

PATB-NT : COPYRIGHT : H.KLEIN/F.ACKERMANN 1988-2003

BLOCK ADJUSTMENT WITH BUNDLES

REVISION Dec-09

PROJECT : lines Chilliwack 2016

USER-ID. : MCELHANNEY

START OF EXECUTION : 02-09-2016 12:47:43

```
*****
*****
**
** PROGRAM VERSION   PATB-NT
**
** INPUT FILES:
** PROJECT PARAMETERS:      ... ata\18859-00_chilliwack\chwk2016.pro
** PHOTOGRAPHS:            c:\patdata\18859-00_chilliwack\chwk.ptb
** CONTROL POINTS:         c:\patdata\18859-00_chilliwack\chwk.ctp
**
** INITIAL VALUES FOR EXTERIOR ORIENTATION PARAMETERS ARE CALCULATED
**
** OPTIONAL FEATURES:
** WITHOUT AUTOMATIC GROSS ERROR DETECTION
** WITH CORRECTION OF EARTH CURVATURE AND REFRACTION
** ADJUSTMENT WITH SELF-CALIBRATION
** PARAMETER SET 1 (12 ADDED PARAMETERS) IS USED
** ADJUSTMENT WITH GPS-OBS
**           WITH DETERMINATION OF GPS-DRIFT PARAMETERS
** NO INVERSION OF NORMAL EQUATIONS
**
** REGISTRATION UNITS:
** IMAGE SYSTEM:      micron
** TERRAIN SYSTEM:    meter
**
** CAMERA INFORMATION:
** FOCAL LENGTHS IN MM AND CORRESPONDING FL-NUMBERS:
**           FOCAL LENGTHS ON INPUT FILE OF PHOTOGRAPHS
** SIZE OF PHOTOGRAPHS IN MM:
**           IN X:      80.000   IN Y:      90.000
**
** STANDARD DEVIATIONS OF OBS:
** FOR IMAGE POINTS IN X AND Y (IN UNITS OF IMAGE SYSTEM):
**   DEFAULT SET (SDS NO. 0 OR BLANK):      7.000
** FOR CONTROL POINTS IN PLAN AND HEIGHT (IN UNITS OF TERRAIN SYSTEM):
**   1.SET FOR CONTROL POINTS:      0.150   0.150
**   3.SET FOR CONTROL POINTS:      10.000  10.000
** FOR GPS OBS IN PLAN AND HEIGHT (IN UNITS OF TERRAIN SYSTEM):
**   1.SET FOR GPS OBS:      0.500
**   2.SET FOR GPS OBS:      0.500
**
*****
*****
```

mean value of photo scales over the block = 1/ 1660

end of adjustment -- due to condition 2

STATISTICS

2-fold points = 2922
3-fold points = 7725
4-fold points = 2102
5-fold points = 755
6-fold points = 1063
7-fold points = 129
8-fold points = 17
9-fold points = 26
number of block points = 14739

number of OBS = 101297
number of unknowns = 51305
redundancy = 49992

number of outliers for image OBS = 0
number of outliers for control OBS = 0
number of outliers for gps OBS = 0

ADDITIONAL PARAMETERS FOR SELF-CALIBRATION

common parameters for all photographs

parameter number	parameter value	standardized residual	lower bound of determinability.
2	-0.65	-5.95	0.45
8	0.33	7.52	0.18

corrections by this parameter group on the 9 regular grid points

-0.46	-0.46	-0.46
0.63	-0.33	-0.30
0.00	0.00	0.00
0.46	0.00	-0.46
0.46	0.46	0.46
0.30	0.33	-0.63

ROOT MEAN SQUARE VALUES AND CHECK VALUES OF RESIDUALS OF PHOTOGRAMMETRIC OBS

image system	terrain system	image system
--------------	----------------	--------------

image points

```

-----
obs x = 48853   rms x =      2.77   rms x =      0.046   chv vx =      8.31
obs y = 48853   rms y =      2.12   rms y =      0.035   chv vy =      6.35

```

ROOT MEAN SQUARE VALUES AND CHECK VALUES OF RESIDUALS OF NON-PHOTOGRAMMETRIC OBS

```

-----
                image system      terrain system      terrain system

control points with sds-no.  1
-----
obs x =      44   rms x =      7.78   rms x =      0.130   chv vx =      0.39
obs y =      44   rms y =      8.08   rms y =      0.135   chv vy =      0.40
obs z =      44   rms z =      2.26   rms z =      0.038   chv vz =      0.11

```

root mean square values of residuals of non-photogrammetric OBS with minimum weight

```

-----
                image system      terrain system

control points with sds-no.  2
-----
obs x =       3   rms x =    122.77   rms x =      2.049
obs y =       3   rms y =     56.51   rms y =      0.943
obs z =       3   rms z =    111.75   rms z =      1.865

```

ROOT MEAN SQUARE VALUES AND CHECK VALUES OF RESIDUALS OF GPS OBS

```

-----
                terrain system      terrain system

gps OBS with sds-no.  1
-----
obs x =  1153           rms x =      0.176   chv vx =      0.53
obs y =  1153           rms y =      0.156   chv vy =      0.47
obs z =  1153           rms z =      0.099   chv vz =      0.30

```

```

SIGMA NAUGHT      3.50      =      0.058
-----

```

CORRELATION MATRIX OF SELF-CALIBRATION PARAMETERS

```

-----
sn  pg  pn  rik  ..

```

```

1    0    2

```

```

2    0    8    0

```

COORDINATES OF CONTROL POINTS AND RESIDUALS

in units of terrain system

horizontal control points

point-no.	x	y	code of point input -> used	rx	ry	sds
1	576241.590	5445093.950	HV 3	-0.136	0.046	1
2	580451.160	5445890.800	HV 5	-0.110	0.064	1
3	586416.700	5447691.900	HV 4	-0.082	0.162	1
4	573535.110	5447563.890	HV 6	0.008	-0.156	1
5	573835.790	5443921.120	HV 6	-0.017	0.208	1
6	573469.380	5440962.060	HV 4	0.150	-0.093	1
7	576142.020	5439796.340	HV 5	-0.074	0.093	1
8	569698.690	5436554.430	HV 7	0.130	0.068	1
9	567735.760	5434263.170	HV 5	0.152	-0.102	1
10	566126.560	5432918.340	HV 9	-0.003	0.142	1
11	566104.710	5434769.150	HV 2	-0.076	-0.043	1
12	566064.470	5437497.090	HV 6	-0.080	-0.070	1
13	569675.680	5438854.920	HV 4	-0.148	-0.059	1
14	569650.840	5440705.470	HV 5	-0.158	-0.054	1
15	566623.080	5441930.920	HV 5	0.080	-0.233	1
16	569795.950	5444019.740	HV 3	0.157	0.115	1
17	576208.190	5449437.770	HV 3	0.013	-0.152	1
18	577186.360	5450050.330	HV 5	0.003	0.234	1
19	580471.740	5443696.680	HV 6	-0.126	-0.029	1
20	584558.930	5444454.870	HV 3	0.017	0.241	1
21	587695.380	5446747.520	HV 6	0.102	0.033	1
22	581428.540	5450872.660	HV 6	-0.134	-0.041	1
23	581105.720	5449909.700	HV 6	-0.093	-0.079	1
24	579902.270	5451783.590	HV 6	0.147	-0.256	1
25	580443.310	5440618.910	HV 6	0.286	0.024	1
26	581342.491	5438368.438	HV 6	-0.240	0.079	1
27	574412.360	5436934.890	HV 6	0.050	-0.215	1
28	582621.940	5436965.350	HV 5	-0.130	-0.170	1
29	585431.870	5450623.080	HV 3	0.231	-0.073	1
31	589138.090	5436600.600	HV 6	0.028	-0.362	1
32	584852.401	5439542.739	HV 2	-0.073	0.151	1
33	584881.910	5442671.330	HV 3	-0.057	0.036	1
34	583741.190	5438043.070	HV 2	0.128	0.179	1
35	570607.830	5445614.010	HV 6	-0.098	0.165	1
36	586705.450	5444891.700	HV 5	0.072	-0.051	1
37	583864.670	5449219.120	HV 2	0.215	-0.027	1
38	588010.900	5450478.800	HV 3	0.058	0.020	1
39	583681.990	5445971.830	HV 4	-0.208	-0.012	1
40	577999.000	5447149.730	HV 2	-0.153	0.107	1
41	582048.690	5447375.980	HV 3	-0.194	0.031	1
42	578013.990	5442786.650	HV 6	0.103	-0.127	1
43	576285.310	5444983.010	HV 5	0.026	0.029	1
47	584572.933	5440049.430	HV 6 -> TP 6	0.530*	-1.179*	2
77741	584849.722	5439541.918	HV 4 -> TP 4	2.623*	1.022*	2
77742	584571.170	5440047.796	HV 6 -> TP 6	2.332*	0.483*	2
2016998	566019.460	5440704.510	HV 5	0.232	0.137	1
2016999	576285.310	5444983.010	HV 5	0.003	0.042	1

>>>>> warning:

>>>>> 1 planimetric control point(s) not in the block

<<<<<

<<<<<

vertical control points

point-no.	z	code of point input -> used	rz	sds
1	9.142	HV 3	0.002	1
2	11.847	HV 5	-0.012	1
3	14.397	HV 4	-0.016	1
4	10.229	HV 6	0.003	1
5	9.516	HV 6	0.032	1
6	15.858	HV 4	0.053	1
7	26.949	HV 5	0.002	1
8	7.120	HV 7	-0.062	1
9	94.601	HV 5	0.045	1
10	2.291	HV 9	-0.002	1
11	1.941	HV 2	-0.019	1
12	3.901	HV 6	-0.011	1
13	8.168	HV 4	-0.026	1
14	6.722	HV 5	0.018	1
15	5.401	HV 5	-0.025	1
16	8.440	HV 3	-0.031	1
17	12.968	HV 3	0.036	1
18	11.696	HV 5	-0.012	1
19	10.725	HV 6	-0.034	1
20	16.308	HV 3	0.025	1
21	19.910	HV 6	0.021	1
22	12.993	HV 6	0.048	1
23	13.116	HV 6	-0.063	1
24	12.252	HV 6	-0.022	1
25	177.741	HV 6	0.055	1
26	255.423	HV 6	0.031	1
27	69.264	HV 6	0.009	1
28	95.080	HV 5	0.087	1
29	15.641	HV 3	0.027	1
31	167.492	HV 6	-0.122	1
32	509.531	HV 2	0.062	1
33	201.090	HV 3	-0.026	1
34	295.650	HV 2	-0.027	1
35	73.465	HV 6	0.001	1
36	167.376	HV 5	0.005	1
37	14.146	HV 2	-0.017	1
38	19.091	HV 3	0.004	1
39	13.591	HV 4	0.004	1
40	9.735	HV 2	-0.020	1
41	12.697	HV 3	0.003	1
42	12.253	HV 6	-0.061	1
43	18.072	HV 5	-0.018	1
47	581.325	HV 6 -> TP 6	2.731*	2
77741	510.888	HV 4 -> TP 4	-1.455*	2
77742	583.139	HV 6 -> TP 6	0.929*	2
2016998	3.733	HV 5	0.013	1
2016999	18.072	HV 5	0.040	1

>>>>> warning:

>>>>> 1 height control point(s) not in the block

<<<<<

<<<<<

END OF EXECUTION : 02-09-2016 12:52:24
PATB-NT END