

THE EAST SIDE AIR CARGO DEVELOPMENT PROJECT WINNIPEG RICHARDSON INTERNATIONAL AIRPORT (YWG)



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PAVEMENT DESIGN AND GEOMETRY FOR THE EAST SIDE AIR CARGO DEVELOPMENT PROJECT WINNIPEG RICHARDSON INTERNATIONAL AIRPORT (YWG)



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PROGRESSIVE
LEARNING

EAST SIDE AIR CARGO DEVELOPMENT AT WINNIPEG RICHARDSON INTERNATIONAL AIRPORT



LOCATED IN WINNIPEG, MB

Winnipeg Richardson International Airport (YWG)

One of Canada's busiest air cargo airports - Located in the geographic centre of Canada



AIRPORT WITH VISION

As the aviation industry struggled in a global pandemic, WAA's determination through innovation and growth

Major player in the movements of goods across North America

Expansion and modernization of its cargo handling capabilities to allow Canadian companies to compete internationally



SUSTAINABILITY

This project is aiming to obtain LEED® certification



HATCH

Charter growth set to level off

Reality may be biting at last but the 'new normal' in the global air cargo charter business is still seeing unprecedented levels of demand, writes **Chris Lewis**

What happens next is equally uncertain. Hogben says. It could be that, as China and fully exits lockdown and ramp up production, some pent-up demand will be added to the market.

International volumes soar at Shenzhen

China's third-largest cargo airport is growing faster than its domestic competitors, thanks to the development of new technology and infrastructure – and a focus on global trade, writes **Roger Hailey**

Freighters set for Mexico City move

MEXICO'S GOVERNMENT HAS struck an agreement with airlines to shift all-cargo operations from Benito Juarez International Airport (Mexico City International), to Felipe Angeles International (AFIA).

Following the government's decision to ban freighter flights from Mexico City's primary airport, Mexican president Andrés Manuel López Obrador

said AFIA, which opened in March 2022, is ready to receive cargo flights.

Cargo operations are due to be transferred to the new airport in the summer, but DHL has already moved its flights.

As a result of this, congestion at Benito Juarez is anticipated to decrease.

In January, IATA said expecting airlines to move cargo opera-

tions at short notice "is not feasible given the enormous technical, regulatory and infrastructural requirements associated with this transfer".

The trade association added that AFIA does not yet have adequate facilities and infrastructure so that the cargo operators can work smoothly.

Belly cargo in passenger flights is exempt from

'Airfreight was 10-15 times more expensive [than ocean freight] but it's now only about seven times more, which does make it more viable'

Neil Dursley, Chapman Freeborn



THE TEAM

DIALOG®

- Prime Consultant
 - Architecture
 - Landscaping
 - Sustainability
-

HATCH

- Airfield civil & electrical engineering
 - Airfield Pavement Design
 - Drainage (LDS), Utilities Design
- Geotechnical and Environmental engineering services



- Mechanical & Electrical Engineering
-



Crosier Kilgour
& Partners Ltd.
CONSULTING STRUCTURAL ENGINEERS

- Structural Engineering

AND MORE...



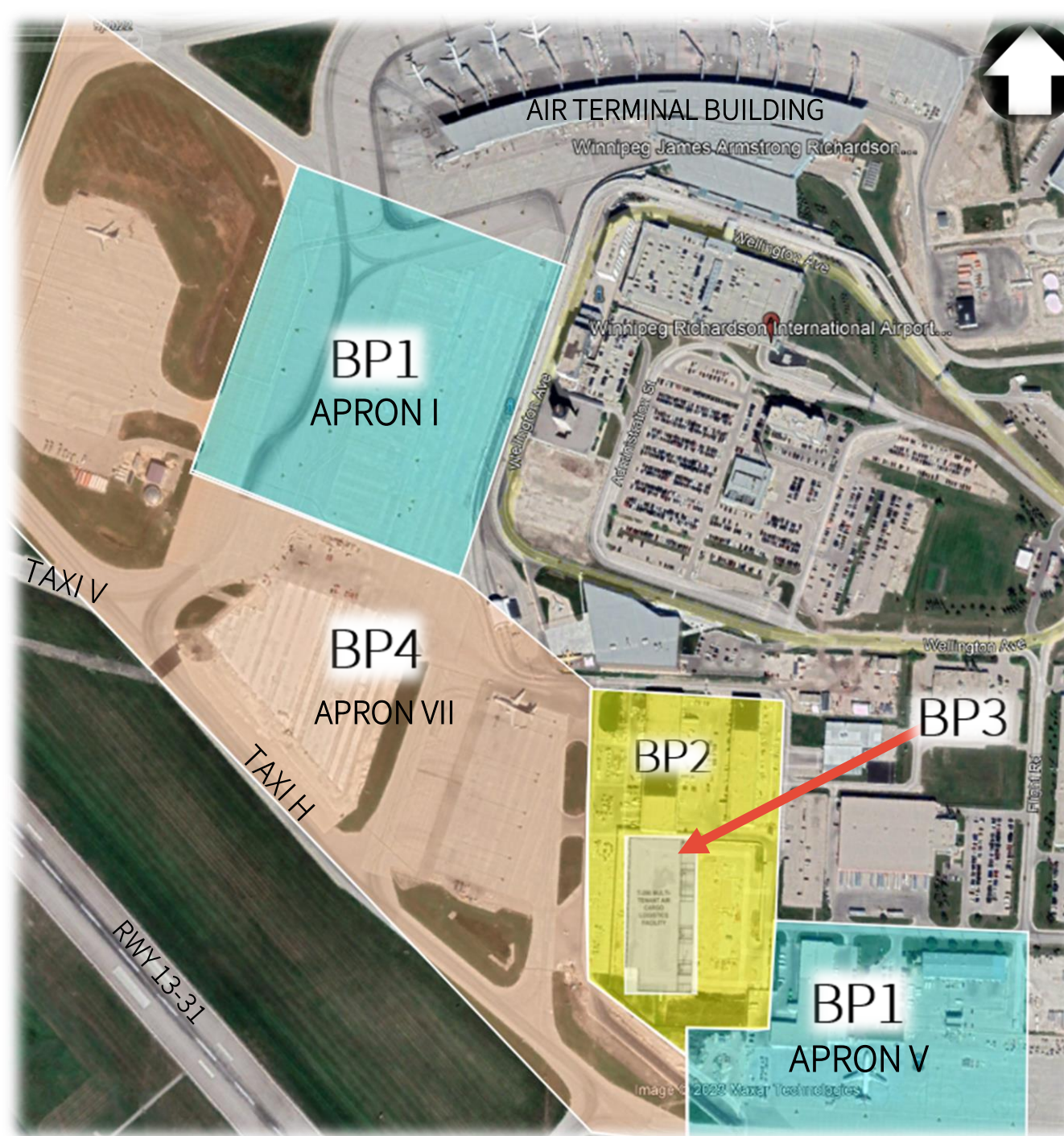
WINNIPEG
AIRPORTS AUTHORITY



SWIFT

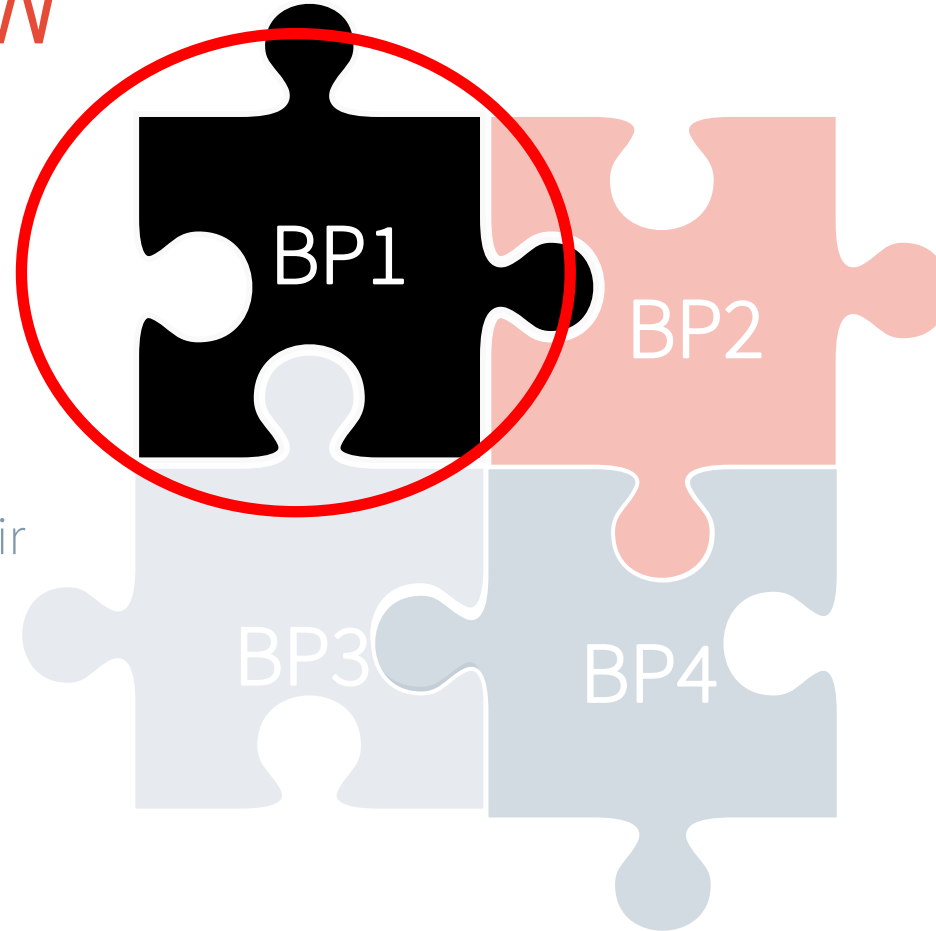
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PACKAGES LOCATION



BP1 CONSTRUCTION PHASES OVERVIEW

Package 1: Apron I and Apron
V stands modifications and
pavement reconstruction



Package 3: Multi-tenant air
cargo logistics facility
(MTACLF)

Package 2: Air Canada
(T-115) cargo building
demolition

Package 4: Airfield Construction and
Rehabilitation

BP1 - APRON I

SWIFT



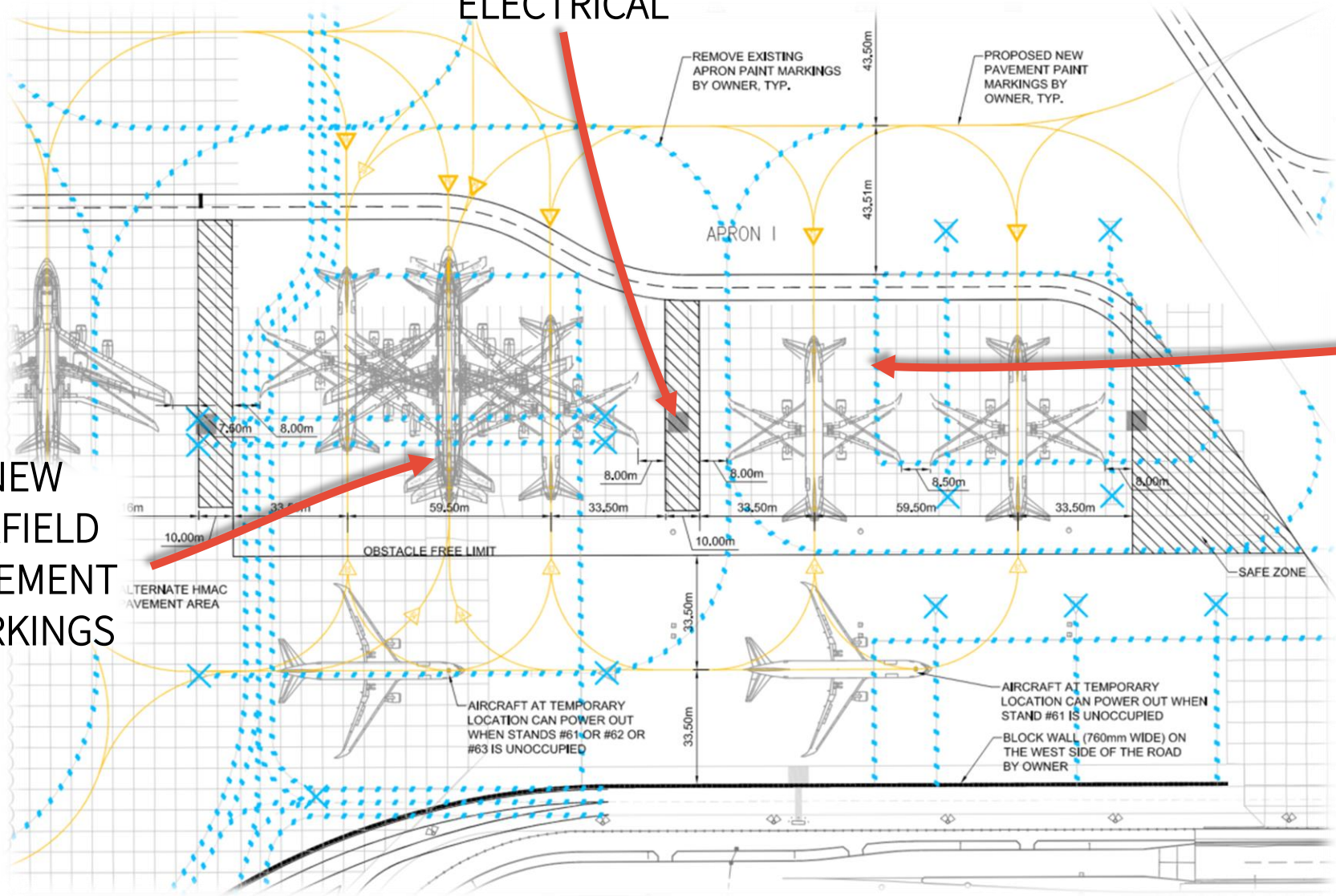
WINNIPEG AIRPORTS AUTHORITY



NEW
AIRFIELD
ELECTRICAL

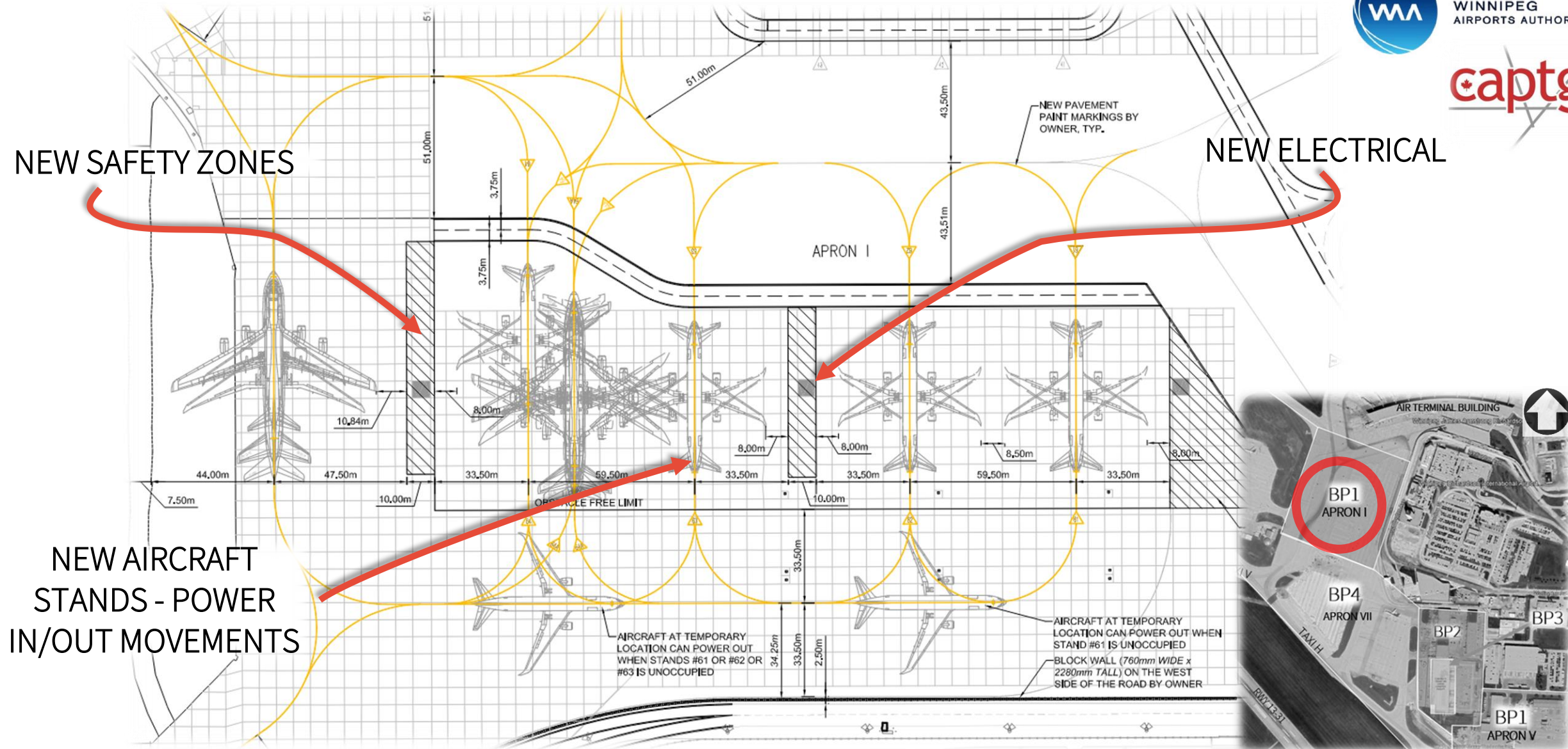
AIRFIELD PAVEMENT
REMOVALS

NEW
AIRFIELD
PAVEMENT
MARKINGS



HATCH

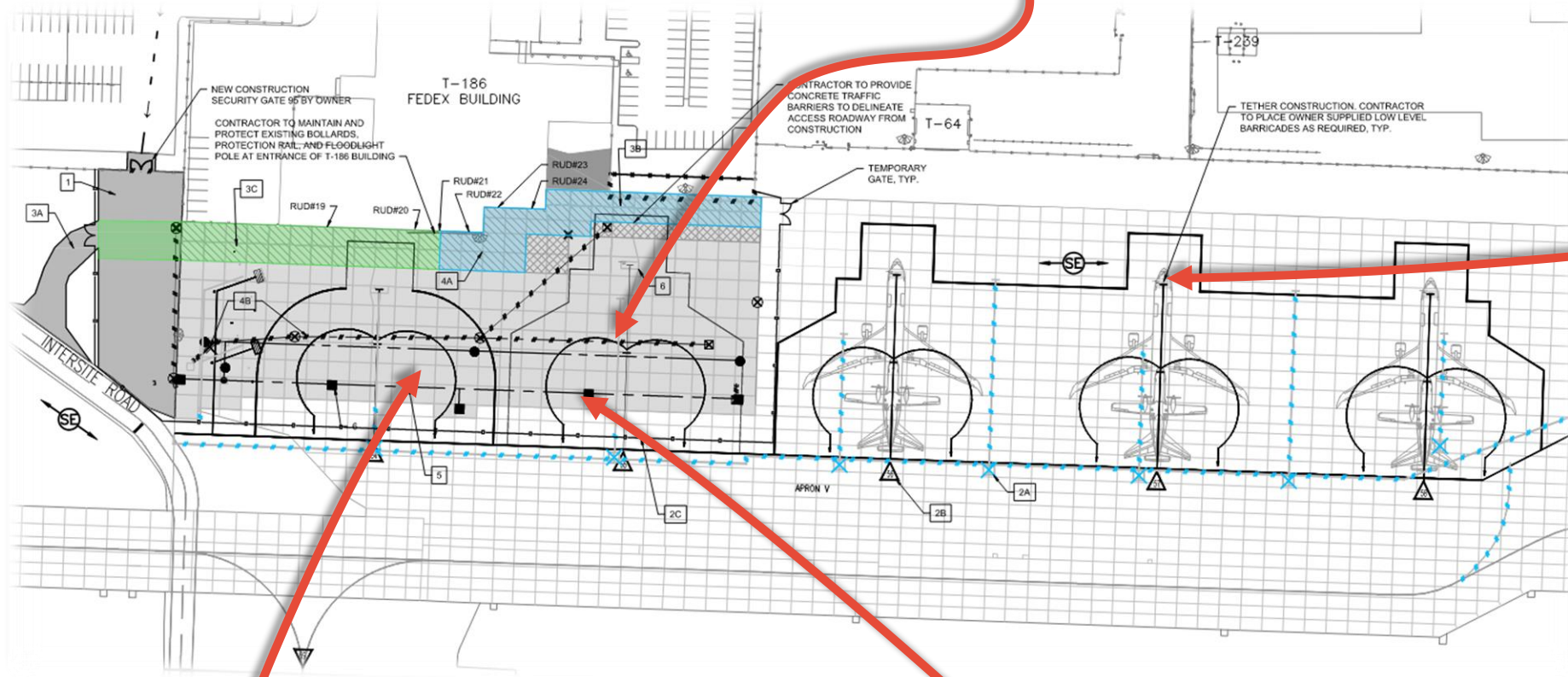
BP1 - APRON I – FINAL CONFIGURATION



BP1 - APRON V

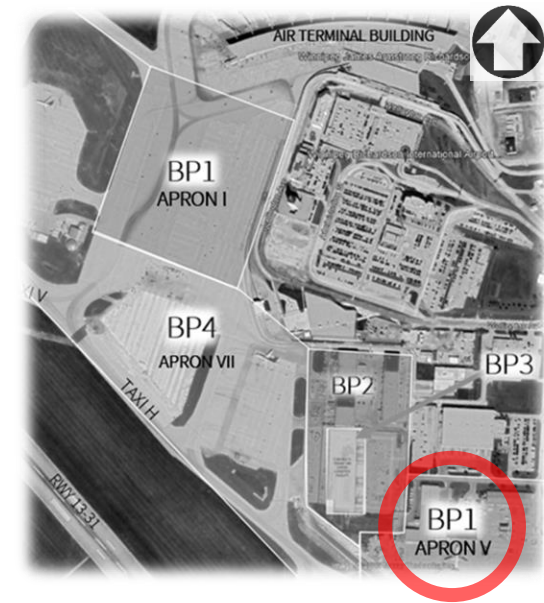
AIRFIELD PAVEMENT MARKINGS MODIFICATIONS

NOSE WHEEL
TETHERS



APRON
REHABILITATION WORK

NEW LAND DRAINAGE
SEWER (LDS)



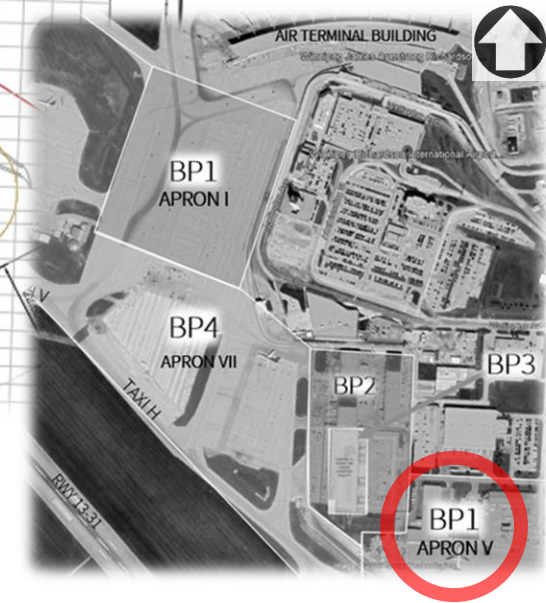
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BP1 APRON V – FINAL CONFIGURATION

ASPHALT PAVEMENT



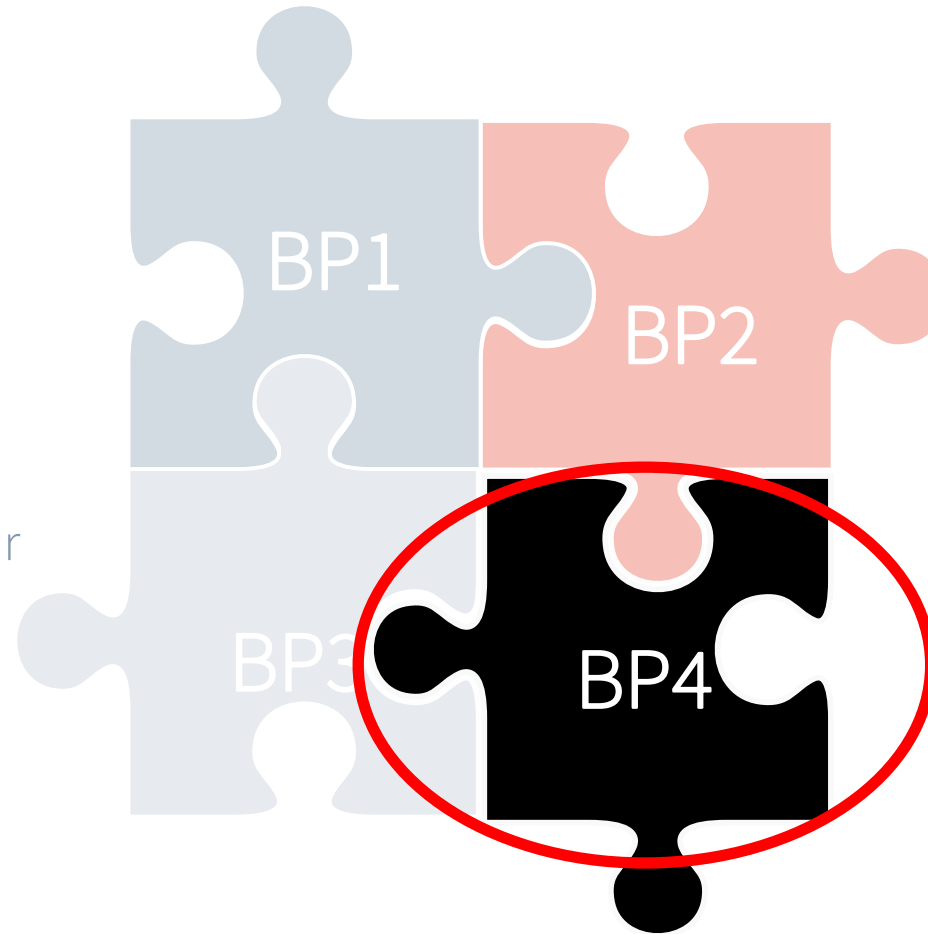
PCC PAVEMENT



HATCH

BP4 CONSTRUCTION PHASES OVERVIEW

Package 1: Apron I and Apron V
stands modifications and
pavement reconstruction



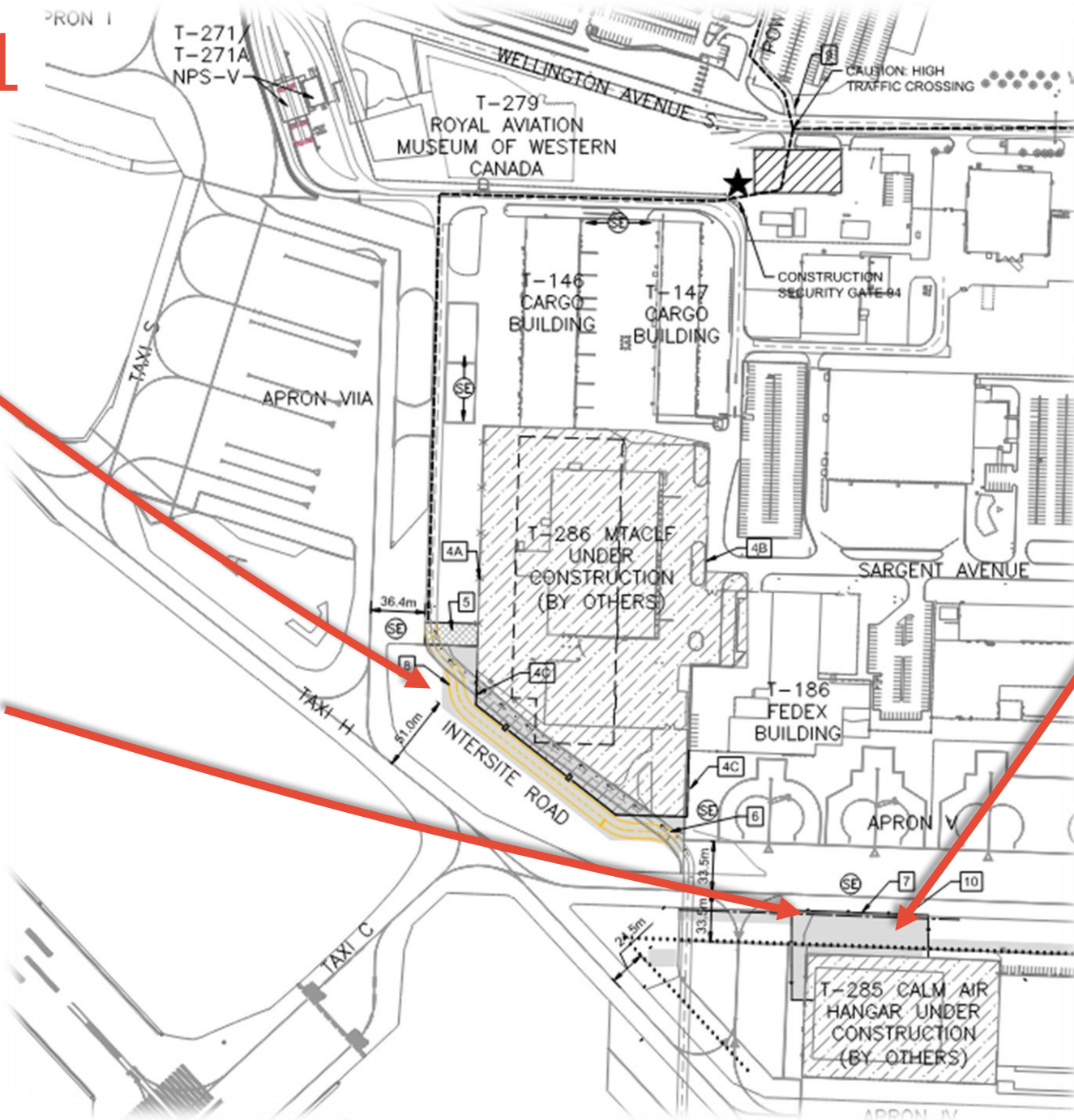
Package 2: Air Canada
(T-115) cargo building
demolition

Package 3: Multi-tenant air
cargo logistics facility
(MTACLF)

Package 4: Airfield Construction
and Rehabilitation

HATCH

BP4 – STAGE 1



MODIFICATIONS FOR
INTERSITE ROAD
REALIGNMENT

AIRFIELD ELECTRICAL
WORK

CALM AIR APRON



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WINNIPEG
AIRPORTS AUTHORITY



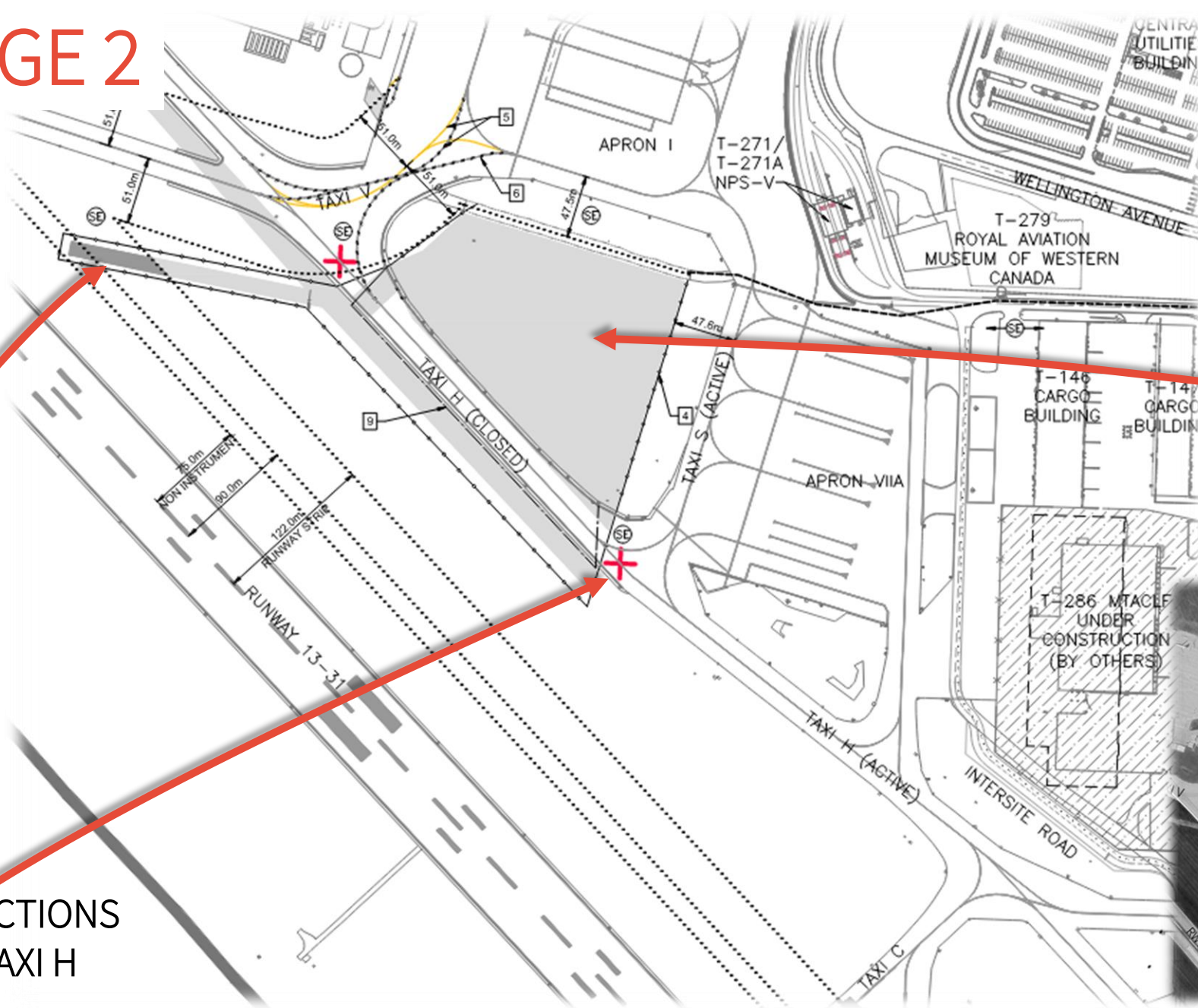
SWIFT

BP4 – STAGE 2

RWY
RESTRICTIONS
FOR WORK
WITHIN RWY
STRIP

RESTRICTIONS
TO TAXI H

NEW
APRON

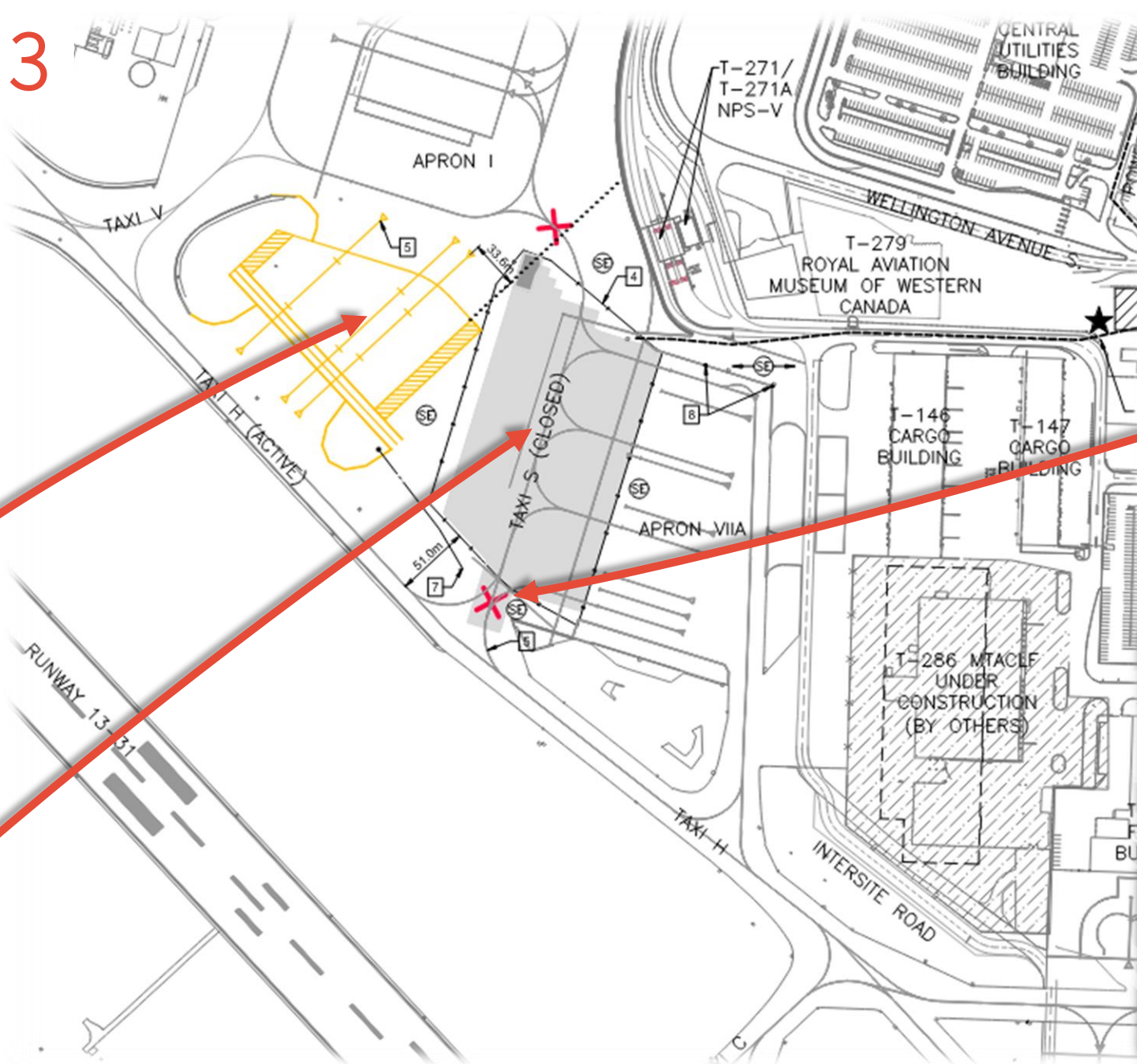


BP4 – STAGE 3

ACCESS
RESTRICTIONS

NEW
PAVEMENT
MARKINGS

APRON
WORK



BP4 – STAGE 4

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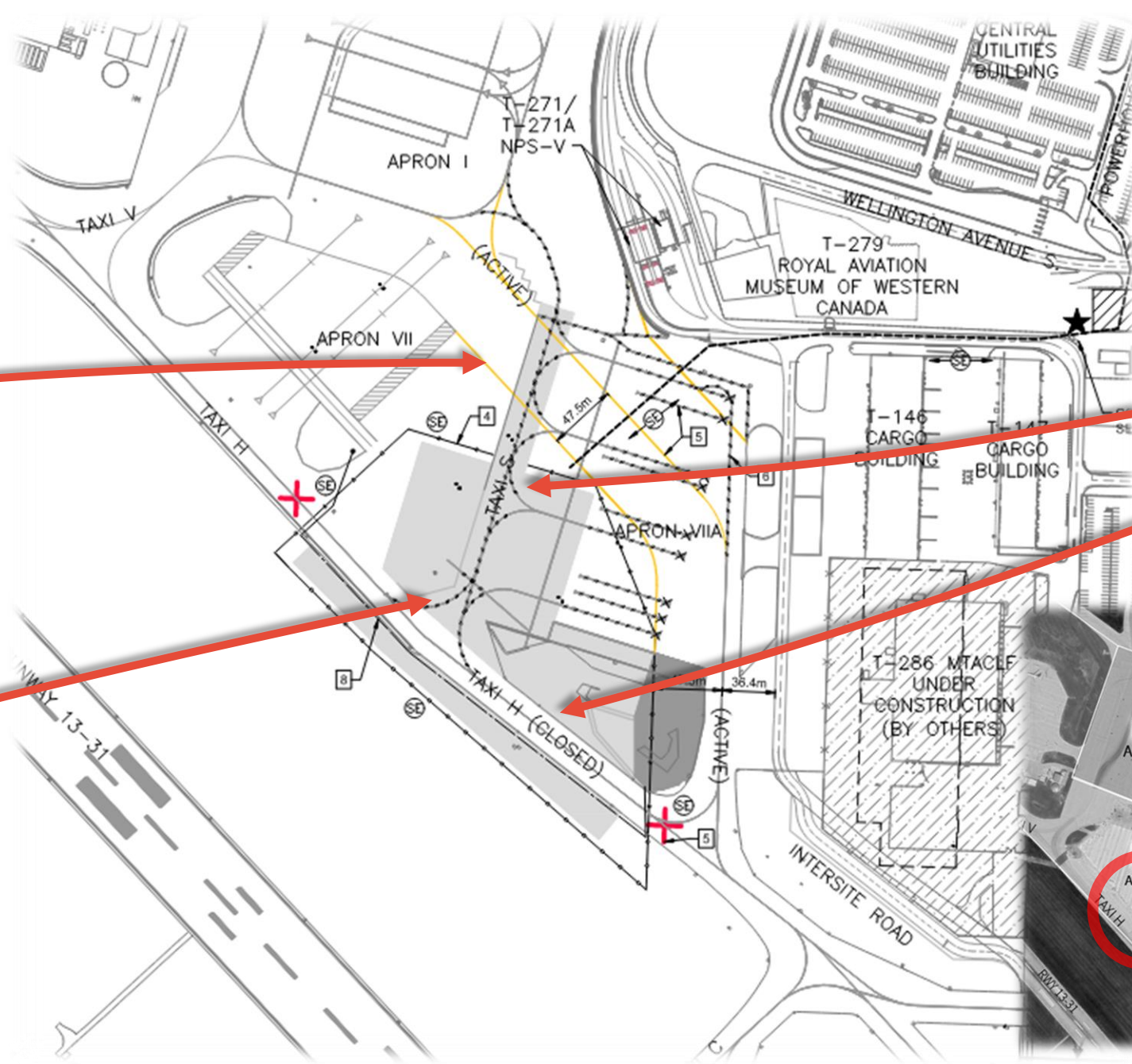
WINNIPEG
AIRPORTS AUTHORITY



NEW
PAVEMENT
MARKINGS

ACCESS
RESTRICTIONS

APRON
WORK

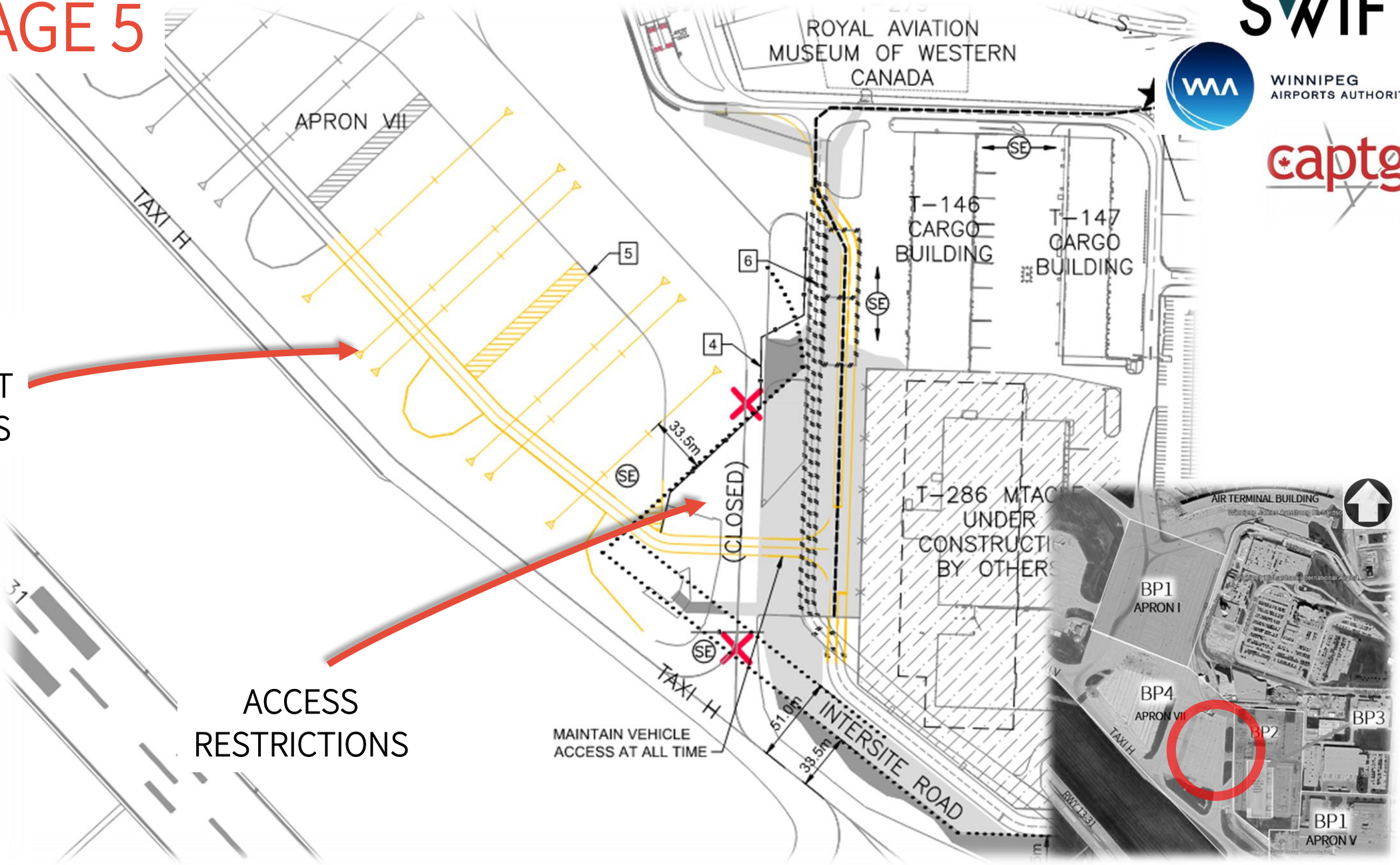


HATCH

BP4 – STAGE 5

NEW
PAVEMENT
MARKINGS

ACCESS
RESTRICTIONS



SWIFT



WINNIPEG
AIRPORTS AUTHORITY

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BP4 FINAL CONFIGURATION

SWIFT



WINNIPEG
AIRPORTS AUTHORITY

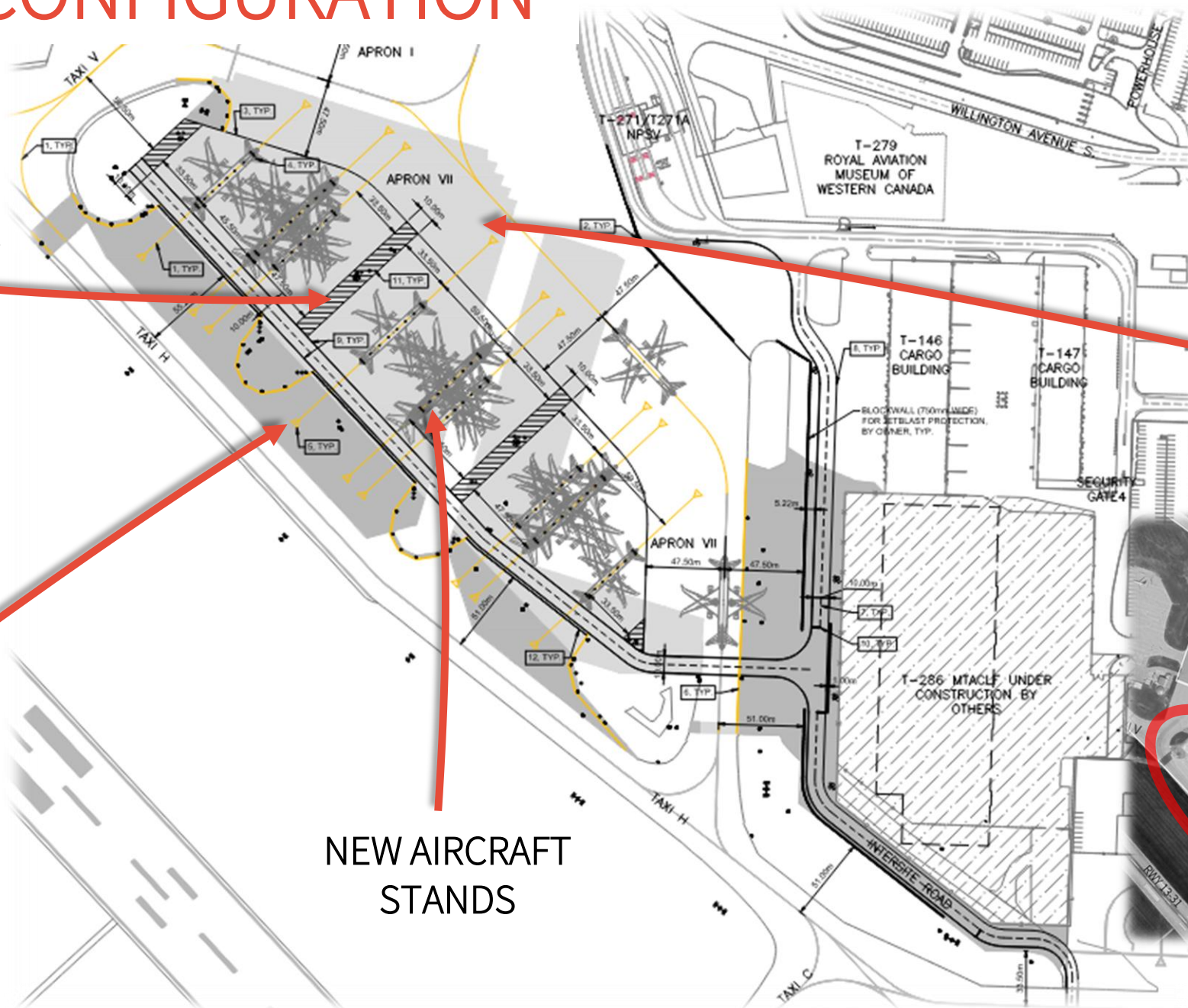


NEW SAFETY ZONES

NEW HMAC
PAVEMENT

NEW AIRCRAFT
STANDS

NEW PCC
PAVEMENT



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SUMMARY



Pavement Design

- 48,000 m² - New Rigid Pavement – Apron/GSE/landside
- 18,400 m² - New Flexible Pavement – Apron Edges/landside Areas
- 9,700 m² - Pavement Rehab. - Aprons



Benson N. - Civil and Drainage (LDS) - EoR for this project

- Pavement Geometry & Design
- Overview of Construction Highlights
- Progressive Learning

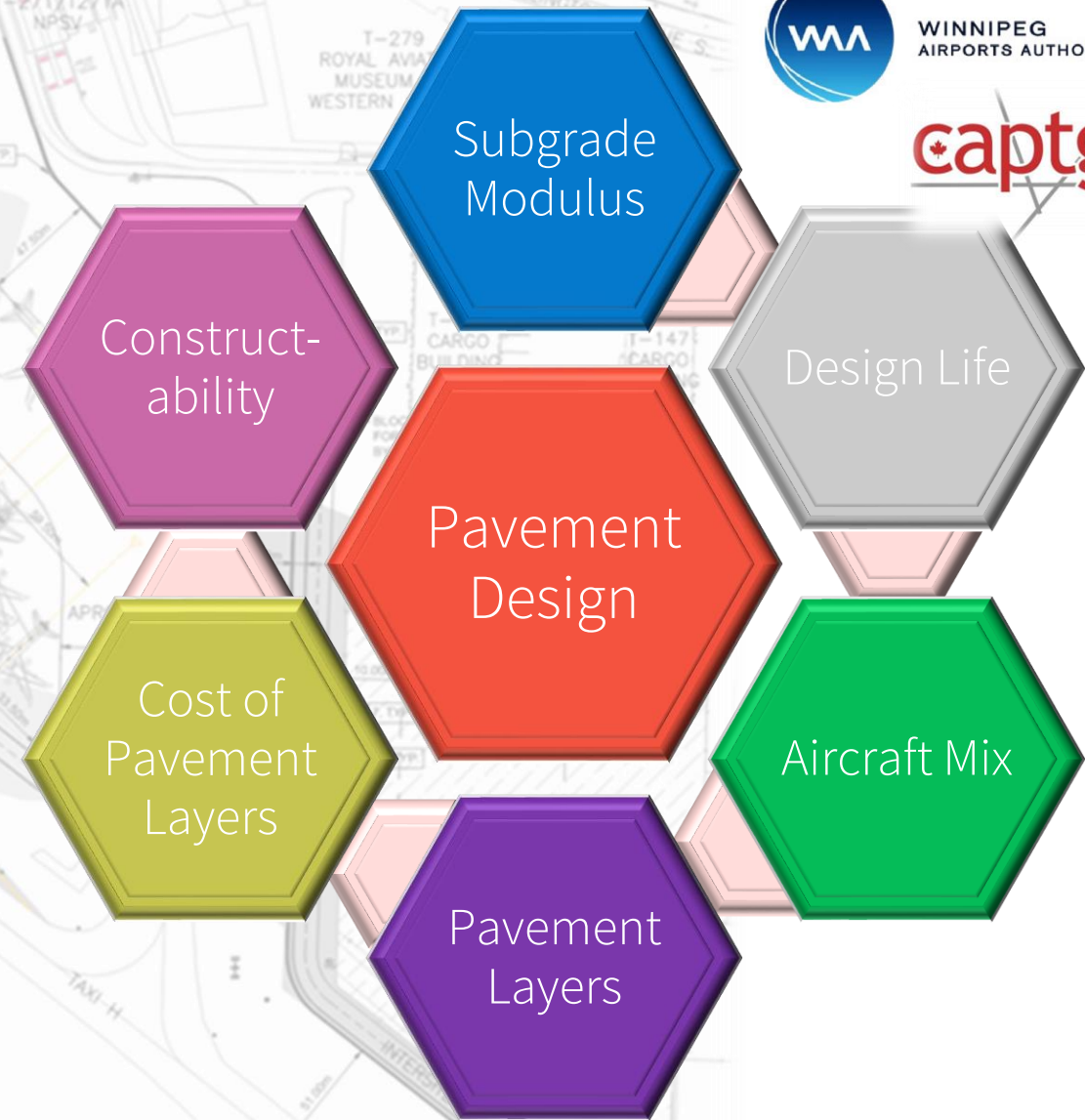
BP4 PAVEMENT GEOMETRY & CIRCULATION



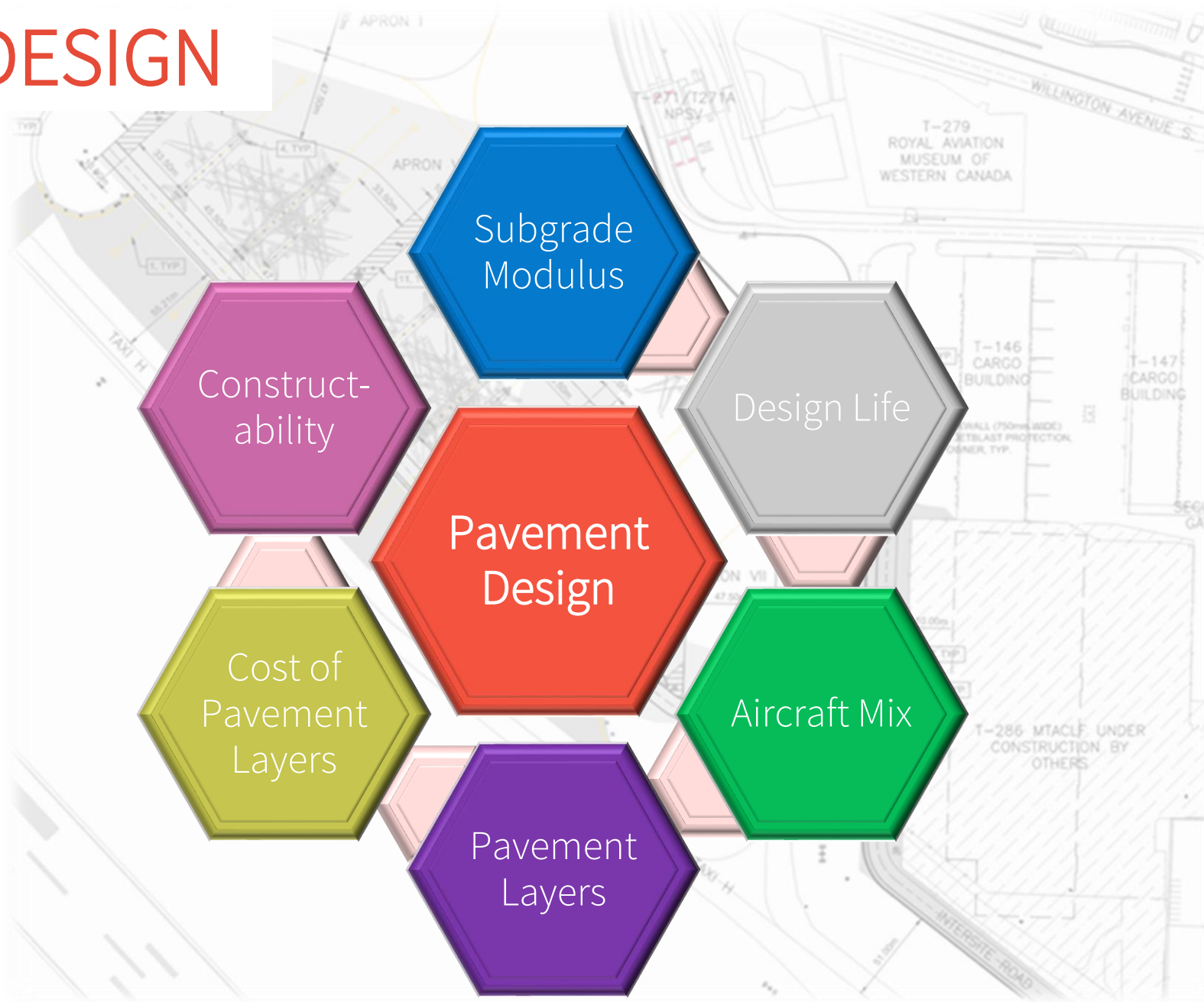
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PAVEMENT DESIGN

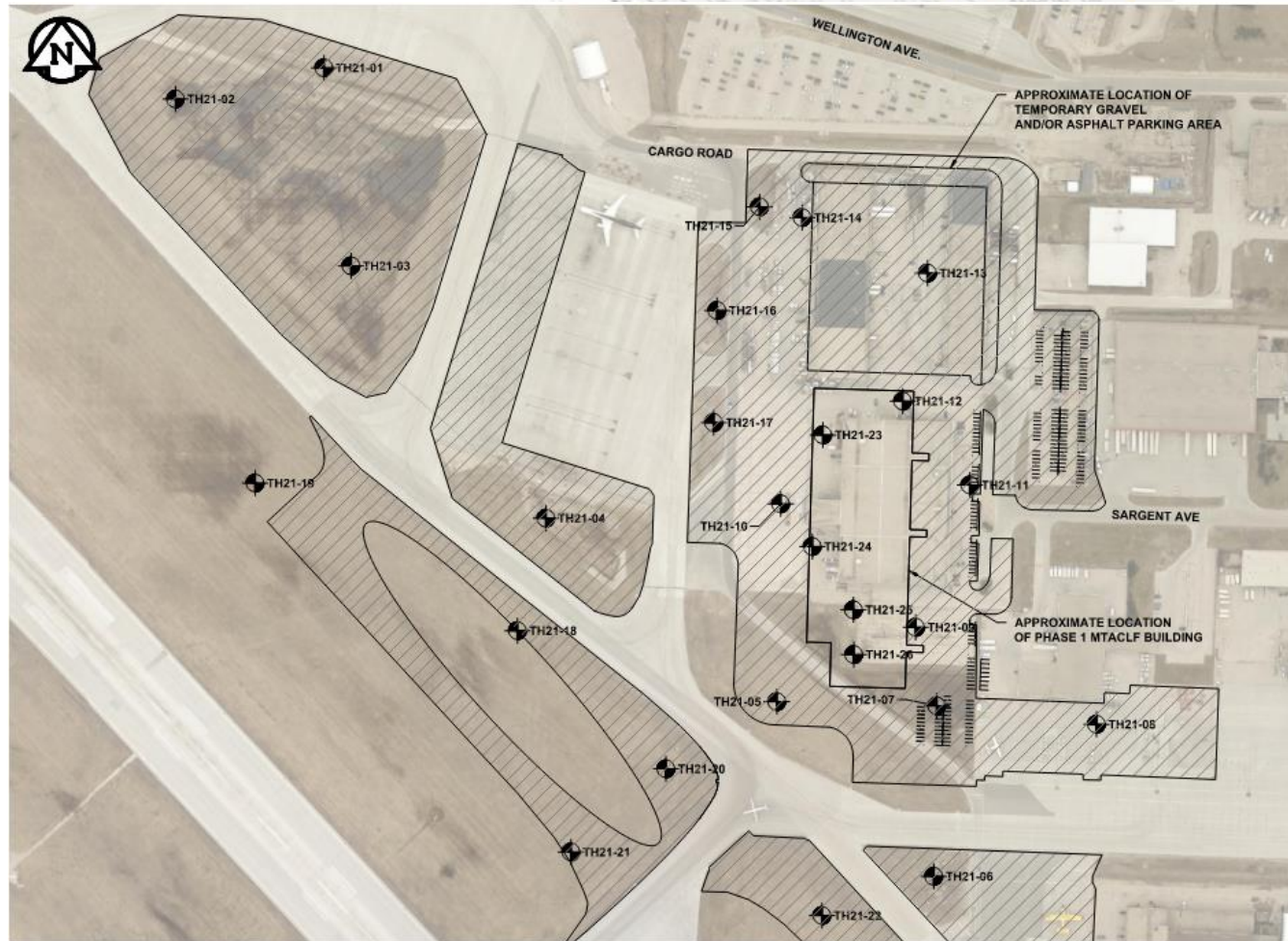
- ❖ Pavement designed using FAARFIELD with inputs:
 - ❖ Geotechnical Investigation to determine subgrade soil types and modulus
 - ❖ Design Life based on size of airport and forecasting reliability
 - ❖ Historical and forecasted aircraft movements
 - ❖ Local availability of pavement materials
 - ❖ Pavement optimization
 - ❖ Assess constructability



PAVEMENT DESIGN

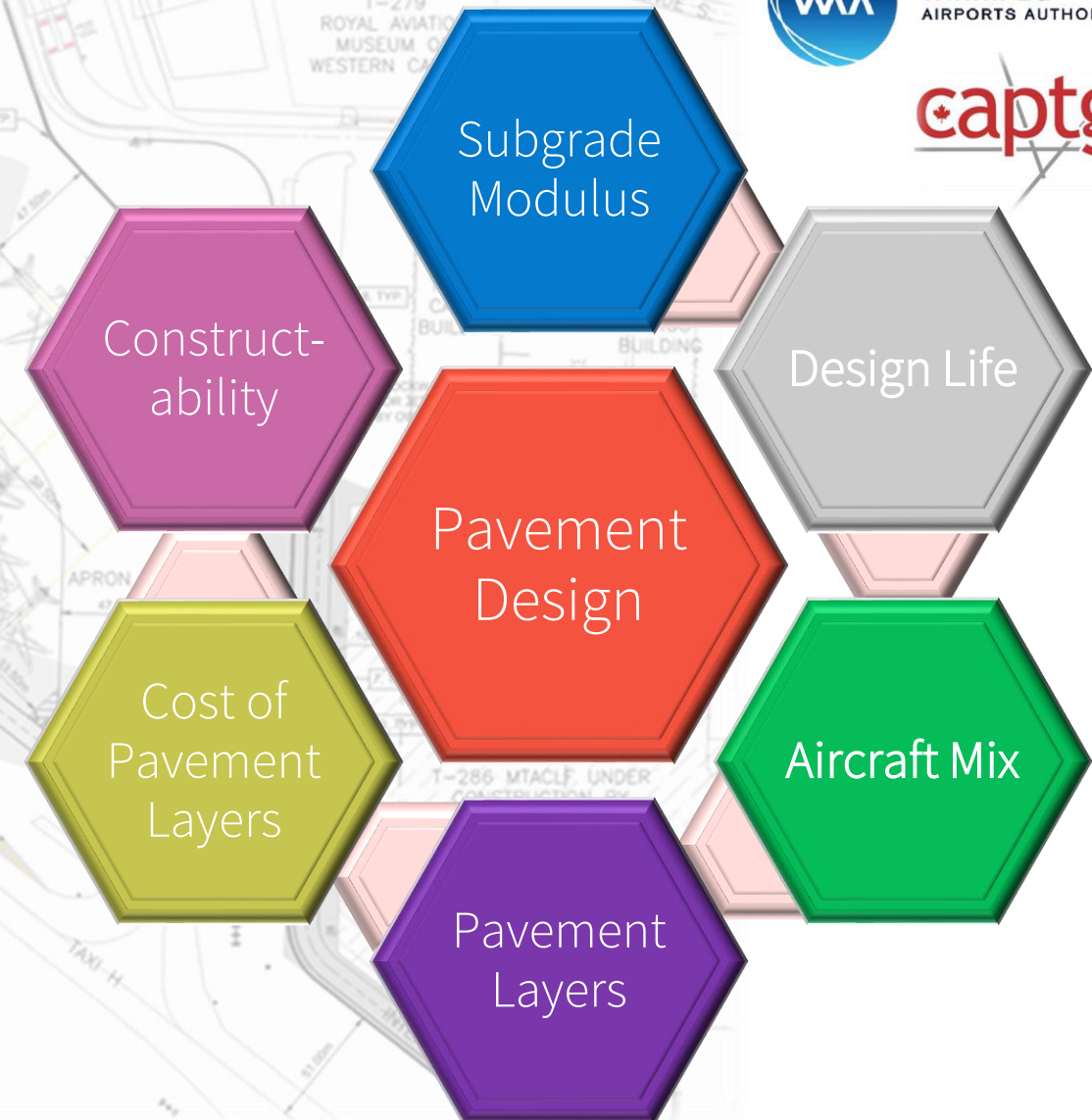


GEOTECHNICAL INVESTIGATION



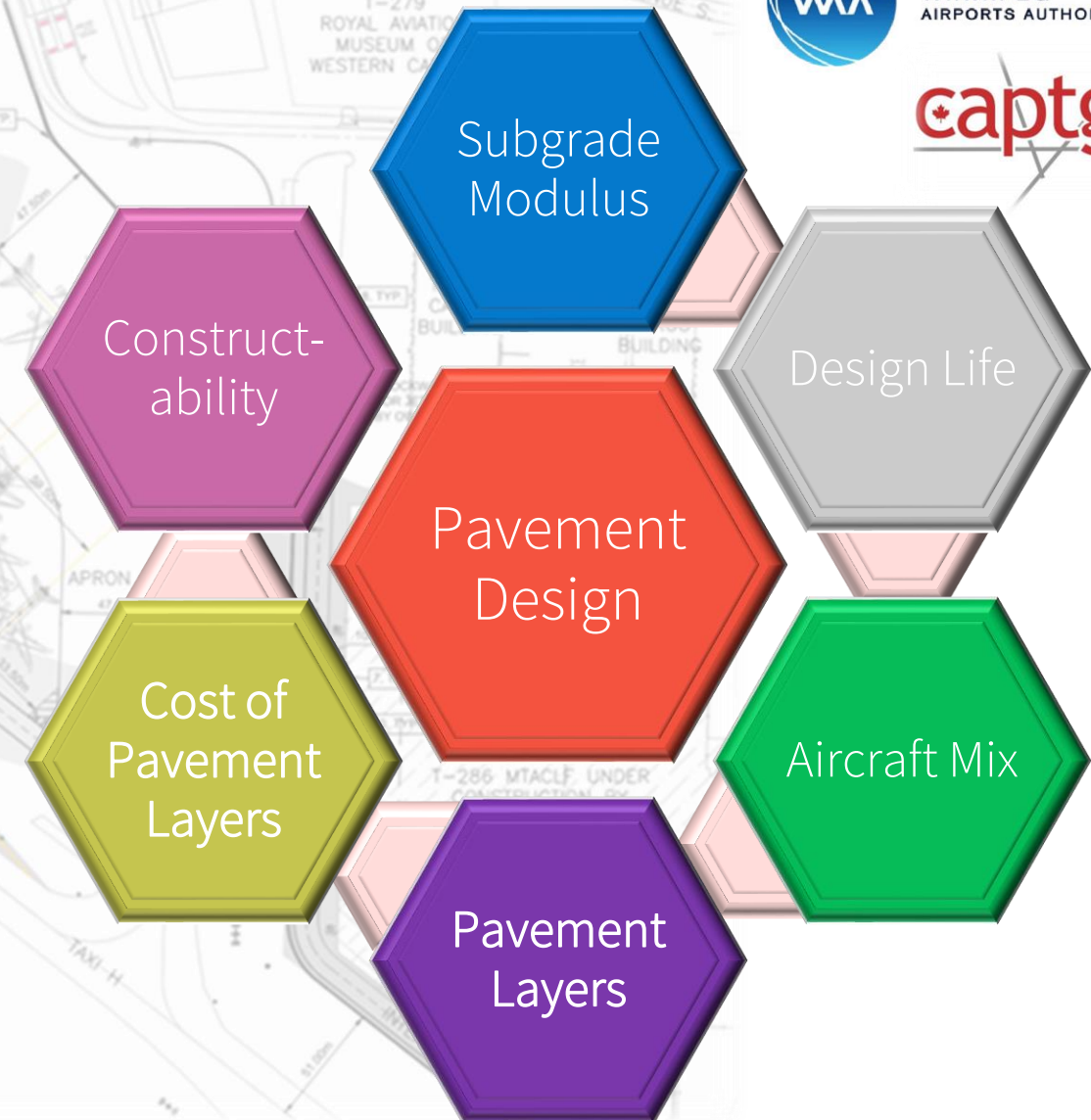
DESIGN LIFE & AIRCRAFT MIX

- ❖ 40-year design life:
 - ❖ Medium and large hub airports
 - ❖ Relatively accurate forecasts of the future aircraft traffic are available
 - ❖ Size and configuration of airport are relatively well known
- ❖ Aircraft Mix:
 - ❖ WAA provided aircraft movements per airline in 2020 and forecasted landings between 2021 to 2026
 - ❖ Airlines movements distributed to designated aprons
 - ❖ 1% annual growth rate based on sensitivity analysis by assessing number of movements per stand

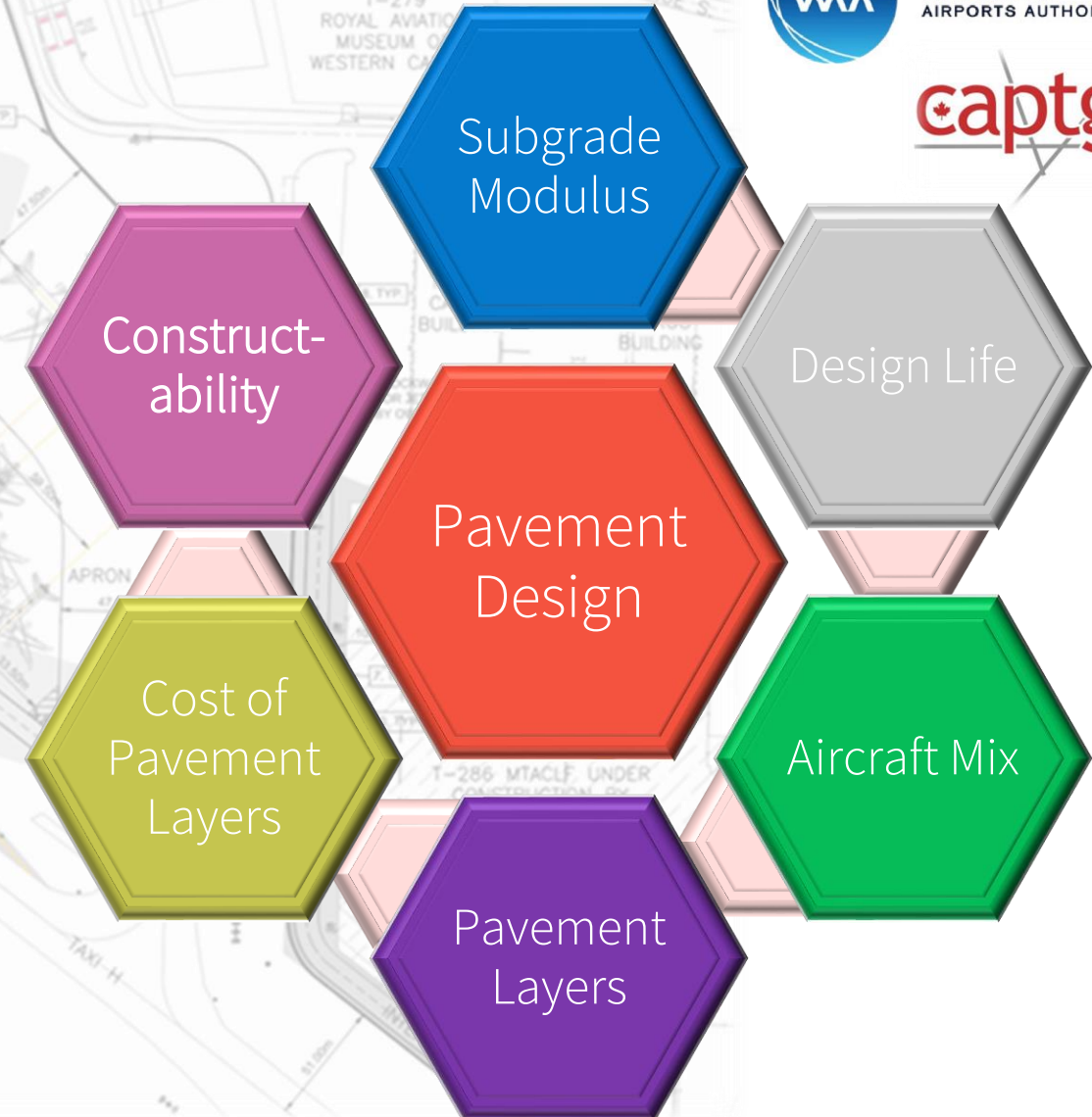
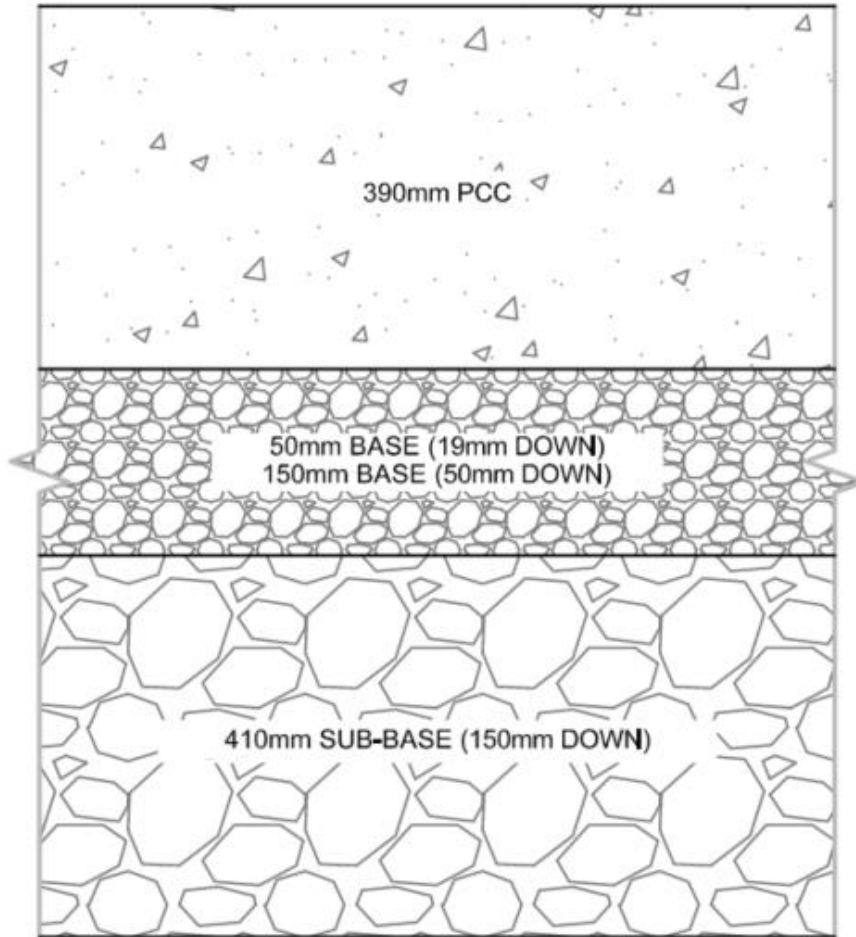


PAVEMENT OPTIMIZATION

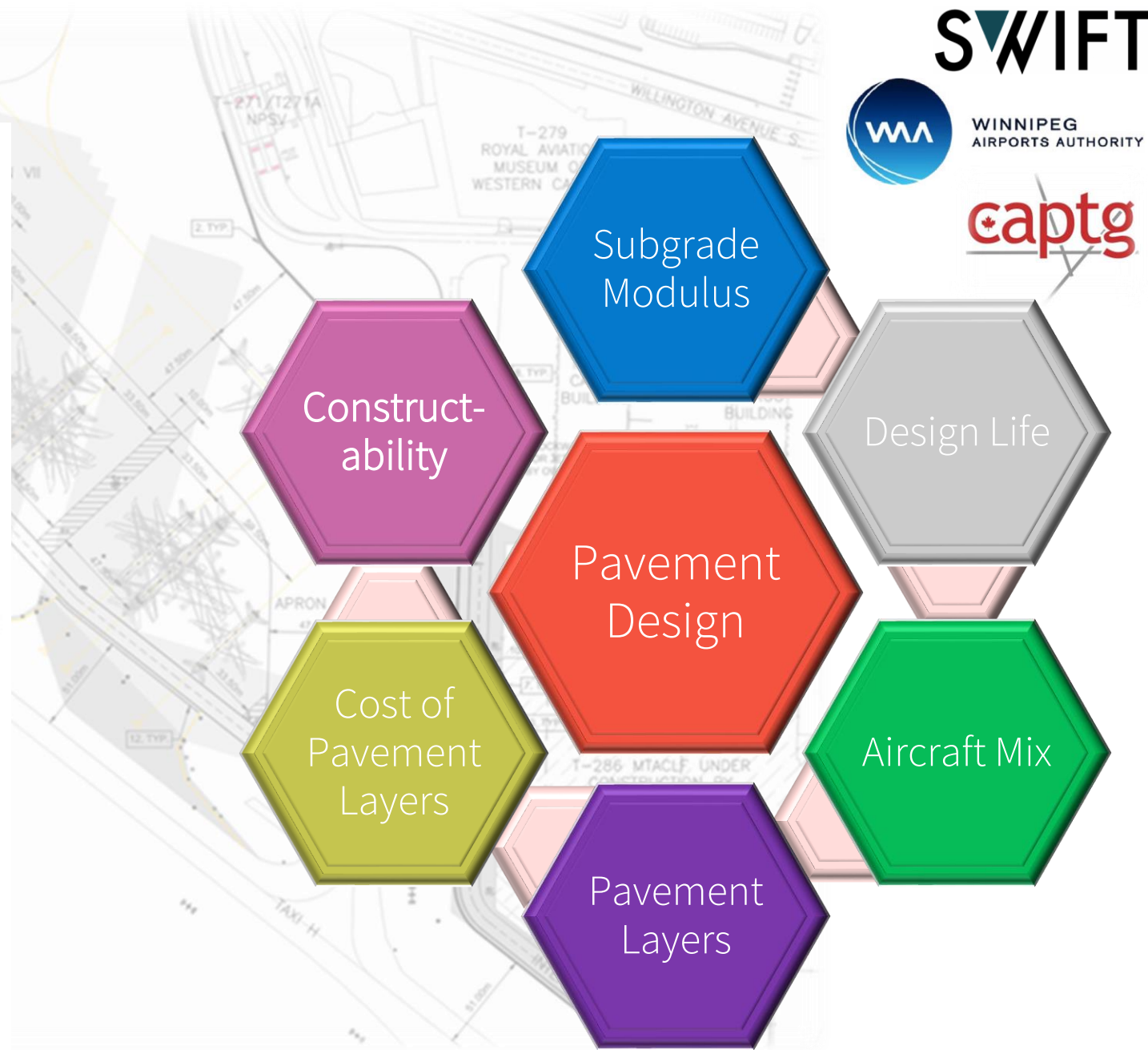
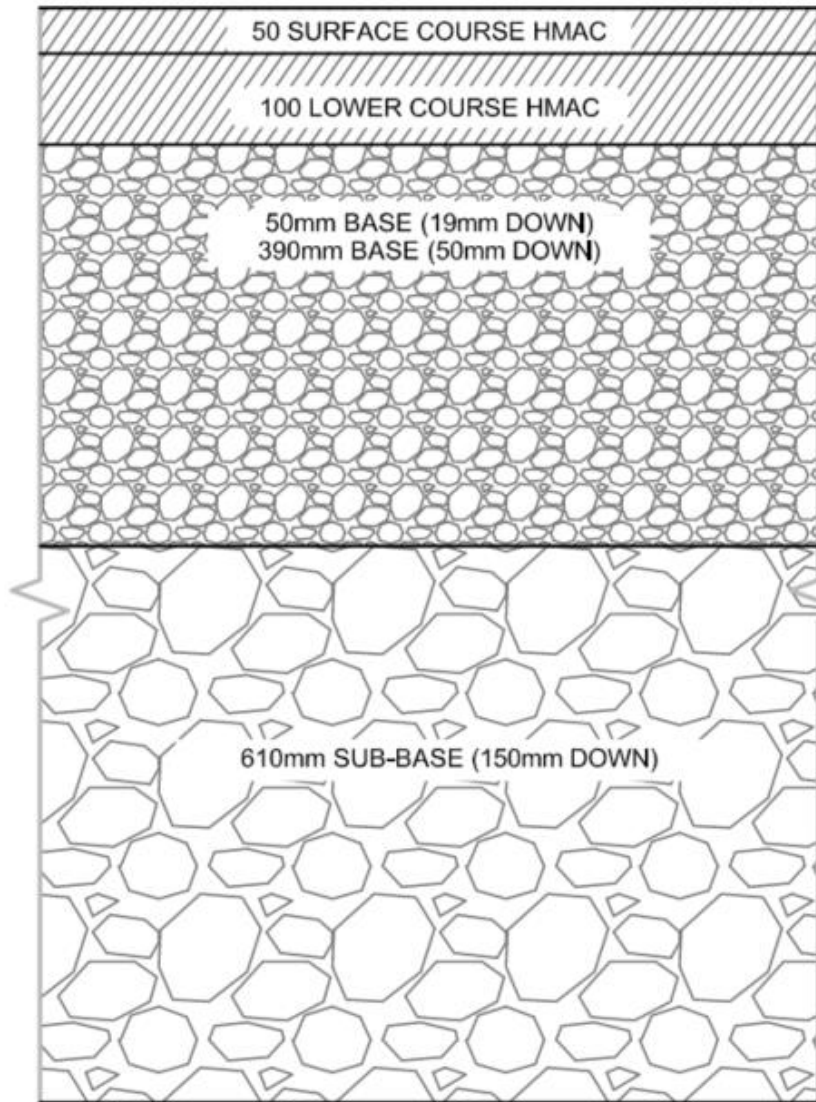
Scenario	P-501 PCC (mm)	PCC Flex. Strength (MPa)	P-209 Cr Ag (mm)	P-154 UnCr Ag (mm)	Rank based on Cost
1	423	4.48	200	400	6
2	422	4.48	200	500	2
3	390	4.83	200	410	1
4	390	4.83	250	400	3
5	390	4.83	200	500	4
6	390	4.83	250	500	5



CONSTRUCTABILITY



CONSTRUCTABILITY



CONSTRUCTION HIGHLIGHTS

Subgrade Compaction



Granular Base Compaction



CONSTRUCTION HIGHLIGHTS

Slip-form paving



Concrete Consolidation



CONSTRUCTION HIGHLIGHTS

Strike Off



Broom Finish



CONSTRUCTION HIGHLIGHTS

Curing Compound



Application Rate / Coverage



PROGRESSIVE LEARNING

Voids from Dowel Inserter



Misaligned Dowels



Thank you!

