CTA's Red and Purple Modernization (RPM) Project in 2021: Progress, Challenges and Milestones

Presentation for the Sandhouse Rail Group at Northwestern University
October 26, 2021
RPM Phase One (2019-2025)

Phase One will bring maximum benefits to CTA customers across the rail system:

- **Red-Purple Bypass**: A rail bypass & track realignment to increase speed, reliability, and capacity
- **Lawrence to Bryn Mawr Modernization**: Reconstruction of six miles of track structure and four Red Line stations, including making them ADA accessible
- **Corridor Signal Improvement**: Signal improvement covering 23 miles of track, improving service reliability
RPM Phase One: Benefits to CTA riders and Chicago communities

- Faster and smoother rides: New tracks, bridges, viaducts, and signal upgrades permit faster and quieter rides
- More frequent and less crowded service
- Four newly rebuilt Red Line stations that will be fully ADA accessible
- Economic growth through RPM programs for workforce development and increasing SBE/DBE participation
- Transit-oriented development post-construction

From top left, clockwise: Crumbling viaduct at Hollywood Ave. between Bryn Mawr and Thorndale Stations; crumbling retaining wall near Bryn Mawr Station; overcrowding and delays at Belmont, a major rail transfer point; and small, outdated platform at Bryn Mawr with no elevator access.
RPM: Project key dates

- 2018-2021: Advance Utility Relocation
- 2019: Project groundbreaking with Red-Purple Bypass
- 2020-2021: Lawrence to Bryn Mawr Pre-Stage work
- 2021: Red-Purple Bypass bridge to be completed
- 2021-2025: Lawrence to Bryn Mawr new station and track construction
- 2019-2025: New signal system installation
- 2021-2025: North Main (Red & Purple Line) reconstruction
RPM Project: Key issues and challenges

- Replacing a 100-year-old structural system and 50-year-old signal system
- Construction in a densely populated, urban environment and minimizing impacts to local communities
- Maintaining rail service during entire construction period (2019-2025)
- Meeting and exceeding DBE and workforce development requirements
- Preparing Transit Oriented Development for parcels post-construction
RPM Phase One: Transit Operations coordination

- Coordination with CTA Planning and Transit Operations groups helps facilitate construction around transit service, balancing critical access with maintaining sufficient service levels.

- Total quantities and allowable combination of different types of service impacts were analyzed by CTA Planning and Ops.

- They were woven into the RPM construction contract - creating multi-lateral framework for planning work with acceptable impacts.

- Regular weekly and semi-weekly RPM meetings with Planning and Ops keep lines of communications open, and provide advanced notice of upcoming work to facilitate coordination.
Approaching RPM Project Milestone #1: Completion of the new Red-Purple Bypass

- Nearing completion of the rail bypass that will carry Kimball-bound Brown Line trains and eliminate bottleneck caused by 114-year-old rail junction (2019-2021)

- Rebuilding the Red and Purple lines underneath the bypass between Belmont and Cornelia (2021-2025) to straighten curve and increase train speeds.

Looking southeast, Kimball-bound Brown Line trains will travel on the new bypass, above, crossing over Red and Purple Line tracks.
Approaching RPM Project Milestone #1: Completion of the new Red-Purple Bypass

Left, Red-Purple Bypass will carry Kimball-bound Brown Line trains over Red, Purple Line tracks. Right, installation of the noise wall for the new closed-deck structure.
Completion of the Red-Purple Bypass

**Oct. 13-27: Kenmore interlocking installation (round 1)**

- **What:** Attach the Bypass to the Brown Line Kimball-bound tracks (track 2)
- **How:** A crane will hoist equipment and materials onto the ROW. A Speedswing and tie cranes will put the special trackwork into place and will secure it using hand tools.
- **Service impacts**
  - Oct. 15-18 and Oct. 22-25 line cuts between Belmont and Southport; Infrastructure will piggyback on part of line cut periods extended cuts to Belmont-Irving Park

**Oct. 26-Nov. 9: Belmont “slide-in”**

- **What:** Attach the Bypass just north of W Belmont Ave.
- **How:** New segment will be “driven” over to the existing tracks utilizing self-propelled modular transporters (SPMTs) and connected to the existing structure through bolted connections.
- **Service impacts**
  - The slide-in reroute will go into effect Monday 10/25 after morning rush; impact to customers is a platform boarding change only.
Bypass attachment, north end at N Kenmore Ave

New interlocking, facing west

Bypass, facing east
Bypass attachment, south end
After completion of Red-Purple Bypass bridge, North Main track (Red, Purple lines) reconstruction begins (2021-2025)

Left: Red and Purple Line track structure north of Belmont is a century old and contains an S-curve that slows train traffic and contributes to delays.

Right: A rendering of the new track over Newport Avenue that will be straightened.
The path to North Main Line reconstruction

November 2021
- **Micropile/shoring tower**
  - Cut and throw installations
    - Bypass completed

December 2021
- North Main track 1-2 demo and micropile work

January 2022
- Tie-in temp track
  - Kenmore interlocking installation (round 2)
  - Relay house installation
Temporary track construction
Connecting the temporary track: Phased reroutes

Phase 2E
Connecting the temporary track: Phased reroutes

Phase 2F
Connecting the temporary track: Phased reroutes

Phase 2G
Connecting the temporary track: Phased reroutes

Phase 2H
Lawrence to Bryn Mawr Modernization

**Bryn Mawr**
The Bryn Mawr station facility opened in 1922; at right, rendering of the new Bryn Mawr station.

**Berwyn**
The Berwyn station opened in 1923; at right, rendering of the new Berwyn station.
Lawrence to Bryn Mawr Modernization

Argyle
The Argyle station facility opened in 1922; at right, rendering of the new Argyle station

Lawrence
The stationhouse at Lawrence opened in 1923 and closed in 1995, replaced with metal fencing. Right: rendering of the new Lawrence station
Demolition work: Summer/fall 2021

W Hollywood viaduct

W Catalpa viaduct

W Bryn Mawr viaduct
Drilled shaft work: Summer/fall 2021
Drill rig incident 10/6/2021

- Walsh-Fluor, the contractor for the RPM project, was drilling a new caisson (track foundation) south of Bryn Mawr from track level when the drill rig fell onto the alley below.
- Rig’s crane collided with electric pole and a car.
- No injuries reported.
- Drill rig was stabilized, disassembled and removed.
- Investigation continues.
Lawrence to Bryn Mawr: Construction approach

- Design/construction plan will result in faster construction, fewer impacts to customers and local communities and lowest cost
- New “segmental box girder” structure -- can be built more quickly via gantry system (right) with less disruption to the community
- Design requires fewer columns, providing better sightlines and spaces underneath the structure
- Reducing construction time reduces impacts to CTA service and rail customers
RPM: A project inclusive for all

**Project workforce and SBE/DBE goals**

- Hiring and DBE-certified businesses goals were placed on the RPM Phase One project
- We are meeting and in some cases exceeding those goals
- DBE goals: 20.64% design/20% construction
- Workforce Goals *(as percentage of labor hours)*: Workforce Innovation and Opportunity Act (WIOA) - 10%; Economically Disadvantaged Areas - 35%; Union Apprentice - 15%

**Innovation**

- We created innovative workforce development program, hiring HIRE360 and Chicago Cook Workforce Partnership, to do intake and connect people to training and apprenticeships, including WIOA workers and those from zip codes with median incomes <$40K
- RPM created the CTA Building Small Businesses program created in 2019 to provide financial and technical assistance
  - BSB program has helped small contractors participate in projects like RPM. When COVID hit, BSB pivoted and mobilized to help businesses apply and receive more than $5M in PPP and CARES funding.