


Ontario Highway 401

Route map: 

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King's Highway 401, commonly referred to as **Highway 401** and also known by its official name as the **Macdonald–Cartier Freeway** or colloquially as **the four-oh-one**,^[3] is a controlled-access 400-series highway in the Canadian province of Ontario. It stretches 828.0 kilometres (514.5 mi) from Windsor in the west to the Ontario–Quebec border in the east. The part of Highway 401 that passes through Toronto is North America's busiest highway,^{[4][5]} and one of the widest.^{[6][7]} Together with Quebec Autoroute 20, it forms the road transportation backbone of the Quebec City–Windsor Corridor, along which over half of Canada's population resides and is also a *Core Route* in the National Highway System of Canada. The route is maintained by the Ministry of Transportation of Ontario (MTO) and patrolled by the Ontario Provincial Police. The speed limit is 100 km/h (62 mph) throughout its length, unless posted otherwise.

By the end of 1952, three individual highways were numbered "Highway 401": the partially completed Toronto Bypass between Weston Road and Highway 11 (Yonge Street); Highway 2A between West Hill and Newcastle; and the Scenic Highway between Gananoque and Brockville, now known as the Thousand Islands Parkway. These three sections of highway were 11.8 km, 54.7 and 41.2 km, (7.3, 34.0 and 25.6 mi), respectively. In 1964, the route became fully navigable from Windsor to the Ontario–Quebec border. In 1965 it was given a second designation, the Macdonald–Cartier Freeway, in honour of two Fathers of Confederation. At the end of 1968, the Gananoque–Brockville section was bypassed and the final intersection grade-separated near Kingston, making Highway 401 a freeway for its entire 817.9-km length. On August 24, 2007, the portion of the highway between Glen Miller Road in Trenton and the Don Valley Parkway / Highway 404 Junction in Toronto was designated the **Highway of Heroes**, as the road is travelled by funeral convoys for fallen Canadian Forces personnel from CFB Trenton to the coroner's office in Toronto. On September 27, 2013, the Highway of Heroes designation was extended west to Keele Street in Toronto, to coincide with the move of the coroner's office to the new Forensic Services and Coroner's Complex at the Humber River Hospital.

In 2011, construction began on a westward extension called the **Right Honourable Herb Gray Parkway**. This new route follows, but does not replace, former Highway 3 between the former end of the freeway and the E. C. Row Expressway, at which point it turns and parallels that route towards the site of the future Gordie Howe International Bridge. An 8-kilometre (5 mi) section of the parkway, east of the E. C. Row interchange, opened on June 28, 2015, with the remaining section completed and opened on November 21. Elsewhere in Ontario, plans are under way to widen the remaining four-lane sections between Windsor and London to six lanes and to widen the route between Kitchener and Milton as well as through Oshawa. The expansive twelve-plus-lane collector–express system will also be extended west through Mississauga to Milton and east through Ajax and Whitby.

Route description



Highway 401 just east of Highway 400 in Toronto, one of the highway's busiest segments



Highway 401 at Weston Road has volumes of over 500,000 vehicles per day during the summer months, making it the busiest stretch of highway in the world.

Highway 401 extends across Southwestern, Central and Eastern Ontario. In anticipation of the future expansion of the highway, the transportation ministry purchased a 91.4-metre-wide (300 ft) right-of-way along the entire length. Generally, the highway occupies only a portion of this allotment.^[8] It is one of the world's busiest highways;^[6] a 2008 analysis stated the annual average daily traffic (AADT) count between Weston Road and Highway 400 in Toronto was approximately 450,000,^[1] while a second study estimate over 500,000 vehicles travel that section on some days.^[5] This makes it North America's busiest roadway, surpassing the Santa Monica Freeway in Los Angeles and I-75 in Atlanta.^{[7][9]} The just-in-time auto parts delivery systems of the highly integrated automotive industry of Michigan and Ontario have contributed to the highway's status as the world's busiest truck route,^[10] carrying 60 percent of vehicular trade between Canada and the US.^[7]



Highway 401 also features North America's busiest multi-structure bridge, located at Hogg's Hollow in Toronto.^[10] The four bridges, two for each direction with the collector and express lanes, carried an average of 373,700 vehicles daily in 2006.^[1] The highway is one of the major backbones of a network in the Great Lakes region, connecting the

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Highway 401
Macdonald–Cartier Freeway
<div><div><div><div><div><div><div></div><div><div>Highway 401 within Southern Ontario</div></div></div></div><div></div></div></div></div></div>
Route information
Maintained by the <u>Ministry of Transportation of Ontario</u>
Length 828.0 km ^[1] (514.5 mi)
History Proposed 1938 <div><div>Opened December 1947 – October 11, 1968^[2]</div><div>Extended June 28 and November 21, 2015</div></div>
Major junctions
West end <u>Ojibway Parkway in Windsor</u> <div><div>E. C. Row Expressway in Windsor</div><div><div><div>402</div></div> Highway 402 in London</div><div><div><div>403</div></div> Highway 403 near Woodstock</div><div><div><div>407</div></div> Highway 407 near Milton</div><div><div><div>403</div><div>410</div></div> Highway 403 / Highway 410 in Mississauga</div><div><div><div>427</div></div> Highway 427 in Toronto</div><div><div><div>409</div></div> Highway 409 in Toronto</div><div><div><div>400</div></div> Highway 400 in Toronto</div><div><div><div>404</div><div>404</div></div> Don Valley Parkway / Highway 404 in Toronto</div><div><div><div>412</div></div> Highway 412 in Whitby</div><div><div><div>416</div></div> Highway 416 towards Ottawa</div></div>
East end <div><div><div>20</div></div> A-20 towards Montreal, QC</div>
Location
Country <u>Canada</u>
Province <u>Ontario</u>

populous Quebec City–Windsor corridor with Michigan, New York and central Ontario's cottage country.^[11] It is the principal connection between Toronto and Montreal, becoming Autoroute 20 at the Ontario–Quebec border.^[12]

Southwestern Ontario

Highway 401 does not yet extend the last few kilometres to Detroit;^[13] an extension to Brighton Beach (at the Canada–US border in Windsor) was completed in November 2015, after which the Gordie Howe International Bridge will extend Highway 401 across the Canada–United States border through Delray to Interstate 75 in Michigan by 2019.^{[14][15]} At present, Highway 401 begins as a six-lane freeway at the west end of the E. C. Row Expressway. At the Dougall Parkway, the highway turns east and exits Windsor.^[16] From here, Highway 401 mostly parallels the former route of Highway 98 from Windsor to Tilbury.^[17]

Major cities	<u>Windsor</u> , <u>London</u> , <u>Kitchener</u> , <u>Cambridge</u> , <u>Mississauga</u> , <u>Toronto</u> , <u>Oshawa</u> , <u>Kingston</u> and <u>Cornwall</u>
Highway system	
Ontario provincial highways	
Current · Former · 400-series	
 Highway 400	Highway 402 

Southwestern Ontario is flat, primarily agricultural land, that takes advantage of the fertile clay soil deposited throughout the region.^{[18][19]} The main river through the region is the Thames River, which drains the second largest watershed in southern Ontario and largely influences the land use surrounding the highway;^[20] It parallels the route to the north between Tilbury and Woodstock.^[16]

Near Tilbury, Highway 401 loses its tall wall median barrier and narrows to four lanes, following lot lines laid between concession roads in a plan designed to limit damage to the sensitive agricultural lands through which the highway runs.^[21] Here the highway's flat and straight route is notorious for leading to driver inattention.^[22] The section from Windsor to London (especially west of Tilbury) has become known for deadly car accidents and pile-ups, earning it the nickname *Carnage Alley*.^[23] As the highway approaches London, Highway 402 merges in,^[16] resulting in a six-lane cross-section.^{[24][25]} Within London, it intersects the city's two municipal expressways, Highbury Avenue and the Veterans Memorial Parkway.^[26]



Highway 401 widens to six lanes at Highway 402 in London.

The section between London and Woodstock generally parallels the former Highway 2 but lies on the south side of the Thames River.^[16] This area is not as flat but the highway is generally straight. This part of Highway 401 often experiences heavy snowsqualls in early winter, sometimes extending as far east as Toronto. To the south of Woodstock, Highway 401 curves northeast and encounters the western terminus of Highway 403.^[26] The highway heads towards Kitchener and Cambridge, where it encounters Highway 8 and returns to its eastward orientation.^{[16][27]} East of Cambridge, the highway meanders towards Milton, passing through hills and rock cuts along the way.^[28]

Greater Toronto Area

As Highway 401 approaches the Greater Toronto Area (GTA), it descends through the ecologically protected Niagara Escarpment to the west of Milton.^{[29][30]} Upon entering the town, it enters the first urbanized section of the GTA, passing through two rural areas between there and Oshawa.^{[16][31]} The first rural gap is the western side of Toronto's Greenbelt, a zone around Toronto protected from development.^[29] After this 10 km (6.2 mi) gap, the highway interchanges with the Highway 407 Express Toll Route. Within the GTA, the highway passes several major shopping malls including Yorkdale Shopping Centre, Scarborough Town Centre and Pickering Town Centre.^{[32][33][34]}



Highway 401 between Highway 410 and Highway 403 in Mississauga

Highway 401 widens into a collector-express system^[35] as it approaches Hurontario Street in Mississauga, a concept inspired by the Dan Ryan Expressway in Chicago.^[8] The system divides each direction of travel into collector and express lanes,^[36] giving the highway a wide span and four carriageways. To avoid confusion between carriageways, blue signs are used for the collector lanes and green signs for the express lanes. Unlike the collector lanes, which provide access to every interchange, the express lanes only provide direct access to a select few interchanges. Access between the two is provided by transfers, which are strategically placed to prevent disruptions caused by closely spaced interchanges.^[37] The overall purpose of the collector-express system is to maximize traffic flow for both local and long-distance traffic. In addition, Highway 401 was equipped with a traffic camera system called COMPASS in early 1991.^[38] Using closed-circuit television cameras, vehicle detection loops and LED changeable-message signs, COMPASS enables the MTO Traffic Operations Centre to obtain a real-time assessment of traffic conditions and alert drivers of collisions, congestion and construction.^[39] The system currently stretches from the Highway 403 / 410 interchange in Mississauga to Harwood Avenue in Ajax.^[40]

Two sets of collector-express systems exist in the GTA. The first set is 6.6 km (4.1 mi) long and connects Highway 403, Highway 410 and Highway 427.^[41] This system primarily serves to accommodate and organize various traffic movements from the Highway 403 / 410 and Highway 427 interchanges along Highway 401, replacing an earlier plan that would have run Highway 403 directly to Eglinton Avenue and the never-built Richview Expressway.^[42] East of the interchange with Renforth Drive, the collector lanes diverge to become the on-ramps to Highway 427 northbound and southbound. The second 43.7 km (27.2 mi) system passes through the centre of Toronto and ends in Pickering to the east.^[43] The 5 km (3.1 mi) gap between the two systems is a traffic bottleneck. However, the interchange cannot currently accommodate future widening of Highway 401.^[9]



"The Basketweave", located just east of the Highway 400 interchange, is a free-flowing crossover between the collector and express lanes.

Highway 401 widens to 18 lanes south of Toronto Pearson International Airport.^[7] Progressing eastward, eight lanes are carried beneath the large spaghetti junction at Highway 427. The highway curves northeast and follows a power transmission corridor to Highway 409, which merges with the mainline and forms the collector lanes. It returns to its eastward route through Toronto, now carrying 12–16 lanes of traffic on four carriageways.^{[35][44]} Highway 401 is often congested in this section, with an average of 442,900 vehicles passing between Weston Road and Highway 400 per day as of 2008.^{[1][7]} In spite of this congestion, it is the primary commuting route in Toronto; over 50 percent of vehicles bound for downtown Toronto use the highway.^[45]



Different signs on Highway 401's collector-express system are used to avoid confusion. The express lanes use green signs and the collector lanes use blue. These particular signs are located at *The Basketweave*.



Traffic cameras are mounted at every exit within Toronto and form one part of the COMPASS system.

East of Highway 400 is *The Basketweave*, a criss-crossing transfer between the express and collectors carriageways,^[35] beyond which is Yorkdale Centre. Twelve lanes pass beneath a complicated interchange with Allen Road, built to serve the cancelled Spadina Expressway. Further east, the highway crosses Hogg's Hollow, over the West Don River and Yonge Street in the centre of Toronto, the busiest multi-span bridge crossing in North America, surpassing the Brooklyn Bridge. It then crosses the East Don River and climbs toward the Don Valley Parkway, which provides access to downtown Toronto and Highway 404, which provides access to the suburbs to the north. Progressing eastward, the highway continues through mostly residential areas in Scarborough, eventually reaching the Rouge Valley on the city's eastern edge and crossing into Pickering.^[35]

West of Pickering, Highway 401 again meets former Highway 2, which thereafter parallels it to the Ontario–Quebec border.^[16] As the highway approaches Brock Road in Pickering, the collector and express lanes converge, narrowing the 14-lane cross-section to 10, divided only at the centre.^[44] It remains this width as it passes into Ajax,^[35] before narrowing back to six lanes at Salem Road.^[46] Planned expansions east of Salem to accommodate an interchange with Highway 412 will see the highway widened to ten lanes east to Brock Street.

East of Ajax, the highway passes through the second 3.5 km (2.1 mi) rural gap, and enters Whitby. The stretch of Highway 401 through Whitby and Oshawa features several structures completed during the initial construction of the highway in the 1940s.^[9] Several of these structures are to be demolished, either due to their age, or to prepare for the planned widening of Highway 401 through this area.^[47] A former Canadian National

Railway overpass, which was fenced off but commonly used by pedestrians during Highway of Heroes repatriations, was demolished on the night of June 11, 2011. A second structure in Bowmanville was demolished during two overnight closures on July 9 and 16.^[48] At Harmony Road, the suburban surroundings quickly transition to agricultural land. The highway curves around the south side of Bowmanville and travels towards Highway 35 and Highway 115.^[31]

Eastern Ontario

From east of Highway 35 and Highway 115 to Cobourg, Highway 401 passes through a mix of agricultural land and forests, maintaining a straight course.^[49] As the highway passes through Cobourg, it narrows to four lanes and the terrain becomes undulating, with the highway routed around hills and through valleys along the shores of Lake Ontario.^[50] At Trenton, the highway crosses the Trent Canal and returns to an agricultural setting. It then crosses the Moira River as it goes through Belleville before heading eastward to Kingston.^[12] The Kingston portion of the highway, originally named the *Kingston-Bypass*, was one of the first sections of the highway to be completed;^[2] it is now mostly three lanes each way.

East of Kingston, the highway continues through a predominantly agricultural area alongside the Saint Lawrence River to Gananoque, where it splits with the Thousand Islands Parkway.^[51] one of the original sections of the highway designated in 1952.^[52] The current Highway 401 runs parallel to the parkway several kilometres inland from the river. The Canadian Shield, an ancient geological formation, appears through this heavily forested section of the highway. Highway 401 rejoins the Thousand Islands Parkway immediately southwest of Brockville, now heading northeast.^[53]

The remainder of the highway runs parallel to the former Highway 2 along the shore of the Saint Lawrence River within the Saint Lawrence Valley. Northeast of Brockville is the interchange with Highway 416, which heads north to Ottawa.^[54] At the Ontario–Quebec border, Highway 401 becomes Autoroute 20 and continues to Montreal.^[55]

Traffic

The MTO publishes yearly traffic volume data for provincial highways, expressed as an average daily vehicle count over the span of a year (AADT).^[56] The table below compares the AADT at several locations along Highway 401 using data from 1969, 1988 and 2008.



Highway 401 in central Toronto; the North York skyline is visible in the distance.



Traffic congestion on Highway 401 east of Toronto. During rush hours and holidays, Highway 401 eastbound suffers severe from traffic jams as the collector-express system ends between Pickering and Ajax, causing a traffic bottleneck.



East of Highway 416, Highway 401 is a low-volume rural freeway with a grass median.

Traffic volumes												
Location	Windsor	London	Woodstock	Cambridge	Mississauga	Toronto	Oshawa	Belleville	Kingston	Brockville	Cornwall	
Section	Dougall Parkway – Essex County Road 46	Highbury Avenue – Veterans Memorial Parkway	Oxford County Road 59 – Highway 403	Highway 8 – Highway 24	Mississauga Road – Hurontario Street	Weston Road – Highway 400	Park Road – Simcoe Street	Highway 62 – Highway 37	Frontenac County Road 38 – Sydenham Road	Highway 29 – North Augusta Road	Highway 138 – McConnell Avenue	
Traffic volume (AADT)	1969 ^[57]	9,550	17,450	16,700	19,900	28,450	106,850	29,000	13,750	12,000	10,050	10,300
	1988 ^[1]	13,200	33,800	35,100	50,400	97,100	319,600	79,000	22,500	20,700	15,300	12,900
	2008 ^[1]	16,700	64,500	67,100	125,600	177,300	442,900	120,700	43,500	45,400	29,100	18,400
Average annual daily traffic counts of selected sections of Highway 401 over 40 years												

Lane count (November 2015)												
Location	E C Row Expressway to Essex County Road 42	Essex County Road 42 to Highway 402	Highway 402 to Highway 403 / 410	Highway 403 / 410 to Highway 427	Highway 427 to Highway 27	Highway 27 to Highway 409	Highway 409 to Brock Road	Brock Road to Salem Road	Salem Road to Burnham Street	Burnham Street to Frontenac County Road 38	Frontenac County Road 38 to Montreal Street	Montreal Street to Ontario border
Lane count	6 lanes ^[58]	4 lanes ^[28]	6 lanes ^[58]	18-lane collector-express system ^[7]	8 lanes ^[9]	10 lanes ^[35]	12–16-lane collector-express system ^[44]	10 lanes ^[44]	6 lanes ^[46]	4 lanes ^[12]	6 lanes ^[59]	4 lanes ^[12]
Distance ^[1]	55.7 km (34.6 mi)	127.5 km (79.2 mi)	161.3 km (100.2 mi)	5.8 km (3.6 mi)	0.8 km (0.50 mi)	3.9 km (2.4 mi)	43.3 km (26.9 mi)	6.0 km (3.7 mi)	68.3 km (42.4 mi)	138.2 km (85.9 mi)	8.2 km (5.1 mi)	205 km (127 mi)
Number of through lanes on Highway 401 (excludes ongoing or planned widening projects)												

History

Predecessors

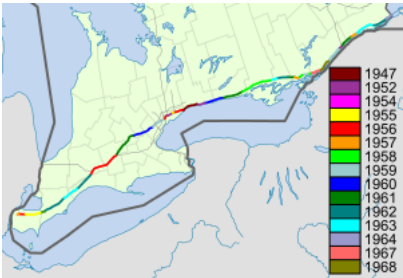
Highway 401's history predates its designation by over two decades. As automobile use in southern Ontario grew in the early 20th century, road design and construction advanced significantly. Following frequent erosion of Lake Shore Road, then macadamized,^[60] a concrete road known as the *Toronto–Hamilton Highway* was proposed in January 1914. Construction began on November 8 of that year, following the onset of World War I.^{[61][62]} The highway was designed to run along the lake shore, instead of Dundas Street to the north, because the numerous hills encountered along Dundas would have increased costs without improving accessibility. Middle Road, a dirt lane named because of its position between the two, was not considered since Lake Shore and Dundas were both overcrowded and in need of serious repairs.^[63] The road was formally opened on November 24, 1917,^{[60][61]} 5.5 m (18 ft) wide and nearly 64 km (40 mi) long. It was the first concrete road in Ontario, as well as one of the longest stretches of concrete road between two cities in the world.^[64]

Over the next decade, vehicle usage increased substantially, and by 1920 Lakeshore Road was again congested, particularly during weekends.^[65] In response, the Department of Highways examined improving another road between Toronto and Hamilton. The road was to be more than twice the width of Lakeshore Road at 12 m (39 ft) and would carry two lanes of traffic in either direction.^[66] Construction on what was then known as the *Queen Street Extension* west of Toronto began in early 1931.^[67]

Before the highway could be completed, Thomas McQuesten was appointed the new minister of the Department of Highways, with Robert Melville Smith as deputy minister, following the 1934 provincial elections.^[9] Smith, inspired by the German autobahns—new "dual-lane divided highways"—modified the design for Ontario roads,^[68] and McQuesten ordered that the Middle Road be converted into this new form of highway.^{[69][70][71]} A 40 m (130 ft) right-of-way was purchased along the Middle Road and construction began to convert the existing sections to a divided highway. Work also began on Canada's first interchange at Highway 10.^[66]

Beginning in 1935, McQuesten applied the concept of a dual-highway to several projects along Highway 2, including along Kingston Road in Scarborough Township.^{[9][72]} When widening in Scarborough reached the Highland Creek ravine in 1936, the Department of Highways began construction on a new bridge over the large valley, bypassing the former alignment around West Hill.^[73] From here the highway was constructed on a new alignment to Oshawa, avoiding construction on the congested Highway 2.^[8] As grading and bridge construction neared completion on the new highway between West Hill and Oshawa in September 1939, World War II broke out and gradually tax revenues were re-allocated from highway construction to the war effort.^[9]

At the same time, between September 6 and 8, 1939, the Ontario Good Roads Association Conference was held at Bigwin Inn, near Huntsville,^[74] drawing highway engineers from across North America to discuss the new concept of "Dual Highways". On the first day of the convention, McQuesten announced his vision of the freeway: an uninterrupted drive through the scenic regions of Ontario, discouraging local business and local traffic from accessing the highway except at infrequent controlled-access points.^[75] It was announced in the days thereafter that this concept would be applied to a new "trans-provincial expressway", running from Windsor to the Ontario–Quebec border.^[76]



Highway 401 colour-coded by the year each section opened to traffic



The former Highway 2A near Highland Creek, aside from a resurfaced pavement, has not been altered since it opened in 1947.



The Highway 400 interchange in 1953. Today, the former cloverleaf has been replaced with a multilevel interchange.

Highway engineers evaluated factors such as grading, curve radius and the narrow median used along the Middle Road (which was inaugurated on August 23, 1940, as the *Queen Elizabeth Way*).^[77] and began to plan the course of a new dual highway mostly parallel to Highway 2, with precedence given to areas most hampered by congestion. Unlike the Queen Elizabeth Way (QEW), this highway would not be built along an existing road, but rather on a new right-of-way, avoiding the need to provide access to properties.^{[9][75]}

Along with immense improvements to machinery and construction techniques over its six-year course, the war provided planners an opportunity to conduct a survey of 375,000 drivers, asking them about their preferred route to travel to their destination. Using this information, a course was plotted from Windsor to Quebec, bypassing all towns along the way.^{[8][78]}

Highway 2S (S for Scenic), was the first completed section of new roadway. Built to connect with the Thousand Islands Bridge at Ivy Lea and opened as a gravel road in late 1941 or early 1942,^[79] the road followed the shore of the Saint Lawrence River and connected with the western end of the twinned Highway 2 near Brockville.^[16] In addition, the highway between Highland Creek and Oshawa was opened as a gravel-surfaced road in May 1942.^[80]

Following the war, construction resumed on roadways throughout Ontario. The expressway between Highland Creek and Oshawa was completed in December 1947,^[8] while other sections languished. The Toronto–Barrie Highway was the primary focus of the Department of Highways at the time, and the onset of the Korean War in 1950 stalled construction again. Despite the delays, highway minister George Doucett officially announced the plans for construction of the new trans-provincial expressway that year, with the Toronto to Oshawa expressway serving as a model for the design.^[9] Work on the most important link, the *Toronto Bypass*, began in 1951,^[9] but it would not open with that name.



Heavy traffic traverses Highway 401 within Toronto 24 hours a day.

Assumption

In July 1952 (possibly July 1, the same day Highway 400 was numbered),^{[a][52]} the Highland Creek to Oshawa expressway and Highway 2S were designated *Controlled-Access Highway No 401*,^[8] a move scorned by one critic because of the lack of thought into the numbered name.^[81] Construction was completed for several sections of the Toronto Bypass; between Highway 400 and Dufferin Street in August, west to Weston Road in September, east to Bathurst Street in October and finally to Yonge Street in December.^[2] Extensions east and west began in 1953; the eastern extension to Bayview Avenue would open in April 1955,^[2] the western extension was delayed by the damage caused by Hurricane Hazel on October 15, 1954, which nearly destroyed the new bridge over the Humber River. The reconstruction would take until July 8, 1955,^[82] and the highway was opened between Weston and Highway 27 in September 1955.^[2]



The widening of Highway 401 from four to twelve lanes in Toronto took nine years and was accomplished with at least four lanes open at all times. Shown here is the Highway 401 / Don Valley Parkway / Highway 404 interchange under construction in 1965.

The entire bypass, including the widening of Highway 27 into an expressway south of Highway 401,^{[8][83]} was completed in August 1956.^{[2][8]} Upon its opening, the bypass was described by one reporter as "a motorist's dream" providing "some of the most soothing scenery in the Metropolitan area". The reporter continued, with regard to the eastern section through Scarborough, that it "winds smoothly through pastures across streams and rivers, and beside green thickets. It seems a long way from the big city."^[8] By 1959 however, the bypass was a lineup of cars, as 85,000 drivers crowded the roadway, designed to handle a maximum of 48,000 vehicles, on a daily basis.^[8] Motorists found the new road to be a convenient way of travelling across Toronto; this convenience helped influence the suburban shift in the city and continues to be a driving force of urban sprawl today.^[52]

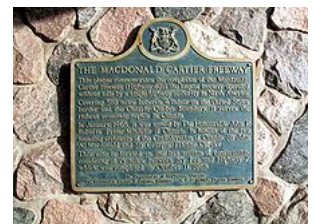
Meanwhile, beyond Toronto, the highway was being built in a patchwork fashion, focusing on congested areas first.^[9] Construction west from Highway 27 began in late 1954,^[84] as did the *Kingston Bypass* in Eastern Ontario.^[85] Work began to connect the latter with the *Scenic Highway* in 1955.^[84] After the 1954 New York State Thruway opened from Buffalo to New York City,^[86] Michigan officials encouraged Ontario to bypass Highway 3 as the most direct path from Detroit to Buffalo.^[87] By 1956, construction had begun on a segment between Highway 4 in London and Highway 2 in Woodstock, as well as on the section between Windsor and Tilbury.^[88]

In 1958, a section bypassing Morrisburg was opened to accommodate traffic displaced from a portion of Highway 2 through The Lost Villages of the Saint Lawrence Seaway.^[89] Highway 2 would ultimately be reopened on a new alignment which followed the CN rail right-of-way.

By the end of 1960, the Toronto section of the highway was extended both eastwards and westwards: first, to the east between Newcastle and Port Hope on June 30, then later to the west between Highway 25 in Milton and Highway 8 south of Kitchener on November 17.^[2] By mid-1961, the section between Brighton and Marysville had opened.^[90] The gap to the east, from Highway 28 in Port Hope to Highway 30 in Brighton was opened on July 20, 1961.^[91]

The gap between Woodstock and Kitchener was completed on November 9, 1961, while the gap between Tilbury and London was completed two lanes at a time; the northbound lanes on October 22, 1963, the southbound on July 20, 1965.^[2] The gap between Marysville and Kingston was opened by 1962.^[90] The final sections, from west of Cornwall to Lancaster, were opened between 1962 and 1964;^{[90][92]} two lanes opened to Lancaster on September 11, 1962, but the other two were not completed until July 31, 1964. The last segment, to the Ontario–Quebec border, was opened on November 10, 1964.^[2] Finally, on October 11, 1968, the Thousand Islands Bypass opened.^[8] This final piece was commemorated with a plaque to signify the completion of Highway 401.^[9]

In Toronto, engineers and surveyors were examining the four-lane bypass, while planners set about designing a way to handle the commuter highway. In 1963, transportation minister Charles MacNaughton announced the widening of Highway 401 in Toronto from four to a minimum of 12 lanes between Islington Avenue and Markham Road. The design was taken from the Dan Ryan Expressway in Chicago, which was widened into a similar configuration around the same time.^[8] Construction began immediately. While the plan initially called for construction to end in 1967, it continued for nearly a decade. At least four lanes were always open during the large reconstruction project, which included complex new interchanges at Highway 27, Highway 400, the



A plaque near Brockville commemorates the official completion of the highway.



Throughout the Greater Toronto Area, Highway 401 uses a collector-express roadway configuration to manage high traffic volumes. Highway 401's widest segment has 18 through lanes, located near Toronto Pearson International Airport and includes *The Transfer*.

planned Spadina Expressway and the Don Valley Parkway. The system was completed in 1972, along with the Highway 27 (renamed Highway 427) bypass between the QEW and Pearson Airport. Most of the interchanges in Toronto were reconstructed as partial cloverleaves and a continuous lighting system was installed.^[9]

On January 11, 1965, at the dinner celebration of Sir John A. Macdonald's 150th birthday, the Premier of Ontario John Robarts designated Highway 401 the *Macdonald–Cartier Freeway* to honour Macdonald and George-Étienne Cartier, two of Canada's Fathers of Confederation.^{[93][94]} Unlike other names later applied to the highway, the Macdonald–Cartier Freeway designation covers the entire length of Highway 401. Signs designating the freeway and shields with the letters 'M-C' were installed, but these had been removed by 1997.^[95] In 2003, 38 years after Robarts' naming of the highway, a Member of Provincial Parliament attempted to get the Macdonald-Cartier Freeway highway name enshrined into law; the bill only passed first reading and was not enacted.^[96]

In the 1970s, Highway 401 was widened to six lanes in Durham, but otherwise saw little improvement.^[9] The 1980s saw more sections widened, as well as a new collector-express system between Highway 403 / 410 and Highway 427 completed in mid-1985.^[97] Plans were made to extend the eastern system from Neilson Road to Brock Road in Pickering in the late 1980s,^[98] but took over a decade to reach fruition by 2000.^{[99][100]} This was followed shortly thereafter by the widening of the highway through Ajax and a new interchange at Pickering Beach Road (renamed Salem Road) and Stevenson Road.^[101]

The 1990s also saw the first step in widening the highway to six lanes from Toronto to London.^[102] A project in the mid-1990s brought the highway up to a minimum of six lanes between Highway 8 in Kitchener and Highway 35 / 115 in Newcastle.^[103] Other projects prepared sections for eventual widening.^[104]

In 1993, the stretch of Highway 401 eastbound near Milton and westbound near Whitby had chevrons painted in each lane in an effort to reduce tailgating, a concept borrowed from France and Britain. Signs advised motorists to keep at least two chevrons apart, in essence warning them not to follow too closely.^[105] Some of these chevrons remain intact in the westbound lanes in Whitby, though the signs stating their use have since been removed.^[106]



Highway 401 at Meadowvale Road in 1989, before being widened to a 14-lane collector-express system

Beginning in 1998, several projects were initiated on Highway 401 within Toronto. These included the addition of one lane through the Highway 427 interchange in 2005, as well as the resurfacing of the pavement through the city.^[6]

Advantage I-75

Between June 1990 and 1998, Highway 401 and Interstate 75 were used for a pilot project named *Advantage I-75* to test the reliability and versatility of an automated tracking system for transport trucks. Termed MACS for Mainline Automated Clearance System, it would allow a truck to travel from Florida to Ontario without a second inspection.^[107] MACS was initially tested out at two truck inspection stations in Kentucky, with transponders installed in 220 trucks. Exact time, date, location, weight and axle data were logged as a truck approached an equipped station.^[108] Following initial tests, MACS was deployed at every inspection station along I-75 from Miami to Detroit and along Highway 401 from Windsor to Belleville in 1994.^[107] The project demonstrated the effectiveness of electronic systems in enforcing freight restrictions without delaying vehicles, while alleviating security fears that such systems could be easily compromised. The concept has since been applied to many parts of Canada, including Highway 407's electronic tolling system.^[109]

"Carnage Alley"

The section of Highway 401 between Windsor and London has often been referred to as *Carnage Alley*, in reference to the numerous crashes that have occurred throughout its history. The term became more commonplace following several deadly pileups during the 1990s.^[9] The narrow and open grass median was an ineffective obstacle in preventing cross-median collisions. The soft shoulders consisted of gravel with a sharp slope which was blamed for facilitating vehicle rollovers.^[110] The nature of that section of highway, described as largely a straight road with a featureless agricultural landscape, was said to make drivers feel less involved and lose focus on the road. In winter, the area between Woodstock and Chatham is also subject to sudden snow squalls from lake-effect snow.^[111] Several collisions have resulted from motorists deviating from their lane and losing control of their vehicles.^{[110][112]}

Various other names, including *The Killer Highway* circulated for a time,^[113] but *Carnage Alley* became predominant following an 87-vehicle pile-up on September 3, 1999 (the start of Labour Day weekend), the worst in Canadian history, that resulted in eight deaths and 45 injured individuals.^[114]

Only a few days prior, then-Transportation Minister David Turnbull had deemed the highway "pleasant" to drive.^[115] On the morning of September 3, the local weather station reported clear conditions due to a malfunction,^[114] while a thick layer of fog rolled onto the highway. Dozens of vehicles including several semi-trailers quickly crashed into each other shortly after 8 a.m., one following another in the dense fog, and the accumulating wreckage caught traffic travelling in the opposite direction.^{[116][117]} Immediately following the crash, the MTO installed paved shoulders with rumble strips^[118] and funded additional police to patrol the highway, a move criticized as being insufficient.^[119]



Within years after opening, the four-lane Toronto Bypass was congested, prompting the Department of Highways to widen this section to 12 lanes beginning in 1963.



The 87-vehicle pile up on September 3, 1999



The route marker for the Highway of Heroes

Beginning in 2004, 46 km (29 mi) of the highway was widened from four asphalt lanes to six concrete lanes, paved shoulders were added, a concrete Ontario Tall Wall median was installed,^[120] which was the solution that the Canadian Automobile Association promoted in 1999.^[110] Interchanges were improved and signage was upgraded as part of a five-phase project to improve Highway 401 from Highway 3 in Windsor to Essex County Road 42 (formerly Highway 2) on the western edge of Tilbury.^[24]

Highway of Heroes

On August 24, 2007, the MTO announced that the stretch of Highway 401 between Glen Miller Road in Trenton and the intersection of the Don Valley Parkway and Highway 404 in Toronto would bear the additional name *Highway of Heroes* (*French: Autoroute des héros*), in honour of Canadian soldiers who have died,^[121] though Highway 401 in its entirety remains designated as the *Macdonald–Cartier Freeway*.^[122] This length of the highway is often travelled by a convoy of vehicles carrying a fallen soldier's body, with his or her family, from CFB Trenton to the coroner's office at the Centre for Forensic Sciences in Toronto. Since 2002, when the first fallen Canadian soldiers were repatriated from Afghanistan, crowds have lined the overpasses to pay their respects as convoys pass.^[123]

The origin of the name can be traced to an article in the *Toronto Sun* on June 23, 2007, by columnist Joe Warmington, in which he interviewed Northumberland photographer Pete Fisher. Fisher, along with Bob Jenkins, an emergency dispatcher, were responsible for organizing the first bridge salutes following the loss of four soldiers on April 18, 2002.^[124] Warmington described the gathering of crowds on overpasses to welcome fallen soldiers as a "highway of heroes phenomena".^[125] This led a Cramahe Township volunteer firefighter to contact Fisher on July 10 about starting a petition, leading Fisher to publish an article which was posted to the *Northumberland Today* website.^[126] The online article eventually caught the attention of London resident Jay Forbes. Forbes began a petition, which received over 20,000 signatures^[121] before being brought to the Minister of Transportation on August 22.^[127] Following the announcement on August 24, the provincial government and MTO set out to design new signs. The signs were erected and unveiled on September 7,^[122] and include a smaller reassurance marker (shield), as well as a larger billboard version.^[128]



Canadians line overpasses along the Highway of Heroes to pay their respects to fallen soldiers.



Highway 401 was closed during a series of propane explosions in Toronto in 2008, allowing for this rare photo of the 14-lane highway occupied by a single vehicle.

Safety concerns and highway improvements

On August 10, 2008, following a series of explosions at a propane facility in Toronto, Highway 401 was closed between Highway 400 and Highway 404 as a precautionary measure, the largest closure of the highway in its history.^[129] The highway remained closed until 8 p.m., though several exits near the blast remained closed thereafter.^{[130][131]}

Between 2006 and 2008, Highway 401 was widened from four to six lanes between Highway 402 and Wellington Road in London. This included replacing the original Wellington Road overpass.^[24] In Oshawa, Exit 416 (Park Road) was replaced by a new interchange at Exit 415 (Stevenson Road). The contract, which began September 7, 2005, included the interchange and the resurfacing of 23.4 km (14.5 mi) of the highway between Oshawa and Highway 35 / Highway 115.^[132] The westbound ramps were opened in mid-September 2007^[133] and the eastbound ramps in mid-2009. The resurfacing was completed mid-2010.^[132]

In November 2010, the widening of Highway 401 from four to six lanes between Woodstock and Kitchener was completed after many years of planning and construction.^[134] The project included the installation of a tall-wall median barrier, straightening curves and adding additional interchanges on the freeway, allowing it to be easily vacated in an emergency event.^[135]

Rt. Hon. Herb Gray Parkway

In 2004, a joint announcement by the federal government of the United States and Government of Canada confirmed that a new border crossing would be constructed between Detroit and Windsor. The Detroit River International Crossing (DRIC) was formed as a bi-national committee to manage the project.^[136] The MTO took advantage of this opportunity to extend Highway 401 to the Canada–US border and began an environmental impact assessment on the entire project in late 2005.^[136] The City of Windsor also hired New York traffic consultant Sam Schwartz to design a parkway to the border. Schwartz's proposal would eventually inspire the DRIC's own design, but his route was not chosen, with the DRIC opting instead to take a northern route.^[137] On February 8, 2008, the MTO announced that it had begun purchasing property south of the E.C. Row Expressway, upsetting many area residents who had purchased properties in the years prior.^{[138][139]}

On March 3, 2008, the Michigan Department of Transportation and the MTO (in partnership with Transport Canada, the Federal Highway Administration of the United States and the Detroit River International Crossing group) completed a joint assessment on the soils along the Detroit River and determined that they could indeed support the weight of a new bridge; the stability of the underlying soil and clay and the impact of the nearby Windsor Salt Mine had caused concern for all parties involved in the project.^[140]

Despite protest from area residents,^[141] as well as a dismissed lawsuit from Ambassador Bridge owner Matty Moroun,^{[142][143]} it was announced on May 1, 2008, that a preferred route had been selected and that the new route would be named the *Windsor–Essex Parkway*.^[14] The new parkway is below-grade and has six through-lanes. It follows (but does not replace) Talbot Road and Huron Church Road from a new interchange at the former end of Highway 401 to the E. C. Row Expressway, where it runs concurrently westward for 2 km (1.2 mi). From there, it turns northwest and follows a new alignment to the border.^[144] Initial construction of a noise barrier from North Talbot Road to Howard Avenue began in March 2010; full construction began on August 19, 2011.^[145]



Highway 401 was widened in 2008 between Highway 402 and Wellington Road in London

File:HGParkway Western End.png

The new parkway (pictured under construction in July 2013) was extended alongside former Highway 3 and the E.C. Row Expressway to the Detroit River, where it will cross the future Gordie Howe International Bridge to connect with I-75 in Michigan.

On November 28, 2012, the Ministry of Transportation announced that a Federal Order in Council was passed to change the name of the parkway to the Right Honourable Herb Gray Parkway, after the long-time Windsor MP.^[146] In early 2015, it was announced that the parkway would open to traffic between Highway 3 and Labelle Street (near the E. C. Row Expressway) in the spring;^[147] an 8-kilometre (5 mi) section was opened to traffic on June 28, extending Highway 401 as far west as the E. C. Row Expressway. It was the first new segment of the highway to be opened since the Thousand Islands Bypass in 1968.^[148] The stretch to Ojibway Parkway was opened on November 21,^[149] completing the parkway as far as the planned bridge approach and border plaza.^[150] Construction on projects related to the Gordie Howe International Bridge began in 2015 with an initial completion date in 2019–20.^[151] Construction of the bridge itself is expected to start in 2018 after a project contractor is selected in 2017. An updated completion date would be in or after 2022.^[152]

Future

In 2007 Minister of Transportation Donna Cansfield commented that the MTO intends to widen all of the remaining four-lane sections to a minimum of six. With no dates set for construction or completion, this is a tentative announcement for the long-term future.^[153]

Southwestern Ontario

In Southwestern Ontario, several improvements are under way to provide six lanes on Highway 401 from Windsor to Toronto,^[153] in response to the Carnage Alley pile-up in 1999.^{[120][154]} West of Essex County Road 42 on the west of Tilbury, the highway has been widened to six lanes with a concrete divider in anticipation of the Windsor–Essex Parkway.^{[14][155]} Between Tilbury and Highway 402, the highway remains four lanes wide with a grass median. The widening and upgrading of this section is in the planning stages, with construction possibly beginning in 2017 and lasting for several years. Several interchanges are slated to be upgraded as part of this construction.^[156]



Highway 401 between Highway 4 and Highway 402 is being reconstructed and now includes a new interchange with Wonderland Road. This photo was taken from the Westminster Drive overpass which was demolished on July 5, 2014, to prepare for the widening of the highway west towards Highway 4.

Within the London area, traffic volumes are expected to increase considerably, leading to poor highway conditions. The province has put in place an extensive plan to widen and reconstruct the London corridor between 2006 and 2021.^[157] This included building a new interchange with Wonderland Road which opened in November 2015 to help improve access to Highway 401 westbound from the city's southwest end and involved replacing the Westminster Drive overpass to allow the highway to be widened.^[158] The Westminster Drive overpass was demolished on July 5, 2014.^[159] This project will coincide with reconstructing the outdated cloverleaf interchange at Colonel Talbot Road^[160] and widening Highway 401 from four to six lanes between Highway 4 and Highway 402. These projects start in 2017.^{[161][162][163]} The MTO is also planning on widening Highway 401 from six to eight lanes through part of the London corridor.^{[164][165]}

Long-term plans call for Highway 401 in the Waterloo region to be widened to eight to ten lanes as well.^[166] Work began on June 8, 2015 to widen the highway from six to ten lanes between Highway 8 and Hespeler Road in Cambridge. The interchange between Highway 401 and Highway 8 (King Street) is to be reconstructed to make it free-flowing for all directions of travel.^{[167][168]}

Central Southern Ontario

In its 2007 plan for southern Ontario, the MTO announced long-term plans to create high-occupancy vehicle (HOV) lanes from Mississauga Road west to Milton;^[169] these plans have since been expanded in scope to as far west as Hespeler Road in Cambridge.^[170]

Construction recently completed widening Highway 401 to a collector-express system from Highway 403 and Highway 410 west to Hurontario Street, a distance of 2.8 km (1.7 mi).^[171] Plans have been unveiled to lengthen the Mavis Road overpass and add ramps to the 401/403/410 interchange to prepare for the 'ultimate widening' of Highway 401 between the Credit River and Highway 410.^[172]

Within Toronto, some projects have been completed during overnight construction projects, including the widening and rehabilitation of the Hogg's Hollow bridge,^[173] the replacement of the original gantries throughout the collector-express system,^[174] and reconstructing the Highway 401 / 400 interchange.^[175]

Current expansion plans in Durham include the construction of two new freeways north from Highway 401. Highway 412 is directly east of Lakeridge Road,^[176] while Highway 418 will lie to the east of Courtice Road.^[177] Alongside the extension of Highway 407, Highway 401 is being widened to 12 lanes, forming an extension to the current collector-express system, from its current end at Brock Road in Pickering to Brock Street in Whitby. In addition, a partial interchange is being constructed at Lakeridge Road, with westbound entrance and eastbound exit ramps. In order to accommodate the ramps for Highway 412, the highway is being shifted north at the interchange, currently under construction.^[178] Long-term plans also call for HOV lanes to run from Brock Road to Harmony Road, though no planning has commenced.^[169] However, there has been an environmental assessment on widening highway 401, extending the collector-express system east towards Salem Road in Ajax and to 10 lanes from Brock Street in Whitby, to Courtice Road in the Clarington township. The assessment was completed in March 2015.^[179]

All the original World War II era overpasses dating back in the 1940s and 1950s built between Whitby and Oshawa will gradually be replaced with new overpasses as part of modern highway safety standards and to allow highway widening sometime in the future.^[180]

Eastern Ontario



Highway 401 in the Greenbelt. The stretch of Highway 401 between Highway 8 and Highway 407 ETR is slated to be widened from six to ten lanes, including two HOV lanes.



Work is underway to expand Highway 401 from six to twelve lanes from Hurontario Street to the Credit River by 2019, consisting of a collector-express system with HOV lanes. Pictured is Highway 401 near Mavis Road in 2012.

East of Durham, the MTO is planning to widen parts of Highway 401 to six lanes.^[153] Preliminary work includes the widening of the bridge over the Trent River in Trenton,^[181] as well as the realignment of some roads alongside the highway.^[182] By 2012, the highway was widened to six lanes for 9 km (5.6 mi) through Kingston between exits 611 and 619.^[59] Construction began in 2014 to expand the highway to six lanes through Cobourg.^[183] This was completed in the summer of 2017.

Services

Highway 401 features 19 service centres controlled by the MTO. These service centres were announced in 1961 following public outcry over the lack of rest stops. They provide a place to park, rest, eat and refuel 24 hours a day.^[8]

The centres were originally leased to and operated by several major gasoline distributors; however, those companies have chosen not to renew their leases as the terms end. In response, the MTO put the operation of the full network of service centres out for tender, resulting in a 50-year lease with Host Kilmer Service Centres, a joint venture between hospitality company HMSHost (a subsidiary of Autogrill) and Larry Tanenbaum's investment company Kilmer van Nostrand, which operates the rest areas under the ONroute brand.^[184]



ONroute Cambridge South service station

Seventeen of the centres along Highway 401 have been reconstructed entirely. Two centres that were rebuilt in the late 1990s, specifically Newcastle and Ingersoll, will not be redeveloped at this time. Work on 15 of the 17 service centres to be reconstructed began in late 2009 or early 2010. The new service centres, opening in phases beginning in July 2010, feature a Canadian Tire gas station, an HMSHost-operated convenience store known as "The Market", as well as fast food brands such as Tim Hortons, A&W, Pizza Pizza, Extreme Pita, KFC, Taco Bell, Big Smoke Burger and Burger King.^[185]

Service centres located along Highway 401













Location	Direction(s)	Nearby exits ^[186]	Status ^[185]
Tilbury North Tilbury South	Westbound Eastbound	56, 63 ^[187]	Reopened as of October 1, 2010 ^[188]
West Lorne Dutton	Westbound Eastbound	137, 149	Reopened as of October 1, 2010 ^[188]
Ingersoll	Westbound	222, 230	Will not be redeveloped at this time. Leased by <u>Imperial Oil</u> .
Woodstock	Eastbound	222, 230	Closed for reconstruction on March 31, 2010; reopened July 2011 ^[189]
Cambridge North Cambridge South	Westbound Eastbound	286, 295	Closed for reconstruction on September 7, 2011; ^[190] Cambridge North reopened June 25, 2013; Cambridge South reopened July 23, 2013. ^[191]
Mississauga	Eastbound	333, 336 ^[192]	Permanently closed as of September 30, 2006
Newcastle	Westbound	440, 448	Will not be redeveloped at this time. Leased by <u>Imperial Oil</u> .
Port Hope	Eastbound	448, 456	Reopened by June 2011
Trenton North	Westbound	509, 522	Reopened as of October 1, 2010 ^[188]
Trenton South	Eastbound		Reopened March 2011
Camden East	Westbound	582, 593	Closed for reconstruction March 31, 2010; ^[193] reopened June 2011
Odessa	Eastbound	599, 611	Open during 2010–11 reconstruction (while a new structure was built directly west of a now-demolished original facility on same property). New facility opened June 2011
Mallorytown North	Westbound	675	Reopened February 1, 2011 ^[194]
Mallorytown South	Eastbound	685	Reopened June 28, 2012. ^[191]
Morrisburg	Eastbound	750, 758	Reopened as of October 1, 2010 ^[188]
Ingleside	Westbound	758, 770	Reopened April 2011 ^[188]
Bainsville	Westbound	825	Reopened as of October 1, 2010 ^[188]
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









Exit list

































The following table lists the major junctions along Highway 401, as noted by the Ministry of Transportation of Ontario.^[1]

Division	Location	km ^[1]	mi	Exit ^[16]	Destinations	Notes
<u>Canada–US border</u>		0.0	0.0	Planned <u>Gordie Howe International Bridge</u> to <u>Detroit, Michigan</u> <div> <div>TO</div> <div>75</div> </div> To I-75		
<u>Windsor</u>		–		1	<u>Ojibway Parkway</u> <u>E. C. Row Expressway</u>	Westbound exit and eastbound entrance; western terminus ^[195]
		–		2	<u>E. C. Row Expressway</u>	Eastbound exit and westbound entrance
		4.7	2.9	5	<div>3</div> <u>Highway 3 (Huron Church Road) – Ambassador Bridge to U.S., Detroit</u>	Westbound exit and eastbound entrance; former western terminus from June 28 to November 21, 2015 ^[195]
		5.8	3.6	6	<u>Cabana Road</u> <div>6</div> <u>County Road 6 (Todd Lane) – LaSalle</u>	Eastbound exit and eastbound entrance
		7.1	4.4	7	<div>3</div> <u>Highway 3 (Talbot Road) – LaSalle, Leamington</u>	Westbound exit to Highway 3, eastbound exit to Highway 3, eastbound entrance
		9.1	5.7	9	<div>3</div> <u>Highway 3 (Highway 401) – Leamington, Windsor</u>	westbound entrance
		10.1	6.3	10	<div>3</div> <u>Highway 3 – Leamington, Windsor</u> <div>9</div> <u>County Road 9 (Howard Ave) – Amherstburg</u>	Former western terminus from 1968 to June 28, 2015
		12.6	7.8	13	<u>Dougall Parkway – Detroit–Windsor Tunnel to U.S.</u>	Westbound exit and eastbound entrance; formerly <u>Highway 3B</u> / <u>Highway 401A</u>
<u>Essex</u>	<u>Tecumseh</u>	13.4	8.3	14	<div>46</div> <u>County Road 46 (to/vers Walker Road) – Windsor</u>	Formerly <u>Highway 98</u> , access to <u>Windsor International Airport</u>
	<u>Lakeshore</u>	20.4	12.7	21	<div>19</div> <u>County Road 19 (Manning Road) – Tecumseh</u>	
		27.5	17.1	28	<div>25</div> <u>County Road 25 (Puce Road) – Puce</u>	
		33.7	20.9	34	<div>27</div> <u>County Road 27 (Belle River Road) – Woodslee, Belle River</u>	
		40.0	24.9	40	<div>31</div> <u>County Road 31 (French Line Road) – St. Joachim</u>	
		47.3	29.4	48	<div>77</div> <u>Highway 77 south – Leamington</u> <div>35</div> <u>County Road 35 north (Comber Road) – Stoney Point</u>	
		55.7	34.6	56	<div>42</div> <u>County Road 42 – Tilbury</u>	Formerly <u>Highway 2</u>
<u>Chatham-Kent</u>		62.8	39.0	63	<div>2</div> <u>Municipal Road 2 (Queen's Line)</u>	Formerly <u>Highway 2</u>
		80.9	50.3	81	<div>27</div> <u>Municipal Road 27 (Bloomfield Road)</u>	
		89.3	55.5	90	<div>40</div> <u>Highway 40 north</u> <div>11</div> <u>Municipal Road 11 south (Communication Road) – Blenheim</u>	
		101.0	62.8	101	<div>15</div> <u>Municipal Road 15 (Kent Bridge Road) – Dresden, Ridgetown</u>	
		108.3	67.3	109	<div>17</div> <div>21</div> <u>Municipal Road 17 / Municipal Road 21 (Victoria Road) – Thamesville, Ridgetown</u>	Formerly <u>Highway 21</u>
		116.2	72.2	117	<div>20</div> <u>Municipal Road 20 (Orford Road) – Highgate</u>	
<u>Elgin</u>	<u>West Elgin</u>	129.2	80.3	129	<div>103</div> <u>County Road 103 (Furnival Road) – Wardsville, Rodney</u>	
	<u>Dutton/Dunwich</u>	137.3	85.3	137	<div>76</div> <u>County Road 76 (Graham Road) – West Lorne</u>	Formerly <u>Highway 76</u>
		148.5	92.3	149	<div>8</div> <u>County Road 8 (Currie Road) – Dutton</u>	
		157.4	97.8	157	<div>14</div> <u>County Road 14 (Iona Road) – Melbourne, Iona</u>	
	<u>Southwold</u>	164.1	102.0	164	<div>20</div> <u>County Road 20 (Union Road) – Port Stanley, Shedden</u>	
<u>London</u>		176.7	109.8	177	<div>4</div> <u>Highway 4 (Colonel Talbot Road) – St. Thomas</u>	Signed as exits 177A (south) and 177B (north); reconstruction begun in 2015, turning the <u>cloverleaf interchange</u> into a <u>parclo</u> ^[161]

		–		180	<u>Wonderland Road</u>	Construction begun in early 2014, opened November 2015. ^{[158][161]}
		183.2	113.8	183	402 Highway 402 west – <u>Sarnia</u>	Westbound exit and eastbound entrance
		185.9	115.5	186	<u>Wellington Road</u>	
		186.8	116.1	187	<u>Exeter Road</u>	Westbound exit, formerly <u>Highway 135</u> west
		189.1	117.5	189	<u>Highbury Avenue – St. Thomas</u>	Formerly <u>Highway 126</u>
		193.6	120.3	194	<u>Veterans Memorial Parkway</u>	Formerly <u>Highway 100</u> ; reconstruction and expansion from a three-way to four-way interchange begun in 2015 ^[161]
<u>Middlesex</u>	<u>Thames Centre</u>	195.5	121.5	195	74 County Road 74 (Westchester Bourne) – Nilestown, Belmont	Formerly <u>Highway 74</u>
		199.3	123.8	199	32 County Road 32 (Dorchester Road) – Dorchester	
		203.0	126.1	203	73 County Road 73 (Elgin Road) – Aylmer	Formerly <u>Highway 73</u>
		208.5	129.6	208	30 County Road 30 (Putnam Road) – Putnam, Avon	
<u>Oxford</u>	<u>South-West Oxford, Ingersoll</u>	216.0	134.2	216	10 County Road 10 (Culloden Road)	
		218.5	135.8	218	19 Highway 19 south 119 County Road 119 north (Plank Line) – Tillsonburg	
	<u>South-West Oxford</u>	222.2	138.1	222	6 County Road 6 – Stratford	
		229.8	142.8	230	12 County Road 12 (Sweaburg Road / Mill Street) – Sweaburg	
	<u>Woodstock</u>	231.9	144.1	232	59 County Road 59 – Delhi	Formerly <u>Highway 59</u>
		235.3	146.2	235	403 Highway 403 east – Hamilton, Niagara Falls	Eastbound exit and westbound entrance
	<u>Norwich</u>	236.3	146.8	236	15 County Road 15 (Towerline Road) – Woodstock	
	<u>Woodstock</u>	237.9	147.8	238	2 County Road 2 – Paris, Woodstock	Formerly <u>Highway 2</u>
	<u>Blandford-Blenheim</u>	250.1	155.4	250	29 County Road 29 (Drumbo Road) – Innerkip, Drumbo	
<u>Waterloo</u>	<u>North Dumfries</u>	267.9	166.5	268	Regional Road 97 (Cedar Creek Road) – Cambridge, Ayr	Signed as exits 268A (east) and 268B (west) eastbound; formerly <u>Highway 97</u>
	<u>Kitchener, Cambridge</u>	275.0	170.9	275	Regional Road 28 (Homer Watson Boulevard / Fountain Street)	
		277.9	172.7	278	8 Highway 8 north – Kitchener, Waterloo Regional Road 8 south – Cambridge	Westbound exit and eastbound entrance only to Highway 8; signed as exit 278A (east) and 278B (west) eastbound
	<u>Cambridge</u>	282.5	175.5	282	Regional Road 24 (Hespeler Road) to 24 Highway 24 south – Brantford	
		283.8	176.3	284	Regional Road 36 south (Franklin Boulevard)	Eastbound to southbound exit and northbound to westbound entrance
		286.5	178.0	286	Regional Road 33 (Townline Road) 33 County Road 33 (Townline Road)	
<u>Wellington</u>	<u>Puslinch</u>	295.7	183.7	295	6 Highway 6 north – Guelph	Western end of Highway 6 concurrency
		300.1	186.5	299	6 Highway 6 south – Hamilton 46 County Road 46 (Brock Road) – Guelph, Hamilton	Eastern end of Highway 6 concurrency
<u>Halton</u>	<u>Milton</u>	311.9	193.8	312	1 Regional Road 1 (Guelph Line) – Burlington	
		320.1	198.9	320	25 Regional Road 25 – Acton, Milton	Formerly <u>Highway 25</u> ; GO Transit bus stop on eastbound ramp
		323.8	201.2	324	4 Regional Road 4 (James Snow Parkway)	
		328.0	203.8	328	3 Regional Road 3 (Trafalgar Road) – Oakville, Georgetown	
		330.4	205.3	330	407 Highway 407	Signed as exits 330A (west) and 330B (east) eastbound; no access from westbound Highway 407 to eastbound Highway 401 or westbound Highway 401 to eastbound Highway 407
<u>Peel</u>	<u>Mississauga</u>	332.7	206.7	333	Winston Churchill Boulevard	

		336.1	208.8	336	 Regional Road 1 (Mississauga Road / Erin Mills Parkway)		
		339.6	211.0	340	<u>Mavis Road</u>	Exit opened in 1999.	
		341.7	212.3	342	<u>Hurontario Street</u>	Formerly <u>Highway 10</u>	
		344.5	214.1	344	 Highway 403 / Highway 410 – Hamilton, Brampton	No access from eastbound Highway 401 to westbound Highway 403 or eastbound Highway 403 to westbound Highway 401; construction underway to convert this to a full interchange, to be complete by 2018	
		346.0	215.0	346	 Regional Road 4 (Dixie Road)		
Toronto	350.3–351.1	217.7–218.2	348	 Highway 427 / Renforth Drive – Toronto Pearson International Airport, Downtown Toronto	Exit 348 (eastbound exit and westbound entrance), exit 350 (eastbound exit and westbound entrance), exit 351 (westbound exit and eastbound entrance) and exit 352 (westbound exit and eastbound entrance)		
			350	<u>Eglinton Avenue</u>			
			351	<u>Carlingview Drive</u>			
			352	 Highway 427 south			
	353.5	219.7	354	<u>Dixon Road / Martin Grove Road</u>	No access from southbound Martin Grove to eastbound Highway 401; No access from eastbound Highway 401 to Martin Grove		
	355.4	220.8	355	 Highway 409 – Toronto Airport Belfield Road	Westbound exit and eastbound entrance		
	356.0	221.2	356	<u>Islington Avenue</u>			
	357.4	222.1	357	<u>Weston Road</u>			
	358.9	223.0	359	 Highway 400 north (south to Black Creek Drive) – Barrie	Eastbound express access to Highway 400		
	360.5	224.0	360	<u>Jane Street</u>	Ramps removed; access to Jane Street via Black Creek Drive		
	362.0	224.9	362	<u>Keele Street</u>			
	364.0	226.2	364	<u>Dufferin Street, Yorkdale Road</u>	Eastbound exit and westbound entrance		
	364.8	226.7	365	 Allen Road, Yorkdale Road	Westbound exit is a left-hand exit from collector lanes, and right-hand exit from express lanes; westbound access to Dufferin Street via Yorkdale Road		
	366.2	227.5	366	<u>Bathurst Street</u>	Westbound exit and eastbound entrance (access only from northbound Bathurst Street); westbound entrance and eastbound exit ramps removed; westbound exits to Wilson Avenue, about 200m west of Bathurst Street		
	367.3	228.2	367	<u>Avenue Road</u>	Formerly <u>Highway 11A</u>		
	368	229	368	<u>Yonge Boulevard</u>	Access removed in 1964 due to core-collector system widening. ^[196] ^[197]		
	369.0	229.3	369	<u>Yonge Street</u>	Formerly <u>Highway 11</u>		
	371.0	230.5	371	<u>Bayview Avenue</u>			
	372.9	231.7	373	<u>Leslie Street</u>			
	374.9	233.0	375	 Highway 404 north – Markham, Newmarket  Don Valley Parkway – Downtown Toronto	From eastbound Highway 401, access to Sheppard Avenue via northbound Highway 404 from 401 collector lanes only		
	376.3	233.8	376	<u>Victoria Park Avenue</u>			
	377.6	234.6	378	<u>Warden Avenue</u>			
	379.2	235.6	379	<u>Kennedy Road</u>			
	380.8	236.6	380	<u>Brimley Road</u> south, Progress Avenue	Eastbound exit and westbound entrance from northbound Brimley Road; exit opened February 18, 1988 ^[198]		
	381.6	237.1	381	<u>McCowan Road – Markham</u>			
	383.2	238.1	383	<u>Markham Road – Markham</u> Progress Avenue	Formerly <u>Highway 48</u> Eastbound entrance only		
	385.0	239.2	385	<u>Neilson Road</u>	Exit opened in 1983 ^[199]		
	386.5	240.2	387	<u>Morningside Avenue</u>			
	389.0	241.7	389	<u>Meadowvale Road</u>			
			390.3	242.5	390	 Highway 2 / Highway 2A (Kingston Road, Sheppard Avenue (westbound), Port Union Road (eastbound))	Signed as exit 392 westbound
	Durham	Pickering	394.0	244.8	394	 Regional Road 38 (Whites Road)	Exit opened in 1983 ^[199]

		396.6	246.4	397	 Regional Road 29 (Liverpool Road)	Westbound exit and entrance
		398.3	247.5	399	 Regional Road 1 (Brock Road)	Exit opened September 11, 1974, replacing the full-access interchange at Liverpool Road ^[200]
	<u>Ajax</u>	400.3	248.7	400	Church Street	Removed, exit replaced with Westney Road interchange (exit 401) in 1986 ^[201]
		401.3	249.4	401	 Regional Road 31 (Westney Road)	Replaced exit 400 (Church Street) in 1986 as part of Go Transit expansion east of Pickering ^[201]
		402.5	250.1	403	 Regional Road 44 (Harwood Avenue)	Removed, exit replaced with Salem Road interchange (exit 404) in 2003
		404.3	251.2	404	 Regional Road 41 (Salem Road)	Replaced exit 403 (Harwood Avenue) in December 2003
		406.9	252.8	406	 Regional Road 23 (Lakeridge Road)	Westbound entry and eastbound exit; construction begun in 2013, completed Spring 2016
	<u>Whitby</u>	407.7	253.3	408	 Highway 412	Construction begun in 2013, completed June 20, 2016
		409.6	254.5	410	Brock Street	Formerly Highway 12, had a  Regional Highway 12 designation, but was removed, as the regional section runs from Rossland Road to south of Highway 7
		412.1	256.1	412	 Regional Road 26 (Thickson Road)	
	<u>Oshawa</u>	415.2	258.0	415	 Regional Road 53 (Stevenson Road)	Replaced exit 416 (Park Road) in 2009
		415.8	258.4	416	 Regional Road 54 (Park Road)	Removed, exit replaced with nearby Stevenson Road interchange (exit 415) in 2009
		417.6	259.5	417	 Regional Road 2 (Simcoe Street)	Westbound exit via exit 418
		418.5	260.0	418	 Regional Road 16 (Ritson Road)	
		419.4	260.6	419	  Regional Road 22 / Regional Road 33 (Bloor Street / Harmony Road)	Access to Regional Road 56/Farewell Street
	<u>Clarington</u>	425.4	264.3	425	 Regional Road 34 (Courtice Road) – Courtice	
		426.5	265.0	426	 Highway 418	Construction begun in 2016, to be completed by 2020
		428.4	266.2	428	Holt Road (Darlington Nuclear Generating Station)	Formerly eastbound exit and westbound entrance; converted into a full interchange, ^[202] opened June 2016
		431.3	268.0	431	 Regional Road 57 (Waverley Road) – Bowmanville	
		432.4	268.7	432	 Regional Road 14 (Liberty Street) – Bowmanville, Port Darlington	
		435.2	270.4	435	Bennett Road	
		436.3	271.1	436	  Highway 35 / Highway 115 – Peterborough, Lindsay	
		440.1	273.5	440	 Regional Road 17 (Mill Street) – Newcastle, Bond Head	
		448.1	278.4	448	 Regional Road 18 (Newtonville Road) – Newtonville	
<u>Northumberland</u>	<u>Port Hope</u>	456.6	283.7	456	Wesleyville Road	
		461.4	286.7	461	 County Road 2 (Toronto Street) – Welcome	Formerly Highway 2
		464.8	288.8	464	 County Road 28 (Ontario Street) – Peterborough	Formerly Highway 28
	<u>Cobourg, Hamilton</u>	472.6	293.7	472	 County Road 18 (Burnham Street) – Gores Landing	
		474.5	294.8	474	 County Road 45 (Baltimore Road) – Norwood, Baltimore	Formerly Highway 45
	<u>Alnwick/Haldimand</u>	487.0	302.6	487	 County Road 23 (Lyle Street) – Centreton, Grafton	
	<u>Cramahe</u>	497.2	308.9	497	 County Road 25 (Percy Street / Big Apple Drive) – Colborne, Castleton	
	<u>Brighton</u>	509.7	316.7	509	 County Road 30 – Brighton	Formerly Highway 30

Hastings	Quinte West	520.4	323.4	522	 County Road 40 (Wooler Road) – Trenton	
		525.4	326.5	525	 County Road 33 – Trenton, Batawa	Formerly <u>Highway 33</u>
		526.5	327.2	526	 County Road 4 (Glen Miller Road) – Trenton	
	Belleville	538.5	334.6	538	 County Road 1 (Wallbridge-Loyalist Road) – Stirling	
		542.7	337.2	543	 Highway 62 – Marmora, Madoc to  County Road 14	Signed as exits 543A (south) and 543B (north); formerly <u>Highway 14</u>
		543.2	337.5	544	 Highway 37 – Tweed	
	Tyendinaga	555.7	345.3	556	 County Road 7 (Shannonville Road) – Shannonville, Tyendinaga Mohawk Territory	
		566.4	351.9	566	 Highway 49  County Road 15 (Marysville Road) – Picton, Tyendinaga Mohawk Territory	
		570.5	354.5	570	 County Road 10 (Deseronto Road) – Deseronto	
Lennox and Addington	Greater Napanee	578.8	359.6	579	 County Road 41 – Napanee	Formerly <u>Highway 41</u>
		582.1	361.7	582	 County Road 5 (Palace Road) – Napanee	
	Loyalist	593.4	368.7	593	 County Road 4 (Camden East Road) – Millhaven, Camden East	Formerly <u>Highway 133</u>
		598.8	372.1	599	 County Road 6 (Wilton Road) – Yarker, Odessa	
Kingston		610.8	379.5	611	 County Road 38 – Harrowsmith, Sharbot Lake	Formerly <u>Highway 38</u>
		613.0	380.9	613	 County Road 9 (Sydenham Road), Sydenham	
		615.3	382.3	615	Sir John A. Macdonald Boulevard	
		617.0	383.4	617	 County Road 10 (Division Street) – Westport	
		619.0	384.6	619	 County Road 11 (Montreal Street) – Battersea	
		623.0	387.1	623	 Highway 15 – Smiths Falls, Ottawa	
		631.9	392.6	632	 County Road 16 (Joyceville Road) – Joyceville	
Leeds and Grenville	Gananoque, Leeds and the Thousand Islands	645.1	400.8	645	 County Road 32 – Crosby	Formerly <u>Highway 32</u>
		646.7	401.8	647	Thousand Islands Parkway – Ivy Lea, Rockport	Eastbound exit and westbound entrance
	Leeds and the Thousand Islands	647.9	402.6	648	 Highway 2 west – Gananoque  County Road 2 east	Eastbound via exit 647
		658.8	409.4	659	 County Road 3 (Reynolds Road) – Ivy Lea, Rockport	
		661.0	410.7	661	 Highway 137 to I-81 – Hill Island, Thousand Islands Bridge to U.S.	
	Front of Yonge	675.5	419.7	675	 County Road 5 (Mallorytown Road) – Mallorytown, Rockport	
	Elizabethtown-Kitley	684.7	425.5	685	Thousand Islands Parkway	Westbound exit and eastbound entrance
		686.7	426.7	687	 County Road 2 – Brockville	Formerly <u>Highway 2</u>
	Brockville	696.2	432.6	696	 County Road 29 – Brockville	Formerly <u>Highway 29</u> / <u>Highway 42</u>
		698.0	433.7	698	 County Road 6 (North Augusta Road) – Brockville	
	Augusta	704.8	437.9	705	 County Road 15 (Maitland Road) – Merrickville, Maitland	
	Prescott	716.2	445.0	716	 County Road 18 (Edward Street) – Prescott, Domville	

Stormont, Dundas and Glengarry	Edwardsburgh/Cardinal	720.1	447.4	721A	 Highway 416 north – Ottawa	Eastbound exit and westbound entrance; signed as exit 721 eastbound
		721.2	448.1	721B	 Highway 16 (to NY 37) – Kemptville, Johnstown and Ogdensburg, New York	Signed as exit 721 westbound
		730.0	453.6	730	 County Road 22 (Shanly Road) – Cardinal	
	South Dundas	737.8	458.4	738	 County Road 1 (Carman Road) – Iroquois	
		750.2	466.2	750	 County Road 31 – Ottawa, Winchester	Formerly Highway 31
		758.2	471.1	758	Upper Canada Road	
	South Stormont	769.5	478.1	770	 County Road 14 (Dickinson Drive) – Ingleside	
		777.8	483.3	778	 County Road 35 (Moulinette Road) – Long Sault	
		786.4	488.6	786	 County Road 33 (Power Dam Drive)	Eastbound exit and westbound entrance
	Cornwall	789.5	490.6	789	 Highway 138 (Brookdale Avenue) – Ottawa, Three Nations Crossing to Massena, New York	
		791.8	492.0	792	McConnell Avenue	
	South Glengarry	796.1	494.7	796	 County Road 44 (Boundary Road)	
		804.6	500.0	804	 County Road 27 (Summerstown Road) – Summerstown	
		813.8	505.7	814	 County Road 2 / County Road 34 – Lancaster, Alexandria	Formerly Highway 2 south / Highway 34 north
		825.4	512.9	825	 County Road 23 (4th Line Road, Curry Hill Road)	
Ontario–Quebec border		828.0	514.5	Highway 401 ends at border  A-20 continues east towards Montreal		
1,000 mi = 1,609 km; 1,000 km = 0.621 mi <input type="checkbox"/> Closed/former · <input type="checkbox"/> Concurrency terminus · <input type="checkbox"/> Incomplete access · <input type="checkbox"/> Unopened						

See also

- Southern Ontario Transportation
- Heavy Rescue: 401 - a documentary/reality series on Discovery Channel showcasing the operations of heavy rescue and recovery towing businesses along the highway and nearby roads.



Notes

- The Department of Highways Fiscal Report for the year ending March 31, 1952, claims "Controlled Access Highways nos. 400 and 401 were signed". However, all other sources claim July.

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External links

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- The Rt. Honourable Herb Gray Parkway (Windsor-Essex Parkway) web site (<http://www.hgparkway.ca/>)
- Live COMPASS Traffic Cameras (http://www.mto.gov.on.ca/english/traveller/trip/traffic_cameras.shtml)

Photos and additional information

- Highway 401 at OntHighways (http://www.asphaltplanet.ca/ON/highway_401.htm)
- Highway 401 at vintagekingshighways.com (<https://web.archive.org/web/20091230141818/http://www.vintagekingshighways.com/401/401.html>)

Videos

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- Video of Highway 401 between Tilbury and Essex (<https://www.youtube.com/watch?v=MQZEN6N79Io>)
- Video of Highway 401 between Highway 4 and the Veterans Memorial Parkway (<https://www.youtube.com/watch?v=GdYyO8Bzpk0>)
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