

# Measurement News



September 2001

Issue #109



Here is Wietse Marco Jurgen Hoornweg van Rij measuring the IAAF Marathon Relay course in Manaus, Brazil.

## MEASUREMENT NEWS

Issue #109 - September 2001

\*\*\*\*\*

**Chairman's Clatter**  
From Mike Wickiser

A recent certifier's concern prompts me to this month's topic. The certifier was concerned over a mistake or two on recent measurement certificates. Let me start out with the awareness and appreciation that each of us is a volunteer giving of time and expertise to course certification. No one is perfect. We all make the occasional mistake in spite of our best efforts.

Once a measurement certificate is completed, copies are sent to the measurer and two copies are sent off to the regional Vice Chair. Most certifiers keep a file of certificates as well. Paul Hronjak and Tom McBrayer each review all these certificates. In doing so they look at the map, making sure the course is clearly defined from start to finish. They also look for typographic errors and check the drop and separation. With the number of certificates these guys review it is not uncommon for them to question the occasional certificate. At any given time they might have 3 to 5 certs being held for some clarification or additional information. This doesn't mean that any certifier is slacking off. Their review assures a high standard for certified courses is maintained.

Tom & Paul then send the certificates to Karen & myself for inclusion on the course list. We take an additional look at the certs while being posted on the "current" list and as they are filed, by state and sequential number. Every now and again something catches our eyes. A quick email usually clears things up.

All new certificates are posted in an Excel file and then converted to text format and posted at <http://home.neo.rr.com/mikewickiser/> usually within a day or so. This way they are readily available for anyone with Internet accessibility. With each MN issue, the current file is sent to Pete Riegel and then merged with the complete course list. Updates for replaced, renewed, and validated courses are done at this time also. The 'complete' file is then split into 'active' and 'archive' files and sent to Bob Baumel as text for posting on [www.rrtc.net](http://www.rrtc.net). Course lists downloaded can be imported back into Excel easily.

Pete proof reads the current list and usually finds several typos that require correction. (Five this month.) Bob checks the active & archive files before posting them. Some of the 'human' touches in the process have been as slight as listing an Ohio course with an IN prefix or as huge as sorting the list and getting the columns out of sync. That one really scared me! In any event there are several checks on the certificates and the course list to catch mistakes as they occur and backup copies for safe keeping.

I have simply had to accept that we all 'goof' from time to time. It may be humbling to have a mistake pointed out, but it is very reassuring having several people help to maintain the highest standards for USATF Certified courses.



## MEASUREMENT NEWS ON COMPACT DISK

A few years ago Mike Sandford suggested that it might be a nice idea if the archives of *Measurement News* could be put on a compact disk. I thought it was an interesting and possibly valuable idea, but did nothing about it. Since then, however, I have acquired a scanner, a more powerful computer, and a cd-writing drive. Shortly after acquiring the cd-writer Mike's idea came back to me.

I have, in a basement file drawer, copies of every issue of *Measurement News*. It's almost full, and the idea of all that scanning put me off for a while. However, the work is now complete. Each of the 3100 pages has been scanned individually, edited briefly, and assembled into 108 files, readable in Microsoft Word 97 for Windows.

The scanning is incomplete, as I decided not to scan repetitive pages, and also did not scan course lists, as that information is available elsewhere. Material NOT scanned includes:

- Page 2, which lists the RRTC officers and miscellaneous information
- Course lists
- Publications available from RRTC
- List of Certifiers

It has been suggested that each issue could be incorporated into a separate .pdf file, such as may be created using Adobe Acrobat, but I have no present plans to do this.

I am not sure of the value of all this, but it seemed like a good idea. It's our history since 1982, and shows the various ideas that have guided our progress. Also, who shall get the disks, who wants the disks, and how much I should charge for them is still undetermined.

Any ideas on this subject are welcome.

### GET MN ON CD FREE!

If you will agree to index 20 issues I will send you a free set of 2 CD's. You will need access to Microsoft Excel. If you are interested, contact Pete Riegel at [riegelpete@aol.com](mailto:riegelpete@aol.com).



## HANDICAPPING THE 5K

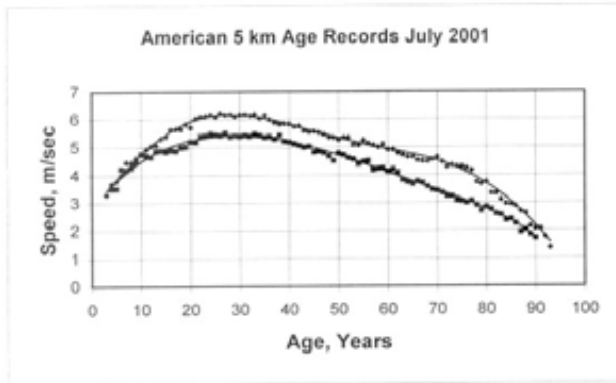
I ran my first and only handicap race in 1977. The "Olympic Memories" 5 mile race was directed by Ben Buckner, early Columbus measurer and my early mentor. He developed a handicap scheme and used it in the race. As each person registered, he or she was given a starting time using Ben's magic.

All started at their appointed times. Men and women together. It was exciting, as everybody ahead of you was theoretically slower, and I enjoyed catching some people. But I also feared the faster people who had started behind me. At the finish Ben handed out the awards in the order of finish - no age or sex groups. It was a load of fun. After the race we went to Ben's house to see his slides from the Montreal Olympics.

A few months ago I received an email from a stranger who had heard that I once had made some handicapping charts, and he wondered whether I had any for the 5 kilometer distance. I replied that I had indeed done some of that sort of thing long ago, but had since lost interest and no longer had the original material. After a few exchanges of emails I agreed to see what I could do.

For a handicap to work, it must be based on some sort of reality. The purest handicap comes from past performances of the competitors in the specific race to be handicapped. However, most road races don't have this sort of information about their competitors. The only information that anybody has yet found to apply to this sort of problem are the age and sex of the competitors. Whether this is fair may be questioned, but most people accept it as fair enough, in the absence of anything better.

I went to the website of the Road Running Information Center ([www.usaldr.org](http://www.usaldr.org)) and downloaded all the single-age records for men and women for the 5km distance. This information was used to make up the handicap chart. Using an Excel spreadsheet, I converted the finish times to speed, in meters per second. This was plotted on a graph. Then I experimented until I found a way to represent the data as a continuous, smooth curve.



Here is how the data looked when I was done, for men (upper curve) and women (lower curve). I would have preferred similarly-shaped curves, as they would better fit a general theory of how people run. But as my goal was to handicap only one race distance, I thought it better to use the data as it is, rather than as I might wish it to be.

The solid-line curves result from using Microsoft Excel's "trendline" curve fitting feature. The curves shown represent the fit of a 6th order equation to the data. I don't believe the 7 coefficients used have any relation to running reality - they simply make the curve fit the data.



With equations determined, it was easy to prepare a chart showing the proper amount of head start for competitors of all likely ages and both sexes. However, the data are based on the performances of the very best runners. Are they truly appropriate for the field one might expect to get in a local handicap race?

My answer to the question was "no." If the field was composed of those likely to attend a WAVA World Championship, where the best in the world attend, I'd use the data as is. However, for a race in which the field is slower, the standard, I reasoned, should be lower.

How much lower? Here I had to fall back on personal experience. In the races I have run, the age-group winners typically ran at about 70 percent of world-class speed, so I chose 70 percent as the standard. I would like to have something more definitive, but I don't.

A chart showing starting times and head starts may be seen on the following page. It's my best shot at handicapping for a local 5k race. Anyone wishing to have a copy need only email me at <<[riegelpete@aol.com](mailto:riegelpete@aol.com)>> and I'll send you a tab-delimited text file which you can open in most word processor or spreadsheet formats.

*Pete*

## HANDICAPPING FOR 5 KM AT 70 PERCENT OF RECORD SPEED

Sex	Age	Start Time Minutes	Head Start Minutes	Sex	Age	Start Time Minutes	Head Start Minutes	Sex	Age	Start Time Minutes	Head Start Minutes
M	93	0:00	56:02	F	58	47:09	8:52	F	20	52:36	3:26
F	90	7:12	48:50	F	8	47:19	8:43	M	52	52:37	3:24
M	92	8:37	47:25	M	74	47:19	8:42	F	38	52:41	3:20
F	89	12:09	43:52	F	57	47:34	8:27	F	21	52:46	3:16
M	91	15:18	40:44	M	73	47:47	8:15	M	51	52:49	3:13
F	88	16:09	39:53	F	56	47:58	8:03	F	37	52:49	3:13
F	87	19:25	36:36	F	9	48:08	7:54	F	22	52:54	3:07
M	90	20:37	35:24	M	72	48:12	7:50	F	36	52:56	3:06
F	86	22:10	33:52	M	8	48:18	7:44	M	50	53:00	3:02
F	85	24:30	31:32	F	55	48:22	7:40	M	14	53:01	3:01
M	89	24:56	31:05	M	71	48:34	7:28	F	23	53:02	3:00
F	84	26:30	29:32	F	54	48:44	7:18	F	35	53:02	3:00
F	83	28:15	27:46	F	10	48:51	7:11	F	34	53:07	2:55
M	88	28:30	27:32	M	70	48:54	7:08	F	24	53:07	2:54
F	82	29:48	26:14	F	53	49:05	6:56	M	49	53:11	2:50
F	81	31:11	24:51	M	69	49:12	6:49	F	33	53:11	2:50
M	87	31:28	24:34	M	9	49:20	6:41	F	25	53:12	2:50
F	80	32:26	23:36	F	52	49:26	6:36	F	32	53:15	2:47
F	79	33:34	22:28	F	11	49:28	6:33	F	26	53:15	2:46
M	86	33:58	22:04	M	68	49:29	6:32	F	31	53:17	2:44
F	78	34:36	21:26	M	67	49:45	6:17	F	27	53:18	2:44
F	77	35:33	20:28	F	51	49:45	6:16	F	30	53:19	2:43
M	85	36:06	19:56	M	66	49:59	6:02	F	28	53:19	2:43
F	76	36:27	19:34	F	12	50:01	6:00	F	29	53:19	2:42
F	75	37:17	18:44	F	50	50:04	5:58	M	48	53:23	2:39
M	84	37:56	18:06	M	65	50:13	5:49	M	15	53:31	2:31
F	74	38:05	17:57	M	10	50:15	5:46	M	47	53:34	2:27
F	73	38:50	17:12	F	49	50:22	5:40	M	46	53:46	2:16
M	83	39:31	16:31	M	64	50:25	5:36	M	45	53:57	2:05
F	72	39:33	16:29	F	13	50:30	5:31	M	16	53:57	2:04
F	71	40:14	15:48	M	63	50:37	5:24	M	44	54:08	1:53
M	3	40:49	15:13	F	48	50:39	5:23	M	43	54:19	1:42
F	70	40:53	15:09	M	62	50:49	5:13	M	17	54:21	1:41
M	82	40:53	15:09	F	47	50:55	5:07	M	42	54:30	1:31
F	69	41:30	14:31	F	14	50:56	5:06	M	18	54:41	1:21
M	81	42:05	13:57	M	61	51:00	5:02	M	41	54:41	1:21
F	68	42:07	13:55	M	11	51:05	4:57	M	40	54:51	1:11
F	4	42:31	13:31	F	46	51:10	4:52	M	19	54:58	1:03
M	4	42:41	13:21	M	60	51:11	4:51	M	39	55:01	1:01
F	67	42:42	13:20	F	15	51:18	4:43	M	38	55:10	0:51
M	80	43:08	12:54	M	59	51:22	4:40	M	20	55:13	0:49
F	66	43:16	12:46	F	45	51:24	4:37	M	37	55:19	0:43
F	65	43:48	12:13	M	58	51:32	4:29	M	21	55:26	0:36
F	5	44:01	12:01	F	44	51:38	4:24	M	36	55:27	0:34
M	79	44:03	11:58	F	16	51:38	4:23	M	35	55:35	0:27
F	64	44:20	11:42	M	57	51:43	4:19	M	22	55:36	0:25
M	5	44:21	11:41	M	12	51:48	4:14	M	34	55:41	0:20
F	63	44:51	11:11	F	43	51:51	4:11	M	23	55:45	0:17
M	78	44:52	11:09	M	56	51:54	4:08	M	33	55:47	0:14
F	6	45:17	10:45	F	17	51:56	4:06	M	24	55:51	0:10
F	62	45:20	10:41	F	42	52:02	3:59	M	32	55:52	0:09
M	77	45:36	10:26	M	55	52:05	3:57	M	25	55:56	0:05
F	61	45:49	10:13	F	18	52:11	3:51	M	31	55:56	0:05
M	6	45:49	10:12	F	41	52:13	3:48	M	30	55:59	0:02
M	76	46:14	9:47	M	54	52:15	3:46	M	26	56:00	0:02
F	60	46:17	9:45	F	40	52:24	3:38	M	29	56:01	0:00
F	7	46:22	9:39	F	19	52:24	3:37	M	27	56:02	0:00
F	59	46:44	9:18	M	53	52:26	3:35	M	28	56:02	0:00
M	75	46:49	9:13	M	13	52:27	3:35				
M	7	47:08	8:54	F	39	52:33	3:29				

## THEORY VS REALITY - HOW THINGS WORKED OUT

The 70 percent handicapping scheme was designed for a "typical" local-class 5 km race. As a check to see how things might have worked out, I took the results of the 1999 Columbus Roadrunners Spring Challenge from their web site, since they were available.

The graphs show how things worked out.

It is obvious that the range of talent has a lot more spread than do the American records, since the records do not reflect the participation of any but the best.

Whether the handicapping level, at 70 percent, is optimum, I don't know. I don't see that another level would make things any more fun for the runners. At the end of the day, each runner will see what their elapsed time was, and if they feel ill-used by the handicapping scheme, consolation is available.



## METRIC SPLITS

from *Road Race Management* - August 2001

### *Metric OK in Oklahoma*

We started metric splits in Oklahoma in 1994 with a 5 km night race in Tulsa. I can say unequivocally that it has been the most significant and most successful single item in road racing in Oklahoma.

Along with computer scoring it has been instrumental in making most all the races in Oklahoma very enjoyable.

The *Oklahoma Runner* magazine and Glen's Racing Service have been the leaders in pushing both of these items. Of course, Bob Baumel is the one person who really helped us in the metric area.

I remember some of the comments we got about the first race which were made directly to me and also to Glen's Racing Service and to the director of the race. [See *Comments on page 8*].

In the 1994 Tulsa Run, Glen's Racing Service timed each [kilometer] of the 15 km and we had an article in the *Oklahoma Runner* about the course and the difficulty of each km.

It's funny that the persons who were opposed to this have all come around and now support it. One person was so opposed that he wrote a couple of articles to the *Oklahoma Runner* magazine. He even went so far as to establish an 8-mile race. After having this 8-mile race for several years he called and advised he is changing it to an 8 km race.

Without going into all the stories about metric splits in Oklahoma I can say that it is a simple matter of third-grade math. It is so nice to have the course divided into equal parts. Most of the races these days are 5 km and I don't remember a race with mile splits called or marked the past 7 or 8 years. Runners realize after

[Letters Continued on Page 8](#)

### Letters

(Continued from page 2)

a race or two that metric splits is like the monetary system...ten's, hundreds and thousands. I cannot recall the last time anyone made a negative comment about metric splits.

One lady moved here from out of state and is one of the big supporters of metric splits. Last week she went to one of the races in Oklahoma with mile splits. It was a 10 km. Her comment was how awkward it seemed to have 6 mile splits called and having a little bit left over. She wrote the director a nice letter suggesting metric splits.

We have a couple of 5-mile races and some 2-mile events which have mile splits. Also, the two marathons have both mile and metric splits.

Glen and Coneil Lafarlette and the other measurers around the state rarely ever put in mile splits. The km splits are documented on the certificate (not certified) and marked on the course for race day. I have every certificate for the state of Oklahoma which are available to any runner on request.

The new Tulsa Run course will undoubtedly have all metric splits and no miles. It looks like the new Tulsa Run course will be aided. The start/finish drop will be in the area of 25 m as it stands now.

**Joe McDaniel**

*Oklahoma Runner* ■

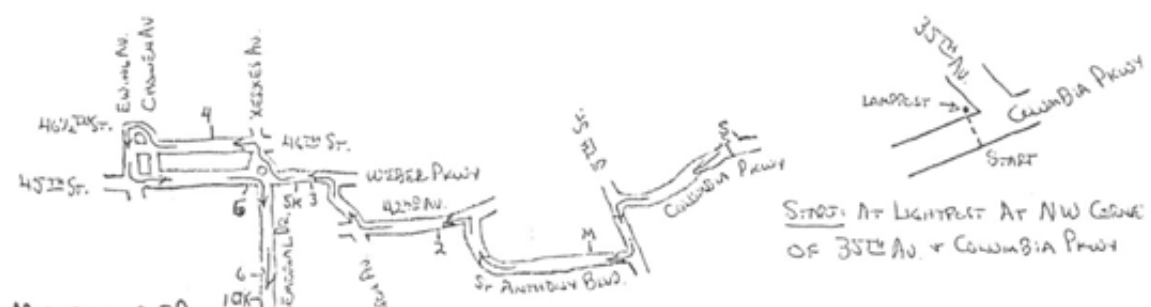
### COMMENTS

#### *Tell Us How You Really Feel*

Joe McDaniel of the *Oklahoma Runner* provided *RRM* with some of the more colorful comments his publication has received regarding metric splits:

- Metric splits suck. The majority of people don't want it.
- When I read in the brochure about the metric splits, I drove 90 miles just to try it. It's great.
- The first time I tried it I didn't like it. Now I think it's great.
- Why pounds and not kilograms for the Clydesdales?
- There are all types of bigotry and there certainly is metric bigotry. Those opposed are all over age 40 it seems.
- I won't run again if metric splits are called.
- It's easy for me because I study the metric system in school and I think it is better. My dad doesn't like it because he doesn't understand it.

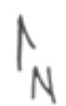
-- Age 12 runner ■



START: AT LIGHTPOST AT NW CORNER OF 35th AVE + COLUMBIA PRWY

**DESCRIPTION:** PARTICIPANTS USE WHOLE ROAD AS INDICATED ON MAP EXCEPT ON GARDEN BRIDGE WHERE THEY ARE LIMITED TO THE 2 SOUTH LANES. AT 20, 275m PARTICIPANTS LEAVE THE ROAD ONTO A BIKE PATH + FOLLOW THAT TO FINISH IN PARKING LOT

MN-01008-RR



**SPLITS: IN ORANGE PAINT**

- 1M: 6m E OF SEWER GRATE ACROSS FROM ACTION INC. MARKED ON N CURB.
- 2M: 19m W OF W FACING SPEED LIMIT 30 MARKED ON S SIDE OF BRIDGE
- 3M: 11m E OF JAMES AV. MARKED ON N CURB.
- 5K: 33m E OF LOCAN AV. MARKED ON N CURB.
- 4M: 7m W OF DRIVEWAY FOR 3200 MARKED ON S CURB.
- 5M: 1m E OF YORK AV. MARKED ON S CURB.
- 6M: 9m N OF JAMES CARD. MARKED ON E CURB.
- 10K: 5m S OF HERMAN BEYER. MARKED ON E CURB.
- 7M: 48m N OF N FACING SPEED LIMIT 25
- 8M: 56m S OF BIKE RACK. MARKED ON W CURB.
- 9M: 36m N OF HWY 55. MARKED ON E CURB.
- 15K: 38m S OF 2nd SET OF POSTS S OF HWY 55. MARKED ON E CURB.
- 10M: 4m N OF ELSIE BUTLER FLOWER GARDEN CROSSWALK. MARKED ON W CURB
- 11M: 5m S OF FIRE HYDRANT. MARKED ON E CURB.
- 12M: 21m W OF SIDEWALK FOR 2711. MARKED ON S CURB.
- 20K: 11m W OF EAST END OF DOC RUN FENCE MARKED ON N CURB.
- 13M: 8m W OF E FACING 

MAP OF THE MONTH



**FINISH:** EASTMOST MANHOLE COVER AT EAST END OF PARKING LOT 9





USA Track & Field • The National Governing Body for Track & Field, Long Distance Running and Race Walking

Chair	ROAD RUNNING TECHNICAL COUNCIL		Secretary
<i>Mike Wickiser</i>	Vice Chair (E) <i>Paul Hronjak</i>	Vice Chair (W) <i>E. T. McBrayer</i>	<i>Robert T. Baumel</i>

July 25, 2001

**To all regional certifiers.**

With the changes regarding renewal of courses, it has been suggested that a formal policy be issued. Since renewed courses represent such a minor segment of a certifier's duties, enclosed is a renewal procedure for future reference.

It was decided at the 2000 USATF convention to cease renewing courses because the continued quality was often very questionable. Quite often renewal forms were completed without the requester having a copy of the measurement certificate and map. There has been quite a bit of discussion regarding the expiration date of a renewed course. In the past courses have been given an additional 10 years from renewal date. This was Pete Riegel's method with a status code in the course list. The problem with adding 10 years to any renewal is it can extend the active life of a course well beyond twenty years. For instance a 1985 course renewed in 1999 was given a status code of 'A99' which would then not expire again until 2009. Any such course would have enjoyed a 25 year certification.

Ten years is long enough for a certified course to exist. This was the consensus from MNForum as well as the RRTC meetings at the convention. Twenty years exceeds the life of most paved roadways. Beyond twenty years is simply not acceptable to me. A ten year time frame for eliminating renewals provides is adequate for people to learn about the end of the renewal policy. Ten years also allows for a fair time to phase out renewable certificates with renewal wording on them.

It was originally stated (MN #105) that no course could be renewed beyond Dec. 31, 2010. This should have been 2011 because certificates in 2000 all have renewal wording at the bottom and should be granted some renewal opportunity. Given, the renewal in 2010 will be only good for one additional year. Most courses are certified the same year as they are run, so a 2000 course renewed in 2010 until the end of 2011 would provide for 12 annual races (2000 thru 2011).

Kindly keep and refer to the Renewal Procedure. It outlines the policy and should answer any questions that arise in the future.

Thanks for your assistance,

PLEASE REPLY TO: Michael A. Wickiser, Chair, 2939 Vincent Rd., Silver Lake, OH 44224-2916 • 330.929.1605 • 509.351.5383 (fax)



### **Road Running Technical Council Certified Course Renewal Procedure.**

USATF certified courses expire after ten years from original certification. Course certificates issued certified prior to 2001 contain renewal language and may be renewed. Courses certified in 2001 and later may not be renewed.

To renew an expired course, it is necessary to complete an Application for Renewal of Certified Course form. Forms are available for download from <http://www.rrtc.net> or from Mike Wickiser 2939 Vincent Rd, Silver Lake, Ohio 44224.

The renewal application states clear questions for the race director, original measurer or technical director (i.e. person in charge of setting up the course on race day) to answer.

The completed Application for Renewal of a Certified Course is to be sent to the regional certifier along with a copy of the original certificate & map. Applications that are sent without original maps are not to be renewed.

Once the certifier is satisfied that the course is as originally measured for certification he or she should produce a new certificate for the course, using the original course number. Using the original number allows for historical identification and proper sorting of the course list.

The expiration date for ALL renewed courses is twenty years after the original certification but not later than December 31, 2011.

A 1985 course being renewed would expire in 2005.

A 2000 course renewal will expire December 31, 2011.

Return one copy of the renewed measurement certificate to the person requesting renewal. This notifies them of the final expiration date of their course. Send the renewal form, or a copy to your Vice Chairman along with two copies of the new renewal certificate. The Vice Chairman will forward the renewal form and a copy of the certificate to the Course Registrar to complete the process. No money is required for renewing a race course.

# RIDING ON THE RUNWAYS

from George Tillson

A few weeks ago I had a most fascinating project, laying out and measuring a 5K course on a runway at the Rochester Airport. The project was for Lifetime Assistance which operates some 20 area homes for developmentally handicapped adults. The county manager (the county administers the airport), and the airport manager have some type of an affiliation with Lifetime and suggested to Lifetime about using a runway and one of the adjacent hangars.

I started out by meeting the race director and another staff member from Lifetime Assistance and the airport Operations Supervisor at a hangar on May 4 at 1pm. We planned to review the course, closing down aeroplane traffic on Runway 25 that is used by non scheduled plane service - private, corporate, charter and the smaller Federal Express planes. However we encountered a problem, Hillary and Bill Clinton were in town, he to receive an award from the NY State Teachers Federation for outstanding service. He was due to leave from the hangar about the time that we met at 1 pm. His Gulfstream was standing by, two dozen policemen or more, many patrol cars on the ramp and many others, who we assumed were secret service. Our plan was to drive on the runway, closing down the runway, I estimated that I would need an hour. However the Secret Service told the airport supervisor that we would have to wait until Clinton left. We arrived at about the time that Clinton was scheduled to leave, but he was running late. We waited for 45 minutes and still no Clinton but then the supervisor had to leave for an important 2:15 engagement.

We met again on Monday morning, a 60 mile round trip for me - thanks, Clinton. Four of us in an airport vehicle, me in the front seat. The Supervisor called the control tower and requested that the runway be closed until notified otherwise. Took us an hour to drive around several times, clockwise and counterclockwise, and get some rough measurements by the vehicle odometer. I established the finish line, the direction to run, made sketches, etc.

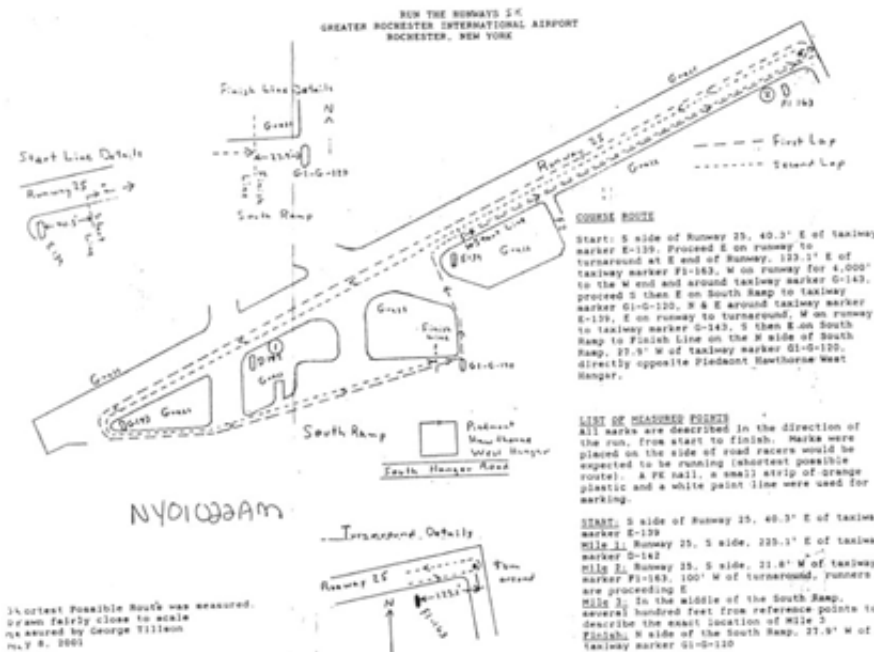
Returned on Tuesday at 8 am, a vehicle was assigned to me. The driver contacted the control tower and the runway was closed to traffic, excluding a bicycle and my patrol car. I estimated that 3 to 3 1/2 hours would be needed. A lighted barrier 141 high with flashing lights was towed into place at the E end of the runway by a crew - planes were landing from the east. We made several drives, both directions. Then on my bicycle for 3 trips escorted by a truck with flashing lights. And then two truck trips around to measure and place splits and the finish line and the location of the start line. Took a little over 3 hours. The driver was most helpful.

Three planes that passed me on the taxiways stopped, the pilots opened their windows and asked me about my mission. And the control tower was most fascinated. Imagine, a solitary bicyclist on their runway. Crazy.

Interestingly, the runways are numbered based upon points on the compass. We were using runway #25, about 4,000' long. About 150-175 participated in the race. A large hangar was emptied and tables and chairs were set up. Several food and beverage firms set up counters. The best of all, barbecued chicken. Many of the patients came to watch us and join in the festivities.

Really quite an experience for me. I wonder if any other races are held on plane runways.

Regards  
George



## 8<sup>th</sup> World Games - Edmonton, Alberta, Canada

By Bernie Conway

At the end of November I made my first trip to Edmonton in preparation for the Worlds. I was to validate the marathon course that was designed and measured by John McBean, a Canadian Measurer living in Edmonton. John had taken the measurement workshop given by Pete Riegel in Vancouver April 30-June 1, 1999. I arrived on the Saturday and that night Edmonton received freezing rain and the course on the Sunday morning was covered with a layer of ice. The police vetoed the measurement and I agreed. John and his wife Sharon had taken me out to see the West Edmonton Mall on the Saturday night and then on the Sunday, since we could not measure, they took me to the Muttart Conservatory and the outdoor education centre. The West Edmonton Mall is the largest mall in the world and contains a skating rink, a wave pool, a submarine ride, several other rides including a roller coaster, a pirate ship which swings, etc. The Muttart is a series of four large pyramid shaped glass greenhouses which contain three different biomes, one in each greenhouse, and one greenhouse just for flowers. The Tropical Rainforest Biome also had tropical birds. I then returned to London Sunday night.

At the end of May I again went to Edmonton and joined Pete Riegel, as well as Laurent Lacroix, John Jacobson, Marcel LaMontagne, Gerry Dragomir, John McBean, and Kelcey Stilwell (see MNF July 2001) and we proceeded to validate the marathon and racewalk courses that John McBean had measured. John had measured the racewalk as two separate courses, the first starting in the stadium and joining the loop course and back to the finish at the stadium. The total of this distance was 4 km. The second part of the racewalk was a loop which was superimposed on the first course starting about the 1 km mark. For the 20 km walk, participants would do the loop 8 times for 16 km plus the start, onto the loop, and then to the finish which was the other 4 km. For the 50 km participants did the loop 23 times for 46 km plus the other 4 km from start, around loop, to the finish.

At the end of June I again flew to Edmonton. John McBean (now officially an IAAF Grade B measurer) and I measured an alternate finish for the marathon for those who would need more than 2 hours and 45 minutes. The Men's Marathon was part of the Opening Ceremonies for the first time and so their finish had to be limited because of the number of acts being presented. Luckily Clarke Stadium was next to the regular marathon finish in Commonwealth Stadium where the World's were held. Clarke Stadium was also used as the warmup track. Runners would have had to run about 1.5 laps of the track in Clarke Stadium, running the first lap in lane 3 until opposite the usual finish for the track and then into lane 1 to the marathon finish. We actually ended up having no finishers on this alternate finish since the last marathoner finished under 2:46. Besides measuring the alternate finish for the marathon John and I remeasured the race walk

courses. There were 3 changes to the course since our trip out in May. First, for the finish the race walkers would only have lanes 7 & 8, second, one of the lanes going from 86 St. to Fort Rd. which was originally not available was now available, and third, the radius of the turn for the turnaround was increased from 3.1 m to 4.5 m.

I again flew to Edmonton, this time for the World Games, leaving Aug. 1<sup>st</sup> and staying to Aug. 13<sup>th</sup>. When I was in Edmonton in May I was told I was going to the Inn on the 7<sup>th</sup> and would be there also for the Games. Upon arrival in Edmonton I boarded a shuttle bus to the accreditation area, about 3 km from the airport, and then was driven to the hotel. When I tried to check in I found that my accommodations had been upgraded to the Westin. Prince Edward and his wife Sofie of England were on the 20<sup>th</sup> floor and my room was on the 16<sup>th</sup> floor. I had an interesting breakfast talking to one of their body guards who is a Mountie.

The day after my arrival I went to Commonwealth Stadium and made sure that the marks for the cones on the turnaround for the race walk were at the proper spot and that the alternate finish of the marathon was visible. I also marked the starting positions of the marathon and the racewalks on the rail of the track at Commonwealth Stadium so that I could check that the starting line was positioned correctly the days these races were run. These lines are not permanent and so are laid down about an hour prior to the event. They are removed very shortly after the start of each of these races. The day they held the first racewalk the line was there but the race walkers were lining up at the line used by 800 m runners where they can move out of their assigned lanes and then run the shortest possible distance. I went down onto the track and pointed out the correct start. There was no problem with the starts in the two other race walks. After making sure the race walks began at the correct start I would go to the turnaround to make sure the cones were in the correct position. There was no rush since the race walkers had to travel almost 3 km to get to this turn while I only had to walk about 500 m. The night prior to the Opening Ceremonies which included the marathon the lead vehicle and the Press vehicle, lead by several police cruisers, drove over the course with a group of cyclists riding the course, so that the TV cameras could be tested..

### Schedule

Friday August 3/2001 Men's Marathon 6:45 PM Start

Saturday August 4/2001 Men's 20 km Walk 3:50 PM Start

Thursday August 9/2001 Women's 20 km Walk 7:15 PM Start

Saturday August 11/2001 Men's 50 km Walk 8:00 AM Start

Sunday August 12/2001 Women's Marathon 8:00 AM Start

I had free access to the stadium and was there every day except for one. Some days there were events only in the evening and other days there were events in the morning and then after about a 3 hour break the events resumed for the evening. The only day I missed was Wednesday August 8<sup>th</sup> when the events didn't start to 6 PM. I took a bus trip to Jasper to view the Rocky Mountains, several of which still had snow on their peaks. There were several stops on the way at such places as Maligne Falls and Athabasca Falls as well as the Jasper Park Lodge and Beauvert Lake. I saw mountain goats and elk galore. That night I paid a brief visit to the party put on by Mondo in Edmonton.

I was impressed by the amount of results published. Each of the heats were available as separate sheets very quickly and each day a booklet was published with the results of the previous days results along with pictures and a schedule of the events for that day and a list of IAAF World Records. Not only were the results available for the Men's and Women's Marathon but their times at each of the intermediate 5 km points were printed separately. This was possible because of the use of the chip and mats set up every 5 km as well as the half marathon positions.

For the marathon I was on the lead vehicle which also had the CBC TV camera and its crew plus a member of the Marathon Committee who directed the vehicles on the course so that they did not interfere with the runners or the TV media. I had a great view of the race and was able to observe that the runners ran the course as measured. This was quite easy since the runners followed a solid blue line the entire way. There was only one section I had noticed in May that was not the spr but I was assured that it would be coned. I did notice the cones during the races and also noticed that there was some rough road at this point which must have been the reason for not using the spr in the first place. A humorous problem arose in the Men's Marathon. The truck I was in was showing the runners in a view from the front, of course, and a Moroccan was leading. At certain spots on the course we got further in front of the runners since there were some other TV cameras taking shots at the side or back of the runners. The TV crew shooting from the back thought their colour was off and adjusted the colour to compensate, or so they thought but the skin tones were terrible. The Moroccan colours is green on the front and red on the back, or vice versa which is why the colours appeared to be off. The runners crossed from one side of Edmonton to the other over a low bridge in the valley and then have a steep hill to climb for about a km. When returning to the original section of town they are lucky since they use a high bridge. This bridge has pipes carrying fresh water which can be sprayed to make it look like a waterfall. This was done for the Men's marathon but for the Women's marathon the wind was blowing the spray from the water onto the bridge and flooding it so it had to be turned off.

The third problem they experienced was caused by the helicopter which was also there to film the marathon. When the helicopter was close to the TV truck it interfered with the signal coming from the TV in the lead vehicle.

The number of people attending the World Games increased steadily over the 10 days and on the second Saturday, the day of the 50 km racewalk, there were 47 000 and on the Sunday, the day of the Men's Marathon, there were 54 000 paid customers. The maximum Commonwealth Stadium can seat is 60 000. The people I talked to on the local organizing committee were very pleased with the response that these Games received especially since this is the first time that these games have ever been in North America.

I left on the Monday, Aug. 13<sup>th</sup> along with quite a few others using Air Canada. The lineup extended out of the building and took more than an hour to get my tickets and take care of my bags. I made my plane which flew direct from Edmonton to Toronto. I then transferred to another plane which flew direct to London. Unfortunately my bags didn't, however they delivered them about two hours after my arrival. By the way, London is the site of the Canada Summer Games and I am a volunteer for the next two weeks working security for the soccer games.

I very much enjoyed my part in the 8<sup>th</sup> World Games in Edmonton and envy Jean Francois de la Salle who probably will be the validator of the race walks and the marathon in Paris for the 9<sup>th</sup> World Games of Track and Field.

I have been home now for two weeks and am volunteering for the Canada Summer Games which are being held in London, Ontario. I am part of the security at the Marconi Club whose venue is Soccer. I had hoped to volunteer for the Track and Field events that are going on at the Price-Waterhouse Stadium at the University of Western Ontario but this has been almost as interesting.



Bernie with wife Mary and daughter Colleen on her Wedding Day, July 28, 2001.

## Running: Some Courses don't measure up

by Doug Thurston - Special to The Bee

(Published August 22, 2001)

Stand at the finish line at any road race, and you'll see runners sprinting across the line, then punching their watch to stop their time. Their goal might be a world best or simply a personal record, but most runners are keenly interested in their finish time.

At some runs, runners will look at their watch after the finish and shake their heads in disbelief. Their time was either much faster or much slower than they expected, and they'll wonder if the course was too short or too long.

If a racecourse is advertised as "certified," though, most runners feel confident of the distance. The term "certified" means that USA Track & Field, the sport's governing body, has approved the course as accurately measured based on accepted standards and practices.

Measuring a course sounds simple. The actual technique, however, is a mystery to most runners. Early road races were often measured with a surveyor's wheel, a measured rope laid end to end or by automobile. These procedures were slow and often inaccurate. Automobiles, in particular, are known for odometer error generally resulting in short courses.

Measuring tapes are awkward around corners and cumbersome on public roads. Plus, who has the time to continually lay a tape end-to-end hundreds of times? Walking behind a wheel for much more than a quarter mile also takes too much time, and a straight line is awkward to maintain.

The bicycle is the best measuring tool. It can ride the same course as runners, easily going over hills or curbs, cutting tight turns and rolling over grass, dirt or gravel surfaces. It can also be easily ridden in a straight line and for long distances.

The key to using a bicycle was figuring out how many wheel revolutions it took to cover a certain distance. Bicycle cable odometers/speedometers were easily available, but they didn't provide the precision needed.

Alan Jones, an engineer and runner in upstate New York, was one of many frustrated with inaccurate race distances. In the early 1970s, Jones, using a combination of old bicycle speedometer parts and a revolution counter, configured a counter mounted low on the front bike axle. The Jones Counter accurately clicked off 20 counts for every revolution of the wheel. The counter, with modest improvements, is still in use today and called a Jones/Oerth Counter. It is still manufactured by hand, now by Paul Oerth in San Francisco.

Course measurement and certification grew slowly but steadily by 40 to 60 courses a year in the U.S. until 1978. With the publication that year of Jim Fixx's best-selling book, "The Complete Book of Running," road running exploded and with it, course measurement. Jones Counter sales grew from 100 a year to more than 400. The number of certified courses also escalated from 52 in 1977 to 400 in 1980 and to more than 1,200 by 1985.

Now, more than 1,100 courses are certified in an average year. In total, more than 20,000 courses have been certified in the past 20 years. California leads the national list with more than 1,800 certified courses. Texas, Florida, New York, Ohio and Oklahoma also have more than 1,000 certified courses. Last year, 68 courses in the Golden State were certified, more than any other state except Texas, Illinois, and North Carolina.

A list of certified courses by state is available at [www.rrtc.net](http://www.rrtc.net). Although the number of courses certified each year has remained relatively constant, the average length of certified courses has dropped significantly. Thirty years ago, marathons and near-marathon distances were popular race lengths. The tremendous growth of the 5 km in the past decade and a reduced number of marathons and other long distances have cut the average distance by two-thirds.

Sacramento County features 57 active certified courses (certificates automatically expire after 10 years without remeasurement). A handful are for runs no longer held, including the Avon Run and Tower to Tower. The roads are still there and, with the certification map, these and many other courses are ready to be raced again.

Doug Thurston is a Sacramento runner and race director.

**The following text was removed from Thurston's text by the Bee Editor:**

Actual course measurement is not complex, but it does take a little math and logical thinking, a little planning, and, sometimes, a little luck.

First, the Jones/Oerth Counter is calibrated for accuracy on the day of measurement. Over the same set distance, or calibration course, the same rider will get different readings, or counts, every day due to varying temperature and tire pressure.

The calibration course is usually a 1000-foot, half-mile, or one kilometer laid out on a straight and flat roadway. Measurement is either by a steel tape (with temperature correction and consistent force) or a highly accurate electronic distance measurer.

Four rides of the calibration distance are averaged. With a calculator and exact distance tables, the number of counts in a mile or kilometer are computed. A "short course prevention factor" of one percent is added to the final figure. Thus, a certified 5-km course is actually 5005 meters.

Courses are measured to the shortest possible route available to runners on race day. Thus, the bicycle is ridden to within about a foot of the curbs and the rider follows the tangents around corners.

If roads are closed to normal auto traffic on race day and runners have full curb-to-curb access, then that is the way the course must be measured. This often requires measurements be done in the early morning when traffic is low or with a police escort.

Other typical obstacles during measurements are parked cars, locked gates, road debris, trash cans, dogs, paper deliverers (remember most measurement is done early in the morning) and, ironically, other runners and cyclists. It's challenging to explain to fellow runners and cyclists why, when measuring, one often rides on the "wrong" side of a road and has to come to a stop rather than swerve out of the way and affect the measurement.

The measurer often marks intermediate or "split" marks during measurement. In the U.S., even though most races are metric distances, most splits are marked in miles. Few Americans think of their pace in terms of pace-per-kilometer.

Two complete rides of the course are required for certification with the shortest measurement being used. A post-measurement calibration and average helps assure the data was accurate. The final tasks are completing a four-page application and drawing an accurate map. The map is drawn by hand or computer with enough detail and reference points that anyone could find the course.

It's typical for a course measurement to take several hours as adjustments may be needed at the start, finish, or along the course to find the needed distance. Sometimes a run director has a fixed point for either the start or the finish and the required distance has to be found somewhere on available roads. Often city authorities require say on a course, perhaps requiring runners avoid certain streets or stay on a particular lane or on side of a road.

With mapmaking and paperwork generally taking several more hours, it's not unusual for even a 5 km to take the better part of a day to complete. Measuring marathons can take several weekends of effort.

Course measurement is a perfect example of one of the many "behind the scenes" aspects of event organization. It may be unappreciated and rarely noticed when it's done right. But it's a nightmare to runners when it's done wrong.

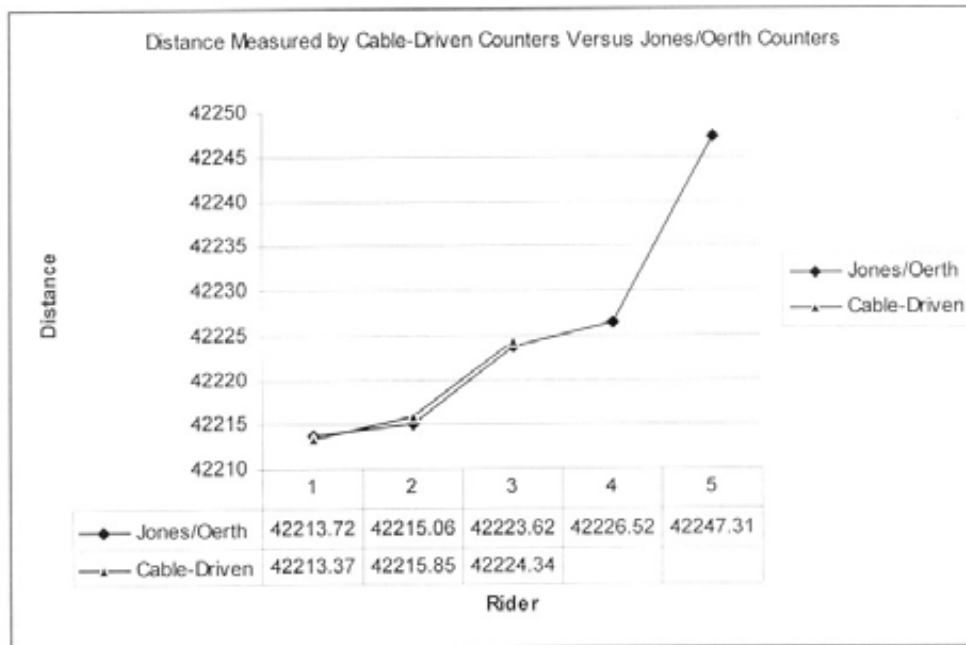
Thanks!

Doug Thurston  
Race Director  
Gold Medal Event Management  
905 Enterprise Drive  
Sacramento, CA 95825  
Phone number (916) 929-4786  
Fax Number: (916) 929-4157  
Website: [www.rungoldmedal.com](http://www.rungoldmedal.com)

## Cable-Driven Counters Perform Well in Edmonton

Laurent Lacroix

Since July 23, 2000, I have been tinkering with, and testing, a cable-driven counter design that uses an analog bicycle speedometer cable, and have reported some of the results in past issues of Measurement News. The last few months of testing culminated with the validation ride of the 2001 World Championships, where three of the eight riders used cable-driven counters. Bernie Conway and I had cable-driven counters that measured 31.1111... counts per revolution, while John McBean's cable-driven counter measured 23.6363... counts per revolution. The data obtained by these three measurers gave results closely matched that of measurers using Jones/Oerth Counters.



The gearing of my cable-driven counter differs from the original Jones Counter and the Jones/Oerth Counter. This is not by choice: the only Canadian supplier that I have found distributes an axle mount with a gearing of 280/9 or 31.1111... counts per revolution. This allows me to measure in smaller units (approximately 6.26 cm per count with my slick 26 inch tires as opposed to the 8.24 cm per count with the Jones/Oerth Counter). Theoretically this will make the device more precise than its predecessors, but in reality, the ability of a measurer to follow the SPR is by far the most significant factor in the precision of course measurement.

In addition to the data recorded from the cable-driven counter, I had a second counter mounted on the right side of the front hub that allowed me to directly compare the performance of the cable-driven counter to a standard Jones/Oerth Counter's. I've found this method to be the only sure way to evaluate the performance of the cable-driven counter since no two riders will follow exactly the same path; nor is a single rider likely to reproduce a measurement *exactly* as it was ridden previously. In order to compare the cable-driven counter's data to the Jones/Oerth Counter's, I multiplied the data obtained by a conversion factor, which I obtained by dividing the cable-driven counter's gear ratio (280/9) by the Jones/Oerth Counter's gear ratio (260/11).

$$\frac{280}{9} \div \frac{260}{11} = 0.75974025974026$$

By multiplying the interval in counts obtained from cable-driven by the conversion factor, I should obtain the interval in counts for the Jones/Oerth Counter. The cable-driven counter's numbers never perfectly matched the Jones/Oerth Counter's, but differences did not exceed a count, even when the distance covered was greater than 40 km.



Elapsed Counts from Point 2 to Point 1 of the 2001 World's Marathon

Cable-driven Counter Interval (cts)	Converted Counts	Jones/Oerth Interval (cts)	Difference (cts)
654428	497195.2987	497195.5	-0.20

I attribute the small differences to rounding off errors in reading the counters to a fraction of a count. I attempted to minimize these errors by recording numbers to the nearest quarter of a count. I find this particularly interesting because such errors are always present when reading any counter. Though minimal and not cumulative, these errors occur at all times, including calibration rides. During the calculations of the working constant and the race distance, the small error is multiplied and can result in a difference of close to a metre or so between two counters on the same wheel over 42.2 km.

**Measured Distances from Point 2 to Point 1 of the 2001 World's Marathon**

	Cable-driven Counter			Jones/Oerth Counter		Difference
	Counts	Interval	Converted Counts	Counts	Interval	
<b>1st calibration</b>	23500			740486.5		
	30140	6640	5044.6753	735441.5	5045	-0.32
	36778	6638	5043.1558	730398.75	5042.75	0.41
	43416	6638	5043.1558	725355.5	5043.25	-0.09
	50055.25	6639.25	5044.1055	720311	5044.5	-0.39
	<b>avg</b>	<b>6638.8125</b>	<b>5043.7731</b>	<b>avg</b>	<b>5043.875</b>	<b>-0.1018669</b>
<b>2nd calibration</b>	25620			207057.5		
	32250	6630	5037.0779	202020	5037.5	-0.42
	38882.75	6632.75	5039.1672	196981.5	5038.5	0.67
	45512	6629.25	5036.5081	191944.75	5036.75	-0.24
	52142.5	6630.5	5037.4578	186907	5037.75	-0.29
	<b>avg</b>	<b>6630.625</b>	<b>5037.5528</b>	<b>avg</b>	<b>5037.625</b>	<b>-0.0722403</b>
<b>Pre-Post avg</b> For 415.27 m		<b>6634.7188</b>	<b>5040.6629</b>		<b>5040.75</b>	<b>-0.0870536</b>
<b>Counts/m</b>		15.97688	12.13828		12.13849	
<b>Elapsed Counts</b> (Point 2 to Point 1)		654428	497195.3		497195.5	-0.2
<b>Measured Distance (m)</b>		40960.94			40960.25	0.69081

The difference of -0.20 counts between the two counters over the 40.96 km distance is a mere -1.66 cm before "polluting" the data with the calibration calculations. Factoring in the calculations from the calibrations increases the difference to 69.1 cm.

The cable-driven counters performed admirably in Edmonton, and I am confident in stating that they work as well as other counters commonly in use. The main advantage to using the cable-driven counter is that I can see the counter without completely averting my eyes from the SPR and from oncoming traffic, a big advantage when establishing split locations on busy streets.