Circle Line Alternative

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Revision 1.1

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1 Introduction

The Chicago Transit Authority (CTA) circle line L was first proposed in 2005 as a means to connect several Chicago neighborhoods. The circle line would use the Paulina connector on the west side, and extend it north to the Green Line (rehab old infrastructure). The line would continue northeast and connect into the Brown/Red lines. The circle line would go through downtown, onto the Orange Line, and then continue north on the Paulina connector. The CTA has the plan available at its website[1].

This document is an enthusiast's perspective of a potential circle line for the Chicago Transit Authority (CTA). Several enthusiasts have noted that the Circle line is misplaced, doesn't meet all Metra connectors, and requires much purchasing of private property. The plan outlined in this document is an alternative to that proposed by the CTA.

1.1 Revision History

Revisions should be noted using the version number. Versioning of this document occurs after 1.0.

Version	Date	Changes
0.1	May 2011	Original idea of circular path using Green or Red lines.
1.0	Dec 17, 2011	Complete rewrite using semicircular path
1.1	Dec 18, 2011	Transfer at Green line via Damen, transit via Leavitt to continue Circle. Brown line connection at Sedgwick via tracks 1 and 4. Other misc.

2 Purpose

The proposal as outlined by the CTA requires much acquisition of private property along the Paulina corridor. The Paulina connector originates from railroad entities predating the CTA, from Cullerton to Division avenues. During the years, sections were allowed to deteriorate, and ultimately close sections north of the Eisenhower expressway. The Paulina L north of Lake had been torn down in the 1950's.

The CTA didn't have a way to circulate L trains from the Blue line to the rest of the network, as the Blue line doesn't intersect or use any other L rail tracks. The CTA proposed the circle line, which would rehabilitate the Paulina corridor from the Eisenhower expressway (Blue line Douglas branch) to the Green Line (Lake St). Documents were created assessing the need and viability of the circle line, along with projected costs and ridership[1].

The circle line would be developed in stages, starting with the Paulina connector rehabilitation. Federal and state funding were provided for the project; however, the state mandated that the rehabbed section of the corridor provide revenue service[1]. Thus the CTA created the Pink Line, which services the Cermak branch of the L system. This had the side benefit of running only Blue line trains on the Douglas and O'Hare branches of the system, as well as changing the train schedules for the Pink line only to match passenger demands.

[1] http://www.transitchicago.com/news_initiatives/planning/circle.aspx

Experts have mentioned that the real purpose of the circle line proposal was to only rehab the Paulina connector, and not provide connections between all L lines[2]. Comments from riders and enthusiasts have stated that the proposed corridor for such a circle line is too far east. Aerial photographs show that extending the Paulina connector north and south would require much private property acquisition, for the purposes of tearing down buildings (many of which are homes) in favor of placing an L line. The proposal in this document will attempt the following:

- Use corridors that will not result in the destruction of many private properties
- Use corridors that will hide the L train for aesthetic reasons.
- Attempt to use corridors where there is room for 2 L train tracks, as well as possible infrastructure to be reused for L transit (such as abandoned bridges).
- Move the circle line to orient it more towards Western Ave.
- Connect all CTA L lines, and incoming Metra lines.
- Attempt to provide an L line that is not at-grade with street crossings.
- Minimize the amount of private property acquisitions.

3 Potential Corridors

This section will identify potential corridors for use for the Circle line. The corridors discussed here do not entertain the possibility of creating L tracks over existing streets, especially major streets. In general, CTA L line infrastructure runs through alleys, expressways, minor streets, or subways. Instead of using streets, the potential corridors identified in this section must have unobstructed pathways to reach certain destinations.

Corridor identification allows planners to present options for new CTA track alignment for use of the circle line. Usage of the corridors may be considered in part or in whole.

3.1 Freight and Metra corridors

Freight corridors may be considered if extra room exists on the right-of-way (ROW) to contain two pairs of tracks for CTA use. The Orange line currently uses part of the ROW along the Western Ave RR south of the Chicago River. The CTA has a proposal to extend the Red line further south to 115th street, even possibly to 130th street. One of the proposed corridors for the Red line extension would build an L line using the ROW along the Union Pacific tracks.

Many Metra train lines use class 1 freight tracks to terminate into Chicago. Metra rents the ROW in order to provide passenger train service. Metra does own the railroad tracks for the Southwest Service (SWS) and the Metra Electric Line (ME). Metra even provides intra-city stops along some rail lines, and can function as an intra-city transit line. At this time, the CTA does not have rail service that parallels a current Metra route.

3.2 North corridors

This section discusses possible corridors on the northern part of the city.

[2] http://forum.skyscraperpage.com/showpost.php?s=80834f2d23bba04d801f700115d41925&p=5242578&postcount=7809

3.2.1 Bloomingdale Ave

A rail corridor exists along Bloomingdale Ave from Hamlin St on the west to the Kennedy Expressway on the east. This rail corridor appears to be abandoned, as the rail corridor has much plant overgrowth. This corridor is composed of an embankment and several bridges. The condition of the bridges appears to be deteriorating. This corridor is especially important as it appears to be the only northern intra-city corridor that provides an unobstructed path for rail services which may connect several existing Metra and CTA rail lines.

A group of Chicago citizens have formed the Bloomingdale Trail Coalition, in order to convert the rail viaduct into a pedestrian and bike trail[3]. The park would be owned by the Chicago Park District. This group would oppose the usage of the Bloomingdale corridor for reuse as a CTA L.

3.2.2 Lincolnwood

A former rail corridor exists starting at the intersection of the Blue line and the Milwaukee district North line. The corridor goes north to Lawrence Ave, and then northeast towards Bryn Mawr Ave.

The corridor splits where the original line goes northeast towards Skokie Northshore Channel Park. The split line goes northwest towards Emily Oak Nature Center, near the Yellow line. The northwest branch contains electrical utility ROW alongside the former railroad. This corridor is interesting in that it is unobstructed by buildings, even though the former rail tracks have been removed. This corridor intersects the CTA Blue line only, and does not intersect all northern Metra lines. Additionally, this corridor is significantly further north than the center of population to be effective for any circle line use.

3.3 West corridors

This section discusses possible corridors on the western part of the city.

3.3.1 Paulina

The CTA proposes to use the current Paulina connector to go north to meet the O'Hare Blue line and south to meet the Orange line at Ashland. This corridor has the advantage of cost, in that the CTA can reuse existing infrastructure. This alone would probably save $1 Billion. The Paulina connector currently serves the Pink line, and can possibly route trains onto the Blue line. This segment of track currently does not allow for a transfer station onto the Blue line. The newly refurbished northern section of track between the Blue and Green lines could allow for a new station to be placed near the United Center at Madison.

The CTA original circle line plans include extending the Paulina corridor north towards the Blue line as well as south to meet the Orange line. In order to do this, several private properties would need to be acquired and demolished. Many have argued that the circle line needs to go further west, and using the Paulina Connector does not accomplish this.

The CTA original circle line plan has the Paulina corridor connecting into the Orange line at Ashland and routing the circle line trains onto the Orange line into downtown. This plan fails to adequately

[3] http://www.bloomingdaletrail.org/

move anyone towards the southern part of the city. New Metra stations at 18th street aren't feasible, considering the closeness of their downtown termini. This plan isn't necessarily the fault of using the Paulina connector, but rather of reusing the Orange line along a path where very few Chicagoans can be served.

3.3.2 Western Ave

On the north side of the Chicago River, a stretch of railroad parallels west of Western Ave. On the south side of the Chicago River, the stretch crosses Western and parallels Western Ave one block east. Throughout this document, this will be referred to as the Western Ave RR corridor. This is currently a freight corridor, serving multiple railroads. This rail corridor has 4 sets of tracks, with room on the western edge for 2-4 more sets. The rail is set upon an above ground embankment, with several bridges spanning roads, as well as the Chicago River. Most of the bridges appear to be in good repair. The unused ROW has overgrowth. This corridor has much potential, as it has much ROW, and is near Western Ave. This corridor goes under the Pink, Green, and Blue lines, with stations relatively nearby. Metra also has stations that meet at Western Ave, which could connect into a potential Circle line using this corridor.

However, several railroads have rail connectors into this corridor that would provide engineering issues with use with the CTA. Also, a string of power lines with towers use this corridor, which also requires some engineering to work-around.

3.3.3 Cicero Ave

A few sets of railroad tracks parallels Cicero Ave. Some ROW exists for potential CTA use. This corridor would connect several residential neighborhoods, which could provide access to transit to many people. However, this corridor is too far west, and not very useful for consideration for the circle line.

3.4 South corridors

This section discusses possible corridors on the southern part of the city.

3.4.1 40th Street rail

A major rail corridor and rail yard exists between Western Ave and the Dan Ryan Expressway, which parallels 40th St. An old bridge exists where the former Stockyards L line once existed, which crosses the Dan Ryan. A ROW can be dedicated to connect from the Western Ave RR and parallel the existing rail and rail yards. The route would continue east to cross the Dan Ryan expressway to connect into the Green line.

The circle line may not be routed through downtown, and instead could be a semi-circular route. To complete the semi-circle, the route from the 40th Street corridor could continue east using the former Kenwood extension. A majority of the former Kenwood ROW exists to extend a potential circle line to the Metra Electric and South Shore lines. A new station would have to be made to connect the ME and circle line.

The 40th St. corridor has many industrial plants along the route, with very little access to residential housing. This reduces the potential ridership of this corridor. The current rail bridges over the Dan

Ryan would be at grade level with the Metra Rock Island rail line. These bridges would have to be demolished to make way for the new ROW.

3.4.2 49th Street rail

The 49th street rail is an abandoned rail corridor that can carry up to 4 sets of rail tracks. The corridor is an elevated embankment, with bridges spanning all streets. The corridor starts at Western Ave, and goes east to Wallace Street. This corridor has plant overgrowth. The bridges appear to be in decent repair.

The Circle line could re-use the Orange line along Western Ave. However, sections of the Orange line are at different grades along the route, and may be unsuitable. The Circle line route would parallel the Orange line as needed until reaching 49th street. At 49th St, a massive flyover would be needed to go over an existing railroad and connect into the 49th St corridor.

The Circle route would turn east along the 49th St. corridor and use the existing infrastructure until it meets the Norfolk Southern RR (Metra Southwest Service). From there, it could go elevated, and meet the Red line at 47th, and then continue and connect into the Green line.

The surrounding area is a mix of mostly residential and some industrial zones. Residential zones increase the chances of more ridership.

3.4.3 58 ½ Street rail

An abandoned rail corridor exists between 58th and 59th streets, referred hereto as the "58th ½ St corridor". This corridor starts from the Western Ave RR rail yard and connects into the Norfolk Southern rail line. Bridges and embankments exist to provide grade separation for trains. The embankment and bridges are covered with plant overgrowth. This corridor could possibly connect into the Green line at the 59th street rail elbow.

The surrounding land area along the corridor is residential.

This corridor is probably too far south, and closely parallels 63rd St., where the Green line currently exists. If the Green line is extended west, this corridor would essentially duplicate the service.

3.4.4 Green line at 63rd

The circle line could use the Orange line tracks, continue south on new ROW tracks along the Western corridor, and meet at 63rd St. The Green line would extend west until the Western Ave RR corridor tracks. This has the benefit of using the existing Green line infrastructure to go into downtown. Additionally, the Green line East 63rd St could be extended to the Metra Electric (as it once did in the past), and provide a transfer point to the ME.

However, this location is too far south for the circle line. Additionally, the Green line alignment doesn't transfer with the Red line.

3.5 Corridor Map

The corridors as mentioned in the above sections are shown on the CTA map in black.

Figure 1 – Former and current rail corridors

4 Proposed Routes

This section looks at using the corridors mentioned in the above section, and creating possible routes going from the north to the south. This section is divided into northern and southern routes and alternatives.

4.1 Colors

The following picture shows potential color codes to be used. The colors of "Gold" and "Gray" are reserved for a potential conversion of the Metra Electric line into CTA rapid service[4]. The author has chosen "Navy" for the circle line color.

Figure 2 – Circle Line colors

4.2 Complete Circular vs Semi-Circular

The original CTA circle line proposal connected the Paulina corridor into the Orange Line, and the circle line would continue into the Loop on the Orange Line. The CTA circle line proposal would use the Red line and continue north, and would connect into a new subway that would turn west towards the Blue line, and then south along the Paulina corridor.

The identified corridors in section 3 can connect into either the elevated lines or the Red line subway. The proposed southern corridors mentioned in section 3 could travel east along the corridor and merge into either the Red or Green line, thus completing a circle.

However, a rail expert had mentioned that the CTA system is unable to handle additional train traffic through the loop and the Red line. The loop is already running trains from the Green, Brown, Pink, Orange, and Purple lines, and does not have extra capacity to run another service. And, the Red line already runs numerous trains, especially during peak periods. Routing the Circle line trains through downtown would complicate existing schedules for the current CTA lines, congest the existing tracks, and possibly reduce or slow down service on existing lines.

Instead, the circle line could be conceived as only a semicircular route, without a need to route passengers toward the loop. The semicircular route would have the main purpose to connect all CTA and Metra routes in order to have passengers switch between the transit options. This has the advantage of circulating passengers outside of downtown in order to meet other transit options.

[4] http://www.grayline.20m.com/

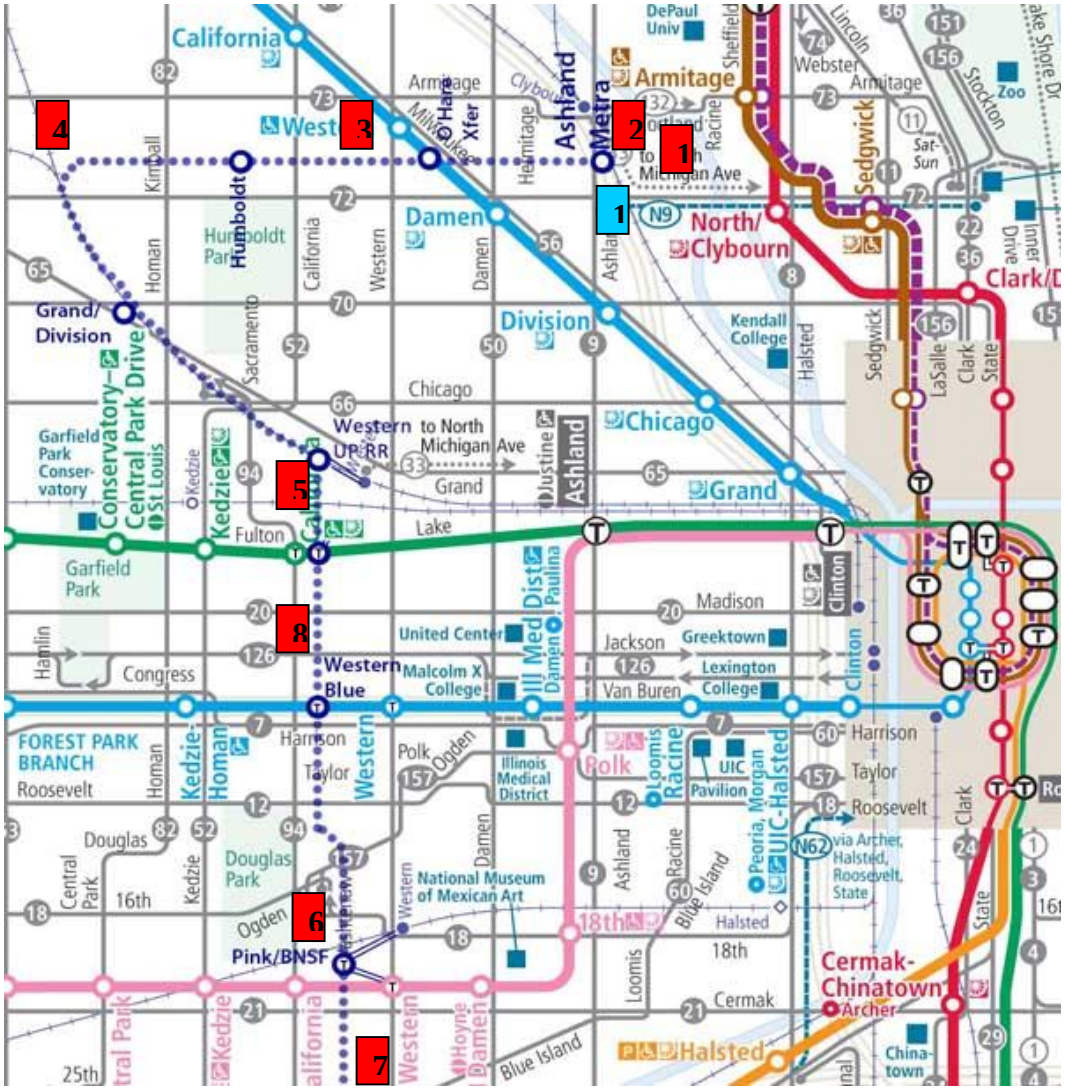
4.3 Northern Routes

The northern route considers only the Bloomingdale corridor. Alternative 1 considers using the entire Western Ave RR, and alternative 2 examines the use of the Paulina connector with several southward options.

4.3.1 Alternative 1 – Western RR

This alternative looks at using the Western RR to route from the Bloomingdale corridor towards the south across the Chicago River. The circle route will parallel the UP freight tracks, using a ROW on the western side of the freight tracks until the rail yard just north of the Green line. The line will be elevated over the rail yard, and then parallel the Western Ave RR along the western side of the tracks.

The blue boxes signify positives, whereas the red signify issues.



The following represent the advantages of this route:

1. Station connection to the UP-N and UP-NW trains at Ashland. Connection to the 9 bus, possible connections to 33, 73, and 132.

The following represent issues with the route:

1. A route hasn't been determined as to how to connect to the Red and/or Brown lines to provide transfers. A bus route could be used to transfer to the Red and/or Brown line.
2. The Ashland stop is approximately 500 ft away from the Metra station, making a direct connection difficult.
3. The Blue line transfer at Western is approximately 500 ft away from a Blue line stop, making a direct connection difficult.
4. Connecting the Bloomingdale corridor to parallel the MD tracks will require a fly-over. This represents an engineering challenge. Fortunately, enough room exists to make a nice circular turn without a need for sharp curves. The flyover will cost additional money.
5. Two rail yards exist just north of the Green Line. The proposed route would have to either go over or under the rail yards. The route should keep in mind a connection to the MD-N and MD-NW station, as well as a possible UP-W station. However, the station transfers may be 500 to 1000 ft away, which is probably too far for a transfer. The connection across the rail yards would have to rejoin the Western Ave RR corridor. An estimated 500 ft is needed to transition an L from elevated to grade level. This connection may not have enough distance to go from an elevated structure to go under the Green line. Instead, the circle route could stay elevated, and either intersect the Green line at-grade (which would be a loss of a transfer point), or elevate over the Green line with a transfer point, in which the extra elevation may create additional cost. This disadvantage greatly inhibits the use of this route.

Figure 3 – Rail yards as explained in #5

6. A combined station can transfer between both the Pink and BNSF Metra stations. However, the transfer point is about 500 ft away from the nearest station for each rail line.
7. Chicago CREATE project WA 4[5] will create a new rail track from the BNSF line going south and parallels the Western Ave RR corridor. The track will then turn west at 31st St. and connect into BNSF Chillicothe Subdivision. This project will interfere with using the Western Ave RR corridor.
8. The Western Ave RR only has one unused bridge span to the west or east of the existing track. This means that another bridge would be needed to construct the CTA tracks to be next to each other for a line. Additionally, the residential and commercial density along the Western Ave RR is very low, and would attract low ridership, despite this route being about 500 to 1000 ft from Western Ave.

4.3.2 Alternative 2 - Paulina Connector

This route looks at using going south from the Bloomingdale corridor along the MD tracks and connecting into the Paulina connector. The track may be at grade level or elevated with respect to the rail freight tracks. [Rev 1.1] The route will elevate and turn at Leavitt St heading south, in order to connect into the Green line at Lake and Leavitt streets. The route will turn east, and provide a transfer to the Green line at the Damen station. The route will turn south into the Paulina connector. The route will continue south along the Paulina connector, turn towards Western Ave. using the existing Pink line tracks, and then turn south to parallel the Western Ave RR corridor.

[5] http://www.createprogram.org/factsheets/WA4.pdf

The blue boxes signify positives, whereas the red signify issues. [Picture Rev 1.1]

The following represent the advantages of this route:

1. Station connection to the UP-N and UP-NW trains at Ashland. Connection to the 9 bus, possible connections to 33, 73, and 132.
2. New Sacramento station meets the 52, 66, and 94 bus routes. This route is not dependent on needing clearance to create a flyover over the rail yards that Alternative 1 requires, which allows for a station at Sacramento.
3. New station to intersect the MD-N and MD-NW lines at an elevated level. The elevated track will continue east until turning to the Paulina connector. This solution solves the issue of crossing the rail yards from Alternative 1 issue 5 by bypassing the yards. Additionally, the UP-

W could move the Kedzie station to Western Ave, thereby providing a transfer to the Circle line.

4. [Rev 1.1] The Leavitt street corridor has two properties that allow L curves without the need for demolishing property. The northwest curve would go over an existing outdoor lot that is used for parking forklifts. At this juncture, the proposed Circle L may elevate higher in order to be elevated over the MD lines in #3. The other property at the southwest corner is currently a parking lot. Arial rights may need to be purchased in order to provide for the curves.
5. Reuses the existing rehabilitated Paulina connector and Green line, thereby saving money. [Rev 1.1] The transfer into the Green line will occur at the new Damen station, as envisioned in a future outlook of the neighborhood[6]. The previous version of this document had a Pink/Circle station at Madison. According to the Near West Side study, the Damen station was recommended over the Madison station, especially for providing service to the United Center.

The following represent issues with the route:

1. A route hasn't been determined as to how to connect to the Red and/or Brown lines to provide transfers. A bus route could be used to transfer to the Red and/or Brown line.
2. The Ashland stop is approximately 500 ft away from the Metra station, making a direct connection difficult.
3. The Blue line transfer at Western is approximately 500 ft away from a Blue line stop, making a direct connection difficult.
4. Connecting the Bloomingdale corridor to parallel the MD tracks will require a fly-over. This represents an engineering challenge. Fortunately, enough room exists to make a nice circular turn without a need for sharp curves. The flyover will cost additional money.
5. The Paulina connector is 1 mile from Western Ave, and makes this Circle line route double-back when using the Bloomingdale corridor. [Rev 1.1] The at-grade connection into the Green line going west will require buying and demolishing the apartment building at 185 N Hermitage Ave. The Circle/Green/Pink lines around the Paulina area would need extensive signaling for train flow.
6. A new turn is needed to separate the Circle line and Pink lines, with the circle line descending to the Western Ave RR grade level. This connection requires the Circle line train to cross both pairs of tracks. This connection could be a choke point as the Pink and Circle line trains would need signaling to stop in order to allow trains to cross the junction. A similar junction is in place at the Brown and Red lines at Belmont, which has caused traffic issues between the Brown and Red lines. However, the Pink line doesn't run at the same frequencies as the Brown or Red line, so this issue is mitigated to a degree.

   There may be an issue with regards to clearance for providing a turn which won't slow the Circle line. The distance between buildings along the Western Ave RR and Pink line is ~200 ft. The turn would have to be engineered to fit this window.

   Additionally, the connection to the BNSF station is about 1000 ft away, which makes for a distant connection.
7. Chicago CREATE project WA 4[7] will create a new rail track from the BNSF line going south and parallels the Western Ave RR corridor. The track will then turn west at 31st St. and

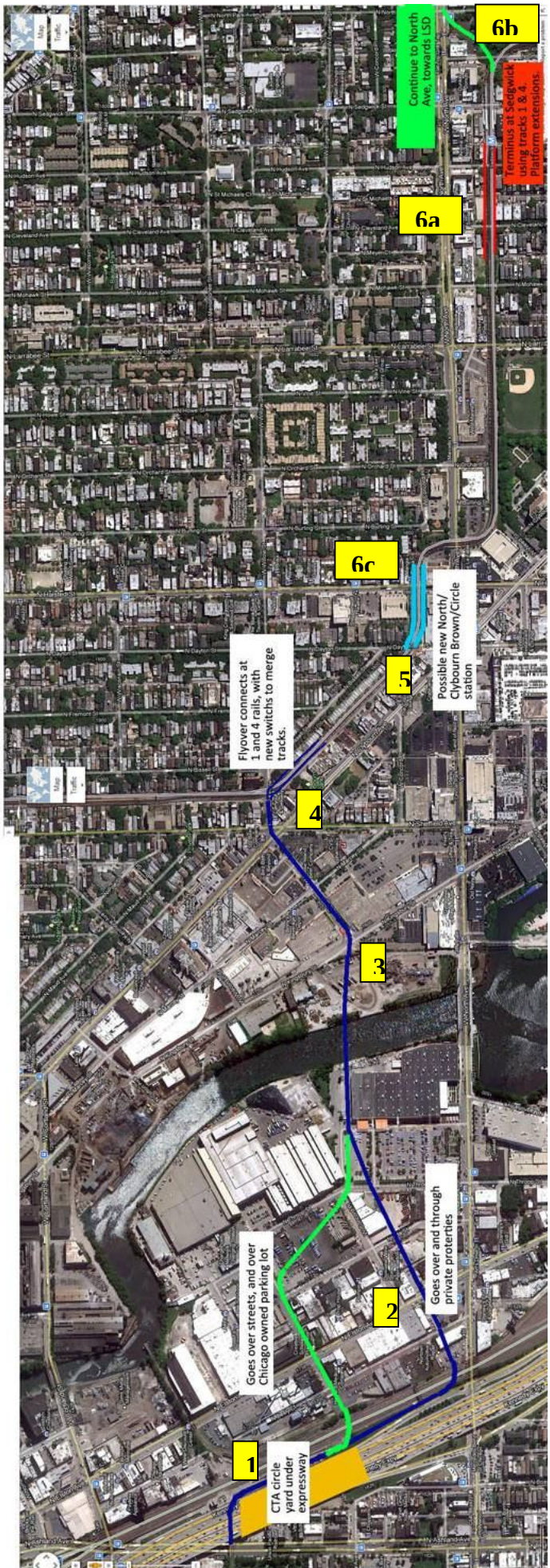
[6] http://www.cityofchicago.org/content/dam/city/depts/zlup/Planning_and_Policy/Publications/Reconnecting_Neighborhoods/05_Near_West_Study_Area.pdf

[7] http://www.createprogram.org/factsheets/WA4.pdf

connect into BNSF Chillicothe Subdivision. This project will interfere with using the Western Ave RR corridor.

4.3.3 Northern connection into the Brown or Red line

The problem with the above northern alternatives is the lack of a connection into the Brown and Red line trains. This section attempts to address this issue.


6b
Continue to North Ave, towards LSD
Terminus at Sedgwick using tracks 1 & 4. Platform extensions.
6a
6c
Possible new North/ Clybourn Brown/Circle station
5
Flyover connects at 1 and 4 rails, with new switchs to merge tracks.
4
3
Goes over and through private proterties
2
Goes over streets, and over Chicago owned parking lot
1
CTA circle yard under expressway

The diagram above shows potential corridors to use to continue the Circle line from the Ashland stop to connect into the Red/Brown lines. The closest stops near the potential Circle line Ashland stop is the Red line North/Clybourn station or the Brown line Armitage station. The Red line is underground at North/Clybourn. Once underground, any potential Circle line route would have to follow the existing subway, unless a new subway corridor is created to allow Circle line trains to reverse direction. Given this fact, connecting into the Red line via subway is not a good option.

Another option would be to connect into a shared Red/Brown station with Transfer, such as the Fullerton station. But, the Fullerton station is further north, and the northern rail segments of the Brown and Red lines don't have any opportunities for the Circle line to reverse course, or diverge and go any further east.

The best opportunity is to connect into the Brown line south of Armitage. The Brown line rail segment south of Armitage is wide enough to handle 4 sets of tracks, until reaching a station.

1. The Circle line would need a northern rail yard for train storage. The CTA could buy several private properties in order to set up a yard. However, the easement underneath the Kennedy expressway is currently unused, and could be a great location for placement of a CTA yard. The Kennedy expressway pylons would present a challenge for creating a yard, especially in the case when the Kennedy overpass is reconstructed.
2. The Circle line would continue east and turn southward along the west side ROW of the UP tracks. The Circle line would have to elevate about 25 feet or more (structure and tracks) and cross the UP tracks via a flyover in order to prevent an at-grade crossing. The UP tracks are already elevated 10 ft (or more) along an embankment. [North Ave from Google Maps appears to state the bridge height of 12' 10". Part of this could be due to the street being lowered somewhat, so a 10ft embankment is estimated.]. This would make the Circle line elevated approximately 35 ft.

   The best river crossing and connection point is just north of the Home Depot along North/Throop streets. The Green route would turn east at Wabansia Ave, then turn south and cross over the City of Chicago maintenance building parking lot. This option would have less resistance, as it would go over less private property. However, this would require more curves for the Circle line. And, the city parking lot would have to be subdivided into separate land parcels if the land is ever sold to redevelopment.
3. The Circle line route goes over the Chicago River, and then over a segment of private property, which appears to be some kind of waste yard. The Circle line is still elevated at approximately 35 feet. A Chicago River drawbridge should not be necessary for barge traffic, but could be necessary if this segment of the river is used for moving sailboats. The Circle line would go overhead on Willow St.
4. The Circle line can merge into the exiting Brown line tracks paralleling Clybourn at Willow St. The existing Brown line structure is approximately 15 ft above ground, with the tracks being approximately another 3 ft above, for a total elevation of 18ft. This segment of the Brown line has room for 4 tracks, where the outside 1 and 4 tracks have currently been removed.

   The Circle line will connect to the Brown line segment via a flyover, into new tracks on the 1 and 4 slots. The Circle line at this point is still 35 ft above ground, which has enough clearance to go over the existing CTA structure (estimated total height of 18 ft) and have room for elevated trains (12 ft, according to Bombardier specs[8]) -- total height 18 + 12 = 30 ft, with 5 ft

[8] http://en.wikipedia.org/wiki/5000_series_%28Chicago_%27L%27%29

to spare (35 – 30 = 5). Once the Circle line becomes at the same grade as the existing Brown line tracks, a new switching segment will be installed to switch the Circle line to use the existing Brown line tracks (tracks 2 and 3).

[Rev 1.1] The Circle line was not chosen to go north onto the Brown/Red lines because the L tracks do not have room to allow a reverse turn-around, or opportunities to go any further east.

5. A new station could be positioned at Halsted and North Ave, in order to provide a transfer point amongst the Circle, Red, Brown, and Purple lines. This station would provide the closest transfer to the Red/Brown lines in order to go north. However, such a station would have a few problems. The station would duplicate the existing services of the current Red line North/Clybourn station. This means that this new station would have low ridership, which is the reason that the original Halsted/North station had closed. The Halsted/North station would need platforms that would wrap at the curves in order to handle an 8 car L train. This station would be an additional stop for both the Purple and Brown lines.
6. Option A:
   [Rev 1.1] The Circle line can use the Brown line tracks 1 and 4, and would not switch onto the mainline tracks. This could be done to not interfere with current Brown and Purple line operations. The Circle line would continue to the east, and terminate at the Sedgwick station. The Sedgwick station has room on the sides for tracks 1 and 4 to meet until the station elevator structure. The platform length from the west end of the station until the station elevators would only allow a 4 car train at the station. If a longer Circle line train is in service, the station platforms would need to be extended. This would also mean that tracks 1 and 4 would abut the nearby buildings, which is probably a hazard and a detriment to the quality of life for the building occupants.

   Option B:
   [Previous Option A] The CTA can purchase the property at 1537 N Orleans St (which is currently for sale, with no structures built), and build a new track line to go towards and over North Ave. The track can be extended for a new terminus station near the Chicago Historical Society at Clark St. This would allow passengers to go to Lincoln Park or North Ave Beach, as well as allowing bus routes 9, 11, 22, 36, 72, 73 connect to the Circle line. This also provides a station near some high rises on the north side of town. This option is quite expensive, as it creates a lot of new infrastructure only for one stop.

   Option C:
   [Rev 1.1] The Circle line can use tracks 1 and 4 in order to not interfere with current Brown and Purple line operations. The North/Halsted station can be built as platforms in between tracks 1 and 2, and 3 and 4. This station could have an elevator to go underground to connect with the North/Clark Red line station via tunnel. This station would be an endpoint for the Circle line, and the Circle line would need to reverse course. This option would not hinder the Brown/Purple line operations since switching the Circle line onto the Brown/Purple tracks are not required. This option would add another stop onto the Brown/Purple routes. A station in this configuration may not have enough width to be ADA compliant.

Sharing the existing L tracks could mean scheduling issues for the Brown and Purple lines, as the Clybourn and Sedgwick segments would service the Circle, Brown, and Purple lines. Signaling priority should be given to the Brown and Purple lines in order to not interrupt their service to and from the Loop.

4.3.4 River Crossings

This shows the potential river crossings by using the Paulina Connector or the Western Ave RR. This section attempts to analyze and address issues as mentioned in the Northern Alternatives with connecting into the southern part of the Circle line.

[Rev 1.1] The red, green, and orange routes listed below remove obstacles 6 and 7 from the disadvantage list when using the Paulina connector.

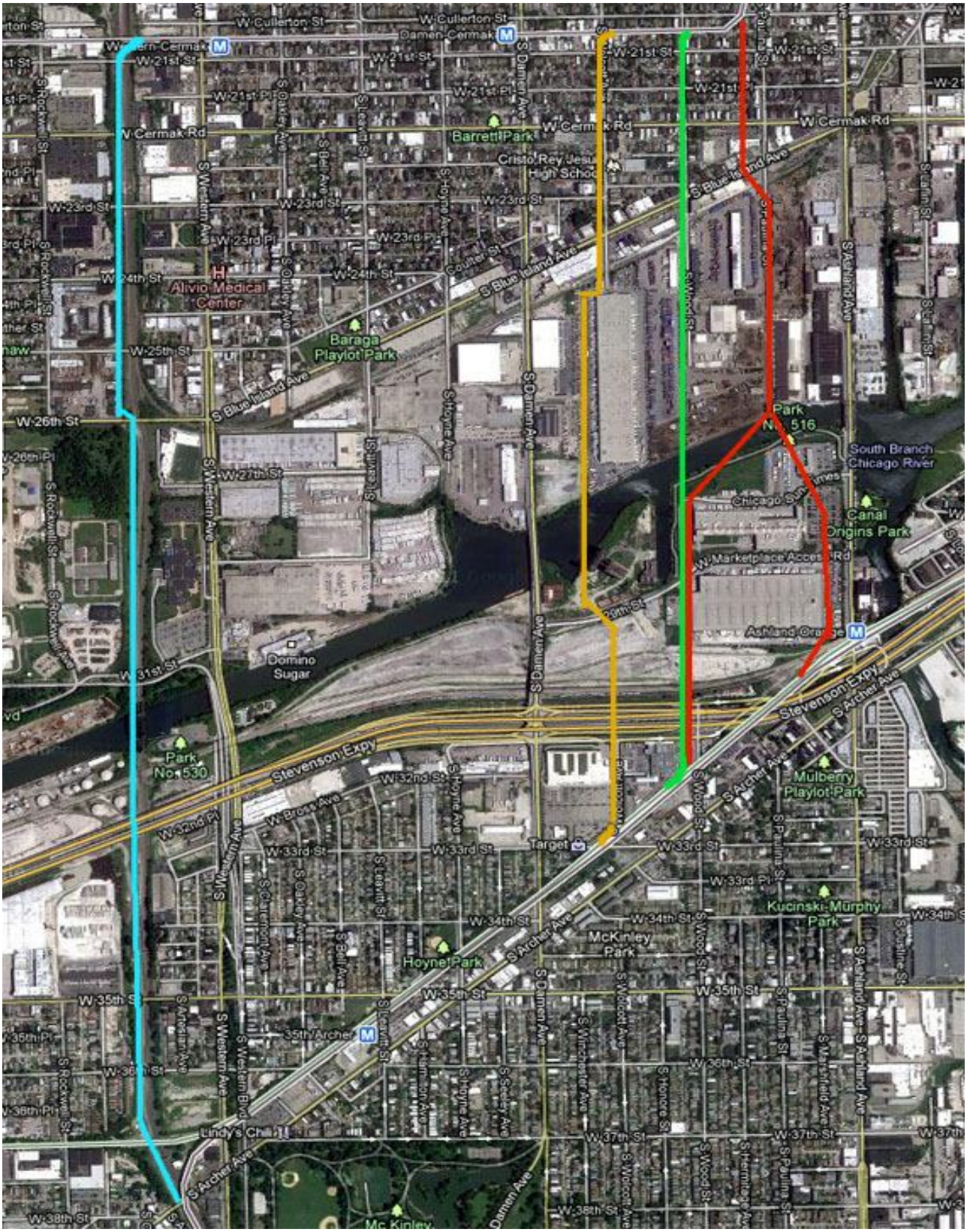


Figure 4 – Potential River crossings

4.3.4.1 Paulina Connector straight south

This route (in red) shows a potential corridor from the Paulina connector going south from the Pink line curve. This route is the original route as proposed by the CTA Circle line. This corridor would have to buy several housing properties until reaching Blue Island Ave. From there, the route can turn and go over Paulina St (in order to avoid the industrial plant) until the river. A new bridge at the river is required. At the river, the route would have to turn again, in order to avoid the Sun Times plant across the way. The "right" fork in the diagram is less preferred, since it is joins too closely near the Ashland station. The left fork would follow Wood St. A flyover is needed to connect into the existing Orange Line in order to separate grade from the CN tracks. Satellite images show that enough space is available along the ROW to reroute the Orange line to have a flyover in the middle of the tracks. In such a case, the existing Orange line would have to go around the flyover. This option has the advantage of a shared station at 35th and Archer. However, the numerous curves and required property purchases provide many disadvantages for this route.

4.3.4.2 Wood St

This route (in green) shows a potential corridor from the Paulina connector going south along Wood St after the Pink line curve. Some properties at 21st St and Wood St would need to be purchased and demolished for an elevated curve to be placed. The route would go over Wood St until the river. A new bridge is required to go over the river. A small curve is introduced in order to avoid the Sun Times plant. South of the Sun Times plant, the route would continue to go over Wood St, and connect into the Orange line via a flyover. A flyover is needed to connect into the existing Orange Line in order to separate grade from the CN tracks. Satellite images show that enough space is available along the ROW to reroute the Orange line to have a flyover in the middle of the tracks. In such a case, the existing Orange line would have to go around the flyover. This route has the following advantages: needing less track than Western Ave RR route, less curves than the Paulina and Walcott Rd routes, and a shared Orange line station at 35th and Archer. The main disadvantage of this route is the immediate S-curve when joining the Pink line, as this may require additional engineering and signal work.

4.3.4.3 Walcott Rd

This route (in gold) shows a potential corridor from the Paulina connector going south along Walcott Rd, after the Pink line curve. Some properties at 21st St and Walcott St would need to be purchased and demolished for an elevated curve to be placed. The route would go over Walcott St reaching the industrial warehouse at Walcott and Blue Island Ave. The route would curve around the warehouse facility, and use a new bridge to cross the river. Once over the river, the route would resume over Walcott Rd and connect into the Orange line via a flyover. A flyover is needed to connect into the existing Orange Line in order to separate grade from the CN tracks. Satellite images show that enough space is available along the ROW to reroute the Orange line to have a flyover in the middle of the tracks. In such a case, the existing Orange line would have to go around the flyover. This route doesn't have the immediate S-curve as the Wood St. route. However, this route requires more infrastructure and curves than the Wood St route, requires the cooperation of warehouses, and is more expensive.

4.3.4.4 Western Ave RR

The Western Ave RR route (in blue) would use an ROW along the current freight tracks. This route could use the existing freight bridge over the river. However, the northern route proposals show that the CREATE WA4 project may interfere with using the current freight bridge. Additionally, if the freight bridge were used, the Circle route would be at-grade with the BNSF tracks. Instead, the route could be elevated from the Pink Line going south. A new bridge would be needed over the river, and the route would need to be elevated over I-55. This route can stay elevated, and connect into the existing Orange Line at the curve.

This route would need the most new infrastructure for the Circle line. In addition, CREATE has the Brighton Park projects[9,10], which will (presumably) create a flyover for the CN tracks over the Western Ave RR tracks, and create a connection between the Western Ave RR and the CN tracks. The Brighton Park flyover may interfere with the Circle line elevated connection into the Orange line. The Orange and the Circle lines would not have a common station for transfers, unless a new station would be created. However, this route provides the closest transfer from the BNSF Metra at Western. All other routes would need a new BNSF station for direct transfers to the circle line; otherwise the BNSF Metra could transfer to the Pink line or Bus #18, and then transfer to the Circle line at 18th St. on the Paulina connector.

4.4 Southern Routes

4.4.1 40th Street

This route looks at using an ROW along the 40th St rail tracks. The route would come south near the Orange Line, and have an elevated flyover the Orange and Western Ave RR tracks. The route would have an ROW north of the Norfolk Southern rail yard and parallel the current tracks until I-90/94. The route would continue over the interstate, and connect into the Green line. For a circular line, the circle route could use the Green line going north. For the semicircular route, the Circle line would intersect the Green Line at the Indiana station, and continue going east using the former CTA Kenwood extension.

The blue boxes signify positives, whereas the red signify issues.

[9] http://www.createprogram.org/factsheets/P5.pdf
[10] http://www.createprogram.org/factsheets/WA7.pdf

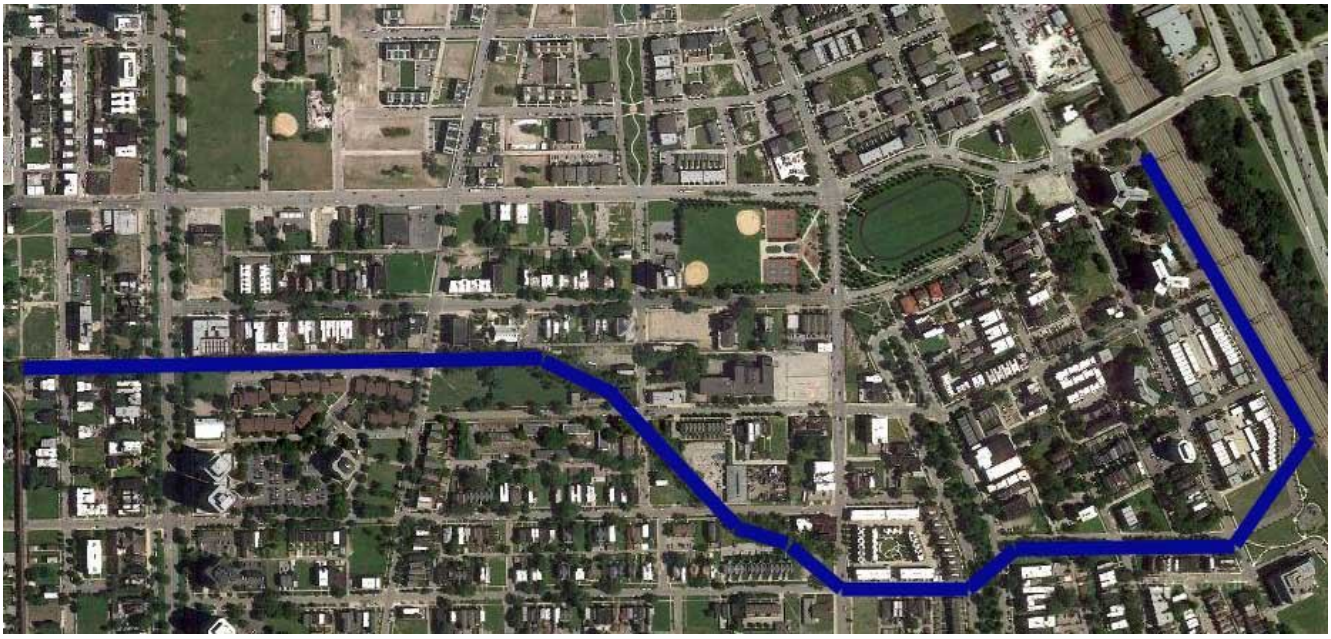


Figure 5 – Kenwood extension route

The following are the advantages of this route:

1. Reuses a ROW that is currently not used for the Kenwood extension. Most of this ROW is intact in order to reach the ME.
2. A new station at Pershing allows area residents a CTA option, as well as a transfer to the ME. The Pershing stop has many bus routes that can provide a stop.

The following are the disadvantages of this route:

1. Requires a flyover at the Orange line and Western Ave RR (assuming use of the Western RR rail segment). This may mean that the Orange line tracks cannot be used.
2. If the Orange line tracks cannot be used, this route does not have a transfer point between the Orange line and the Circle line. Even if the Paulina connector is used to go south (via any alternative), it may not make sense to share the Orange line tracks for the station at 35th and Archer.
3. This route would have to coordinate with the existing rail yard as to not interrupt its operations. This may present problems for interchanging modular containers from the trucking industry to be transported on the rail lines. Additionally, the surrounding area is basically industrial. The stops at Ashland and Halsted may not produce enough passenger traffic to necessitate the stops. Thus, this segment of the Circle line is not very useful, which tends to eliminate this route.
4. The existing bridges over I-90/94 are at-grade level for the Rock Island rail tracks. The Circle line would have to be elevated over the Rock Island tracks. Thus, the bridges would have to be demolished and rebuilt for CTA purposes. In addition, an existing Red line station does not exist at 40th St. A passenger would have to transfer at the Green Indiana station in order to possibly transfer to the Red line.

4.4.2 49th Street

This route looks at using an ROW along the 49th St rail tracks. The route would come south across the river and either use or parallel the current Orange line tracks. At the 49th St track, a flyover is required

to separate from the Orange line, and go over the current (CSX, UP?) tracks. This flyover requires a bit of engineering, since there is already a freight flyover to connect into the Western Ave RR corridor. Once on the 49th St. RR, the route would head east until the Norfolk Southern RR west of I-94. From there, routes would need to be determined to connect the Red, Green, and Metra Electric lines.

4.4.2.1 49th Street corridor Map

The blue boxes signify positives, whereas the red signify issues.

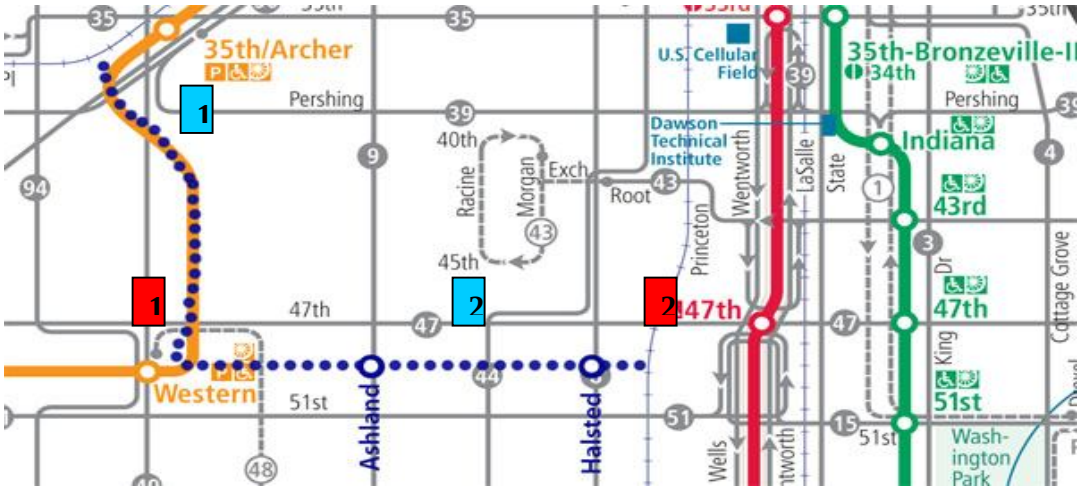


Figure 6 - 49th Street Route

The following are advantages of this route:

1. Possible reuse of the Orange Line corridor. The east-west portion of the route is significantly south enough to use the Orange line tracks, especially in the case where the river crossing is made at Wood St.
2. The neighborhood is mixed with residential and industrial zones. The catchment area for potential passengers is much larger than the 40th St route. Additionally, there is ample space within this area for a CTA maintenance station [Rev 1.1] by acquiring one of the neighboring industrial sites.

The following are disadvantages of this route:

1. As mentioned before, a significant amount of engineering is required to create a flyover at the Orange line and (CSX, UP?) tracks to connect to the 49th St route.
2. No current direct way to connect the Red, Green, and ME lines. However, this is mitigated with the following route extensions.

4.4.2.2 49th Street Route extensions

The following map shows possible route extensions from the 49th Street corridor.

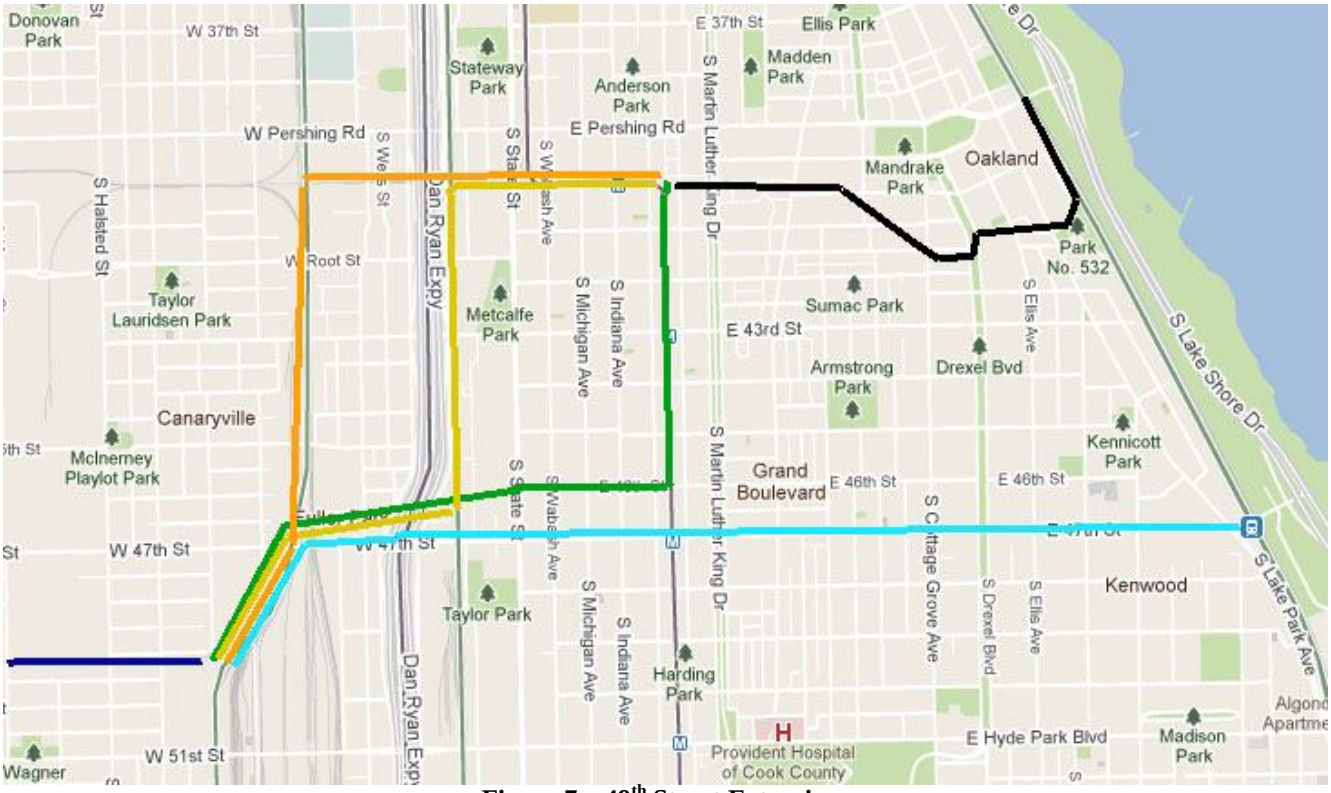


Figure 7 – 49th Street Extensions

Three of the following routes attempt to connect into the former Kenwood extension, as the Kenwood extension is the only unobstructed corridor without using a new elevated L or subway that can connect the Metra Electric to the Circle line. A station at Pershing can connect the ME to the circle line, and bus routes 39, 2, 6, 28, and X28.

None of the alternatives offered connect to a Metra station on the SWS and RI lines. New Metra stations would have to be built.

4.4.2.2.1 Using Norfolk Southern / Metra SWS

This route (in orange) shows a potential corridor to connect into the Kenwood extension via using a corridor along the Norfolk Southern RR tracks. The route would travel north along the RR ROW. At 40th St., a flyover would be used go over the RR tracks and expressway to connect into the Green line and transfer at the Indiana station. From there, it would use a rehabilitated Kenwood branch.

This route does not have a transfer to the Red line, unless a new station is built at 40th St. However, not enough ROW exists at 40th St to build a new Red line station. Secondly, satellite imagery shows that not enough room exists to create a flyover at 40th St without tearing down existing buildings. The Kenwood extension is further north than the 49th St corridor, and requires that the Circle line double-back north/south in order to use the Kenwood extension. This may add unnecessary length to the Circle line. Additionally, a new Pershing station would need to be built for the ME transfer.

4.4.2.2.2 Using Metra RI

This route (in gold) shows a potential corridor to connect into the Kenwood extension via using a corridor along the Metra Rock Island RR tracks. The route would go elevated along 46th Pl, and link up with the Red line station at 47th St. After the Red line station, the route would turn to go north along the RI tracks, and probably stay elevated. This is because there isn't enough ROW for two pairs of tracks, and a flyover will be needed to connect to the Green Line at Indiana. The route would connect into the Green line Indiana segment, provide a transfer at Indiana, and continue towards the Kenwood branch.

This is route is better than the Metra SWS alternative, as this route connects into both the Red and Green lines. However, creating more elevated L track along a new corridor will cost extra money. The Kenwood extension is further north than the 49th St corridor, and requires that the circle line double-back north/south in order to use the Kenwood extension. This may add unnecessary length to the Circle line. Additionally, a new Pershing station would need to be built for the ME transfer.

4.4.2.2.3 Using the Green Line

This route (in green) shows a potential corridor to connect into the Kenwood extension via using the existing Green Line tracks north of 46th St. From the 49th tracks, the circle line would run elevated north to 46th Pl. At 46th Pl, the route would turn east, and provide a connection to the Red line station at 47th St. The route would continue east along 46th St, and connect into the Green line tracks. A new switching track is needed at the junction. The route would continue north until Indiana St, and provide a new junction and turn to use the Kenwood extension.

This route is slightly better than the Metra RI alternative, in that the Green line tracks are reused for north/south movement. This route provides a Red line transfer at 47th St, and a Green line transfer at 43rd St. However, the new switches may interfere with Green line operations, similar to the Belmont curve for the Red/Brown lines. Satellite imagery show that a sharp curve is needed at the Green line and Kenwood extension junction; otherwise the existing building would need to be destroyed. The Kenwood extension is further north than the 49th St corridor, and requires that the circle line double-back north/south in order to use the Kenwood extension. This may add unnecessary length to the Circle line. Additionally, a new Pershing station would need to be built for the ME transfer.

4.4.2.2.4 Elevated or Subway along 47th Street.

This route (in blue) shows a potential corridor to extend the 49th St railway to use an elevated or (preferably, for aesthetic reasons) a subway along 47th St. The route would travel from 49th St north to 47th St along the NS tracks and become elevated or a subway. Approximately 1000 ft is available to descend as a subway, which should be enough available distance to do so. This route would have transfer connections at the existing 47th St Red line and 47th St Green line stations. Additionally, an existing ME station exists at 47th St.

This route is better than the other alternatives in that existing Red, Green, and Metra stations may be used for transfer points. This segment has more bus routes for transfers (2, 3, 4, 6, 28, 47, and x28) than the other alternatives. However, if this segment were a subway, it would be quite expensive. The elevated option would run over the current 47th St, which is not aesthetically pleasing, and could provide difficulties for lighting and vehicle traffic. If elevated, this segment would also have to engineer a solution to go over the existing Green line.

[Rev 1.1] The Circle line could briefly connect into the Green line, and then attempt to go east somewhere south of 48th Street. However, the neighborhood residents in the mansions would vehemently oppose an L corridor going through their neighborhood. As such, it is probably better to elevate over 47th St, and provide a double-decker station at the Green line for transfers.

5 Final Route

This is the final route based on the best available alternatives mentioned in the section above. The proposed route would use the Bloomingdale Ave corridor on the north, using the embankment infrastructure. This alignment will intersect the Blue line O'Hare branch, as well as the combined Metra UP-N and UP-NW Clybourn station. Heading west, it would meet up with the Milwaukee District lines, and turn south, using an elevated section along the ROW of the tracks. The route parallels the rail yards, then turns south onto the Paulina connector. The Circle line will have transfers at several Pink line stations, and new stations are needed to transfer to the Blue and Green lines. The proposed route will cross the Chicago Sanitary & Ship Canal using a new bridge over Wood Street, and connect into the Orange line near Wood Street. The Orange and Circle lines will have a transfer at the 35th and Archer station. The route would use the Orange line tracks until 49th Street, where a flyover is required to use the 49th St corridor. The route will continue east along the corridor until the Norfolk Southern tracks and rail yard. The route will then descend underground and follow 47th St east until reaching the Metra Electric line.

The following segments should be constructed in this order:

1. Green background – the northern segment until the Ashland Metra stop and CTA yard underneath the Kennedy. This will attract many riders from the area, and provide connections into the Blue, Green, and Pink segments.
2. Red background – the southern segment along the 49th St tracks. This will equalize service to balance the Circle line with the northern segment. New ridership will come from the neighborhoods around Halsted and Ashland. The Circle line will have a connection into the Orange line.
3. Blue background – Brown/Purple line connection into the Clybourn and Sedgwick segments.
4. Orange background – Connection into the Red and Green lines, and servicing the southeast residents. This can also connect into the Metra and NICTD station at 47th St.

Figure 8 - Final Proposed Route

6 Summary

6.1 Advantages

This proposal should be measured by how much of the criteria has been met to provide transfers and circular access:

✓ Use corridors that will not result in the destruction of many private properties
✓ Use corridors that will hide the L train for aesthetic reasons.
✓ Attempt to use corridors where there is room for 2 L train tracks, as well as possible infrastructure to be reused for L transit (such as abandoned bridges).
✓ Attempt to provide an L line that is not at-grade with street crossings.
✓ Minimize the amount of private property acquisitions.

⇔ Connect all CTA L lines, and incoming Metra lines.

× Move the circle line to orient it more towards Western Ave. (corridor not chosen).

The following are listed as advantages for the proposed alignment

1. Humboldt Park Access – Five or more stations created along the northern segment provides access to the Humboldt Park neighborhood. From there, residents could access any of the other CTA lines via the Circle line.
2. 49th and 47th Streets Access – New stations at 49th/Ashland, 49th/Halsted, 47th/Cottage Grove, and 47th/Lake Park allow new CTA L access to residents.
3. [Rev 1.1] Potential connection to all CTA L lines – Green, Orange, Pink, Brown, Purple, and Red (south) line stations have potential transfer points. The Blue lines require extra engineering to allow for transfers. The Red (north) would need to transfer to the Brown line at Fullerton in order to catch the Circle line at Sedgwick.
4. Metra Station connections – This route will use the following existing Metra stations:
    a. Clybourn (UP-NW and UP-N)
    b. Western (MD-W and MD-N)
    c. Metra Electric and NICTD South Shore at 47th.

    Potential station transfers with Metra:
    a. SWS at 47th St.
    b. RI at 47th St.
    c. HC at 35th/Archer for Orange Line
    d. Metra UP-W moves Kedzie station to Western.

    Only the BNSF does not have a connection possibility with its existing Western Station.

5. About 20% of the proposed route uses existing CTA L tracks. The Circle route could use the Western Ave RR instead in order to be closer to Western Ave. However, the density and current zoning may not produce good passenger numbers, and such a route would be cost ineffective.
6. Bloomingdale and 49th St corridors hide L tracks for aesthetic reasons, and reuses non servicing rail lines.

7. Symmetry – The north and south access corridors are nearly symmetrical, meaning that no part of the city is favored over another.
8. Airport Access – Residents on the west side have easier access to transfers to the Orange or Blue lines to take them to Midway or O'Hare, respectively.
9. Transfer points are limited to within 500 ft.

6.2 Challenges

The following are listed as challenges – obstacles to implementation.

1. Cost – The cost of the project will probably be between $5 and $7 billion. Most of the cost will be to acquire rights of way, lay track, rehab bridges, etc. The CTA does not receive enough revenue to perform general maintenance, and must rely on federal funding.
2. ROW access – the ability to acquire the ROW may be obstructed by several railroads. Additionally, some corridors may not have enough ROW to provide for 2 sets of rail tracks. This is especially a concern along the MD track alignment.
3. CREATE and ROW engineering – A rail project to improve rail speed and reduce delays (CREATE[11]) adds complexity to the engineering of the CTA ROW. Several projects impact the Western corridor, including a BNSF rail connector, as well as an underpass/overpass for the CN lines which provides the Metra Heritage Corridor (HC) service. This construction would impact the ability to reuse some existing infrastructure, mainly the rail bridge over the Chicago Sanitary and Ship Canal, only if using the Western Ave RR corridor. These issues are mitigated when using the Wood St Corridor and Paulina connector.
4. Flyover Engineering – Several of the curves require a flyover with relatively sharp curves, or extra elevation to go over existing buildings or CTA tracks.
5. Metra/CTA interoperability – Currently the CTA and Metra do not have an interoperability agreement where a resident would get a discount for transferring between services. This is biggest potential problem of the proposed Gray line. However, Metra inter-connection doesn't have to be the first priority of the given alignment.
6. Western BNSF does not have a direct transfer. The passengers could receive a special card to use the 18 Bus and transfer at the Pink line at 18th St.
7. Long transfer tunnels – Many of the existing stations are somewhat far from the proposed alignment, some as much as 3 blocks. Providing transfer operations would require long tunnels between L lines and Metra stations.
8. "Not Invented Here" – Considering that this is an enthusiast proposal, certain professional elements may reject the proposal.
9. Rail yards – This proposal does not consider locations needed for CTA rail yards for the circle line. However, some industrial zones exist which may be used for CTA purposes.
10. The Bloomingdale Trail Coalition would oppose use of the Bloomingdale corridor for rail use.

6.3 Other Modifications

1. The Circle line would really be useful if it could connect into the Orange line and use the station at Western, so that passengers from east of Ashland on the Circle line don't have to transfer at the 35th/Archer station in order to go to Midway Airport.
2.

[11] http://www.createprogram.org/

6.4 Key Takeaways

The important note about this route is the need to acquire rights of ways, before development overtakes them. This is especially true existing rail corridors which may be demolished for other potential uses.