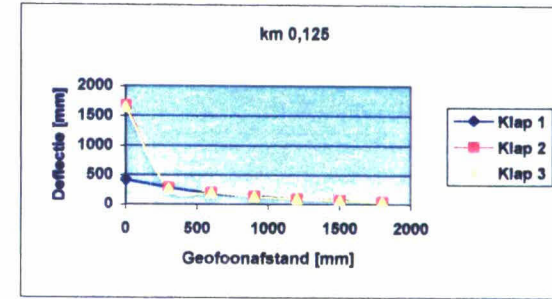
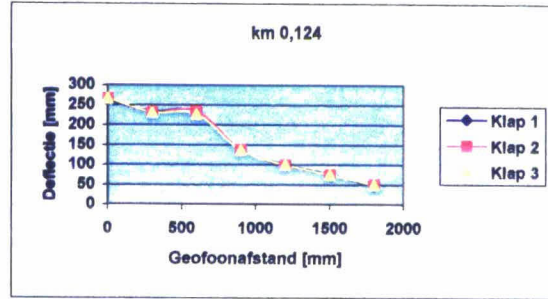
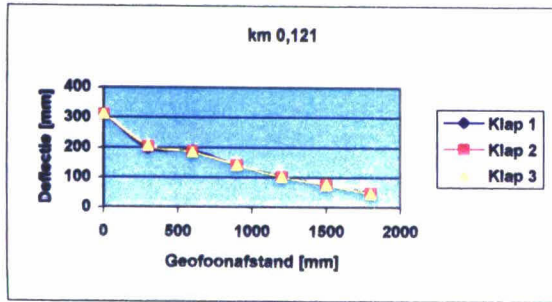


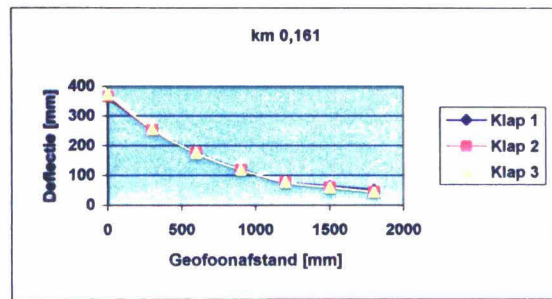
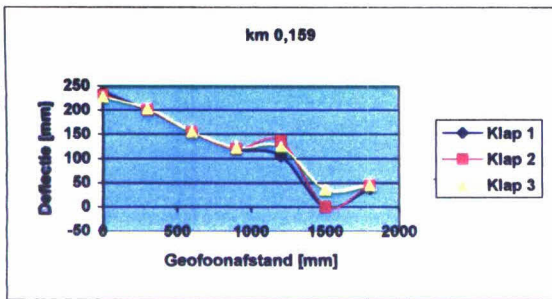
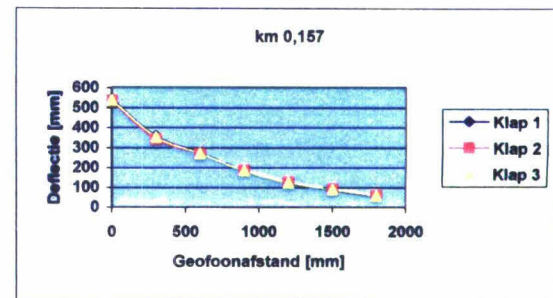
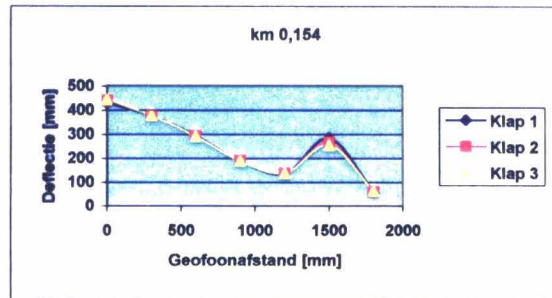
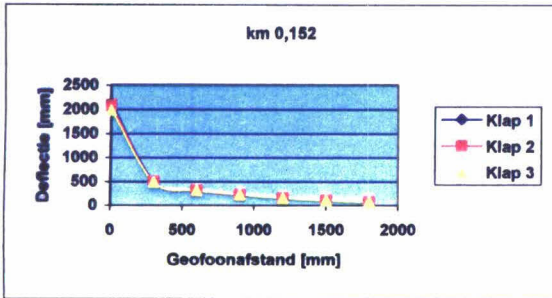
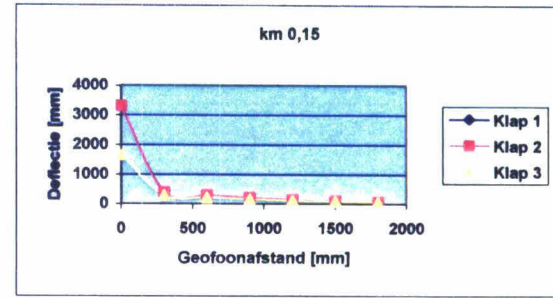
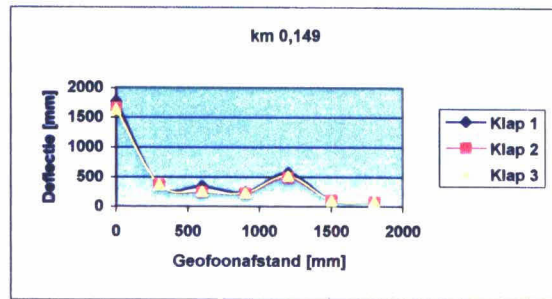
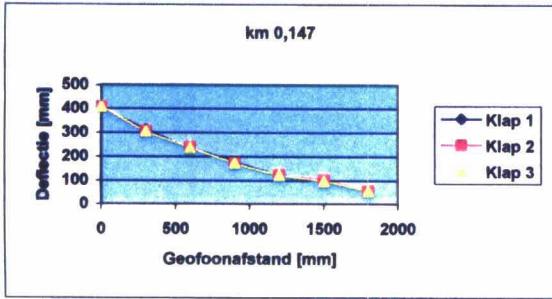




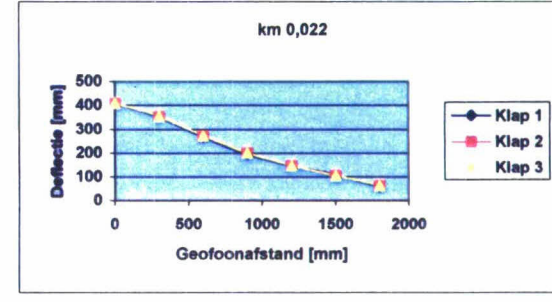
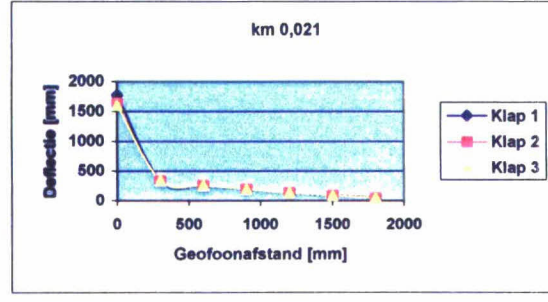
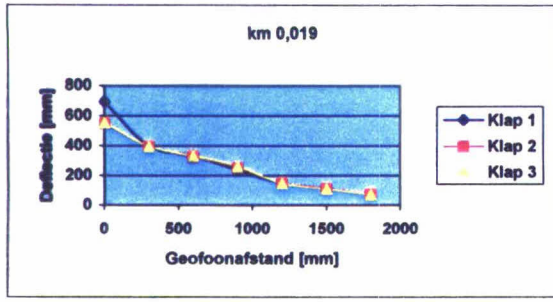
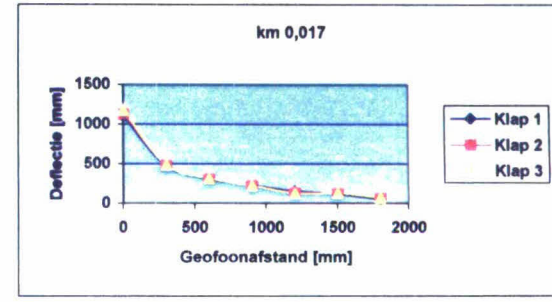
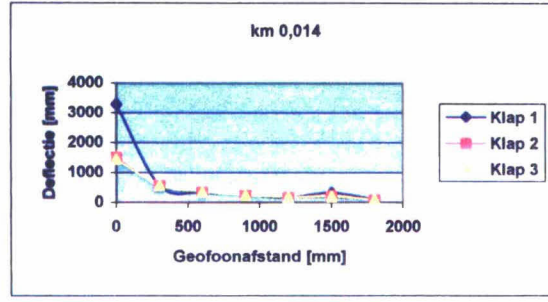
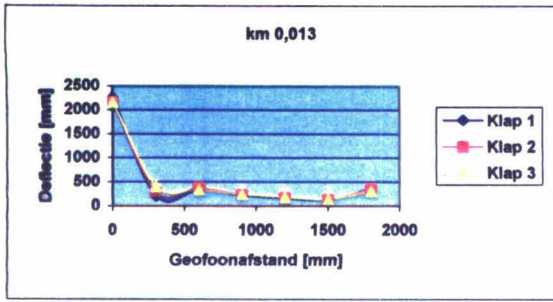
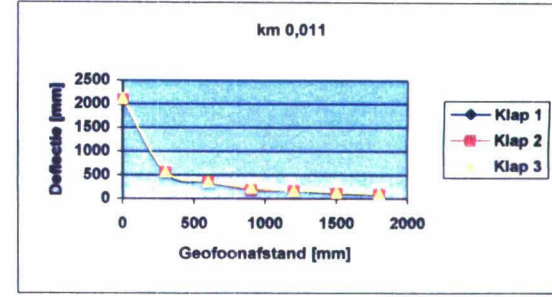
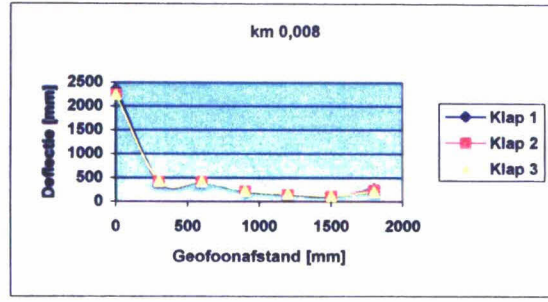
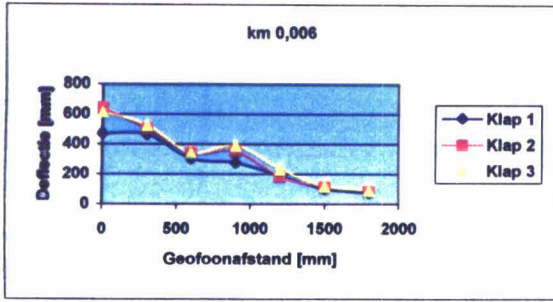
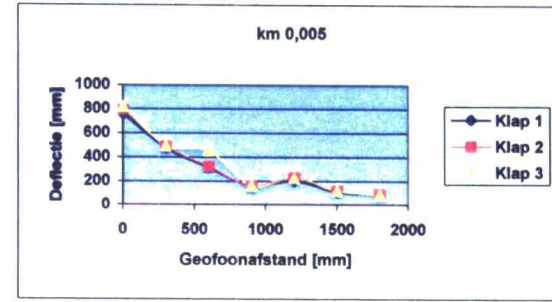
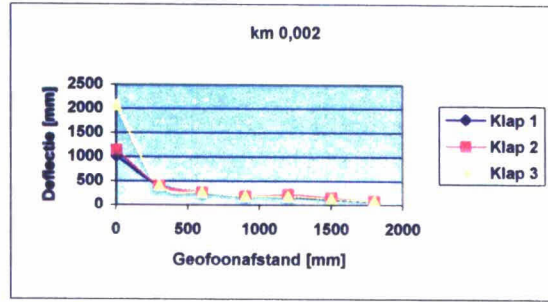
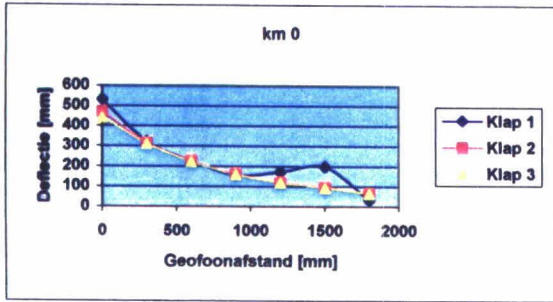


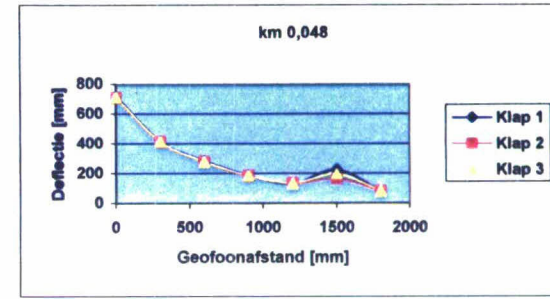
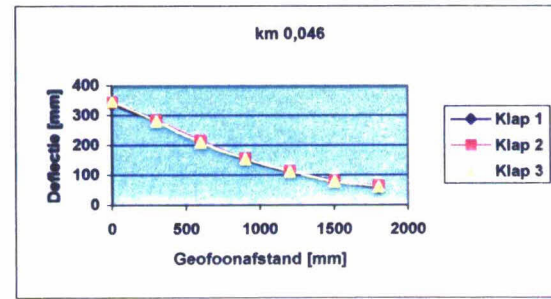
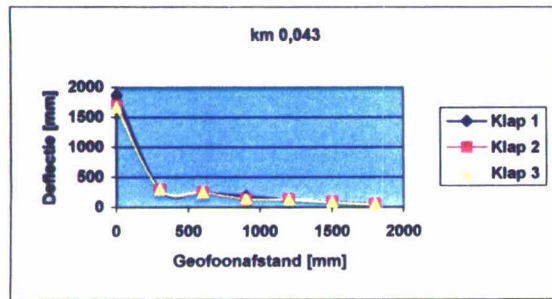
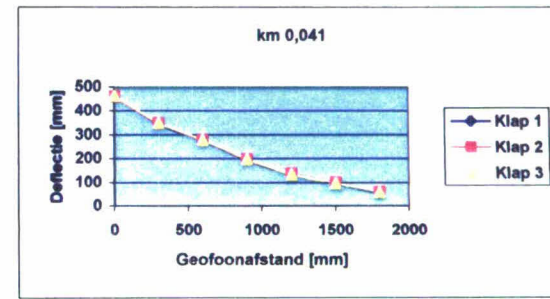
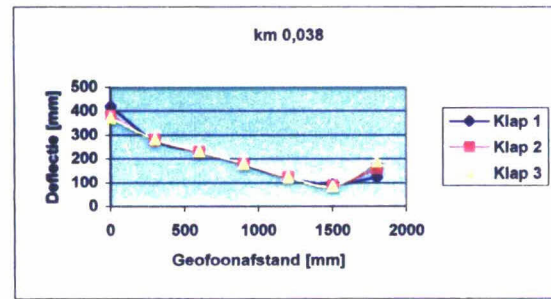
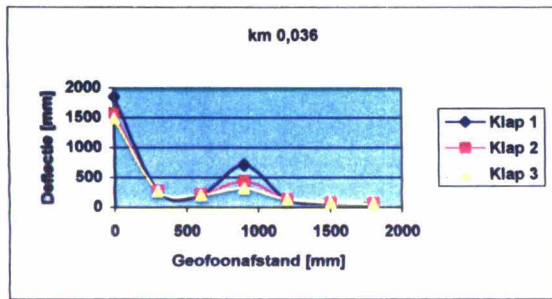
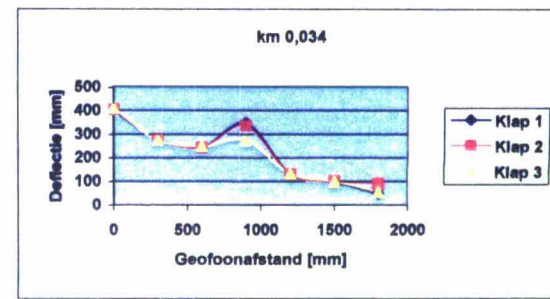
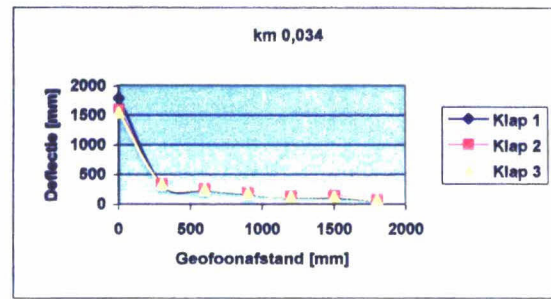
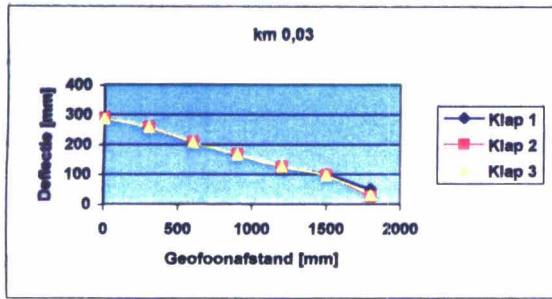
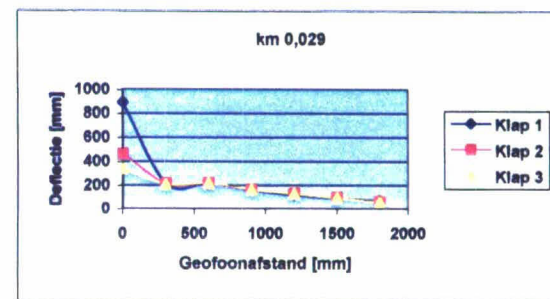
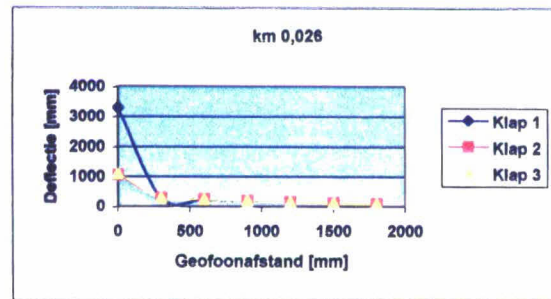
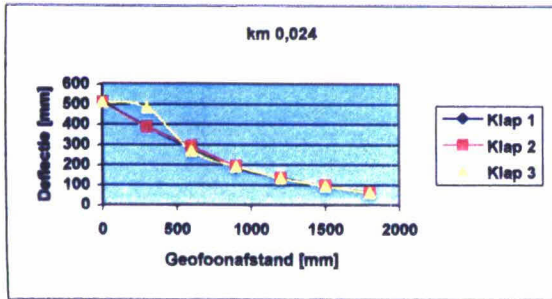


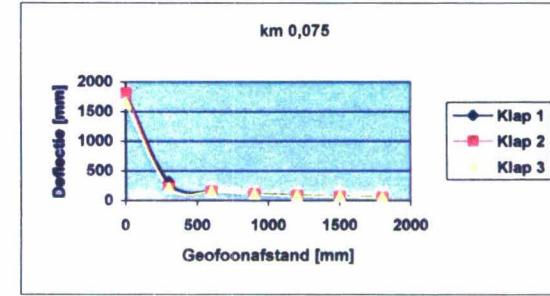
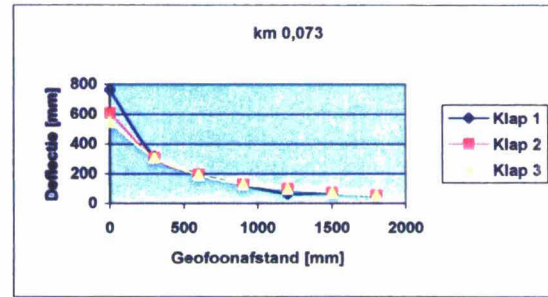
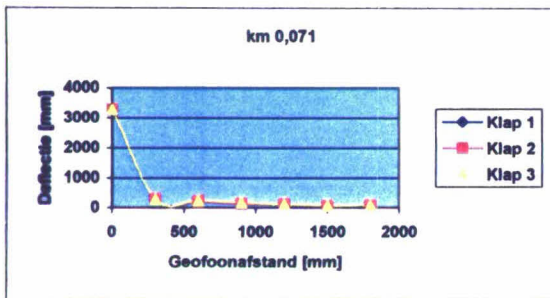
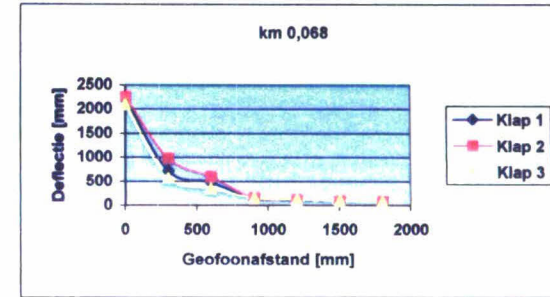
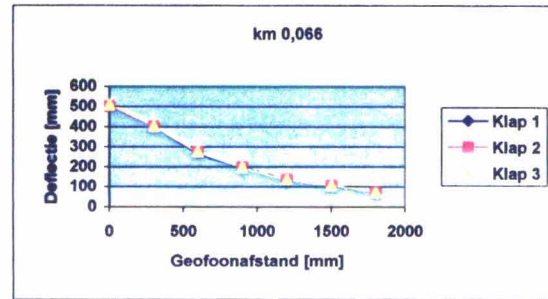
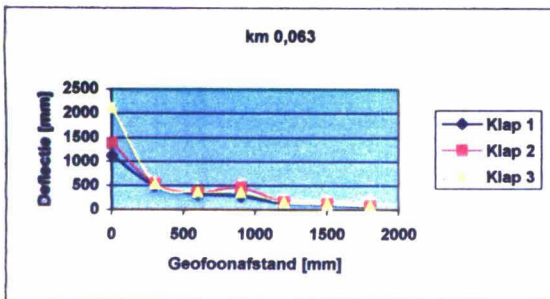
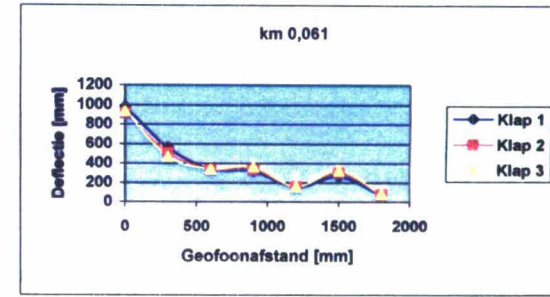
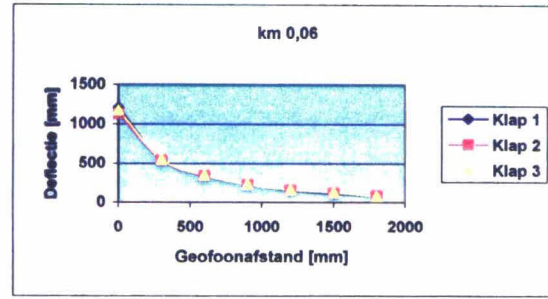
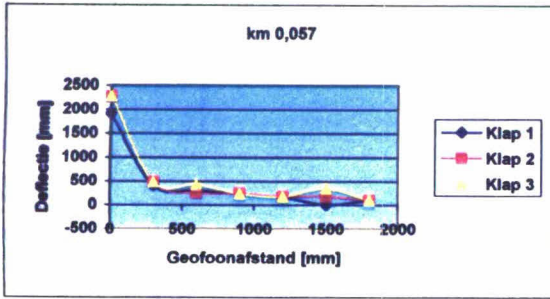
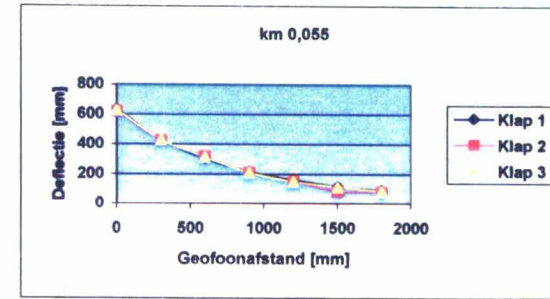
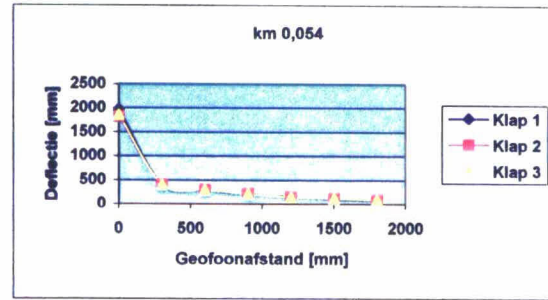
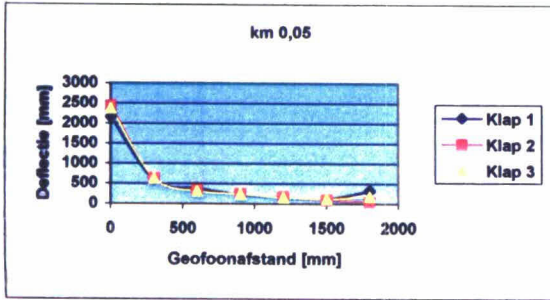


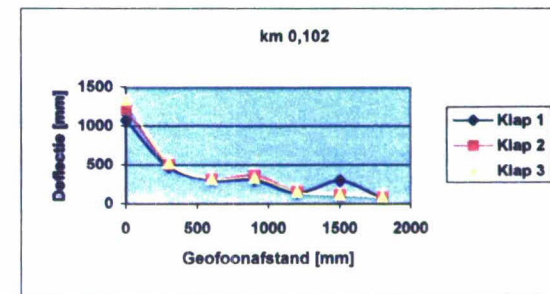
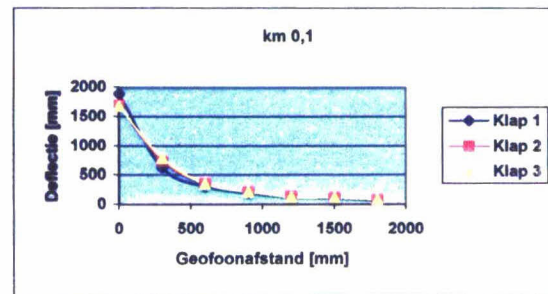
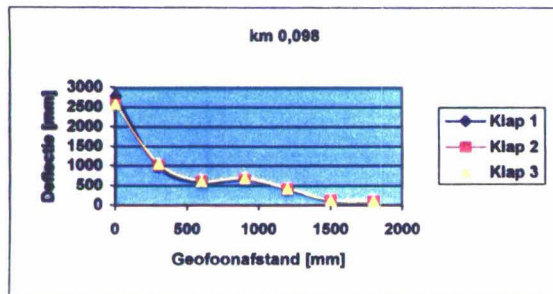
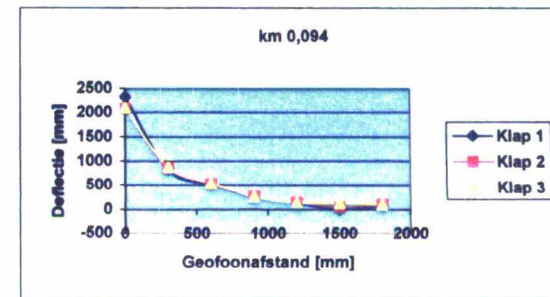
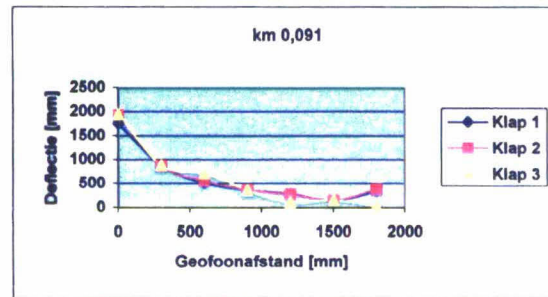
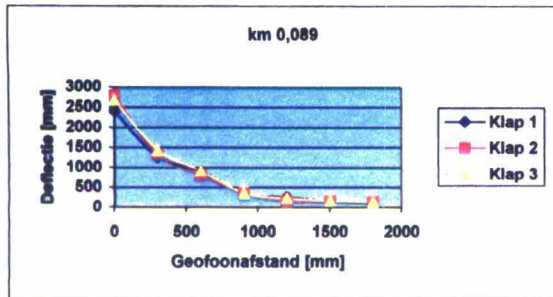
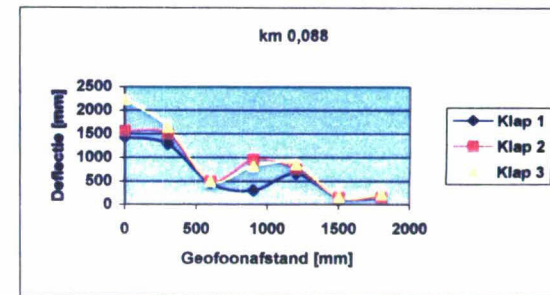
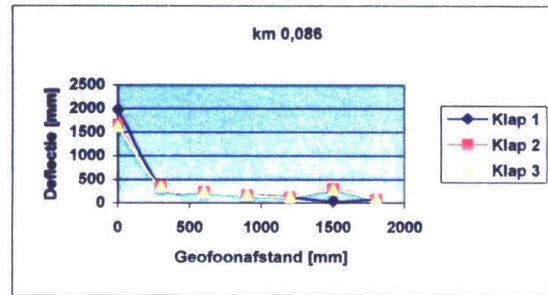
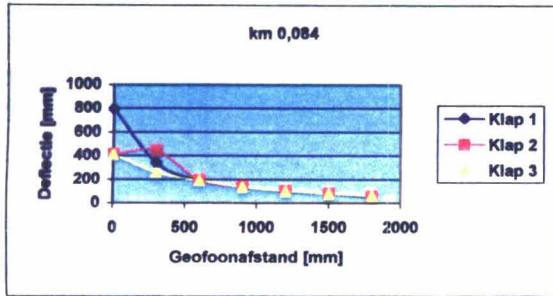
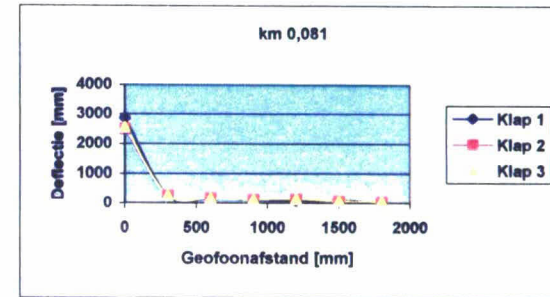
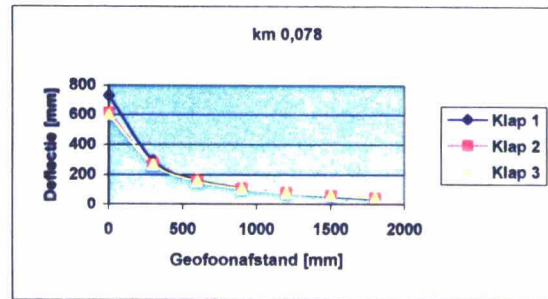
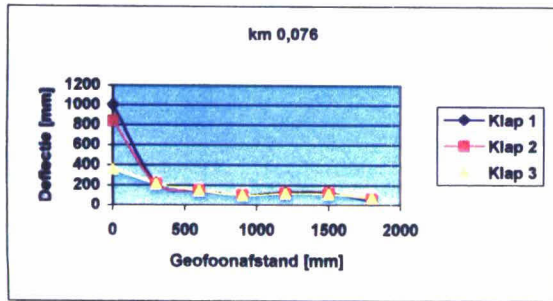


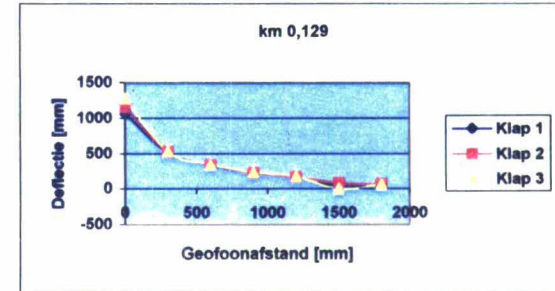
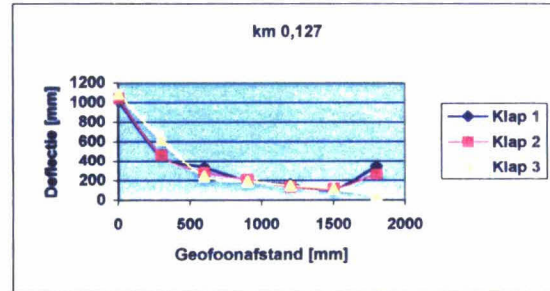
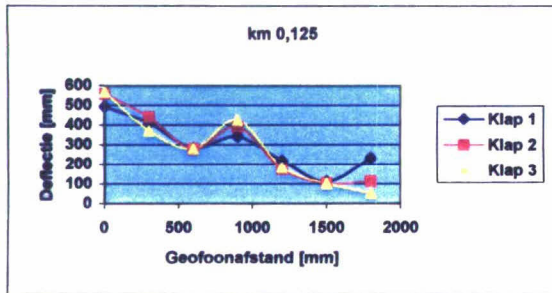
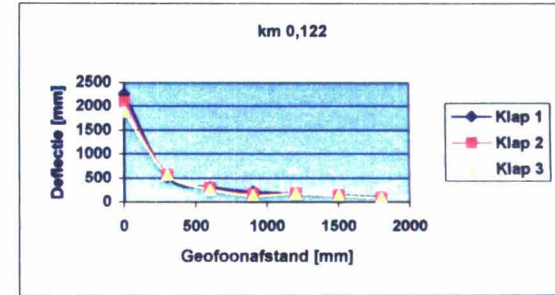
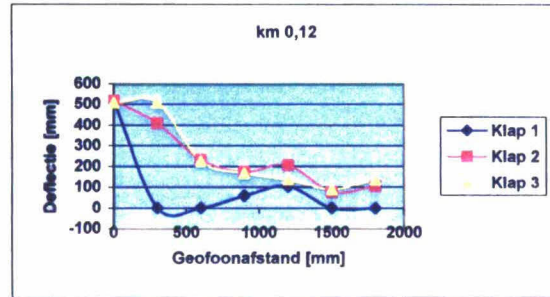
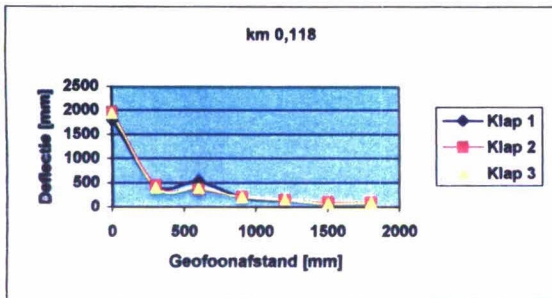
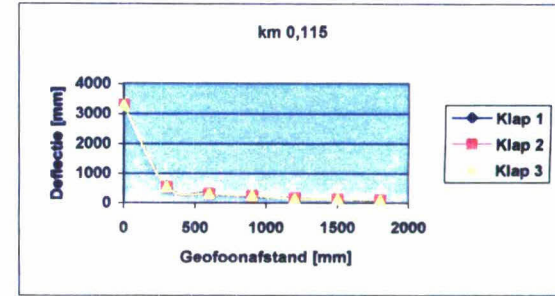
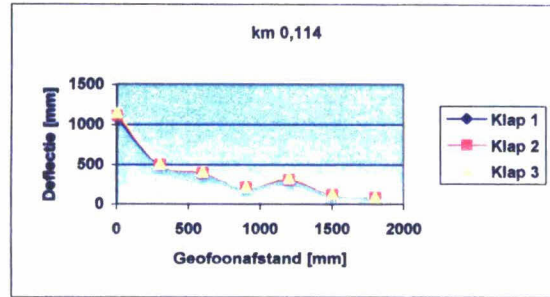
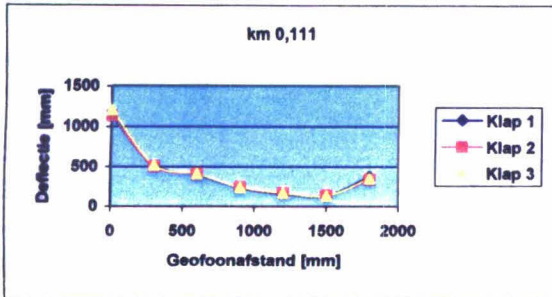
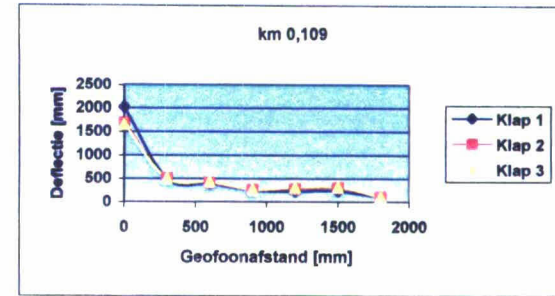
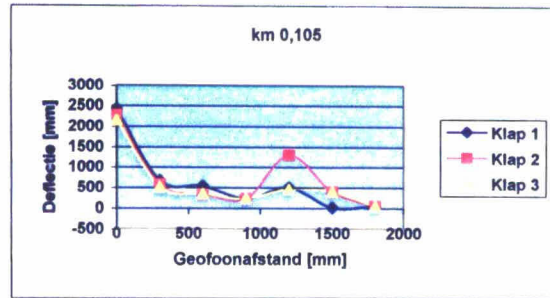
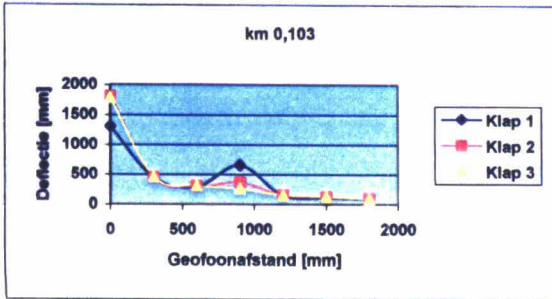
**Meetraai 4**



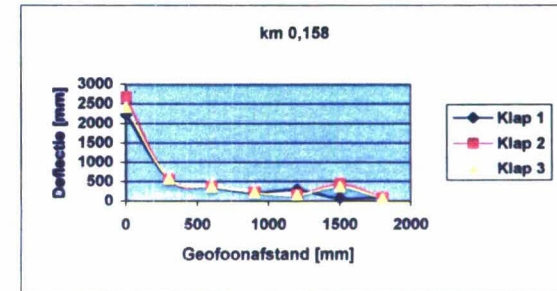
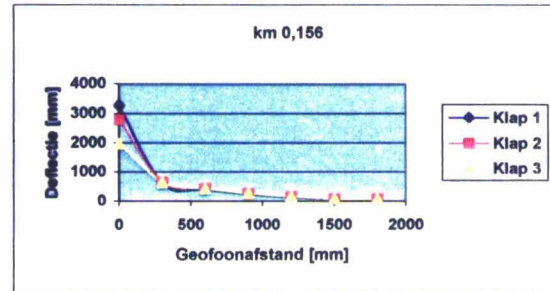
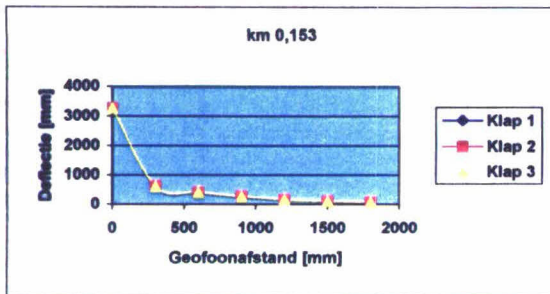
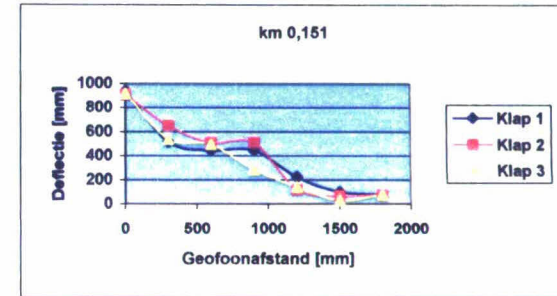
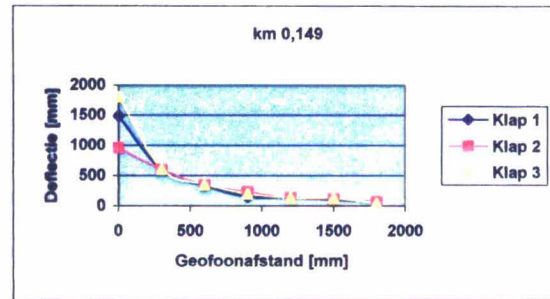
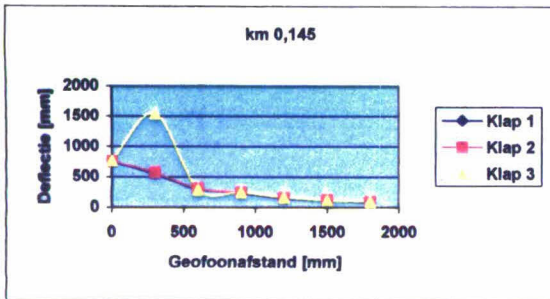
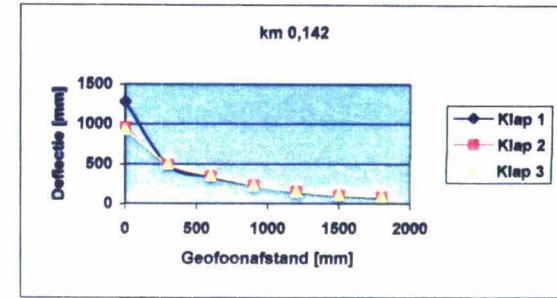
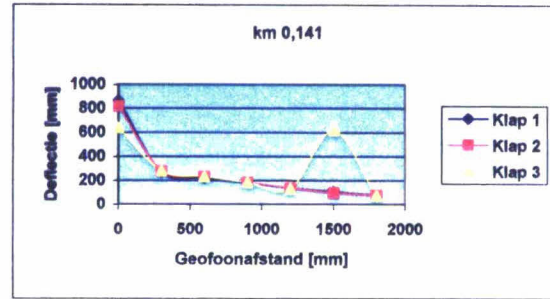
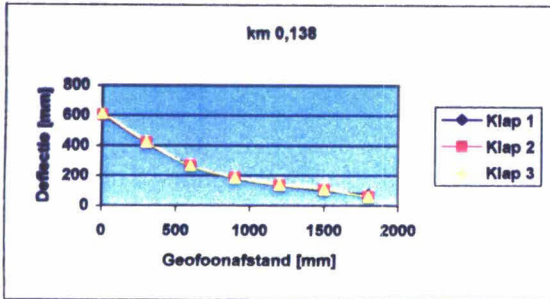
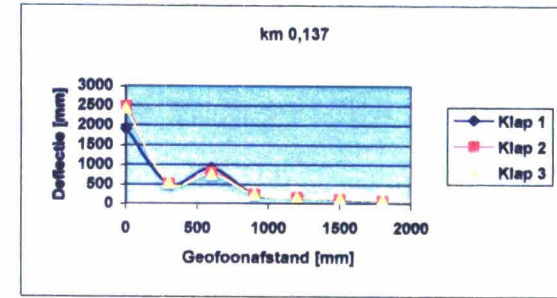
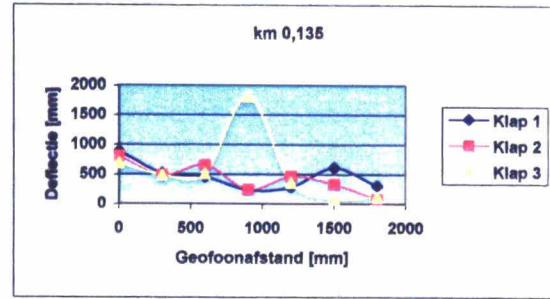
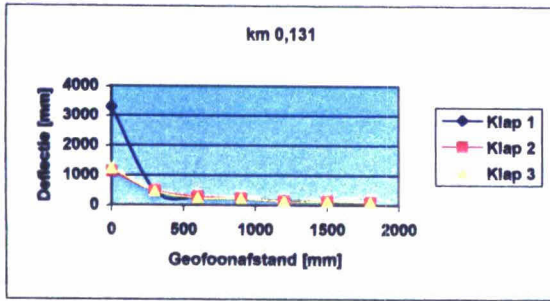


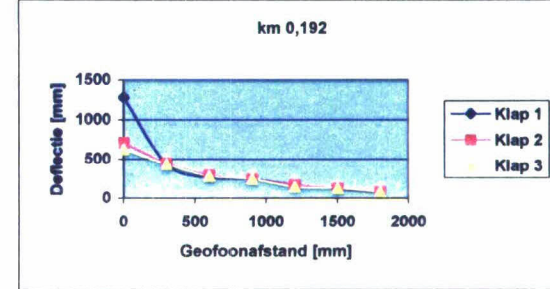
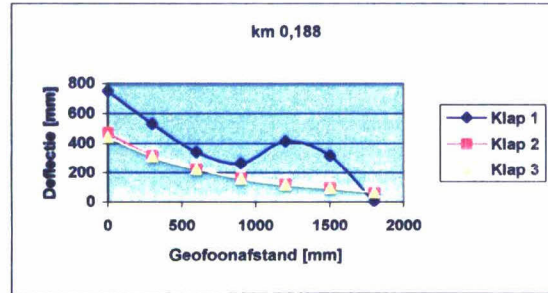
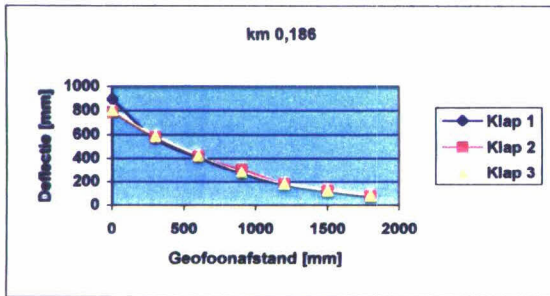
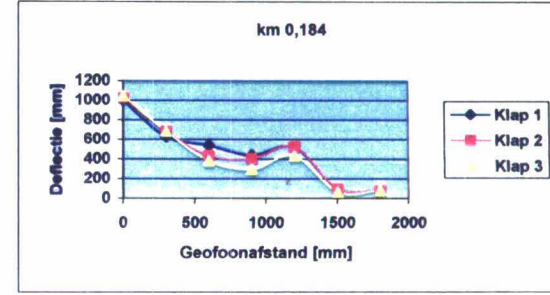
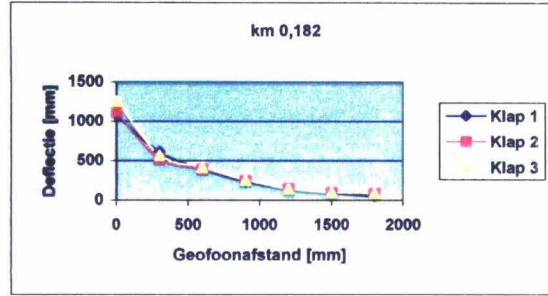
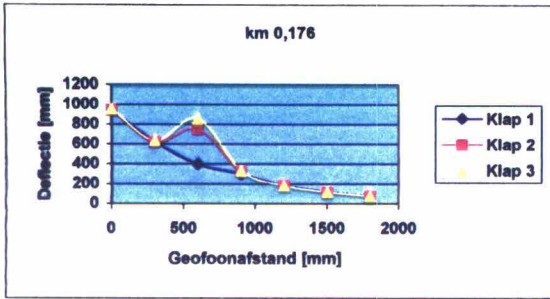
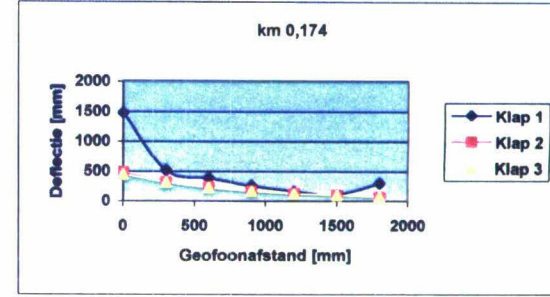
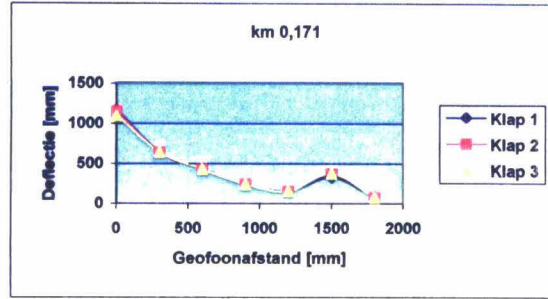
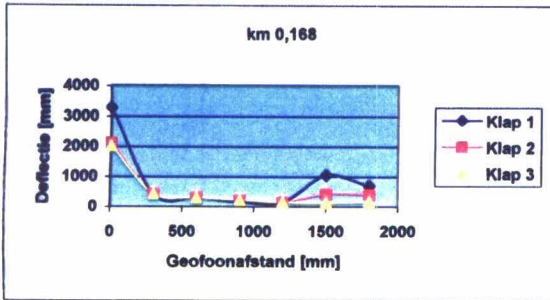
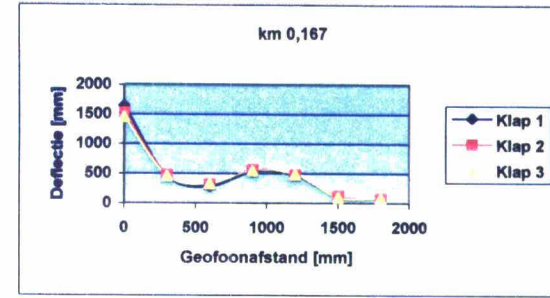
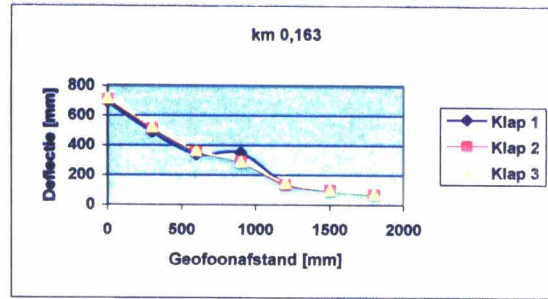
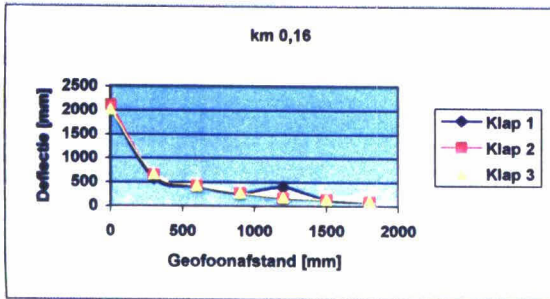


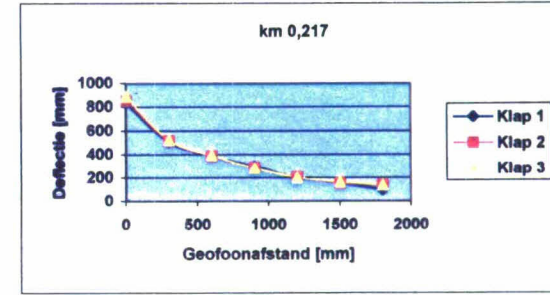
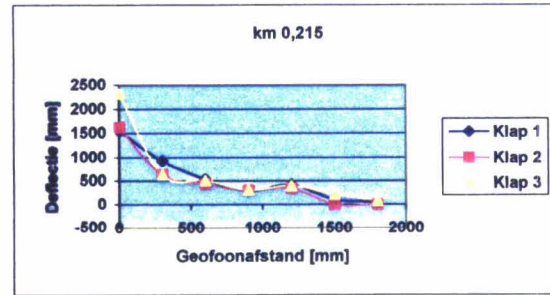
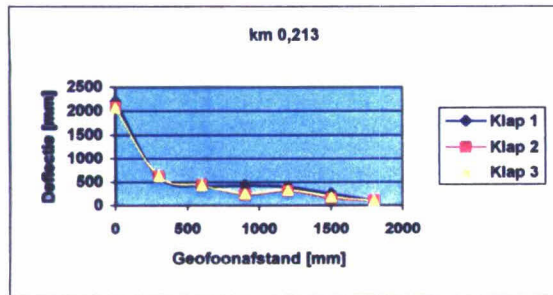
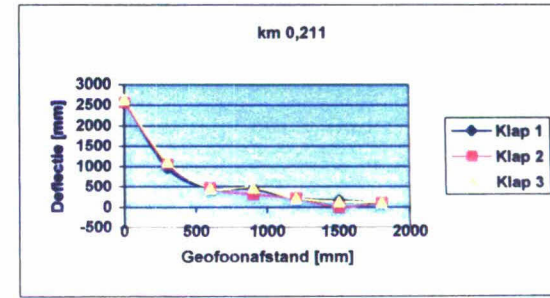
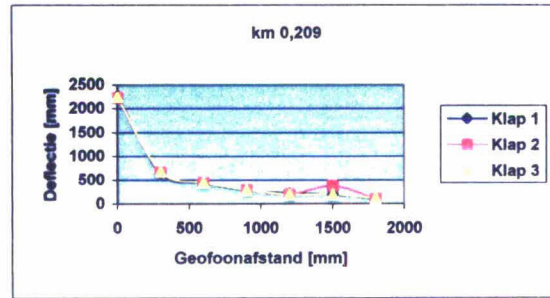
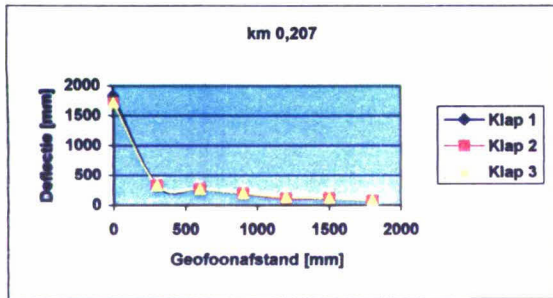
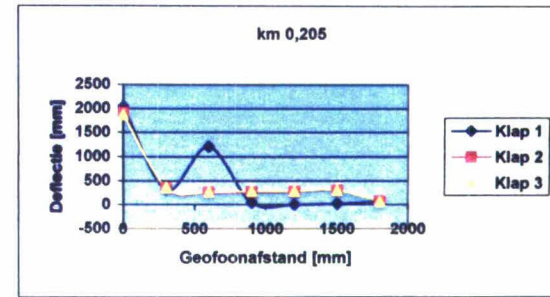
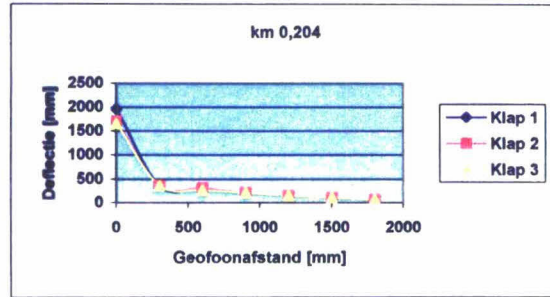
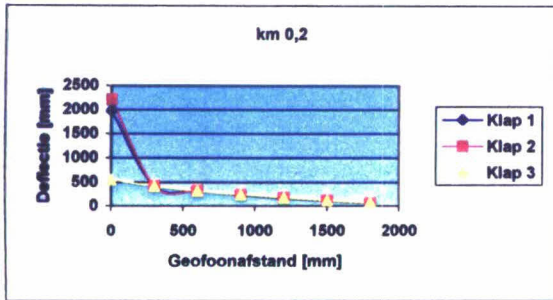
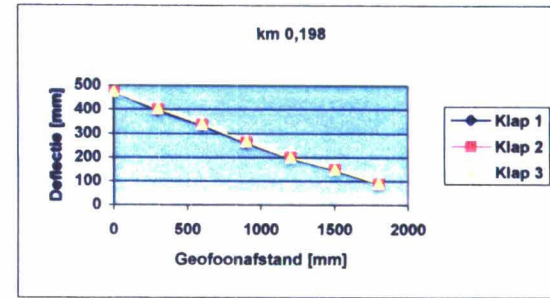
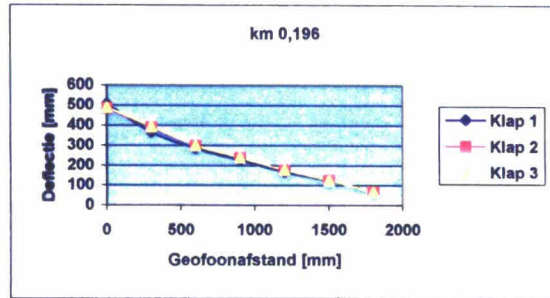
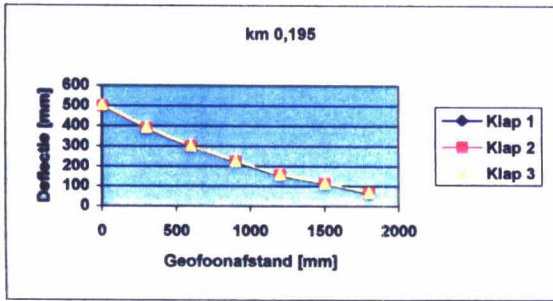


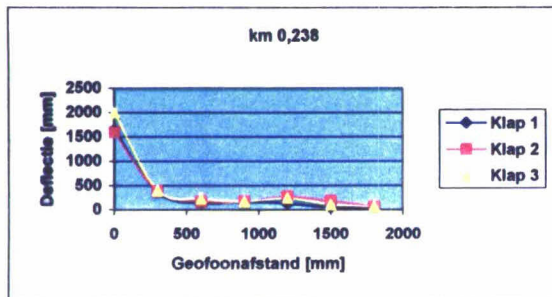
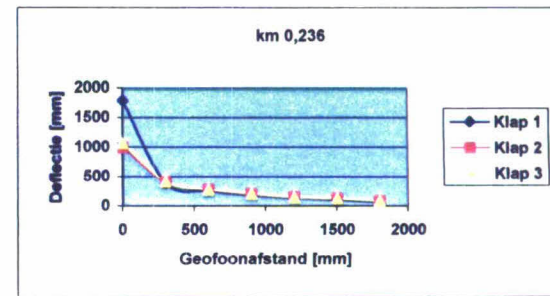
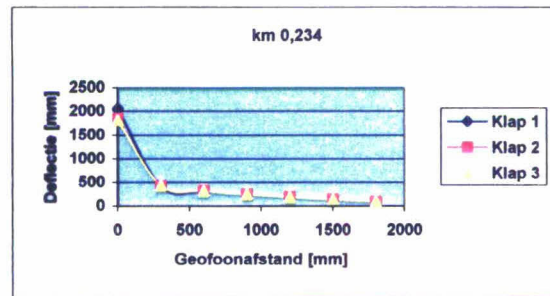
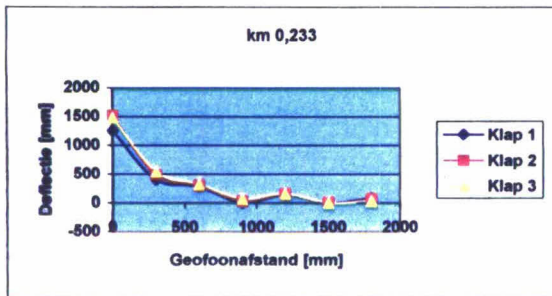
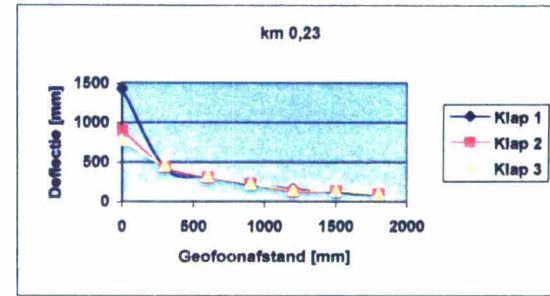
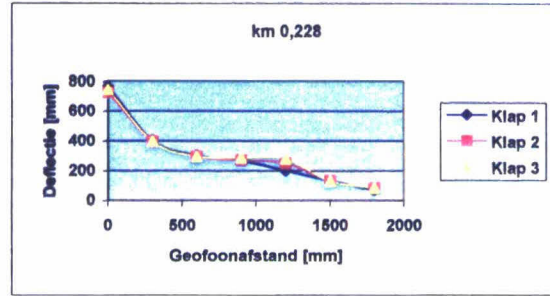
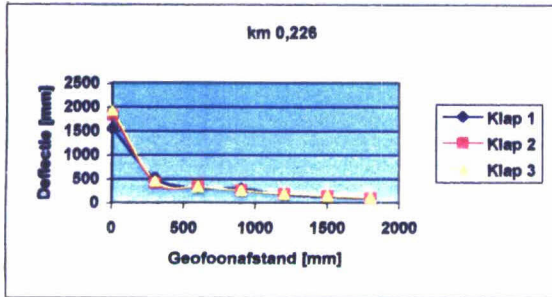
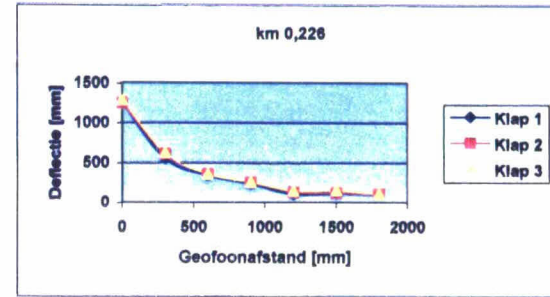
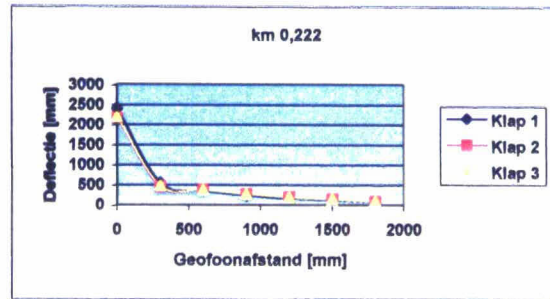
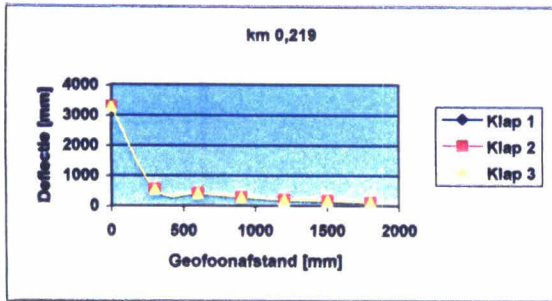














ZWARTWIT

**Bijlage 4**

Alle teruggerekende waarden

**Meetraai 1**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	345	200	0	1332	141	26	82	101,86	Basin
3	345	200	0,004	1334	92	10.681	78	11,03	Basin
3	345	200	0,006	1335	106	1.681	91	181,32	MET
3	345	200	0,008	1335	1.598	734	39	6,63	Basin
3	345	200	0,01	1337	97	328	141	42,24	Basin
3	345	200	0,012	1339	72	4.437	74	14,71	Basin
2	345	200	0,014	1339	1.353	7.692	14	47,10	Basin
3	345	200	0,017	1341	1.188	1.414	65	3,48	Basin
3	345	200	0,021	1342	385	13.509	42	4,03	Basin
3	345	200	0,022	1342	334	5.789	110	36,19	MET
3	345	200	0,025	1343	4.297	5	164	8,11	Basin
3	345	200	0,028	1345	1.458	599	132	16,15	Basin
3	345	200	0,03	1346	144	32	85	87,08	Basin
3	345	200	0,032	1346	3.859	52	65	39,21	Basin
3	345	200	0,034	1348	7.476	3	61	4,09	Basin
3	345	200	0,037	1348	284	3.811	132	10,91	Basin
3	345	200	0,038	1349	906	63	65	8,69	Basin
3	345	200	0,04	1350	96	9	43	75,01	Basin
3	345	200	0,043	1351	266	3.836	43	4,56	Basin
3	345	200	0,045	1351	1.949	1.028	42	3,05	Basin
3	345	200	0,048	1353	1.143	2.511	41	3,32	Basin
3	345	200	0,05	1353	2.738	12	60	9,83	Basin
3	345	200	0,052	1354	1.091	749	44	2,91	Basin
3	345	200	0,055	1355	1.938	4.425	25	57,19	Basin
3	345	200	0,056	1356	11.768	2	35	14,42	Basin
3	345	200	0,059	1357	132	31	81	81,71	Basin
1	345	200	0,06	1357	743	9.324	108	6,77	Basin
3	345	200	0,063	1358	6.229	2.709	85	14,50	Basin
3	345	200	0,064	1359	2.394	1.725	60	1,98	MET
3	345	200	0,067	1359	6.125	368	120	16,57	Basin
3	345	200	0,068	1400	131	35	80	91,19	Basin
3	345	200	0,07	1401	4.602	821	80	7,29	Basin
3	345	200	0,073	1401	3.312	863	41	4,47	Basin
3	345	200	0,075	1402	109	343	171	33,48	Basin
3	345	200	0,077	1403	1.847	3.438	33	4,95	Basin
3	345	200	0,078	1404	94	12.636	64	10,94	Basin
3	345	200	0,081	1406	1.767	1.774	39	3,10	Basin
3	345	200	0,083	1406	1.307	42.424	31	34,91	Basin
3	345	200	0,084	1407	325	4.864	122	118,70	MET
3	345	200	0,086	1408	104	9.056	110	9,03	Basin
3	345	200	0,088	1409	3.481	850	31	66,64	Basin
3	345	200	0,09	1409	2.267	966	35	5,56	Basin
3	345	200	0,093	1410	7.595	5	45	8,86	Basin
3	345	200	0,094	1411	2.766	1.005	45	2,56	Basin
3	345	200	0,097	1411	5.027	6	45	6,74	Basin
3	345	200	0,098	1412	83	10.998	72	25,37	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	345	200	0,101	1413	91	11.420	38	5,49	Basin
3	345	200	0,102	1413	1.815	118	38	5,16	Basin
3	345	200	0,106	1415	999	333	27	2,87	Basin
3	345	200	0,106	1414	100	6.157	26	18,35	Basin
3	345	200	0,108	1415	842	3	45	41,41	Basin
3	345	200	0,111	1416	2.252	5	15	11,36	Basin
3	345	200	0,112	1417	673	204	19	25,01	Basin
3	345	200	0,114	1418	1.024	6	44	10,40	Basin
3	345	200	0,117	1418	559	140	31	3,61	Basin
3	345	200	0,118	1419	92	210	71	16,36	Basin



**Meetraai 2**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0	1631	89	264	140	22,11	Basin
3	353	200	0,002	1632	91	4.889	174	19,70	Basin
3	353	200	0,004	1633	10.081	32	43	7,79	Basin
3	353	200	0,006	1634	118	31	63	90,38	Basin
3	353	200	0,01	1636	5.538	3.191	48	11,70	Basin
3	353	200	0,013	1637	11.020	5	35	4,85	Basin
3	353	200	0,014	1637	4.015	5	327	16,52	Basin
3	353	200	0,016	1638	5.916	439	32	5,04	Basin
3	353	200	0,019	1639	5.002	5	21	9,96	Basin
3	353	200	0,02	1640	78	3.370	169	26,82	Basin
3	353	200	0,022	1641	87	22	42	168,52	Basin
3	353	200	0,025	1642	2.714	354	131	28,12	Basin
3	353	200	0,029	1653	11.563	225	69	19,84	Basin
3	353	200	0,03	1653	5.247	5	116	12,09	Basin
3	353	200	0,032	1654	3.010	3.266	61	3,41	Basin
3	353	200	0,034	1655	103	16.991	73	8,83	Basin
3	353	200	0,036	1656	133	12	81	230,81	Basin
3	353	200	0,038	1657	6.518	312	60	6,55	Basin
3	353	200	0,04	1657	5.314	460	58	11,86	Basin
3	353	200	0,042	1658	87	34	37	77,45	Basin
3	353	200	0,045	1700	5.577	11	321	6,88	Basin
3	353	200	0,046	1701	7.872	263	54	3,51	Basin
3	353	200	0,05	1704	1.636	3.325	39	2,85	Basin
3	353	200	0,052	1705	86	654	163	10,76	MET
3	353	200	0,054	1706	6.224	1.194	55	16,15	Basin
3	353	200	0,057	1708	303	12.456	33	4,84	Basin
3	353	200	0,058	1710	64	18.078	36	8,69	Basin
3	353	200	0,06	1710	817	4.539	31	3,66	Basin
3	353	200	0,062	1711	5.367	38	58	5,70	Basin
3	353	200	0,064	1712	3.160	3.109	46	10,02	Basin
3	353	200	0,066	1713	1.940	4.511	47	4,83	Basin
3	353	200	0,068	1713	52	40	30	90,29	Basin
3	353	200	0,07	1714	96	35.819	61	9,45	Basin
3	353	200	0,072	1715	260	892	166	101,24	MET
3	353	200	0,074	1716	105	23	51	80,46	Basin
3	353	200	0,076	1718	1.557	5.991	64	10,25	Basin
3	353	200	0,078	1718	137	29	85	73,48	Basin
2	353	200	0,082	1720	5.228	1.012	80	2,23	Basin
3	353	200	0,082	1720	5.237	735	87	1,83	Basin
3	353	200	0,085	1721	13.062	8	155	19,35	Basin
3	353	200	0,086	1721	3.382	11.130	35	15,98	Basin
3	353	200	0,088	1722	123	28	80	95,83	Basin
3	353	200	0,091	1723	4.910	481	54	5,84	Basin
3	353	200	0,094	1724	7.880	201	53	7,79	Basin
3	353	200	0,096	1725	1.804	4.596	54	3,19	Basin
3	353	200	0,099	1727	13.729	3	53	4,22	Basin



Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,1	1727	3.440	2.298	78	3,67	Basin
3	353	200	0,102	1729	4.632	709	61	2,47	Basin
3	353	200	0,104	1730	10.971	136	74	4,20	Basin
3	353	200	0,106	1730	120	37	42	87,97	Basin
3	353	200	0,108	1731	137	28	82	75,03	Basin
3	353	200	0,11	1732	3.127	3.850	86	2,41	Basin
3	353	200	0,112	1733	7.916	6.039	67	8,09	Basin
3	353	200	0,116	1735	14.001	242	103	3,57	Basin
3	353	200	0,118	1736	113	29	68	79,82	Basin
3	353	200	0,122	1738	127	33	160	69,15	Basin
3	353	200	0,124	1740	5.336	756	77	10,26	Basin
3	353	200	0,129	1744	2.287	6.952	64	4,76	Basin
3	353	200	0,131	1746	6.682	2.587	80	10,28	Basin
3	353	200	0,132	1747	2.948	1.413	140	14,88	Basin
3	353	200	0,134	1747	133	39	79	82,42	Basin
3	353	200	0,136	1749	126	32	67	68,37	Basin
3	353	200	0,138	1749	7.783	947	71	4,38	Basin
3	353	200	0,14	1750	79	41	37	73,79	Basin
3	353	200	0,142	1751	52	58	46	61,08	Basin
3	353	200	0,145	1751	8.251	243	99	2,51	Basin
3	353	200	0,146	1752	54	45	29	92,55	Basin
3	353	200	0,149	1755	6.919	6.980	83	8,04	Basin
3	353	200	0,15	1756	8.361	1.396	94	3,12	Basin
3	353	200	0,153	1756	147	13.614	150	11,07	Basin
3	353	200	0,154	1758	729	2.074	41	6,01	Basin
3	353	200	0,156	1758	120	18	69	91,04	Basin
3	353	200	0,158	1759	5.123	1	69	17,65	Basin
3	353	200	0,162	1801	498	2.501	35	6,92	Basin
3	353	200	0,164	1801	108	242	110	527,35	MET
3	353	200	0,166	1803	1.096	993	27	7,12	Basin
1	353	200	0,168	1804	4.888	30	25	6,79	Basin
3	353	200	0,17	1805	80	111	181	42,14	Basin
3	353	200	0,173	1805	4.457	294	84	38,43	MET
3	353	200	0,175	1807	105	55	125	158,22	Basin
3	353	200	0,176	1807	86	147	155	36,58	Basin
3	353	200	0,178	1808	4.138	437	25	22,76	Basin
3	353	200	0,181	1810	2.668	144	31	4,48	Basin
3	353	200	0,182	1810	797	1.952	40	4,57	Basin
3	353	200	0,185	1811	86	477	161	46,62	MET
3	353	200	0,187	1812	2.470	1.245	33	22,20	Basin
3	353	200	0,19	1813	4.651	76	41	4,00	Basin
3	353	200	0,191	1814	3.992	88	37	5,42	Basin
3	353	200	0,192	1814	80	7.779	47	9,09	Basin
3	353	200	0,194	1815	949	537	30	4,14	Basin
3	353	200	0,196	1816	971	7	115	20,83	Basin
3	353	200	0,198	1817	1.990	5	27	8,39	Basin
3	353	200	0,202	1818	600	229	52	3,23	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,204	1819	559	501	38	20,87	Basin
3	353	200	0,207	1822	82	367	125	22,74	Basin
3	353	200	0,208	1823	1.191	56	40	6,72	Basin
3	353	200	0,21	1824	822	319	39	4,65	Basin
3	353	200	0,212	1825	157	263	14	18,13	Basin
3	353	200	0,214	1826	519	6.468	14	85,33	Basin
3	353	200	0,216	1827	214	1.065	45	25,67	Basin
3	353	200	0,218	1828	875	315	35	7,27	Basin
3	353	200	0,221	1829	1.549	5	39	7,90	Basin
3	353	200	0,222	1830	830	754	22	12,74	Basin
3	353	200	0,224	1831	76	567	99	634,49	MET
1	353	200	0,227	1832	832	31	103	11,54	MET
3	353	200	0,228	1833	733	478	32	7,70	Basin
3	353	200	0,23	1834	1.547	15	37	10,16	Basin
3	353	200	0,234	1835	607	663	34	4,36	Basin
3	353	200	0,24	1847	3.498	3.707	41	8,45	Basin
3	353	200	0,247	846	119	28	61	89,78	Basin
3	353	200	0,248	847	128	25	75	110,28	Basin
3	353	200	0,25	848	1.611	6	106	46,02	Basin
3	353	200	0,254	852	630	315	255	11,69	Basin
3	353	200	0,257	852	92	199	271	96,64	MET
3	353	200	0,258	853	1.831	819	77	1,27	Basin
3	353	200	0,26	854	2.515	1.698	44	5,76	Basin
3	353	200	0,262	855	60	11.995	102	39,78	Basin
3	353	200	0,264	855	57	24	29	110,66	Basin
3	353	200	0,267	856	53	29	30	93,10	Basin
3	353	200	0,271	858	54	37	30	91,15	Basin
3	353	200	0,272	858	51	35	31	88,61	Basin
3	353	200	0,275	859	51	38	28	77,83	Basin
3	353	200	0,276	900	50	41	29	86,11	Basin
3	353	200	0,278	905	6.107	120	174	2,83	MET
3	353	200	0,28	906	9.617	55	69	98,06	Basin
3	353	200	0,282	907	12.705	112	166	4,67	MET
3	353	200	0,284	908	2.784	3.056	86	3,31	Basin
3	353	200	0,287	909	14.974	3	45	5,17	Basin
3	353	200	0,288	909	136	14.319	75	3,86	Basin
3	353	200	0,29	910	7.523	6	41	9,56	Basin
3	353	200	0,293	911	1.076	9.119	54	10,29	Basin
3	353	200	0,294	911	5.864	420	62	3,74	Basin
3	353	200	0,296	912	142	28	71	72,42	Basin
3	353	200	0,298	913	1.197	2.750	50	8,92	Basin
3	353	200	0,301	914	52	26	29	99,20	Basin
3	353	200	0,304	918	147	3.429	84	4,16	Basin
3	353	200	0,306	923	55	90	41	165,60	MET
3	353	200	0,308	924	2.063	371	70	2,20	Basin
3	353	200	0,31	925	2.274	3	77	20,32	Basin
3	353	200	0,312	926	404	10.814	55	3,73	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,314	927	43	18	595	107,50	Basin
3	353	200	0,317	928	57	21	29	128,03	Basin
3	353	200	0,32	930	73	482	40	12,65	Basin
3	353	200	0,326	931	536	168	21	12,43	Basin
3	353	200	0,328	932	785	76	25	6,69	Basin
3	353	200	0,331	933	663	44	31	13,04	Basin
3	353	200	0,333	933	263	130	35	12,24	Basin
3	353	200	0,336	935	393	709	73	91,36	Basin
3	353	200	0,339	938	4.644	15	40	10,31	Basin
3	353	200	0,341	939	84	9.617	58	11,34	Basin
2	353	200	0,344	939	1.727	1.437	27	6,70	Basin
3	353	200	0,346	940	1.149	5.610	23	15,12	Basin
3	353	200	0,348	940	105	13.910	31	6,65	Basin
3	353	200	0,349	941	1.908	786	38	3,50	Basin
2	353	200	0,35	942	4.371	97	45	13,12	Basin
3	353	200	0,353	943	2.113	696	33	5,58	Basin
3	353	200	0,356	943	95	368	102	12,33	Basin
3	353	200	0,357	944	121	2.100	18	9,80	Basin
3	353	200	0,36	945	1.462	256	19	14,20	Basin
3	353	200	0,361	946	1.858	909	27	8,46	Basin
3	353	200	0,364	948	2.572	858	36	6,42	Basin
3	353	200	0,367	949	1.553	3.677	39	6,78	Basin
3	353	200	0,368	949	79	18	47	139,74	Basin
3	353	200	0,37	950	1.058	1.409	27	36,28	Basin
3	353	200	0,372	951	1.434	5	20	61,84	Basin
3	353	200	0,373	1459	107	179	94	13,15	Basin
3	353	200	0,376	1501	1.006	17	55	9,83	Basin
3	353	200	0,379	1502	97	207	95	43,81	Basin
3	353	200	0,381	1502	2.645	6	26	26,21	Basin
3	353	200	0,383	1503	95	2.431	44	6,94	Basin
3	353	200	0,385	1504	82	13	49	129,56	Basin
3	353	200	0,388	1505	3.378	1.116	54	33,06	Basin
3	353	200	0,391	1507	136	12	56	94,92	Basin
3	353	200	0,393	1507	103	381	128	23,61	Basin
3	353	200	0,395	1508	2.233	4	34	7,87	Basin
3	353	200	0,396	1509	590	660	71	2,36	Basin
3	353	200	0,398	1510	99	175	96	25,00	MET
3	353	200	0,401	1510	971	68	56	9,12	Basin
3	353	200	0,404	1512	90	322	103	28,63	Basin
3	353	200	0,406	1512	89	310	50	34,00	MET
3	353	200	0,41	1514	524	4	36	16,71	Basin
3	353	200	0,411	1515	764	29	38	199,89	Basin
3	353	200	0,414	1516	113	1.939	19	3,29	Basin
3	353	200	0,419	1518	144	637	38	44,00	MET
3	353	200	0,423	1520	613	80	27	12,14	Basin
3	353	200	0,426	1520	805	15	29	21,50	Basin
3	353	200	0,427	1521	327	406	29	9,55	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,43	1523	132	34	60	193,58	Basin
3	353	200	0,431	1523	101	748	24	34,72	Basin
3	353	200	0,434	1525	283	7	19	89,81	Basin
3	353	200	0,438	1526	217	5	6	193,96	Basin
3	353	200	0,447	1530	149	4	52	87,75	Basin
3	353	200	0,45	1530	116	93	89	28,52	Basin
3	353	200	0,455	1533	77	195	75	12,66	Basin
3	353	200	0,457	1534	58	4.056	38	20,67	Basin
3	353	200	0,461	1538	83	1.583	19	42,14	Basin
3	353	200	0,463	1538	110	10	28	93,94	Basin
3	353	200	0,467	1540	87	62	100	9,60	Basin
3	353	200	0,469	1540	83	8	44	79,46	Basin
3	353	200	0,473	1553	171	275	46	12,11	Basin
3	353	200	0,474	1554	752	6	44	14,98	Basin
3	353	200	0,477	1554	361	13	132	15,75	Basin
3	353	200	0,479	1555	348	73	44	3,12	Basin
3	353	200	0,48	1556	298	151	29	17,08	Basin
3	353	200	0,482	1557	112	304	84	12,30	Basin
3	353	200	0,491	1600	362	193	20	21,17	Basin
1	353	200	0,492	1601	741	15	111	8,73	Basin
3	353	200	0,497	1603	1.555	103	26	2,94	Basin
3	353	200	0,5	1603	1.258	38	30	35,84	Basin
3	353	200	0,501	1604	292	8.943	8	74,79	Basin
3	353	200	0,503	1605	474	29	87	11,18	Basin
3	353	200	0,505	1605	977	134	29	4,83	Basin
3	353	200	0,507	1606	1.205	7	47	12,31	Basin
3	353	200	0,512	1609	7.167	9	65	2,11	Basin
3	353	200	0,514	1609	2.257	938	45	3,90	Basin
3	353	200	0,516	1610	1.683	626	48	1,97	Basin
3	353	200	0,521	1612	70	17	41	119,66	Basin
3	353	200	0,523	1613	1.657	1.559	38	2,87	Basin
3	353	200	0,525	1613	2.885	100	38	2,18	Basin
3	353	200	0,527	1614	114	102	151	109,89	Basin
3	353	200	0,53	1615	70	864	7	36,07	Basin
3	353	200	0,532	1615	401	179	20	24,02	Basin
3	353	200	0,533	1616	72	2.462	18	5,32	Basin
3	353	200	0,536	1617	247	254	22	4,80	Basin
3	353	200	0,539	1619	524	2	32	101,43	Basin
3	353	200	0,543	1620	85	764	5	26,61	Basin
3	353	200	0,545	1621	72	177	42	114,00	MET
3	353	200	0,547	1621	275	15	71	139,43	Basin
3	353	200	0,55	1623	299	4	84	148,34	Basin
3	353	200	0,555	1625	202	7	54	53,59	Basin
3	353	200	0,557	1625	94	38	102	83,73	Basin
3	353	200	0,559	1626	85	342	128	46,61	Basin

**Meetraai 3**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	348	200	0	1526	89	11.394	42	4,81	Basin
3	348	200	0,002	1528	1.056	2.090	41	6,60	Basin
3	348	200	0,004	1529	632	2.176	59	4,15	Basin
3	348	200	0,007	1530	2.101	994	48	1,99	Basin
3	348	200	0,008	1532	4.641	123	36	5,41	Basin
3	348	200	0,01	1532	720	4.838	38	13,82	Basin
3	348	200	0,012	1533	850	1.985	27	10,18	Basin
3	348	200	0,016	1535	163	380	96	199,24	MET
3	348	200	0,018	1538	217	6.980	46	4,24	Basin
3	348	200	0,02	1539	1.266	883	39	9,10	Basin
3	348	200	0,022	1540	1.301	1.515	49	3,79	Basin
3	348	200	0,024	1540	1.055	1.817	30	6,68	Basin
3	348	200	0,026	1541	3.599	439	38	6,92	Basin
3	348	200	0,028	1542	158	611	26	37,32	Basin
3	348	200	0,032	1544	9.359	5	35	5,55	Basin
3	348	200	0,034	1546	4.120	9	164	5,45	Basin
3	348	200	0,036	1546	842	724	141	17,87	MET
3	348	200	0,038	1547	791	4.523	52	3,41	Basin
3	348	200	0,042	1550	242	1.290	152	106,98	MET
3	348	200	0,046	1551	128	667	168	108,98	MET
3	348	200	0,049	1553	777	1.520	35	13,39	Basin
3	348	200	0,051	1555	110	24	572	161,68	Basin
3	348	200	0,052	1555	103	417	194	45,40	Basin
3	348	200	0,054	1556	73	35	1.725	79,29	Basin
3	348	200	0,056	1557	3.007	93	70	8,07	Basin
3	348	200	0,058	1558	1.373	2.054	56	5,04	Basin
3	348	200	0,06	1559	8.243	5	31	5,85	Basin
3	348	200	0,062	1600	4.022	222	51	2,23	Basin
1	348	200	0,066	1601	3.767	272	47	3,32	Basin
3	348	200	0,068	1602	1.520	1.305	51	6,21	Basin
3	348	200	0,07	1603	2.900	1.081	55	2,77	Basin
3	348	200	0,072	1604	96	33	385	79,95	Basin
3	348	200	0,074	1605	73	18	705	83,01	Basin
3	348	200	0,076	1605	2.074	204	134	81,12	Basin
3	348	200	0,078	1606	101	104	264	40,98	Basin
3	348	200	0,08	1607	1.230	1.195	46	13,84	Basin
3	348	200	0,082	1608	1.820	402	34	9,41	Basin
3	348	200	0,084	1608	1.578	2.961	38	5,61	Basin
3	348	200	0,086	1610	116	26	74	77,00	Basin
3	348	200	0,088	1611	91	269	238	27,61	Basin
3	348	200	0,093	1155	92	18	58	93,02	Basin
3	348	200	0,095	1156	6.731	8	52	2,43	Basin
3	348	200	0,098	1156	92	21	49	101,52	Basin
3	348	200	0,1	1157	1.004	3.775	36	3,64	Basin
3	348	200	0,101	1158	2.914	70	48	4,06	Basin
3	348	200	0,103	1158	1.128	1.381	40	3,10	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	348	200	0,108	1200	139	8.807	57	34,01	Basin
3	348	200	0,111	1200	6.566	4	46	4,23	Basin
3	348	200	0,114	1202	121	22	71	90,73	Basin
3	348	200	0,115	1202	4.806	71	115	52,66	Basin
3	348	200	0,117	1203	698	3.855	49	2,73	Basin
3	348	200	0,119	1204	4.261	6	48	3,54	Basin
3	348	200	0,121	1205	1.402	3.812	45	5,84	Basin
3	348	200	0,124	1206	5.338	10	55	14,46	Basin
3	348	200	0,129	1210	502	7	67	17,64	Basin
3	348	200	0,133	1211	85	155	139	29,29	Basin
3	348	200	0,134	1212	1.191	701	35	4,04	Basin
3	348	200	0,135	1212	116	977	121	7,02	MET
3	348	200	0,139	1213	3.639	199	31	23,15	Basin
3	348	200	0,142	1215	1.243	851	27	4,55	Basin
3	348	200	0,144	1215	1.512	2	72	45,41	Basin
3	348	200	0,145	1216	924	1.757	21	4,67	Basin
3	348	200	0,147	1217	1.522	896	28	4,06	Basin
3	348	200	0,149	1217	104	1.300	66	270,63	MET
3	348	200	0,152	1219	82	1.867	30	6,60	Basin
3	348	200	0,154	1220	3.256	132	19	55,29	Basin
3	348	200	0,157	1221	798	937	29	4,32	Basin
3	348	200	0,161	1223	1.416	187	74	1,97	Basin



**Meetraai 4**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	338	200	0	1005	1.088	700	43	6,44	Basin
3	338	200	0,002	1006	75	5.766	36	17,94	Basin
3	338	200	0,005	1007	400	1.830	19	52,47	Basin
3	338	200	0,006	1008	2.140	14	14	45,08	Basin
3	338	200	0,008	1009	77	276	86	66,09	Basin
3	338	200	0,011	1010	92	130	84	17,02	Basin
3	338	200	0,013	1011	89	134	99	96,75	Basin
3	338	200	0,014	1012	135	1.984	23	37,92	Basin
3	338	200	0,017	1013	182	1.264	30	15,22	Basin
3	338	200	0,019	1014	1.094	599	30	16,66	Basin
3	338	200	0,021	1014	110	666	100	481,55	MET
3	338	200	0,022	1015	4.096	11	27	4,92	Basin
2	338	200	0,024	1016	1.441	279	27	4,01	Basin
3	338	200	0,026	1016	153	14.338	39	6,96	Basin
3	338	200	0,029	1017	1.056	9.936	39	13,85	Basin
3	338	200	0,03	1018	3.156	202	98	11,76	Basin
3	338	200	0,034	1019	1.057	5.551	29	34,19	Basin
3	338	200	0,036	1020	104	4.811	46	60,39	Basin
3	338	200	0,038	1020	2.378	40	109	39,11	Basin
3	338	200	0,041	1021	1.464	683	26	3,98	Basin
3	338	200	0,043	1022	105	258	119	509,65	MET
3	338	200	0,046	1023	3.004	24	69	4,59	Basin
3	338	200	0,048	1024	381	1.783	36	38,55	Basin
3	338	200	0,05	1024	79	78	88	29,90	Basin
3	338	200	0,054	1025	96	239	111	22,81	Basin
3	338	200	0,055	1026	807	264	36	4,71	Basin
3	338	200	0,06	1027	200	1.625	19	19,19	Basin
3	338	200	0,061	1028	245	7.964	18	70,68	Basin
3	338	200	0,063	1029	72	1.558	23	38,33	Basin
3	338	200	0,066	1030	1.768	42	39	10,58	Basin
3	338	200	0,068	1031	95	56	86	31,17	Basin
3	338	200	0,071	1032	52	23	31	120,47	Basin
3	338	200	0,073	1033	612	624	62	8,13	Basin
3	338	200	0,075	1034	127	21	76	77,43	Basin
3	338	200	0,076	1034	714	13.374	68	20,22	Basin
3	338	200	0,078	1035	423	853	78	7,74	Basin
3	338	200	0,081	1036	55	227	143	939,73	MET
3	338	200	0,084	1037	1.078	617	80	2,06	Basin
3	338	200	0,086	1038	91	12.981	32	63,69	Basin
3	338	200	0,089	1039	138	12	15	50,69	Basin
3	338	200	0,091	1040	120	1.182	5	58,17	Basin
3	338	200	0,094	1041	138	3	32	39,18	Basin
3	338	200	0,098	1043	77	2.674	5	97,34	Basin
3	338	200	0,1	1043	188	5	51	44,32	Basin
3	338	200	0,102	1044	164	651	37	35,21	Basin
3	338	200	0,103	1045	101	573	70	20,51	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	338	200	0,105	1045	69	56.363	4	116,05	Basin
3	338	200	0,109	1048	135	366	54	306,27	MET
3	338	200	0,111	1049	207	272	64	84,99	Basin
3	338	200	0,114	1049	220	423	56	288,71	MET
3	338	200	0,115	1050	50	71	104	41,65	Basin
3	338	200	0,118	1051	83	974	62	43,36	Basin
3	338	200	0,122	1052	87	1.462	24	52,63	Basin
3	338	200	0,127	1054	252	1.569	11	59,28	Basin
3	338	200	0,131	1055	181	163	89	22,26	Basin
3	338	200	0,135	1056	804	870	12	512,56	Basin
3	338	200	0,137	1057	83	109	62	153,83	Basin
3	338	200	0,138	1057	763	710	23	17,49	Basin
2	338	200	0,141	1058	222	5.624	51	5,22	Basin
3	338	200	0,142	1059	354	251	39	5,18	Basin
1	338	200	0,145	1100	769	33	44	26,00	Basin
3	338	200	0,149	1101	112	92	68	278,40	MET
3	338	200	0,151	1102	538	4	66	53,34	Basin
3	338	200	0,153	1103	44	401	39	28,46	Basin
3	338	200	0,156	1104	95	449	21	14,35	Basin
3	338	200	0,158	1105	73	120	60	308,14	MET
3	338	200	0,16	1106	103	182	45	12,26	Basin
3	338	200	0,163	1108	931	74	27	17,41	Basin
3	338	200	0,167	1110	190	213	53	343,05	MET
3	338	200	0,168	1111	83	212	99	35,57	Basin
3	338	200	0,171	1112	255	1.955	14	95,77	Basin
3	338	200	0,176	1114	516	436	13	133,43	Basin
3	338	200	0,182	1115	228	81	50	29,58	Basin
3	338	200	0,184	1116	339	1.785	8	97,65	Basin
3	338	200	0,186	1117	803	167	19	3,50	Basin
3	338	200	0,192	1120	755	446	32	17,64	Basin
3	338	200	0,195	1120	1.513	445	22	3,32	Basin
3	338	200	0,196	1121	1.761	613	19	8,77	Basin
3	338	200	0,198	1122	2.942	100	22	7,05	Basin
3	338	200	0,2	1122	1.226	822	19	5,16	Basin
3	338	200	0,204	1123	94	3.802	47	10,47	Basin
3	338	200	0,205	1124	90	496	70	253,70	MET
3	338	200	0,207	1125	99	293	121	33,47	Basin
3	338	200	0,209	1126	77	1.254	21	23,56	Basin
3	338	200	0,211	1126	96	48	25	69,28	Basin
3	338	200	0,213	1128	90	467	50	332,59	MET
3	338	200	0,217	1129	429	155	53	7,29	Basin
3	338	200	0,219	1130	52	62	102	72,28	Basin
3	338	200	0,222	1131	77	441	68	644,63	MET
3	338	200	0,226	1132	82	3.262	38	5,57	Basin
3	338	200	0,228	1133	319	14.538	14	35,16	Basin
3	338	200	0,23	1134	463	271	47	8,07	Basin
3	338	200	0,234	1136	90	1.542	62	11,81	Basin

<b>Drop</b>	<b>H1</b>	<b>H2</b>	<b>Chainage</b>	<b>theTime</b>	<b>E1</b>	<b>E2</b>	<b>E3</b>	<b>RMS</b>	<b>Method</b>
3	338	200	0,236	1136	169	2.555	33	13,01	Basin
3	338	200	0,238	1137	76	781	82	204,07	MET



## Bijlage 4

Alle teruggerekende waarden

In de tabellen is:

Drop	Klap die is gebruikt voor het terugrekenen
H1	Laagdikte toplaag [mm]
H2	Laagdikte tussenlaag van granulair materiaal [mm]
Chainage:	De metring waarbij elke meetraai bij nul begint [km]
theTime	Tijdstip van uitvoering van de meting
E1	Stijfheid van de toplaag (basalt + asfaltmestiek) [MPa]
E2	Stijfheid van de tussenlaag van granulair materiaal [MPa]
E3	Stijfheid van de ondergrond [MPa]
RMS	Root mean square fout van het berekende ten opzichte van het gemeten deflectieprofiel
Method	Gehanteerde terugrekenmethode: Basin (deflection basin fit) of MET (method of equivalent thickness)

**Meetraai 1**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	345	200	0	1332	141	26	82	101,86	Basin
3	345	200	0,004	1334	92	10.681	78	11,03	Basin
3	345	200	0,006	1335	106	1.681	91	181,32	MET
3	345	200	0,008	1335	1.598	734	39	6,63	Basin
3	345	200	0,01	1337	97	328	141	42,24	Basin
3	345	200	0,012	1339	72	4.437	74	14,71	Basin
2	345	200	0,014	1339	1.353	7.692	14	47,10	Basin
3	345	200	0,017	1341	1.188	1.414	65	3,48	Basin
3	345	200	0,021	1342	385	13.509	42	4,03	Basin
3	345	200	0,022	1342	334	5.789	110	36,19	MET
3	345	200	0,025	1343	4.297	5	164	8,11	Basin
3	345	200	0,028	1345	1.458	599	132	16,15	Basin
3	345	200	0,03	1346	144	32	85	87,08	Basin
3	345	200	0,032	1346	3.859	52	65	39,21	Basin
3	345	200	0,034	1348	7.476	3	61	4,09	Basin
3	345	200	0,037	1348	284	3.811	132	10,91	Basin
3	345	200	0,038	1349	906	63	65	8,69	Basin
3	345	200	0,04	1350	96	9	43	75,01	Basin
3	345	200	0,043	1351	266	3.836	43	4,56	Basin
3	345	200	0,045	1351	1.949	1.028	42	3,05	Basin
3	345	200	0,048	1353	1.143	2.511	41	3,32	Basin
3	345	200	0,05	1353	2.738	12	60	9,83	Basin
3	345	200	0,052	1354	1.091	749	44	2,91	Basin
3	345	200	0,055	1355	1.938	4.425	25	57,19	Basin
3	345	200	0,056	1356	11.768	2	35	14,42	Basin
3	345	200	0,059	1357	132	31	81	81,71	Basin
1	345	200	0,06	1357	743	9.324	108	6,77	Basin
3	345	200	0,063	1358	6.229	2.709	85	14,50	Basin
3	345	200	0,064	1359	2.394	1.725	60	1,98	MET
3	345	200	0,067	1359	6.125	368	120	16,57	Basin
3	345	200	0,068	1400	131	35	80	91,19	Basin
3	345	200	0,07	1401	4.602	821	80	7,29	Basin
3	345	200	0,073	1401	3.312	863	41	4,47	Basin
3	345	200	0,075	1402	109	343	171	33,48	Basin
3	345	200	0,077	1403	1.847	3.438	33	4,95	Basin
3	345	200	0,078	1404	94	12.636	64	10,94	Basin
3	345	200	0,081	1406	1.767	1.774	39	3,10	Basin
3	345	200	0,083	1406	1.307	42.424	31	34,91	Basin
3	345	200	0,084	1407	325	4.864	122	118,70	MET
3	345	200	0,086	1408	104	9.056	110	9,03	Basin
3	345	200	0,088	1409	3.481	850	31	66,64	Basin
3	345	200	0,09	1409	2.267	966	35	5,56	Basin
3	345	200	0,093	1410	7.595	5	45	8,86	Basin
3	345	200	0,094	1411	2.766	1.005	45	2,56	Basin
3	345	200	0,097	1411	5.027	6	45	6,74	Basin
3	345	200	0,098	1412	83	10.998	72	25,37	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	345	200	0,101	1413	91	11.420	38	5,49	Basin
3	345	200	0,102	1413	1.815	118	38	5,16	Basin
3	345	200	0,106	1415	999	333	27	2,87	Basin
3	345	200	0,106	1414	100	6.157	26	18,35	Basin
3	345	200	0,108	1415	842	3	45	41,41	Basin
3	345	200	0,111	1416	2.252	5	15	11,36	Basin
3	345	200	0,112	1417	673	204	19	25,01	Basin
3	345	200	0,114	1418	1.024	6	44	10,40	Basin
3	345	200	0,117	1418	559	140	31	3,61	Basin
3	345	200	0,118	1419	92	210	71	16,36	Basin

**Meetraai 2**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0	1631	89	264	140	22,11	Basin
3	353	200	0,002	1632	91	4.889	174	19,70	Basin
3	353	200	0,004	1633	10.081	32	43	7,79	Basin
3	353	200	0,006	1634	118	31	63	90,38	Basin
3	353	200	0,01	1636	5.538	3.191	48	11,70	Basin
3	353	200	0,013	1637	11.020	5	35	4,85	Basin
3	353	200	0,014	1637	4.015	5	327	16,52	Basin
3	353	200	0,016	1638	5.916	439	32	5,04	Basin
3	353	200	0,019	1639	5.002	5	21	9,96	Basin
3	353	200	0,02	1640	78	3.370	169	26,82	Basin
3	353	200	0,022	1641	87	22	42	168,52	Basin
3	353	200	0,025	1642	2.714	354	131	28,12	Basin
3	353	200	0,029	1653	11.563	225	69	19,84	Basin
3	353	200	0,03	1653	5.247	5	116	12,09	Basin
3	353	200	0,032	1654	3.010	3.266	61	3,41	Basin
3	353	200	0,034	1655	103	16.991	73	8,83	Basin
3	353	200	0,036	1656	133	12	81	230,81	Basin
3	353	200	0,038	1657	6.518	312	60	6,55	Basin
3	353	200	0,04	1657	5.314	460	58	11,86	Basin
3	353	200	0,042	1658	87	34	37	77,45	Basin
3	353	200	0,045	1700	5.577	11	321	6,88	Basin
3	353	200	0,046	1701	7.872	263	54	3,51	Basin
3	353	200	0,05	1704	1.636	3.325	39	2,85	Basin
3	353	200	0,052	1705	86	654	163	10,76	MET
3	353	200	0,054	1706	6.224	1.194	55	16,15	Basin
3	353	200	0,057	1708	303	12.456	33	4,84	Basin
3	353	200	0,058	1710	64	18.078	36	8,69	Basin
3	353	200	0,06	1710	817	4.539	31	3,66	Basin
3	353	200	0,062	1711	5.367	38	58	5,70	Basin
3	353	200	0,064	1712	3.160	3.109	46	10,02	Basin
3	353	200	0,066	1713	1.940	4.511	47	4,83	Basin
3	353	200	0,068	1713	52	40	30	90,29	Basin
3	353	200	0,07	1714	96	35.819	61	9,45	Basin
3	353	200	0,072	1715	260	892	166	101,24	MET
3	353	200	0,074	1716	105	23	51	80,46	Basin
3	353	200	0,076	1718	1.557	5.991	64	10,25	Basin
3	353	200	0,078	1718	137	29	85	73,48	Basin
2	353	200	0,082	1720	5.228	1.012	80	2,23	Basin
3	353	200	0,082	1720	5.237	735	87	1,83	Basin
3	353	200	0,085	1721	13.062	8	155	19,35	Basin
3	353	200	0,086	1721	3.382	11.130	35	15,98	Basin
3	353	200	0,088	1722	123	28	80	95,83	Basin
3	353	200	0,091	1723	4.910	481	54	5,84	Basin
3	353	200	0,094	1724	7.880	201	53	7,79	Basin
3	353	200	0,096	1725	1.804	4.596	54	3,19	Basin
3	353	200	0,099	1727	13.729	3	53	4,22	Basin



Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,1	1727	3.440	2.298	78	3,67	Basin
3	353	200	0,102	1729	4.632	709	61	2,47	Basin
3	353	200	0,104	1730	10.971	136	74	4,20	Basin
3	353	200	0,106	1730	120	37	42	87,97	Basin
3	353	200	0,108	1731	137	28	82	75,03	Basin
3	353	200	0,11	1732	3.127	3.850	86	2,41	Basin
3	353	200	0,112	1733	7.916	6.039	67	8,09	Basin
3	353	200	0,116	1735	14.001	242	103	3,57	Basin
3	353	200	0,118	1736	113	29	68	79,82	Basin
3	353	200	0,122	1738	127	33	160	69,15	Basin
3	353	200	0,124	1740	5.336	756	77	10,26	Basin
3	353	200	0,129	1744	2.287	6.952	64	4,76	Basin
3	353	200	0,131	1746	6.682	2.587	80	10,28	Basin
3	353	200	0,132	1747	2.948	1.413	140	14,88	Basin
3	353	200	0,134	1747	133	39	79	82,42	Basin
3	353	200	0,136	1749	126	32	67	68,37	Basin
3	353	200	0,138	1749	7.783	947	71	4,38	Basin
3	353	200	0,14	1750	79	41	37	73,79	Basin
3	353	200	0,142	1751	52	58	46	61,08	Basin
3	353	200	0,145	1751	8.251	243	99	2,51	Basin
3	353	200	0,146	1752	54	45	29	92,55	Basin
3	353	200	0,149	1755	6.919	6.980	83	8,04	Basin
3	353	200	0,15	1756	8.361	1.396	94	3,12	Basin
3	353	200	0,153	1756	147	13.614	150	11,07	Basin
3	353	200	0,154	1758	729	2.074	41	6,01	Basin
3	353	200	0,156	1758	120	18	69	91,04	Basin
3	353	200	0,158	1759	5.123	1	69	17,65	Basin
3	353	200	0,162	1801	498	2.501	35	6,92	Basin
3	353	200	0,164	1801	108	242	110	527,35	MET
3	353	200	0,166	1803	1.096	993	27	7,12	Basin
1	353	200	0,168	1804	4.888	30	25	6,79	Basin
3	353	200	0,17	1805	80	111	181	42,14	Basin
3	353	200	0,173	1805	4.457	294	84	38,43	MET
3	353	200	0,175	1807	105	55	125	158,22	Basin
3	353	200	0,176	1807	86	147	155	36,58	Basin
3	353	200	0,178	1808	4.138	437	25	22,76	Basin
3	353	200	0,181	1810	2.668	144	31	4,48	Basin
3	353	200	0,182	1810	797	1.952	40	4,57	Basin
3	353	200	0,185	1811	86	477	161	46,62	MET
3	353	200	0,187	1812	2.470	1.245	33	22,20	Basin
3	353	200	0,19	1813	4.651	76	41	4,00	Basin
3	353	200	0,191	1814	3.992	88	37	5,42	Basin
3	353	200	0,192	1814	80	7.779	47	9,09	Basin
3	353	200	0,194	1815	949	537	30	4,14	Basin
3	353	200	0,196	1816	971	7	115	20,83	Basin
3	353	200	0,198	1817	1.990	5	27	8,39	Basin
3	353	200	0,202	1818	600	229	52	3,23	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,204	1819	559	501	38	20,87	Basin
3	353	200	0,207	1822	82	367	125	22,74	Basin
3	353	200	0,208	1823	1.191	56	40	6,72	Basin
3	353	200	0,21	1824	822	319	39	4,65	Basin
3	353	200	0,212	1825	157	263	14	18,13	Basin
3	353	200	0,214	1826	519	6.468	14	85,33	Basin
3	353	200	0,216	1827	214	1.065	45	25,67	Basin
3	353	200	0,218	1828	875	315	35	7,27	Basin
3	353	200	0,221	1829	1.549	5	39	7,90	Basin
3	353	200	0,222	1830	830	754	22	12,74	Basin
3	353	200	0,224	1831	76	567	99	634,49	MET
1	353	200	0,227	1832	832	31	103	11,54	MET
3	353	200	0,228	1833	733	478	32	7,70	Basin
3	353	200	0,23	1834	1.547	15	37	10,16	Basin
3	353	200	0,234	1835	607	663	34	4,36	Basin
3	353	200	0,24	1847	3.498	3.707	41	8,45	Basin
3	353	200	0,247	846	119	28	61	89,78	Basin
3	353	200	0,248	847	128	25	75	110,28	Basin
3	353	200	0,25	848	1.611	6	106	46,02	Basin
3	353	200	0,254	852	630	315	255	11,69	Basin
3	353	200	0,257	852	92	199	271	96,64	MET
3	353	200	0,258	853	1.831	819	77	1,27	Basin
3	353	200	0,26	854	2.515	1.698	44	5,76	Basin
3	353	200	0,262	855	60	11.995	102	39,78	Basin
3	353	200	0,264	855	57	24	29	110,66	Basin
3	353	200	0,267	856	53	29	30	93,10	Basin
3	353	200	0,271	858	54	37	30	91,15	Basin
3	353	200	0,272	858	51	35	31	88,61	Basin
3	353	200	0,275	859	51	38	28	77,83	Basin
3	353	200	0,276	900	50	41	29	86,11	Basin
3	353	200	0,278	905	6.107	120	174	2,83	MET
3	353	200	0,28	906	9.617	55	69	98,06	Basin
3	353	200	0,282	907	12.705	112	166	4,67	MET
3	353	200	0,284	908	2.784	3.056	86	3,31	Basin
3	353	200	0,287	909	14.974	3	45	5,17	Basin
3	353	200	0,288	909	136	14.319	75	3,86	Basin
3	353	200	0,29	910	7.523	6	41	9,56	Basin
3	353	200	0,293	911	1.076	9.119	54	10,29	Basin
3	353	200	0,294	911	5.864	420	62	3,74	Basin
3	353	200	0,296	912	142	28	71	72,42	Basin
3	353	200	0,298	913	1.197	2.750	50	8,92	Basin
3	353	200	0,301	914	52	26	29	99,20	Basin
3	353	200	0,304	918	147	3.429	84	4,16	Basin
3	353	200	0,306	923	55	90	41	165,60	MET
3	353	200	0,308	924	2.063	371	70	2,20	Basin
3	353	200	0,31	925	2.274	3	77	20,32	Basin
3	353	200	0,312	926	404	10.814	55	3,73	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,314	927	43	18	595	107,50	Basin
3	353	200	0,317	928	57	21	29	128,03	Basin
3	353	200	0,32	930	73	482	40	12,65	Basin
3	353	200	0,326	931	536	168	21	12,43	Basin
3	353	200	0,328	932	785	76	25	6,69	Basin
3	353	200	0,331	933	663	44	31	13,04	Basin
3	353	200	0,333	933	263	130	35	12,24	Basin
3	353	200	0,336	935	393	709	73	91,36	Basin
3	353	200	0,339	938	4.644	15	40	10,31	Basin
3	353	200	0,341	939	84	9.617	58	11,34	Basin
2	353	200	0,344	939	1.727	1.437	27	6,70	Basin
3	353	200	0,346	940	1.149	5.610	23	15,12	Basin
3	353	200	0,348	940	105	13.910	31	6,65	Basin
3	353	200	0,349	941	1.908	786	38	3,50	Basin
2	353	200	0,35	942	4.371	97	45	13,12	Basin
3	353	200	0,353	943	2.113	696	33	5,58	Basin
3	353	200	0,356	943	95	368	102	12,33	Basin
3	353	200	0,357	944	121	2.100	18	9,80	Basin
3	353	200	0,36	945	1.462	256	19	14,20	Basin
3	353	200	0,361	946	1.858	909	27	8,46	Basin
3	353	200	0,364	948	2.572	858	36	6,42	Basin
3	353	200	0,367	949	1.553	3.677	39	6,78	Basin
3	353	200	0,368	949	79	18	47	139,74	Basin
3	353	200	0,37	950	1.058	1.409	27	36,28	Basin
3	353	200	0,372	951	1.434	5	20	61,84	Basin
3	353	200	0,373	1459	107	179	94	13,15	Basin
3	353	200	0,376	1501	1.006	17	55	9,83	Basin
3	353	200	0,379	1502	97	207	95	43,81	Basin
3	353	200	0,381	1502	2.645	6	26	26,21	Basin
3	353	200	0,383	1503	95	2.431	44	6,94	Basin
3	353	200	0,385	1504	82	13	49	129,56	Basin
3	353	200	0,388	1505	3.378	1.116	54	33,06	Basin
3	353	200	0,391	1507	136	12	56	94,92	Basin
3	353	200	0,393	1507	103	381	128	23,61	Basin
3	353	200	0,395	1508	2.233	4	34	7,87	Basin
3	353	200	0,396	1509	590	660	71	2,36	Basin
3	353	200	0,398	1510	99	175	96	25,00	MET
3	353	200	0,401	1510	971	68	56	9,12	Basin
3	353	200	0,404	1512	90	322	103	28,63	Basin
3	353	200	0,406	1512	89	310	50	34,00	MET
3	353	200	0,41	1514	524	4	36	16,71	Basin
3	353	200	0,411	1515	764	29	38	199,89	Basin
3	353	200	0,414	1516	113	1.939	19	3,29	Basin
3	353	200	0,419	1518	144	637	38	44,00	MET
3	353	200	0,423	1520	613	80	27	12,14	Basin
3	353	200	0,426	1520	805	15	29	21,50	Basin
3	353	200	0,427	1521	327	406	29	9,55	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	353	200	0,43	1523	132	34	60	193,58	Basin
3	353	200	0,431	1523	101	748	24	34,72	Basin
3	353	200	0,434	1525	283	7	19	89,81	Basin
3	353	200	0,438	1526	217	5	6	193,96	Basin
3	353	200	0,447	1530	149	4	52	87,75	Basin
3	353	200	0,45	1530	116	93	89	28,52	Basin
3	353	200	0,455	1533	77	195	75	12,66	Basin
3	353	200	0,457	1534	58	4.056	38	20,67	Basin
3	353	200	0,461	1538	83	1.583	19	42,14	Basin
3	353	200	0,463	1538	110	10	28	93,94	Basin
3	353	200	0,467	1540	87	62	100	9,60	Basin
3	353	200	0,469	1540	83	8	44	79,46	Basin
3	353	200	0,473	1553	171	275	46	12,11	Basin
3	353	200	0,474	1554	752	6	44	14,98	Basin
3	353	200	0,477	1554	361	13	132	15,75	Basin
3	353	200	0,479	1555	348	73	44	3,12	Basin
3	353	200	0,48	1556	298	151	29	17,08	Basin
3	353	200	0,482	1557	112	304	84	12,30	Basin
3	353	200	0,491	1600	362	193	20	21,17	Basin
1	353	200	0,492	1601	741	15	111	8,73	Basin
3	353	200	0,497	1603	1.555	103	26	2,94	Basin
3	353	200	0,5	1603	1.258	38	30	35,84	Basin
3	353	200	0,501	1604	292	8.943	8	74,79	Basin
3	353	200	0,503	1605	474	29	87	11,18	Basin
3	353	200	0,505	1605	977	134	29	4,83	Basin
3	353	200	0,507	1606	1.205	7	47	12,31	Basin
3	353	200	0,512	1609	7.167	9	65	2,11	Basin
3	353	200	0,514	1609	2.257	938	45	3,90	Basin
3	353	200	0,516	1610	1.683	626	48	1,97	Basin
3	353	200	0,521	1612	70	17	41	119,66	Basin
3	353	200	0,523	1613	1.657	1.559	38	2,87	Basin
3	353	200	0,525	1613	2.885	100	38	2,18	Basin
3	353	200	0,527	1614	114	102	151	109,89	Basin
3	353	200	0,53	1615	70	864	7	36,07	Basin
3	353	200	0,532	1615	401	179	20	24,02	Basin
3	353	200	0,533	1616	72	2.462	18	5,32	Basin
3	353	200	0,536	1617	247	254	22	4,80	Basin
3	353	200	0,539	1619	524	2	32	101,43	Basin
3	353	200	0,543	1620	85	764	5	26,61	Basin
3	353	200	0,545	1621	72	177	42	114,00	MET
3	353	200	0,547	1621	275	15	71	139,43	Basin
3	353	200	0,55	1623	299	4	84	148,34	Basin
3	353	200	0,555	1625	202	7	54	53,59	Basin
3	353	200	0,557	1625	94	38	102	83,73	Basin
3	353	200	0,559	1626	85	342	128	46,61	Basin



**Meetraai 3**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	348	200	0	1526	89	11.394	42	4,81	Basin
3	348	200	0,002	1528	1.056	2.090	41	6,60	Basin
3	348	200	0,004	1529	632	2.176	59	4,15	Basin
3	348	200	0,007	1530	2.101	994	48	1,99	Basin
3	348	200	0,008	1532	4.641	123	36	5,41	Basin
3	348	200	0,01	1532	720	4.838	38	13,82	Basin
3	348	200	0,012	1533	850	1.985	27	10,18	Basin
3	348	200	0,016	1535	163	380	96	199,24	MET
3	348	200	0,018	1538	217	6.980	46	4,24	Basin
3	348	200	0,02	1539	1.266	883	39	9,10	Basin
3	348	200	0,022	1540	1.301	1.515	49	3,79	Basin
3	348	200	0,024	1540	1.055	1.817	30	6,68	Basin
3	348	200	0,026	1541	3.599	439	38	6,92	Basin
3	348	200	0,028	1542	158	611	26	37,32	Basin
3	348	200	0,032	1544	9.359	5	35	5,55	Basin
3	348	200	0,034	1546	4.120	9	164	5,45	Basin
3	348	200	0,036	1546	842	724	141	17,87	MET
3	348	200	0,038	1547	791	4.523	52	3,41	Basin
3	348	200	0,042	1550	242	1.290	152	106,98	MET
3	348	200	0,046	1551	128	667	168	108,98	MET
3	348	200	0,049	1553	777	1.520	35	13,39	Basin
3	348	200	0,051	1555	110	24	572	161,68	Basin
3	348	200	0,052	1555	103	417	194	45,40	Basin
3	348	200	0,054	1556	73	35	1.725	79,29	Basin
3	348	200	0,056	1557	3.007	93	70	8,07	Basin
3	348	200	0,058	1558	1.373	2.054	56	5,04	Basin
3	348	200	0,06	1559	8.243	5	31	5,85	Basin
3	348	200	0,062	1600	4.022	222	51	2,23	Basin
1	348	200	0,066	1601	3.767	272	47	3,32	Basin
3	348	200	0,068	1602	1.520	1.305	51	6,21	Basin
3	348	200	0,07	1603	2.900	1.081	55	2,77	Basin
3	348	200	0,072	1604	96	33	385	79,95	Basin
3	348	200	0,074	1605	73	18	705	83,01	Basin
3	348	200	0,076	1605	2.074	204	134	81,12	Basin
3	348	200	0,078	1606	101	104	264	40,98	Basin
3	348	200	0,08	1607	1.230	1.195	46	13,84	Basin
3	348	200	0,082	1608	1.820	402	34	9,41	Basin
3	348	200	0,084	1608	1.578	2.961	38	5,61	Basin
3	348	200	0,086	1610	116	26	74	77,00	Basin
3	348	200	0,088	1611	91	269	238	27,61	Basin
3	348	200	0,093	1155	92	18	58	93,02	Basin
3	348	200	0,095	1156	6.731	8	52	2,43	Basin
3	348	200	0,098	1156	92	21	49	101,52	Basin
3	348	200	0,1	1157	1.004	3.775	36	3,64	Basin
3	348	200	0,101	1158	2.914	70	48	4,06	Basin
3	348	200	0,103	1158	1.128	1.381	40	3,10	Basin

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	348	200	0,108	1200	139	8.807	57	34,01	Basin
3	348	200	0,111	1200	6.566	4	46	4,23	Basin
3	348	200	0,114	1202	121	22	71	90,73	Basin
3	348	200	0,115	1202	4.806	71	115	52,66	Basin
3	348	200	0,117	1203	698	3.855	49	2,73	Basin
3	348	200	0,119	1204	4.261	6	48	3,54	Basin
3	348	200	0,121	1205	1.402	3.812	45	5,84	Basin
3	348	200	0,124	1206	5.338	10	55	14,46	Basin
3	348	200	0,129	1210	502	7	67	17,64	Basin
3	348	200	0,133	1211	85	155	139	29,29	Basin
3	348	200	0,134	1212	1.191	701	35	4,04	Basin
3	348	200	0,135	1212	116	977	121	7,02	MET
3	348	200	0,139	1213	3.639	199	31	23,15	Basin
3	348	200	0,142	1215	1.243	851	27	4,55	Basin
3	348	200	0,144	1215	1.512	2	72	45,41	Basin
3	348	200	0,145	1216	924	1.757	21	4,67	Basin
3	348	200	0,147	1217	1.522	896	28	4,06	Basin
3	348	200	0,149	1217	104	1.300	66	270,63	MET
3	348	200	0,152	1219	82	1.867	30	6,60	Basin
3	348	200	0,154	1220	3.256	132	19	55,29	Basin
3	348	200	0,157	1221	798	937	29	4,32	Basin
3	348	200	0,161	1223	1.416	187	74	1,97	Basin

**Meetraai 4**

Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	338	200	0	1005	1.088	700	43	6,44	Basin
3	338	200	0,002	1006	75	5.766	36	17,94	Basin
3	338	200	0,005	1007	400	1.830	19	52,47	Basin
3	338	200	0,006	1008	2.140	14	14	45,08	Basin
3	338	200	0,008	1009	77	276	86	66,09	Basin
3	338	200	0,011	1010	92	130	84	17,02	Basin
3	338	200	0,013	1011	89	134	99	96,75	Basin
3	338	200	0,014	1012	135	1.984	23	37,92	Basin
3	338	200	0,017	1013	182	1.264	30	15,22	Basin
3	338	200	0,019	1014	1.094	599	30	16,66	Basin
3	338	200	0,021	1014	110	666	100	481,55	MET
3	338	200	0,022	1015	4.096	11	27	4,92	Basin
2	338	200	0,024	1016	1.441	279	27	4,01	Basin
3	338	200	0,026	1016	153	14.338	39	6,96	Basin
3	338	200	0,029	1017	1.056	9.936	39	13,85	Basin
3	338	200	0,03	1018	3.156	202	98	11,76	Basin
3	338	200	0,034	1019	1.057	5.551	29	34,19	Basin
3	338	200	0,036	1020	104	4.811	46	60,39	Basin
3	338	200	0,038	1020	2.378	40	109	39,11	Basin
3	338	200	0,041	1021	1.464	683	26	3,98	Basin
3	338	200	0,043	1022	105	258	119	509,65	MET
3	338	200	0,046	1023	3.004	24	69	4,59	Basin
3	338	200	0,048	1024	381	1.783	36	38,55	Basin
3	338	200	0,05	1024	79	78	88	29,90	Basin
3	338	200	0,054	1025	96	239	111	22,81	Basin
3	338	200	0,055	1026	807	264	36	4,71	Basin
3	338	200	0,06	1027	200	1.625	19	19,19	Basin
3	338	200	0,061	1028	245	7.964	18	70,68	Basin
3	338	200	0,063	1029	72	1.558	23	38,33	Basin
3	338	200	0,066	1030	1.768	42	39	10,58	Basin
3	338	200	0,068	1031	95	56	86	31,17	Basin
3	338	200	0,071	1032	52	23	31	120,47	Basin
3	338	200	0,073	1033	612	624	62	8,13	Basin
3	338	200	0,075	1034	127	21	76	77,43	Basin
3	338	200	0,076	1034	714	13.374	68	20,22	Basin
3	338	200	0,078	1035	423	853	78	7,74	Basin
3	338	200	0,081	1036	55	227	143	939,73	MET
3	338	200	0,084	1037	1.078	617	80	2,06	Basin
3	338	200	0,086	1038	91	12.981	32	63,69	Basin
3	338	200	0,089	1039	138	12	15	50,69	Basin
3	338	200	0,091	1040	120	1.182	5	58,17	Basin
3	338	200	0,094	1041	138	3	32	39,18	Basin
3	338	200	0,098	1043	77	2.674	5	97,34	Basin
3	338	200	0,1	1043	188	5	51	44,32	Basin
3	338	200	0,102	1044	164	651	37	35,21	Basin
3	338	200	0,103	1045	101	573	70	20,51	Basin



Drop	H1	H2	Chainage	theTime	E1	E2	E3	RMS	Method
3	338	200	0,105	1045	69	56.363	4	116,05	Basin
3	338	200	0,109	1048	135	366	54	306,27	MET
3	338	200	0,111	1049	207	272	64	84,99	Basin
3	338	200	0,114	1049	220	423	56	288,71	MET
3	338	200	0,115	1050	50	71	104	41,65	Basin
3	338	200	0,118	1051	83	974	62	43,36	Basin
3	338	200	0,122	1052	87	1.462	24	52,63	Basin
3	338	200	0,127	1054	252	1.569	11	59,28	Basin
3	338	200	0,131	1055	181	163	89	22,26	Basin
3	338	200	0,135	1056	804	870	12	512,56	Basin
3	338	200	0,137	1057	83	109	62	153,83	Basin
3	338	200	0,138	1057	763	710	23	17,49	Basin
2	338	200	0,141	1058	222	5.624	51	5,22	Basin
3	338	200	0,142	1059	354	251	39	5,18	Basin
1	338	200	0,145	1100	769	33	44	26,00	Basin
3	338	200	0,149	1101	112	92	68	278,40	MET
3	338	200	0,151	1102	538	4	66	53,34	Basin
3	338	200	0,153	1103	44	401	39	28,46	Basin
3	338	200	0,156	1104	95	449	21	14,35	Basin
3	338	200	0,158	1105	73	120	60	308,14	MET
3	338	200	0,16	1106	103	182	45	12,26	Basin
3	338	200	0,163	1108	931	74	27	17,41	Basin
3	338	200	0,167	1110	190	213	53	343,05	MET
3	338	200	0,168	1111	83	212	99	35,57	Basin
3	338	200	0,171	1112	255	1.955	14	95,77	Basin
3	338	200	0,176	1114	516	436	13	133,43	Basin
3	338	200	0,182	1115	228	81	50	29,58	Basin
3	338	200	0,184	1116	339	1.785	8	97,65	Basin
3	338	200	0,186	1117	803	167	19	3,50	Basin
3	338	200	0,192	1120	755	446	32	17,64	Basin
3	338	200	0,195	1120	1.513	445	22	3,32	Basin
3	338	200	0,196	1121	1.761	613	19	8,77	Basin
3	338	200	0,198	1122	2.942	100	22	7,05	Basin
3	338	200	0,2	1122	1.226	822	19	5,16	Basin
3	338	200	0,204	1123	94	3.802	47	10,47	Basin
3	338	200	0,205	1124	90	496	70	253,70	MET
3	338	200	0,207	1125	99	293	121	33,47	Basin
3	338	200	0,209	1126	77	1.254	21	23,56	Basin
3	338	200	0,211	1126	96	48	25	69,28	Basin
3	338	200	0,213	1128	90	467	50	332,59	MET
3	338	200	0,217	1129	429	155	53	7,29	Basin
3	338	200	0,219	1130	52	62	102	72,28	Basin
3	338	200	0,222	1131	77	441	68	644,63	MET
3	338	200	0,226	1132	82	3.262	38	5,57	Basin
3	338	200	0,228	1133	319	14.538	14	35,16	Basin
3	338	200	0,23	1134	463	271	47	8,07	Basin
3	338	200	0,234	1136	90	1.542	62	11,81	Basin

<b>Drop</b>	<b>H1</b>	<b>H2</b>	<b>Chainage</b>	<b>theTime</b>	<b>E1</b>	<b>E2</b>	<b>E3</b>	<b>RMS</b>	<b>Method</b>
3	338	200	0,236	1136	169	2.555	33	13,01	Basin
3	338	200	0,238	1137	76	781	82	204,07	MET



