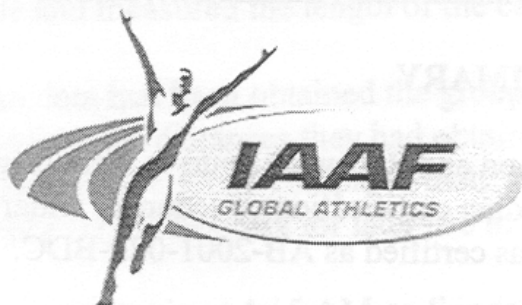


**FINAL REPORT OF THE MEASUREMENT  
of the  
EDMONTON 2001 WORLD CHAMPIONSHIPS  
MARATHON  
and  
RACE WALK COURSES**



The measurement team in Commonwealth Stadium. Left to right: Gerry Dragomir, Kelcey Stilwell, Pete Riegel, John McBean, Bernie Conway, Laurent Lacroix, John Jacobson, Marcel LaMontagne.



**FINAL REPORT OF THE MEASUREMENT  
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RACE WALK COURSES**

by Pete Riegel, IAAF Road Course Measurement Administrator, Americas

**SUMMARY**

The Edmonton 2001 World Championships Marathon and Racewalk courses were originally measured by John McBean. The marathon route was given Canadian certification of accuracy under the identification number AB-2001-010-BDC. The racewalk route was certified as AB-2001-023-BDC.

A group measurement of the courses was performed on May 26 and 27, 2001, under my supervision. Confirming my measurements were Bernie Conway, Canada's chief course certifier and IAAF "A" level measurer, and six other Canadian measurers.

The marathon course had a measured length of 42214 metres, and it was recommended that 19 metres be removed at the start.

The 4 km stadium-to-stadium portion of the racewalk course had a measured length of 3985 metres, and it was recommended that 15 metres be added at the start. The 2 km loop had a measured length of 1998 metres, and it was recommended that the turnaround be extended southward 1 metre, bringing the loop to the desired 2000 metres.

The course adjustments will be performed by John McBean and checked by Bernie Conway when he comes to Edmonton in August as official observer of the events.

**INTRODUCTION**

The 8th IAAF World Championships in Athletics will be held in Edmonton, Alberta, Canada, August 3-12, 2001. There will be five events held on the roads outside the stadium and around the city: Men's and Women's Marathon, Men's 20 km and 50 km racewalk, and Women's 20 km Racewalk. These events will be held on two courses - the marathon course and the walks course. As IAAF Road Race measurer, it was my responsibility to oversee the measurement of these courses.

After preliminary contacts with Edmonton 2001 organizers, the dates of May 26 and 27, 2001, were selected as the measurement days. Athletics Alberta arranged for a measurement seminar to be conducted concurrently with the measurement, assuring that the routes would receive multiple measurements.

## **MEASUREMENT PROCEDURE**

Day 1 - The measurement group met at 9 AM on Saturday, May 26, in a classroom in Commonwealth Stadium, the Games venue. After introductions and a brief overview of course measurement, the group affixed Jones/Oerth counters to their bicycles and moved outside. A calibration course estimated at about 400 metres was paced off, and nails installed in either end of the course. The measurers calibrated their bicycles, then moved to a reference point at the outside of the stadium access tunnel. From this point they measured the distances within the stadium, returning to the reference point. After recalibration they put the bicycles aside and measured the length of the calibration course.

When all stadium data had been obtained the group returned to the classroom, and measurers were instructed to calculate the distances they had obtained. The beginners were assisted by those measurers with some experience. The group compared their results, considering them preliminary. I asked for and received copies of everybody's data for later use in computer calculation.

Day 2 - The group met again at 4:15 AM on Sunday, May 27, and calibrated their bicycles. The police arrived at 5:00, and the group rode from the reference point outside the stadium around the course, stopping at previously-established 5 km points, and the halfway point. After recalibrating, the group measured the route of the racewalk. After the final calibration, the group again went to the classroom and calculated their measured values. Again data was collected for later computer calculation. This completed the data-gathering.

## **DISCUSSION OF DATA AND RESULTS**

Data and results of the group measurement may be seen in following pages. It is usual in discussing the results of group measurements to look for discrepancies and errors. Unfortunately for analysts, the results obtained showed such complete agreement, and so few anomalous values, that there is little material for discussion. Nevertheless, a few points may be made:

- The track had no curbing in place, and no inner line was painted. The measurement used the inner peripheral drain as a reference "curb" during the measurement. Measured lap lengths showed that the error produced by this was acceptably small.
- A few people made minor errors in choice of path along the route. I cut the corner at 95 Ave and 163 St, shortening this measurement by perhaps half a metre. Lacroix, Stilwell and LaMontagne rode a bit inside the line at the approach to the Groat Rd bridge, shortening their measurements by less than a metre. I got slightly off-course during the 4 km racewalk measurement, which I corrected with an offset maneuver. None of these minor errors was accounted for in subsequent calculation, as they were both minor and unquantified.
- Calibration results showed steady riding, even among the less-experienced.
- Close agreement was obtained on measurements of all course segments.
- All things considered, it was one of the best results of a group ride I have ever seen.



## CHOICE OF "OFFICIAL" LENGTHS

As IAAF measurer, it was my responsibility to establish the "official" lengths of the courses so that organizers would know what needed to be done. This is the part of the job that can lead to contention, as different people will use similar logic to arrive at differing results. I considered it desirable to present the Edmonton organizers with recommendations as early as possible, to permit them the maximum time to act on them.

The recommendations were made on Monday, May 28, after I completed the computer calculations in the Edmonton 2001 office. Recommendations were given verbally to Gary Tomick, and emailed and telephoned to John McBean, who will do the actual adjustments.

To make the final choice I graphed the results of the three course measurements, and determined by inspection that the most probable result lay within the span of the lowest four measurements, and I picked "official" distances that seemed to me to be reasonable. I have, in the past, employed various mathematical schemes to justify such choices, and have found none that agree exactly, and none that show a marked difference from simply inspecting the results.

Measurement results show that none of the "official" distances chosen was shown to be short of the nominal distance, by any measurer using any constant.

## THE SEMINAR

A seminar was held concurrently with the course measurements. Organized by John Jacobson of Athletics Alberta, it consisted of myself and seven Canadian measurers of varying levels of experience, including Jacobson himself, and Bernie Conway, Chief Course Certifier for Canada.

The seminar was quite informal, with the principal goal being to give the measurers as much hands-on experience as possible within the two available days and to provide them with copies of the Canadian course measurement manual for detailed study. Six of the eight measurers had previous experience, while Jacobson and Kelcey Stilwell were novices.

The students quickly grasped the fundamentals of proper riding. Later when data was being calculated, a small amount of one-on-one guidance in calculation helped them complete the first day. No such guidance was necessary on the second day, as they now had the calculation procedures clear in their minds.

The quality of the work, judging by the data obtained, was equal to that of the best group rides I have seen. There was no way to distinguish between the work of these relatively inexperienced measurers and that of



The class. Left to right, front row: Laurent Lacroix, Bernie Conway, Pete Riegel, Kelcey Stilwell. Back row: John McBean, John Jacobson, Marcel LaMontagne, Gerry Dragomir.

far more experienced people. As they have a viable certification system in Canada, I am hoping to see them take advantage of their newfound knowledge and confidence to produce certified courses.

All measurers were told that this report would be delayed for two weeks to permit them, if they so wished, to contribute individual reports of their own, to be appended to this report. Two measurers, Laurent Lacroix and Bernie Conway, sent contributions.

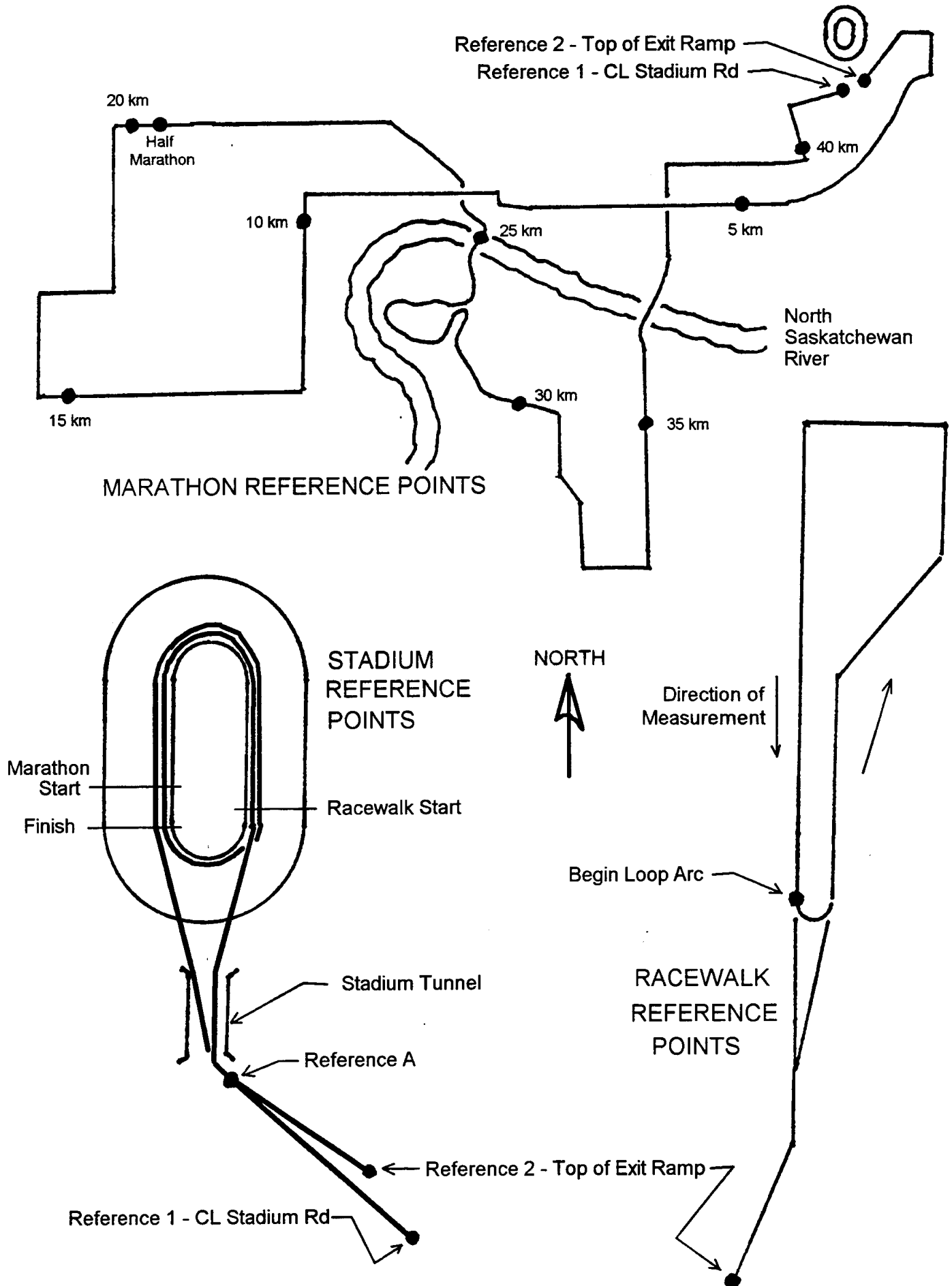
### **ACKNOWLEDGEMENTS AND THANKS**

This measurement and seminar was a privilege and a pleasure for me, as well as a thoroughly successful technical exercise. I would like to thank the following people for their help:

- Pierre Weiss and Sue Richardson of the IAAF office in Monte Carlo, who acceded to my request that I remain the course measurer, while Bernie Conway take on the responsibility of official observer at the Championships.
- Gary Tomick, Acting Director of Competition, Edmonton 2001, who was my main contact in Edmonton, and who oversaw the general organization of the effort. Gary also made a computer available to me on the day following the measurement, so that I was able to complete the calculations before returning home.
- John McBean, who provided us with an accurate course, in spite of being an inexperienced measurer. He followed the procedures, and they worked. John also procured for me an excellent bicycle to use, which I greatly appreciated.
- John Jacobson, Executive Director, Athletics Alberta, who organized the seminar. John also had one of the best measurements, in spite of riding with a sore knee.
- Laurent Lacroix, webmaster of the Canadian certification system, who has kept measurers abreast of our results. Laurent showed up with a large quantity of bicycle tools, which were a great help in getting us properly set up.
- Bernie Conway, Chief Certifier for Canada, who, by being there to offer support and advice, helped strengthen the bonds uniting the measurers of Canada.
- Tom Knight, US certifier, IAAF "A" measurer, and measurer of two Olympic marathon courses, who was kind enough to review my calculations and to show me several typographical errors.

A handwritten signature in black ink, reading "Pete Riegel". The signature is fluid and cursive, with a long horizontal stroke at the end.

# REFERENCE POINTS USED DURING THE MEASUREMENT



# WORLD CHAMPIONSHIPS MARATHON AND WALKS MEASUREMENT - May 26 & 27, 2001

Measurer	Abbreviation
Pete Riegel	PR
Laurent Lacroix	LL
Bernie Conway	BC
Kelcey Stilwell	KS
Gerry Dragomir	GD
John McBean	JM
Marcel LaMontagne	ML
John Jacobson	JJ

<p>This page contains only data, in the order taken. No calculations appear on this page.</p>
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## DAY 1 - Counter readings obtained by measurers

First calibration data - 5/26/01 - 11:30 - 22C - dry, sunny

	PR	LL	BC	KS	GD	JM	ML	JJ
	28400	15000	569000	936500	594000	778360	25220	16300
	32948.8	21642.5	575765	941565	598757	782897	30169	20915
	37497.8	28285.5	582531	946630		787434	35117.5	25532
	42046.5	34928	589296	951694	599000	791970	40066	30147
	46595.5	41569	596060	956757	603756	796507	45014.5	34762
					604000			
					608757			
					609000			
					613757			
Reference A - outside stadium	51300	48660	607000	966830	618900	801190	50130	46300
Walk Start	52226	50009.5	608377	967883	619870	802115	51139	47245
Marathon Start	55001	54063	612505	970972	622777	804885	54160.5	50061.5
Finish	55299	54497.5	612948	971304	623088	805184	54485.5	50364.5
Walk Start	56599	56401	614885	972761	624460	806483	55907	51685
Marathon Start	59372	60452.5	619011	975854	627365	809253	58929	54501
Finish	59669.5	60886.75	619454	976186	627677	809551	59253	54803.5
Reference A - outside stadium	60870	62636.25	621239.5	977589	628941	810753	60524	56026.5

Second calibration data - 5/26/01 - 12:13 - 22C - dry, sunny

65570	69550	628000	982791	634000	815380	65565	61000
70117	76190.5	634765	987853	638755	819916	70512.5	65614
74664.3	82833	641529	992917		824454	75460.5	70227
79211	89473.5	648292	997980	639000	828990	80409	74842
83758.3	96113.5	655055.5	1003042	643754	833525	85356.5	79456
				644000			
				648755			
				649000			
				653755			

Measurement of calibration course - 12:30 - dry, sunny

Calibration course was laid out on the west side of Stadium Road, adjacent to Commonwealth Stadium

PR, BC	13 X 30 metres plus 25.250 =	415.250
LL, JM, JJ	8 X 50 metres plus 15.249 =	415.249
KS, ML, GD	30 metre tape with mistaken endpoint, corrected later	415.300

Temperature, C =

**DAY 2 - Counter readings obtained by measurers**

This page contains only data,  
in the order taken. No calculations  
appear on this page.

First Calibration data - 5/27/01 - 04:12 - 13C - dry, dark

PR	LL	BC	KS	GD	JM	ML	JJ
8150	23500	674000	23141	806000	845084	3320	98000
12705	30140	680760	28217	810762	849627	8277.5	102618
17260	36778	687518	33292	815524	854172	13234	107236
21815.5	43416	694279	38367.5	820290	858717	18191	111853
26370.5	50055.25	701039.5	43442	825052	863263	23147	116471

Counter readings during measurement

Reference 1 - CL Stadium Road	28960	54071.5	705000	46330	827918	865930	26260	118500
Reference A - outside stadium	31217	57362.5	708346	48874	830275	868189	28725	120795.5
Reference A - outside stadium	31217	57362.5	708346	48874	830275	868189	28725	120800
Reference 2 - Top of Exit Ramp	33279	60360	711406.5	51189	832441	870246	30971	122896
Reference 2 - Top of Exit Ramp	38270	67189	718000	55106	837200	871310	36080	127000
5 km	85108	135453	787517	107304	886193	918046	87065	174481
10 km	140043	215508	869039	168498	943688	972879	146861	230171
15 km	194945	295491	950503	229630	1001093	1027651	206590	285816
20 km	249752	375348.5	1031839	290675	1058418	1082352	266232	341361
Half Marathon	261803	392906	1049728	304098	1071019	1094373	279346	353580
25 km	304624	455268	1113259	351790	1115798	1137096	325932	396986
30 km	359493	535190	1194671	412938.5	1173190	1191830	385645	452617
35 km	414359	615121	1276102	474065	1230576	1246572	445352	508240
40 km	469269	695116	1357591	535217	1288002	1301365	505115	563917
Reference 1 - CL Stadium Road	487466	721617	1384591	555484	1307031	1319521	524914	582366

Second Calibration data - 5/27/01 - 07:50 - 14C - dry, sunny

PR	LL	BC	KS	GD	JM	ML	JJ
90000	25620	389000	558600	314498	322253	27500	585000
94552	32250	395758	563670	319254	326794	32452.5	589616
99105	38882.75	402513	568742		331337	37405	594232
103658	45512	409267	573812	319400	335878	42357.5	598848
108210.5	52142.5	416022	578882	324157	340419	47310	603464

324185  
328942

329000  
333756

Reference 2 - Top of Exit Ramp	10800	56062.5	420000	581900	336636	363930	50350	606000
Reference 2 - Top of Exit Ramp	42117	101701.75	466485	616825.5	369402	395204	84458	637779
Begin Loop Arc	46930	9000	474000	622366	374600	400265	89810	642700
Begin Loop Arc	68852	40924.25	506516	646786	397515	422140	113664	664922

Third Calibration data - 5/27/01 - 08:57 - 16C - dry, sunny

PR	LL	BC	KS	GD	JM	ML	JJ
71160	44400	510000	649300	400000	424576	16120	667000
75711	51028.75	516752	654369	404755	429117	21071.5	671614
80262.5	57656.5	523504	659440		433658	26023	676228
84813.5	64284.75	530257	664510	404800	438199	30974.5	680842
89364	70913	537008.5	669580	409555	442740	35926	685454

409600  
414354

414400  
419154



# WORLD CHAMPIONSHIPS MARATHON AND WALKS MEASUREMENT - May 26 & 27, 2001

## CALCULATIONS OF MEASURED LENGTHS

### CALCULATION OF CALIBRATION COURSE LENGTH

PR, BC	13 X 30 metres plus 25.250 =	415.250
LL, JM, JJ	8 X 50 metres plus 15.249 =	415.249
KS, ML, GD	30 metre tape with mistaken endpoint, corrected later	415.300
Temperature, C =		24
Average of two best =		415.2495
Temperature correction =		0.01927
Corrected length =		415.2688

A length of 415.27 metres is used in subsequent calculations.

ALL CALCULATIONS USE AVERAGE CONSTANT AND  
INCLUDE 1.001 SHORT COURSE PREVENTION FACTOR

### DAY 1 - CALCULATION OF CONSTANTS

	PR	LL	BC	KS	GD	JM	ML	JJ
Precalibration	4548.8	6642.5	6765	5065	4757	4537	4949	4615
counts per ride	4549	6643	6766	5065	4756	4537	4948.5	4617
	4548.7	6642.5	6765	5064	4757	4536	4948.5	4615
	4549	6641	6764	5063	4755	4537	4948.5	4615
Average of 4	4548.875	6642.25	6765	5064.25	4756.25	4536.75	4948.625	4615.5
Precal constant, counts/m	10.96497	16.01101	16.3069	12.20727	11.46485	10.93574	11.92856	11.12557
Postcalibration	4547	6640.5	6765	5062	4755	4536	4947.5	4614
counts per ride	4547.3	6642.5	6764	5064	4754	4538	4948	4613
	4546.7	6640.5	6763	5063	4755	4536	4948.5	4615
	4547.3	6640	6763.5	5062	4755	4535	4947.5	4614
Average of 4	4547.075	6640.875	6763.875	5062.75	4754.75	4536.25	4947.875	4614
Postcal constant, counts/m	10.96063	16.0077	16.30418	12.20366	11.46123	10.93454	11.92675	11.12195
Average constant, counts/m	10.9628	16.00935	16.30554	12.20547	11.46304	10.93514	11.92766	11.12376
Change, counts/km	-4.3	-3.3	-2.7	-3.6	-3.6	-1.2	-1.8	-3.6
Change, parts per 10,000	-4.0	-2.1	-1.7	-3.0	-3.2	-1.1	-1.5	-3.3

### DAY 1 - MEASURED LENGTHS

Constant used	PR	LL	BC	KS	GD	JM	ML	JJ
Average constant, counts/m	10.9628	16.00935	16.30554	12.20547	11.46304	10.93514	11.92766	11.12376
Reference A - outside stadium								
Walk Start	84.47	84.29	84.45	86.27	84.62	84.59	84.59	84.95
Marathon Start	253.13	253.20	253.17	253.08	253.60	253.31	253.32	253.20
Finish	27.18	27.14	27.17	27.20	27.13	27.34	27.25	27.24
Walk Start	118.58	118.90	118.79	119.37	119.69	118.79	119.18	118.71
Marathon Start	252.95	253.07	253.04	253.41	253.42	253.31	253.36	253.15
Finish	27.14	27.12	27.17	27.20	27.22	27.25	27.16	27.19
Reference A - outside stadium	109.51	109.28	109.50	114.95	110.27	109.92	106.56	109.94

### SUMMARY OF DAY 1

	PR	LL	BC	KS	GD	JM	ML	JJ
Marathon start to Reference A	535.36	535.52	535.68	542.13	537.73	536.62	533.51	536.24
Racewalk start to Reference A	389.59	389.48	389.71	395.56	390.91	390.48	387.08	390.29
Reference A to Finish	364.78	364.63	364.78	366.56	365.35	365.24	365.16	365.39
One Lap (Finish to Finish)	398.67	399.09	399.01	399.98	400.33	399.35	399.70	399.06

DAY 2 - CALCULATION OF CONSTANTS								
	PR	LL	BC	KS	GD	JM	ML	JJ
First calibration	4555	6640	6760	5076	4762	4543	4957.5	4618
counts per ride	4555	6638	6758	5075	4762	4545	4956.5	4618
	4555.5	6638	6761	5075.5	4766	4545	4957	4617
	4555	6639.25	6760.5	5074.5	4762	4546	4956	4618
Average of 4	4555.125	6638.813	6759.875	5075.25	4763	4544.75	4956.75	4617.75
First cal constant, counts/m	10.98004	16.00272	16.29454	12.23379	11.48112	10.95503	11.94815	11.13099
Second calibration	4552	6630	6758	5070	4756	4541	4952.5	4616
counts per ride	4553	6632.75	6755	5072	4757	4543	4952.5	4616
	4553	6629.25	6754	5070	4757	4541	4952.5	4616
	4552.5	6630.5	6755	5070	4756	4541	4952.5	4616
Average of 4	4552.625	6630.625	6755.5	5070.5	4756.5	4541.5	4952.5	4616
Second cal constant, counts/m	10.97401	15.98299	16.284	12.22234	11.46545	10.94719	11.9379	11.12678
Third calibration	4551	6628.75	6752	5069	4755	4541	4951.5	4614
counts per ride	4551.5	6627.75	6752	5071	4755	4541	4951.5	4614
	4551	6628.25	6753	5070	4754	4541	4951.5	4614
	4550.5	6628.25	6751.5	5070	4754	4541	4951.5	4612
Average of 4	4551	6628.25	6752.125	5070	4754.5	4541	4951.5	4613.5
Third cal constant, counts/m	10.97009	15.97726	16.27586	12.22113	11.46063	10.94599	11.93549	11.12075
Average of 1 & 2, counts/m	10.97702	15.99286	16.28927	12.22806	11.47328	10.95111	11.94302	11.12888
Change, counts/km	-6.0	-19.7	-10.5	-11.4	-15.7	-7.8	-10.2	-4.2
Change, parts per 10,000	-5.5	-12.3	-6.5	-9.4	-13.7	-7.2	-8.6	-3.8
Average of 2 & 3, counts/m	10.97205	15.98013	16.27993	12.22174	11.46304	10.94659	11.9367	11.12376
Change, counts/km	-3.9	-5.7	-8.1	-1.2	-4.8	-1.2	-2.4	-6.0
Change, parts per 10,000	-3.6	-3.6	-5.0	-1.0	-4.2	-1.1	-2.0	-5.4

DAY 2 - MEASURED LENGTHS - STADIUM AND MARATHON ROUTE								
Constant used	PR	LL	BC	KS	GD	JM	ML	JJ
Average of 1 & 2, counts/m	10.97702	15.99286	16.28927	12.22806	11.47328	10.95111	11.94302	11.12888
Reference 1 - CL Stadium Road								
Reference A - outside stadium	205.61	205.78	205.41	208.05	205.43	206.28	206.40	206.27
Reference A - outside stadium								
Reference 2 - Top of Exit Ramp	187.85	187.43	187.88	189.32	188.79	187.83	188.06	188.34
Reference 2 - Top of Exit Ramp								
5 km	4266.91	4268.41	4267.66	4268.71	4270.18	4267.69	4269.02	4266.47
10 km	5004.54	5005.67	5004.64	5004.39	5011.21	5007.07	5006.77	5004.10
15 km	5001.54	5001.17	5001.08	4999.32	5003.36	5001.50	5001.16	5000.05
20 km	4992.88	4993.32	4993.23	4992.21	4996.39	4995.02	4993.88	4991.07
Half Marathon	1097.84	1097.83	1098.21	1097.72	1098.29	1097.70	1098.05	1097.95
25 km	3900.97	3899.37	3900.17	3900.21	3902.89	3901.25	3900.69	3900.30
30 km	4998.53	4997.36	4997.89	5000.67	5002.23	4998.03	4999.82	4998.79
35 km	4998.26	4997.92	4999.06	4998.87	5001.71	4998.76	4999.32	4998.08
40 km	5002.27	5001.92	5002.62	5000.96	5005.19	5003.42	5004.01	5002.93
Reference 1 - CL Stadium Road	1657.74	1657.05	1657.53	1657.42	1658.55	1657.91	1657.79	1657.76

**DAY 2 - RACEWALK LOOPS**

Constant used	PR	LL	BC	KS	GD	JM	ML	JJ
Average of 2 & 3, counts/m	10.97205	15.98013	16.27993	12.22174	11.46304	10.94659	11.9367	11.12376
Reference 2 - Top of Exit Ramp								
Reference 2 - Top of Exit Ramp	2854.25	2856.00	2855.36	2857.65	2858.40	2856.96	2857.41	2856.86
Begin Loop Arc								
Begin Loop Arc	1997.99	1997.75	1997.31	1998.08	1999.03	1998.34	1998.38	1997.71

**SUMMARY OF MARATHON MEASUREMENTS**

	PR	LL	BC	KS	GD	JM	ML	JJ	Shortest Split
Marathon Start									
Reference A - outside stadium	535.36	535.52	535.68	542.13	537.73	536.62	533.51	536.24	533.51
Reference A - outside stadium									
Reference 2 - Top of Exit Ramp	187.85	187.43	187.88	189.32	188.79	187.83	188.06	188.34	187.43
Reference 2 - Top of Exit Ramp									
5 km	4266.91	4268.41	4267.66	4268.71	4270.18	4267.69	4269.02	4266.47	4266.47
10 km	5004.54	5005.67	5004.64	5004.39	5011.21	5007.07	5006.77	5004.10	5004.10
15 km	5001.54	5001.17	5001.08	4999.32	5003.36	5001.50	5001.16	5000.05	4999.32
20 km	4992.88	4993.32	4993.23	4992.21	4996.39	4995.02	4993.88	4991.07	4991.07
Half Marathon	1097.84	1097.83	1098.21	1097.72	1098.29	1097.70	1098.05	1097.95	1097.70
25 km	3900.97	3899.37	3900.17	3900.21	3902.89	3901.25	3900.69	3900.30	3899.37
30 km	4998.53	4997.36	4997.89	5000.67	5002.23	4998.03	4999.82	4998.79	4997.36
35 km	4998.26	4997.92	4999.06	4998.87	5001.71	4998.76	4999.32	4998.08	4997.92
40 km	5002.27	5001.92	5002.62	5000.96	5005.19	5003.42	5004.01	5002.93	5000.96
Reference 1 - CL Stadium Road	1657.74	1657.05	1657.53	1657.42	1658.55	1657.91	1657.79	1657.76	1657.05
Reference 1 - CL Stadium Road									
Reference A - outside stadium	205.61	205.78	205.41	208.05	205.43	206.28	206.40	206.27	205.41
Reference A - outside stadium									
Finish	364.78	364.63	364.78	366.56	365.35	365.24	365.16	365.39	364.63
Totals	42215.07	42213.37	42215.85	42226.52	42247.31	42224.33	42223.63	42213.72	42202.27

**SUMMARY OF RACEWALK MEASUREMENTS****Stadium-to-Stadium**

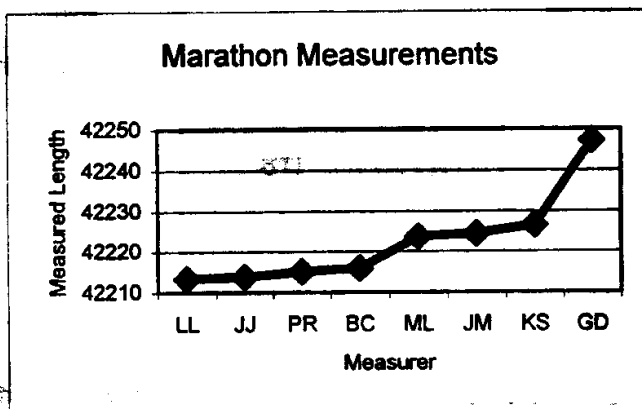
	PR	LL	BC	KS	GD	JM	ML	JJ
Walk Start								
Reference A - outside stadium	389.59	389.48	389.71	395.56	390.91	390.48	387.08	390.29
Reference 2 - Top of Exit Ramp	187.85	187.43	187.88	189.32	188.79	187.83	188.06	188.34
Reference 2 - Top of Exit Ramp	2854.25	2856.00	2855.36	2857.65	2858.40	2856.96	2857.41	2856.86
Reference A - outside stadium	187.85	187.43	187.88	189.32	188.79	187.83	188.06	188.34
Finish	364.78	364.63	364.78	366.56	365.35	365.24	365.16	365.39
Totals	3984.31	3984.96	3985.62	3998.41	3992.23	3988.36	3985.77	3989.21
2 kilometre loop:								
	PR	LL	BC	KS	GD	JM	ML	JJ
Begin Loop Arc								
Begin Loop Arc	1997.99	1997.75	1997.31	1998.08	1999.03	1998.34	1998.38	1997.71

# WORLD CHAMPIONSHIPS MARATHON AND WALKS MEASUREMENT - May 26 & 27, 200

## RECOMMENDATIONS FOR COURSE ADJUSTMENTS

### MARATHON RECOMMENDATION:

Measurer	Length
LL	42213.37
JJ	42213.72
PR	42215.07
BC	42215.85
ML	42223.63
JM	42224.33
KS	42226.52
GD	42247.31



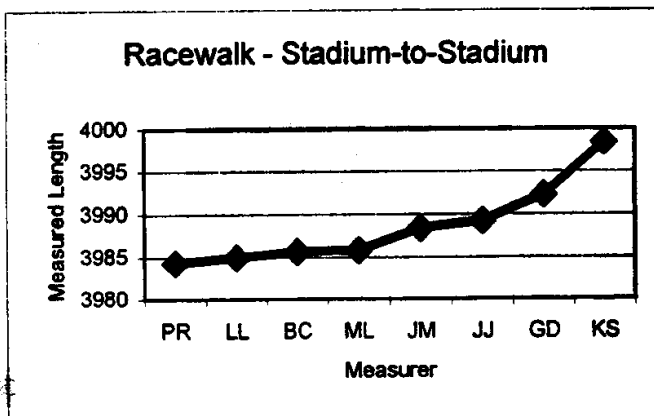
Use 42214 metres as official

Recommendation: Remove 19 metres from the course at the start.

### RACEWALK RECOMMENDATIONS:

#### Stadium-to-Stadium:

PR	3984.31
LL	3984.96
BC	3985.62
ML	3985.77
JM	3988.36
JJ	3989.21
GD	3992.23
KS	3998.41

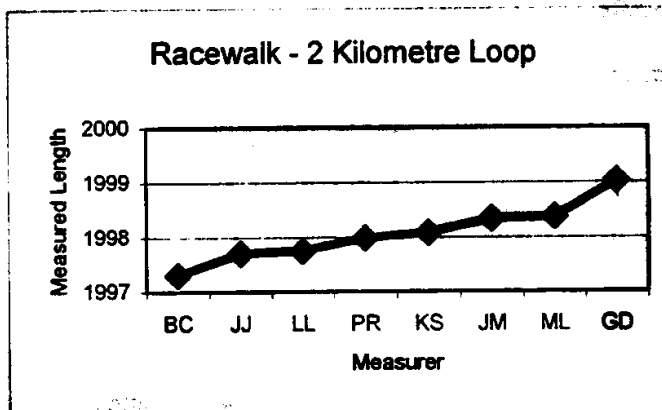


Use 3985 metres as official

Add 15 metres to the course at the start.

#### 2 Kilometre Loop:

BC	1997.31
JJ	1997.71
LL	1997.75
PR	1997.99
KS	1998.08
JM	1998.34
ML	1998.38
GD	1999.03



Use 1998 metres as official

Move turnaround south 1.0 m

# WORLD CHAMPIONSHIPS MARATHON AND WALKS MEASUREMENT - May 26 & 27, 2001

## RECOMMENDATIONS FOR ADJUSTMENTS TO INTERMEDIATE POINTS

John Jacobson had the measurement lying closest to the recommended values.  
It is used here to calculate the following recommended adjustments to the intermediate splits.

	Interval As Measured	Interval after removing 18.72 m at start	Cumulative Distance	Desired Distance	Adjust toward Finish
Marathon Start			0	0	0
Reference A - outside stadium	536.24	517.52	517.52		
Reference 2 - Top of Exit Ramp	188.34	188.34	705.86		
5 km	4266.47	4266.47	4972.32	5000	27.7
10 km	5004.10	5004.10	9976.42	10000	23.6
15 km	5000.05	5000.05	14976.47	15000	23.5
20 km	4991.07	4991.07	19967.54	20000	32.5
Half Marathon	1097.95	1097.95	21065.49	21097.5	32.0
25 km	3900.30	3900.30	24965.79	25000	34.2
30 km	4998.79	4998.79	29964.59	30000	35.4
35 km	4998.08	4998.08	34962.66	35000	37.3
40 km	5002.93	5002.93	39965.59	40000	34.4
Reference 1 - CL Stadium Road	1657.76	1657.76	41623.35		
Reference A - outside stadium	206.27	206.27	41829.61		
Finish	365.39	365.39	42195.00	42195	0
Totals	42213.72	42195			



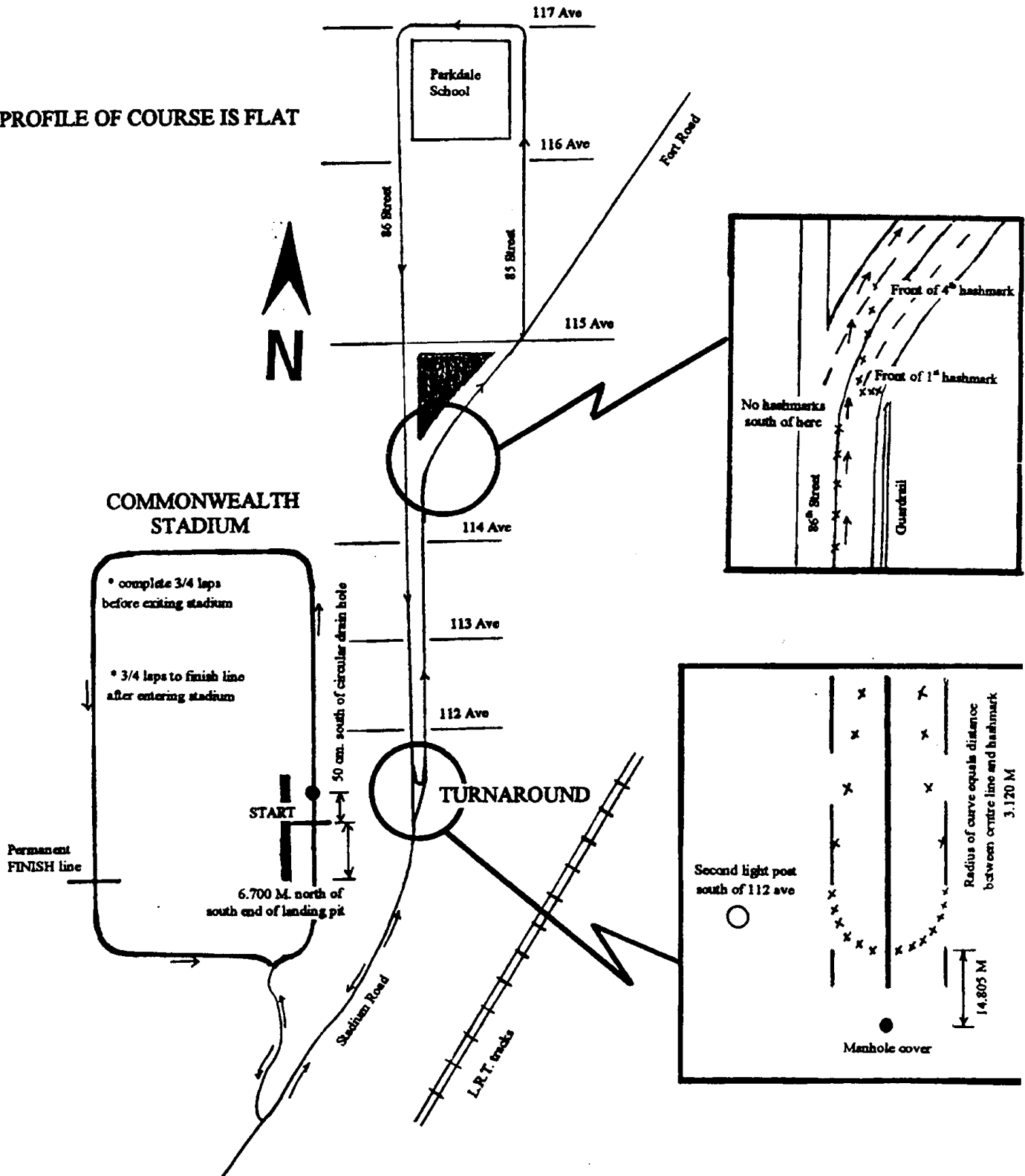


**Guidelines:**

1. Cones are placed on the centre line of Stadium Road and 86 Street
2. Racers must keep to the right of the cones
3. The best line is measured 30 cm. from the curb on left turns

RACEWALK COURSE  
AS MEASURED  
CANADIAN CERTIFICATION  
AB-2001-023-BDC

PROFILE OF COURSE IS FLAT



# **2001 World Championships Validation**

**May 26 and 27, 2001**

Supplemental Report by Laurent Lacroix
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- I. Participants
- II. Calibration Course Measurement
- III. Stadium Measurements
- IV. Marathon Measurement
- V. Effect of Temperature Variation and Riding Errors on the Marathon Measurement
- VI. Adjustments for Temperature Variation and Errors to the Marathon Measurement
- VII. Race Walk Measurement
- VIII. Adjustments to the Race Walk Measurements
- IX. Recommendations for the Marathon and Race Walk Courses
- X. Cable-Driven Counters
- XI. A Word of Thanks

## **I. The team consisted of:**

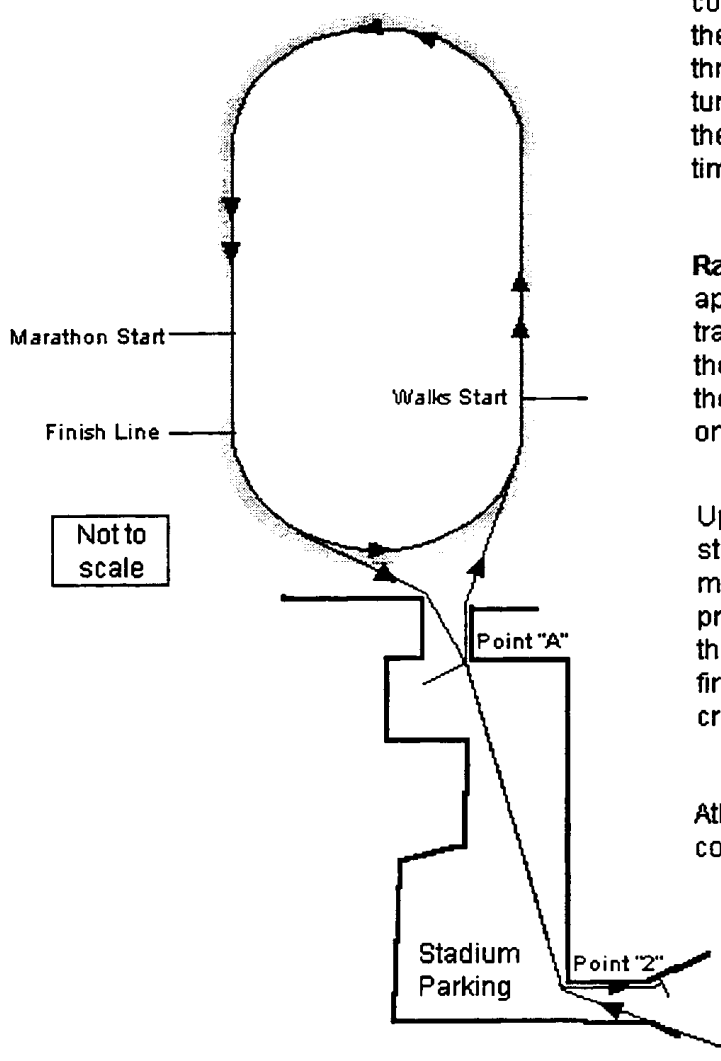
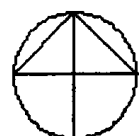
Pete Riegel (PR), Columbus, Ohio – IAAF/AIMS Measurement Administrator for the Americas  
Laurent Lacroix (LL), Winnipeg, Manitoba – IAAF/AIMS Grade B measurer  
Bernie Conway (BC), London, Ontario – IAAF/AIMS Grade A measurer and Canada's Chief Certifier  
Kelcey Stilwell (KS), Edmonton – Novice measurer  
Gerry Dragomir (GD), Vancouver, British Columbia – Measurer with a year of experience and 3 certified courses to his credit.  
John McBean (JM), Edmonton, Alberta – IAAF/AIMS Grade C measurer, measurer of the Worlds courses and lead measurer for the validation rides.  
Marcel LaMontagne (ML), Calgary, Alberta – Measurer with a few years experience and one certified course to his credit.  
John Jacobson (JJ), Edmonton – Novice measurer

## **II. Calibration Course Measurement**

The calibration course was situated on Stadium Road, adjacent to Commonwealth Stadium where the walks and marathon courses start and finish. Barricades and traffic cones were provided by the city of Edmonton so that we were able to close off one full lane for measurement of the calibration course and the calibrations. Pete opted to use the west end of John McBean's 300 m calibration course and placed a nail east of the other end. Three teams measured the distance and obtained the following results: Team 1 (PR, BC): 415.250 m; Team 2 (JM, LL): 415.249 m; Team 3 (KC, JJ, GD): 415.300 m. To their credit, Team 3, who by their estimate was a couple of metres out at the 300 m mark, completed the measurement. Upon comparison of their "30 m" tape to my 50 m tape realized that they had measured 100 foot lengths rather than 30 metre lengths. Their measurement was salvaged once the source of their error was discovered. After temperature corrections at 24 degrees C., the calibration course distance was set at 415.27 m.

## **III. Stadium Measurements**

Resurfacing of the track was commencing the weekend of the validation ride. The track surface was smooth asphalt at the time, though we had to contend with three obstacles: two hoses and a palette of bricks. One rider, KS, wiped out the first time she attempted to ride over a hose, fortunately she was unhurt by the ordeal. The workers didn't know why we were there and weren't exactly ecstatic about having a group of riders on the track. We did eventually complete the ride and the foreman, who knew about our task but wasn't on hand for the measurement, apologized profusely upon his arrival.



**Marathon:** Athletes complete one full lap of the track and exit through the stadium tunnel after they pass the finish line a second time.

**Race walks:** Athletes approx 3/4 of a lap of the track and exit through the stadium tunnel after they pass the finish line once.

Upon entering the stadium, athletes for the marathon and the walks proceed immediately to the back stretch and finish the first time they cross the finish line.

Athletes always proceed counter clockwise.

**Stadium Measurement (May 26, 2001):** Measurers started at Point A and took readings at the walk start, the marathon start, and the finish; completed a lap at the walk start, taking a reading there, and took readings at the marathon start and finish a second time as well. After taking the second reading at the finish, measurers rode to Point A and took a reading there.

**Stadium Parking Measurement (May 27, 2001):** Measurers rode from Point 1 to Point A, and Point A to Point 2. It was necessary to perform this before cars would be parked in the lot, and so it was done just prior to the measurement of the marathon.

The section of the route that traverses the stadium parking lot goes through the tunnel. This was measured immediately after the pre-calibration on May 27 to avoid having to ride around the cars that would be parked there later in the day. Use of the first calibration would more accurately represent the true distance of this segment, but the difference is minimal.

### Summary of Marathon Stadium Measurements

	PR	LL	BC	KS	GD	JM	ML	JJ
Start to Point A	535.36	535.52	535.68	542.13	537.73	536.62	533.51	536.24
Point A to Finish	364.78	364.63	364.78	366.56	365.35	365.24	365.16	365.39
Total	900.13	900.15	900.46	908.69	903.08	901.86	898.67	901.63

### **Total of Stadium Parking Lot Lengths**

	PR	LL	BC	KS	GD	JM	ML	JJ
Based on pre-calibration (m)	393.350	392.964	393.169	397.18	393.95	393.974	394.29	394.53
Based on average (m)	393.458	393.207	393.30	397.36	394.22	394.12	394.46	394.60
Difference (m)	0.108	0.242	0.127	0.186	0.269	0.141	0.169	0.075

### **IV. Measurement of the Marathon Course**

The riders were placed in the following order in the measurement peloton:

JM, PR, GD, BC, KS, LL, JJ, ML

Each rider was instructed to follow the SPR and not exceed a distance from 30 cm from the curb. Measurers used their best judgement in following the SPR and did not blindly follow the leader. A police escort of four vehicles stopped traffic as we approached intersections, so we only needed to stop at every 5 km and the halfway point, whose locations had been established by JM on previous measurements. The blue line indicating the marathon route was already in place and it approximated the SPR, though not reliably enough to be followed by the measurers. The Edmonton Police did a superb job, making this the smoothest and most efficient marathon measurement in which I have ever ridden.

### **Total Length of the Marathon Course in Metres**

	PR	LL	BC	KS	GD	JM	ML	JJ
Point 2 to Point 1	40921.47	40920.02	40922.09	40920.46	40950.01	40928.36	40930.50	40917.49
Stadium Parking Lot (cal avg)	393.458	393.207	393.2957	397.365	394.22	394.115	394.456	394.604
Stadium	900.13	900.15	900.46	908.69	903.08	901.86	898.67	901.63
Total	42215.06	42213.37	42215.85	42226.52	42247.31	42224.34	42223.62	42213.72

### **V. Effect of Temperature Variation and Errors**

Pre-calibration was under way by 4:10 am on May 27<sup>th</sup>. Fortunately, ground temperature readings varied minimally considering the amount of riding time - from a dark 12.5 degrees C. at the start of the pre-calibration to a sunny 14 degrees C. at the end of the post-calibration. The marathon measurement began at 5:08 am, with sunrise occurring at 5:18, according to Environment Canada. Before beginning the marathon measurement, we measured the route through the stadium parking lot before it was filled with parked cars. The values used in Pete's calculations use the average constant, but it makes more sense to use the largest constant for these as it occurred immediately after the pre-calibration. The distance through the stadium parking lot is approximately 393 metres, and using the average constant rather than the largest results in a course that is shorter by about 16.5 cm on average. John Jacobson's measurement of this section was the least affected with a difference of only 7.5 cm.

I was rather disappointed in the performance of the Specialized Fat Boy tire that I used for the measurement. The slick 1.25-inch mtb tire holds 100 psi and handles well. Unfortunately it expanded far more than most other tires over such a small temperature variance. BC used my extra wheel, equipped with a 1 inch Ritchey Tom Slick mtb tire. This tire also holds 100 psi but expanded significantly less than mine. Even though expansion varied greatly between tires, use of the average constant puts our results fairly close together,

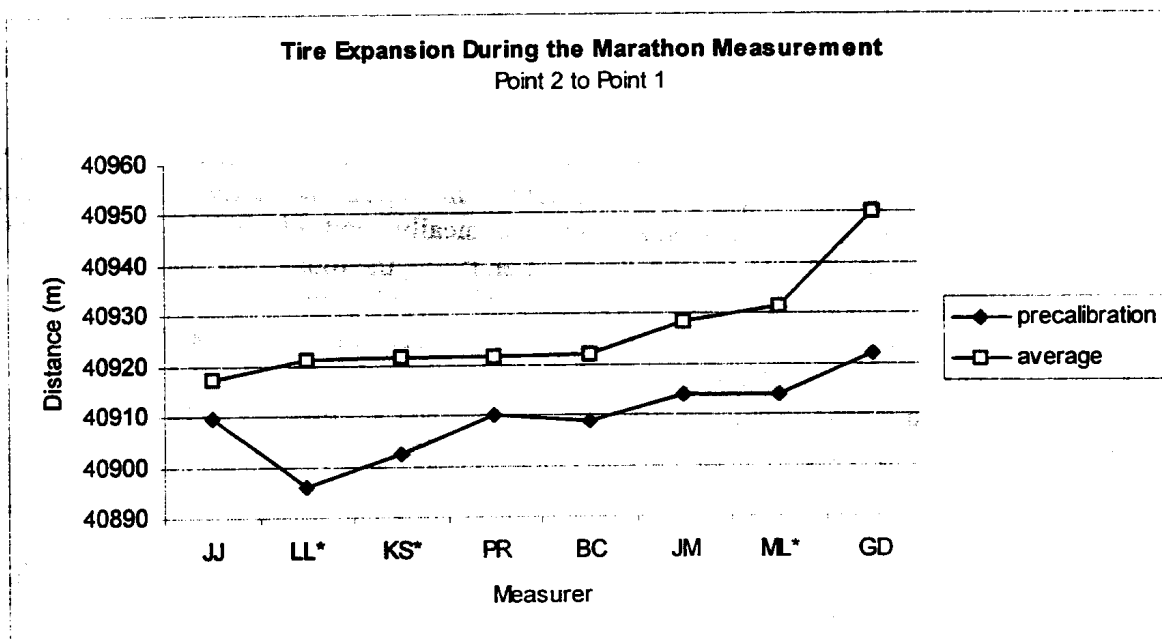


Change in Counts from Pre-calibration to Post-calibration								
	PR	LL	BC	KS	GD	JM	ML	JJ
First cal constant, counts/m	10.98004	16.00272	16.29454	12.23379	11.48112	10.95503	11.94815	11.13099
Second cal constant, counts/m	10.97401	15.98299	16.284	12.22234	11.46545	10.94719	11.9379	11.12678
Average of 1 & 2, counts/m	10.97702	15.99286	16.28927	12.22806	11.47328	10.95111	11.94302	11.12888
Change, counts/km	-6.0	-19.7	-10.5	-11.4	-15.7	-7.8	-10.2	-4.2
Change, parts per 10,000	-5.5	-12.3	-6.5	-9.4	-13.7	-7.2	-8.6	-3.8

Length of the Portion of the Course Affected by the Calibration Change on Day 2

	JJ	LL*	KS*	PR	BC	JM	ML*	GD
Pre-calibration	40909.748	40895.788	40902.307	40910.233	40908.857	40913.717	40913.945	40922.053
Average	40917.505	40921.021	40921.473	40921.451	40922.092	40928.363	40931.484	40950.016

\* Adjusted for Groat Rd. Error, 1 metre added. See below.

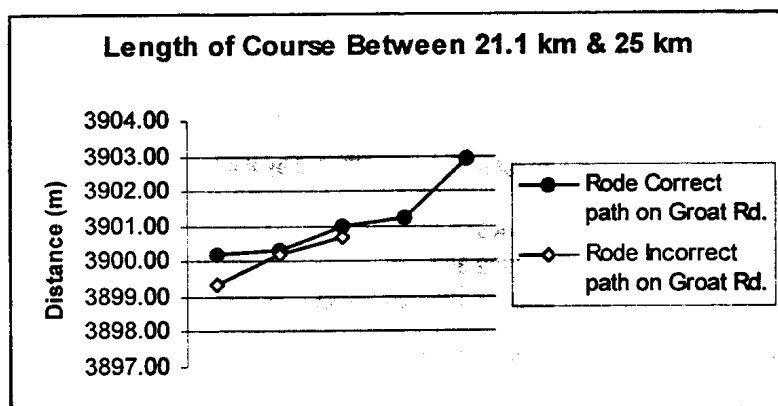


\*Adjusted for Groat Rd. Error, 1 metre added. See below.

**Noteworthy Errors:** Aside from small deviations from the SPR that I noticed among those ahead of me, from which I was not immune, there were two incidents of rider error worth reporting. The first occurred when an officer in the police escort chastised JJ for not riding single file. He tried to explain that he was merely following the SPR, and that everyone else was riding the incorrect line; his attempt didn't go over too well. It later became evident that though this was JJ's first measurement, his knowledge of the route and of Edmonton's streets combined with a good riding technique and close adherence to the SPR resulted in an excellent measurement. JJ came up with a distance that was slightly ahead of the experienced measurers' who were less familiar with the course. The second incident occurred when LL, KS, and ML rode to the inside of the cone placement on the curve at the bottom of the Groat Road hill, on the approach to the bridge, between the half way point and the 25 km mark. When I realized that I had chosen the wrong line on my approach, I maintained the distance I had already cut rather than pursuing the shortest path on the paved shoulder or rather swerving back to the designated route. I estimate, based on the other measurers' recorded distance for this split, that the three riders cut 80 to 100 cm from the course, which would make my measured distance slightly longer than JJ's. The overall effect of the error to the measurement is minimal. It is interesting to note that KS's measurement on Day 2 was in close agreement with JJ, LL, PR and BC, while the sum of her stadium and parking lot measurements added 12 metres of separation to these measurers.

### Distance from 21.1 km to 25 km, Where Groat Rd. Error Occurred

	LL	BC	KS	JJ	ML	PR	JM	GD
Distance (m)	3899.37	3900.17	3900.21	3900.30	3900.69	3900.97	3901.25	3902.89

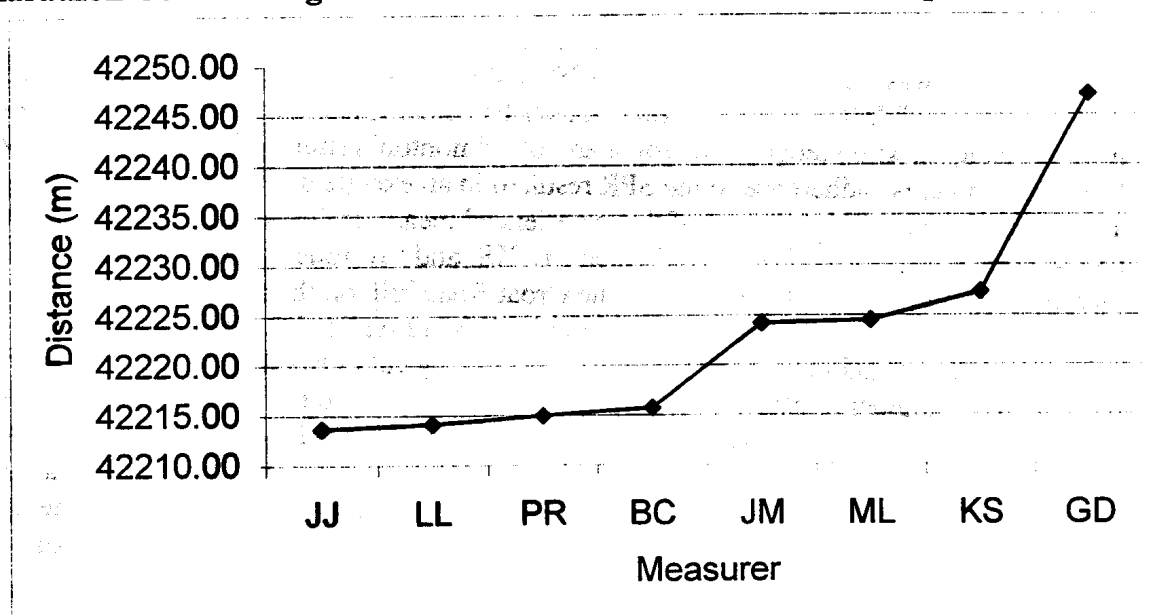


### VI. Adjustments for Temperature Variation and Errors

The measurement went very smoothly, with errors and temperature variations having very little impact on the Marathon measurement. JJ's data is the logical choice for use in establishing the location of the finish line because a) he had a technically good ride, b) he was familiar with the course, c) he did not make any major errors when riding the route, d) he had a small calibration change, and e) his measured distance was the smallest and would result in the least amount of shortening to the course. The only differences between my calculations and Pete's is that I opt to use the pre-calibration numbers for the parking lot segments, resulting in a course that is shorter by 7 cm; I round off to the nearest cm rather than the nearest metre. The result is that I recommend shortening the course by 35 cm less than Pete does.

	JJ	LL	PR	BC	JM	ML	KS	GD
Point 2 to Point 1	40917.49	40921.02	40921.47	40922.09	40928.36	40931.50	40921.46	40950.01
Parking Lot (precal)	394.52915	392.96435	393.35012	393.16851	393.97427	394.28698	397.17863	393.95111
Stadium	901.63	900.15	900.13	900.46	901.86	898.67	908.69	903.08
Total	42213.65	42214.13	42214.95	42215.72	42224.20	42224.45	42227.33	42247.04

### Marathon Course Length After Corrections for Errors and Temperature Variation



## **VII. Measurement of the Race Walk Course**

The race walk course starts and finishes on the stadium track, with athletes exiting the stadium before completing a full lap of the track. The course outside the stadium is comprised of a four km loop, which includes a two km closed loop. Stadium and stadium parking lot measurements were done as described above. The four km loop was measured as an out-and-back course from Point 2, followed by the measurement of the two km closed loop.

### **Length in Metres of 4 km Loop Before Adjustments**

	PR	LL	BC	KS	GD	JM	ML	JJ
Start to point A	389.59	389.48	389.71	395.56	390.91	390.48	387.08	390.29
Point A to Point 2	187.85	187.43	187.88	189.32	188.79	187.83	188.06	188.34
Point 2 to Point 2	2854.25	2856.00	2855.36	2857.65	2858.40	2856.96	2857.41	2856.86
Point 2 to Point A	187.85	187.43	187.88	189.32	188.79	187.83	188.06	188.34
Point A to Finish Lin	364.78	364.63	364.78	366.56	365.35	365.24	365.16	365.39
Total	3984.31	3984.96	3985.62	3998.41	3992.23	3988.36	3985.77	3989.21

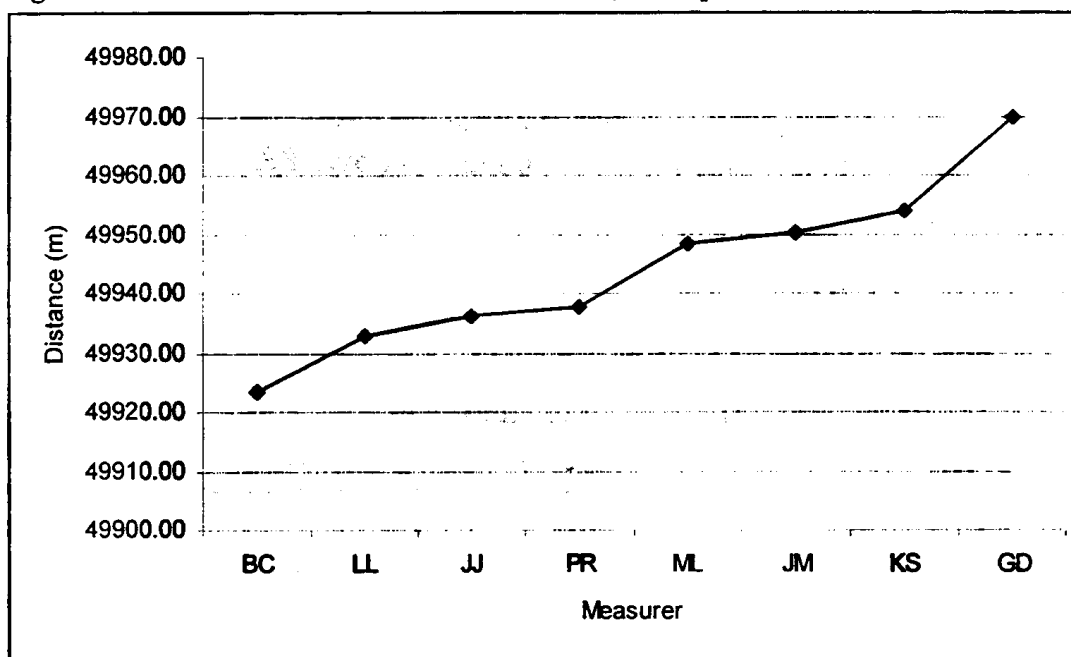
### **Length in Metres of 2 km Closed Loop**

PR	LL	BC	KS	GD	JM	ML	JJ
1997.99	1997.75	1997.31	1998.08	1999.03	1998.34	1998.38	1997.71

### **Length in Metres of the 50 km Race Walk Course, Extrapolated from Measurement Data**

	BC	LL	JJ	PR	ML	JM	KS	GD
4 km loop	3985.50	3984.73	3989.14	3984.21	3985.61	3988.23	3998.23	3991.98
2 km loop	1997.31	1997.75	1997.71	1997.99	1998.38	1998.34	1998.08	1999.03
Number of laps	23	23	23	23	23	23	23	23
Total for 2 km loo	45938.03685	45948.2	45947.22	45953.7	45962.633	45961.79	45955.83	45977.8
Total distance	49923.54	49932.91	49936.37	49937.87	49948.24	49950.02	49954.06	49969.76

### **Length in Metres of the 50 km Race Walk Course, Extrapolated from Measurement Data**



## **VIII. Adjustments for Temperature Variation**

As with the Stadium parking lot segment of the marathon course, the pre-calibration would yield a more accurate distance than use of the average calibration. The difference is so small, however, that it's akin to splitting hairs. There was little variation in temperature between pre-calibration and post-calibration of the race walk loops.

### **Length of 4 km Race Walk Loop Using Average and Pre-Calibration for the Parking Lot Segment**

	PR	LL	BC	KS	GD	JM	ML	JJ
Average	3984.31	3984.96	3985.62	3998.41	3992.23	3988.36	3985.77	3989.21
Pre-calibration	3984.21	3984.73	3985.50	3998.23	3991.98	3988.23	3985.61	3989.14

## **IX. Recommendations**

**Marathon** - John McBean used the largest constant rather than the average constant during the original layout of the marathon course. I concur with Pete's recommendation that John Jacobson's data be used to establish the marathon distance since it is the "best" measurement when the Groat Rd. error is taken into account. Three experienced measurers, including the official validator, were in close agreement (within 1.35 metres) with his results.  
 $42213.65 - 42195 = 18.65$  m.

Shorten course by 18.65 m by moving the marathon start line toward the finish.

**Race Walk 4 km Loop** – This course needs to be lengthened.  
 $4000 \text{ m} - 3984.31 \text{ m} = 15.69 \text{ m}$ . Move Start line 15.69 m away from finish line.

**Race Walk 2 km Closed Loop** – Lengthen the course by adjusting the centre of the radius at the turn-around by 1.16 m (rather than Pete's 1.00 m) toward the southwest. This has the effect of adding 7.36 m to the 50 km course and 2.56 m to the 20 km course over PR's data.

I preferred to err on the side of a slightly long course because even small adjustments or errors are multiplied several times over on a race walk course. Pete chose an adjustment of one metre on the 2 km loop, adding two metres per lap. I chose an adjustment that was between BC's and PR's result for the measurement of the 2 km closed loop: 1.16 m. or 2.32 m. per lap.

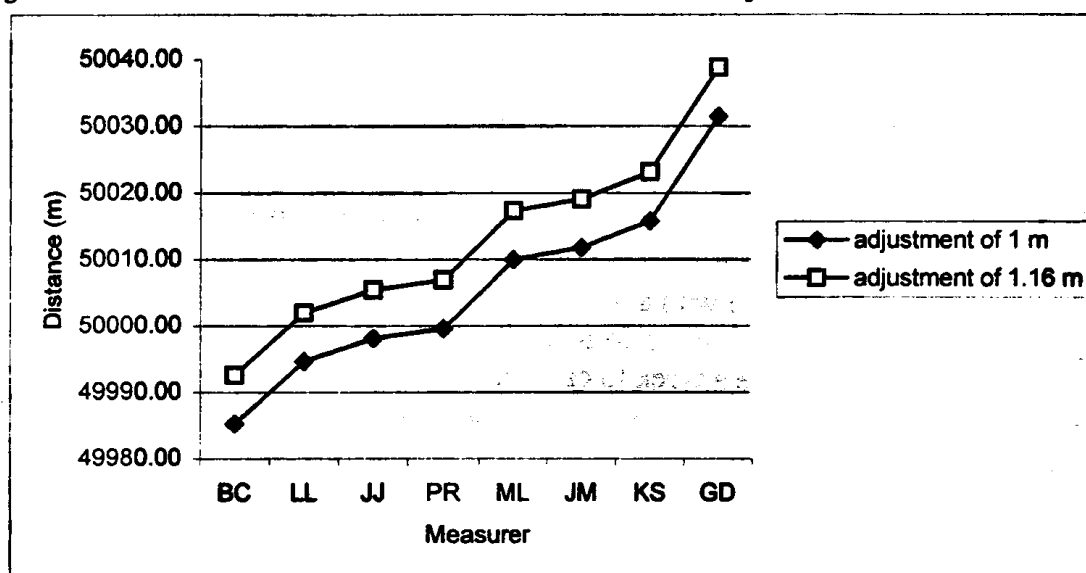
$20000 \text{ m} - 4000 \text{ m} = 16000 \text{ m}$   
 $16000 \text{ m} / 2000 \text{ m per lap} = 8$  laps of the closed loop course.  
 $8 (2 \times 0.32 \text{ m}) = 2.26 \text{ m}$  added for the 20 km walk over PR's measurement.

$50000 \text{ m} - 4000 \text{ m} = 46000 \text{ m}$ ;  
 $46000 \text{ m} / 2000 \text{ m per lap} = 23$  laps of the closed loop course.  
 $23 \text{ laps} \times 0.32 \text{ m} = 7.36 \text{ m}$ . added for the 50 km walk over PR's measurement.

### **Length of the 50 km Race Walk Course With the Two Different Adjustments to the 2 km Closed Loop**

	BC	LL	JJ	PR	ML	JM	KS	GD
Adjustment of 1 m	49985.23	49994.60	49998.06	49999.56	50009.93	50011.71	50015.75	50031.45
Adjustment of 1.16	49992.6	50001.96	50005.4	50006.92	50017.29	50019.07	50023.1	50038.81

## Length of the 50 km Race Walk Course With the Two Different Adjustments to the 2 km Closed Loop



## X. Cable-Driven Counters

Three measurers used cable-driven counters for the measurement of the 2001 IAAF World Championships Marathon and Race Walk courses. Two of the counters, LL's and BC's, had a gearing of 280/9 or 31.11111... counts per revolution while JM's had a gearing of 260/11 or 23.63636... counts per revolution. Results of measurements using the cable-driven counter did not deviate from what one would expect with a Jones/Oerth Counter. To further test the reliability, I had a Jones/Oerth Counter mounted to the right side of the front hub and took simultaneous readings. I compared the data as follows:

Cable-driven counter, gearing of 280/9

Jones/Oerth counter, gearing of 260/11

$$\frac{(260/11)}{(280/9)} = 0.75974025974026 = \text{conversion factor}$$

By multiplying the Cable-driven counts by the conversion factor, I should obtain counts equal to the Jones/Oerth Counter's. This method of comparison gives small differences, which I attribute to not being able to accurately read fractions of a count. These errors are not cumulative. Total counts for each day of measuring is included in the table below. Detailed data for both counters will be available in the next issue of Measurement News.

### Comparison of Cable-Driven Counter and Jones/Oerth Counter

	<u>Cable-driven Counter</u>		<u>Converted</u>	<u>Jones/Oerth Counter</u>		<u>Difference</u>
Elapsed counts for Day 1	Counts	Interval	Interval	Counts	Interval	
Start pre-cal	15000			122918.3		
End post-cal	96113.5	81113.5	61625.192	61293	61625.3	-0.06
Elapsed counts for Day 2						
Start cal 1	23500			740486.5		
End cal 3	870913	847413	643813.77	96672.5	643814	-0.23



## **XI. A Word of Thanks**

I am grateful for the opportunity to have participated in the measurement of the 2001 World Championships. It was great to see some old friends and to meet some new ones. I always learn something new when I measure with a guru or two. The organization of the measurement and the seminar were nearly flawless (just the construction zone problems in the stadium!), and our hosts were most gracious. It took me a week to catch up on my sleep, and another week to churn out this report... but it was worth it! Thanks to all who were there for making it such a great experience!

Laurent Lacroix

Supplemental Report  
by  
Bernie Conway

Subj: **Worlds**

Date: 6/4/2001 9:50:45 PM Eastern Daylight  
Time

From: *measurer@ican.net (Bernie Conway)*  
To: *riegelpete@aol.com (Pete Riegel)*

Pete,

Here are the adjustments I would make for the marathon and the racewalks using the data I measured. I have also added a bit of a blurb about my trip which you may throw out and also a statement about each of the measurers which you may use if you wish or not.

Bernie

Edmonton (May 26 - 29/2001)

Marathon

Checking my data I found that the overall length of the course was 42 215.764 m and so I would shorten the course at the start by 20 m at the most not worrying about the 0.764 m. I would adjust the 5 km splits as follows:

5 km short by 8.79 m but removing 20 m from the start means the 5 km split should be 28.79 m longer.

10 km short by 4.16 m but removing 20 m from the start means adding 24.16 m.

15 km short by 3.08 m so add 23.08 m.

20 km short by 9.87 m so add 29.87 m.

½ Marathon short by 9.16 m so add 29.16 m.

25 km short by 11.50 m so add 31.50 m.

30 km short by 13.61 m so add 33.61 m.

35 km short by 14.57 m so add 34.57 m.

40 km short by 11.96 m so add 31.96 m

Finish is a fixed point.

4 km Racewalk Section

Assuming the walkers have all 8 lanes of the track at the start and finish. I found the 4 km section to be short by 14.39 m which should be added to the start we measured. The 2 km loop was found to be short by 2.70 m. I would adjust the turnaround for the 2 km loop by 1.35 m, since it is an out and back section. We didn't check the km splits of the racewalk but I would adjust the 1 km, 2 km, and 3 km splits by 14 m (towards start). The 2 km split will also be the 4, 6, 8, etc. splits and the 3 km split will also be the 5, 7, 9, etc. split. I assume these will be posted on race day for the walkers.

Friday May 25/2001

I was able to arrive in Edmonton direct from Toronto after a short flight (45 minutes) from London where I live. My

flight from Toronto to Edmonton was earlier than anticipated because of a strong tail wind. I arrived on the upper level and waited for Laurent Lacroix who was to arrive about the same time from Winnipeg. Laurent had flown from Winnipeg to Calgary and from there to Edmonton. He was waiting for me but one flight below. I finally wandered downstairs and found him. Laurent had decided to rent a car so that he could visit his brother and a cycling friend and had invited me to join him for the drive into Edmonton which I did. I had met Laurent in Winnipeg two years earlier at the Pan American Games. He and Randy Bannister were the course measurers of the marathon and racewalk courses. Laurent had also helped last Summer with the measurement of the marathon, half-marathon, and 10 km Marathon de Deux Rives in Quebec City.

#### Saturday May 26/2001

Measured calibration course 415.250 m before temperature adjustment, 415.2693 m with temp. adjustment. Measured distances from just outside the stadium to various points (start of marathon, and racewalk, and finish of marathon/racewalk. Didn't measure to Stadium Rd. due to the number of parked vehicles in the parking lot.

#### Sunday May 27/2001

After calibrating our bikes we measured from the point outside the stadium to two points on Stadium Rd. on either side of the entrance. These points would be calculated later to find the distances for the marathon and one of these points would be used for the distance for the racewalk. The police escort was great and we measured the marathon riding the course as the runner would run it. The post calibration of the marathon was the pre calibration of the racewalk to minimize temperature fluctuations. We then measured the 4 km loop from the point in front of the stadium to the same point. From there we went to the 2 km loop and measured it as well. Having a 4 km loop and a 2 km loop was a very smart method of measuring the racewalk course. I would have like to have stopped at the 1, 2, and 3 km splits on the 4 km loop to check their accuracy. The 2 km will also be the splits for the even number of km (4, 6, 8, etc.) and the 3 km will be the split for the odd number of km (5, 7, 9, etc.). John McBean did a great job designing and measuring the courses. Each of the measurers learned much from this get together. Thanks to all involved.

#### Participants:

John McBean - Course measurer from Edmonton

John Jacobson - Head of Athletics Alberta. John contacted me about two years ago to express his interest in attending a Measurement Seminar. John was able to help in the measuring despite a knee operation only two weeks earlier. He was worried about being able to ride the distance and ended up having probably the best ride of all assembled.

Kelcey Stilwell is working at Athletics Alberta and also participated in the measurement. Kelcey is a pole vaulter as well.

Gerry Dragomir is from Vancouver and is mainly interested in putting on racewalks. He is also measuring his own events which are held on the Indy 500.

Marcel LaMontagne is from Calgary and has been measuring for quite some time.

Laurent Lacroix is from Winnipeg and was course measurer for the 1999 Pan American Games. He took the Measurement Workshop from Pete Riegel in Vancouver and started a Canadian Measurers Internet Site which has our list of certified courses and our measurement manual and many other topics.

Pete Riegel is head of measurement for the IAAF/AIMS. Pete recently retired as Chief Certifier for the USATF.

I (Bernie Conway) am the chief certifier of road races for Canada. I have been measuring races for certification since 1982. When I was unable to get races certified in Canada I started having them certified in the US thanks to Pete Riegel. I attended a Measurement Seminar in 1990 put on by Pete Riegel and John Disley (UK).

Bernie Conway

Supplemental Report By John McBean
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Dear Pete,

It is with great satisfaction and some disappointment that I look back on the experience of being involved with the validation of such important marathon and race walk courses. Satisfaction knowing that the marathon course was measured within acceptable limits and questioning why the race walk loops proved to be short.

Since I know you will minutely detail the activities of our group from the May 25 weekend, there is no need to repeat what I believe will be very accurate.

I found the whole weekend to be a tremendous learning experience. To associate with some "major players" in the arena of course measurers was a great opportunity. A measurer rarely has the opportunity to be critiqued to the extent that my course was since most certificates are awarded only by the information submitted. When other qualified measurers examine your course, there are many things to be learned. Because I was alone when I originally setup and measured this course, I found I was not using my competitive nature that was so evident among the others on this weekend. I am determined that will change! I also learned that what one thinks one has, will not always measure up under the scrutiny of others as evidenced in my course map. I inadvertently used an older course map showing an incorrect road in my certification application. More experienced measurers have probably used the building block measuring process many times and I found it to be a very useful tool. The preliminary measuring of the Stadium and the ramp were invaluable in setting up for the early Sunday morning ride. It also proved to be a very simple yet accurate method to establish key areas of the marathon and race walk courses.

In my limited experience of this measuring activity, I perceived that the validation process was a great success. There are some adjustments required on the race walk course once the lane painting has been done, but that will be a minor project. I would welcome the opportunity to participate in another group verification ride and jump into the competitive nature this ride has to offer.

Thanks again for the experience,

John McBean