

# ИНВЕСТИЦИОНЕН ПРОЕКТ

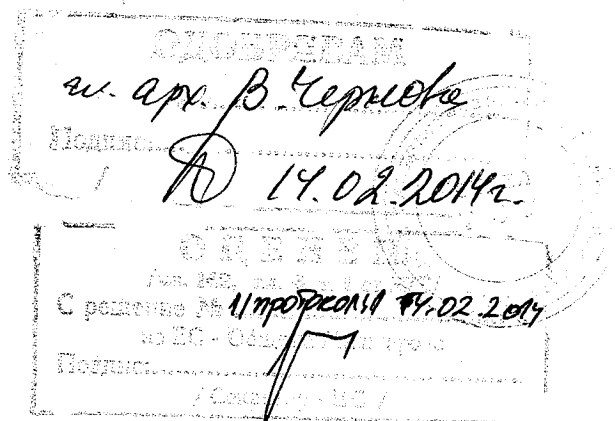
Обект: „Рехабилитация на общински път № НКV 3110/НКV 2224, от с. Долни Главанак - разклон с. Голяма Долина - кръстовище с. Малко Брягово - с. Бориславци от км. 0+000 до км. 6+600“

Възложител: Община Маджарово

Изпълнител: „Екоинженеринг“ ЕООД, гр. Кърджали

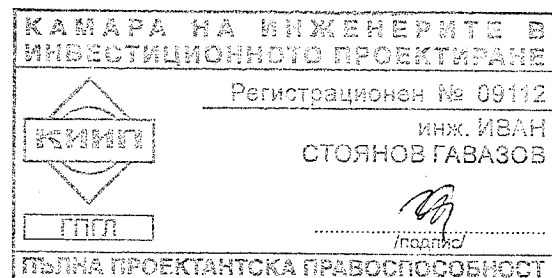
Част: Геодезия

Фаза: Работен проект



Съгласувал:

част Пътна:.....  
инж. Танер Бекир



Проектант:.....  
инж. Иван Гавазов

# ОБЯСНИТЕЛНА ЗАПИСКА

## GPS измервания

През Декември, 2013г. всички съществуващи и годни за измервания точки от района на обекта/с. Долни Главанак, Бориславци и Малко Брягово/ и новопоставени точки са измерени, като е използван приемник Leica Viva CS10.

За определянето положението на всички точки е използван статичен метод.

Продължителността на наблюденията за свързване на мрежата с изходните точки е от 15 до 30 мин. Честотата на регистрация на измерванията са през 1 секунда, минимален ъгъл над хоризонта  $10^\circ$ .

За оценка на реалната точност е осъществен пълен геометричен контрол - подробна статистика е дадена в приложение.

Изчислението на базисните линии е извършено с фирмения софтуер Leica Geo Office версия 4.0. Всички точки са определени чрез фиксирани фазови решения


Подробна информация за обработените базисни линии е дадена в приложение. За всяко едно решение е изведена най-характерната информация, даваща възможност за оценка точността на определения пространствен вектор.

За реална оценка на точността на GPS измерванията и контрол на изчисленията са сключени всички възможни елементарни фигури. Сключването позволява да се контролира точността на центриране и точното измерване височините на антените, фиксирането на еднозначни решения и отстраняването на груби грешки.

Анализът на резултатите от сключването на фигурите показва добрата точност и правилно фиксиране на еднозначни решения.

Извършено е строго изравнение на GPS мрежа, като е използвана опцията за изравнение на фирмения софтуер Leica Geo Office версия 4.0.

За всяка точка от мрежата са изведени средно квадратните грешки по положение и височина, елипсите на грешки и друга статистическа информация. Резултатите от изравнението са дадени в отделно приложение.

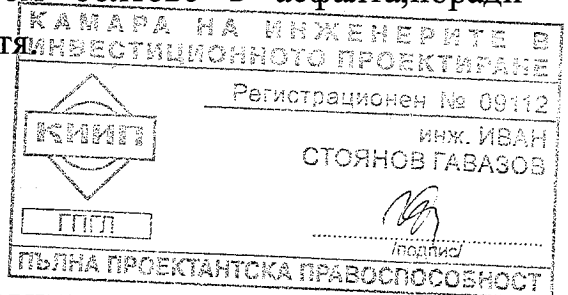
КАМАРА НА ИНЖЕНЕРИТЕ В ИНВЕСТИЦИОННО-ПРОЕКТИРОВАНИЕ	
КНИП	Регистрационен № 09112
ПОП	инж. ИВАН СТОЯНОВ ГАВАЗОВ
	
ПЪЛНА ПРОЕКТИРОВАТСКА ПРАВОСПОСОБНОСТ	

За получаването на трансформационния модел между координатните системи ETRS-89 и 1970 г. (зона К-5) е използвана седем параметрова трансформация по положение, а за определяне на ортометричната височина – полиномиална трансформация.

Трансформацията е извършена със софтера "GPSView" v.1.0.

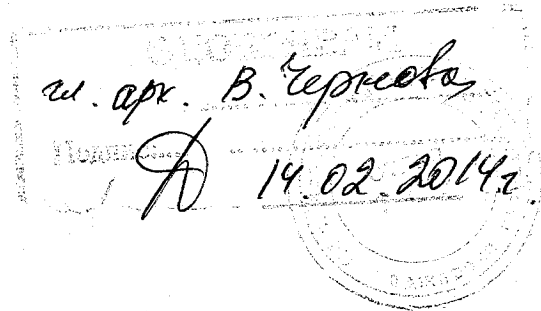
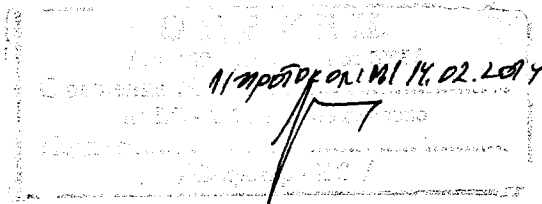
Пътя е заснет ситуационно,но част от точките от новопроектираната опорна мрежа са стабилизирани посредством болтове в асфалта,поради невъзможност да бъдат изнесени встрани от пътя

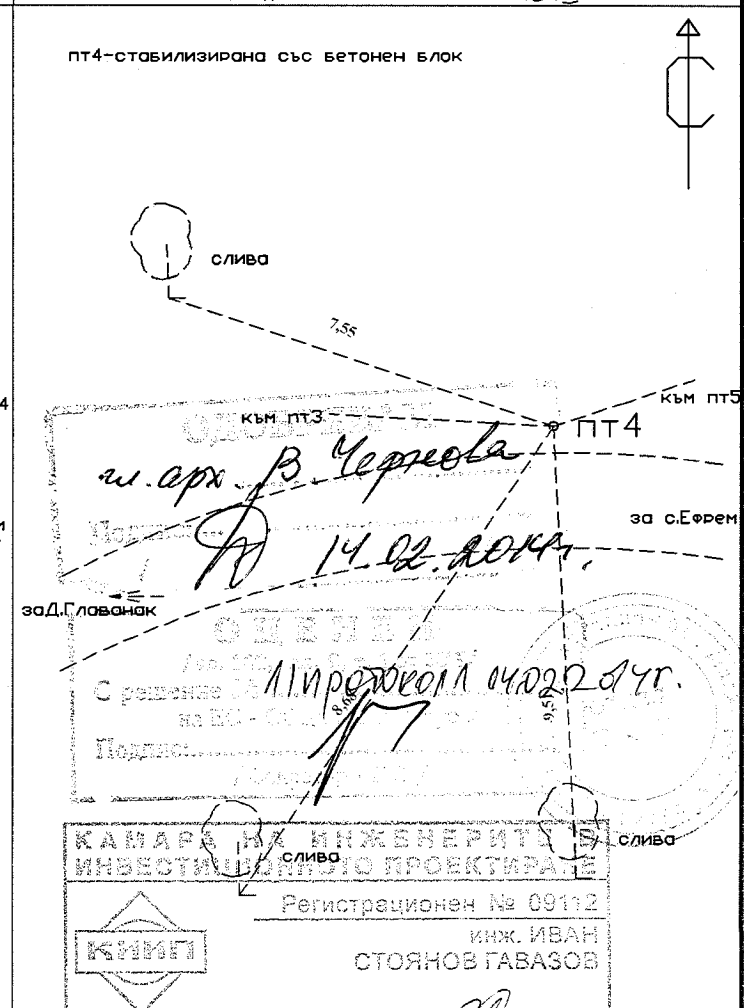
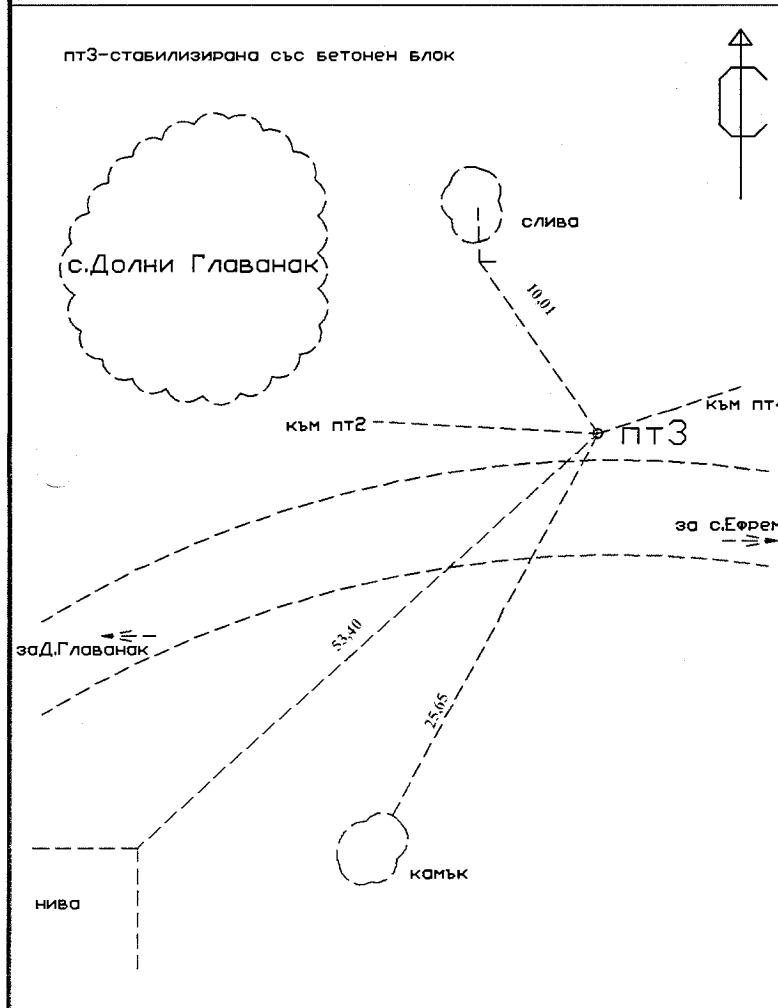
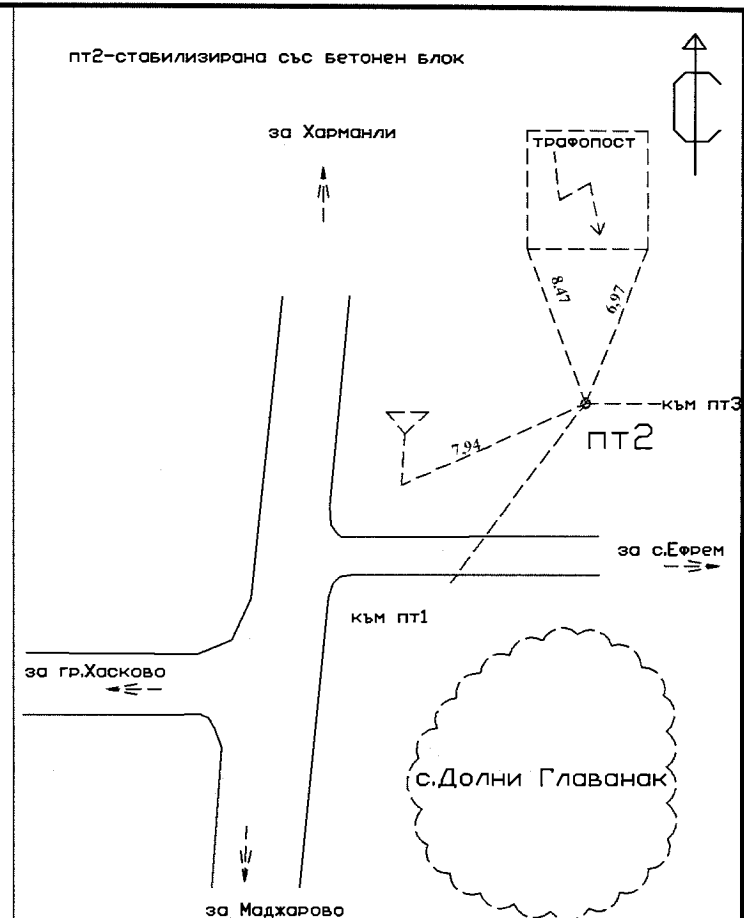
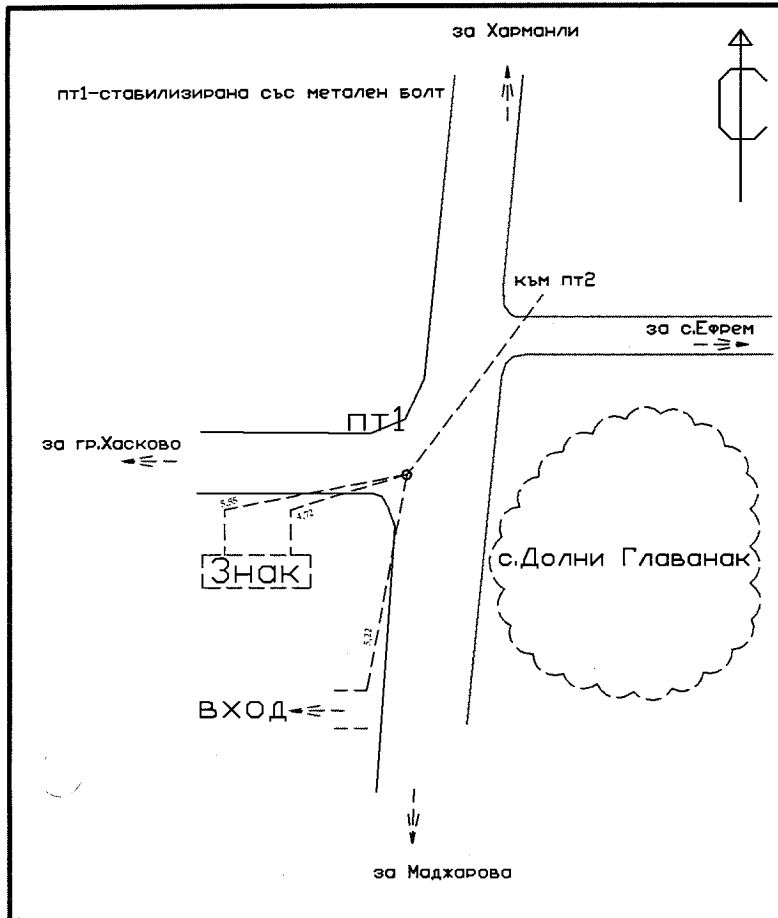
Януари,2014г.



Съставил: .....

/инж.Иван Гавазов/



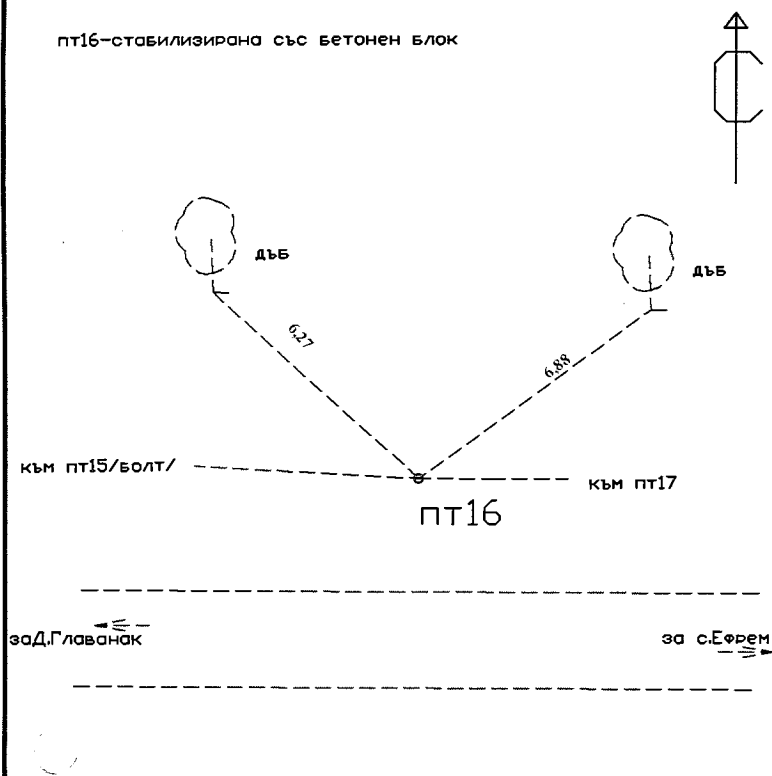


Обект: "Рехабилитация на общински път №НКВ V2224, от с.Долни Главанак до разклон/кръстовище/ с.Малко Брягово-с.Бориславци от км0+000 до 6+600

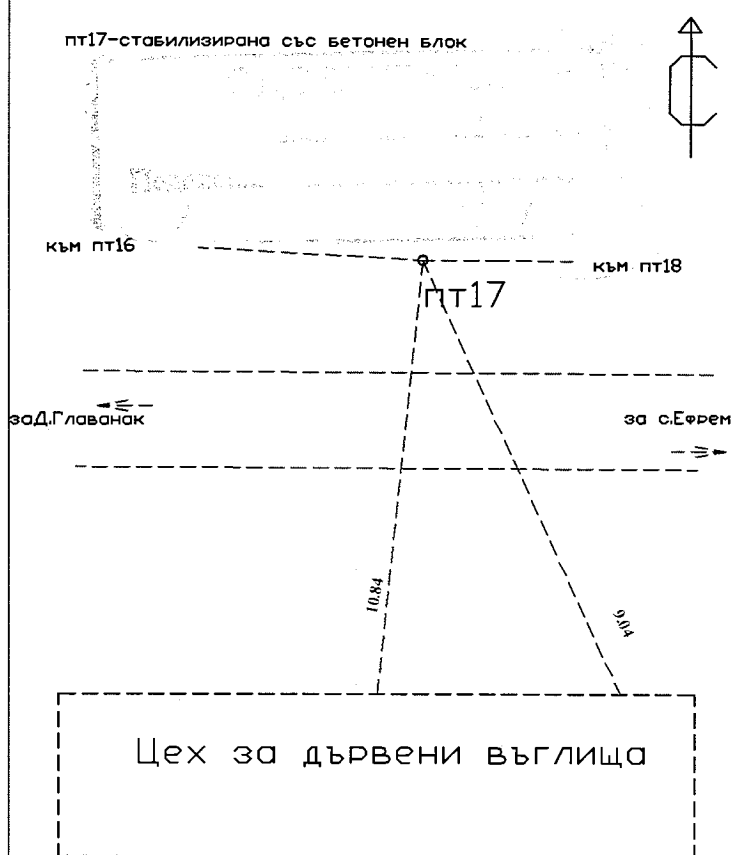
Име на чертежа: Релерен картет

чертеж 1/1

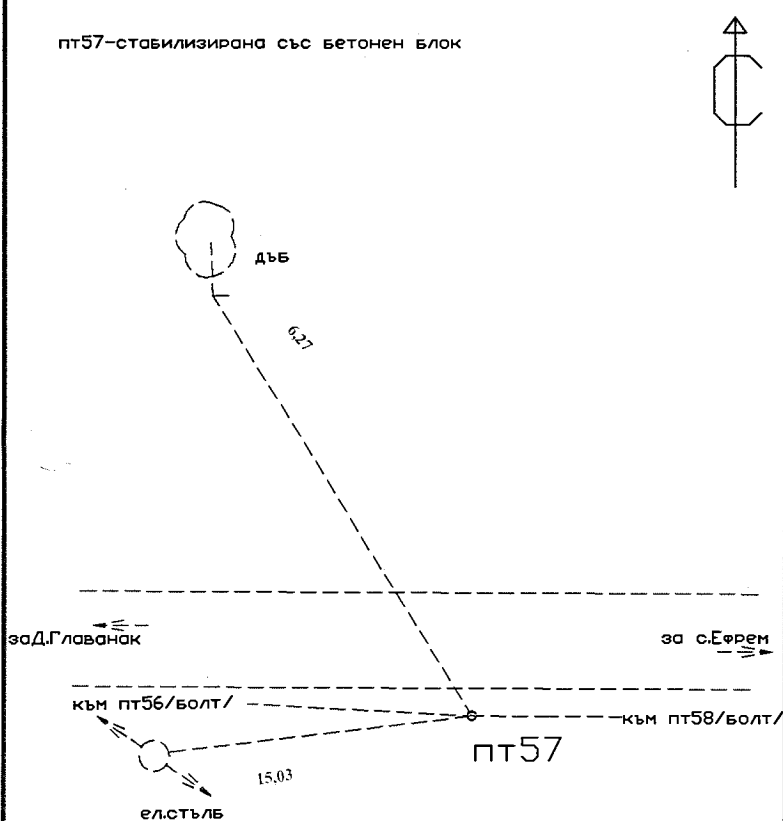
пт16-стабилизирана със бетонен блок



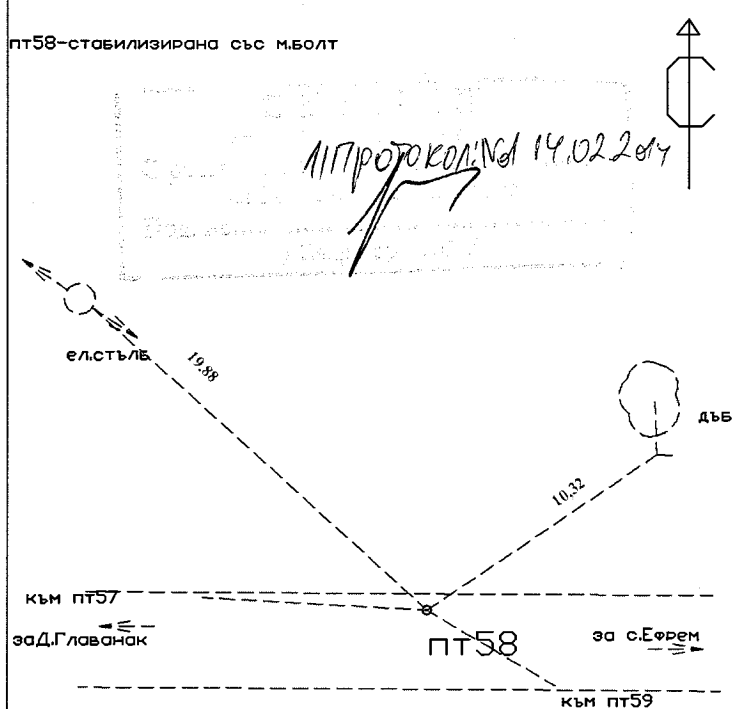
пт17-стабилизирана със бетонен блок



пт57-стабилизирана със бетонен блок



пт58-стабилизирана със м.болт



КАМАРА НА ИНЖЕНЕРИТЕ В  
ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ

Регистрационен № 09112

инж. ИВАН  
СТОЯНОВ ГАВАЗОВ



ПТЛ

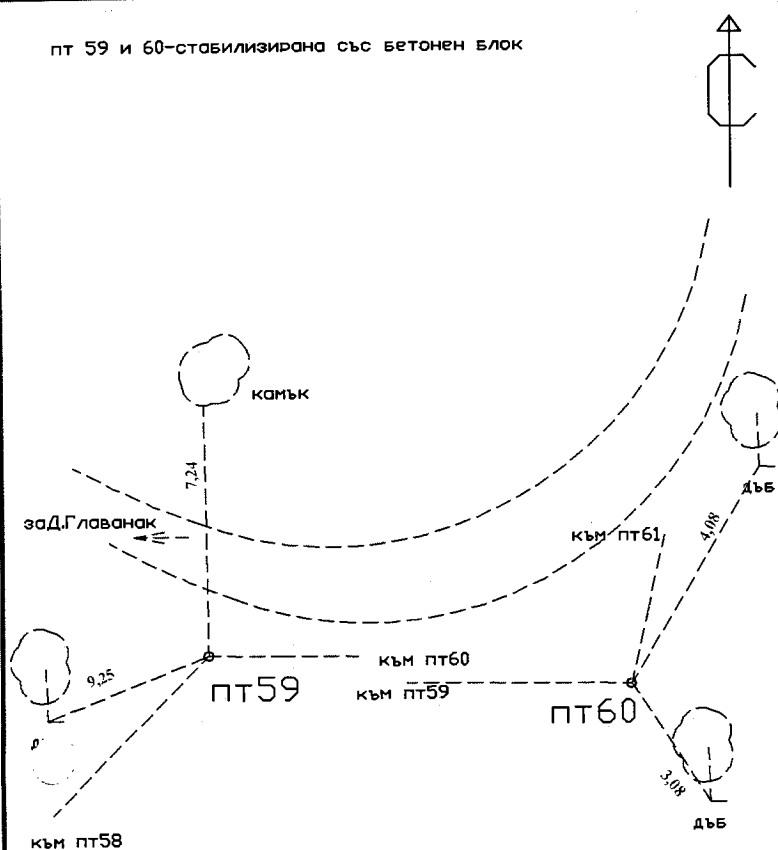
подпис

ПЪЛНА ПРОЕКТАНТОКА ПРАВОСПОСОБНОСТ  
Име на чертежа: Реперен карнет

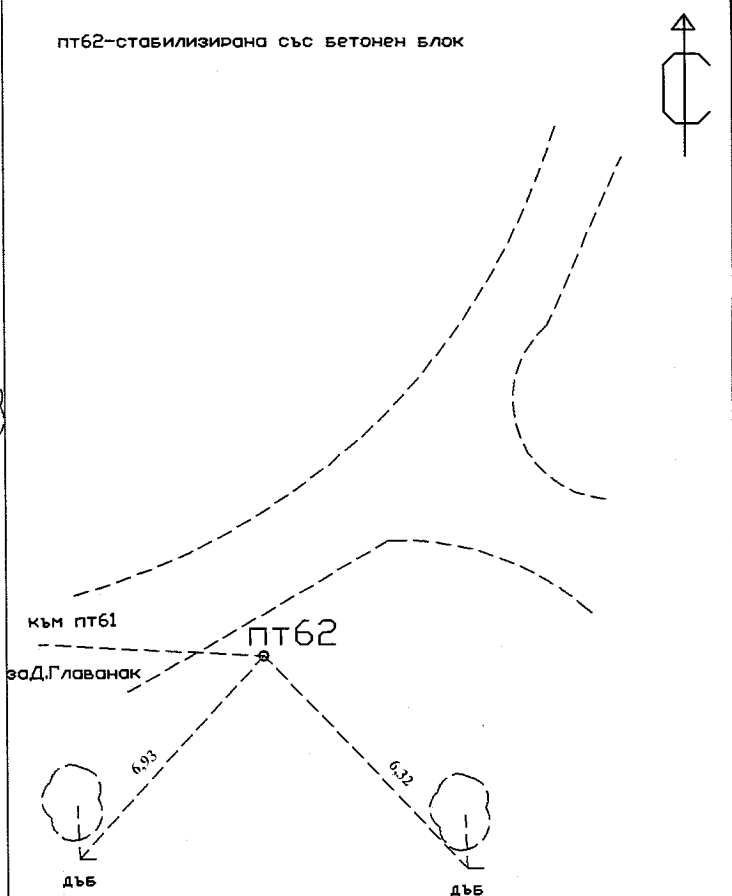
Обект: "Рехабилитация на общински път №НКV  
V2224, от с. Долни Главанак до разклон/кръстовище/  
с. Малко Брягово-с. Бориславци от км0+000 до 6+600

чертеж  
1/2

пт 59 и 60-стабилизирана със бетонен блок



пт62-стабилизирана със бетонен блок



ОТВЕТ  
Средствата са в протокол: 14.02.2014

и. арх. В. Чернова  
Подпис: 14.02.2014 г.

КАМАРА НА ИНЖЕНЕРИТЕ В  
ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ  
Регистрационен № 09112  
инж. ИВАН  
СТОЯНОВ ГАВАЗОВ  
ПЪЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ

Обект: "Рехабилитация на общински път №НК V  
V2224, от с. Долни Главанак до разклон/кръстовище/  
с. Малко Брягово-с. Бориславци от км0+000 до 6+600

Име на чертежа: Реперен карнет

чертеж  
1/3

# Координатен регистър на точките от опорната мрежа

№	У	Х	Н
1	9449873.837	4551030.903	270.934
2	9449900.744	4551056.872	269.767
3	9450206.875	4551054.875	263.571
4	9450345.553	4551147.078	257.292
5	9450449.830	4551174.662	255.732
6	9450627.736	4551248.907	250.510
7	9450788.905	4551357.349	246.655
8	9450851.157	4551386.968	248.050
9	9450926.729	4551385.613	249.541
10	9451032.131	4551459.837	238.844
11	9451137.356	4551510.373	235.472
12	9451192.979	4551520.423	232.858
13	9451227.737	4551557.214	229.260
14	9451335.630	4551571.980	218.701
15	9451421.985	4551550.676	211.455
16	9451481.852	4551558.424	207.954
17	9451629.023	4551546.326	200.383
18	9451737.015	4551529.207	197.960
19	9451782.584	4551539.028	197.787
20	9451849.881	4551599.082	202.217
21	9451899.430	4551610.376	202.450
22	9451992.172	4551593.759	197.158
23	9452053.593	4551558.629	196.415
24	9452191.332	4551488.813	193.192
25	9452288.641	4551483.557	190.097
26	9452419.936	4551478.968	188.804
27	9452587.141	4551459.688	186.098
28	9452680.333	4551455.367	183.645
29	9452769.031	4551422.376	182.639
30	9452792.519	4551387.412	182.769
31	9452860.166	4551376.602	183.137
32	9452952.185	4551385.870	181.930
33	9453018.641	4551381.518	180.839
34	9453134.680	4551375.242	179.197
35	9453242.980	4551341.458	177.620
36	9453302.796	4551332.042	177.286
37	9453351.062	4551329.756	175.861
38	9453490.056	4551279.938	173.451
39	9453543.708	4551246.763	173.145
40	9453618.407	4551244.071	172.516
41	9453744.017	4551249.885	171.235
42	9453826.260	4551242.559	170.766

ОДОБРЯВАМ

м. арх. В. Чернова

14.02.2014г.

ОТВЕТСТВЕНО

11.02.2014

КАМАРА НА ИНЖЕНЕРИТЕ В  
РЕСПУБЛИКА БЪЛГАРИЯ

Регистрационен № 00112

ИНЖ. ИВАН  
СТОЯНОВ ГАВАСОВ

ПОЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ

43 9453941.366 4551233.432 172.706  
 44 9454015.584 4551265.566 172.429  
 45 9454103.041 4551229.378 170.056  
 46 9454236.973 4551162.603 167.478  
 47 9454292.802 4551110.625 166.750  
 48 9454400.594 4551082.663 165.417  
 49 9454531.118 4551070.303 163.987  
 50 9454617.434 4551062.051 162.331  
 57 9454903.378 4550875.646 157.551  
 58 9455027.421 4550850.809 158.022  
 59 9455394.528 4550781.486 175.691  
 60 9455435.428 4550784.323 177.648  
 61 9455435.134 4551024.287 184.761  
 62 9455489.924 4551176.647 193.799

КАМАРА НА ИНЖЕНЕРИТЕ В ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ	
	Регистрационен № 09112
	ИНЖ. ИВАН СТОЯНОВ ГАВАЗОВ
	 Подпис
ПЪЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ	

ОДБРЕВАН	
С решение №	11/протокол № 14.02.2014г.
Подпис	 14.02.2014г.



- when it has to be right



## Twostep - Transformation Report

Processed: 01/09/2014 11:23:41

### Project Information

	System A	System B
Project name:	Madjarovo_Haskovo_Krumovgrad	Madjarovo_70

### Coordinate System Information System B

Coordinate system name:	BG70K5
Created:	-
Transformation name:	zoneK5
Transformation type:	Classical 3D
Height mode:	Ellipsoidal
Residuals:	-
Local Ellipsoid:	Krassowski
Projection:	BG70K5
Geoid model:	-
CSCS model:	-

### Transformation details

Height mode:	Orthometric
Pre-transformation name:	zoneK5

#### 3D-Helmert transformation

Number of common points:	4
Transformation model:	Bursa-Wolf

No.	Parameter	Value
1	Shift dX	94.6216 m
2	Shift dY	37.1304 m
3	Shift dZ	94.7520 m
4	Rotation about X	-59.35618 "
5	Rotation about Y	-24.78359 "
6	Rotation about Z	-63.82382 "
7	Scale	-4.6894 ppm

#### 2D-Helmert transformation

Number of common points:	5
Sigma a priori:	1.0000
Sigma a posteriori:	0.0280
Rotation origin:	X0: 4550249.3660 m
	Y0: 9455658.5116 m

No.	Parameter	Value	rms
1	dE	0.3600 m	0.0125 m
2	dN	0.0076 m	0.0125 m
3	Rotation	0° 00' 02.24919"	0° 00' 00.77390"

4 Scale -9.3279 ppm 3.7519 ppm

### Height transformation

Number of common points: 4  
 Mean transformation accuracy: 0.0157 m  
 Parameters: 0.00011233 0.00005865 -41.2753 m  
 Inclination of height in X: 0° 00' 23.16973"  
 Inclination of height in Y: 0° 00' 12.09743"

### Residuals

#### Grid:

System A	System B	Point type	dE [m]	dN [m]	dHgt [m]
13	13	Position	-0.0135 m	0.0034 m	-
14	14	Position + height	0.0251 m	-0.0024 m	-0.0016 m
16	16	Position + height	-0.0219 m	0.0056 m	-0.0095 m
22	22	Position + height	-0.0164 m	0.0310 m	0.0123 m
565	565	Position + height	0.0266 m	-0.0375 m	-0.0012 m

#### Graphical overview:

### List of identical points

#### System A:

##### WGS 84 Cartesian:

	X [m]	Y [m]	Z [m]
13	4291934.1441	2086391.9261	4217743.4748
14	4294166.9747	2078393.0460	4219648.9448
16	4290792.7822	2083171.7384	4220606.2642
22	4291342.7096	2082824.6859	4220203.1593
565	4292054.1039	2086097.3482	4217803.7346

##### WGS 84 Geodetic:

	Lat [°]	Lon [°]	Hgt [m]
13	-	-	-
14	-	-	-
16	-	-	-
22	-	-	-
565	-	-	-

#### System B:

##### Local Grid:

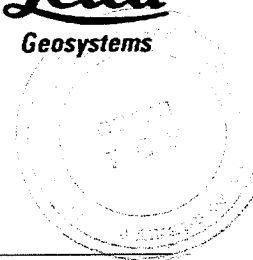
	Easting [m]	Northing [m]	Hgt [m]
13	9458415.0740	4548343.0940	-
14	9450258.0500	4550801.2800	302.3200
16	9456038.4930	4552113.2630	228.7700
22	9455483.0140	4551587.2040	216.7800
565	9458097.9650	4548403.7890	167.0300

- when it has to be right


**Leica**  
Geosystems

## Processing Summary

### Madjarovo\_Haskovo\_Krumovgrad



#### Project Information

Project name:	Madjarovo_Haskovo_Krumovgrad
Date created:	01/09/2014 09:58:34
Time zone:	2h 00'
Coordinate system name:	WGS 1984
Application software:	LEICA Geo Office 8.3
Start date and time:	12/20/2013 13:31:50
End date and time:	12/20/2013 17:16:41
Manually occupied points:	10
Processing kernel:	PSI-Pro 3.0
Processed:	01/09/2014 11:01:54

#### Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Precise
Solution type:	Automatic
GNSS type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

#### Baseline Overview

HSKO - 22	Reference: HSKO	Rover: 22
Receiver type / S/N:	GMX902GG / 0	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Coordinates:		
Latitude:	41° 55' 51.47139" N	41° 41' 27.37581" N
Longitude:	25° 33' 42.24100" E	25° 53' 23.46020" E
Ellip. Hgt:	251.3697 m	257.9477 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	

Time span: 12/20/2013 13:31:50 - 12/20/2013 13:48:35  
 Duration: 16' 45"

Quality: Sd. Lat: 0.0002 m Sd. Lon: 0.0002 m Sd. Hgt: 0.0004 m  
 Posn. Qlty: 0.0002 m Sd. Slope: 0.0002 m

Baseline vector: dLat: -0° 14' 24.09559" dLon: 0° 19' 41.21920" dHgt: 6.5780 m  
 Slope: 38134.3079 m

DOPs (min-max): GDOP: 1.4 - 2.7  
 PDOP: 1.2 - 2.2 HDOP: 0.7 - 1.0 VDOP: 1.0 - 2.0

Number of used satellites: GPS: 8  
 GLONASS: 7

**KRUM - 22**

Receiver type / S/N:  
 Antenna type / S/N:  
 Antenna height:

**Reference: KRUM**

GR10 / 1700124  
 AR10 / -  
 0.0000 m

**Rover: 22**

GS08 / 2520174  
 GS08 / -  
 2.0000 m

**Coordinates:**

Latitude: 41° 28' 24.51270" N  
 Longitude: 25° 39' 06.89477" E  
 Ellip. Hgt: 274.0316 m

41° 41' 27.37563" N  
 25° 53' 23.46020" E  
 257.9261 m

Solution type: Phase: all fix  
 GNSS type: GPS / GLONASS  
 Frequency: IonoFree (L3)  
 Ambiguity: Yes  
 Time span: 12/20/2013 13:31:50 - 12/20/2013 13:48:35  
 Duration: 16' 45"

Quality: Sd. Lat: 0.0001 m Sd. Lon: 0.0001 m Sd. Hgt: 0.0003 m  
 Posn. Qlty: 0.0002 m Sd. Slope: 0.0001 m

Baseline vector: dLat: 0° 13' 02.86293" dLon: 0° 14' 16.56543" dHgt: -16.1055 m  
 Slope: 31258.6627 m

DOPs (min-max): GDOP: 1.4 - 2.7  
 PDOP: 1.2 - 2.2 HDOP: 0.7 - 1.0 VDOP: 1.0 - 2.0

Number of used satellites: GPS: 8  
 GLONASS: 7

**HSKO - 16**

Receiver type / S/N:  
 Antenna type / S/N:  
 Antenna height:

**Reference: HSKO**

GMX902GG / 0  
 AR10 / -  
 0.0000 m

**Rover: 16**

GS08 / 2520174  
 GS08 / -  
 2.0000 m

**Coordinates:**

Latitude: 41° 55' 51.47139" N  
 Longitude: 25° 33' 42.24100" E  
 Ellip. Hgt: 251.3697 m

41° 41' 44.52979" N  
 25° 53' 47.34591" E  
 269.8171 m

Solution type: Phase: all fix  
 GNSS type: GPS / GLONASS  
 Frequency: IonoFree (L3)  
 Ambiguity: Yes

Time span: 12/20/2013 14:13:32 - 12/20/2013 14:37:33  
 Duration: 24' 01"

Quality: Sd. Lat: 0.0002 m Sd. Lon: 0.0001 m Sd. Hgt: 0.0003 m  
 Posn. Qlty: 0.0002 m Sd. Slope: 0.0001 m

Baseline vector: dLat: -0° 14' 06.94161" dLon: 0° 20' 05.10490" dHgt: 18.4473 m  
 Slope: 38165.4418 m

DOPs (min-max): GDOP: 1.4 - 1.6 HDOP: 0.6 - 0.7 VDOP: 1.0 - 1.2  
 PDOP: 1.2 - 1.4

Number of used satellites: GPS: 9  
 GLONASS: 8

**KRUM - 16**

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

**Reference: KRUM**

GR10 / 1700124

AR10 / -

0.0000 m

**Rover: 16**

GS08 / 2520174

GS08 / -

2.0000 m

## Coordinates:

Latitude: 41° 28' 24.51270" N

Longitude: 25° 39' 06.89477" E

Ellip. Hgt: 274.0316 m

41° 41' 44.52965" N

25° 53' 47.34588" E

269.8073 m

Solution type:

Phase: all fix

GNSS type:

GPS / GLONASS

Frequency:

IonoFree (L3)

Ambiguity:

Yes

Time span:

12/20/2013 14:13:32 - 12/20/2013 14:37:33

Duration:

24' 01"

Quality: Sd. Lat: 0.0001 m Sd. Lon: 0.0001 m Sd. Hgt: 0.0003 m  
 Posn. Qlty: 0.0002 m Sd. Slope: 0.0001 m

Baseline vector: dLat: 0° 13' 20.01695" dLon: 0° 14' 40.45110" dHgt: -4.2243 m  
 Slope: 32018.5225 m

DOPs (min-max): GDOP: 1.4 - 1.6 HDOP: 0.6 - 0.7 VDOP: 1.0 - 1.2  
 PDOP: 1.2 - 1.4

Number of used satellites: GPS: 9  
 GLONASS: 8

**HSKO - 565**

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

**Reference: HSKO**

GMX902GG / 0

AR10 / -

0.0000 m

**Rover: 565**

GS08 / 2520174

GS08 / -

2.0000 m

## Coordinates:

Latitude: 41° 55' 51.47139" N

Longitude: 25° 33' 42.24100" E

Ellip. Hgt: 251.3697 m

41° 39' 44.68416" N

25° 55' 17.28999" E

208.3883 m

Solution type:

Phase: all fix

GNSS type:

GPS / GLONASS

Frequency:

IonoFree (L3)

Ambiguity:

Yes

Time span: 12/20/2013 15:21:21 - 12/20/2013 15:40:25  
 Duration: 19' 04"

Quality: Sd. Lat: 0.0001 m Sd. Lon: 0.0001 m Sd. Hgt: 0.0003 m  
 Posn. Qlty: 0.0002 m Sd. Slope: 0.0001 m

Baseline vector: dLat: -0° 16' 06.78723" dLon: 0° 21' 35.04899" dHgt: -42.9814 m  
 Slope: 42234.7584 m

DOPs (min-max): GDOP: 1.4 - 1.6  
 PDOP: 1.3 - 1.4 HDOP: 0.6 - 0.6 VDOP: 1.1 - 1.2

Number of used satellites: GPS: 9  
 GLONASS: 8

**KRUM - 565**

Receiver type / S/N:  
 Antenna type / S/N:  
 Antenna height:

**Reference: KRUM**

GR10 / 1700124  
 AR10 / -  
 0.0000 m

**Rover: 565**

GS08 / 2520174  
 GS08 / -  
 2.0000 m

**Coordinates:**

Latitude: 41° 28' 24.51270" N  
 Longitude: 25° 39' 06.89477" E  
 Ellip. Hgt: 274.0316 m

41° 39' 44.68395" N  
 25° 55' 17.29003" E  
 208.3637 m

**Solution type:**

Phase: all fix

**GNSS type:**

GPS / GLONASS

**Frequency:**

IonoFree (L3)

**Ambiguity:**

Yes

**Time span:**

12/20/2013 15:21:21 - 12/20/2013 15:40:25

**Duration:**

19' 04"

Quality: Sd. Lat: 0.0001 m Sd. Lon: 0.0001 m Sd. Hgt: 0.0003 m  
 Posn. Qlty: 0.0002 m Sd. Slope: 0.0001 m

Baseline vector: dLat: 0° 11' 20.17125" dLon: 0° 16' 10.39526" dHgt: -65.6680 m  
 Slope: 30755.5472 m

DOPs (min-max): GDOP: 1.4 - 1.7  
 PDOP: 1.3 - 1.5 HDOP: 0.6 - 0.7 VDOP: 1.1 - 1.3

Number of used satellites: GPS: 9  
 GLONASS: 8

**HSKO - 13**

Receiver type / S/N:  
 Antenna type / S/N:  
 Antenna height:

**Reference: HSKO**

GMX902GG / 0  
 AR10 / -  
 0.0000 m

**Rover: 13**

GS08 / 2520174  
 GS08 / -  
 2.0000 m

**Coordinates:**

Latitude: 41° 55' 51.47139" N  
 Longitude: 25° 33' 42.24100" E  
 Ellip. Hgt: 251.3697 m

41° 39' 42.77487" N  
 25° 55' 31.00792" E  
 183.9391 m

**Solution type:**

Phase: all fix

**GNSS type:**

GPS / GLONASS

**Frequency:**

IonoFree (L3)

**Ambiguity:**

Yes

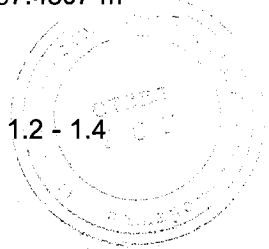
Time span: 12/20/2013 15:46:46 - 12/20/2013 15:59:32  
Duration: 12' 46"

Quality: Sd. Lat: 0.0003 m Sd. Lon: 0.0002 m Sd. Hgt: 0.0005 m  
Posn. Qlty: 0.0003 m Sd. Slope: 0.0002 m

Baseline vector: dLat: -0° 16' 08.69653" dLon: 0° 21' 48.76692" dHgt: -67.4307 m  
Slope: 42501.0094 m

DOPs (min-max): GDOP: 1.6 - 1.9  
PDOP: 1.4 - 1.6 HDOP: 0.6 - 0.7 VDOP: 1.2 - 1.4

Number of used satellites: GPS: 9  
GLONASS: 7

**KRUM - 13**

Receiver type / S/N:  
Antenna type / S/N:  
Antenna height:

**Reference: KRUM**

GR10 / 1700124  
AR10 / -  
0.0000 m

**Rover: 13**

GS08 / 2520174  
GS08 / -  
2.0000 m

**Coordinates:**

Latitude: 41° 28' 24.51270" N  
Longitude: 25° 39' 06.89477" E  
Ellip. Hgt: 274.0316 m

41° 39' 42.77476" N  
25° 55' 31.00796" E  
183.9138 m

**Solution type:**

Phase: all fix

**GNSS type:**

GPS / GLONASS

**Frequency:**

IonoFree (L3)

**Ambiguity:**

Yes

**Time span:**

12/20/2013 15:46:46 - 12/20/2013 15:59:32

**Duration:**

12' 46"

Quality: Sd. Lat: 0.0003 m Sd. Lon: 0.0002 m Sd. Hgt: 0.0005 m  
Posn. Qlty: 0.0003 m Sd. Slope: 0.0002 m

Baseline vector: dLat: 0° 11' 18.26206" dLon: 0° 16' 24.11319" dHgt: -90.1179 m  
Slope: 30948.8789 m

DOPs (min-max): GDOP: 1.5 - 1.9  
PDOP: 1.3 - 1.6 HDOP: 0.6 - 0.7 VDOP: 1.2 - 1.4

Number of used satellites: GPS: 9  
GLONASS: 8

**HSKO - 14**

Receiver type / S/N:  
Antenna type / S/N:  
Antenna height:

**Reference: HSKO**

GMX902GG / 0  
AR10 / -  
0.0000 m

**Rover: 14**

GS08 / 2520174  
GS08 / -  
2.0000 m

**Coordinates:**

Latitude: 41° 55' 51.47139" N  
Longitude: 25° 33' 42.24100" E  
Ellip. Hgt: 251.3697 m

41° 41' 00.84223" N  
25° 49' 37.76717" E  
343.8732 m

**Solution type:**

Phase: all fix

**GNSS type:**

GPS / GLONASS

**Frequency:**

IonoFree (L3)

**Ambiguity:**

Yes

Time span: 12/20/2013 17:01:03 - 12/20/2013 17:16:41  
 Duration: 15' 38"

Quality: Sd. Lat: 0.0002 m Sd. Lon: 0.0002 m Sd. Hgt: 0.0004 m  
 Posn. Qlty: 0.0003 m Sd. Slope: 0.0002 m

Baseline vector: dLat: -0° 14' 50.62917" dLon: 0° 15' 55.52617" dHgt: 92.5035 m  
 Slope: 35237.4312 m

DOPs (min-max): GDOP: 1.4 - 1.5 HDOP: 0.7 - 0.7 VDOP: 1.0 - 1.1  
 PDOP: 1.3 - 1.3

Number of used satellites: GPS: 8  
 GLONASS: 7

**KRUM - 14**

Receiver type / S/N:  
 Antenna type / S/N:  
 Antenna height:

**Reference: KRUM**

GR10 / 1700124  
 AR10 / -  
 0.0000 m

**Rover: 14**

GS08 / 2520174  
 GS08 / -  
 2.0000 m

**Coordinates:**

Latitude: 41° 28' 24.51270" N  
 Longitude: 25° 39' 06.89477" E  
 Ellip. Hgt: 274.0316 m

41° 41' 00.84208" N  
 25° 49' 37.76735" E  
 343.8473 m

Solution type: Phase: all fix  
 GNSS type: GPS / GLONASS  
 Frequency: IonoFree (L3)  
 Ambiguity: Yes  
 Time span: 12/20/2013 17:01:03 - 12/20/2013 17:16:41  
 Duration: 15' 38"

Quality: Sd. Lat: 0.0002 m Sd. Lon: 0.0001 m Sd. Hgt: 0.0004 m  
 Posn. Qlty: 0.0002 m Sd. Slope: 0.0002 m

Baseline vector: dLat: 0° 12' 36.32938" dLon: 0° 10' 30.87258" dHgt: 69.8157 m  
 Slope: 27534.0561 m

DOPs (min-max): GDOP: 1.4 - 1.5 HDOP: 0.7 - 0.7 VDOP: 1.0 - 1.1  
 PDOP: 1.3 - 1.3

Number of used satellites: GPS: 8  
 GLONASS: 7



- when it has to be right



## Results - Baseline

### KRUM - 565

#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:02:17

#### Point Information

	<b>Reference: KRUM</b>	<b>Rover: 565</b>
Receiver type / S/N:	GR10 / 1700124	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4314416.5180 m	4292045.4221 m
Y:	2071930.7768 m	2086092.6915 m
Z:	4202146.9632 m	4217797.9083 m
Time span:	12/20/2013 15:21:21 - 12/20/2013 15:40:25	
Duration:	19' 04"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 28' 24.51270" N  
 Longitude: 25° 39' 06.89477" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.43069372	0.00772196
	0	1	0.10741988	0.00768996
	0	2	-0.36007828	0.00295260
	1	0	-0.37694269	0.00564835
	1	1	0.05415118	0.00436330

## Ambiguity Statistics

Total number of GPS ambiguities: 20  
 Number of fixed GPS ambiguities: 18  
 Total number of GLONASS ambiguities: 20  
 Number of fixed GLONASS ambiguities: 18  
 Number of independent fixes: 104  
 Avg. time between independent fixes: 8"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 15:21:21	12/20/2013 15:40:25	19' 04"

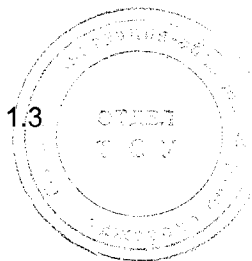
## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: KRUM	Rover: 565
Coordinates:		
X:	4314416.5180 m	4292054.0972 m
Y:	2071930.7768 m	2086097.3454 m
Z:	4202146.9632 m	4217803.7237 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0003 m	Sd. Y: 0.0002 m      Sd. Z: 0.0002 m

	Posn. Qlty: 0.0002 m	Hgt. Qlty: 0.0003 m	Sd. Slope: 0.0001 m
M0:	0.1755 m		
Cofactor matrix Qxx:	0.00000216	0.00000090 0.00000094	0.00000128 0.00000049 0.00000164
Baseline vector:	dLat: 0° 11' 20.17125" Slope: 30755.5472 m	dLon: 0° 16' 10.39526"	dHgt: -65.6680 m
DOPs (min-max):	GDOP: 1.4 - 1.7 PDOP: 1.3 - 1.5	HDOP: 0.6 - 0.7	VDOP: 1.1 - 1.3
Number of used satellites:	GPS: 9 GLONASS: 8		



- when it has to be right



## Results - Baseline

### KRUM - 22

#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:01:58

#### Point Information

	Reference: KRUM	Rover: 22
Receiver type / S/N:	GR10 / 1700124	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4314416.5180 m	4291334.6344 m
Y:	2071930.7768 m	2082822.5501 m
Z:	4202146.9632 m	4220201.5443 m
Time span:	12/20/2013 13:31:50 - 12/20/2013 13:48:35	
Duration:	16' 45"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 28' 24.51270" N  
 Longitude: 25° 39' 06.89477" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.43069372	0.00772196
	0	1	0.10741988	0.00768996
	0	2	-0.36007828	0.00295260
	1	0	-0.37694269	0.00564835
	1	1	0.05415118	0.00436330

## Ambiguity Statistics

Total number of GPS ambiguities: 24  
 Number of fixed GPS ambiguities: 16  
 Total number of GLONASS ambiguities: 22  
 Number of fixed GLONASS ambiguities: 14  
 Number of independent fixes: 99  
 Avg. time between independent fixes: 8"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 13:31:50	12/20/2013 13:48:35	16' 45"

## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: KRUN	Rover: 22
Coordinates:		
X:	4314416.5180 m	4291342.7046 m
Y:	2071930.7768 m	2082824.6835 m
Z:	4202146.9632 m	4220203.1511 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0002 m	Sd. Y: 0.0002 m      Sd. Z: 0.0002 m

	Posn. Qlty: 0.0002 m	Hgt. Qlty: 0.0003 m	Sd. Slope: 0.0001 m
M0:	0.1596 m		
Cofactor matrix Qxx:	0.00000226	0.00000133 0.00000191	0.00000126 0.00000101 0.00000187
Baseline vector:	dLat: 0° 13' 02.86293" Slope: 31258.6627 m	dLon: 0° 14' 16.56543"	dHgt: -16.1055 m
DOPs (min-max):	GDOP: 1.4 - 2.7 PDOP: 1.2 - 2.2	HDOP: 0.7 - 1.0	VDOP: 1.0 - 2.0
Number of used satellites:	GPS: 8 GLONASS: 7		

- when it has to be right


**Leica**  
Geosystems

## Results - Baseline

### KRUM - 14



#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:02:38

#### Point Information

	<b>Reference: KRUM</b>	<b>Rover: 14</b>
Receiver type / S/N:	GR10 / 1700124	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4314416.5180 m	4294157.8022 m
Y:	2071930.7768 m	2078389.2734 m
Z:	4202146.9632 m	4219643.0529 m
Time span:	12/20/2013 17:01:03 - 12/20/2013 17:16:41	
Duration:	15' 38"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 28' 24.51270" N  
 Longitude: 25° 39' 06.89477" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.43069372	0.00772196
	0	1	0.10741988	0.00768996
	0	2	-0.36007828	0.00295260
	1	0	-0.37694269	0.00564835
	1	1	0.05415118	0.00436330

## Ambiguity Statistics

Total number of GPS ambiguities: 20  
 Number of fixed GPS ambiguities: 16  
 Total number of GLONASS ambiguities: 18  
 Number of fixed GLONASS ambiguities: 14  
 Number of independent fixes: 86  
 Avg. time between independent fixes: 8"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 17:01:03	12/20/2013 17:16:41	15' 38"

## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: KRUM	Rover: 14
Coordinates:		
X:	4314416.5180 m	4294166.9679 m
Y:	2071930.7768 m	2078393.0446 m
Z:	4202146.9632 m	4219648.9363 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0003 m	Sd. Y: 0.0002 m      Sd. Z: 0.0002 m



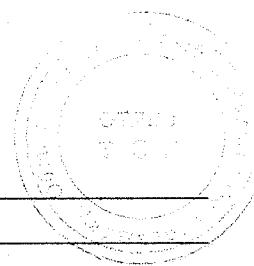
	Posn. Qlty: 0.0002 m	Hgt. Qlty: 0.0004 m	Sd. Slope: 0.0002 m
M0:	0.1693 m		
Cofactor matrix Qxx:	0.00000355	0.00000082	0.00000135
		0.00000086	0.00000064
			0.00000187
Baseline vector:	dLat: 0° 12' 36.32938" Slope: 27534.0561 m	dLon: 0° 10' 30.87258"	dHgt: 69.8157 m
DOPs (min-max):	GDOP: 1.4 - 1.5 PDOP: 1.3 - 1.3	HDOP: 0.7 - 0.7	VDOP: 1.0 - 1.1
Number of used satellites:	GPS: 8 GLONASS: 7		

- when it has to be right



## Results - Baseline

### KRUM - 13



#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:02:27

#### Point Information

	Reference: KRUM	Rover: 13
Receiver type / S/N:	GR10 / 1700124	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4314416.5180 m	4291926.8765 m
Y:	2071930.7768 m	2086388.1864 m
Z:	4202146.9632 m	4217739.0224 m
Time span:	12/20/2013 15:46:46 - 12/20/2013 15:59:32	
Duration:	12' 46"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 28' 24.51270" N  
 Longitude: 25° 39' 06.89477" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.43069372	0.00772196
	0	1	0.10741988	0.00768996
	0	2	-0.36007828	0.00295260
	1	0	-0.37694269	0.00564835
	1	1	0.05415118	0.00436330

## Ambiguity Statistics

Total number of GPS ambiguities: 18  
 Number of fixed GPS ambiguities: 18  
 Total number of GLONASS ambiguities: 20  
 Number of fixed GLONASS ambiguities: 16  
 Number of independent fixes: 68  
 Avg. time between independent fixes: 8"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 15:46:46	12/20/2013 15:59:32	12' 46"

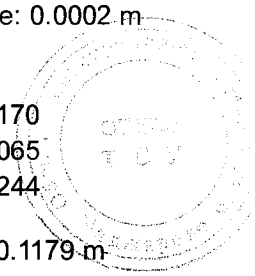
## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: KRUN	Rover: 13
Coordinates:		
X:	4314416.5180 m	4291934.1363 m
Y:	2071930.7768 m	2086391.9229 m
Z:	4202146.9632 m	4217743.4651 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0004 m	Sd. Y: 0.0003 m      Sd. Z: 0.0004 m

	Posn. Qty: 0.0003 m	Hgt. Qty: 0.0005 m	Sd. Slope: 0.0002 m
M0:	0.2456 m		
Cofactor matrix Qxx:	0.00000294	0.00000106 0.00000112	0.00000170 0.00000065 0.00000244
Baseline vector:	dLat: 0° 11' 18.26206" Slope: 30948.8789 m	dLon: 0° 16' 24.11319"	dHgt: -90.1179 m
DOPs (min-max):	GDOP: 1.5 - 1.9 PDOP: 1.3 - 1.6	HDOP: 0.6 - 0.7	VDOP: 1.2 - 1.4
Number of used satellites:	GPS: 9 GLONASS: 8		



- when it has to be right



## Results - Baseline

### HSKO - 565

#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:02:12

#### Point Information

	<b>Reference: HSKO</b>	<b>Rover: 565</b>
Receiver type / S/N:	GMX902GG / 0	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4287161.2796 m	4292045.4221 m
Y:	2050544.0744 m	2086092.6915 m
Z:	4240070.3020 m	4217797.9083 m
Time span:	12/20/2013 15:21:21 - 12/20/2013 15:40:25	
Duration:	19' 04"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 55' 51.47139" N  
 Longitude: 25° 33' 42.24100" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.40008242	0.00720768
	0	1	0.10800889	0.00714139
	0	2	-0.34527108	0.00317327
	1	0	-0.34719867	0.00469286
	1	1	0.06190615	0.00405670

## Ambiguity Statistics

Total number of GPS ambiguities: 20  
 Number of fixed GPS ambiguities: 18  
 Total number of GLONASS ambiguities: 18  
 Number of fixed GLONASS ambiguities: 16  
 Number of independent fixes: 105  
 Avg. time between independent fixes: 8"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 15:21:21	12/20/2013 15:40:25	19' 04"

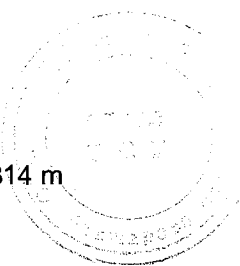
## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: HSKO	Rover: 565
Coordinates:		
X:	4287161.2796 m	4292054.1103 m
Y:	2050544.0744 m	2086097.3508 m
Z:	4240070.3020 m	4217803.7449 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0003 m	Sd. Y: 0.0002 m      Sd. Z: 0.0002 m

	Posn. Qty: 0.0002 m	Hgt. Qty: 0.0003 m	Sd. Slope: 0.0001 m
M0:	0.1713 m		
Cofactor matrix Qxx:	0.00000216	0.00000090 0.00000094	0.00000128 0.00000049 0.00000164
Baseline vector:	dLat: -0° 16' 06.78723" Slope: 42234.7584 m	dLon: 0° 21' 35.04899"	dHgt: -42.9814 m
DOPs (min-max):	GDOP: 1.4 - 1.6 PDOP: 1.3 - 1.4	HDOP: 0.6 - 0.6	VDOP: 1.1 - 1.2
Number of used satellites:	GPS: 9 GLONASS: 8		

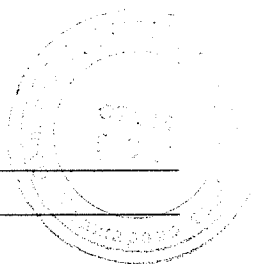


- when it has to be right



## Results - Baseline

### HSKO - 22



#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:01:54

#### Point Information

	Reference: HSKO	Rover: 22
Receiver type / S/N:	GMX902GG / 0	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4287161.2796 m	4291334.6344 m
Y:	2050544.0744 m	2082822.5501 m
Z:	4240070.3020 m	4220201.5443 m
Time span:	12/20/2013 13:31:50 - 12/20/2013 13:48:35	
Duration:	16' 45"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	



## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 55' 51.47139" N  
 Longitude: 25° 33' 42.24100" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.40008242	0.00720768
	0	1	0.10800889	0.00714139
	0	2	-0.34527108	0.00317327
	1	0	-0.34719867	0.00469286
	1	1	0.06190615	0.00405670

## Ambiguity Statistics

Total number of GPS ambiguities: 24  
 Number of fixed GPS ambiguities: 16  
 Total number of GLONASS ambiguities: 22  
 Number of fixed GLONASS ambiguities: 14  
 Number of independent fixes: 75  
 Avg. time between independent fixes: 8"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 13:31:50	12/20/2013 13:48:35	16' 45"

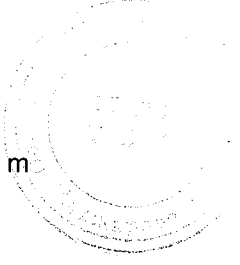
## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: HSKO	Rover: 22
Coordinates:		
X:	4287161.2796 m	4291342.7158 m
Y:	2050544.0744 m	2082824.6890 m
Z:	4240070.3020 m	4220203.1695 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0003 m	Sd. Y: 0.0003 m      Sd. Z: 0.0002 m

	Posn. Qlty: 0.0002 m	Hgt. Qlty: 0.0004 m	Sd. Slope: 0.0002 m
M0:	0.1782 m		
Cofactor matrix Qxx:	0.00000226	0.00000133 0.00000191	0.00000126 0.00000101 0.00000187
Baseline vector:	dLat: -0° 14' 24.09559" Slope: 38134.3079 m	dLon: 0° 19' 41.21920"	dHgt: 6.5780 m
DOPs (min-max):	GDOP: 1.4 - 2.7 PDOP: 1.2 - 2.2	HDOP: 0.7 - 1.0	VDOP: 1.0 - 2.0
Number of used satellites:	GPS: 8 GLONASS: 7		



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## Results - Baseline

### HSKO - 16

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#### Project Information

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Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:02:02

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#### Point Information

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	<b>Reference: HSKO</b>	<b>Rover: 16</b>
Receiver type / S/N:	GMX902GG / 0	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4287161.2796 m	4290784.6413 m
Y:	2050544.0744 m	2083168.4142 m
Z:	4240070.3020 m	4220602.5987 m
Time span:	12/20/2013 14:13:32 - 12/20/2013 14:37:33	
Duration:	24' 01"	

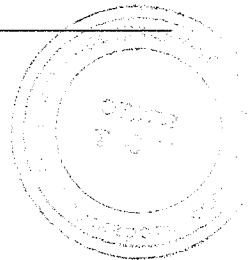
---

#### Processing Parameters

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Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

---



## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 55' 51.47139" N  
 Longitude: 25° 33' 42.24100" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.40008242	0.00720768
	0	1	0.10800889	0.00714139
	0	2	-0.34527108	0.00317327
	1	0	-0.34719867	0.00469286
	1	1	0.06190615	0.00405670

## Ambiguity Statistics

Total number of GPS ambiguities: 18  
 Number of fixed GPS ambiguities: 18  
 Total number of GLONASS ambiguities: 20  
 Number of fixed GLONASS ambiguities: 16  
 Number of independent fixes: 99  
 Avg. time between independent fixes: 10"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

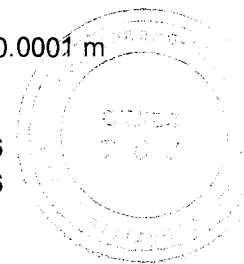
Status	From	To	Duration
Fixed	12/20/2013 14:13:32	12/20/2013 14:37:33	24' 01"

## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: HSKO	Rover: 16
Coordinates:		
X:	4287161.2796 m	4290792.7841 m
Y:	2050544.0744 m	2083171.7397 m
Z:	4240070.3020 m	4220606.2690 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0003 m	Sd. Y: 0.0002 m      Sd. Z: 0.0002 m



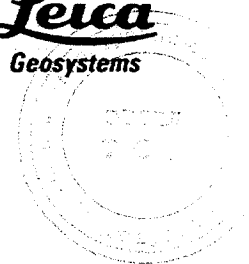
	Posn. Qlty: 0.0002 m	Hgt. Qlty: 0.0003 m	Sd. Slope: 0.0001 m
M0:	0.2046 m		
Cofactor matrix Qxx:	0.00000148	0.00000063	0.00000086
		0.00000081	0.00000046
			0.00000131
Baseline vector:	dLat: -0° 14' 06.94161"	dLon: 0° 20' 05.10490"	dHgt: 18.4473 m
	Slope: 38165.4418 m		
DOPs (min-max):	GDOP: 1.4 - 1.6		
	PDOP: 1.2 - 1.4	HDOP: 0.6 - 0.7	VDOP: 1.0 - 1.2
Number of used satellites:	GPS: 9		
	GLONASS: 8		

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## Results - Baseline

### HSKO - 14



#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:02:31

#### Point Information

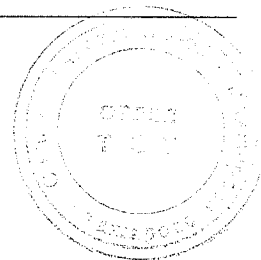
	<b>Reference: HSKO</b>	<b>Rover: 14</b>
Receiver type / S/N:	GMX902GG / 0	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4287161.2796 m	4294157.8022 m
Y:	2050544.0744 m	2078389.2734 m
Z:	4240070.3020 m	4219643.0529 m
Time span:	12/20/2013 17:01:03 - 12/20/2013 17:16:41	
Duration:	15' 38"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km



### Model 1:

Origin of development: Latitude: 41° 55' 51.47139" N  
 Longitude: 25° 33' 42.24100" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.40008242	0.00720768
	0	1	0.10800889	0.00714139
	0	2	-0.34527108	0.00317327
	1	0	-0.34719867	0.00469286
	1	1	0.06190615	0.00405670

## Ambiguity Statistics

Total number of GPS ambiguities: 20  
 Number of fixed GPS ambiguities: 16  
 Total number of GLONASS ambiguities: 18  
 Number of fixed GLONASS ambiguities: 14  
 Number of independent fixes: 86  
 Avg. time between independent fixes: 8"

Percentage of fixed epochs (L1): 100%  
 Percentage of fixed epochs (L2): 100%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 17:01:03	12/20/2013 17:16:41	15' 38"

## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: HSKO	Rover: 14
Coordinates:		
X:	4287161.2796 m	4294166.9844 m
Y:	2050544.0744 m	2078393.0479 m
Z:	4240070.3020 m	4219648.9570 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0004 m	Sd. Y: 0.0002 m      Sd. Z: 0.0003 m

	Posn. Qty: 0.0003 m	Hgt. Qty: 0.0004 m	Sd. Slope: 0.0002 m
M0:	0.2031 m		
Cofactor matrix Qxx:	0.00000355	0.00000082	0.00000135
		0.00000086	0.00000064
			0.00000187
Baseline vector:	dLat: -0° 14' 50.62917"	dLon: 0° 15' 55.52617"	dHgt: 92.5035 m
	Slope: 35237.4312 m		
DOPs (min-max):	GDOP: 1.4 - 1.5		
	PDOP: 1.3 - 1.3	HDOP: 0.7 - 0.7	VDOP: 1.0 - 1.1
Number of used satellites:	GPS: 8		
	GLONASS: 7		



- when it has to be right



## Results - Baseline

### HSKO - 13

#### Project Information

Project name: Madjarovo\_Haskovo\_Krumovgrad  
 Date created: 01/09/2014 09:58:34  
 Time zone: 2h 00'  
 Coordinate system name: WGS 1984  
 Application software: LEICA Geo Office 8.3  
 Processing kernel: PSI-Pro 3.0  
 Processed: 01/09/2014 11:02:23

#### Point Information

	<b>Reference: HSKO</b>	<b>Rover: 13</b>
Receiver type / S/N:	GMX902GG / 0	GS08 / 2520174
Antenna type / S/N:	AR10 / -	GS08 / -
Antenna height:	0.0000 m	2.0000 m
Initial coordinates:		
X:	4287161.2796 m	4291926.8765 m
Y:	2050544.0744 m	2086388.1864 m
Z:	4240070.3020 m	4217739.0224 m
Time span:	12/20/2013 15:46:46 - 12/20/2013 15:59:32	
Duration:	12' 46"	

#### Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Precise	Broadcast	No Gps precise ephemeris available, switched to broadcast ephemeris.
Ephemeris type (GLONASS):	Precise	Broadcast	No Glonass precise ephemeris available, switched to broadcast ephemeris.
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS / GLONASS	
Frequency:	Automatic	L1/E1 and L2	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	1	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

## Computed Iono Model

Number of computed models: 1  
 Sampling rate of iono model: 30 sec  
 Height of single layer: 350 km

### Model 1:

Origin of development: Latitude: 41° 55' 51.47139" N  
 Longitude: 25° 33' 42.24100" E  
 Time (UT): 12/20/2013 11:29:44

Validity: From epoch: 12/20/2013 13:29:44  
 To epoch: 12/20/2013 18:01:40

Coefficients:	Deg. Lat	Deg. time	Value	rms
	0	0	2.40008242	0.00720768
	0	1	0.10800889	0.00714139
	0	2	-0.34527108	0.00317327
	1	0	-0.34719867	0.00469286
	1	1	0.06190615	0.00405670

## Ambiguity Statistics

Total number of GPS ambiguities: 18  
 Number of fixed GPS ambiguities: 18  
 Total number of GLONASS ambiguities: 20  
 Number of fixed GLONASS ambiguities: 14  
 Number of independent fixes: 54  
 Avg. time between independent fixes: 10"

Percentage of fixed epochs (L1): 97%  
 Percentage of fixed epochs (L2): 97%  
 Percentage of fixed epochs (overall): 100%

### Overall Statistic:

Status	From	To	Duration
Fixed	12/20/2013 15:46:46	12/20/2013 15:59:32	12' 46"

## Cycle Slip Statistics

Total number of cycle slips: 0

## Final Coordinates

	Reference: HSKO	Rover: 13
Coordinates:		
X:	4287161.2796 m	4291934.1518 m
Y:	2050544.0744 m	2086391.9293 m
Z:	4240070.3020 m	4217743.4843 m
Solution type:	Phase: all fix	
GNSS type:	GPS / GLONASS	
Frequency:	IonoFree (L3)	
Ambiguity:	Yes	
Quality:	Sd. X: 0.0004 m	Sd. Y: 0.0003 m      Sd. Z: 0.0004 m

	Posn. Qlty: 0.0003 m	Hgt. Qlty: 0.0005 m	Sd. Slope: 0.0002 m
M0:	0.2426 m		
Cofactor matrix Qxx:	0.00000295	0.00000106	0.00000171
		0.00000113	0.00000067
			0.00000251
Baseline vector:	dLat: -0° 16' 08.69653"	dLon: 0° 21' 48.76692"	dHgt: -67.4307 m
	Slope: 42501.0094 m		
DOPs (min-max):	GDOP: 1.6 - 1.9		
	PDOP: 1.4 - 1.6	HDOP: 0.6 - 0.7	VDOP: 1.2 - 1.4
Number of used satellites:	GPS: 9		
	GLONASS: 7		

Обект: "Рехабилитация на общински път № НКV 3110/НКV 2224, от с. Долни  
Главанак - разклон с. Голяма Долина - кръстовище с. Малко Брягово - с.  
Бориславци от км. 0+000 до км. 6+600"

Възложител: Община Маджарово

№ точка	Y	X
1	9449885,946	4551051,023
2	9449905,919	4551049,975
n1	9449914,764	4551049,511
s1	9449922,580	4551048,793
k1	9449930,315	4551047,464
3	9449949,878	4551043,307
4	9449969,441	4551039,149
v1	9449979,571	4551036,996
5	9449999,241	4551033,379
6	9450018,911	4551029,761
7	9450038,582	4551026,144
8	9450058,252	4551022,526
9	9450077,922	4551018,909
10	9450097,592	4551015,292
11	9450117,262	4551011,674
n2	9450137,840	4551007,890
12	9450157,836	4551008,279
s2	9450163,942	4551010,065
13	9450180,998	4551020,511
k2	9450185,363	4551025,138
14	9450198,134	4551040,530
n3	9450201,918	4551045,091
15	9450215,835	4551059,455
s3	9450217,851	4551061,201
16	9450234,050	4551072,931
k3	9450236,339	4551074,301
17	9450253,603	4551084,397
18	9450270,868	4551094,493
n4	9450278,950	4551099,220
s4	9450287,988	4551104,833
k4	9450296,715	4551110,919
19	9450312,810	4551122,792
n5	9450319,921	4551128,038
20	9450336,539	4551139,167
21	9450354,099	4551148,741
s5	9450360,001	4551151,511
22	9450378,584	4551158,903
23	9450397,763	4551164,577
k5	9450404,115	4551166,047
24	9450423,665	4551170,265
25	9450443,215	4551174,484
v2	9450444,269	4551174,712
26	9450463,753	4551179,229
27	9450483,236	4551183,746
v3	9450499,228	4551187,453
28	9450518,815	4551191,498
n6	9450534,592	4551194,757
29	9450553,774	4551200,421
s6	9450557,540	4551201,958
30	9450575,207	4551211,333
k6	9450578,591	4551213,590
31	9450595,038	4551224,968
32	9450611,486	4551236,347
33	9450627,934	4551247,725
34	9450644,382	4551259,104
35	9450660,830	4551270,482
36	9450677,278	4551281,860

КАМАРА НА ИНЖЕНЕРИТЕ В  
ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ

Регистрационен № 09112

инж. ИВАН  
СТОЯНОВ ГАВАЗОВ

ПОП

ПОЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ

Но точка	Y	X
37	9450693,725	4551293,239
38	9450710,173	4551304,617
39	9450726,621	4551315,996
40	9450743,069	4551327,374
41	9450759,517	4551338,753
n7	9450763,208	4551341,306
s7	9450778,238	4551350,929
k7	9450793,916	4551359,455
42	9450811,816	4551368,377
43	9450829,715	4551377,299
n8	9450835,774	4551380,319
44	9450854,703	4551386,774
s8	9450856,937	4551387,180
45	9450876,927	4551387,799
k8	9450879,182	4551387,531
46	9450899,005	4551384,878
n9	9450902,195	4551384,451
s9	9450920,073	4551385,427
k9	9450936,349	4551392,886
47	9450952,658	4551404,464
48	9450968,966	4551416,041
49	9450985,274	4551427,618
n10	9450995,795	4551435,087
s10	9451009,858	4551444,714
k10	9451024,242	4551453,857
50	9451041,301	4551464,296
v4	9451046,914	4551467,731
51	9451064,143	4551477,889
52	9451081,372	4551488,046
v5	9451086,123	4551490,847
n11	9451103,549	4551499,999
53	9451122,279	4551507,013
s11	9451124,601	4551507,527
54	9451144,540	4551509,084
k11	9451146,914	4551508,935
n12	9451161,108	4551507,838
s12	9451176,200	4551510,002
k12	9451188,940	4551518,377
n13	9451201,374	4551531,207
s13	9451205,971	4551535,751
k13	9451210,760	4551540,092
n14	9451215,389	4551544,110
55	9451231,727	4551555,645
s14	9451239,309	4551559,516
56	9451258,235	4551565,983
k14	9451266,600	4551567,561
57	9451286,393	4551570,430
n15	9451306,643	4551573,365
58	9451326,636	4551573,885
s15	9451328,516	4551573,691
59	9451347,980	4551569,091
k15	9451349,748	4551568,423
60	9451368,378	4551561,150
n16	9451376,624	4551557,931
61	9451395,947	4551552,772
s16	9451396,975	4551552,623
62	9451416,968	4551552,090
k16	9451418,002	4551552,184
63	9451437,910	4551554,106
n17	9451445,673	4551554,855
64	9451465,634	4551556,112
s17	9451472,623	4551556,237



КАМАРА НА ИНЖЕНЕРИТЕ В  
ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ



Регистрационен № 09112

инж. ИВАН  
СТОЯНОВ ГАВАЗОВ

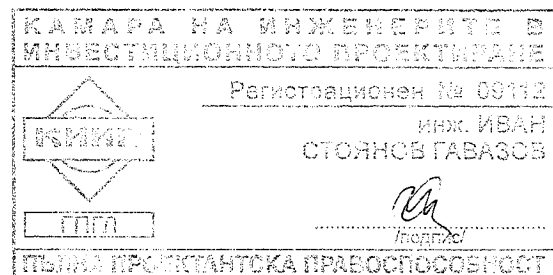
ПЪЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ

№ точка	Y	X
65	9451492,615	4551555,695
k17	9451499,587	4551555,192
66	9451519,517	4551553,519
n18	9451525,749	4551552,996
s18	9451535,749	4551552,012
k18	9451545,697	4551550,599
n19	9451565,115	4551547,985
67	9451584,968	4551545,568
s19	9451595,830	4551544,585
68	9451615,795	4551543,399
k19	9451626,696	4551543,089
69	9451646,693	4551542,739
n20	9451657,465	4551542,550
70	9451677,436	4551541,486
s20	9451688,534	4551540,273
71	9451708,264	4551536,996
k20	9451719,158	4551534,558
72	9451738,584	4551529,801
n21	9451741,326	4551529,129
73	9451761,323	4551528,808
s21	9451763,478	4551529,319
74	9451781,205	4551538,578
k21	9451782,855	4551540,054
75	9451797,425	4551553,755
n22	9451807,628	4551563,348
s22	9451815,633	4551570,713
k22	9451823,796	4551577,901
n23	9451839,045	4551591,038
s23	9451848,050	4551597,072
k23	9451858,235	4551600,778
76	9451877,717	4551605,302
n24	9451880,908	4551606,044
77	9451900,699	4551608,929
s24	9451906,377	4551609,143
78	9451926,329	4551607,756
k24	9451931,923	4551606,758
79	9451951,523	4551602,780
80	9451971,124	4551598,802
n25	9451974,098	4551598,199
81	9451993,334	4551592,725
s25	9451994,772	4551592,184
82	9452012,841	4551583,610
k25	9452014,171	4551582,838
83	9452031,408	4551572,696
84	9452048,645	4551562,553
n26	9452050,278	4551561,592
s26	9452059,427	4551556,422
k26	9452068,752	4551551,576
85	9452086,657	4551542,665
86	9452104,562	4551533,753
87	9452122,467	4551524,842
v6	9452125,247	4551523,458
88	9452142,899	4551514,056
89	9452160,551	4551504,653
n27	9452173,205	4551497,912
s27	9452181,995	4551493,504
k27	9452190,991	4551489,533
n28	9452197,479	4551486,857
90	9452216,737	4551481,461
s28	9452217,837	4551481,297
91	9452237,831	4551480,811
k28	9452238,937	4551480,923

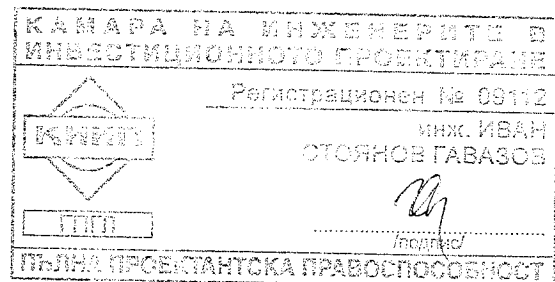


КАМАРА НА ИНЖЕНЕРИТЕ В ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ	
Регистрационен № 09112	
инж. ИВАН СТОЯНОВ ГАВАЗОВ	
 ПОДПИС	 ПОДПИС
ПЪЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ	

№ точка	Y	X
92	9452258,824	4551483,053
n29	9452261,507	4551483,341
s29	9452279,182	4551484,446
k29	9452296,886	4551483,983
93	9452316,836	4551482,576
94	9452336,786	4551481,169
n30	9452343,326	4551480,708
s30	9452353,730	4551480,155
k30	9452364,148	4551479,965
95	9452384,148	4551479,946
n31	9452386,314	4551479,944
s31	9452403,304	4551479,515
k31	9452420,252	4551478,262
96	9452440,156	4551476,304
97	9452460,060	4551474,345
98	9452479,964	4551472,387
v7	9452492,097	4551471,193
99	9452511,906	4551468,438
100	9452531,716	4551465,683
n32	9452537,033	4551464,943
101	9452556,894	4551462,585
s32	9452574,054	4551461,192
102	9452594,035	4551460,317
k32	9452611,251	4551460,204
n33	9452628,448	4551460,388
103	9452648,432	4551459,601
s33	9452657,237	4551458,615
104	9452676,900	4551454,962
k33	9452685,472	4551452,720
105	9452704,704	4551447,231
v8	9452715,869	4551444,044
106	9452735,299	4551439,302
n34	9452742,268	4551437,601
s34	9452758,796	4551430,023
k34	9452771,319	4551416,841
n35	9452777,574	4551407,065
107	9452791,237	4551392,460
s35	9452793,093	4551391,148
108	9452811,422	4551383,144
k35	9452813,645	4551382,674
n36	9452824,960	4551380,527
109	9452844,815	4551378,115
s36	9452847,156	4551378,007
110	9452867,148	4551378,570
k36	9452869,480	4551378,811
111	9452889,358	4551381,017
112	9452909,236	4551383,223
n37	9452920,818	4551384,509
s37	9452932,647	4551385,380
k37	9452944,508	4551385,372
113	9452964,494	4551384,617
114	9452984,480	4551383,862
115	9453004,465	4551383,107
v9	9453007,632	4551382,988
116	9453027,632	4551382,722
117	9453047,628	4551382,457
118	9453067,627	4551382,192
n38	9453082,178	4551381,999
119	9453102,138	4551380,734
s38	9453111,619	4551379,425
120	9453131,174	4551375,233
k38	9453140,358	4551372,541





Но точка	Y	X
121	9453159,410	4551366,458
122	9453178,463	4551360,375
n39	9453183,233	4551358,852
123	9453202,384	4551353,087
s39	9453218,593	4551348,745
124	9453238,061	4551344,164
k39	9453254,505	4551340,824
n40	9453274,950	4551336,967
s40	9453293,536	4551334,061
k40	9453312,269	4551332,326
125	9453332,232	4551331,107
n41	9453341,100	4551330,565
126	9453360,948	4551328,100
s41	9453364,628	4551327,363
127	9453383,892	4551321,988
k41	9453387,422	4551320,714
128	9453406,154	4551313,704
129	9453424,885	4551306,694
n42	9453430,652	4551304,536
s42	9453450,189	4551296,833
k42	9453469,445	4551288,450
130	9453487,640	4551280,147
131	9453505,835	4551271,845
n43	9453507,220	4551271,213
s43	9453516,578	4551266,330
k43	9453525,369	4551260,489
n44	9453530,899	4551256,377
s44	9453547,694	4551247,372
k44	9453566,379	4551243,625
n45	9453580,764	4551242,894
s45	9453591,333	4551242,543
k45	9453601,907	4551242,565
132	9453621,903	4551242,959
n46	9453625,409	4551243,028
s46	9453641,915	4551243,548
k46	9453658,405	4551244,457
133	9453678,360	4551245,794
134	9453698,315	4551247,131
n47	9453716,079	4551248,321
s47	9453735,955	4551248,991
k47	9453755,832	4551248,344
135	9453775,788	4551247,030
136	9453795,745	4551245,717
n48	9453812,350	4551244,624
s48	9453824,753	4551243,962
k48	9453837,169	4551243,609
n49	9453849,132	4551243,417
s49	9453866,861	4551242,608
k49	9453884,511	4551240,751
137	9453904,331	4551238,072
138	9453924,150	4551235,393
n50	9453925,636	4551235,192
139	9453945,636	4551235,371
s50	9453947,105	4551235,613
140	9453966,109	4551241,846
k50	9453967,436	4551242,522
141	9453985,161	4551251,785
n51	9454001,959	4551260,564
s51	9454014,769	4551263,956
k51	9454027,790	4551261,500
142	9454046,139	4551253,543
143	9454064,488	4551245,586

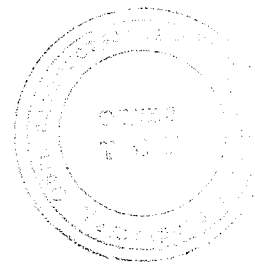




Но точка	Y	X
v10	9454081,994	4551237,995
144	9454100,619	4551230,706
n52	9454110,325	4551226,908
s52	9454119,714	4551222,955
k52	9454128,889	4551218,529
145	9454146,676	4551209,384
146	9454164,463	4551200,239
v11	9454180,975	4551191,749
147	9454198,578	4551182,254
148	9454216,180	4551172,759
n53	9454229,875	4551165,371
s53	9454247,150	4551154,032
k53	9454262,223	4551139,897
n54	9454272,605	4551128,325
s54	9454286,576	4551116,176
k54	9454303,097	4551107,820
n55	9454306,517	4551106,593
s55	9454319,465	4551102,341
k55	9454332,626	4551098,801
149	9454352,074	4551094,135
n56	9454358,958	4551092,483
150	9454378,495	4551088,206
s56	9454389,095	4551086,226
151	9454408,858	4551083,159
k56	9454419,560	4551081,835
152	9454439,434	4551079,592
v12	9454445,489	4551078,909
153	9454465,424	4551077,293
154	9454485,358	4551075,677
155	9454505,293	4551074,062
v13	9454512,960	4551073,440
156	9454532,865	4551071,492
157	9454552,770	4551069,543
v14	9454563,550	4551068,488
158	9454583,444	4551066,427
n57	9454598,004	4551064,918
159	9454617,592	4551060,878
s57	9454633,489	4551054,351
160	9454650,264	4551043,460
k57	9454662,697	4551031,596
161	9454675,926	4551016,596
n58	9454677,764	4551014,512
s58	9454687,928	4551000,782
k58	9454695,607	4550985,522
162	9454703,038	4550966,954
163	9454710,469	4550948,386
n59	9454715,123	4550936,759
s59	9454718,413	4550929,410
k59	9454722,284	4550922,349
n60	9454724,636	4550918,441
s60	9454738,321	4550903,603
k60	9454756,757	4550895,386
164	9454776,292	4550891,098
n61	9454782,294	4550889,780
165	9454801,961	4550886,146
s61	9454808,228	4550885,270
166	9454828,137	4550883,374
k61	9454834,457	4550883,051
167	9454854,440	4550882,240
n62	9454861,807	4550881,942
s62	9454872,385	4550881,325
k62	9454882,936	4550880,336

КАДАРА НА ИНЖЕНЕРИТЕ В ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ	
	Регистрационен № 09112 инж. ИВАН СТОЯНОВ ГАВАЗОВ
	ПОДПИС
ПЪЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ	

Но точка	Y	X
168	9454902,812	4550878,117
169	9454922,689	4550875,897
n63	9454923,961	4550875,755
s63	9454941,009	4550872,849
k63	9454957,608	4550868,000
170	9454976,451	4550861,295
n64	9454995,781	4550854,416
s64	9455009,500	4550850,951
k64	9455023,625	4550850,124
171	9455043,612	4550850,843
172	9455063,599	4550851,563
n65	9455075,435	4550851,989
s65	9455086,520	4550852,543
k65	9455097,586	4550853,403
n66	9455118,445	4550855,317
s66	9455133,529	4550856,319
k66	9455148,644	4550856,559
173	9455168,643	4550856,373
174	9455188,642	4550856,187
v15	9455190,114	4550856,173
n67	9455207,335	4550856,721
s67	9455220,051	4550861,528
k67	9455227,159	4550873,117
n68	9455227,809	4550876,021
s68	9455228,516	4550883,667
k68	9455227,259	4550891,242
175	9455221,486	4550910,391
n69	9455219,486	4550917,024
s69	9455218,582	4550927,763
k69	9455222,109	4550937,946
n70	9455225,653	4550943,829
s70	9455227,889	4550946,983
k70	9455230,567	4550949,770
n71	9455233,954	4550952,808
s71	9455247,052	4550956,712
k71	9455258,387	4550949,076
176	9455268,612	4550931,887
v16	9455276,166	4550919,189
n72	9455286,658	4550903,942
s72	9455293,146	4550893,643
k72	9455298,778	4550882,851
n73	9455307,027	4550865,348
s73	9455310,408	4550858,616
k73	9455314,124	4550852,062
n74	9455318,473	4550844,820
s74	9455325,386	4550835,814
k74	9455334,152	4550828,600
177	9455350,937	4550817,726
n75	9455355,551	4550814,737
s75	9455365,296	4550808,007
k75	9455374,625	4550800,711
v17	9455389,282	4550788,744
n76	9455396,198	4550783,884
178	9455415,931	4550780,628
s76	9455419,687	4550781,998
179	9455432,693	4550797,190
k76	9455433,468	4550801,112
n77	9455434,154	4550807,240
s77	9455435,008	4550817,539
k77	9455435,270	4550827,870
180	9455435,204	4550847,870
181	9455435,137	4550867,870



КАМАРА НА ИНЖЕНЕРИТЕ В  
ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ

Регистрационен № 09112

инж. ИВАН  
СТОЯНОВ ГИВАЗОВ

ПЪЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ

№ точка	Y	X
182	9455435,070	4550887,869
183	9455435,003	4550907,869
v18	9455434,977	4550915,638
v19	9455435,117	4550933,910
184	9455435,002	4550953,909
v20	9455434,953	4550962,563
185	9455435,275	4550982,561
n78	9455435,480	4550995,257
186	9455436,802	4551015,214
s78	9455438,668	4551027,742
187	9455443,219	4551047,218
k78	9455447,098	4551059,276
188	9455453,822	4551078,112
189	9455460,547	4551096,947
n79	9455467,142	4551115,420
190	9455473,630	4551134,339
191	9455479,644	4551153,413
s79	9455480,774	4551157,196
192	9455486,214	4551176,442
193	9455491,171	4551195,818
k79	9455492,093	4551199,658
n80	9455495,711	4551214,905
s80	9455499,656	4551222,005
k80	9455506,724	4551226,007
194	9455509,121	4551226,597

