Boundary Bay Airport (CZBB) Runway 07/25 Extension Project, Delta, BC

Stantec

Mental Health & Well-being Moment

Incorporating Exercise into Your Day

It’s important to find a way to incorporate some exercise into your day, no matter how busy your schedule becomes. Here are some ways to make exercise part of your routine:

- Wake up early and spend an extra 15-30 minutes walking or exercising before work
- Park your car farther from your destination and walk the extra steps to work, stores, and appointments
- Take a walk on your lunch break
- Take the stairs instead of the elevator every chance you get
- Carry bags to your car instead of using a shopping cart
- Work out while watching your favorite TV show

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Agenda

1. Background
2. Project Scope
3. Runway Extension & Overlay Pavement Design & Airfield Drainage
4. Constructability Challenges
5. Stakeholder Engagement
6. Dual Taxiway Configuration
7. Regulatory Compliance

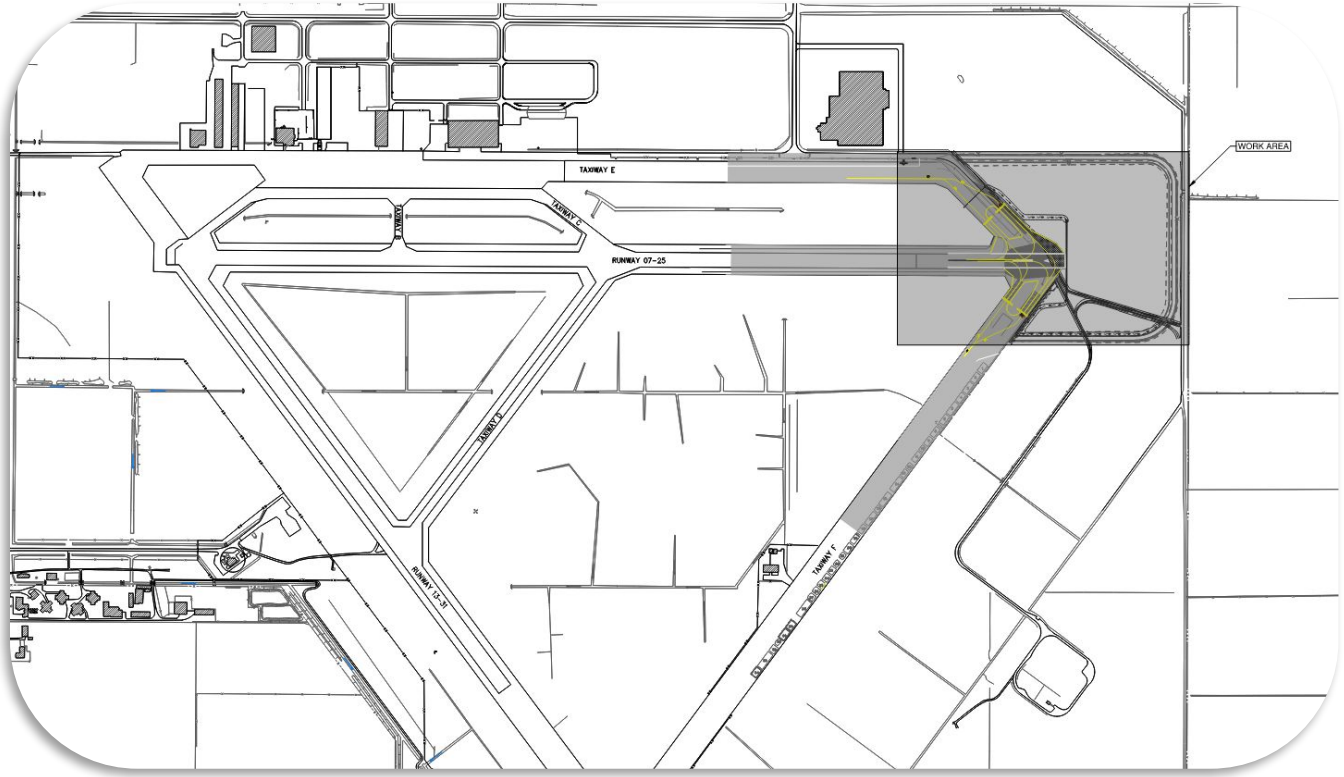
Background

1941-1946 | Late 1940s | 1971 | 1983 | 2004 & beyond

Project Scope

1. **Planning Study** (SNC, 2020)
2. **Ring Road Construction** (Stantec, 2023)
3. **TWY Rehab & Reconfiguration** (HCL* & Continental Power, 2024)
4. **RWY Extension** (HCL* & Continental Power, 2024)

** HCL: Humphrey Construction Limited*



Background & Benefits

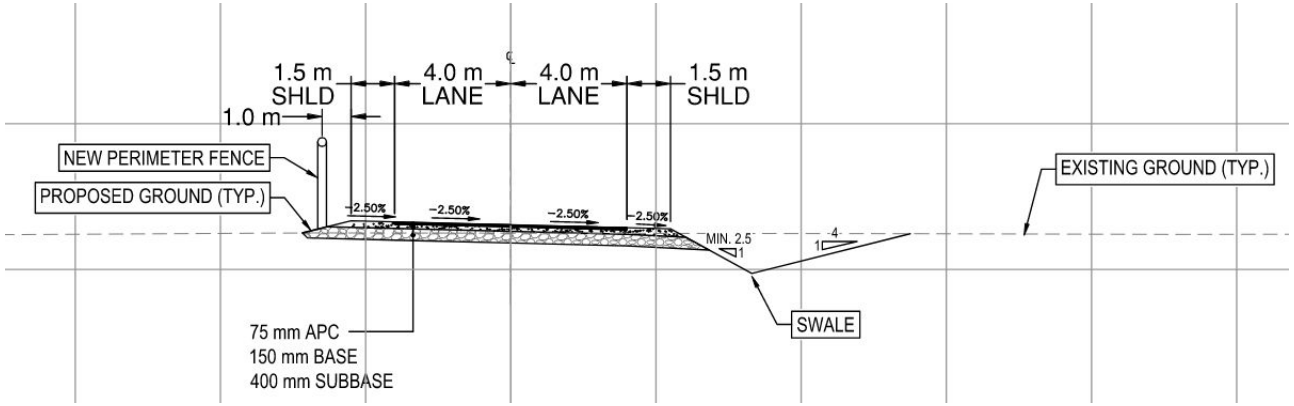
Aging infrastructure	80-year-old Infrastructure
Rapid growth	5th Busiest Airport in Canada
Purpose built, Capacity Improvements	Drainage Dual Taxiway – IFR Clearane Time
Operational efficiency and Safety	Runway Length Runway/Taxiway Lighting Safety Improvements

Project Scope Planning Study (2020)

- Conducted by SNC Lavalin, 2020
  - Pavement condition assessment
  - Geotechnical investigation
  - Development of rehabilitation options
  - Engagement of stakeholders
  - Selection of optimal solution

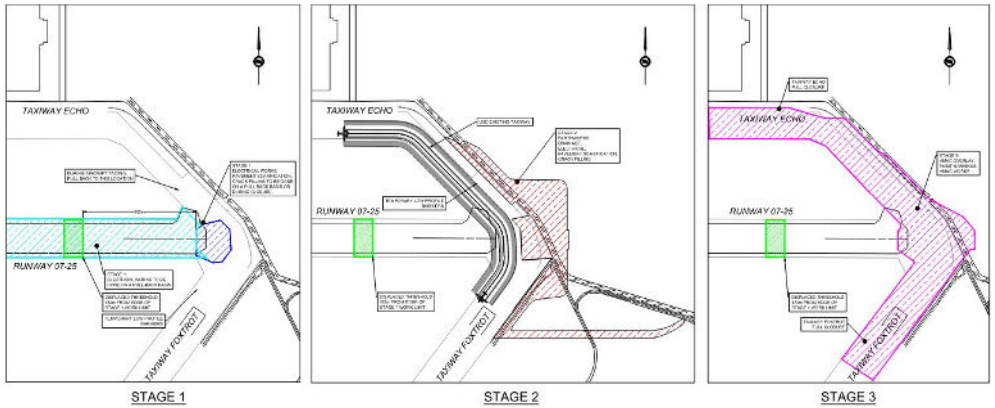
Project Scope
Ring Road Construction

- Ring Road Construction, completed in 2023 (designed by Stantec, constructed by Humphrey)
    - Created space for RWY extension
    - TP312 compliant



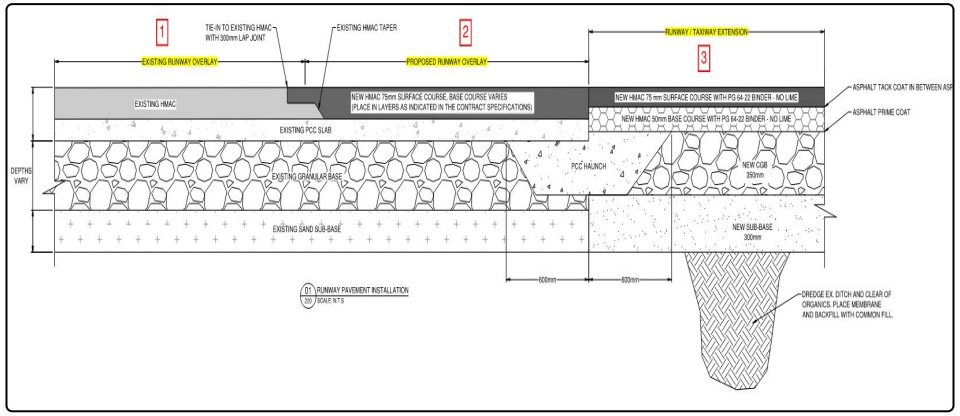
Project Scope
Taxiway & Runway

- Taxiway Rehabilitation
- Runway Extension



Project Scope
Pavement Design

- Pavement Design Calculations
- Pavement Transition



Aircraft Mix at Boundary Bay Airport

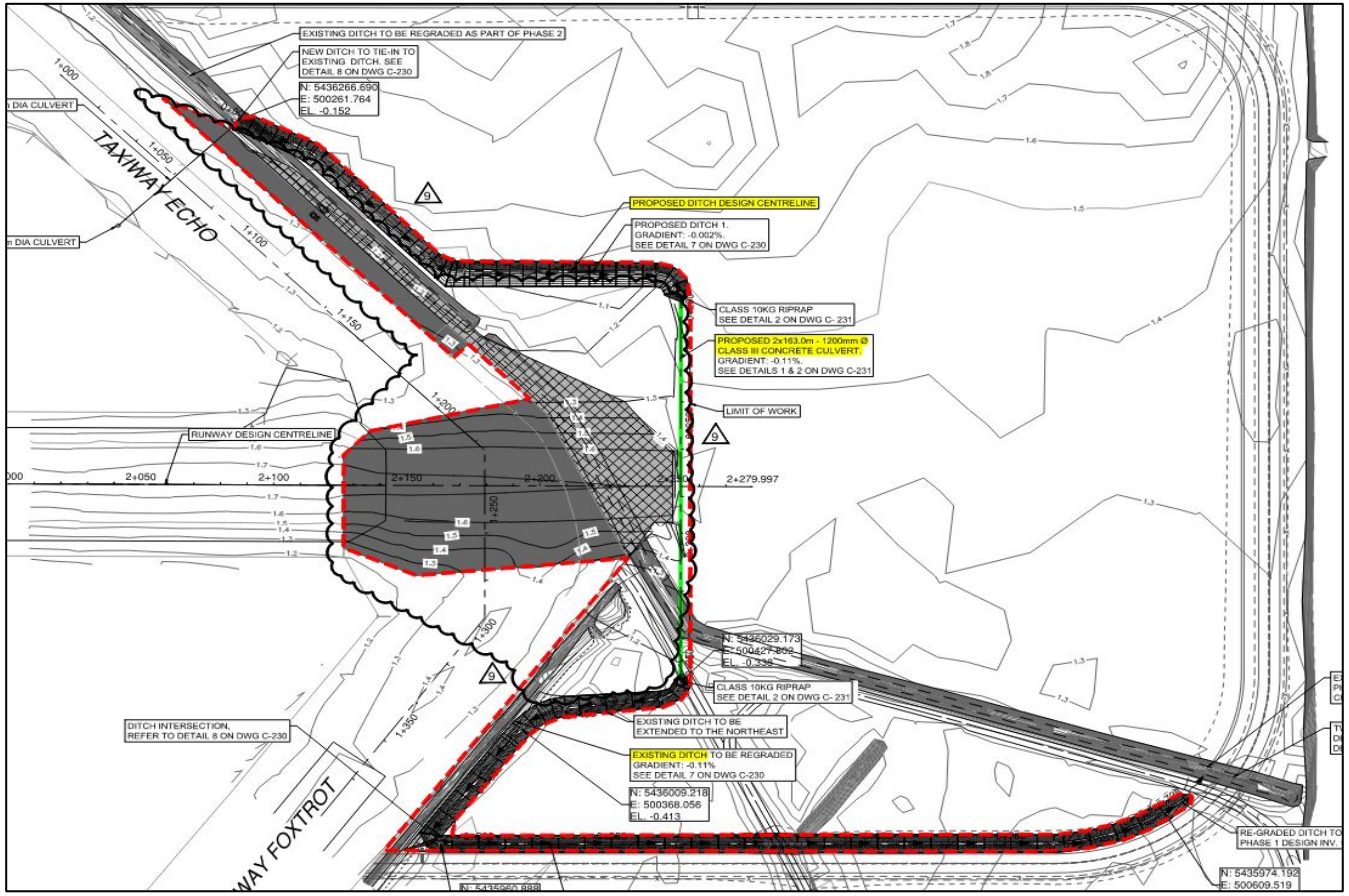
Aircraft	AGN Code	4th ed Code	Flexible Pavement ALR on Weak Subgrade	Flexible Pavement ACN on Low CBR	Tire Pressure Mpa	Estimated 2017 Departures*
Beechcraft 1900	II	B	2.9	4	0.67	345
CJ2	I	A	2.6	N/A	0.68	20448
CJ3	I	A	2.6	N/A	0.68	20448
King Air 100 and 200	II	B	2.4	3	0.73	345
Cessna Caravans	II	B	1.9	N/A	0.6	345
Seneca	I	A	1	N/A	0.38	20448
Duchess	I	A	1	N/A	0.33	20448
Regional Jet 50-seater aircraft	II	B	6.8	16	1.12	287
Dash 8-400 Q400	IV	D	6.4	18	0.9	287
Dash 8-100	IIIA	C	4.8	9	0.9	287
Short 360	II	B	4.4	10	0.54	345
Gulfstream G100, G150	II	B	4	7	0.86	345
Gulfstream G350	II	B	7.9	24	1.21	0
Gulfstream G280 (II)	II	B	4.9	20	0.86	345
Falcon 50	II	B	5.1	12	0.93	345
Falcon 900	II	B	5.6	14	1.3	345
Bombardier Challenger 605 (604)	II	B	5.8	14	1.42	345
Learjet 75 (45)	II	B	3.6	6	0.79	345

The design aircraft is a Bombardier Q400 shown as the Dash 8-400.

*Traffic estimated from total movements in 2017 and distributed approximately in accordance with the operator's comments per aircraft group.

Project Scope
Drainage - Existing

- Two main flow patterns
- Runoff is captured by a network of ditches
- Issue: Ditches within the Runway Safety Area



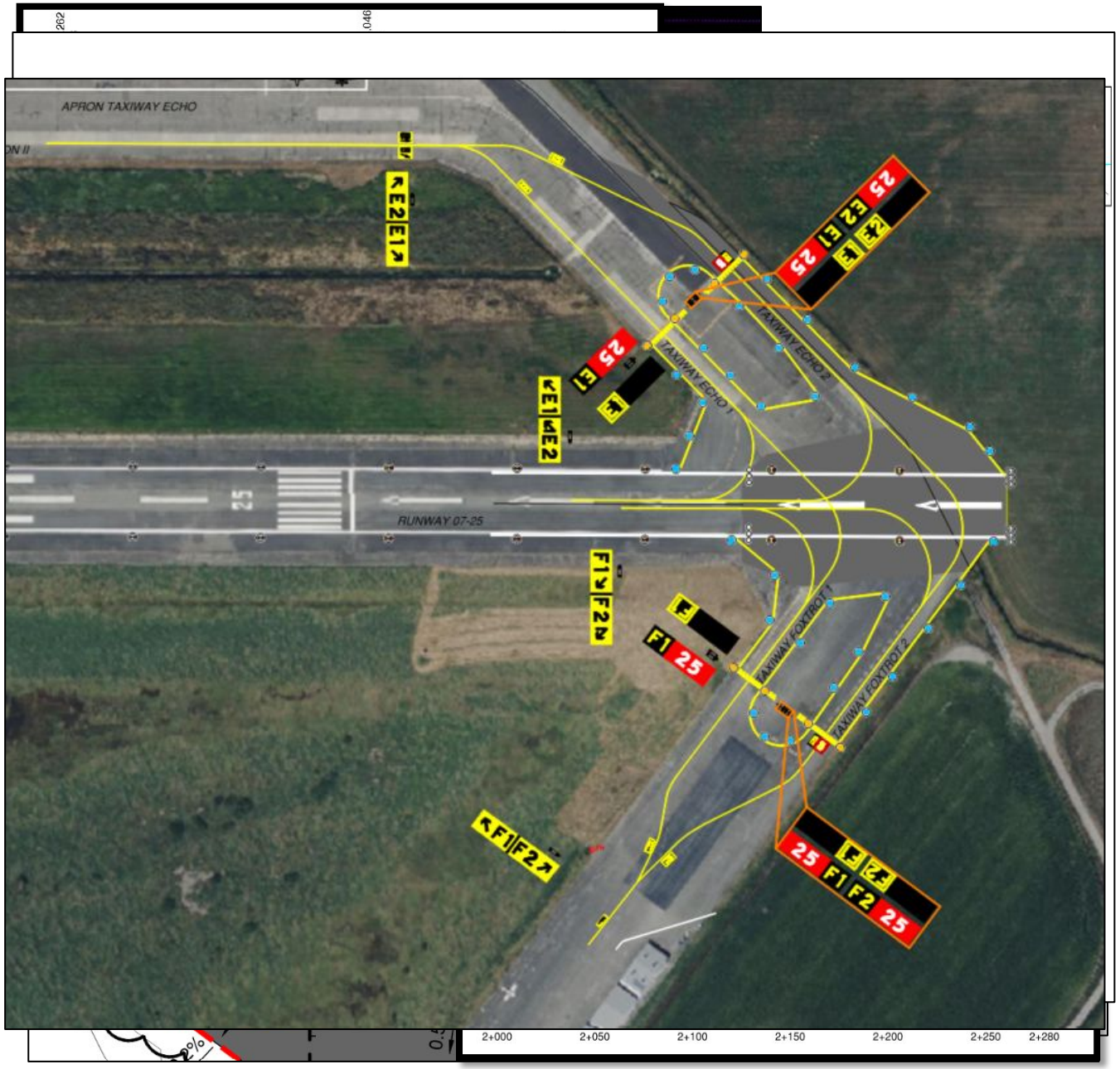
Project Scope
Drainage - Proposed

- All storm drainage scope was coordinated and reviewed by the City of Delta as the airport owner and authority providing jurisdiction for the stormwater management and drainage sizing.

- **Stormwater modelling:** undertaken using AutoDesk Sanitary & Sewer Analysis – design for 100-yr storm event.
- **Futureproofing**: for future developments to the north. Double the capacity (2x900mm dia. twin culvert)
- **Safety Improvements:** ditches were relocated outside the Runway Safety Area.

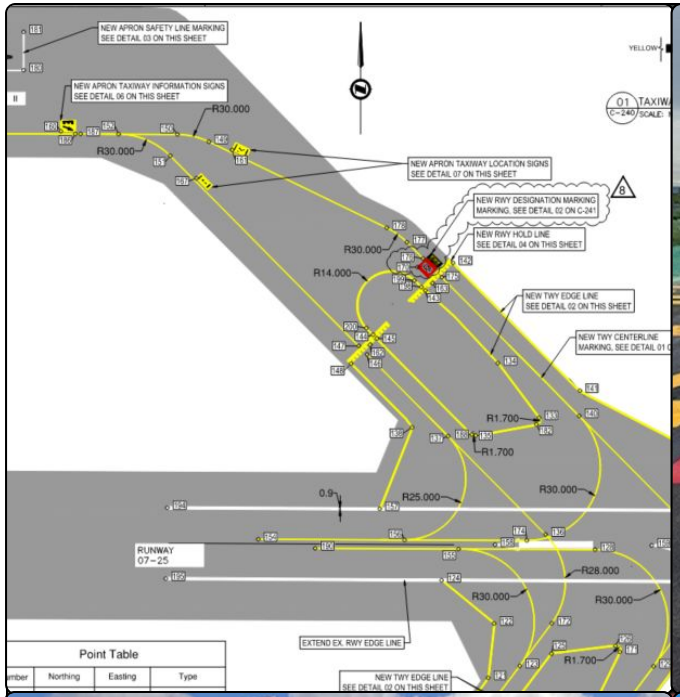
Project Challenges

1. Operational Needs
2. Tie-ins to existing pavement, construction challenges - Value Engineering
3. Stakeholder and Governing Agency Engagement
4. Angled Dual Taxiway



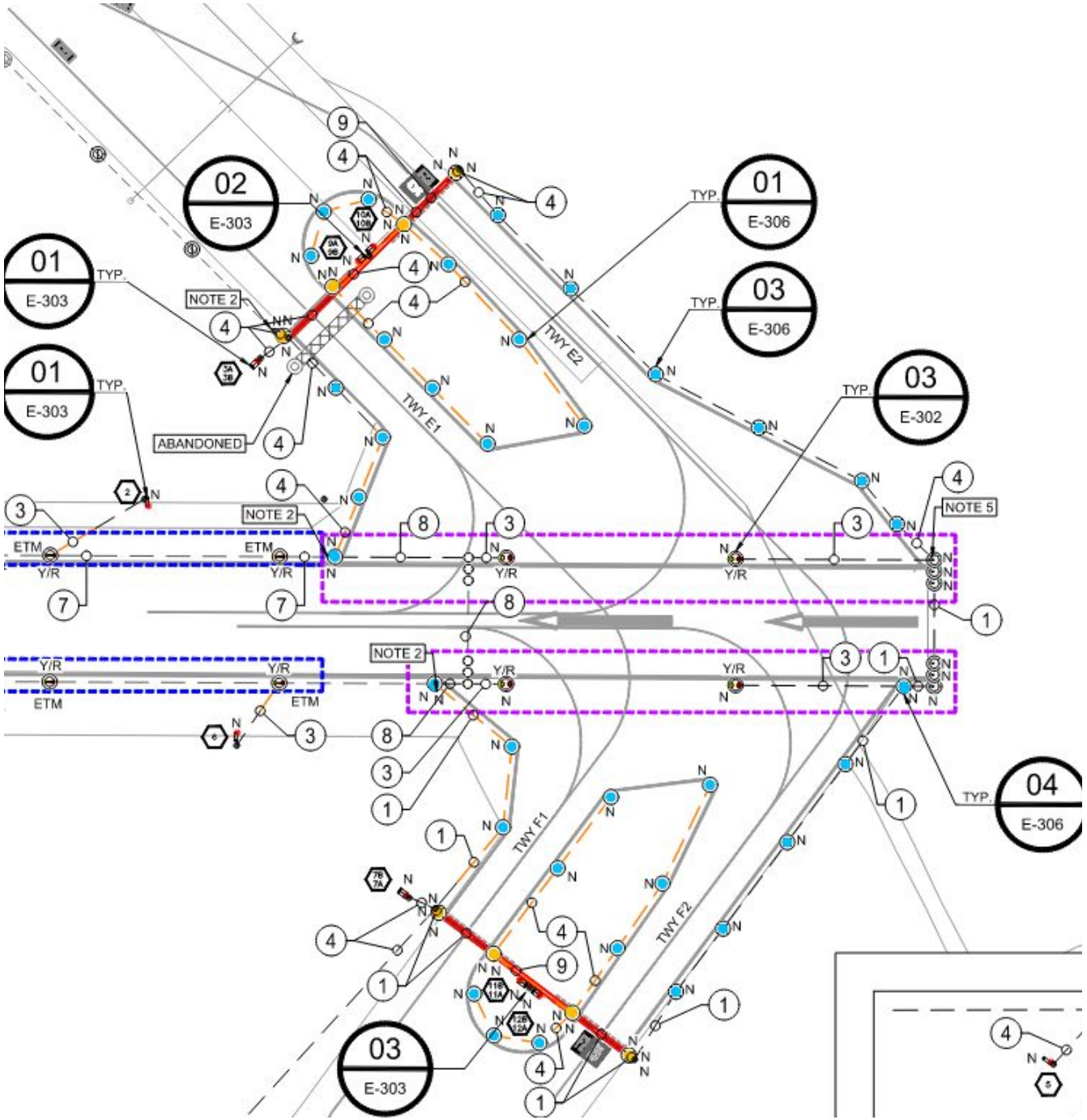
Angled Dual Taxiway Configuration

1. Aircraft Tracking Simulations:
    - Main Gear Clearance: discretionary oversteer is required
    - Simultaneous use of E1, E2, F1, F2 restricted to a wingspan of 32 m.
    - Details are published in the Canada Flight Supplement
2. Navaids:
    - Painted and LED-Illuminated Signs
        - Apron/Taxiway Information Signs
        - Apron/Taxiway Location Signs
        - Runway Designation Signs
    - Lighting
        - Elevated Apron/Taxiway Edge Lights
        - Elevated Runway End Lights
        - Inset Runway Edge Lights



Electrical Scope

- New Runway/Taxiway Edge Lights
- New Stop Position Lights
- PAPI and RTIL
- Primary Circuit Modification from FEC
- New Signs



Conclusion

Airports with a lot of history can continue to be used into the future with the right investment and care.

A collaborative approach can yield great results. The Runway 25 Extension project required a cross-team effort between Alpha Aviation, AeroEdge Consulting, Stantec, the City of Delta, Transport Canada and NavCanada.

In Addition, the project would not have been completed without the collaboration and cooperation from Humphries Construction Ltd. and Continental Power on site adjustments that were made during construction.

Questions?

Dual Taxiway Configuration

1. What is it?
2. Examples
3. Concerns and Complications