

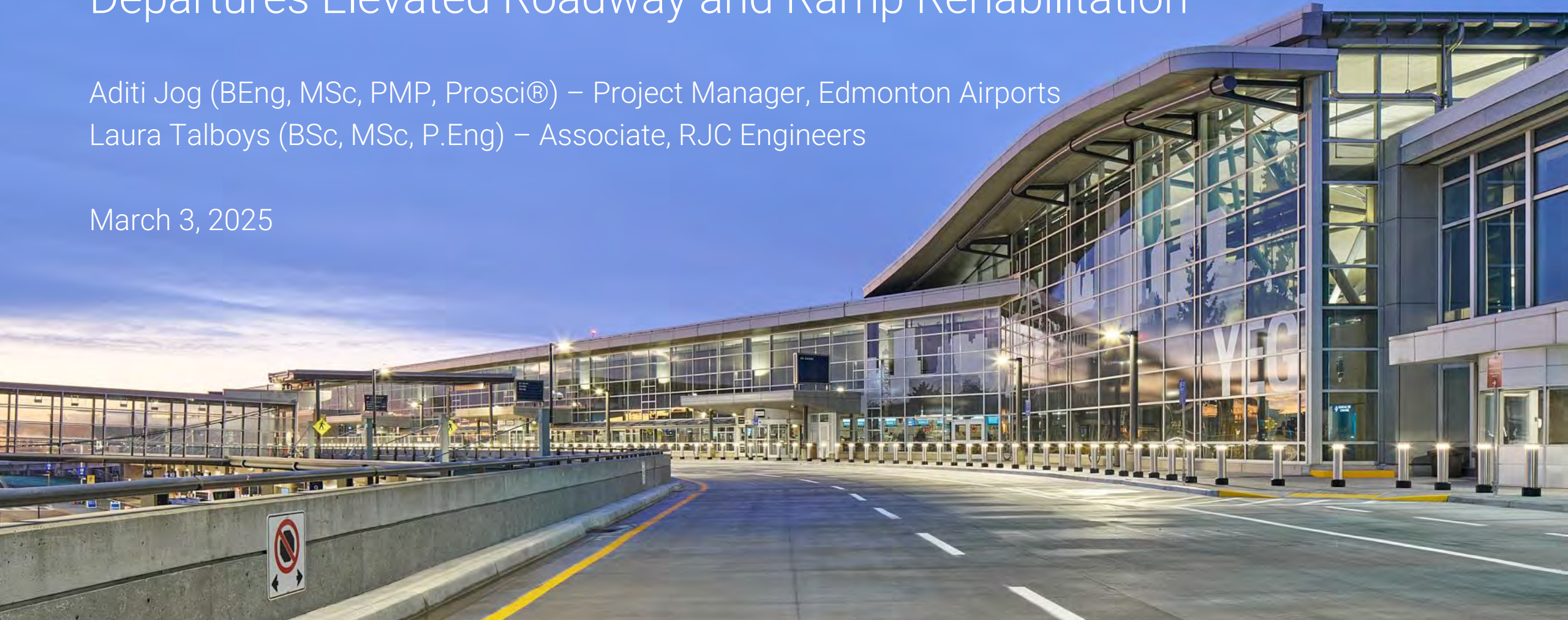
YEG (Edmonton International Airport)

Departures Elevated Roadway and Ramp Rehabilitation

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March 3, 2025



Agenda

- History
- South Ramp Retaining Wall Distress
- Planning & Preparatory Works for Passenger and Traffic Accommodations
- Repair & Replacement Strategies
- Construction Manager
- New Design
- Construction
- Completion

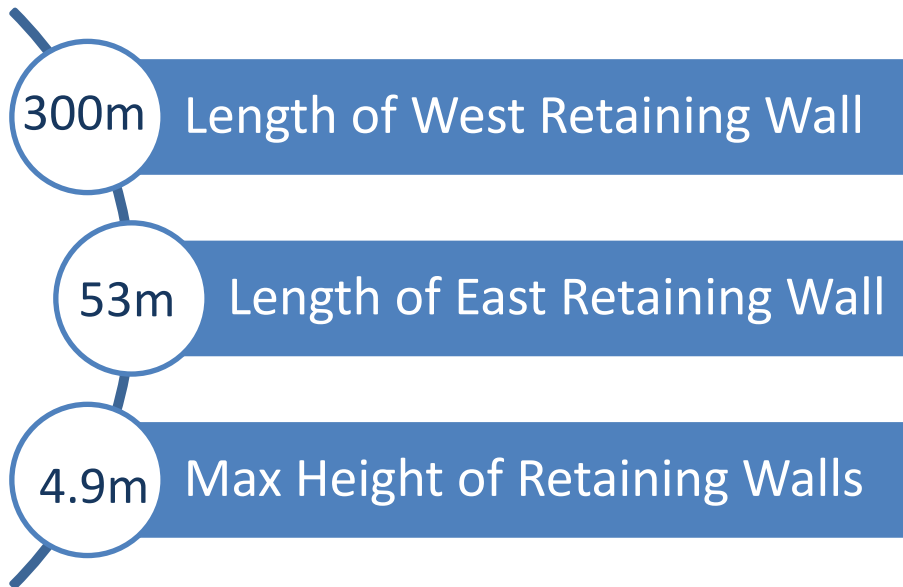




History

- 1962: 394k passengers
- Original elevated roadway and ramp was 1961-62 construction
- Main terminal capacity 2.5M passengers annually
- Terminal and roadway expansion late 90s / early 2000s
- 1999: 3.8M passengers

- New south ramp during terminal expansion circa 2000
- Delegated design modular block retaining walls on each side
- Geotextile tie backs in backfill below road



South Ramp





WEST RETAINING WALL



EAST RETAINING WALL

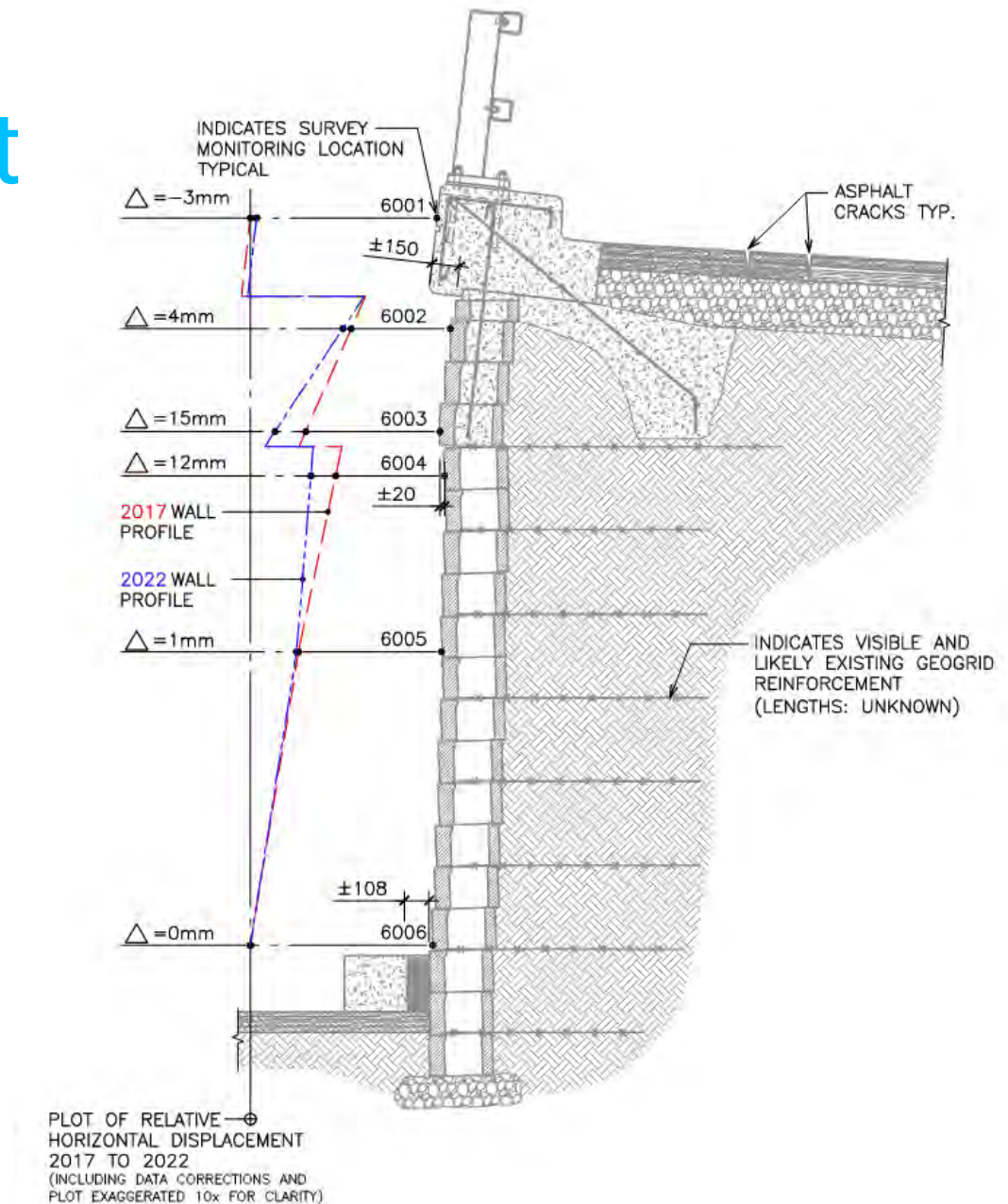


South Ramp Retaining Wall Distress

- Notable distress observed starting 2016 on west retaining wall
- Subject matter experts engaged 2017-2021 for wall monitoring/survey
- WSP engaged for alternate traffic accommodation plan in 2019
- Rehabilitation project on 2020 Capital Plan
- Continuous monitoring through the pandemic
- RJC engaged in September 2022
 - Condition Assessment
 - Geotechnical Assessment (Tetra Tech)

Condition Assessment Report

- Accumulation of Factors
 - Concentrated wheel loads and centrifugal forces
 - Lack of drainage provisions
 - Swelling clay in the backfill
 - Saturated backfill
 - Coping beam rigidly connected to wall
 - Frost heave and thermal effects
 - Block deterioration
 - Snowplow impacts on curb and traffic barrier
 - Asphalt fatigue cracking



Condition Assessment Report

■ Short Term Recommendations

- Weight restrictions applied
- Vehicle traffic limited to passenger vehicles
- Traffic restricted to east half of ramp
- Asphalt pavement on exit ramp sealed to minimize water ingress
- Created a restricted area adjacent to the ramp

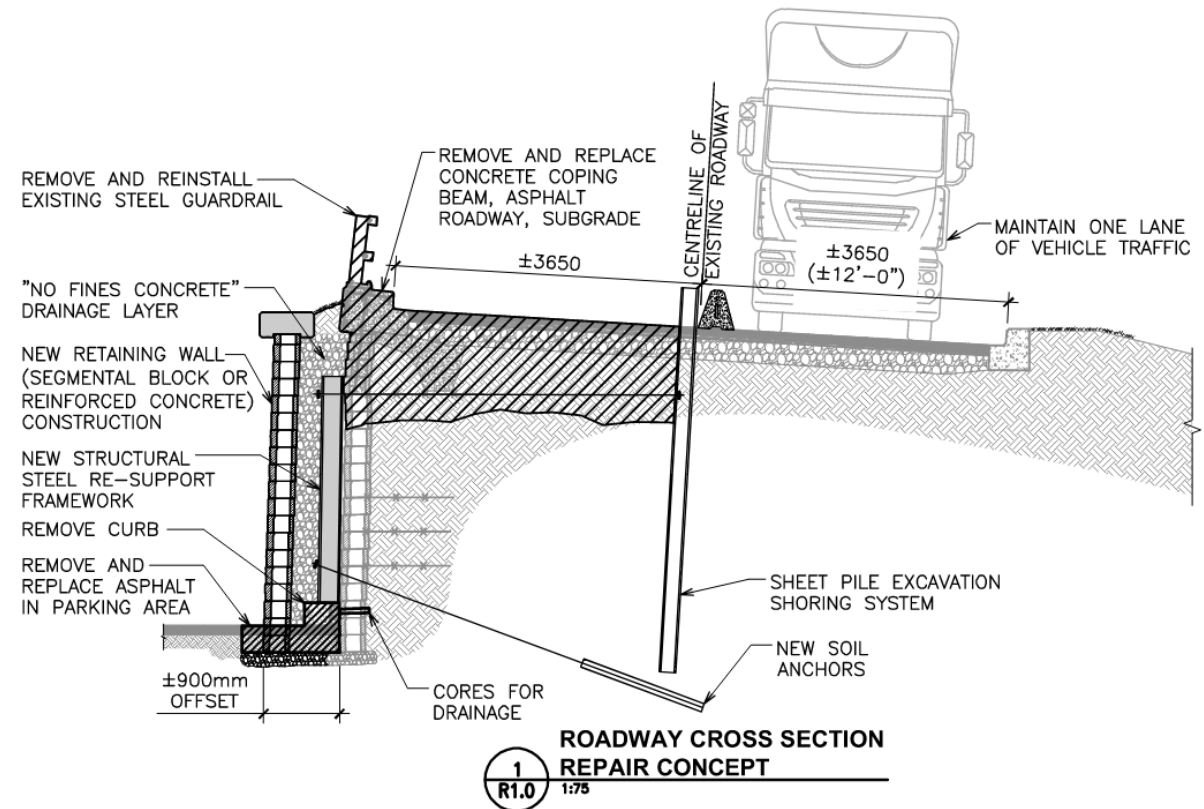
■ Long Term Recommendations

- Rehabilitate or repair west retaining wall
OR
- Complete ramp replacement



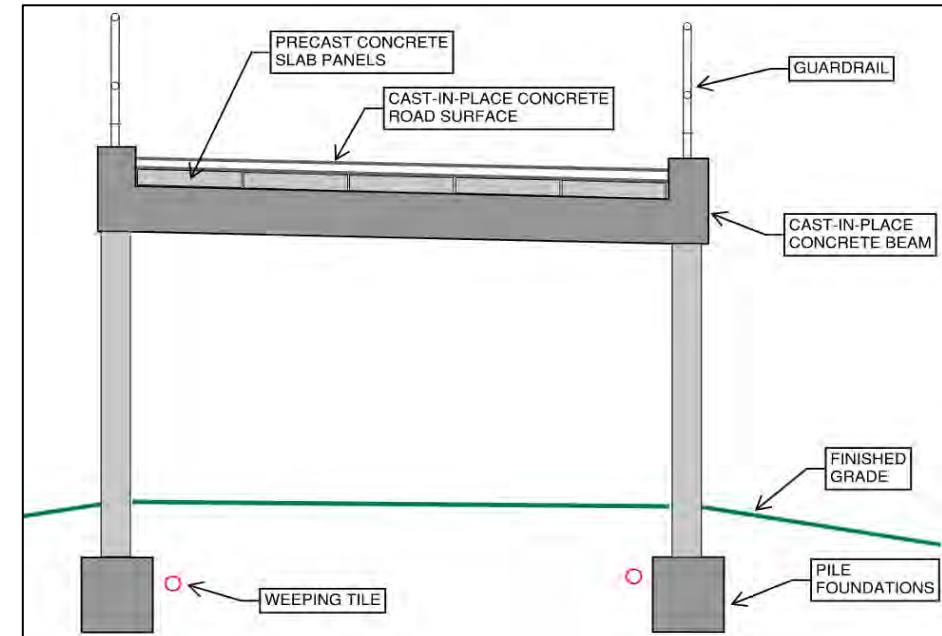
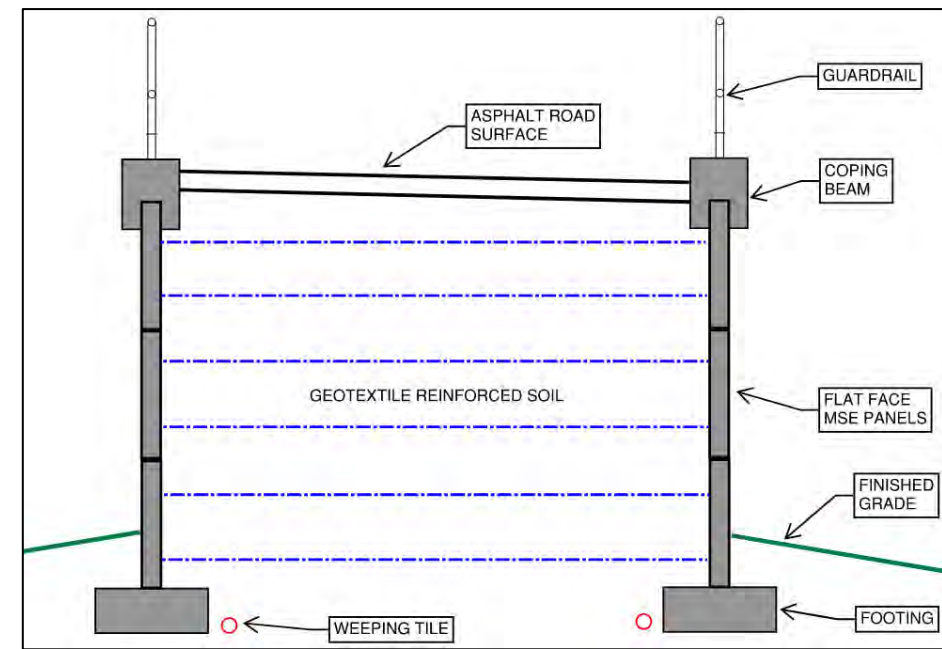
Modular Block Wall Repair Strategies

- YEG: Maintain vehicle access
- Sheet pile retaining wall down center to close one side
 - New wall in front of the block wall
- External shoring and bracing
- Battered piles
- Movement on east wall



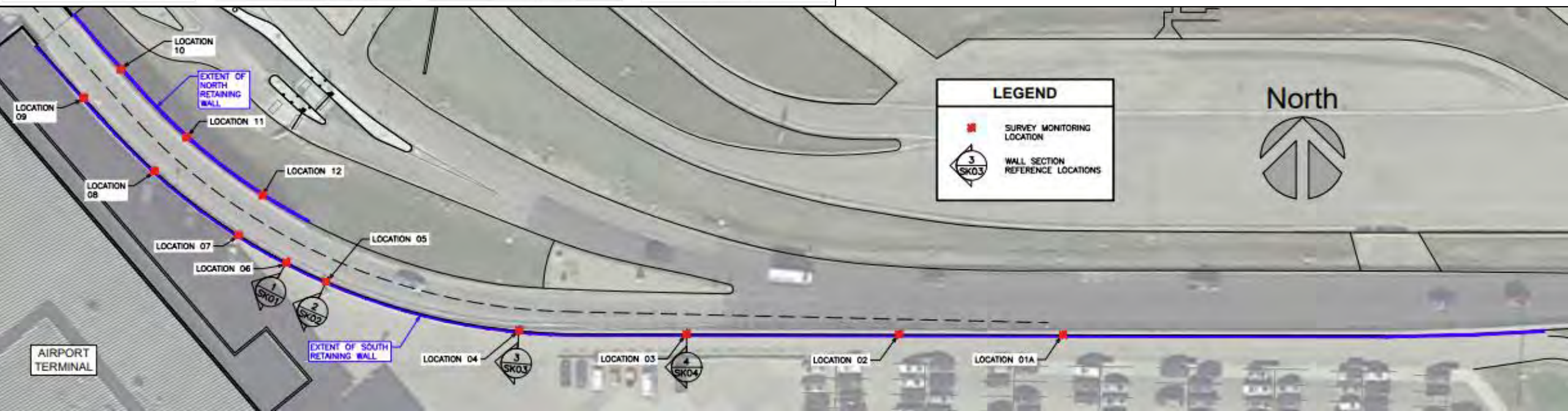
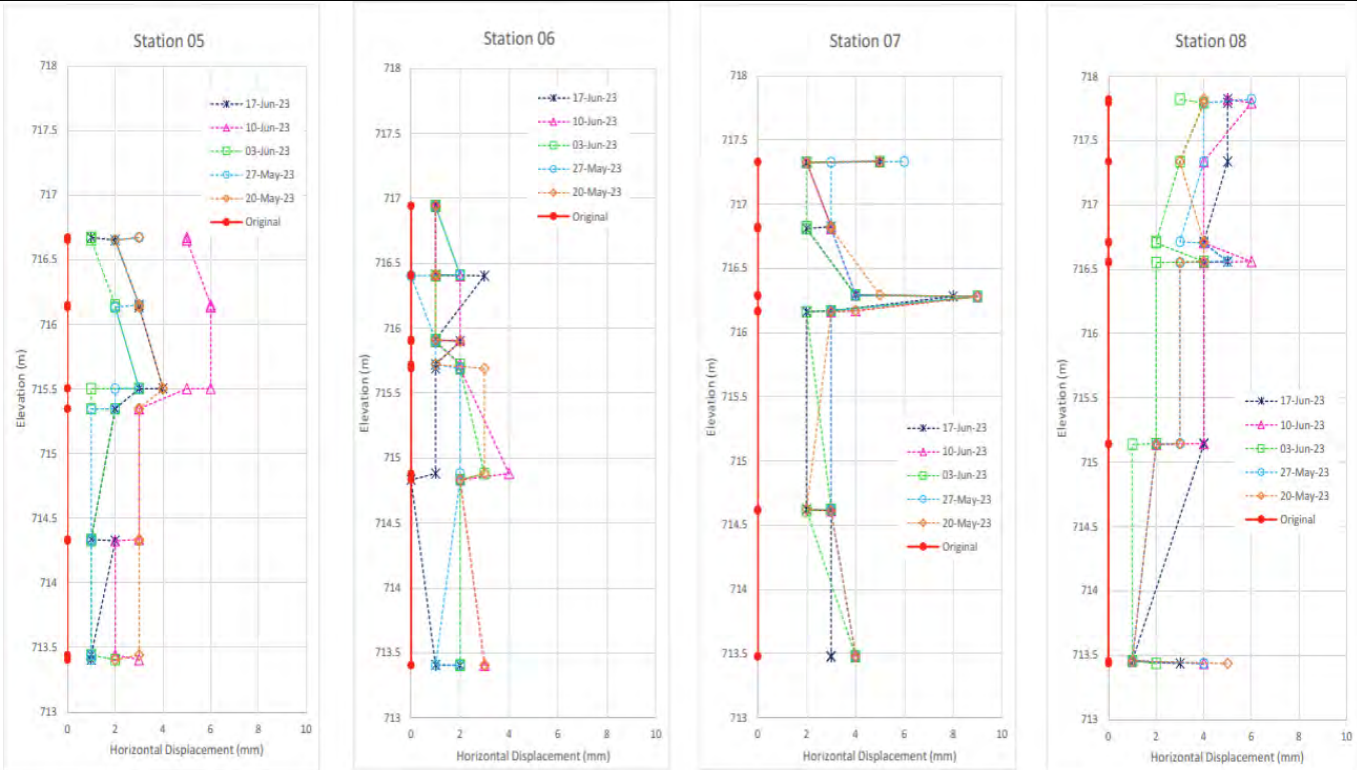
Complete Ramp Replacement

- New mechanically stabilized earth (MSE) retaining walls
 - Less costly
 - Minimal foundation work
 - Weather restrictions
- Elevated concrete structure
 - More expensive
 - Expedited construction with reduced weather impacts
 - Less settlement
 - Longer service life

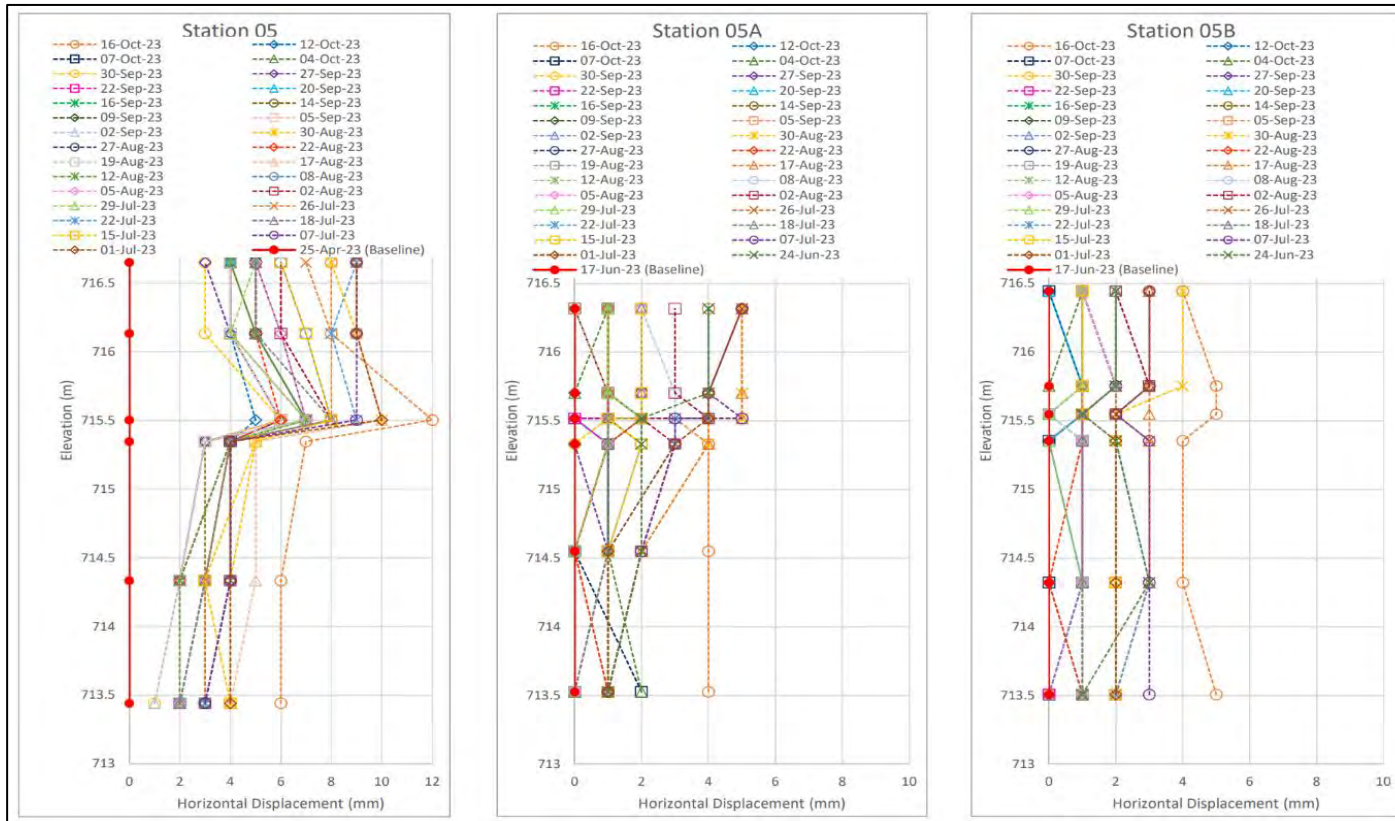


Wall Monitoring

- Inconsistent movement
- Seasonal water ingress
- Moisture build-up
- Expansion and contraction



- Weekly to twice weekly high precision surveys at 13 stations
- Walls eventually deemed to be not salvageable, consider full closure



Considerations of Repair vs Replacement

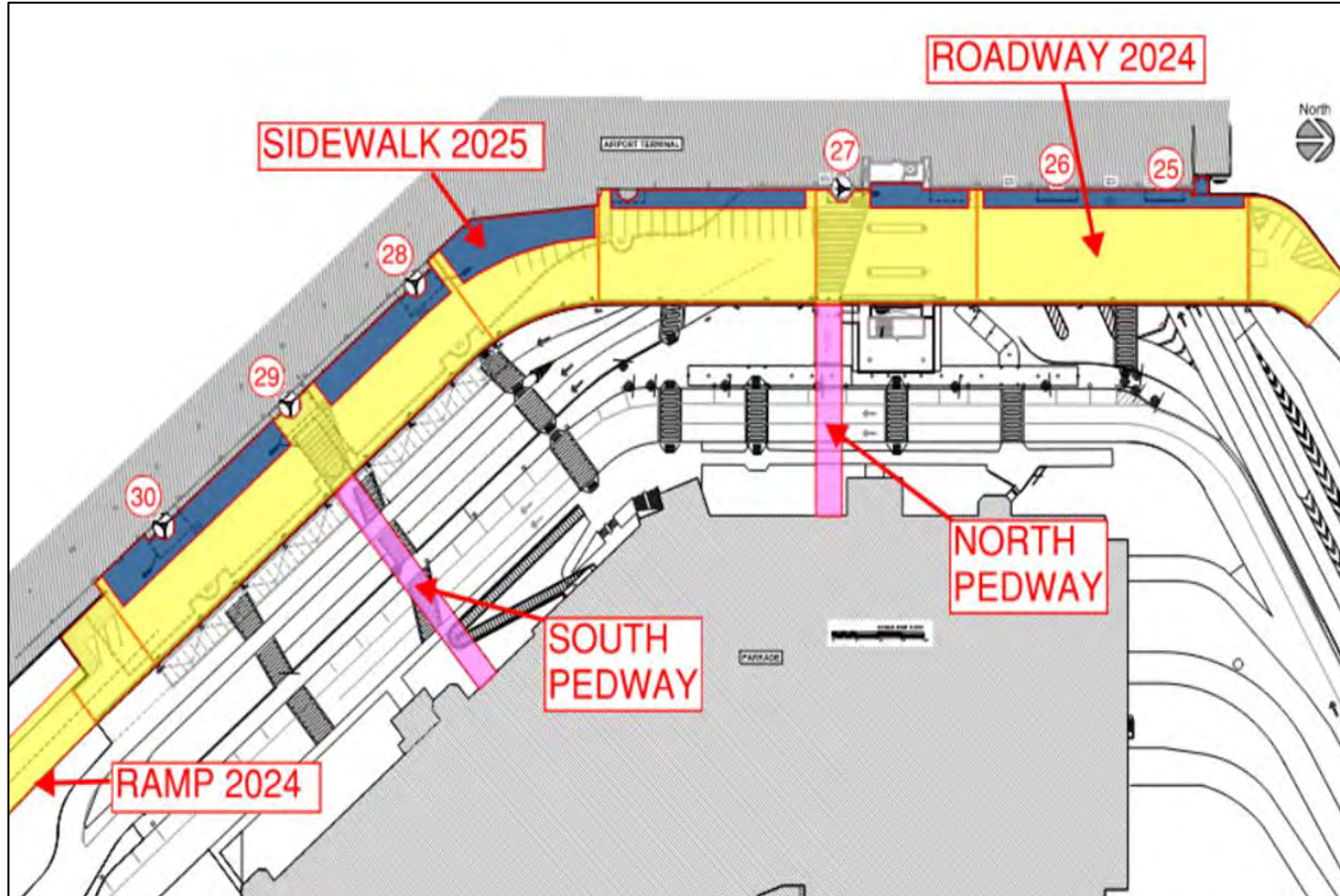
■ Repair

- Departures Level remains operational
- Delays replacement by 2-10 years
- Greater long-term cost
- Short term benefits
- Access challenges (pedestrian)

■ Replacement

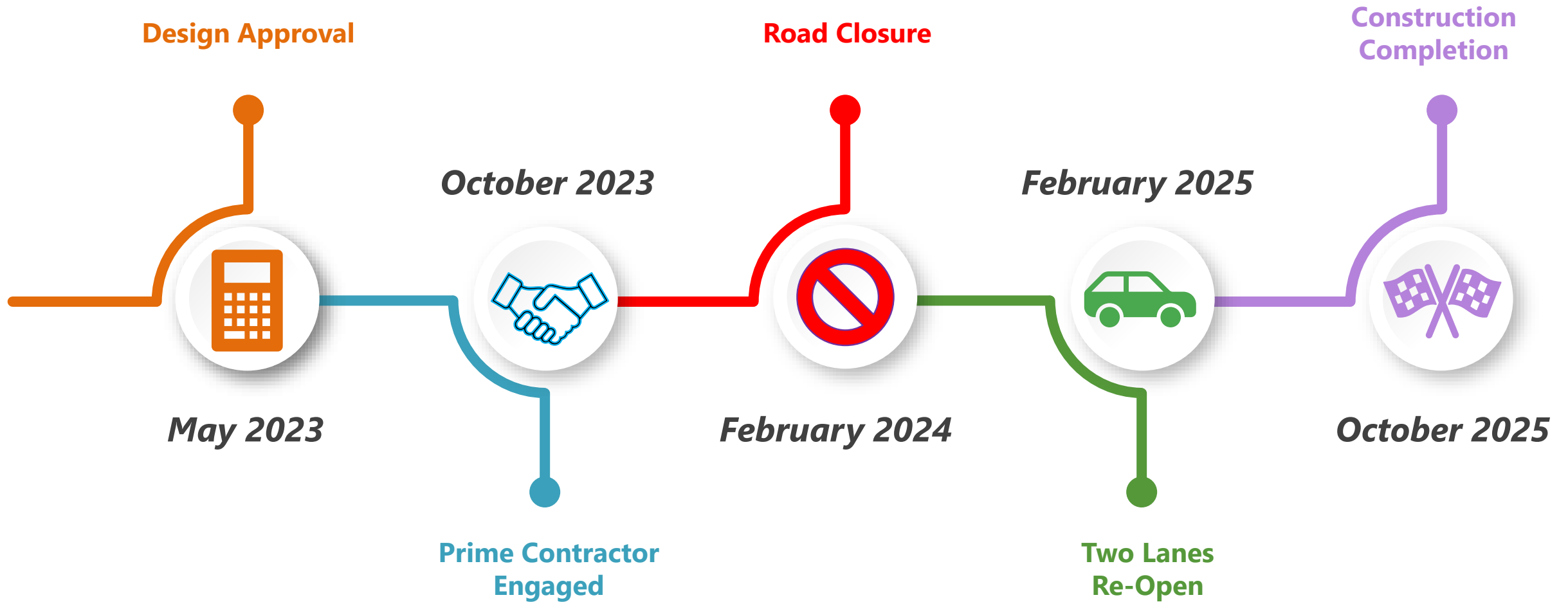
- Improved design & enhanced quality
- Longevity of the structure
- Reduced overall timeline (1.5-2 years)
- Reduced overall cost
- Access challenges (pedestrian + vehicular)
- Option to widen ramp

Proposed Replacement Timeline



- Year 1
 - Departures level full closure (Feb 2024 - Feb 2025)
 - New south ramp construction
 - Elevated roadway lanes rehabilitation
 - Departures level roadway OPEN Feb 2025
- Year 2
 - Curbs & sidewalks – phased construction (Feb 2025 - Oct 2025)
 - Departures level roadway stays open

Schedule – Design Bid Build



YEG Stakeholder Engagement

- Operations, Safety, Security
 - Emergency Response Services, Evacuation Plans
- Parking & Ground Transportation
 - Change traffic flows on Arrivals
 - Reconfigure Value Park lot
 - Parkade traffic flow
 - Relocate Priority Valet
 - Congestion at Exit Plaza
 - Reduced parking
- Terminal Operations & Passenger Experience
 - Airline check-in counters, baggage pick-up, customer service
- Facilities Maintenance & Asset Management
 - Increased infrastructure usage (elevators, escalators, revolving doors, HVAC, etc.)

Preparatory Works

- Information Gathering
 - Traffic count
 - Curb capacity
 - Parking stalls
- Design alternate pick/drop areas, parking lots, signage & communications, etc.
- Execution: July 2023 – Feb 2024



Schedule – ~~Design Bid Build~~

Design Approval



- Execution: July 2023 – ~~Feb 2024~~
Sept 2023
 - ~12,000 m² park & wait area
 - ~4,000 m² overflow lot (South)
 - Airport Road lane changes
 - Roadway & overhead sign updates



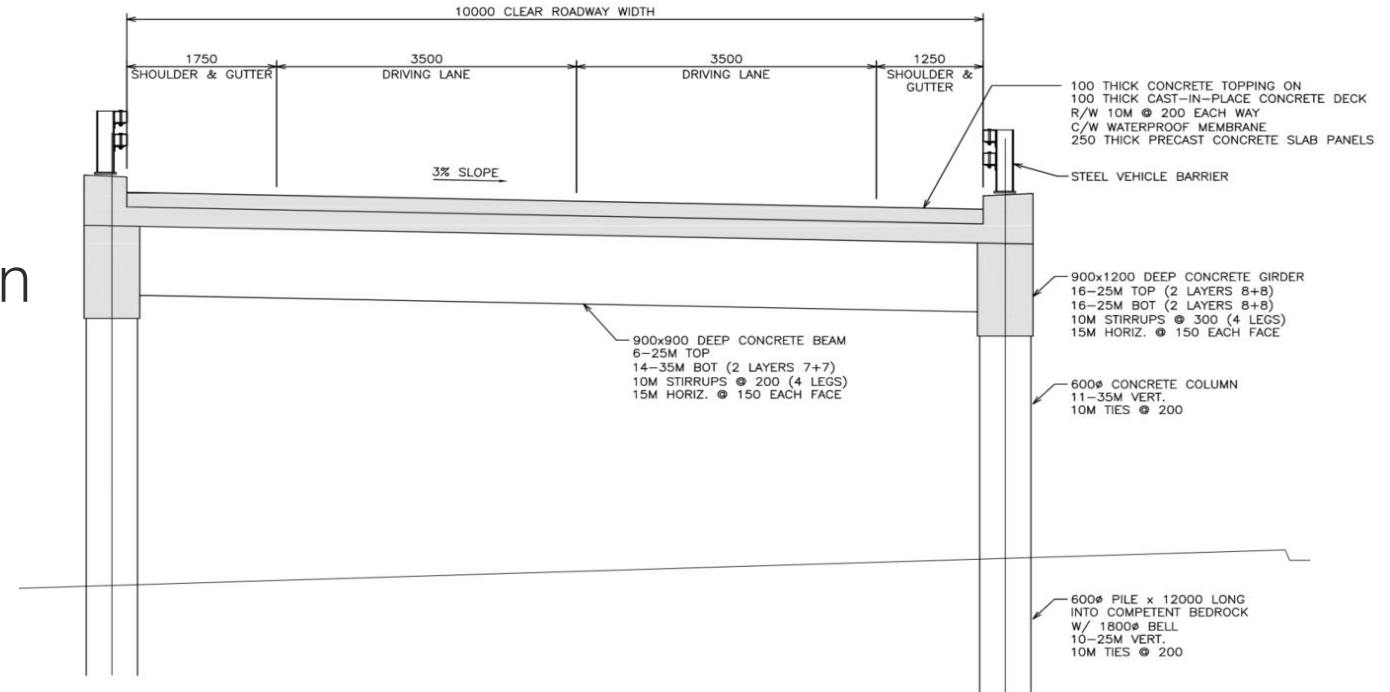


- Execution: July 2023 – Feb 2024 Sep 2023
 - North pedway restoration
 - Parkade Level 2 & 3 ACA (Accessible Canada Act) ramps
 - Signage & wayfinding



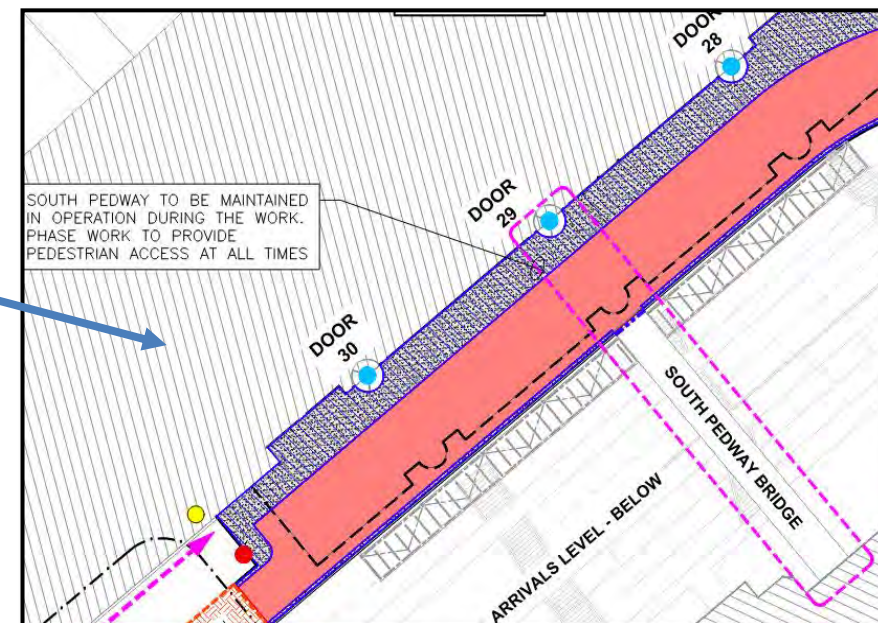
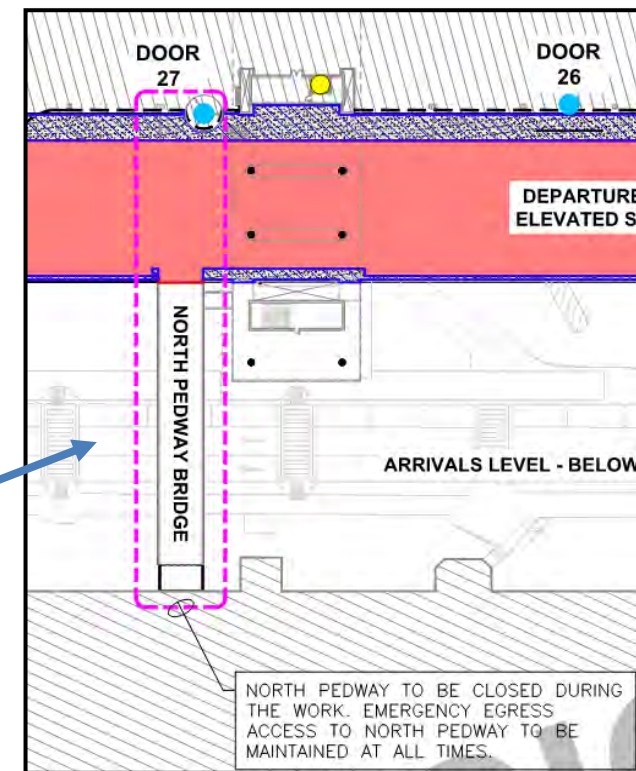
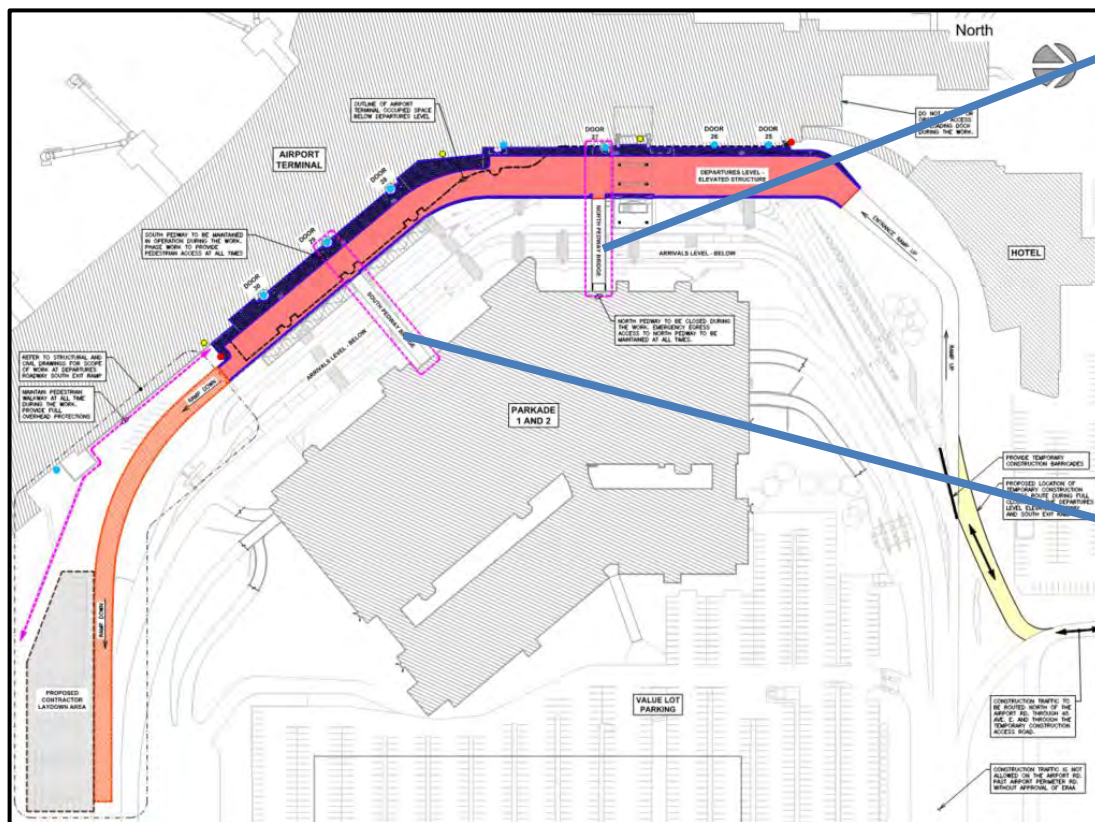
Construction Manager

- RFP Issued June 27, 2023
- 30% Detailed Design
- Staged and Expedited Construction
 - Fall 2023 to end of 2025
- Bid reviews & interviews



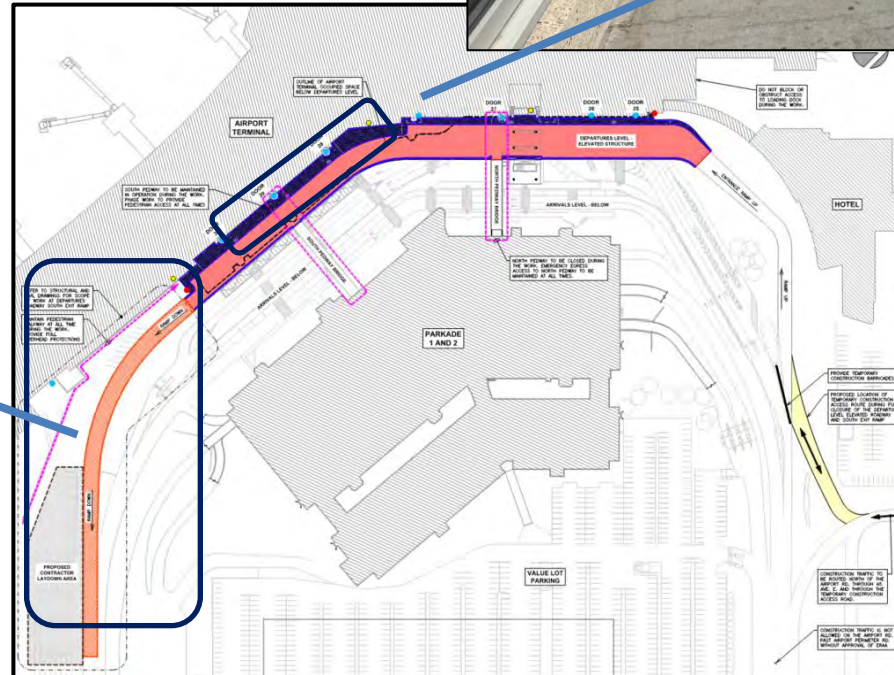
Project Constraints

- Pedways to remain operational and pedestrian access to the terminal building interior via Departures Level to be maintained during construction



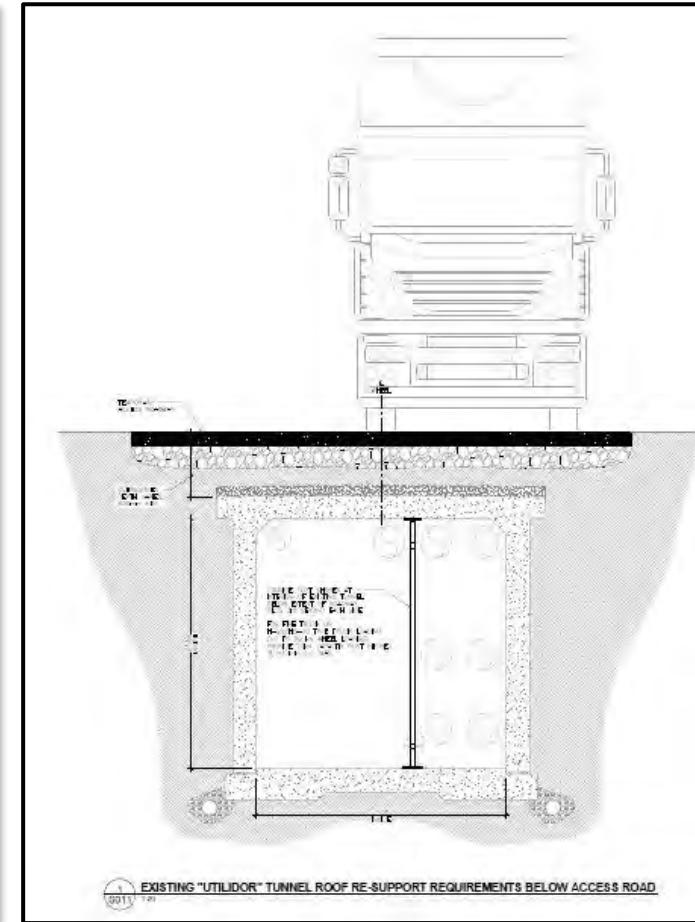
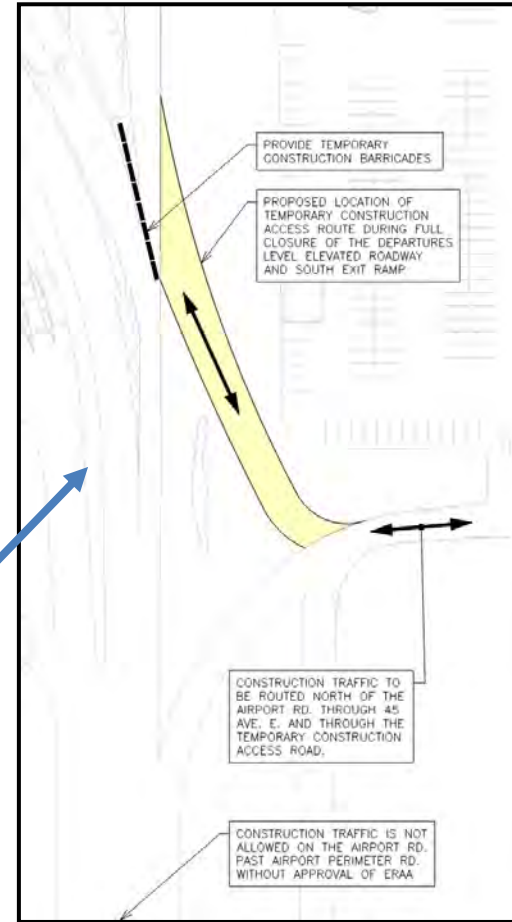
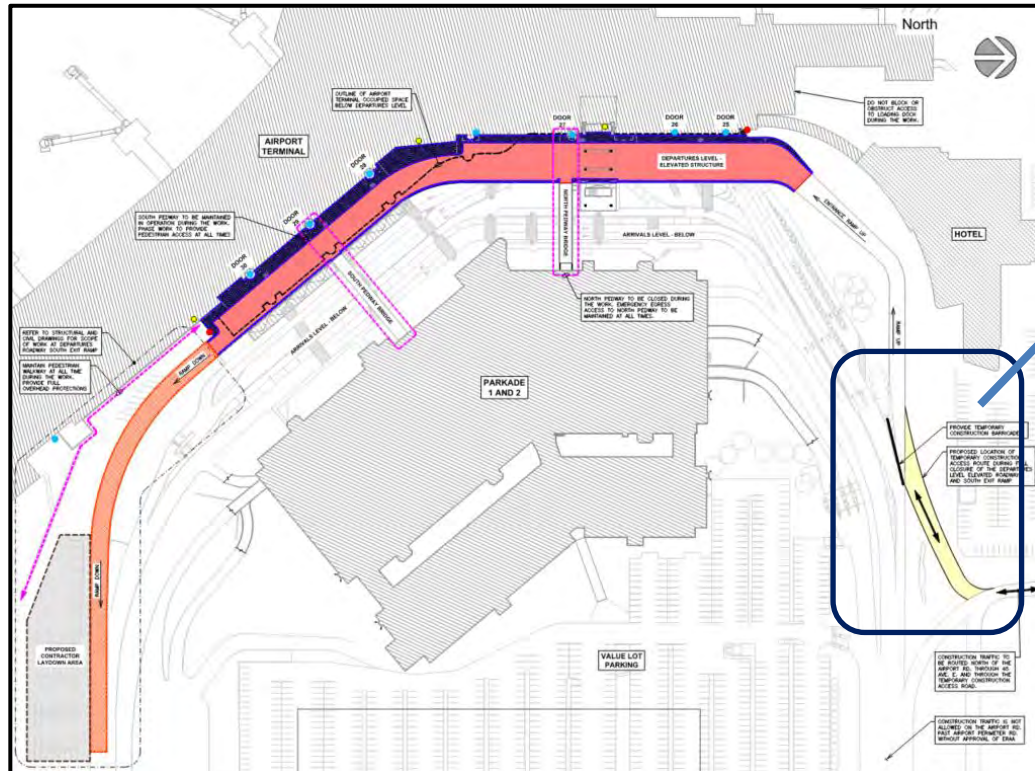
Project Constraints

- Protected walkways for employees, passengers, and airport partners

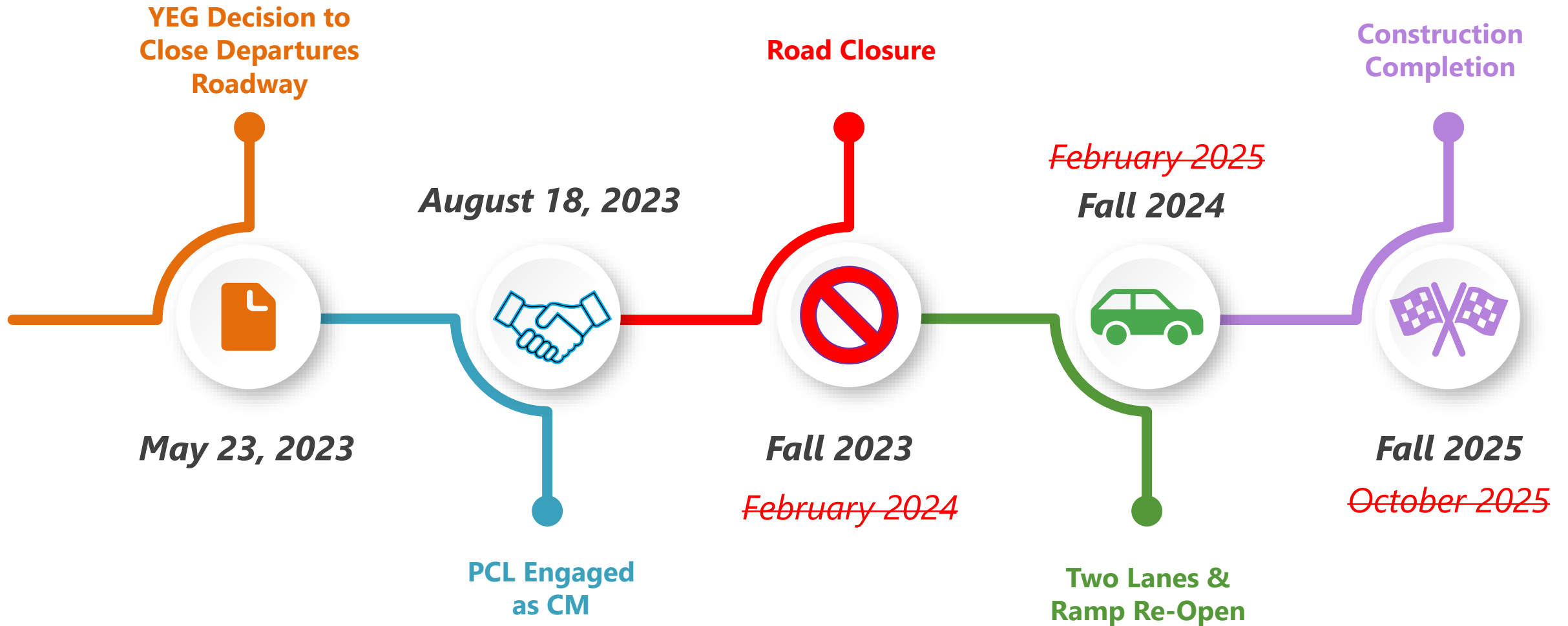


Project Constraints

- Temporary construction access road
- Shoring in utility tunnel



Schedule – CM Delivery Baseline





Road Closure and Mobilization

- Wall surveys continue
- Emergency egress route from terminal through pedways maintained
- Emergency response plan with County of Leduc and YEG Fire Hall
- Condensed work area around south ramp
 - Public access on both sides
- +7M annual passengers
- Highly visible work area





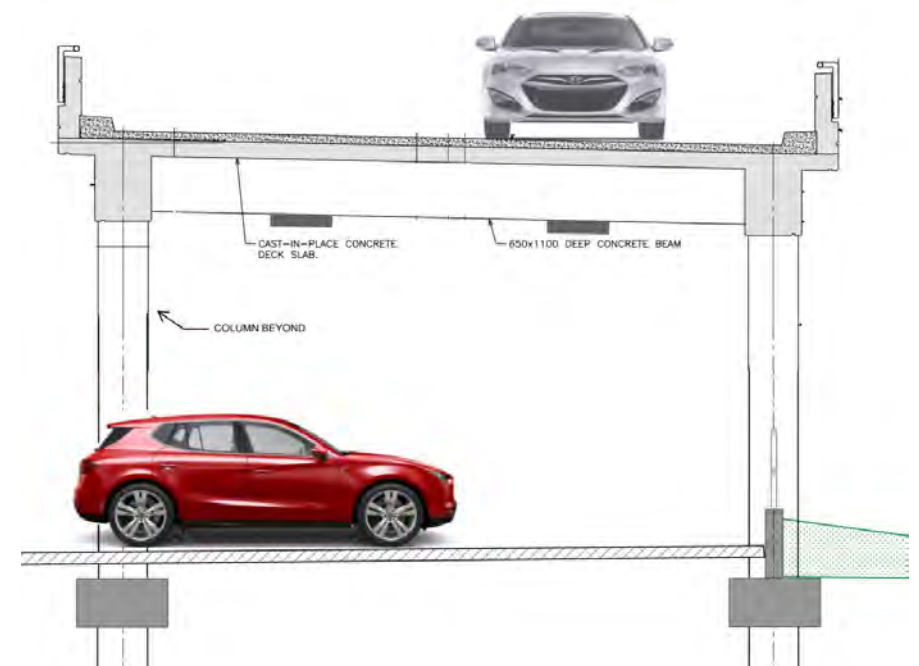
New Design

- Cast-in-place concrete vs precast slab panels
- Designed to CSA S6:19 (bridge code)
- Moment frames for lateral
- Detailed to provide visual continuity with existing
 - Circular columns
 - Slab edges
- Waterproofed and grooved concrete topping
- Widened existing abutment for 2 full lanes
- Belled piles vs CFA piles
- Reduced carbon concrete





- 875 m² useable space below ramp
 - Storage
 - Parking
 - Passenger experience
 - Employee area

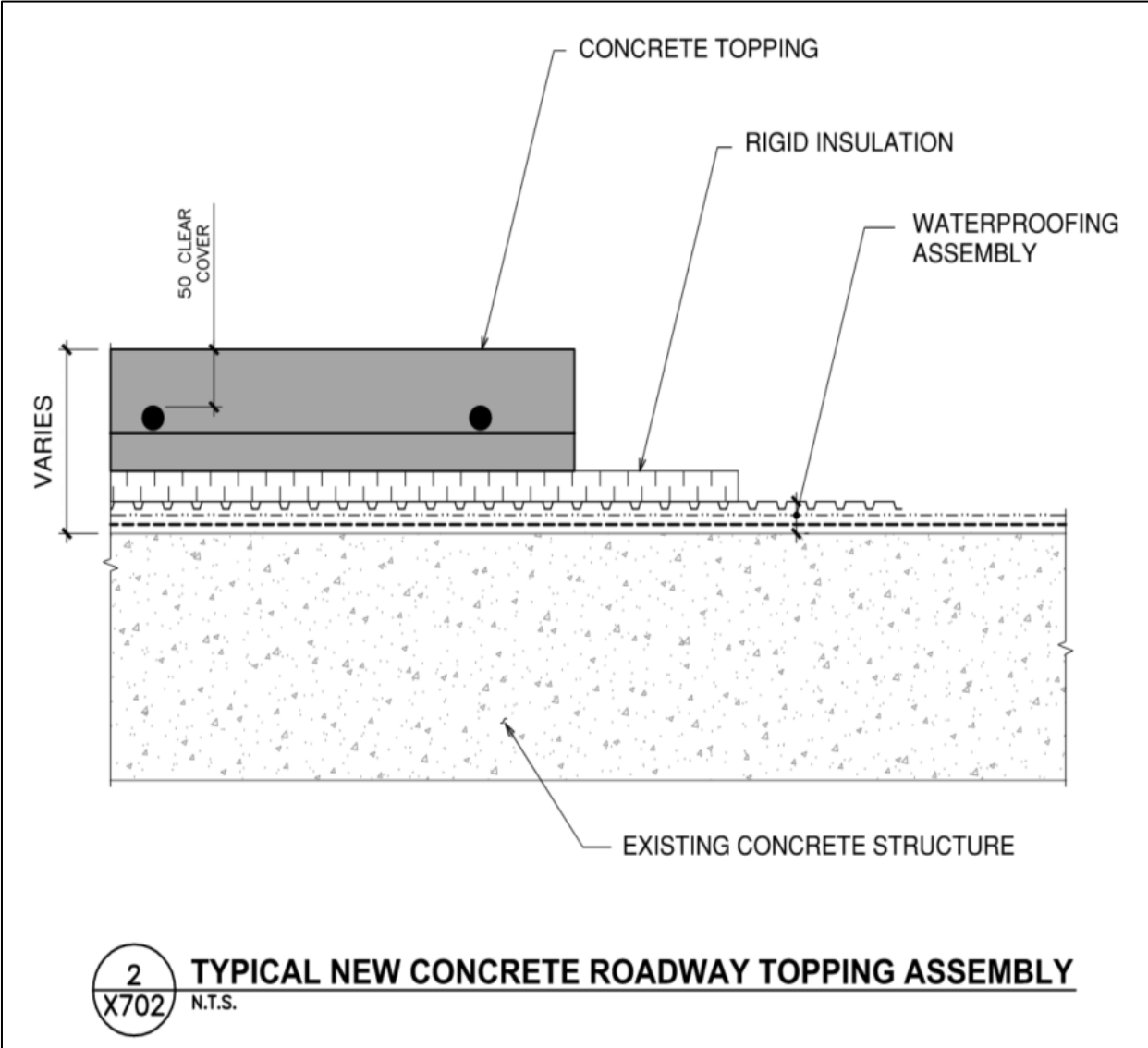


- New cast-in-place retaining wall
- Straight shaft piles
- TL-2 galvanized vehicle barrier
- Pile caps to cross over existing underground water, communications, and electrical lines



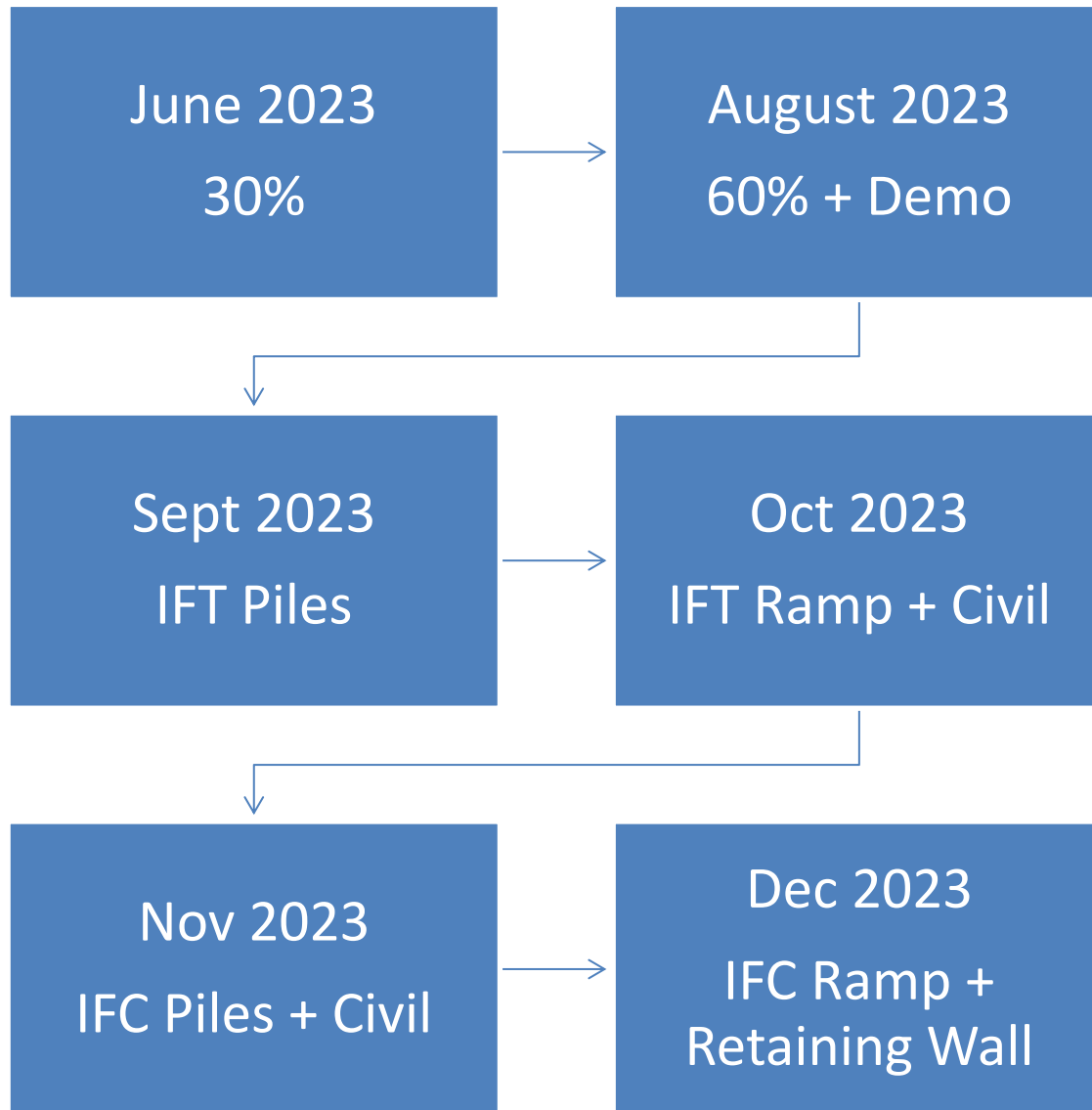


- New sanitary line
 - Existing abandoned in place
 - Started Fall 2023 to allow for ramp construction
 - On hold over winter
 - Finished spring 2024
 - Added manholes
 - Use of existing manhole as short-term holding tank (pumped out multiple times per week)
- Existing water line upgrade
 - Added insulation

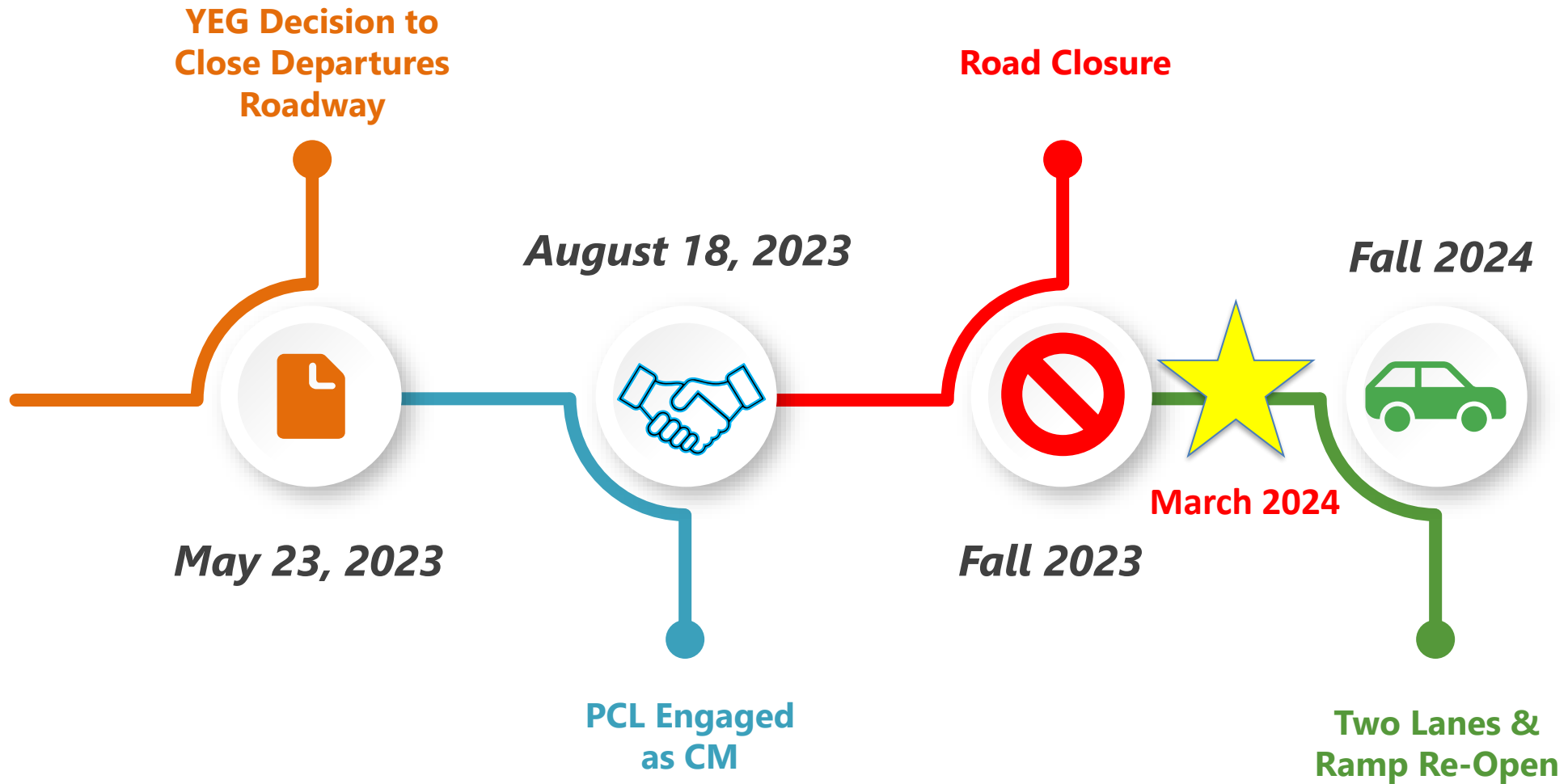


Design Progression

- Design packages expedited
- Concurrent with construction
- Design alternates considered
- Electrical design
- Elevated roadway rehabilitation packages



Schedule – CM Delivery



Construction

3,000 m³
of Concrete Poured

Equivalent to filling the cargo holds
of **58** Boeing 737 MAX 9s with concrete!


7.5
Million kg

Of reinforced concrete
poured. This would
require **340** Boeing
737 MAX 9s to lift!



325,338 kg of Rebar

More than the weight of **3 fully**
loaded Boeing 737 MAX 9s!

91,000 Hours

Of work on the Roadway Rehab,
or flying **1,905 times** around
the world!



4,779 m² of Waterproofing Installed

That's enough to cover the wings of **37** Boeing 737 MAX 9s!



457 Concrete
Trucks

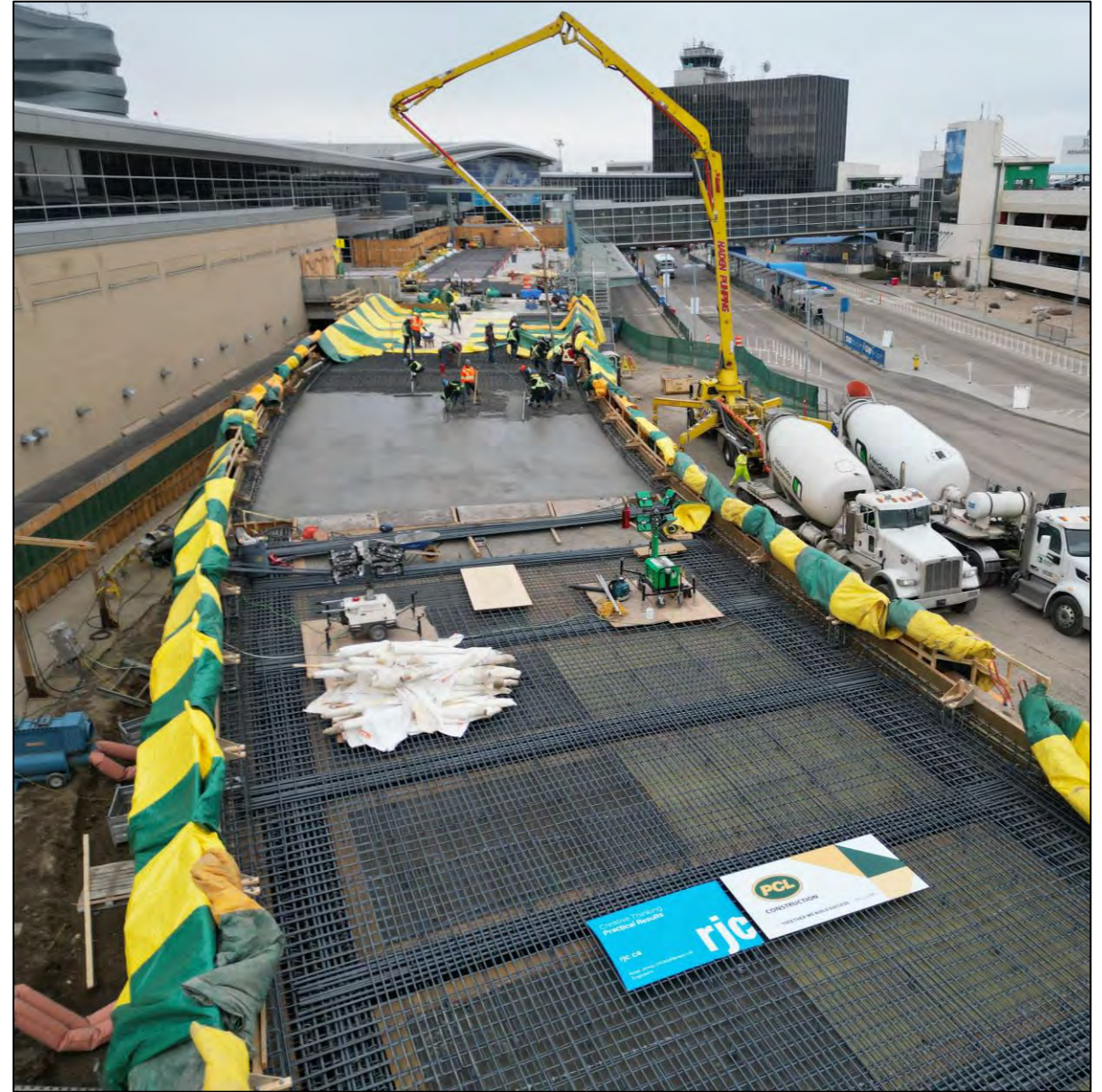
That's **98** Boeing 737 MAX 9s end to end!

3,000 Tonnes of Dirt Excavated
for Manhole Repairs

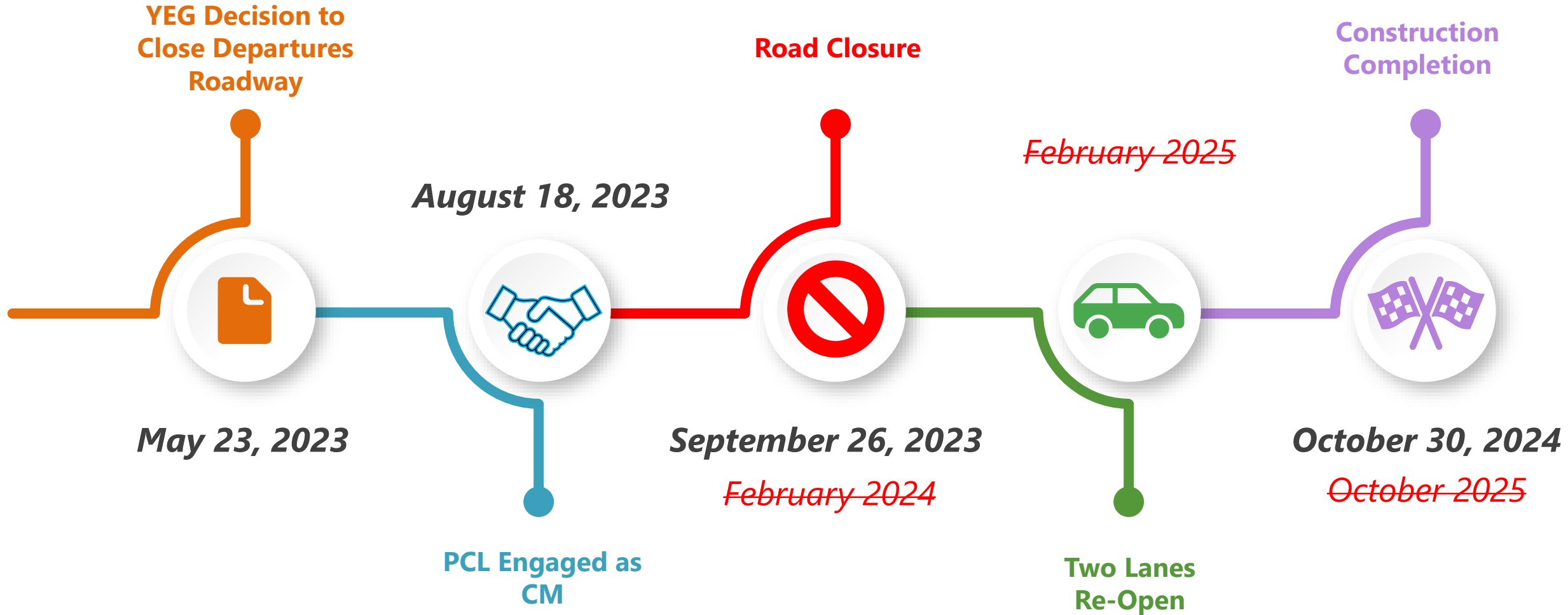
Enough to fill **46,875**
carry-on bags!



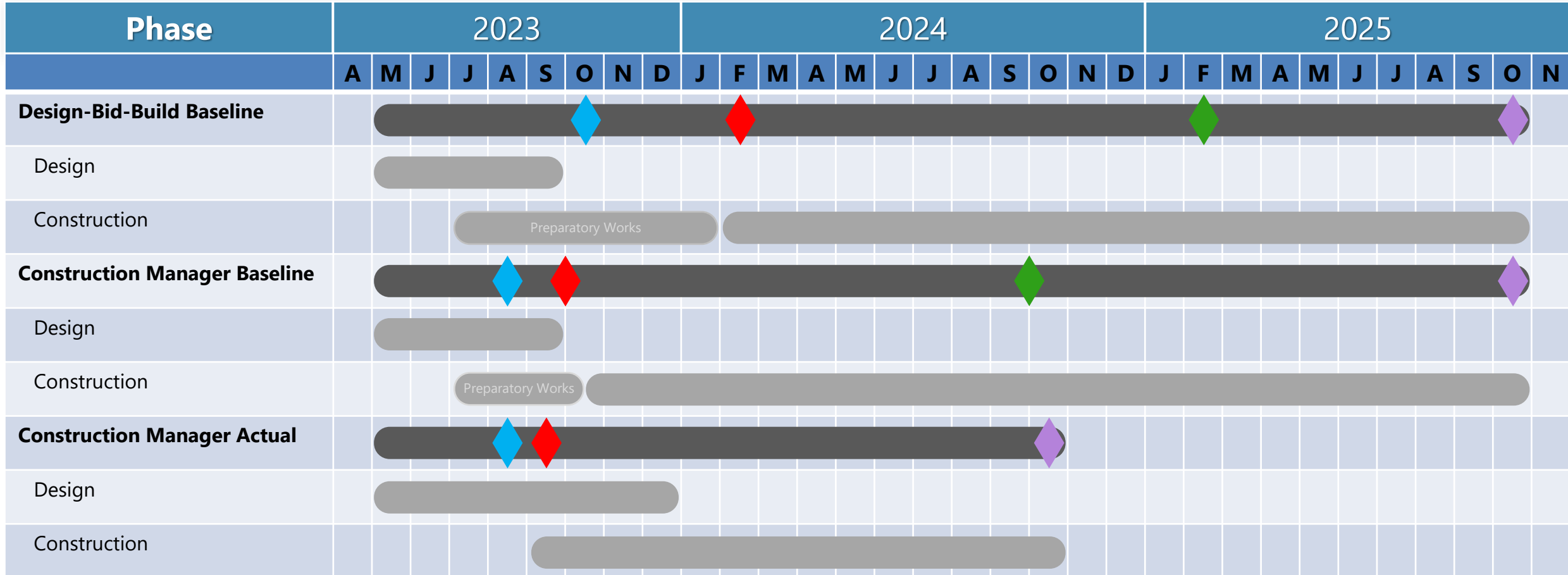





Schedule – Actual



Schedule Evolution

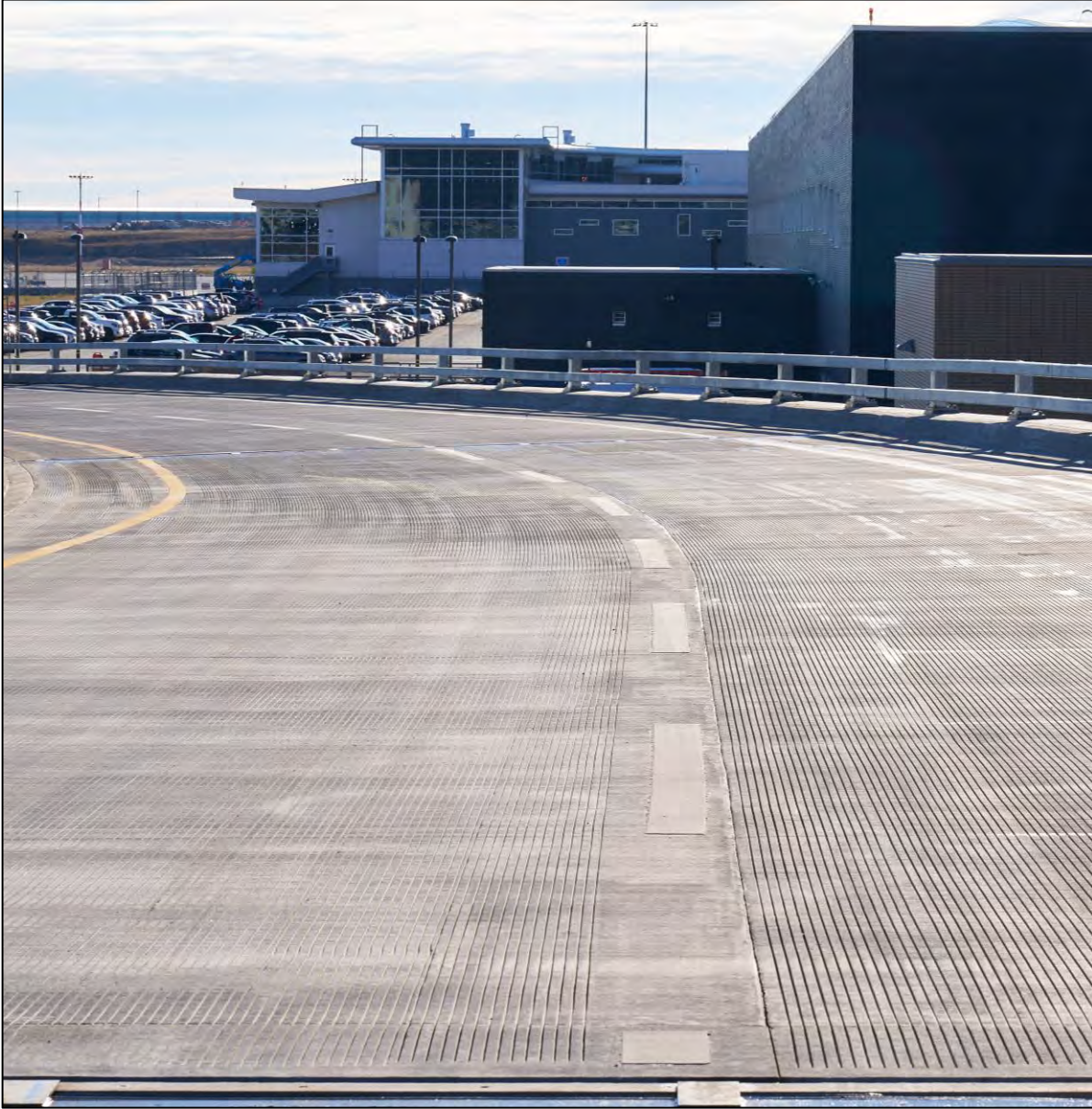


 Contractor Engaged

 Road Closure

 Two Lanes Re-Open

 Construction Completion







Engineers



CONSTRUCTION

Thank you!



YEG

EDMONTON
INTERNATIONAL
AIRPORT

rjc