



BUILDING THE CIRCLE INTERCHANGE

1955 to 1962

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Construction of the Circle Interchange began in 1955 becoming fully operational with the completion of the Dan Ryan Expressway in December of 1962. It was built in stages as the three connecting expressways were built. The Circle Interchange was designed by the City of Chicago Department of Public Works and built under contract to them. Like all urban structures the designers had to fit this facility into the existing environment while connecting three new limited access highways. This is a narrative of how that happened along with a series of photographs that depict the stages of construction.

Financing the Interchange

The expressways and interchanges in Cook County were built under a unique arrangement replicated nowhere else in the country. As expressway planning was underway in the late 1930's various proposals were offered to fund these facilities. For the first time the funding discussion included the use of available federal monies. Until the 30s the money from the Bureau of Public Roads was focused on rural roads not urban byways. But the economic depression of the 1930s brought about a change in philosophy regarding the federal role in urban infrastructure. Federal funding provided for a major upgrading of North Lake Shore Drive and the construction of the bridge over the Chicago River connecting North and South Drive's. One proposal for funding the Chicago expressways was to use a federal capital loan program. The proposal called for paying off the federal loan by charging tolls for the use of the highways and parking fees at multistory parking facilities bracketing the downtown and directly connected to the new expressways.

A more persistent proposal was to use local construction bonds paid off from future fuel tax receipts generated in the City and the County. A campaign to obtain the necessary state legislation was mounted in earnest in the fall of 1938 by the media and Chicago business interests through the local motor clubs and chambers of commerce. But as the 1939 legislature wound down no agreement had been reached. Two days before the end of the session, Republicans who controlled the Illinois House were offered \$4 million for downstate road construction. With that road building plum in hand and fearing being charged with obstructing the construction of "death proof" superhighways they signed on to support legislation that passed just before the end of the session. It was sent to Governor Horner who was urged by Mayor Kelly to quickly sign the measure. But the Illinois Attorney General advised the governor that the legislation was of doubtful constitutionality. His opinion was based on the lack of a statewide referendum in the measure. Opponents argued that the referendum was required because it was a state pledge of over \$250,000 that under the law required the referendum. The argument against that was that the gas tax was a privilege tax that had been previously determined did not

require a state wide referendum. The argument also went on to say if it was not a state obligation then Cook County and Chicago would exceed the local capital bonding limit of 3% of total assessed value. The controversy prompted the Governor to let the legislation become law without his signature leaving the implementation of a future expressway system in the hands of the Illinois Supreme Court.

Despite the optimism of the City and County, in mid-1941 the law was declared unconstitutional by the court. Shortly after the decision the county decided to move ahead with or without their participation of the other players. They held a referendum on bonding authority they already had. With limited support the highway department began to plan, design and would later build the less expensive outer portions of the system.

At the end of the Second World War the parties reconstituted the agreement and added the federal Bureau of Public Roads as a partner. With increasing public pressure to build the limited access roads the partnership moved ahead without much of the bonding authority envisioned in the 1939 agreement. They were able to proceed because prior to the war the City and the County were given the authority to let federally funded contracts. Apparently no other city in the country and only one other County could do that. Although local funding issues would plague the program for the next decade the ability to obtain federal reimbursement provided the resources for the three agencies to move ahead, not just the state, all three could obtain direct federal match increasing available resources.

To use that ability effectively on a system of urban expressways required an unprecedented level of cooperation between the parties. The mechanism to achieve that cooperation was the Joint Expressway Design Committee. This committee which operated for almost thirty years met as often as once a week to cooperatively design the expressways in Cook County. The committee agreed on where the expressways would be built, what materials would be used, who would build what portion and the schedule for construction.

The City was generally tasked with building the inner portions of the system closest to the Chicago CBD. They therefore built the Congress Expressway from Michigan Avenue to Canal Street and from Des Plaines Avenue to Ashland Boulevard. The section from Canal to Des Plaines was constructed by the Cook County Highway Department probably in an effort to get the whole section opened as quickly as possible. The City would also build the inner portions of the Northwest Expressway north to Lake Street and the Dan Ryan south to 39th Street. The length of expressway that each built was determined by the initial cost estimate of each expressway divided by three with the State generally having the middle portion and the County the furthest out.

Locating the interchange

A decision on locating the interchange between the expressways was restricted by a variety of factors beyond those posed by geographical challenges in siting the expressways.

One early and persistent political problem was that during the early decades of the 1900s the axis of the downtown moved north. Between 1909 in 1930 the axis was calculated to have moved from Congress Street to Randolph Street. This complicated the decisions on locating the Westside Expressway with many suggesting it should be north of the original Congress alignment and the promoted the notion that a more eastern alignment for the Northwest/Avondale expressway was necessary to serve this northward moving axis. Another issue was the debate on how to best serve the crowded downtown with expressways that would not cause more congestion. That concern resulted in proposals for a traffic arcade near Union and Chicago and Northwestern stations, an expressway loop around the downtown and proposals for direct connections with Lake Shore Drive.

The debate was created by a variety of entities with their own ideas on where to locate the expressways. Both the Chicago Plan Commission and the Chicago Motor Club during this time had professional engineers on staff doing studies and making proposals. Chief Engineer Hugh Young from the Chicago Plan Commission reviewed plans and made proposals on expressways during the 1920s and 1930s. Similarly the Chicago Motor Club employed traffic engineers such as Miller McClintock and later George Barton to make proposals and analyze the City and County plans in light of their member's perspective. The City of Chicago's expressway interests during the 1930s was under the tutelage of Commissioner Philip Harrington. Early in the 20s he had reorganized the Department of Subways into the Department of Streets and Superhighways. He built up a large staff of engineers with the support of Mayor Kelly, an ardent supporter of a Chicago system of expressways. On the other side of the building at Clark and LaSalle the Cook County Highway Department was run by George Quinlan who put considerable resources in planning and designing a Cook County expressway system. Quinlan enjoyed the support of the Cook County Board during his 40 years as Superintendent. The interested parties were aided in their quest to move forward by the media. Each of the dozen newspapers in the city had editorial opinions on the location and design of the expressways including columnists devoted to an almost daily articulation of the proposals and issues associated with planning and building the expressways. This resulted in a constant flow of ideas and analysis that produced a lively public debate on the design and location of the proposed expressways.

Discussions about locating the expressways started in 1927 with a proposal for locating a Northwest Expressway just west of the Chicago & Northwestern Railroad elevated right away, the so-called Avondale Avenue route. That route was proposed by the Chicago Plan Commission and endorsed by the Northwest Federation of Improvement Clubs. The earliest proposals had it built over the tracks of the railroad but later designs put it adjacent to the railroad embankment. Both the elevated design and placing it adjacent to a rail road embankment achieved similar results, limiting the number of street closings and minimizing the bisecting of neighborhoods. However the strongest proponent capable of building the highway was the Cook County

Highway Department and as time went on they began to favor a route further east to better serve the development taking place directly north of the downtown. In 1940 the County recommended a route along Clybourn and Elston keeping it east of the North Branch of the Chicago River until about Belmont where it crossed the river and ran east of Elston to Bryn Mawr before heading directly west. In addition to better serving the newer development the County felt the overall cost would be less to provide a north-south feeder to the downtown/Lake Shore Drive. As late as 1945 that County option was still in play but the final alignment in 1946 used the City's preferred route along the C&NW RR embankment when it was determined that the cost of the industrial property east of the river was prohibitive. The final alignment included an east-west feeder to serve the northern portion of downtown crossing the river at Ohio Street and used the county's Bryn Mawr Avenue alignment at the west end of the expressway.

Building the Interchange

As the detailed geometric for the Halsted Street interchange were being completed and submitted to the joint design committee the Department of Streets and Subways sent engineer John Pizzotti into the field to check the plans. In that field check he could not make the survey close. Closing the survey was a procedure where the geometric survey calculations were worked from a known point back to another known point. If the survey failed to close that meant a distance or angle in the survey was incorrect. After several unsuccessful attempts by the engineer to close the survey he determined that a simple addition error was to blame. Correcting the error resulted in changes to the layout significantly changing the center lines of the interchange ramps - a mistake if uncorrected would have created a final design nightmare.

The Chief Expressway Engineer for the City in the initial stages of expressway construction was George Jackson often cited as one of the finest civil engineers in the business. Mr. Jackson began his engineering career after graduating from Purdue University with the Metropolitan Sanitary District. After 12 years with the district he moved on to the Chicago Department of Subways and Superhighways in 1938 and immediately became involved in the planning of the expressway system. His work on the expressways for the city culminated in his becoming the engineer in charge of the building Congress Expressway section from Michigan Avenue to Canal Street. Of that effort he wrote that it was unlike what most expressway engineers envision, taking the fronts off buildings, remodeling of storefronts, rebuilding train platforms and other work required to place a limited access highway in the midst of a city. In 1951 Mr. Jackson left the City for the Illinois Division of Highways to head the new Expressway Section. The creation of the Expressway Section and the decision to have George Jackson lead it reflected the State gearing up to become a major player in building the Cook County Expressway system.

Early planning for the *Halsted Street Traffic Interchange*, as it was originally called, required meeting a number of engineering challenges. It needed to be designed to handle seamlessly the transition from for four

expressway legs as they were being constructed, accommodate the West Side Subway Extension, rebuild the Halsted Street bridge in stages to permit the construction of the Circle Interchange ramps and the new transit line. The project also required the rebuilding of the opening in the US post office building and design changes necessitated flooding caused by the hundred year rainfall in the summer of 1957.

West Side Subway Extension

In designing the Congress superhighway it was decided to acquire and use the right of way of the Garfield Park and Douglas lines of the CTA, also used by the Elgin Joliet and Eastern interurban as their access to the Chicago downtown. The plan called for the extension of the existing stub of the Milwaukee-Dearborn-Congress subway which terminated under the west side of the South Branch of the Chicago River. The removal, relocation of the transit line had to be accomplished while maintaining the CTA service schedule on the west side lines.

This was accomplished by temporarily keeping in place the Van Buren Street elevated connection to the loop west to Racine Avenue where it dropped to street level. It ran on Van Buren Street beginning in 1953 as far as Sacramento Boulevard. The movement from street level to elevated structure was accomplished with 2000 foot inclines. The old elevated structure on in the middle of the planned expressway was then removed to facilitate its construction.

That permitted the city built the portion of the subway from Halsted Street east to Des Plaines Avenue using the open cut method prior to the construction of the expressway in that area. Following the completion of that section of the subway the remainder from Des Plaines Avenue east was tunneled under the US post office and connected to the Milwaukee-Dearborn-Congress Line stub with breakthrough occurring in January of 1956. Tunneling under the US post office required special procedures to deal with the underpinnings of sub piers supporting the building. This required a careful shoring up around the existing pier, removal of the pier and the construction of the tunnel structure which substituted for the original pier and now carried the weight of the building. Track work for the Westside Subway Extension began in 1955 by CTA forces with ballast, tie and rail work occurring immediately following completion of the adjacent expressway section.

The Big Rain

On June 12, 1957 between 6:00 PM and midnight more than 5 1/2 inches of rain fell on the new Congress Expressway in the area around Halsted Street. The result was that in several areas the depressed expressway flooded, in some cases as deep 4 1/2 feet. By 10:00 PM the expressway were shut down. The almost completed transit subway also flooded to depth of almost 30 feet where it passed under the river and water surged into the Dearborn Street subway halting operations as far north as Jackson Boulevard. Both would remain shuttered for the next 33 hours. By midnight the rain began to taper off but the expressway and

subways continued to fill with water. The problem was that the same rain had overloaded the adjacent streets and sewers. At numerous points the water burst through previously sealed stubs of old sewer lines. These sewer lines were under side streets which were cut off by the expressway. According to one witness several of the well-sealed plugs, blew off becoming projectiles one of which reportedly ended up on the CTA right of way. The cascading water also overwhelmed the Pulaski lateral siphon sewer lines under the expressway. The laterals were sewer lines that had been cut and tapered to run under the depressed the expressway. At Pulaski the siphon manhole cover lifted within the expressway grade discharging large amounts of water into the expressway. From the flooded arterial streets water raced down the expressway ramps into the depressed roadway further flooding the facility.

The Congress Expressway like all of the expressways in Chicago was built with its own drainage system. The Congress Expressway system was designed to collect the water from the depressed expressway using two large pumps which discharge the water into the Chicago River. However the so-called "100 year rain" which dumped and drained an estimated 9.2 million cubic feet of water on to the expressway eventually overwhelmed the two 6000 gallon per hour pumps located at Des Plaines and Van Buren streets. As a result of the overwhelming flow of water the bar screen at the top of the pumping station was breached. That incident sucked surface litter against the screen severely reducing the flow to the pumps. By midday Saturday when water filled the expressway it was determined that these massive pumps were operating at only about 30% capacity due to the debris clogging their inlets. According to State engineer Mike Hartigan, Roger Nusbaum the State Expressway Engineer entertained several proposals for eliminating the problem finally choosing the one that seemed to hold considerable risk-reward, shut off the pumps hopefully letting the debris fall away and restart at near capacity. Nobody knew for sure if the pumps would restart. They did and by Saturday afternoon they were pumping at near capacity. Earlier that day the Chicago Fire Department had been called upon to provide pumping capacity at various low spots attracting the curious to the bridges over the expressway.

The more than 2 million cubic feet of water that flowed into the subway was slowly pumped out by the relatively small pumping station designed to handle the rain falling directly into the subway through portals, stairways and ventilation shafts. Additional subway flooding was avoided when CTA forces barricaded the new subway portal at Halsted Street with sandbags. The city estimated that the expressway pumps removed about two thirds of the water, the fire department pumpers about 1 million cubic feet and the subway pump mentioned above the remainder. The Congress Expressway was not reopened until about 7 AM on Sunday morning. The City of Chicago estimated that no permanent damage had occurred to the expressway and only about \$50,000 damage to the unfinished subway. As a result of the flooding additional protective walls were built at the Halsted Street subway portal to prevent the intrusion of water from the expressway into the subway. With

the construction of the Halsted Street Traffic Interchange the South and Congress Expressway drainage and pumping systems were interlocked to better handle excessive rainfall occurrences.

Opening the Westside Subway

A year after the storm the on June 22, 1958 the Westside Subway extension opened as the Congress Line, the first transit in the country to use the median of an expressway for service. The new service ran from Logan Square on the Milwaukee Line Congress and Dearborn then west under the US Post Office up on to the Congress median as far as Laramie Avenue in 1958. Near Sacramento the rails in the median split apart to accommodate an incline serving the Douglas Line. West of Laramie the existing at grade facility would be used until the new track on the south side of the Congress was completed to the Des Plaines terminal.

Completing the Interchange

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The US post office that straddles the Congress Expressway was planned and built between 1934 in 1937. *(Newly minted construction engineer Joe Yi while working on the City section of the Northwest Expressway, wondered from a distance how they were going to get around that big building only to discover on closer inspection there was a hole in it for the expressway.)* In order to obtain earlier federal WPA funding the city was required to show how the building fit into an overall plan for auto and rail traffic. As part of that plan and to accommodate the Westside Highway an opening was designed at the ground level of the post office. However, the design standards of the 1930's were not the same as 1954, including the minimum river clearance set by the Corps of Engineers. This required several modifications to alter the opening, including constructing internal beams to allowing the roadway opening in the post office to expand up one floor.

Excavation for the Halsted Street Bridge as part of the Circle Interchange began in 1955 and would open to traffic in early 1956 but the portion of the bridge to the north that would span the interchange ramps could not be built until the Garfield Park structure was removed from that area. The elevated structure could not be removed until the West Side Subway Extension was in operation west to Racine Avenue. CTA crews completed the track work to Racine in 1957 permitting the removal of the Garfield structure in the area of the

Interchange. Removal meant the construction of the Van Buren Street Bridge over the Northwest Expressway and rest of the Halsted Street Bridge could proceed. During construction of this part of the Halsted bridge portions of two interchange ramps the (west bound to south bound and south bound to east bound) on structure just west of the tunnel portal were built and used for the Halsted construction bypass which was finished in 1958.

Like the expressways that fed it the Circle Interchange was built and opened at various time. Congress Expressway bridge that was to become part of the interchange was opened in early 1956 with temporary ramps in the area leading to Des Plaines, Harrison and Van Buren Streets. These temporary ramps depositing main line expressway loads on local streets was a hallmark of the Chicago expressway construction during the 1950's. The next set of ramps would open in December of 1958, they were temporary and connected the short section of the Northwest Expressway from Washington Street to Congress as far west as Laramie.

The bulk of the structure and ramp construction took place between June of 1960 and the summer of 1961 during which time both the Northwest and Congress Expressway were fully opened to their western terminus. This work under a City of Chicago contract by the Thomas McQueen Company cost \$2.5 million. The interchange became fully operational when Dan Ryan Expressway opened in December of 1962.



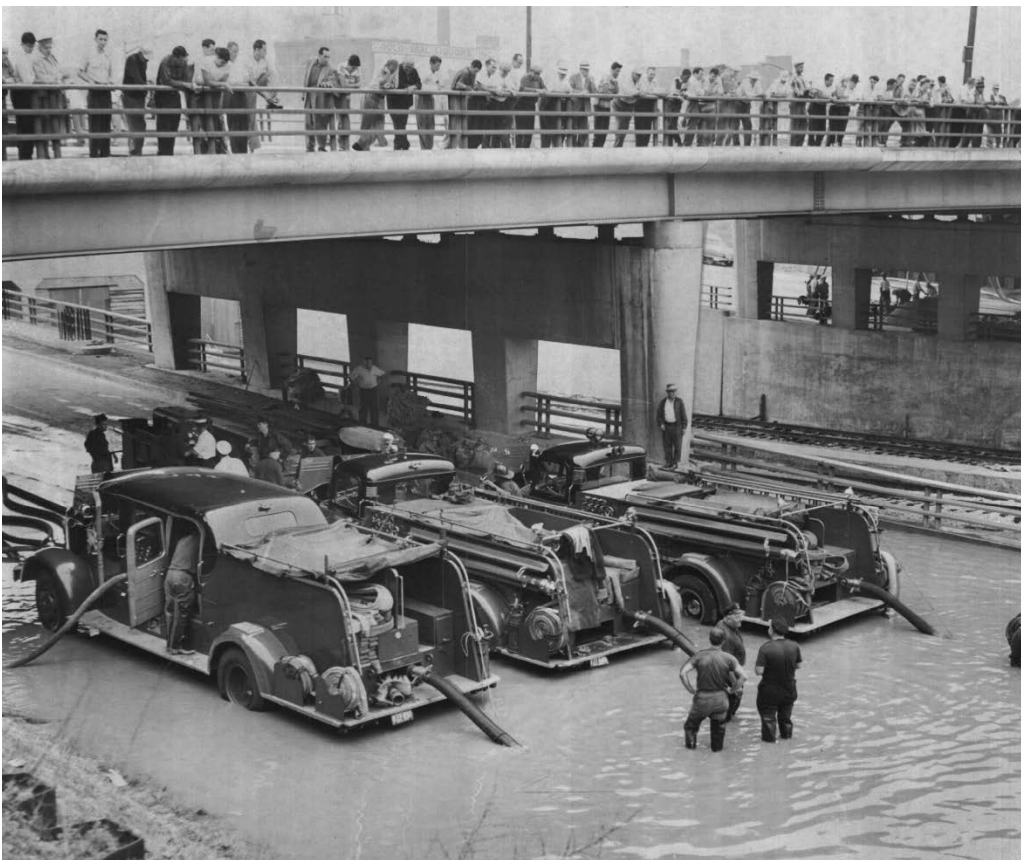
Photograph 1 / CTA 6000 series westbound Douglas Line train moving onto temporary structure created to make room for the Congress Expressway. The 50 foot wide ROW of the Douglas and Garfield rail lines was used for the Congress Expressway. The Circle Interchange, or the *Halsted Street Traffic Interchange* as it was called then, will be built in the area in the photograph where the red trucks are parked. Beyond the trucks are the pillars for the elevated Congress. Date of photograph: sometime in 1955
Photograph: Krambles/Peterson Collection



Photograph 2
In a view looking west from the Post Office Building the girders for Congress Expressway decking between Canal and Des Plaines Streets is underway supported by the pillars noted in Photograph 1 looking west from the Post Office Building. Excavation for the Congress bridge as part of the Circle Interchange has begun. This section of the Congress Expressway built by CCHD would open in early 1956. Date of photograph: late 1955 or early 1956
Photograph: Andrew Plummer Collection



Photograph 3
Congress Expressway opened to traffic in August of 1956 before the Northwest Expressway, Dan Ryan Expressway or the Circle Interchange had been constructed. The area in the center of the picture, the confluence of the three expressways would be the location of the Circle Interchange to be built by the City of Chicago. Temporary ramps lead to Des Plaines, Harrison and Van Buren Streets. Date of photograph: Fall 1956
Photograph: Andrew Plummer Collection



Photograph 4
This is the Congress Expressway looking southeast (CTA Congress Line tunnel portals are seen just under the bridge on the left edge of the photo) in June of 1957. Three Chicago Fire Department pumpers and their crews are helping remove the water that flooded the expressway the night before. The pumpers were enough of an attraction to draw a small crowd on a summer Saturday morning. Date of Photograph: June 13, 1957
Photograph: Chicago Tribune / Jeff Schielke Collection



Photograph 5

This is the Van Buren St. bridge under construction where it will span the Northwest Expressway. The Douglas elevated structure has been torn down (it remains on either side of the ROW) to make room for the construction of the bridge. The Douglas and Garfield lines moved into the median of Congress in this area in June of 1958.

Date of photograph: June 30, 1958

Photograph: Ralph Walters, Chicago Sun-Times / William Lenski Collection



Photograph 6

The Halsted Street bypass is in place, ready for the construction of the Northwest off ramp and Dan Ryan on-ramp. The city section of the Northwest Expressway as far north as Washington Blvd will open in December of 1958 with temporary on/off ramps to Congress Expressway west of the Northwest Expressway, but not for east Congress.

Date of photograph: August 1958

Photograph: Chicago Public Works Engineer Magazine / Andrew Plummer Collection



Photograph 7

This view of the Circle Interchange looking east is midway through the construction that took place between June of 1960 and the summer of 1961. The interchange was built under a city of Chicago contract by the Thomas McQueen Company at a cost of \$2.5 million. The extensions of the Halsted Street bridge are complete and all of the ramps are in some stage of construction. Date of photograph: probably early 1961 Photograph: Chicago Public Works Engineer Magazine / Andrew Plummer Collection



Photograph 8

This is the interchange fully constructed just before the Dan Ryan Expressway opened in December of 1962. Like the Circle Interchange the section of the Dan Ryan to the top of the picture was built by the City of Chicago. The decision to leave the pumping station on West Harrison in place accounts for the interesting geometrics shown in this view. Date of photograph: fall of 1962 Photograph: Chicago Public Works Engineer Magazine / Andrew Plummer Collection