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## Air India Flight 182 Memorial Sundial



*Project File Photo*

R. Bouwmeester & Associates was commissioned by the City of Toronto in late 2006 to design the sundial feature for the Air India Flight 182 Memorial planned for the Toronto, Ontario, waterfront. The Memorial was built in early 2007 in Humber Bay Park East which is located at the foot of Park Lawn Road south of Lakeshore Boulevard West.



## Location Maps

*Photos via Google Earth*

The sundial is the central feature of the Memorial. It was unveiled by Prime Minister Stephen Harper on June 23, 2007. This date marked the 22nd anniversary of the bombing of Air India Flight 182 en route from Montreal to Delhi and Bombay in which 329 victims perished, and the bombing at Narita Airport, Japan, earlier that same day, that killed two baggage handlers.



**Prime Minister Stephen Harper**

*Photo; By Federal Government (Germany)/ REGIERUNGonline / Steins (G8 Summit 2007 Helligendamm) [Attribution], via Wikimedia Commons*

Air India Flight 182 was lost on June 23, 1985, off the south-west coast of Ireland near Ahakista where a memorial was constructed one year later in 1986. The Toronto memorial evokes some of the features of its Irish counterpart, for example, the sundial was designed with a circular, horizontal base mounted on stones. The support stones for the Toronto sundial were donated by various provincial and international organizations representing all of the provinces and territories of Canada, and the countries of India, Ireland, Japan and the USA - all of whom were directly touched by the tragedy.

The overall concept for the Memorial was developed by Peter Klambauer, City of Toronto, Parks & Forestry Department, in consultation with the Air India Victims' Families Association. The Memorial consists of pathways, plazas, retaining walls, low walls, benches and the central sundial.

Mr. Klambauer describes the Memorial by saying:

*"The sundial rests in a small plaza that is framed by two monumental walls, the inscription wall and the title wall. The inscription wall bears the names of the 331 victims. It is oriented in the direction of Ireland, measured at approximately 52 degrees East of North. The title wall follows the direction of the approach pathway, which transforms into a ramp that leads the observer onto the sundial plaza. The plaza itself has a quarter-circle edge with 3 radiating steps, which is intended to evoke a temple-like effect, and which may be the place for adorning wreaths and flowers. The title of the memorial is written on the granite capstone of the title wall, which faces the sundial plaza."*



*Project File Photos*

The south side of the title wall bears an inscription that reads:

***"THIS MEMORIAL HONOURS THE VICTIMS OF THE BOMBING OF AIR INDIA FLIGHT 182 WHICH CRASHED INTO THE ATLANTIC OCEAN BEYOND THE SHORES OF IRELAND ON JUNE 23RD, 1985".***

The sundial itself bears an inscription, similar to that on the sundial in Ahakista, that reads:

"TIME FLIES / SUNS RISE AND SHADOWS FALL /  
LET IT PASS BY / LOVE REIGNS FOREVER OVER ALL".



#### *Project File Photos*

The wording of the inscription and the circular, horizontal shape of the sundial were the only design elements deemed mandatory by the Client - as a reflection of those elements of the Irish sundial. For the design of the sundial's face and shadow-caster (gnomon), we were given a blank slate. Our goal was to develop a design that reflected the country of origin of the aircraft, while memorializing the date and time of the bombing.

The flag of India proved to be our inspiration for the design of the face of the sundial. In particular, the Dharma Chakra wheel, found in the middle of the flag, is the wheel of law in the Sarnath Lion Capital. The Chakra is a Buddhist symbol dating back to the 200th century BC; it has 24 spokes representing life in movement, death in stagnation, and the 24-hour solar cycle. Our final design incorporated these spokes modified to align with the hour lines of the sundial, and this pattern of spokes was mirrored on the sides of the stainless steel gnomon. The spoked pattern was cut out of the gnomon giving it a lattice-like appearance that casts dramatic shadows.



**The Flag of India**

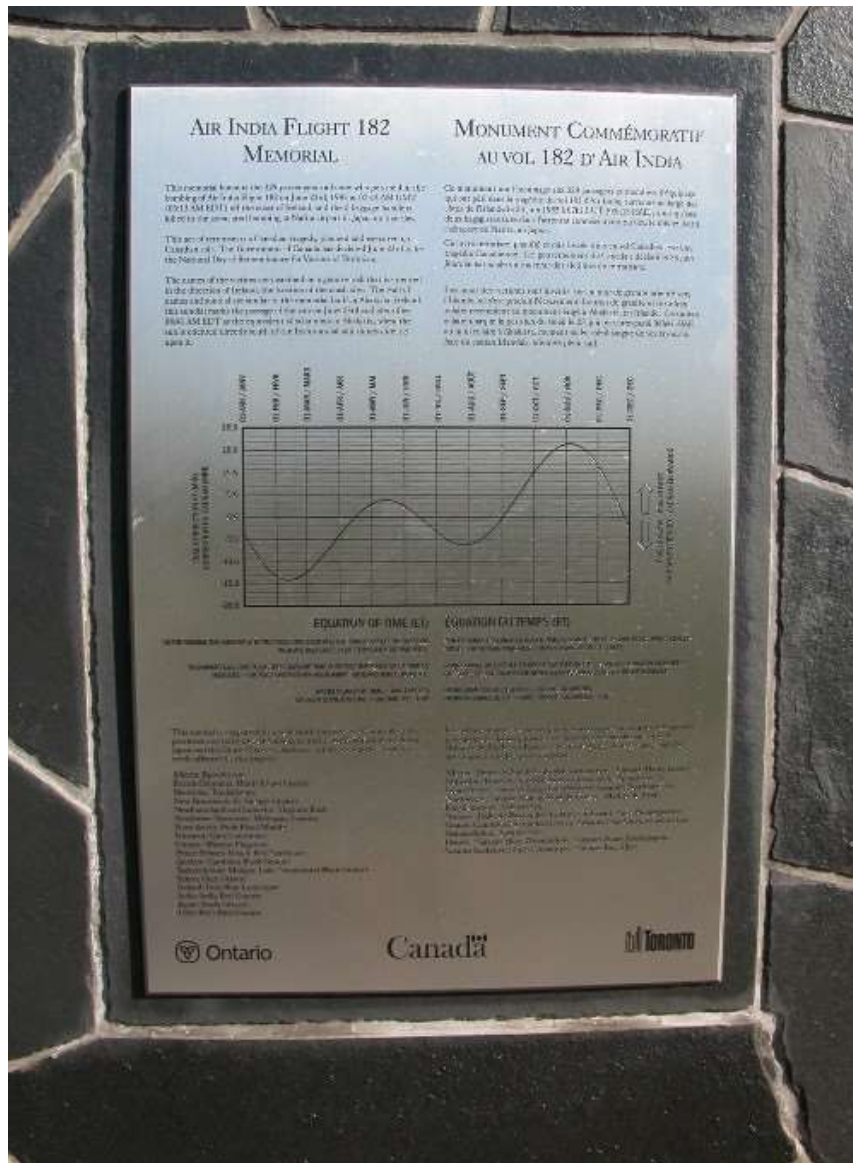
*Image By User:SKopp [Public domain or Public domain], via Wikimedia Commons*



### Enlargement of the Dharma Chakra

Image By File:Flag of India.svg: User:SKopp derivative work: User:Madden [Public domain], via Wikimedia Commons

The sundial shows traditional 'sundial time' to which a correction must be applied in order to convert it to local watch time. This correction, known as the 'equation of time', or sundial correction, accounts for earth's elliptical orbit and the varying speed at which it revolves around the sun. A graph showing the sundial correction can be found on a brass plaque mounted in the inscription wall. On June 23, the sundial is only about 2 minutes slow so the times can be read almost directly.



*Project File Photo*

Although sundials are typically labeled in Standard Time, the times on this sundial are indicated in Eastern Daylight Time (EDT) since daylight time applies on the key date of this Memorial. A note on the brass plaque indicates that one hour should be subtracted from the dial time at those times of year when Standard Time applies.

As mentioned above, the dial runs 2 minutes slow on June 23. To facilitate the reading of actual times on the anniversary date, hourly watch times for this date are marked by small circles on the June 23 declination line.

Although memorial sundials typically mark, by shadow, the specific date and time of an event, a major challenge in the design of the Air India Memorial Sundial was the fact that the bombing occurred at night - Toronto time. However, the June 23rd date was simple to highlight. It is marked by a declination line which is traced by the tip of the gnomon's shadow on June 23. In addition, the gnomon was shaped such that at solar noon on June 23, it casts no shadow whatsoever.

Since the bombing occurred at night Toronto time, this sundial would be unable to mark the actual time of the event. After considering a number of options, we came up with an alternative - that is, a way to 'connect' the Toronto and Ahakista sundials. As it turns out, the sun passes over the meridian of the memorial in Ireland at 8:41 am EDT (Toronto time) on June 23 and we realized that one could look up at the sun in the eastern sky at 8:41 and know that it is at its peak and shining directly down on the Irish memorial at that time. So, we marked 8:41 am EDT on the June 23 declination line with a small circle and labeled it, "Solar Noon Ahakista Ireland". The brass plaque describes it thus:

*"This sundial marks the passage of the sun on June 23rd and identifies 08:41 AM EDT as the equivalent of solar noon in Ahakista, when the sun is oriented directly south of the Irish sundial and shines directly upon it."*

*Project File Photo***Links to several media articles about the unveiling:**

- [Memorial for Air India victims unveiled](#) - CBC News
- [Air India Memorial Unveiled In T.O.](#) - CityTV CityNews
- [Air India memorial unveiled in Toronto ceremony](#) - CTV News
- [Air India victims remembered at new memorial](#) - The Globe and Mail

**Reference and links to the NASS Registry:**

We are honoured to have had our sundial recognized by The North American Sundial Society (NASS) and registered in their database. A brief [write-up and photos](#) can be found on their [web site](#).

**Links to media articles about the Spring 2010 vandalism:**

[Air India Memorial vandalized](#) - InsideToronto.com, May 5, 2010

[Vandals Deface Air India Memorial In Etobicoke](#) - CityNews, May 19, 2010

[Sundial repaired in time for 25th anniversary ceremony](#) - Globe & Mail, June 22, 2010

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[\(back to top\)](#)