

Hemal Patel, PE, SE, NBIS

President, Structural Engineer

10-4 Engineering, PLLC

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10-4 Engineering, PLLC

Summary

Hemal Patel is a licensed structural engineer with 12 years of experience in bridge design, analysis, and inspection. Hemal has specific experience in several projects involving rehabilitation, reconstruction, and complete replacement of rail and transit structures, including open-deck, closed-deck, through plate girder and retained embankments.

Most recently, Hemal was the structural lead on the \$100 million CTA Red-Purple Bypass, which required extensive coordination with the contractors. Responsibilities included expedited review/resolution of hundreds of RFI's, shop drawings, and construction submittals.



Project Experience – Rail/Transit

CTA Red-Purple Bypass, The Flyover, Chicago, IL – Client: Chicago Transit Authority

- Reconstruction of a 120-year-old elevated junction of the CTA Brown, Red and Purple lines.
- Design of a new curved flyover, single-track, carrying the NB Brown Line over the junction.
- Closed deck structure, 1800' long, steel-plate girders on a tight curve, founded on drilled shafts.
- Project structural engineer responsible for all aspects of design, using both AREMA and AASHTO codes.
- Extensive coordination with contractors, geotechnical, track, systems, architects, site civil engineers.

CTA Red-Purple Bypass, Temporary Track Structure, Chicago, IL – Client: Chicago Transit Authority

- Design of a 900' long, temporary, open-deck, single-track structure threaded through tight alley.
- Rolled stringers framing into double-column steel bents supported on pedestals & spread footings.
- Truss bracing in every third span to limit longitudinal sway. Frame action in transverse direction.
- Cross bents were coped and skewed to avoid adjacent buildings, utilities, and mainline structure.
- Extensive coordination to avoid conflicts with utilities, adjacent properties, and mainline platforms.

CTA Red-Purple Bypass, Rehabilitation of Brown Line, Chicago, IL – Client: Chicago Transit Authority

- Extensive rehabilitation of 120-year-old existing Brown Line, a 1200' long, dual-track structure
- Riveted steel, built-up stringers, cross girders, and columns founded on unreinforced concrete footings.
- Replacement of track stringer flanges, stringer-bent connections, sway bracing, stringer expansion pockets.
- Replacement of existing foundations with concrete footings on steel micro-piles socketed into rock.
- Responsible for inspection of entire structure, contract plans, resolution of RFIs and shop drawing review.

Other Notable Railroad Projects:

- CN Railroad over I-80 – Peer review of design and plans for through-plate girder bridge with 100' spans
- KBS Railroad over I-57 – Internal QC for closed deck plate girder RR bridge with 150' spans, 45 deg skew
- Metra Peterson Station – Design of two-span commuter platform and 20' tall, anchored sheet pile wall

Vinod Patel, PE, SE

Principal, Director of Engineering
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Summary

Vinod Patel has over 40 years of experience related to bridge/structural engineering and management of transportation projects of all sizes. His bridge experience ranges from condition assessments and rehabilitation of existing bridges to the planning and design of new or replacement bridges.

Vinod has successfully managed many large and complex transportation projects. His ability to analyze challenging site conditions and develop elegant and easy-to-construct solutions has earned him wide acclaim with clients, and many of his projects have been award-winning designs.



Project Experience – Rail/Transit

Eglinton Crosstown Subway West Extension, Toronto, Canada

Design Manager for the winning bid proposal for this \$2.0 Billion Design-Build project involving twin bored tunnels and associated structures and shafts required for the new 9.2 km long subway extension with 6 new subway stations. Extensive coordination with structural, geotechnical, tunneling, environmental, hydrogeology, civil, and construction disciplines.

Chicago Transit Authority, Red-Purple Bypass (RPB) Flyover, Chicago, IL

Project Manager for design of the 1800' long closed-deck RPB Flyover carrying the NB Brown Line over four Red-Purple mainline tracks, as part of the \$1.0 Billion RPM design-build project. Scope also included a temporary open-deck structure to enable staged demolition of the mainline. Extensive coordination with the contractor and various other disciplines.

Metra, 22 Bridges on the Union Pacific Railroad North Line, Chicago, IL

Project Structural Engineer for the \$60M rehabilitation and replacement of 22 bridges on the UP North Line. This project also included 4 miles of new track alignment/profile, 3 miles of new retaining walls, and reconstruction of station platforms.

Metra, Rock Island District Line Bridge Rehabilitation, Joliet, IL

Project Structural Engineer providing condition assessments, structural designs, construction staging and layout of temporary run-arounds for Bridge Nos. 275, 320, 355 and 379 on the Metra Rock Island District line.

CTA, Western Avenue Station, O'Hare Airport, Chicago, IL

Project Structural Engineer for replacement of existing track structure, passenger station house, and elevated platforms with new handicapped accessible station house, elevators, wider platforms and canopy.

CTA, Elevated Track Structure and Addison Street Station, Chicago, IL

Project Structural Engineer for reconstruction of 1100' of elevated track and the replacement of an existing station house, including elevated platform, canopies, fare-collecting facilities and an elevator and escalators for handicap accessibility. The new elevated track structure implemented experimental direct fixation tracks.

Metra, Randolph Street Interlocker Rehabilitation, Chicago, IL

Drainage system improvement to alleviate flooding of Metra Electric District tracks and replacement of deteriorated timber retaining wall for 18- ft high grade separation between Metra Electric and South Shore tracks. Scope included design of a new stormwater drainage system, pump station with forced main drain and concrete retaining wall.

Gary S. Powell, SE

Principal, Structural Manager

10-4 Engineering, PLLC

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Summary

Gary Powell has over 41 years of civil, structural, architectural and construction engineering experience in the transportation field. His major clients have included IDOT, IL Tollway, CDOT, various counties, CTA, Metra, and various Class I Railroads. Gary has directed the preparation of contract plans, specifications and estimates of more than 50 bridges for IDOT, more than 50 bridges for the Illinois Tollway, more than 20 railroad bridges for Metra and other Class I Railroads (CSX, Norfolk Southern, BNSF, Union Pacific, etc.). He has also directed the annual inspections of 50 railroad bridges for CSX, and the FHWA biennial, fracture critical inspections of 375 highway fixed and movable bridges for CDOT and MWRD.



Project Experience – Rail/Transit

Responsible for all structural work including bridge rehabilitation and replacement design and contract plans for CTA, Metra, and various Class I railroads. Most notable projects as project manager and engineer include:

- **CTA Red-Purple Modernization**, project manager for the prime design firm on the \$1.0 billion design-build reconstruction of 1.3 miles of the Red-Purple Line, an elevated 4-track structure. The existing open-deck riveted steel was replaced with closed-deck PPC beams and post-tensioned box girders. Extensive coordination with the contractors and multiple disciplines and subconsultant firms.
- **BNSF over Realigned Ogden Ave**, 2-span ballasted plate-deck girder structure carrying 6 tracks, supporting on tangent pile caisson substructures. Design also included temporary jump-spans.
- **Metra/Union Pacific NW Line in Chicago**, replacement of 5 bridges, each with single span thru-girder structures, improved track profile and alignment to increase vertical clearance over city streets.
- **Union Pacific West Line, Chicago**, inspection, and rehabilitation of 2 separate, 5-track, thru-plate girder bridges, which included load rating of stringers, floor beams, and thru-plate girders.
- **Norfolk Southern over Widened US-30**, replacement of existing, single-span thru-plate girder structure.
- **CSX RR over 59th St**, superstructure replacement, 4-span, 3-tracks, ballasted closed deck on steel stringers.
- **Metra SW Service Line**, inspection, contract plans and estimates for rehabilitation of 10 separate bridges.
- **Metra Milwaukee District, West Line over Des Plaines River**, inspection, and plans for rehabilitation of 2 structures, as well as complete replacement of 1 other structure.
- **Metra Rock Island District over Halsted St**, rehab plans for 4-span through plate girder bridge on 70-deg skew.
- **Metra Rock Island District over 89th St**, rehab plans for 4-span through plate girder bridge on 60-deg skew.
- **CTA Green Line Rehab Project**, structural repairs to over 1 mile of elevated steel track structure.
- **EOWA Underpass at Canadian-Pacific Bensenville Yard**, preliminary studies for 800' long, 150' wide underpass