RFI

JANUARY 20, 2026

Revitalizing Washington Dulles International Airport

Bermello Ajamil & Partners LLC
in partnership with **Zaha Hadid Architects**

Bermello Ajamil

A WOOLPERT COMPANY

RFI

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COVER LETTER

January 20, 2026

Sean P. Duffy
Secretary
U.S. Department of Transportation

Office of the Secretary
1200 New Jersey Ave. SE
Washington, DC 20590

Re: Response to Request for Information – Revitalizing Washington Dulles International Airport (Docket DOT OST 2025 1887)

To Secretary Duffy and the Department Review Team:

On behalf of our team, we are pleased to submit this response to the U.S. Department of Transportation's Request for Information (RFI) regarding the revitalization of Washington Dulles International Airport (IAD). We share the Department's vision for a bold, inspiring, and future ready gateway worthy of the Nation's capital, and we appreciate the opportunity to contribute concepts, delivery strategies, and financing approaches that can help realize that ambition.

Washington Dulles International Airport is a national asset with extraordinary potential. Its iconic Eero Saarinen designed main terminal remains one of the most significant works of American civic architecture, yet the airport's current facilities no longer meet the operational, experiential, or symbolic expectations of a premier international gateway. Our submission outlines a set of design, delivery, and financing concepts that transform IAD into a modern, efficient, and architecturally distinguished airport aligned with Executive Order 14344 and the Administration's commitment to elevating federal architecture.

Our response provides:

- Three terminal redevelopment concepts—North Headhouse, South Headhouse, and a new Midfield Terminal—each grounded in operational feasibility, architectural ambition, and long term adaptability.
- A comprehensive ROM cost framework informed by national benchmarks, Northern Virginia market conditions, and the unique complexities of constructing within an active hub airport.
- A multipackage, design build delivery strategy that accelerates construction, reduces risk, and maintains operational continuity through Progressive Design Build, Fixed Price Design Build, and hybrid DB/CMAR approaches.
- A robust financing structure that layers traditional airport funding tools with innovative mechanisms such as P3, value capture, ESG linked financing, and TIFIA supported mobility investments.
- A realistic and defensible delivery timeline based on comparable U.S. megaprojects and tailored to IAD's airfield, regulatory, and operational constraints.
- A clear articulation of impediments and mitigation strategies, including NEPA, Section 106, airfield safety areas, utility relocations, and supply chain volatility.
- A comprehensive operational continuity plan leveraging digital twin modeling, ORAT integration, and a unified Program Management Office to ensure uninterrupted airline and federal operations throughout construction.
- Collectively, these elements present a disciplined, achievable, and forward looking pathway for transforming Washington Dulles International Airport into a world class international gateway—one that reflects American excellence, strengthens national competitiveness, and provides a dignified and inspiring arrival experience for millions of travelers each year.

We appreciate the Department's leadership in advancing this important national initiative and welcome the opportunity to support further analysis, refinement, or discussion as the Department and MWAA consider next steps.

Respectfully submitted,

Mark Mosko, AIA, RIBA
Buildings Aviation Market Director

Bermello Ajamil
A WOOLPERT COMPANY

Zaha Hadid Architects

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1

DESIGN / CONCEPT

Bermello Ajamil
A WOOLPERT COMPANY

Zaha Hadid Architects

1.1 WASHINGTON IAD REVITALIZATION

Washington Dulles International Airport is the symbolic international gateway to the United States. More than transportation infrastructure, it is a civic space which celebrates the moment of arrival into the nation – a portal to America that emphasizes its significance to all visitors and a moment of pride for returning citizens. Our vision is to restore the sense of dignity and grandeur to the process of entering the United States – and Make Airports Great Again.

Eero Saarinen's original design transformed aviation architecture by elevating travel into a collective civic experience. His sweeping roofline and disciplined geometry expressed a nation confident in its purpose—modern, optimistic, and unafraid to imagine boldly. Building on that lineage, the proposed redevelopment introduces a new Civic Spine, an organizing axis that frames the passenger journey with coherence and intention. Like Janus, the ancient guardian of thresholds, it looks in two directions at once: one face honoring the ideals and achievements that shaped the country, the other oriented toward the horizon of what the nation continues to build.

The result is a unifying civic threshold, an airport worthy of our nation's capital, that expresses E Pluribus Unum not through symbolism but through order, clarity, and shared experience. It is a gateway grounded in legacy and oriented toward becoming, reflecting a nation that gave the world modern flight, landed a human on the moon, and reshaped everyday life through technological invention, and confident in its enduring capacity to imagine, build, and lead.

1.2 WASHINGTON DULLES INTERNATIONAL (IAD): CURRENT STATUS

Washington Dulles International Airport supports more than 159 destinations across 47 airlines and functions as a major hub for United Airlines. The airport's four runway system, midfield concourses, and AeroTrain network form the backbone of its operational capacity. The revitalization program builds upon this foundation to improve processing efficiency, enhance international arrivals capability, and support long term growth.

1.2.1 KEY ASPECTS OF FLIGHT ALLOCATION AT IAD

- Hub Operations: United Airlines maintains the dominant operational footprint, requiring coordinated gate sequencing and high reliability infrastructure.
- Destinations: Service includes major domestic hubs and key international markets such as London Heathrow and Frankfurt.
- Terminal Configuration: The Main Terminal and concourses A–D are connected by the AeroTrain, with United primarily operating from C and D.
- Airfield Capacity: The current runway system supports up to 600,000 annual operations.
- International Role: IAD is the region's primary international gateway, with significant widebody activity and federal inspection requirements.

1.2.2 RUNWAY SYSTEM AND OPERATIONS

The four-runway system (1L/19R, 1C/19C, 1R/19L, and 12/30) can handle roughly 850 daily flights. The airport generally utilizes North Flow Runways 01) or South Flow (Runways 19) based on wind, with Runway 30 frequently used for departures. A fifth runway (12R-30L) is planned to increase capacity.

- Runway 1L/19R (9,400 ft): Major arrival/departure runway opened in 2008.
- Runways 1C/19C and 1R/19L (11,500 ft): Primary parallel runways supporting most operations.
- Runway 12/30 (10,500 ft): Frequently used for departures, including during tailwind conditions.
- Operational Flow:
  - South Flow: Arrivals on 19C/19L; departures on 19C/19R/30
  - North Flow: Arrivals on 01C/01L/01R; departures on 01R/30
  - Constraints: Wingspan restrictions and unique operational procedures apply to select taxiways and runways (12, 1L and 19R)

1.3 DESIGN OVERVIEW

The design for the revitalized Washington Dulles International Airport is centered around a coherent architectural theme and operational framework that can be applied consistently across all three airfield planning scenarios.

While each option responds to distinct airfield conditions and long term development strategies, the underlying approach remains the same: to create a modern, efficient, and dignified terminal environment that strengthens IAD's role as the Nation's international gateway.

- **Option A** – North Headhouse: Expanding on, and complementing, the historic Saarinen building and its midfield satellites.
- **Option B** – South Headhouse: A new terminal complex to the south, as a counterpoint to Saarinen, and sharing the midfield satellites
- **Option C** – Midfield Terminal: A new terminal complex to the west, entirely separate from the existing airport campus.

The functional revitalization plan includes three key components:

1. New Terminal Processor – building a modern terminal processor Headhouse will offer departing passengers a world-class check-in experience, TSA security processing, and space for arriving passengers to reclaim their checked baggage. In Option A, the new Headhouse will be positioned relative to the current Saarinen processor building and establish a new entry point / façade for the airport on the North.

2. Transitional Space / Civic Spine - a transitional space which will be integrated with the Headhouse to support passenger processing. In Option A, the top level of the existing Saarinen terminal is transformed into a commercial zone, with international arrivals directed to US Customs and Border Protection on the lower level. In Options B and C, this is accomplished by extending the Headhouse roof over these areas.

3. Y-shaped Pier – creating a new Y-shaped pier where all international arrival aircraft can dock. Passengers from these flights will follow separate routes to arrival facilities, while the pier itself will serve both domestic and international departures.

These three elements establish a clear passenger journey, improve operational performance, and reinforce the airport's civic identity through proportion, daylight, and legible spatial organization.

In particular, the use of light in the Civic Spine, a grand, light-filled entrance is designed exclusively for international arrivals, which will provide a daylight-filled experience with open and unobstructed views of the building roofs above, including the iconic Saarinen roof in Option A.

↑

1.3.1 PASSENGER FLOWS | DEPARTURES

Departing passengers enter the new processor building on Level 2, arriving either from the landside drop off zone or directly from the Metro station. From the Entry Hall, they move through a clear and spacious check in zone before progressing into the central piazza that sits between the new Headhouse and the historic Saarinen terminal. TSA security screening is located on both sides of this piazza, allowing passenger flows to distribute efficiently.

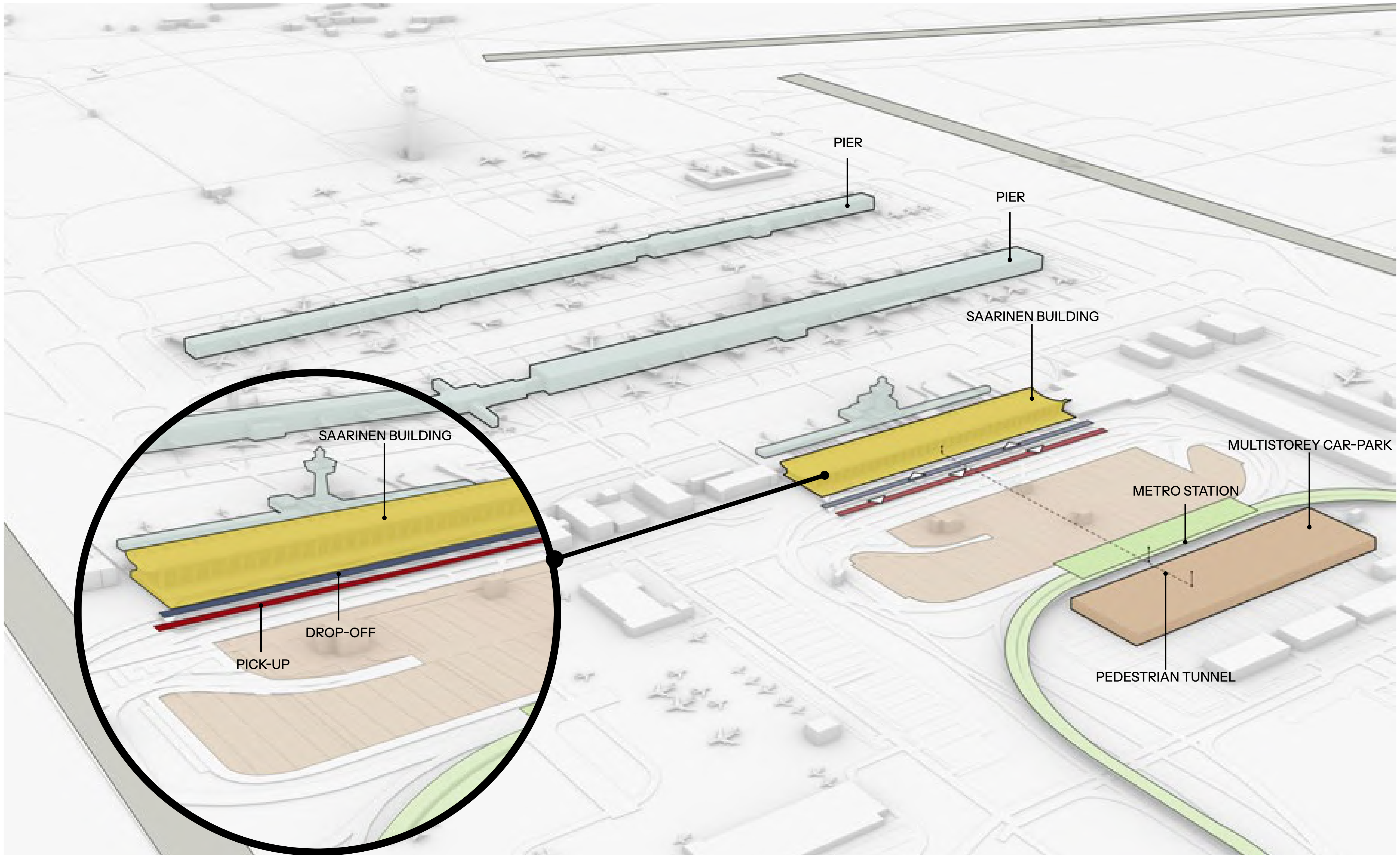
After clearing security, international travelers remain on Level 2 as they proceed toward their departure gates, passing through the commercial hall beneath the Saarinen roof before continuing to the Y shaped pier. Domestic passengers departing from the Y shaped pier follow the same sequence. Those traveling on domestic flights from other concourses descend within the commercial hall to the Automated People Mover level, where the system provides direct access to the satellite terminals.

1.3.2 PASSENGER FLOWS | ARRIVALS

International arrivals enter Level 3 of the Y-shaped pier and progress along its central axis, descending into a spacious, daylight-filled mall area on Basement Level B1. From there, passengers continue at this level through US Customs and Border Protection, baggage reclaim, and customs, before entering the Arrival Hall in the new processor building, all while enjoying views of the distinctive overhead roofing.

Domestic arrivals in the Y-shaped pier remain on Level 2, utilizing the integrated departure and arrival circulation before descending in the original Saarinen building to Level B1 for baggage claim and exiting through the shared domestic-international arrivals hall to landside facilities. Domestic arrivals from the satellites reach the Saarinen building via the APM at Level B2 and then ascend to Level B1, where they join other domestic arrivals enroute to baggage claim and the arrivals hall.

CURRENT SCENARIO



1.4 OPTIONEERING

The three planning scenarios presented apply a consistent architectural and operational framework to different locations within the airfield. Each option reflects a distinct balance of legacy integration, airfield geometry, construction logistics, and long term expansion potential. While the spatial conditions vary, all three options maintain the same core components—a new terminal processor, a transitional civic space, and a Y shaped pier—ensuring a unified passenger experience and a coherent architectural identity across the program.

1.4.1
OPTION A – NORTH HEADHOUSE

Option A builds directly upon the existing airport campus, introducing a new headhouse immediately north of the historic Saarinen terminal. This approach strengthens the current landside configuration and provides a clear strategy for integrating the Saarinen building into a modernized processing environment. The new arch shaped headhouse accommodates expanded Check in, Security, and Baggage Claim functions, while the upper level of the Saarinen terminal is repurposed as a commercial hall that preserves its architectural character.

A central piazza located between the new and historic structures creates a shared civic space that organizes passenger movement and reinforces the airport's identity. The Y shaped pier extends from this combined terminal complex, supporting international arrivals and dual use departure gates. Option A offers the most direct path to modernization, leveraging existing infrastructure while elevating the passenger experience through a coherent architectural sequence.

1.4.2
OPTION B – SOUTH HEADHOUSE

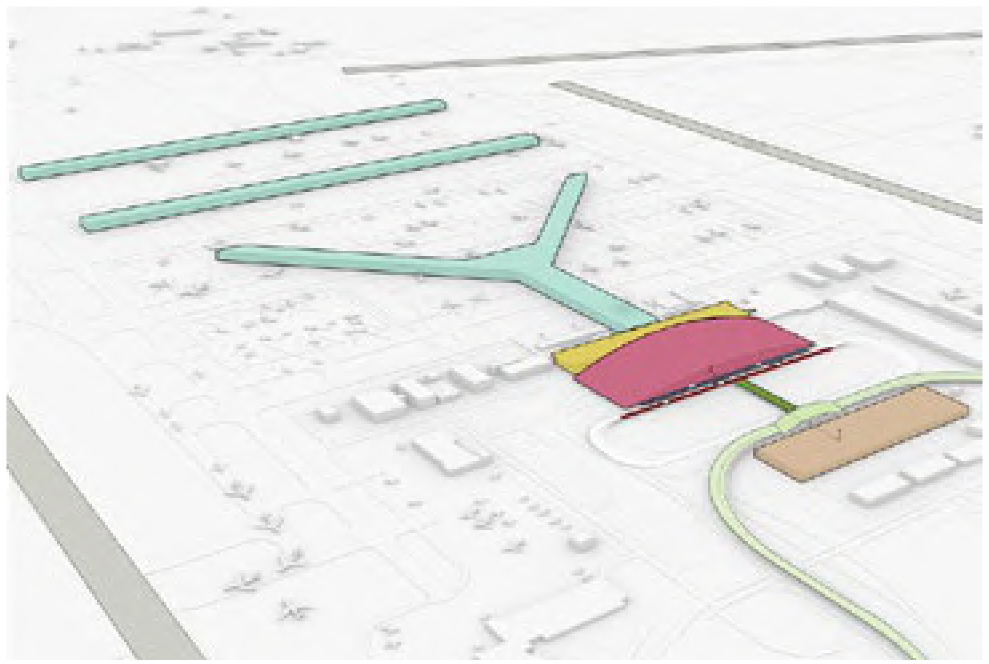
Option B applies the same architectural and operational principles as Option A but relocates the new terminal processor to the south side of the airfield. This creates a balanced landslide and enables the Saarinen terminal to be repurposed or maintained as a secondary headhouse for additional airline tenants or specialized functions. The south terminal complex consists of two new processing buildings organized around a central plaza, providing a clear and efficient passenger sequence consistent with Option A.

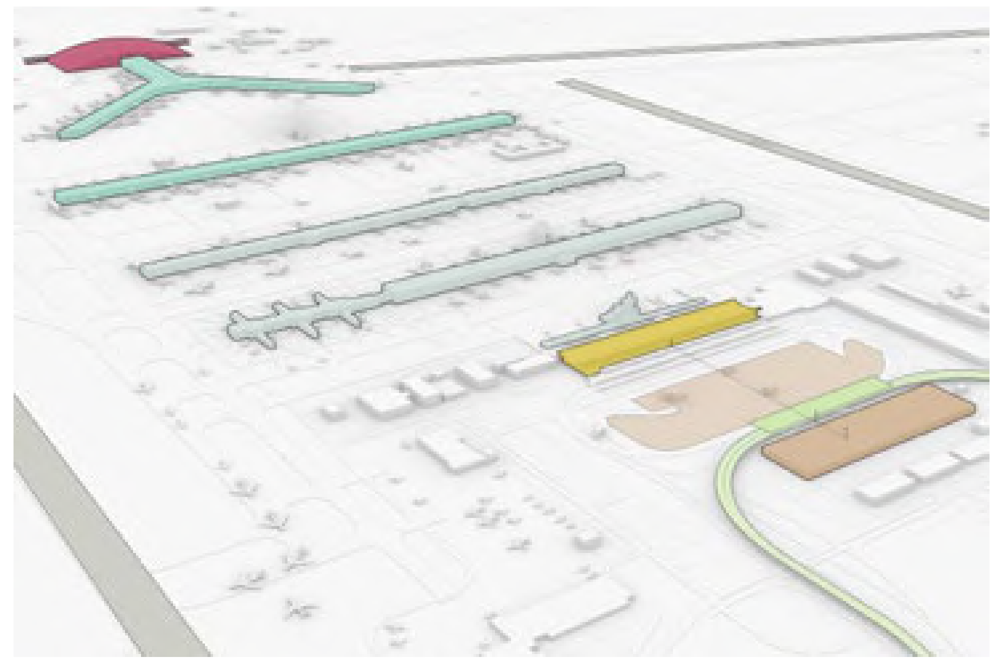
This configuration allows MWAA to develop a new landside frontage with improved roadway access and future expansion potential. The Y shaped pier and associated circulation systems remain consistent with Option A, ensuring a unified design language across both scenarios. Option B offers a strong long term development platform while maintaining operational continuity during construction.

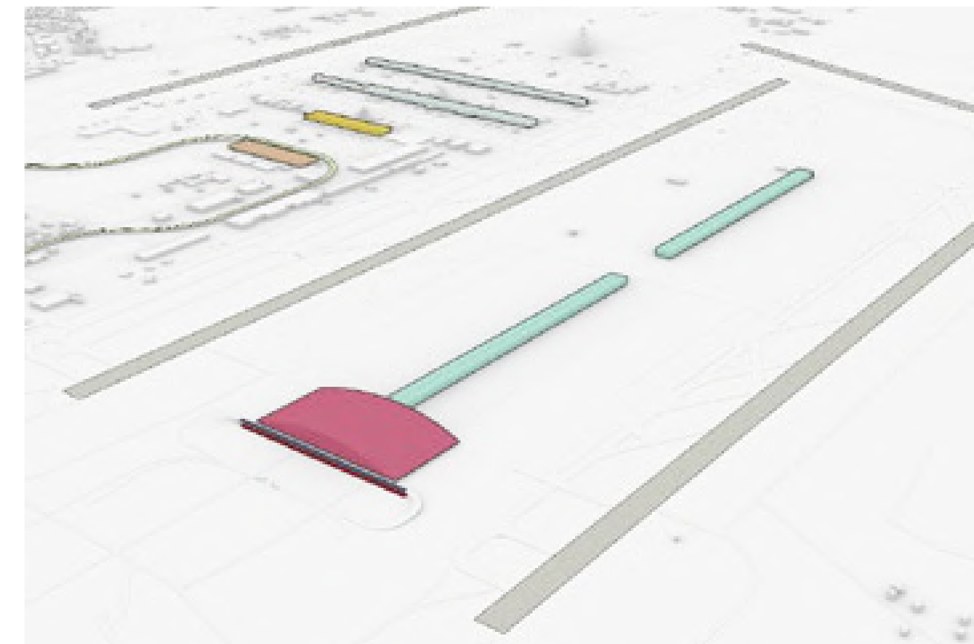
1.4.3
OPTION C – MIDFIELD TERMINAL

Option C introduces a clean slate terminal district in the midfield located between Runway 19C and Runway 19R , independent of the existing Saarinen building. This option maximizes construction flexibility and operational separation, enabling a fully modernized terminal environment to be delivered with minimal interference to ongoing airport operations. The headhouse and Y shaped pier follow the same organizational logic as Options A and B but are adapted to the narrower airfield envelope between the central and western runways.

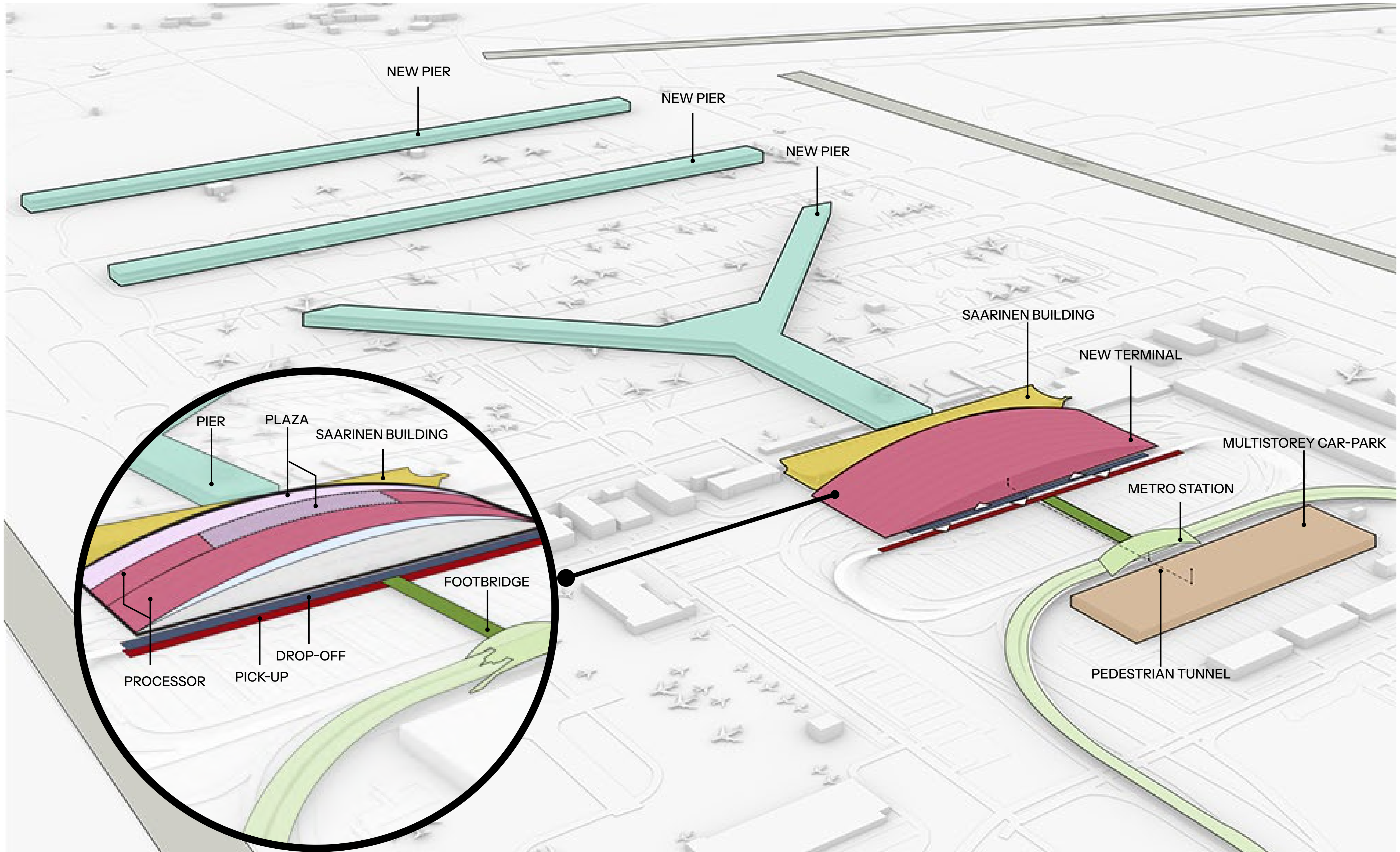
To maintain required aircraft clearances and gate capacity, the pier satellites are designed as narrower and shorter structures, calibrated to the spatial constraints of the midfield site. This approach supports a high performance terminal district optimized for future growth, airfield efficiency, and long term adaptability. Option C represents the most transformative scenario, offering a new terminal campus that can evolve independently of the existing airport infrastructure.


OPTION A


OPTION B

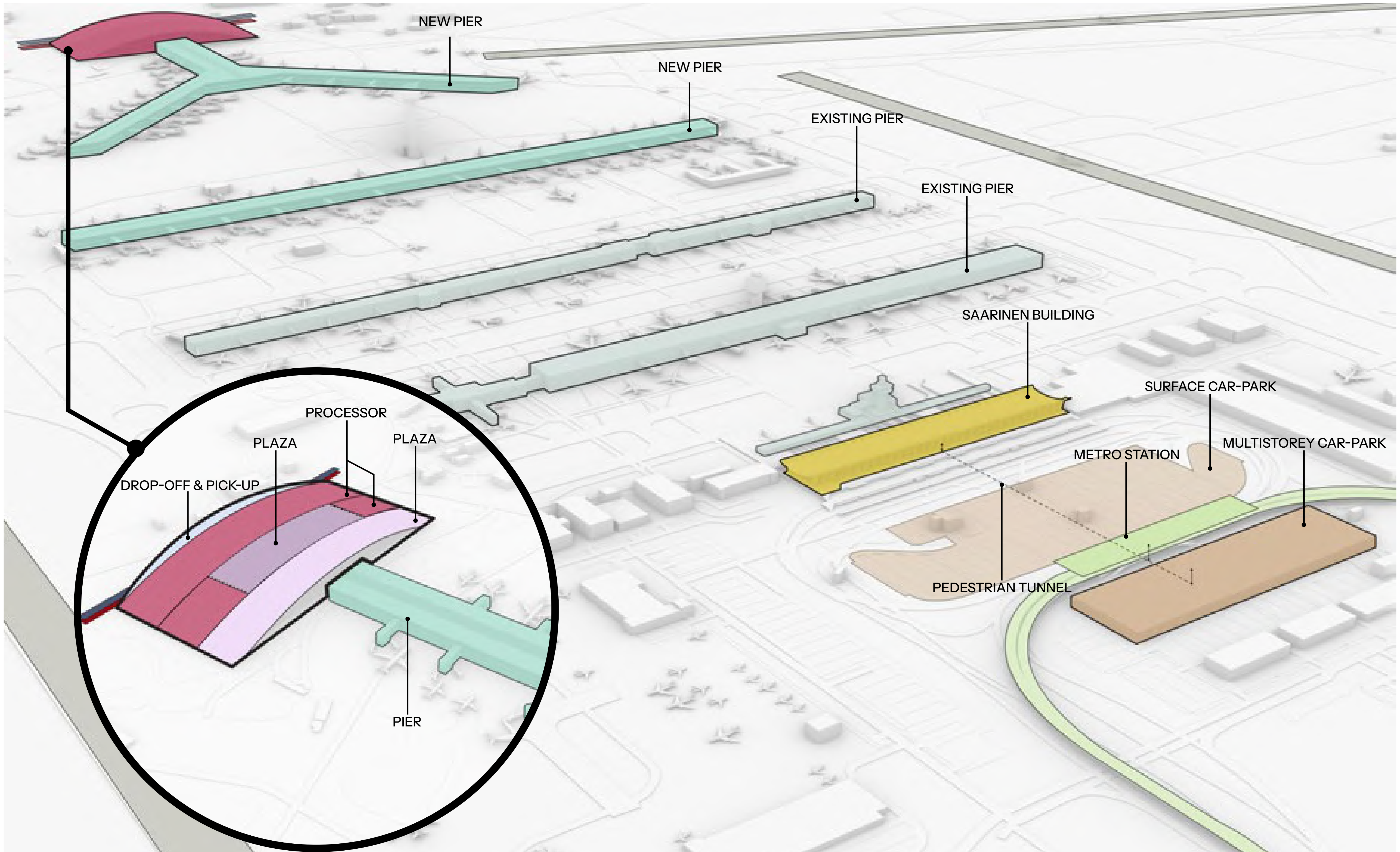

OPTION C

OPTION A

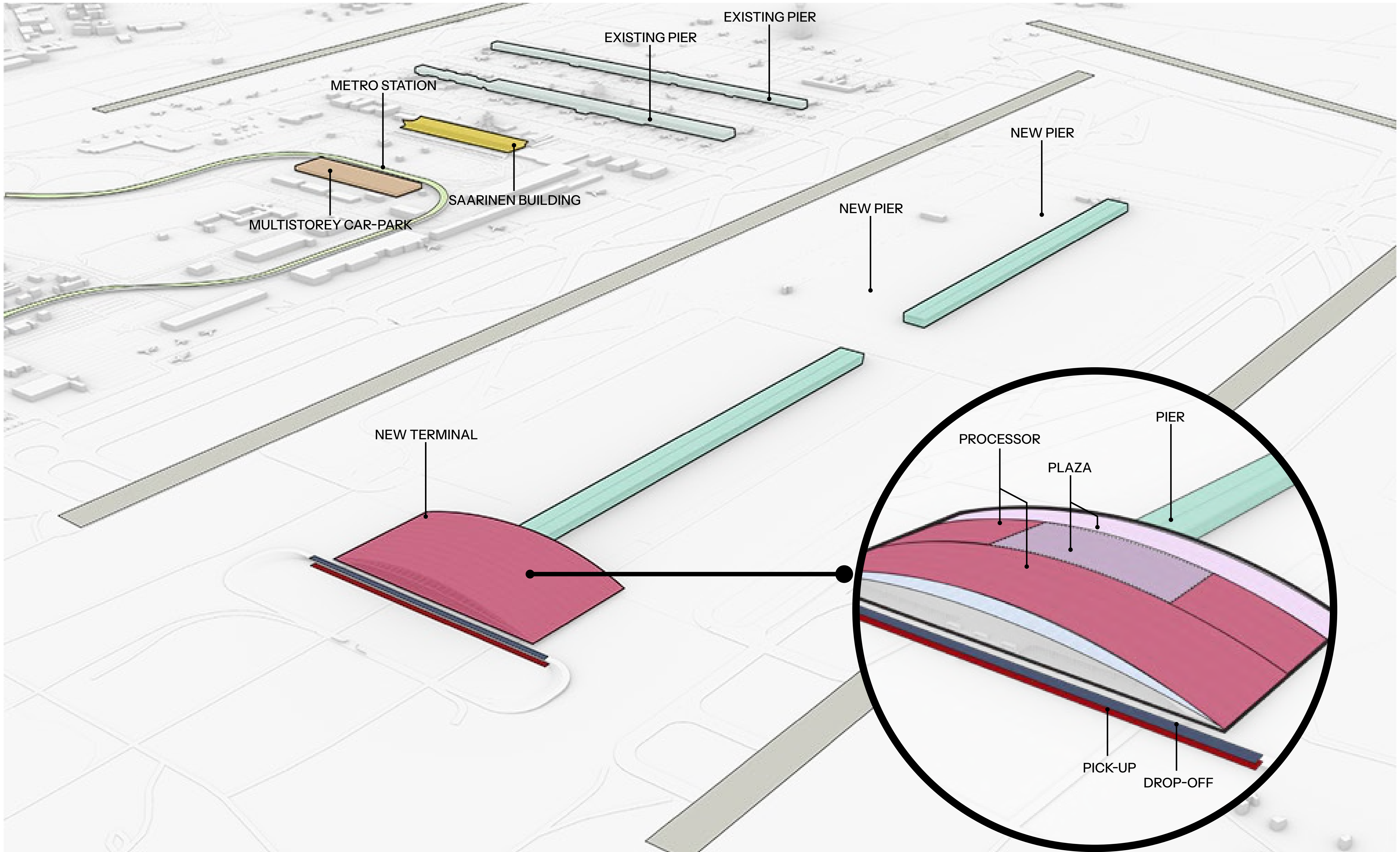


NEW PIER
NEW PIER
NEW PIER
SAARINEN BUILDING
NEW TERMINAL
MULTISTOREY CAR-PARK
METRO STATION
PEDESTRIAN TUNNEL
PIER
PLAZA
SAARINEN BUILDING
FOOTBRIDGE
DROP-OFF
PICK-UP
PROCESSOR

OPTION B


NEW PIER
NEW PIER
EXISTING PIER
EXISTING PIER
SAARINEN BUILDING
SURFACE CAR-PARK
MULTISTOREY CAR-PARK
METRO STATION
PEDESTRIAN TUNNEL
PROCESSOR
PLAZA
PLAZA
DROP-OFF & PICK-UP
PIER

OPTION C


EXISTING PIER
EXISTING PIER
METRO STATION
SAARINEN BUILDING
MULTISTOREY CAR-PARK
NEW PIER
NEW PIER
NEW TERMINAL
PROCESSOR
PLAZA
PIER
PICK-UP
DROP-OFF


DONALD J. TRUMP TERMINAL

1.5 DESIGN ELEMENTS

1.5.1
THE GRAND ARCH

The approach to the terminal is conceived as the beginning of a civic sequence rather than a conventional curbside zone. A broad, unobstructed forecourt establishes a calm and orderly threshold, reinforcing the idea that arrival at the Nation's capital is a shared public moment. The terminal's sweeping, continuous roofline reads as a single, confident gesture—clear, restrained, and legible at a national scale—while the transparent façade conveys openness, accessibility, and trust.

The architecture communicates through proportion, symmetry, and light, relying on the enduring tools of civic design rather than applied ornament. A grove of trees frames the entry, grounding the experience and humanizing the scale, reminding travelers that this gateway is fundamentally a public institution. The building stands with quiet authority—neither imposing nor recessive—projecting stability, aspiration, and welcome.

As the primary landside threshold to the airport, the Grand Arch embodies core civic ideals: clarity over clutter, openness over opacity, and confidence expressed through disciplined form. It positions the terminal not merely as infrastructure, but as a civic space where first and last impressions of the United States are shaped through dignity, order, and shared experience.

1.5.2
DEPARTURES HALL

The Departures Hall is conceived as a large, uncluttered interior volume defined by clarity, structure, and controlled daylight. A long span roof with a continuous skylight introduces natural light deep into the space, providing intuitive orientation and a subtle sense of time. Light enters at a high angle and moves across the floor throughout the day, creating a calm rhythm that guides passengers toward the airfield.

Along the perimeter, slender vertical mullions form a structural colonnade that establishes scale and order. The ceiling plane remains smooth and uninterrupted, reinforcing themes of lift and flight without relying on literal imagery. A restrained material palette—light toned floors, pale structural elements, and clear glazing—ensures the space feels timeless, legible, and civic in character.

Within this open field, passengers move naturally, with opportunities for pause and orientation rather than congestion. The architecture sets the tone, offering an expansive yet human scaled environment that emphasizes collective movement and the shared experience of departure. As the counterpoint to the ordered Civic Spine of arrival, the Departures Hall expresses openness and release, transitioning passengers from the controlled interior sequence toward the broader horizon of the airfield and sky.

1.5.3
THE GARDEN

The airside garden functions as a civic room within the terminal, extending the logic of the Civic Spine into landscape. It introduces a moment of pause within the departure sequence, offering a humane space shaped by daylight, nature, and proportion. The garden reinforces the project's core values—dignity through restraint, confidence through order, and transparency through openness.

A grove of trees softens the airside environment and provides a sense of calm, grounding the experience within a landscape that feels both restorative and intentional. In Option A, the garden sits between the new headhouse and the Saarinen terminal, forming one of several stations along the Civic Axis. The space acts as a buffer parallel to the terminal façade, offering a controlled outdoor indoor condition that feels open yet protected.

In Options B and C, a high transparent canopy spans the garden, filtering daylight and creating a luminous, temperate environment. The interplay of light surfaces, structural ribs, and landscape elements maintains a coherent spatial character across all scenarios. The garden becomes a place of rest and orientation, reinforcing the terminal's civic identity while supporting the practical needs of contemporary air travel.

1.5.4
ARRIVALS (CIVIC) SPINE

The Arrivals Spine serves as the primary civic space for international arrivals, forming a ceremonial counterpart to the arch shaped terminal. A long, uninterrupted linear corridor draws passengers forward, establishing a clear procession from aircraft to the nation's interior. A continuous skylight washes the spine in natural daylight, making light itself the central organizing element and an intuitive guide for movement.

The walls are monumental yet restrained, constructed from solid, civic materials that convey permanence and seriousness without relying on ornament. Key national inscriptions and state seals are integrated directly into the architecture as infrastructural text—embedded rather than applied—reinforcing the space's civic purpose.

The elongated proportions heighten the sense of transition, while the floor's parallel bands create a calm rhythm that supports collective movement. Passengers naturally gather and orient themselves without feeling rushed or dispersed. The architecture elevates each individual while maintaining a sense of equality and shared experience.

Conceptually, the Arrivals Spine embodies the project's central idea: many people, many origins, moving together through one ordered space. It operates as a threshold between arrival and belonging, past ideals and future participation, expressed through light, proportion, and purposeful sequence rather than spectacle.

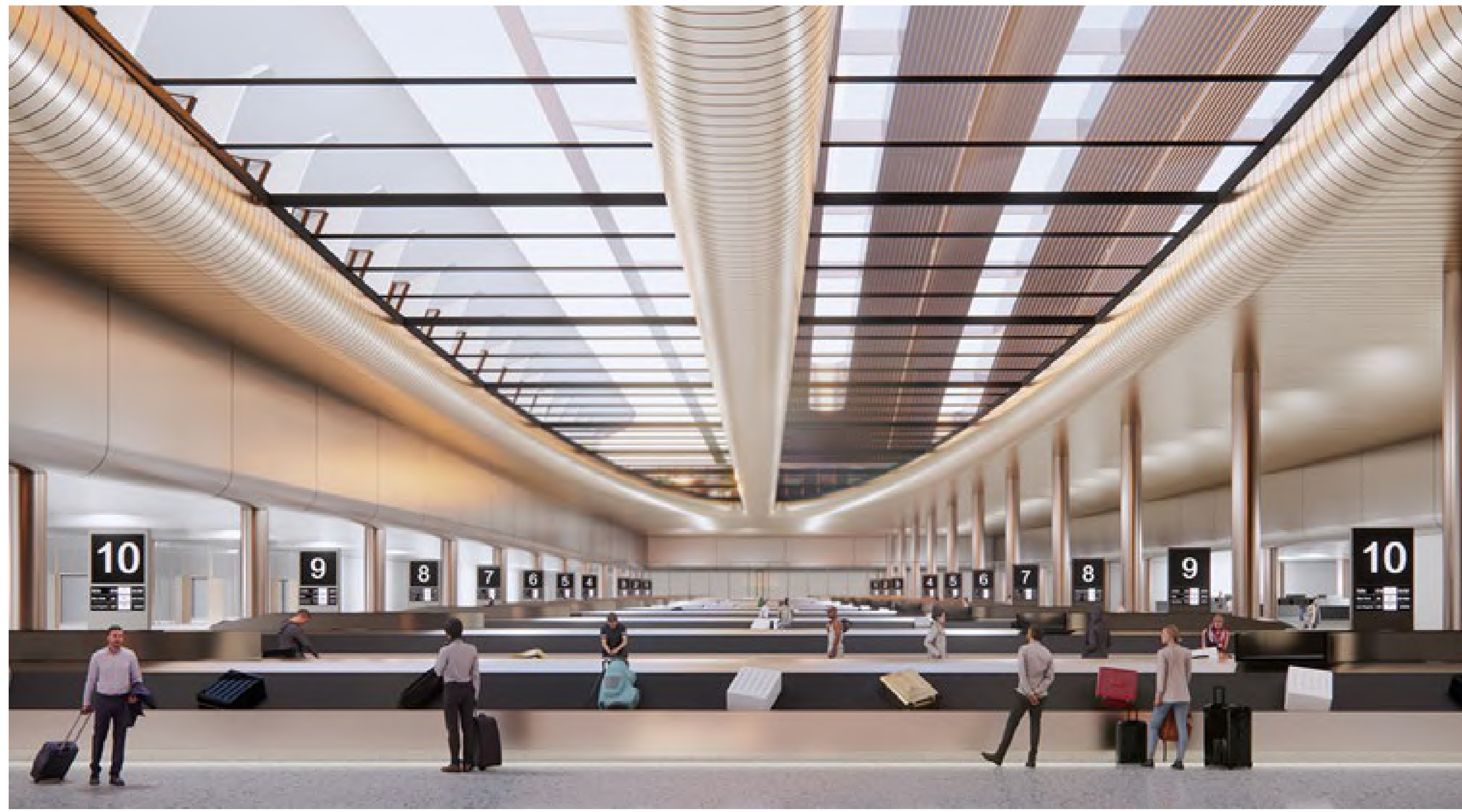
1.5.5
BAGGAGE HALL

The Baggage Hall is designed as a broad, horizontally oriented space that allows arriving passengers to locate and access their baggage clearly and comfortably. A series of oculus skylights introduces daylight deep into the hall, providing orientation and reinforcing the sense of arrival. The structural grid is precise and legible, establishing order without visual complexity.

Below the skylights, the ceiling transitions into a continuous, softly contoured surface supported by slender columns that branch gently at their tops. These forms recall Saarinen's expressive structural language while remaining grounded in contemporary construction logic. The material palette—pale surfaces, diffused light, and softly shadowed edges—creates a calm, civic atmosphere rather than a purely utilitarian one.

Passengers gather naturally beneath the canopy of columns, with generous spacing that avoids the congestion typical of arrival halls. The architecture guides movement and sets a tone of calm completion as the journey transitions toward the landside environment. The skylight cutouts provide both functional illumination and a symbolic connection to the sky, marking the final moment of the arrival sequence.

Together, these elements reinforce the project's broader ambition: to treat arrival as a civic experience, carried consistently from threshold to completion.

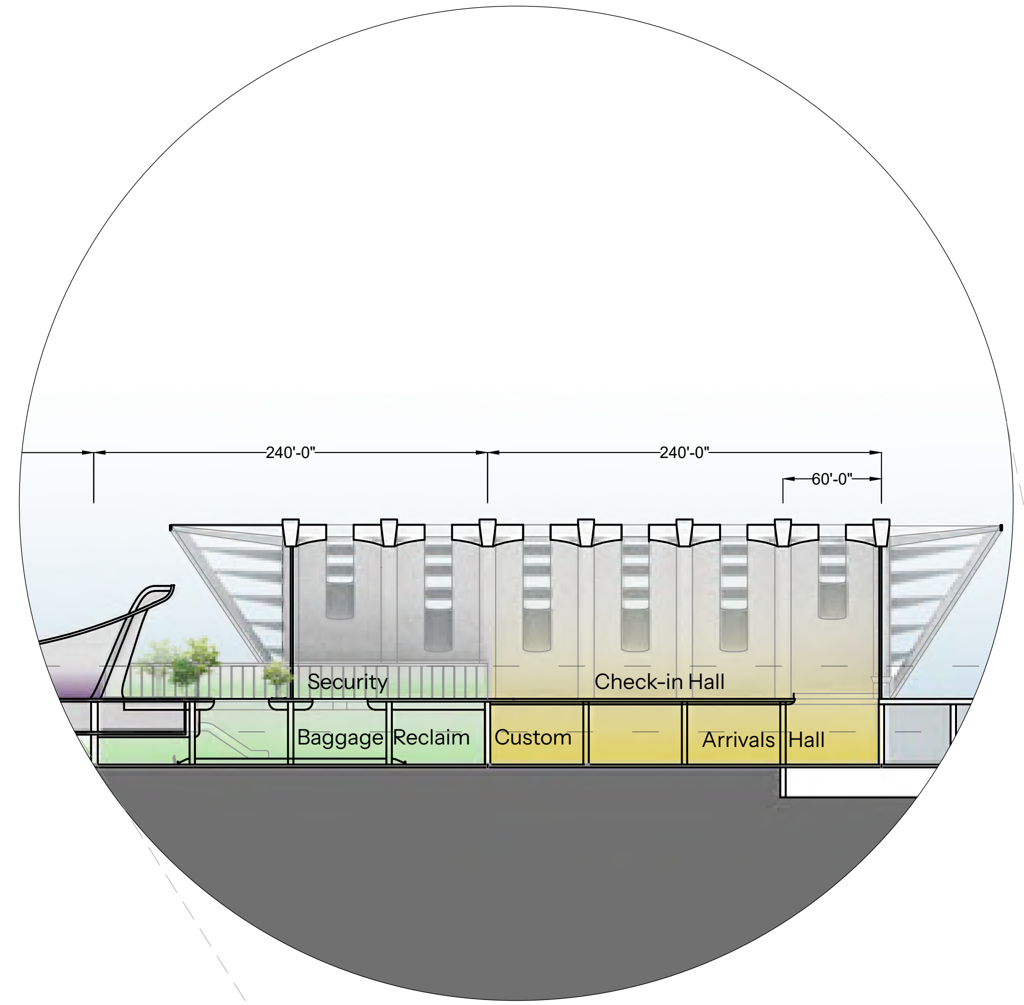


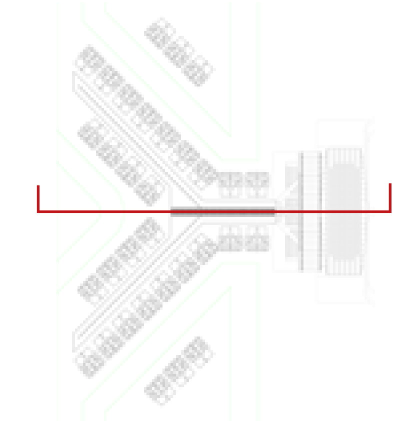

DONALD J. TRUMP TERMINAL

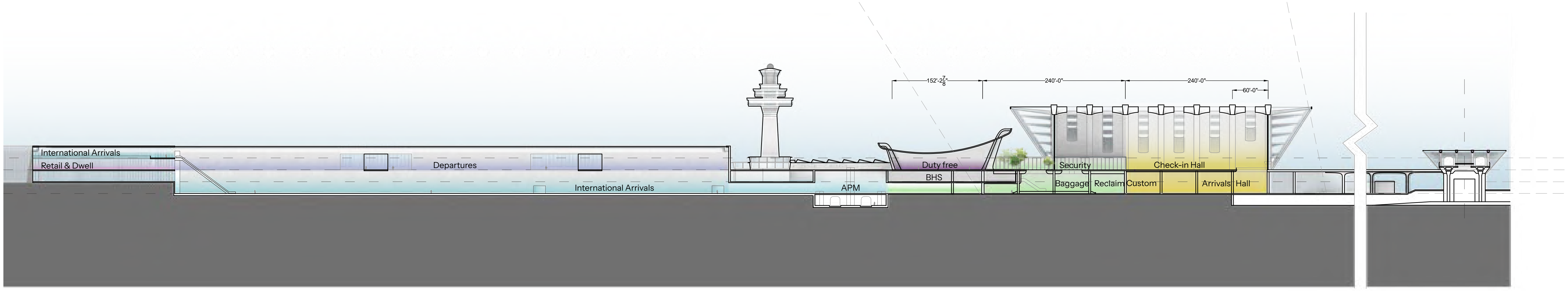

DONALD J. TRUMP TERMINAL

Bermello Ajamil & Partners | Zaha Hadid Architects

1.6 SECTION


240'-0"
240'-0"
60'-0"
Security
Check-in Hall
Baggage
Reclaim
Custom
Arrivals
Hall




International Arrivals
Retail & Dwell
Departures
International Arrivals
APM
Duty free
BHS
Security
Check-in Hall
Baggage
Reclaim
Custom
Arrivals
Hall
240'-0"
240'-0"
60'-0"

1.7 PLANS

The terminal building accommodates international and domestic passenger traffic and provides connectivity to two concourses via the Aerotrain.

International and domestic departing passengers access check-in at level 2 for boarding pass issuance and baggage drop. Following check-in, passengers proceed to the enclosed plaza, which is also accessible to the public. This space provides a final opportunity for farewells and offers views toward the Saarinen building. Security screening areas are located on both sides of the plaza. After clearing security, passengers enter the duty-free area and airline lounges, which lie beneath the Saarinen roof. From this area, passengers may access the concourses via the Aerotrain at Level B2. Passengers departing from gates within the main terminal continue to the boarding areas via the central canyon and along the piers.

Arriving international passengers deplane and ascend to Level 3, where they enter the arrivals corridors. At the end of the corridors, escalators and elevators bring passengers down to level B1, offering an opportunity for views into the central canyon. Passengers then proceed through the canyon to U.S. Customs and Border Protection (USCBP) and baggage claim. After collecting baggage, passengers move through customs control and exit the terminal via the arrivals hall. International passengers arriving at the main terminal spine descend directly to level B1 where they join the international arrivals circulation route.

Arriving domestic passengers proceed through the piers and the central canyon at level 2, crossing into the Saarinen building via connecting bridges and descending to level B1 for baggage claim and access to the arrivals hall. Domestic passengers arriving via the Aerotrain at level B2 ascend to level B1 and follow the same route.

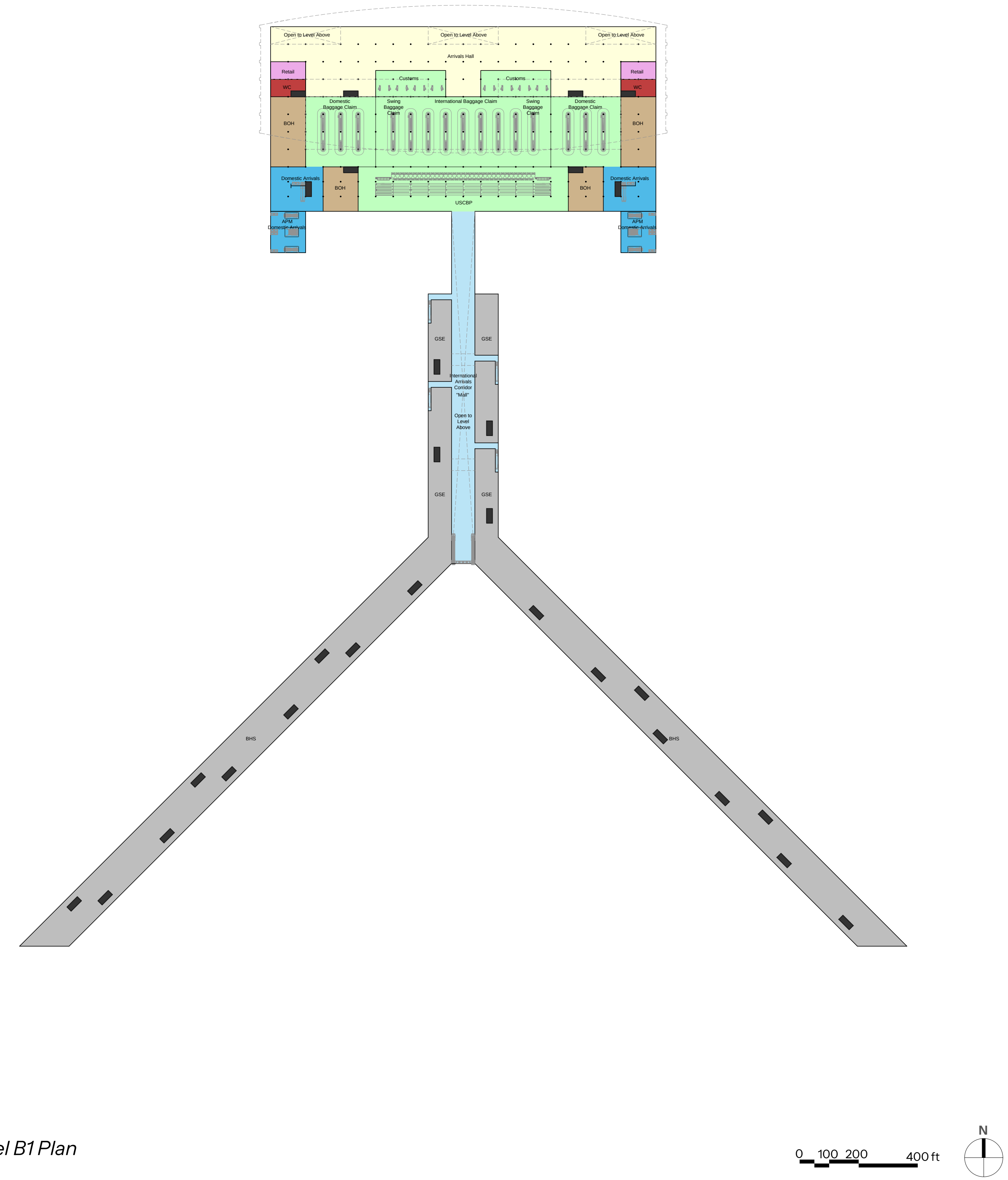


Fig 1. Level B1 Plan

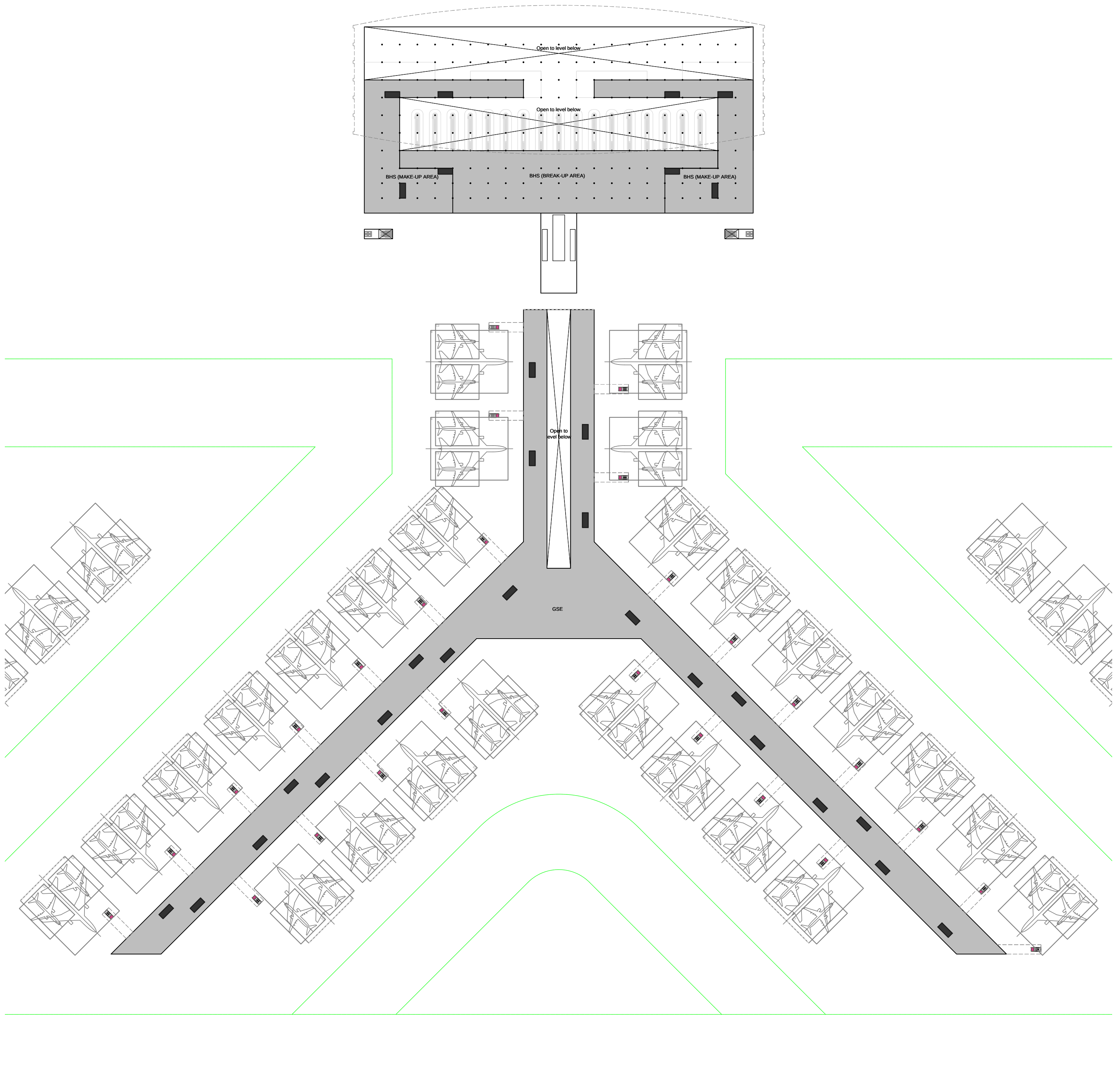


Fig 2. Level 1 Plan

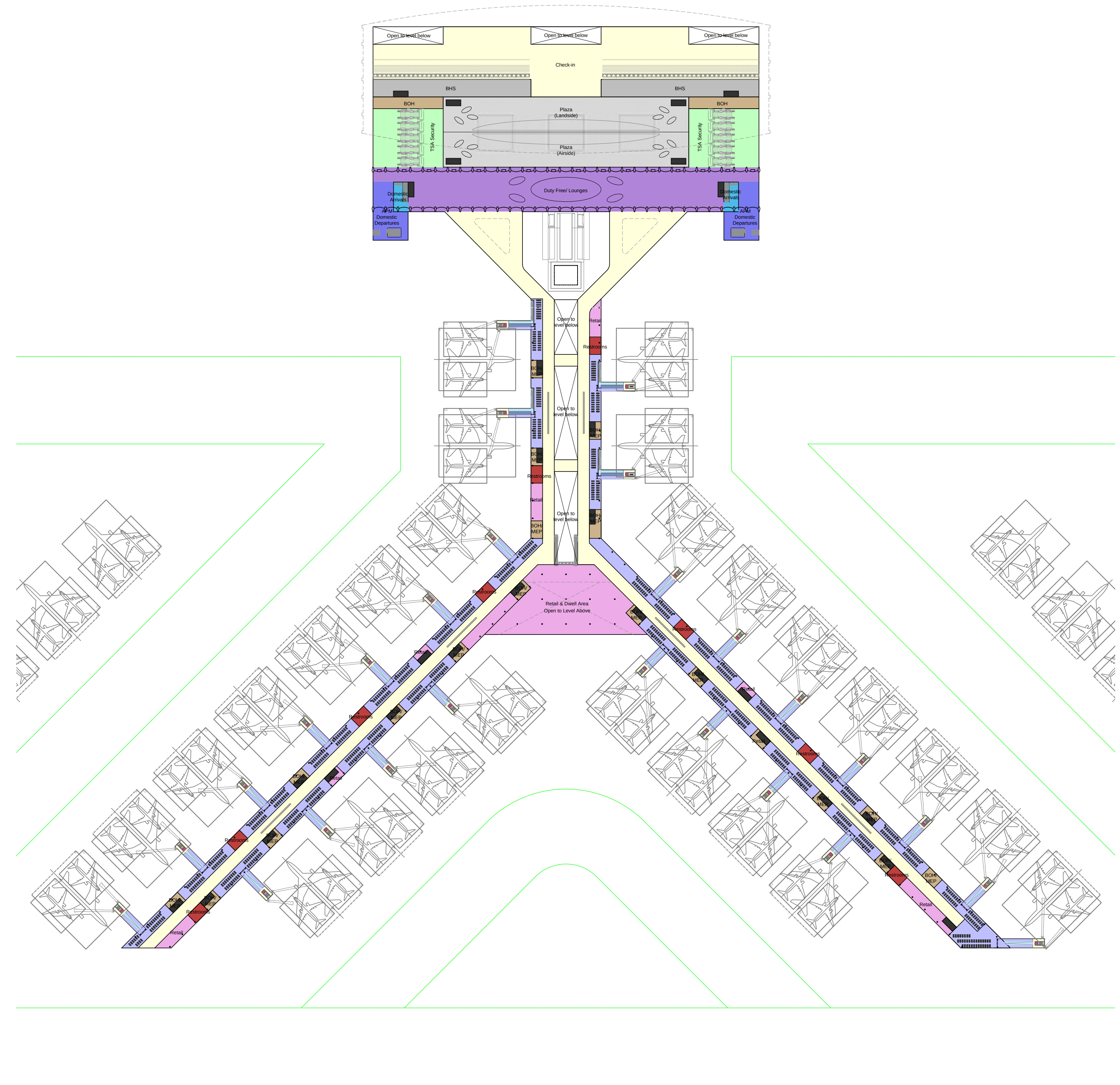
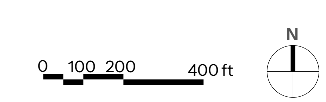


Fig 3. Level 2 Plan



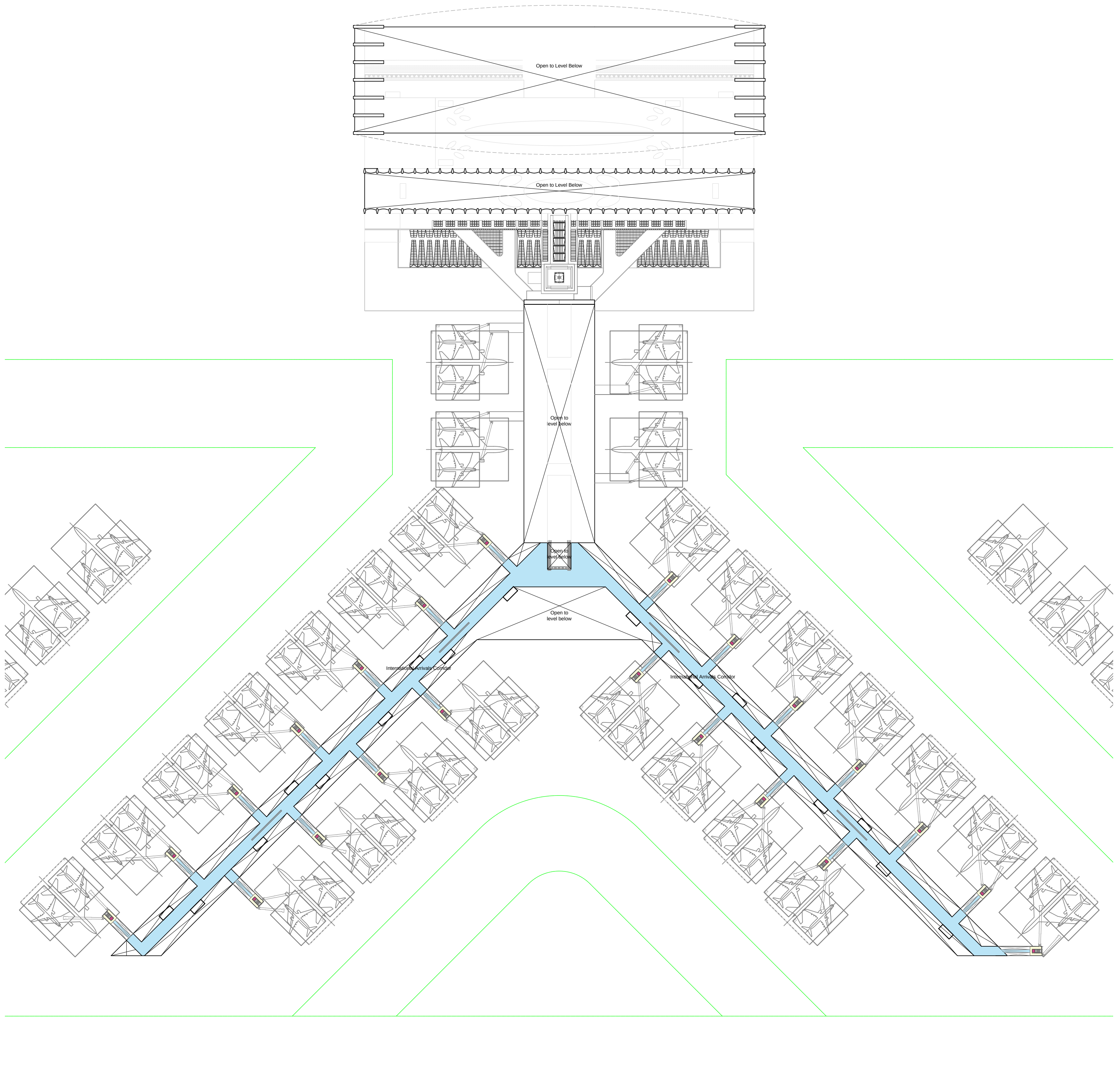


Fig 4. Level 3 Plan

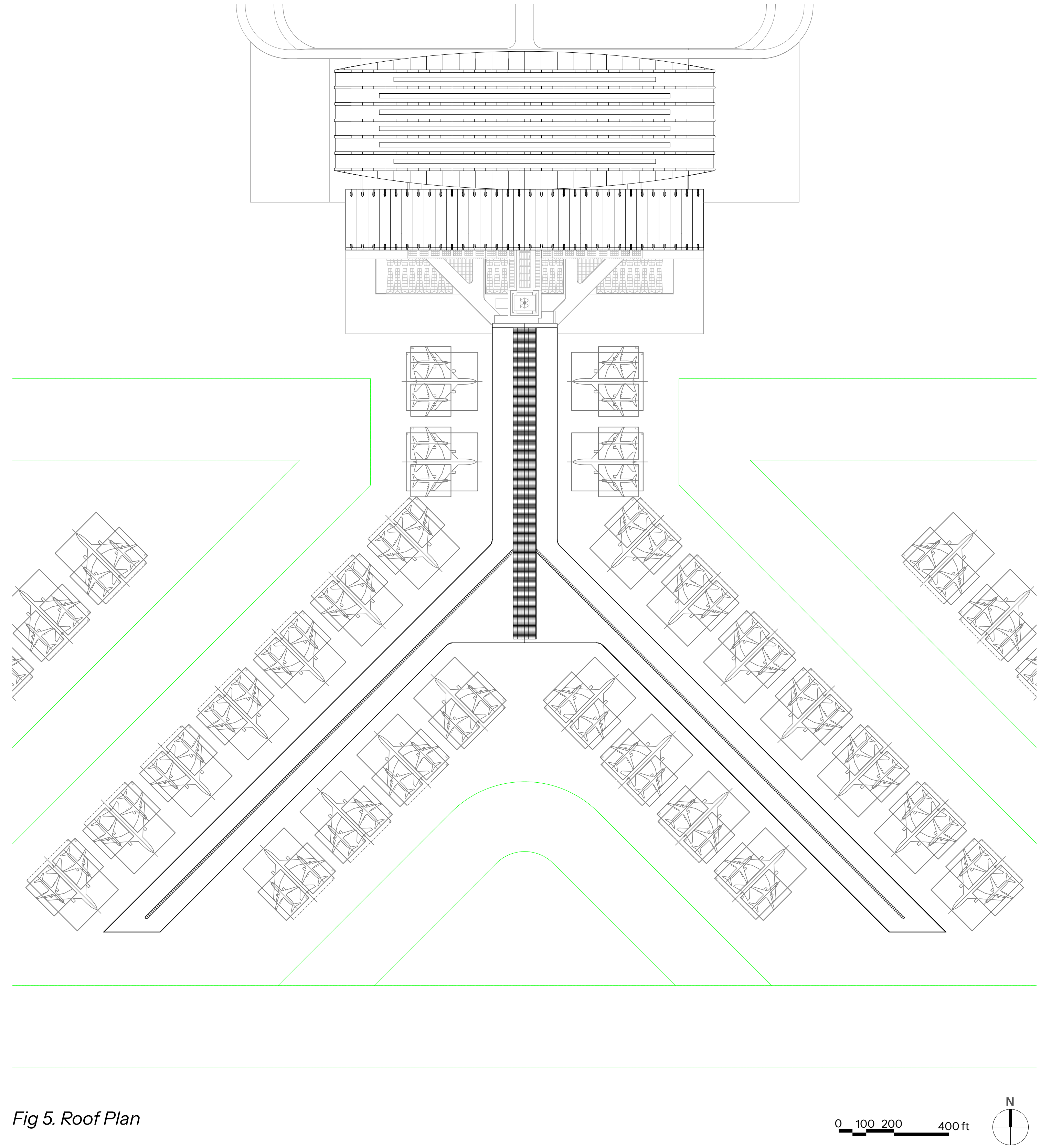
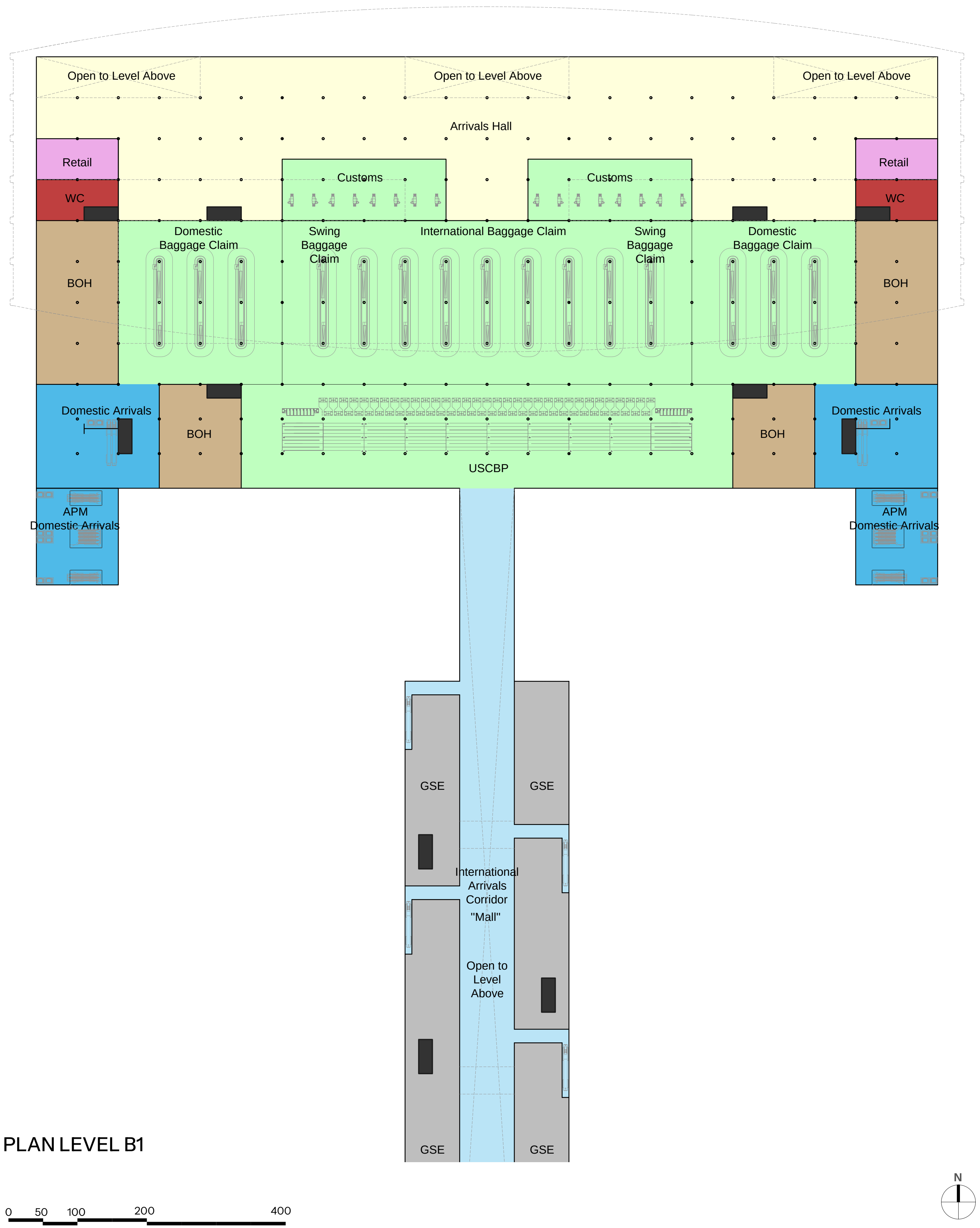


Fig 5. Roof Plan


Open to Level Above
Open to Level Above
Open to Level Above
Arrivals Hall
Retail
Retail
Customs
Customs
WC
WC
Domestic Baggage Claim
Swing Baggage Claim
International Baggage Claim
Swing Baggage Claim
Domestic Baggage Claim
BOH
BOH
Domestic Arrivals
BOH
BOH
Domestic Arrivals
USCBP
APM Domestic Arrivals
APM Domestic Arrivals
GSE
GSE
International Arrivals Corridor "Mall"
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GSE
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PLAN LEVEL B1
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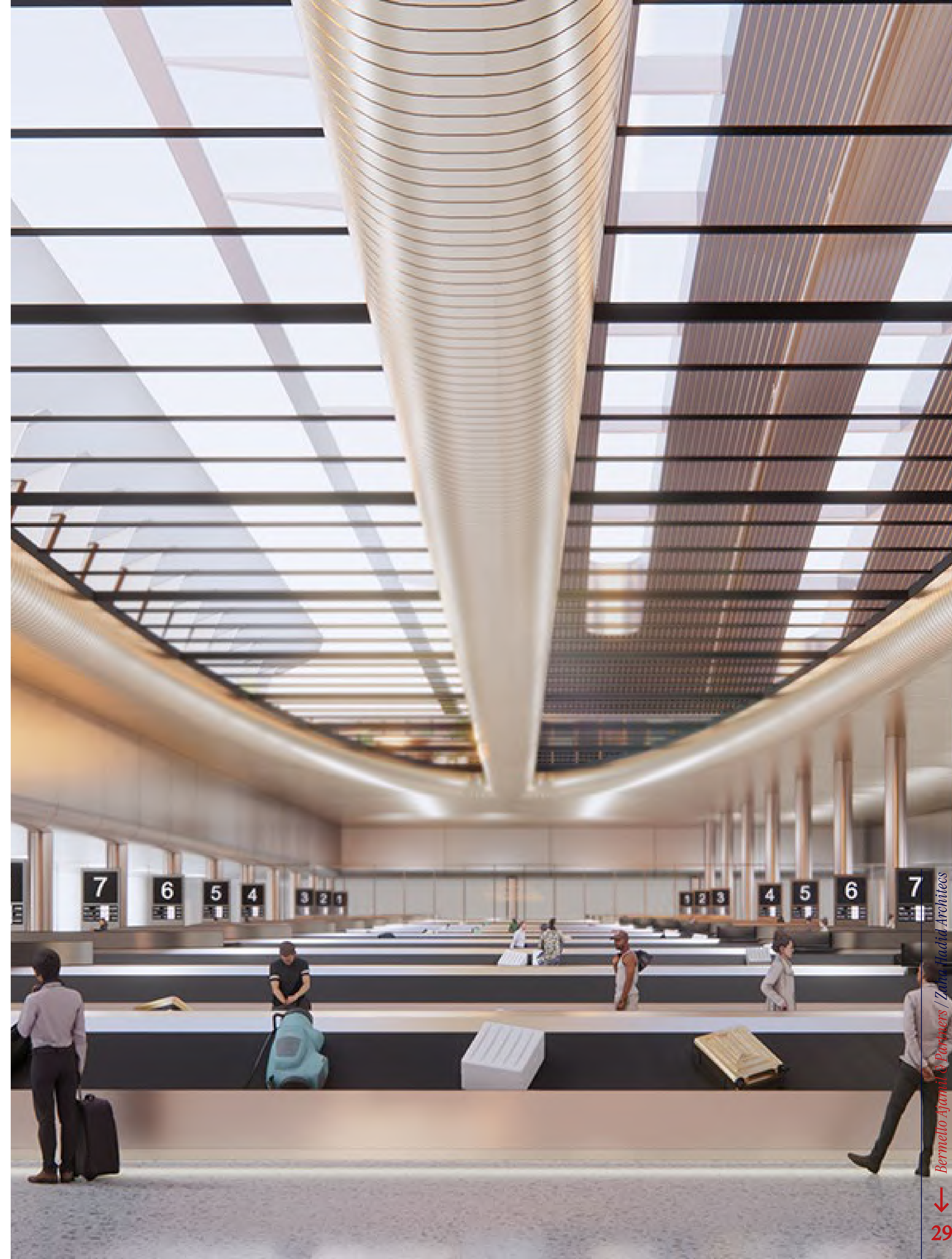
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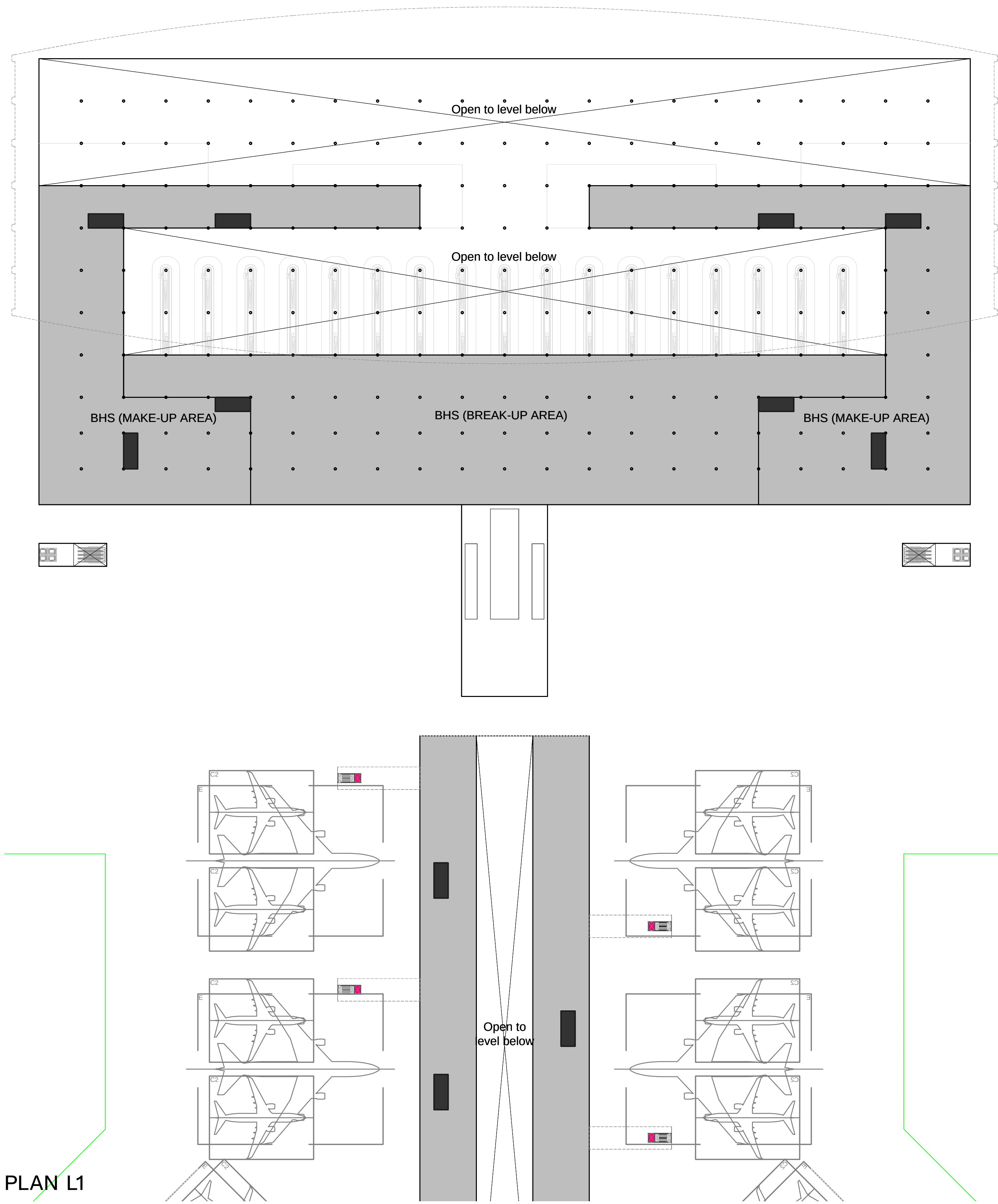
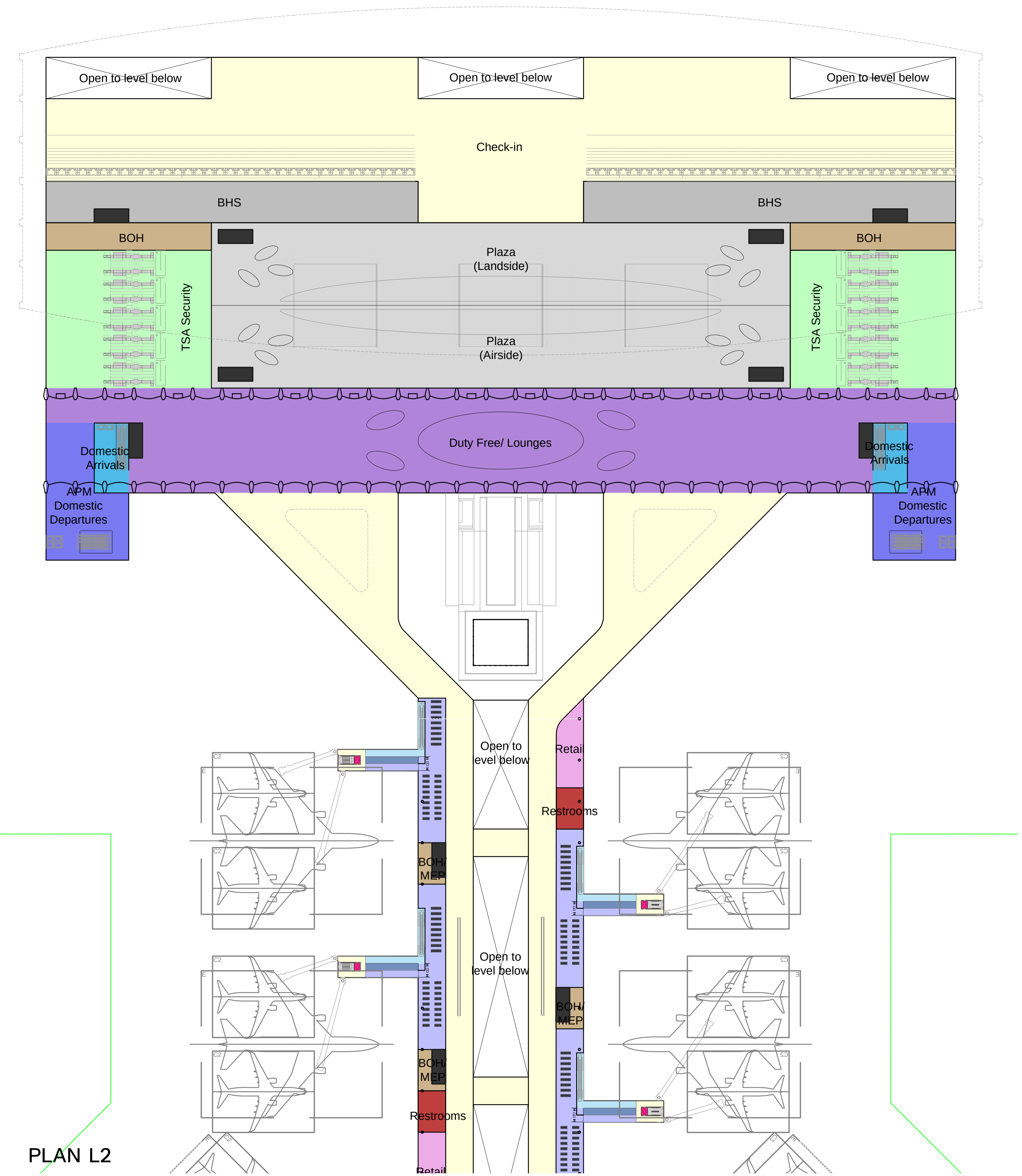


PLAN L1



PLAN L2

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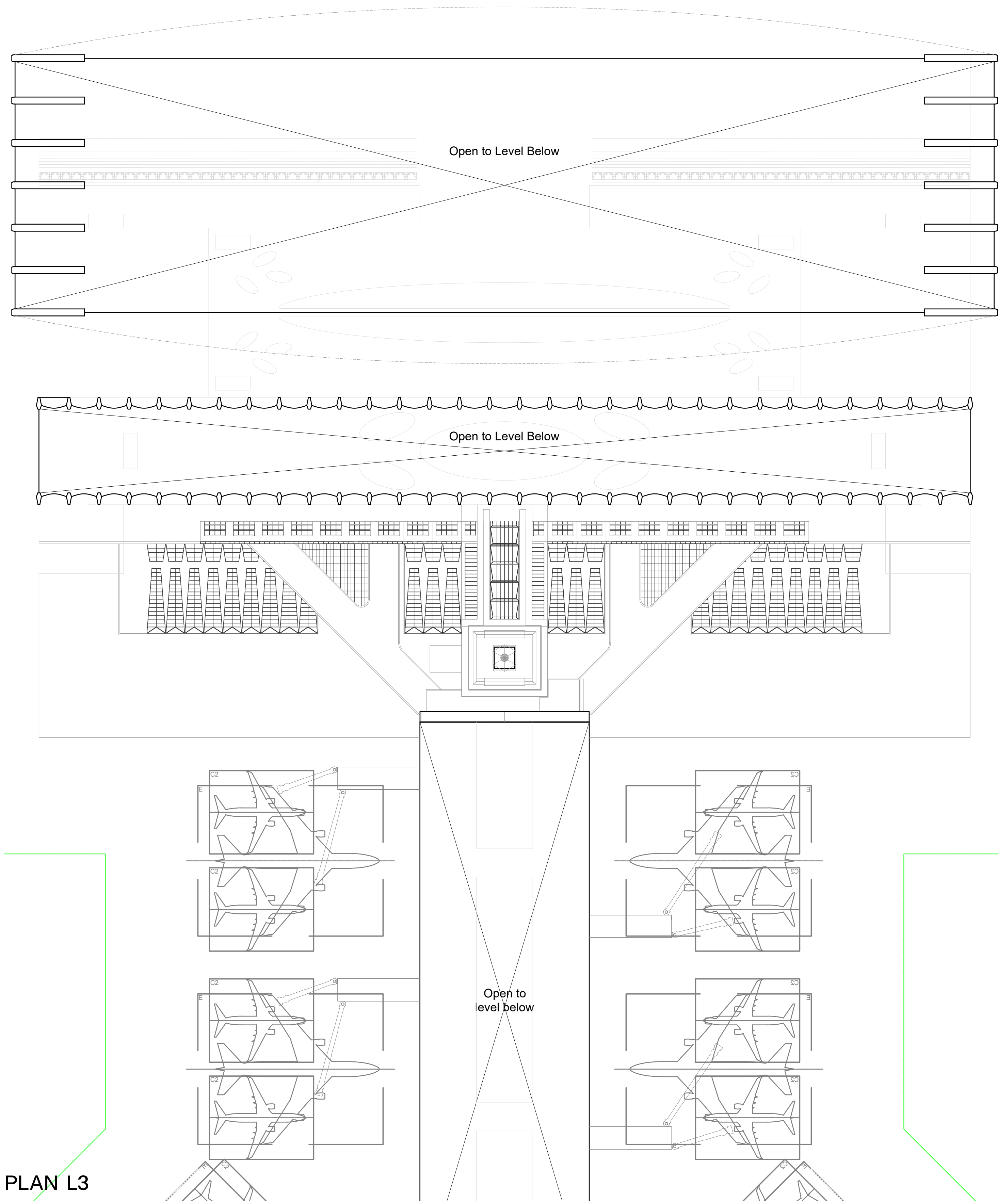
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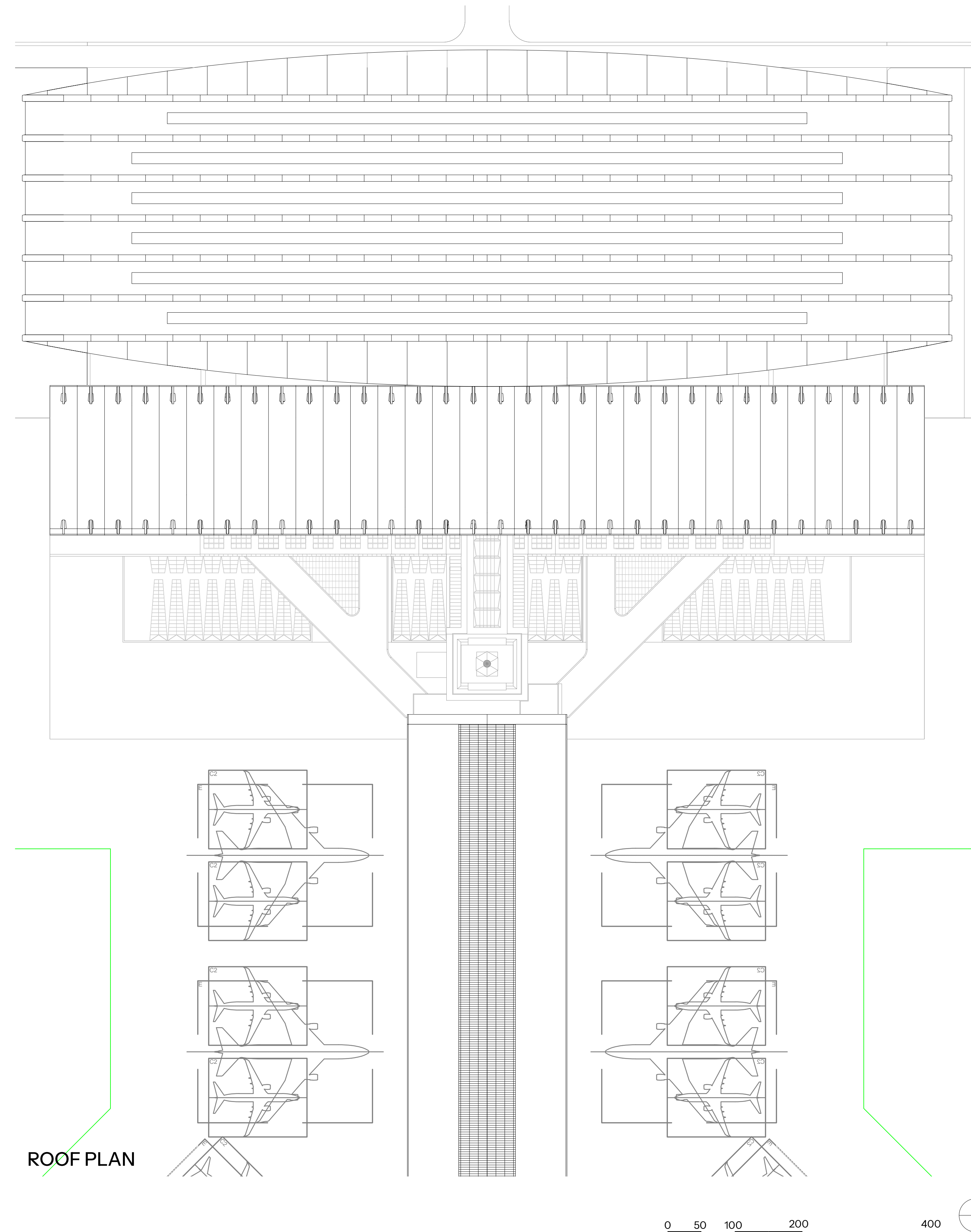
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1.8 PASSENGER FLOWS

INTERNATIONAL ARRIVALS
DOMESTIC ARRIVALS
DOMESTIC ARRIVALS (APM)
INTERNATIONAL DEPARTURES
DOMESTIC DEPARTURES
DOMESTIC DEPARTURES (APM)

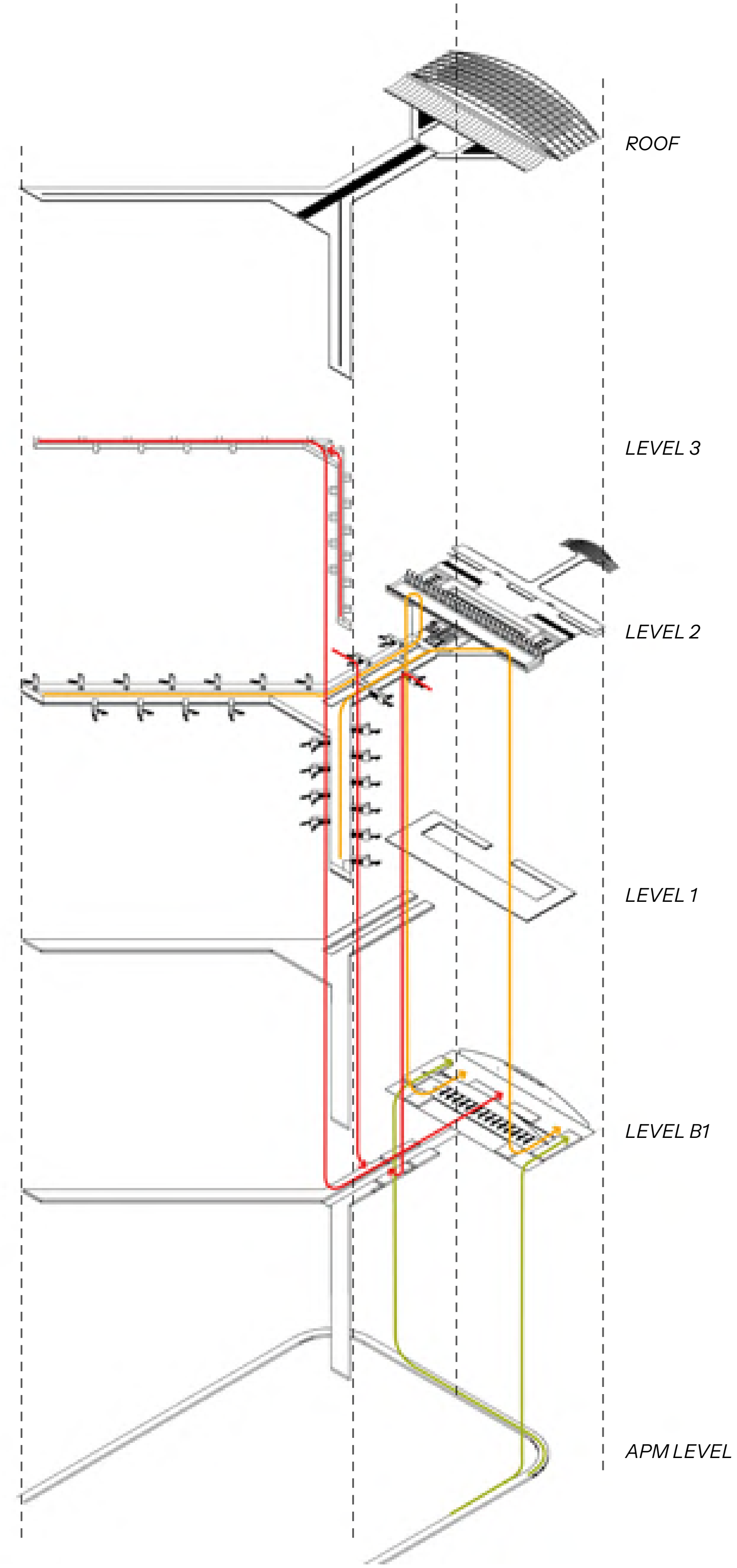

Fig 1. Axonometric diagram of Arrivals flows

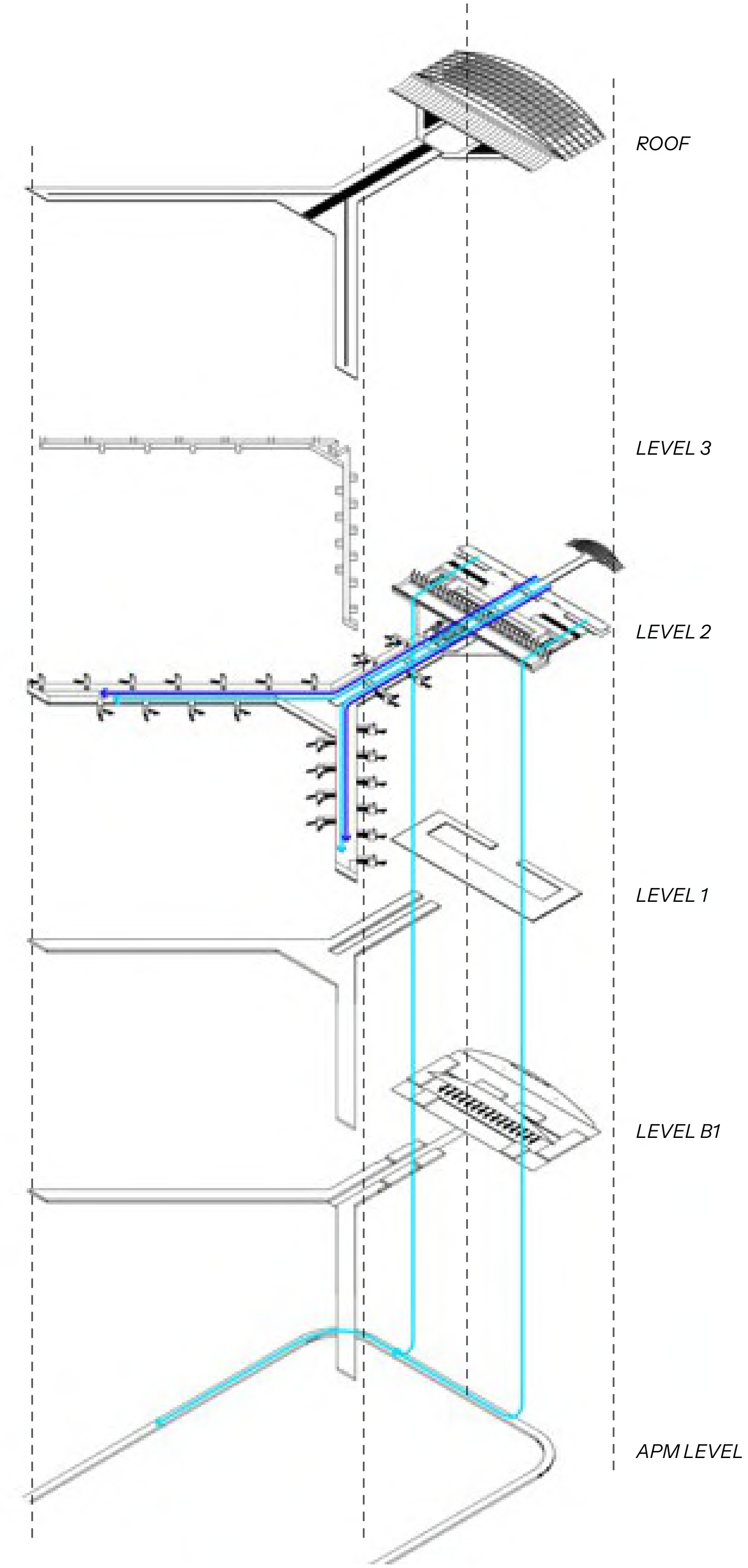

Fig 2. Axonometric diagram of Departures flows


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ONE NATION UND


GATE 12

Revitalizing IAD | Passenger Journey Video

https://vimeo.com/1156335853/9a426fccc5?share=copy&fl=sv&fe=ci

↑

2
COST / PRICE

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Zaha Hadid Architects

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The revitalization of Washington Dulles International Airport (IAD) represents a generational investment in national aviation infrastructure. While precise costs will be refined through progressive design, early contractor involvement, and detailed scoping, the following Rough Order of Magnitude (ROM) ranges establish the expected budget scale for each redevelopment concept. These values reflect industry benchmarks, Northern Virginia construction market conditions, and the unique operational and airfield complexities at IAD.

The ROM estimates are intended to support comparative evaluation across Options A, B, and C and to illustrate the magnitude of investment required to deliver a modern, resilient, and future ready terminal program.

2.1 OPTION A – NORTH HEADHOUSE

Option A leverages existing concourses and landside infrastructure, resulting in a cost profile driven primarily by vertical construction, selective demolition, and targeted landside improvements.

2.1.1
KEY COST COMPONENTS

COMPONENT - OPTION A	LOW RANGE	HIGH RANGE
1. Parking Garage 1 – Demolition & Relocation	—	—
a. Consider adding another Parking Level to the surface parking located to the left of Windsock Dr	$45,000 SPACE	$70,000 SPACE
b. Demolish existing garage	$20 /GSF	$30 /GSF
2. Aviation Drive Buildings (3) - demo and relocate, identified above as Delta Airlines and includes MWAA's offices (far right building)	$620 /GSF	$845 /GSF
3. New "Northern Headhouse" – SF TBD	$1,700 /GSF	$2,850 /GSF
4. Terminal Parking ("The Bowl")		
a. Existing surface parking	$8,500 SPACE	$14,250 SPACE
b. Create new plaza level above existing parking	$225 /GSF	$395 /GSF
5. Saarinen Headhouse - renovate / repurpose / reprogram	$510 /GSF	$960 /GSF
6. Site / Civil / Utilities		
a. Miscellaneous allowance for modifications to the overall area.	$2.0M /ACRE	$6.0M /ACRE
b. Maintenance of Traffic (MOT) allowance	$1.0M /ACRE	$3.0M /ACRE

2.1.2
COST DRIVERS

- Reuse of existing concourses reduces airfield complexity and limits apron level enabling works.
- Significant architectural and structural work required for the new headhouse.
- Renovation and repurposing of the historic Saarinen terminal introduces Section 106 considerations and premium finishes.

2.2 OPTION B – SOUTH HEADHOUSE

Option B introduces a new southern terminal processor and requires substantial enabling works, roadway realignment, and APM integration.

2.2.1
KEY COST COMPONENTS

COMPONENT - OPTION B	LOW RANGE	HIGH RANGE
1. Site / Civil / Utilities		
a. Miscellaneous demo	$0.75M /ACRE	$1.50M /ACRE
b. Utility relocation	$2.50M /ACRE	$4.25M /ACRE
c. Site prep / grading	$0.75M /ACRE	$1.25M /ACRE
d. New roadways from existing Udvar-Hazy exit to Headhouse	$5.0M /LANE MILE	$9.5M /LANE MILE
2. New "Southern Headhouse" – SF TBD	$1,750 /GSF	$2,900 /GSF
a. Saarinen Headhouse - renovate / repurpose	$520 /GSF	$975 /GSF
3. APM		
a. New Station connection	$175M /EACH	$575M /EACH
b. Extension of the existing system / tunnels	$575M /MILE	$1,725M /EACH
4. New remote Ramp Tower	$125,000 /VLF	$300,000 /VLF

2.2.2
COST DRIVERS

- Extensive utility relocation and roadway construction to establish new landside access.
- APM station and tunnel extensions represent major long lead, high complexity elements.
- Proximity to Runway 12/30 introduces FAA safety area constraints that influence staging and sequencing.

2.3 OPTION C – MIDFIELD TERMINAL

Option C is the most transformative concept, establishing a new greenfield terminal complex between active runways. This option carries the highest cost due to airfield integration, APM expansion, and new landside access infrastructure.

2.3.1 KEY COST COMPONENTS

COMPONENT - OPTION C	LOW RANGE	HIGH RANGE
1. Site / Civil / Utilities		
a. New Airport interchange off 267	$12.0M /LANE MILE	$24.0M /LANE MILE
b. Site:		
i. Miscellaneous demo	$0.50M /ACRE	$1.25M /ACRE
ii. Utility relocation	$1.00M /ACRE	$2.50M /ACRE
iii. Site prep / grading	$0.75M /ACRE	$1.25M /ACRE
c. New Taxilines		
i. No new runways	Excluded	Excluded
2. New Midfield Terminal Headhouse – SF TBD	$1,750 /GSF	$2,900 /GSF
a. New entry plaza	$55 /GSF	$90 /GSF
b. Saarinen Headhouse - renovate / repurpose	$540 /GSF	$1,015 /GSF
3. APM		
a. New Station connection	$180M /EACH	$600M /EACH
b. New APM tunnel system to connect into existing tunnel system	$600M /MILE	$1,790M /MILE
4. New remote Ramp Tower	$125,000 /VLF	$300,000 /VLF

2.3.2 COST DRIVERS

- Full greenfield development between active runways requires extensive airfield geometry modeling and phased apron delivery.
- New interchange and roadway network to support a midfield terminal
- Largest APM scope of all options, including new tunnels, stations, and system integration
- Highest utility and airfield integration complexity across all concepts

2.4 INDUSTRY BENCHMARKING

To contextualize the ROM ranges BELOW, recent U.S. terminal megaprojects demonstrate the scale of investment required for a hub level redevelopment:

PROJECT	TOTAL COST	NOTES
LGA TERMINAL B REDEVELOPMENT	$8.0B	Full terminal replacement; complex phasing
SLC NEW TERMINAL (PHASE 1)	$4.1B	Greenfield terminal and concourses
LAX MIDFIELD SATELLITE CONCOURSE	$1.7B	Remote concourse with APM interfaces
MCI NEW TERMINAL	$1.5B	Single-terminal replacement
MSY NEW TERMINAL	$1.3B	New greenfield terminal

These benchmarks reinforce that a major IAD redevelopment will fall within the multi billion dollar range, consistent with peer hub airports.

↑

2.4.1

2.4.1 CROSS – CUTTING COST DRIVERS

- **Phasing in a live airport environment,** requiring temporary facilities, night/weekend work, and complex logistics.
- **Security and technology systems,** including TSA checkpoints, in line BHS, and advanced passenger processing systems.
- **Durable materials and high performance finishes** required for 24/7 airport operations.
- **MEP systems,** which represent a significant share of total construction cost for terminal facilities.

2.5 NORTHERN VIRGINIA MARKET CONDITIONS

The regional construction environment is among the most active and high cost in the nation. Key factors influencing ROM ranges include:

2.5.1 HIGH LABOR COSTS AND SHORTAGES

- Skilled labor wages 15–25% above national averages.
- Competition from data centers, federal facilities, and transportation megaprojects.

2.5.2 RISING MATERIAL PRICES AND SUPPLY CHAIN DISRUPTIONS

- Steel, concrete, and electrical systems subject to 20–50% price fluctuations.
- Long lead procurement risks for specialty airport systems.

2.5.3 STRINGENT REGULATORY AND ENVIRONMENTAL REQUIREMENTS

- NEPA, wetlands, and Section 106 reviews add time and cost.
- Sustainability requirements may increase upfront cost but unlock federal incentives.

2.5.4 ECONOMIC AND INFLATIONARY PRESSURES

- Construction input inflation of 3–5% annually in the D.C. metro area.
- Financing costs sensitive to interest rate conditions.

2.5.5 HIGH DEMAND FOR INFRASTRUCTURE PROJECTS

- Regional competition for contractors and specialty trades.
- Potential for bidding premiums and schedule congestion.

2.5.6 GEOPOLITICAL AND LOCAL EVENTS

- Federal policy shifts and global supply chain disruptions can introduce cost variability.

2.5.7 SUSTAINABILITY AND TECHNOLOGICAL DEMANDS

- Growing emphasis on energy efficiency, electrification, and smart infrastructure

Collectively, these conditions may increase costs by **15–40%** relative to national averages, reinforcing the importance of early enabling works, multipackage delivery, and progressive design build procurement.

The ROM pricing framework for Options A, B, and C reflects the scale, complexity, and ambition of the IAD Revitalization. While costs will be refined through subsequent design phases, these ranges provide a defensible, industry aligned foundation for evaluating program affordability, delivery strategy, and capital stack requirements. This approach ensures that the redevelopment of Washington Dulles International Airport is grounded in realistic market conditions and aligned with the Administration's vision for a bold, efficient, and future ready gateway for the Nation's capital.

3
STRUCTURE / FINANCE

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In support of the taxonomy design approach presented in response to Question 1 (Design / Concept), the redevelopment of Washington Dulles International Airport (IAD) requires a delivery and financing strategy that accelerates construction, maintains operational continuity, and leverages all available federal, airport, and private sector resources.

The following approach integrates proven design build methods with innovative financing mechanisms that expand the capital stack, reduce lifecycle cost, and align with federal priorities around energy, infrastructure, cost reduction, national competitiveness, and economic development.

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Zaha Hadid Architects

3.1 DESIGN-BUILD DELIVERY FRAMEWORK

We considered various delivery framework options which could accelerate construction while managing complexity, minimizing operational disruption, and maintaining cost discipline. A multi package, phased Design Build (DB) program provides the flexibility and speed needed for a redevelopment of this scale, allowing the U.S. DOT and MWAA to tailor delivery methods to the unique requirements of each asset—whether a new concourse, enabling works, or the modernization of the historic Main Terminal, to match delivery methods to the specific technical, operational, and stakeholder requirements of each component. The following structure outlines the recommended DB approaches that collectively maximize speed, reduce risk, and ensure alignment with federal partners, airlines, and regulatory agencies.

3.1.1 PROGRESSIVE DESIGN BUILD (PDB)

BEST FOR

- Major vertical assets
- New concourses
- Terminal modernization

WHY THIS METHOD

- Early contractor involvement
- Iterative cost validation
- Reduced change order risk
- Strong alignment with stakeholder agencies (TSA, CBP, FAA, airlines)

3.1.2 FIXED PRICE DESIGN BUILD (FPDB)

BEST FOR

- Discrete, well-defined enabling works:
  - Utility corridors
  - Airfield geometry modifications
  - Roadway & curbside expansions

WHY THIS METHOD

- Cost certainty on defined scope
- Schedule efficiency
- Clear risk allocation

3.1.3 MULTI PACKAGE "CAMPUS STYLE" DB

BEST FOR

- Parallel construction streams under a unified PMO:
  - Concourses
  - Baggage Handling Systems (BHS)
  - Landside infrastructure projects

WHY THIS METHOD

- Compresses schedule via concurrency
- Reduces bottlenecks across program elements
- Maintains coordination and standards

3.1.4 DESIGN-BUILD (DB) WITH CONSTRUCTION MANAGER AT RISK (CMAR) HYBRID

BEST FOR

- Main Terminal modernization

WHY THIS METHOD

- Greater design influence for MWAA
- Secures Guaranteed Maximum Price (GMP) protection
- Balances flexibility with cost control

3.2 FINANCING OPTIONS

3.2.1
TRADITIONAL FUNDING SOURCES (CORE CAPITAL STACK)

The IAD Revitalization must be grounded in a stable, credit worthy, and federally aligned capital stack. The following traditional airport financing instruments form the foundation of such a program, providing predictable revenue streams, long term affordability, and strong alignment with FAA eligibility requirements and MWAA's established financial framework. These tools represent the core funding mechanisms upon which the broader program can reliably be built upon.

3.2.1.1
PASSENGER FACILITY CHARGES (PFCS)

Eligible for use on the Terminal, Concourses, Automated People Mover (APM) system, and Baggage Handling System projects; can support PFC backed bonds.

3.2.1.2
GENERAL AIRPORT REVENUE BONDS (GARBS)

MWAA's primary financing tool; backed by airline use and lease agreements.

3.2.1.3
TIFIA LOANS

Ideal for long tenor assets such as the APM extension, Parking, and landside mobility.

3.2.1.4
CUSTOMER FACILITY CHARGES (CFCS)

Supports CONRAC development and landside access improvements, including the APM system.

3.2.1.5
FEDERAL GRANTS (AIP, BIL)

Applicable to safety critical airfield work and upgrades related to infrastructure integrity, or operational efficiency.

To complement these established funding sources, the IAD Revitalization program can leverage a suite of innovative financing and delivery mechanisms that expand the capital base, accelerate delivery, and align long term performance with federal priorities. These tools—ranging from P3 structures to value capture and lifecycle driven digital technologies—provide MWAA and the U.S. DOT with flexible pathways to deliver a next generation terminal program at speed and scale.

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3.2.2
INNOVATIVE APPROACHES TO FINANCING AND DELIVERY

The innovative financing tools described in this section are ordered by scale of impact, beginning with Public Private Partnerships (P3s). P3 models are presented first because they represent the most comprehensive mechanism for accelerating delivery, transferring lifecycle risk, and mobilizing private capital at a scale appropriate for major terminal redevelopment. Subsequent subsections address complementary tools—value capture, ESG linked financing, and digital twin lifecycle optimization—that can be layered onto or used alongside P3 structures to strengthen affordability, enhance creditworthiness, and support long term operational performance.

3.2.2.1
PUBLIC PRIVATE PARTNERSHIP (P3) STRUCTURES

P3 delivery models are increasingly used for large, revenue generating airport assets—such as terminal redevelopments at LaGuardia (LGA), JFK and Consolidated Rental Car Facilities (CONRACs) recently built at LAX—where private financing and lifecycle accountability can accelerate delivery and improve long term performance. For IAD, P3 structures can be applied selectively to major vertical assets, mobility infrastructure, or landside developments, and can be combined with MWAA's traditional funding sources to optimize affordability and risk allocation.

Each P3 model below can be structured as Progressive, allowing MWAA to maintain early design influence while securing private sector innovation and financing. Compensation can be structured through availability payments, revenue sharing, or a hybrid approach depending on asset type and risk appetite.

Within this broader P3 framework, the specific delivery model selected—**DBF, DBFM, or DBFOM**—determines the degree of lifecycle responsibility transferred to the private partner. The following subsections outline these models in increasing order of scope and risk transfer.

3.2.2.2
DESIGN BUILD FINANCE (DBF)

A DBF structure transfers design, construction, and financing responsibilities to a private consortium, while MWAA retains operations and maintenance. This model is well suited for assets with clear scope, strong federal eligibility, and predictable construction risk.

Key Characteristics

- Private partner designs, builds, and finances the asset.
- MWAA repays capital costs over time through availability payments or dedicated revenue streams.
- MWAA retains operational control and long term maintenance responsibility.
- Private financing introduces schedule discipline and cost certainty.

Advantages

- Accelerates delivery by mobilizing private capital early.
- Reduces upfront public funding requirements.
- Incentivizes high quality construction due to lender oversight.
- Suitable for discrete assets such as:
  - APM extensions
  - Utility corridors
  - Roadway and curbside expansions
  - Baggage system upgrades

While DBF provides a strong mechanism for accelerating construction, DBFM introduces an additional layer of lifecycle accountability that can further enhance asset durability and long term cost predictability

3.2.2.3
DESIGN BUILD FINANCE MAINTAIN (DBFM)

DBFM extends the DBF model by adding long term maintenance obligations, creating a lifecycle driven delivery structure that aligns private incentives with asset durability and performance.

Key Characteristics

- Private partner designs, builds, finances, and maintains the asset for 20–35 years.
- MWAA retains operational control.
- Payments are tied to performance metrics (availability, reliability, lifecycle condition).
- Lifecycle risk is transferred to the private sector.

Advantages

- Reduces MWAA's long term maintenance burden.
- Ensures predictable lifecycle costs and asset condition.
- Strong incentive for high quality materials and construction methods.
- Suitable for:
  - Terminal concourses
  - Passenger processing facilities
  - Energy and utility plants
  - Parking structures and mobility hubs

While DBF provides a strong mechanism for accelerating construction, DBFM introduces an additional layer of lifecycle accountability that can further enhance asset durability and long term cost predictability

3.2.2.4
DESIGN BUILD FINANCE OPERATE MAINTAIN (DBFOM)

DBFOM represents the most comprehensive P3 structure, transferring design, construction, financing, operations, and maintenance to a private partner. This model is typically used for large, revenue generating assets where private operators can drive efficiency and innovation.

Key Characteristics

- Private partner assumes full lifecycle responsibility.
- Revenue risk may be shared or retained by MWAA depending on structure.
- Compensation may be through availability payments, revenue sharing, or a hybrid model.
- Strong alignment of incentives across design, construction, operations, and maintenance.

Advantages

- Maximizes private sector innovation and operational efficiency.
- Strongest incentives for speed, quality, and lifecycle performance due to lender oversight.
- Reduces MWAA's long term operating and maintenance exposure.
- Suitable for major revenue generating assets such as:
  - New terminal complexes (as at LGA and JFK)
  - CONRAC facilities (as at LAX)
  - Commercial development districts
  - Integrated mobility hubs

Regardless of the model selected, MWAA may elect to pursue a Progressive P3 approach to maintain early design influence, improve cost transparency, and reduce procurement risk.

3.2.2.5
PROGRESSIVE P3 STRUCTURES

All three P3 models—DBF, DBFM, and DBFOM—can be delivered through a **Progressive P3** approach, which mirrors the benefits of Progressive Design Build:

- Early collaboration between MWAA and the private partner
- Transparent cost development and risk allocation
- Iterative design refinement before commercial close
- Reduced procurement risk and improved stakeholder alignment
- Ability to integrate MWAA funding sources (PFCs, GARBs, TIFIA, CFCs) into the capital stack

Progressive P3s are particularly advantageous for complex terminal programs where scope, phasing, and operational interfaces evolve during early design.

Once the delivery structure is established, MWAA can tailor the compensation mechanism—availability payments, revenue sharing, or a hybrid model—to align financial incentives with program objectives.

3.2.2.6
AVAILABILITY PAYMENTS AND REVENUE SHARING MODELS

P3 compensation can be structured in two primary ways:

Availability Payments

MWAA makes periodic payments based on asset performance and availability.

- Predictable long term cost profile
- Strong performance incentives
- No transfer of demand risk unless desired

Revenue Sharing / Self Financed Models

Private partner recovers investment through project revenues, sharing upside with MWAA.

- Reduces MWAA's financial exposure
- Aligns incentives around commercial performance
- Suitable for terminals, parking, commercial development, and CONRACs

Hybrid structures can blend both approaches to optimize affordability and risk transfer.

These compensation structures directly shape the risk profile and financial performance of the P3 arrangement. Their benefits become most evident when viewed in the context of the broader advantages P3s can deliver for a program of this scale.

3.2.2.7
BENEFITS OF P3 INTEGRATION FOR IAD REVITALIZATION

Integrating P3 models into the IAD redevelopment program provides several strategic advantages:

- **Accelerated delivery** driven by private financing and lender oversight
- **Higher construction quality** due to lifecycle accountability
- **Reduced public capital requirements,** preserving MWAA's balance sheet
- **Enhanced innovation** in design, construction, and operations
- **Improved cost certainty** through fixed price, performance based contracts
- **Ability to combine with MWAA's traditional funding sources,** including PFCs, GARBs, TIFIA, CFCs, and federal grants

While P3s provide the most significant opportunity for accelerating delivery and transferring lifecycle risk, additional financing tools—such as value capture—can supplement the capital stack and reduce reliance on airline rates and charges.

3.2.3
VALUE CAPTURE STRATEGIES

Value capture mechanisms allow MWAA to harness the economic uplift generated by new terminals, mobility infrastructure, and landside development. When applied selectively and in coordination with local jurisdictions, these tools can provide incremental revenue streams that support key components of the capital program without increasing airline cost burdens.

3.2.3.1
TAX INCREMENT FINANCING (TIF) NEAR MOBILITY HUBS

A TIF district could be considered around:

- The Silver Line station
- A future Ground Transportation Center
- A potential West Terminal access corridor

Use of the proceeds could include:

- Roadway improvements
- Utility corridors
- District energy systems
- APM related infrastructure (subject to eligibility)
- Development opportunities for hospitality improvements (i.e. hotels and restaurants)

3.2.3.2
JOINT DEVELOPMENT AT LANDSIDE NODES

MWAA can monetize high value parcels through long term ground leases for:

- Hotels and conference centers
- Mobility hubs
- Mixed use commercial development

3.2.3.3
TRANSPORTATION UTILITY FEES

A per trip fee on TNCs, shuttles, and commercial vehicles can be dedicated to:

- Curbside expansion
- Roadway improvements
- Pedestrian bridges and tunnels
- APM improvements

3.2.4
ESG LINKED FINANCING

While not currently supported at a Federal level, Environmental, Social, and Governance (ESG) financing in the private sector continues to exist and remains widely used by investors, airports, and infrastructure owners, which can offer a pathway to lower borrowing costs and broaden investor appeal. These tools can be applied to eligible components of IAD redevelopment to strengthen affordability and long term resilience.

3.2.4.1
GREEN BONDS

Eligible for sustainability components such as:

- Gate electrification
- GSE charging infrastructure
- Solar fields and microgrids
- High efficiency HVAC and glazing
- Stormwater and resilience upgrades

3.2.4.2
SUSTAINABILITY LINKED LOANS (SLLS)

Borrowing costs adjusted based on performance against measurable sustainability KPIs.

3.2.5
DIGITAL TWIN INTEGRATION FOR LIFECYCLE OPTIMIZATION

Digital twin technology is now widely adopted in major infrastructure programs and offers significant benefits across both construction and operations. By integrating digital twins into the design build process, MWAA can improve schedule reliability, reduce change order risk, and optimize long term asset performance—while also generating auditable data that supports ESG reporting and financing, if utilized.

- **Construction of Digital Twin supports:**
  - Phasing validation
  - Clash detection
  - Sequencing optimization
  - Safety planning
  - Change order reduction

- **Potential Operational Digital Twin Models:**
  - Passenger flow
  - Baggage system performance
  - Energy consumption
  - Airside operations
  - Predictive maintenance

- **Digital twins provide ESG integration through auditable data for:**
  - Carbon reporting
  - Energy efficiency KPIs
  - Resilience metrics

3.3 COMBINED IMPACT ON PROGRAM AFFORDABILITY AND DELIVERY SPEED

When traditional funding sources are paired with value capture, ESG linked financing, and digital twin enabled lifecycle optimization, the result is a more robust, flexible, and future ready capital program. This integrated approach expands the funding base, enhances credit strength, and accelerates delivery while maintaining operational continuity. Collectively, these strategies position the IAD Revitalization as a national model for next generation airport financing and delivery, consistent with the Administration's vision for bold, inspiring federal architecture.

3.4 VISUAL DIAGRAM | HOW INNOVATIONS LAYER ONTO THE CAPITAL STACK

TOTAL PROGRAM FUNDING

P3 STRUCTURES
(DBF, DBFM, DBFOM – Availability Payments or Revenue Sharing)

VALUE CAPTURE MECHANISM
(TIF, Joint Development, TNC Fees)

PFC-BACKED BONDS
(Terminal, Concourses, APM, Baggage Handling System)

GARBS
(Core Terminal & Airfield Improvements)

TIFIA LOANS
APM, Mobility, Long-Tenor Assets)

ESG-LINKED FINANCING
(Green Bonds, Sustainability-Linked Loans)

This diagram illustrates how innovative tools sit above and supplement the traditional airport funding base, expanding capacity without increasing airline CPE or over leveraging MWAA's balance sheet.

3.5 DESIGN TEAM APPROACH TO MAXIMIZING SPEED OF CONSTRUCTION IN A DESIGN BUILD CONTEXT

To complement the procurement strategies outlined above, the design team brings a delivery philosophy centered on constructability, accelerated decision making, and disciplined integration across all technical disciplines. This approach ensures that design and construction advance in lockstep, reducing rework, compressing schedules, and supporting the broader objective of delivering new terminal and concourse capacity at Washington Dulles International Airport (IAD) with speed, certainty, and operational continuity.

↑

3.5.1 INDUSTRY EXPERIENCED, AVIATION FOCUSED TEAM

The proposed design team comprises firms with more than two decades of experience delivering major aviation programs worldwide. Each core member brings deep expertise in airport planning, terminal architecture, airside and landside engineering, and complex systems integration. This collective experience, paired with local market knowledge, enables rapid mobilization, early risk identification, and a design process that remains tightly aligned with MWAA's priorities, budget parameters, and stakeholder requirements.

The team is fluent in all major procurement models, including Design Build, Progressive Design Build, hybrid DB/CMAR structures, and P3 frameworks. This flexibility allows the design team to adapt to the delivery strategy selected for each asset, ensuring that design outputs support early contractor involvement, iterative cost validation, and streamlined approvals.

3.5.2 INTEGRATED PROJECT MANAGEMENT VISION

To maximize constructability and schedule performance, the design team employs a holistic, construction oriented project management structure. Rather than a linear, architecture first workflow, the team delivers a fully integrated ASMEP (Architecture–Structure–Mechanical–Electrical–Public Health) output from the earliest stages of design.

Key elements include:

- Clear hierarchies and defined lines of responsibility across all scales—from master planning to interior fit out
- Parallel workstreams that allow building, systems, and interior design to progress concurrently
- Early and continuous coordination with contractors, specialty trades, and permitting authorities
- A delivery culture that prioritizes clarity, discipline, and rapid decision making

This integrated structure reduces design cycle time, minimizes coordination conflicts, and ensures that design intent remains aligned with construction sequencing and operational constraints.

↑

3.5.3
CONSTRUCTABILITY DRIVEN ACCELERATION STRATEGIES

The design team's methodology is grounded in accelerating construction while maintaining quality, safety, and long term performance. The following strategies are embedded into the design process to support early works, fast track procurement, and efficient on site assembly:

3.5.3.1
EARLY PACKAGE RELEASE AND SCOPE DEFINITION

- Early definition of building perimeters, basements, and roadway interfaces
- Rapid advancement of earthworks, foundations, concrete frame, and steel packages
- Early freezing of simple, repeatable primary structural grids to reduce detailing time

3.5.3.2
STANDARDIZATION AND MODULARIZATION

- Use of standardized modules, materials, and component assemblies
- Repeatable structural and architectural systems that reduce fabrication time
- Prefabrication of components in controlled environments to improve quality and reduce on site labor

3.5.3.3
CLEAR ASSET BOUNDARIES AND REDUCED INTERFERENCE

- Deliberate separation of asset scopes to minimize overlap and coordination risk
- Package structures that allow independent procurement and parallel construction streams
- Early definition of construction access, laydown areas, and logistics corridors

3.5.3.4
SEQUENCING AND ON SITE EFFICIENCY

- Design solutions that support just in time delivery and installation
- Component level detailing that prioritizes ease of assembly and minimizes out of sequence work
- Integration of construction sequencing into the design process to reduce rework and change orders

Together, these financing and delivery mechanisms create a flexible, resilient, and federally aligned capital strategy for the IAD Revitalization.

By combining traditional airport funding sources with P3 structures, value capture, ESG linked financing, and digital twin enabled lifecycle optimization, MWAA and the U.S. DOT can deliver a bold, efficient, and future ready terminal program that advances national competitiveness, strengthens infrastructure integrity, and reflects the Administration's vision for inspiring federal architecture.

This integrated approach ensures that the program is both financially sound and operationally achievable, while maintaining continuity of service throughout construction.

↑

4 TIMING

The anticipated delivery timeline for the Revitalization of Washington Dulles International Airport (IAD) varies by concept, but all options follow a consistent four phase structure: **Planning & Design, Procurement & Mobilization, Construction,** and **Commissioning.**

The durations reflect industry benchmarks for major U.S. aviation programs, MWAA's historical delivery performance, and the specific operational and airfield constraints at IAD.

PHASE	OPTION A NORTH HEADHOUSE	OPTION B SOUTH HEADHOUSE	OPTION C MIDFIELD TERMINAL	KEY ACTIVITIES
PLANNING & DESIGN	18	15	12	NEPA Stakeholder engagement Development of DB packages Early contractor involvement
PROCUREMENT & MOBILIZATION	6	6	9	Enabling works Site access Identify Long Lead Items
CONSTRUCTION	36	42	48	Terminal/concourse build APM works Utilities & airfield interfaces
COMMISSIONING	6	6	6	Systems testing ORAT TSA/CBP readiness, Airline move-in
TOTAL	66	69	75	

** Durations shown are in months*

These proposed durations reflect realistic delivery windows for major terminal programs in the Northern Virginia construction market and are consistent with comparable recent U.S. hub redevelopments programs at the following airports:

LGA Terminal B	65 months for a brownfield terminal
DEN Great Hall	48 – 60 months depending on phase
LAX Midfield South Satellite Concourse	60 months
JFK Terminal 1 Redevelopment	72 – 84 months
ATL Concourse expansions	36 – 48 months per concourse

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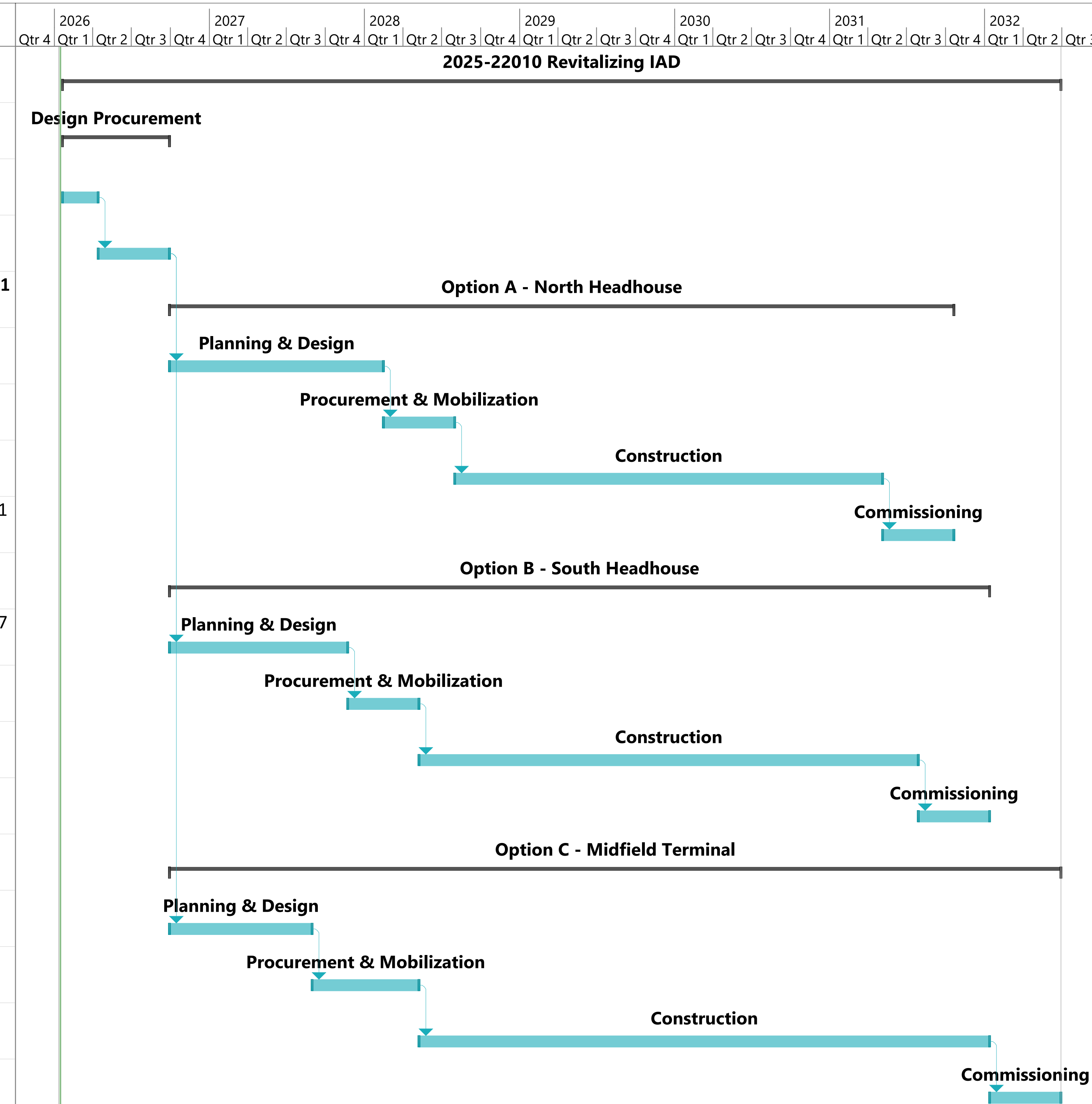
ID		Task Mode	Task Name	Duration	Start	Finish
1			**2025-22010 Revitalizing IAD**	**84 mons**	**Tue 1/20/26**	**Mon 6/28/32**
2			**Design Procurement**	**9 mons**	**Tue 1/20/26**	**Mon 9/28/26**
3			RFI Submittal & Review	3 mons	Tue 1/20/26	Mon 4/13/26
4			Contract Negotiation	6 mons	Tue 4/14/26	Mon 9/28/26
5			**Option A - North Headhouse**	**66 mons**	**Tue 9/29/26**	**Mon 10/20/31**
6			Planning & Design	18 mons	Tue 9/29/26	Mon 2/14/28
7			Procurement & Mobilization	6 mons	Tue 2/15/28	Mon 7/31/28
8			Construction	36 mons	Tue 8/1/28	Mon 5/5/31
9			Commissioning	6 mons	Tue 5/6/31	Mon 10/20/31
10			**Option B - South Headhouse**	**69 mons**	**Tue 9/29/26**	**Mon 1/12/32**
11			Planning & Design	15 mons	Tue 9/29/26	Mon 11/22/27
12			Procurement & Mobilization	6 mons	Tue 11/23/27	Mon 5/8/28
13			Construction	42 mons	Tue 5/9/28	Mon 7/28/31
14			Commissioning	6 mons	Tue 7/29/31	Mon 1/12/32
15			**Option C - Midfield Terminal**	**75 mons**	**Tue 9/29/26**	**Mon 6/28/32**
16			Planning & Design	12 mons	Tue 9/29/26	Mon 8/30/27
17			Procurement & Mobilization	9 mons	Tue 8/31/27	Mon 5/8/28
18			Construction	48 mons	Tue 5/9/28	Mon 1/12/32
19			Commissioning	6 mons	Tue 1/13/32	Mon 6/28/32



Project: Q4 - Timing_Gantt Cha
Date: Thu 1/15/26

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

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4.1 ASSUMPTIONS AND BASIS FOR DURATIONS

4.1.1 PLANNING & DESIGN (12–18 MONTHS)

The planning and design duration includes planning refinement, environmental documentation under NEPA, Stakeholder coordination (MWAA, FAA, TSA, CBP, United Airlines), and progressive design package(s) development.

- **Option A** is the shortest duration due to limited airfield impact and reuse of existing concourses.
- **Option B** requires additional FAA coordination due to proximity to Runway 12/30.
- **Option C** requires the most extensive modeling, including midfield airfield geometry, APM alignment, and new utility corridors.

4.1.2 PROCUREMENT & MOBILIZATION (6–9 MONTHS)

These durations reflect MWAA's experience with Design Build (DB) and multi package procurement.

- **Option A and B** may be procured in a single DB package with limited enabling works, if selected as a delivery approach.
- **Option C** requires multi package procurement and early enabling works (utilities, APM corridor), which requires a longer mobilization period.

4.1.3 CONSTRUCTION (36–48 MONTHS)

Construction durations vary significantly by option due to differences in scope, airfield interfaces, and utility complexity.

- **Option A** is primarily landside and brownfield, enabling faster delivery.
- **Option B** requires careful staging near Runway 12/30 and an APM extension.
- **Option C** is a full greenfield terminal and concourse system between active runways, requiring extensive airfield integration and phased apron delivery.

4.1.4 COMMISSIONING (6 MONTHS)

Commissioning includes systems integration, life safety testing, TSA/CBP certification, operational readiness and transition (ORAT), and airline move in.

A six month window is consistent with recent U.S. terminal openings and reflects the complexity of widebody capable international facilities.

4.2 DELIVERY IMPACTS

4.2.1 PRINCIPAL FACTORS THAT COULD ACCELERATE DELIVERY

- **Progressive Design Build (PDB):** Early contractor involvement accelerates design, improves cost certainty, and reduces rework.
- **Digital Twin Modeling:** Enables phasing validation, operational simulations, and early clash detection.
- **Multi Package Delivery:** Allows parallel construction streams for concourses, utilities, and landside access.
- **Early Enabling Works:** Utility relocations, site access, and APM corridor preparation can begin before full design completion.

4.2.2 PRINCIPAL FACTORS THAT COULD DELAY DELIVERY

- **Environmental Permitting:** NEPA, wetlands, and Section 106 (Saarinen terminal) reviews may extend planning timelines.
- **Airline Negotiations:** Gate allocation, facility charges, and operational impacts require coordination with United and other carriers.
- **Utility Relocations:** Existing fuel, power, and telecom infrastructure may require phased relocation with limited outage windows.
- **Airfield Constraints:** Runway protection zones, taxiway separations, and FAA safety area requirements may affect staging and sequencing.
- **Supply Chain and Labor Market Conditions:** Northern Virginia's construction market is active and may impact specialty trades and long lead materials.

Across all scenarios, the redevelopment of Washington Dulles International Airport can be delivered within a 5 to 8 year window, depending on the selected concept.

The durations presented are based on industry best practices, tailored to the operational realities of Dulles, and structured to minimize disruption while delivering a modern, efficient, and architecturally significant gateway for the Nation's capital.

5
LIMITATIONS / IMPEDIMENTS

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The revitalization of IAD is a complex, multi phase undertaking that must be delivered within an active airfield, under federal oversight, and in coordination with The Metropolitan Washington Airports Authority (MWAA), airline partners, and regulatory agencies.

While the program is achievable within a 5-7 years delivery window, several regulatory, operational, technical, and market based impediments must be proactively managed to ensure successful execution. The following limitations reflect industry benchmarks, MWAA's historical delivery environment, and the unique airfield and operational constraints at IAD.

5.1 REGULATORY AND ENVIRONMENTAL CONSTRAINTS

5.1.1 NEPA AND FEDERAL ENVIRONMENTAL REVIEW

All redevelopment concepts require full compliance with the National Environmental Policy Act (NEPA). Key risks include:

- Extended review timelines for airfield geometry changes (Options B and C)
- Wetlands, stormwater, and wildlife considerations
- Public comment cycles that may affect schedule certainty

5.1.2 SECTION 106 HISTORIC PRESERVATION

Any modification, repurposing, or adjacency impacts to the historic Eero Saarinen terminal will require review and consultation of Section 106 of the National Historic Preservation Act. This may require:

- A Preservation Alternatives analysis
- Mitigation agreements
- Iterative design refinements

5.1.3 FAA SAFETY AND AIRFIELD CONSTRAINTS

Runway Protection Zones (RPZs), Object Free Areas (OFAs), and height restrictions impose design and staging limitations:

- **Option B** is constrained by Runway 12/30's safety areas
- **Option C** requires extensive modeling to maintain independent runway operations
- Taxiway separations and wingspan restrictions may affect phasing and apron delivery

5.2 OPERATIONAL AND AIRLINE COORDINATION

5.2.1 UNITED AIRLINES HUB OPERATIONS

United's dominant presence at IAD requires early and continuous coordination on:

- Gate allocation and sequencing
- Facility charges and cost sharing
- Operational continuity during concourse transitions

5.2.2 PASSENGER FLOW AND ORAT REQUIREMENTS

Maintaining uninterrupted international arrivals, baggage operations, and TSA/CBP processing is essential. Risks include:

- Temporary reductions in gate capacity
- Baggage system cutovers
- APM service modifications

5.3 UTILITY, APM, AND INFRASTRUCTURE DEPENDENCIES

5.3.1 UTILITY RELOCATION AND CORRIDOR CONFLICTS

Existing fuel, power, telecom, and stormwater systems will require phased relocation with limited outage windows. Specific risks include:

- Airfield hydrant fuel conflicts
- High voltage ductbank relocations
- Limited redundancy in existing utility corridors

5.3.2 APM SYSTEM INTEGRATION

All options require APM modifications or extensions with Option C introducing a new APM alignment through the midfield, which require early enabling works. Other considerations include the following:

- Long lead procurement for rolling stock and controls
- Interface risk with existing APM operations
- Potential service disruptions during tie ins

5.4 MARKET, PROCUREMENT, AND DELIVERY RISKS

5.4.1 LABOR AND SUPPLY CHAIN VOLATILITY

Northern Virginia's construction market is among the most active in the U.S., creating risks around:

- Specialty trades availability
- Escalation in steel, electrical systems, and façade materials
- Prefabrication capacity constraints

5.4.2 MULTIPACKAGE DELIVERY COMPLEXITY

Option C requires a campus style, multipackage delivery structure. Without the support of a unified Program Management Office (PMO), risks include:

- Package interference
- Scope gaps and overlaps
- Inconsistent design standards across packages

5.6 ANTICIPATED CONSTRUCTION REQUIREMENTS

Across all options, successful implementation requires:

- Early enabling works (utilities, APM corridors, site access)
- Progressive Design Build (PDB) for major vertical assets
- Standardization and modularization to reduce detailing time
- Digital twin modeling for phasing, clash detection, and operational simulation
- Clear separation of asset scopes to enable parallel construction streams
- Early procurement of long lead items (steel, façade systems, APM components)

5.7 MITIGATION STRATEGIES

To overcome these impediments, the program should consider integrating the following mitigation measures:

- **Progressive Design Build (PDB)** to accelerate design and reduce change orders
- **Digital Twin Integration** for phasing validation, safety planning, and ESG reporting (if required by the financing model)
- **Multipackage Delivery Under a Unified PMO** to enable parallel construction
- **Early Contractor Involvement (ECI)** to validate cost, logistics, and constructability
- **Standardization and Prefabrication** to reduce on site labor and improve quality
- **Early Enabling Works** to de-risk utilities, APM tie-ins, and site access
- **Robust ORAT Program** to ensure seamless operational transition

While the revitalization of Washington Dulles International Airport presents several inherent challenges, each impediment can be effectively mitigated through disciplined planning, integrated design-build delivery, and early coordination with federal partners, MWAA, and airline stakeholders. With these strategies in place, the program can be delivered efficiently, safely, and in alignment with the Administration's vision for a bold, inspiring, and future-ready gateway for the Nation's capital.

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6
MITIGATION OF OPERATIONAL IMPACT

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The proposed IAD revitalization must be delivered within one of the nation's most operationally complex airfield environments. Ensuring uninterrupted airline operations, maintaining international processing capacity, and preserving the integrity of United Airlines' hub are foundational requirements.

The following mitigation strategies reflect best practices from major U.S. and global hub redevelopments and are tailored to IAD's unique regulatory, operational, and airfield constraints.

6.1 OPERATIONAL CONTINUITY FRAMEWORK

A revitalization of this scale can only succeed if construction is orchestrated around uninterrupted airport operations. This framework establishes the sequencing, safeguards, and coordination mechanisms required to maintain gate availability, passenger throughput, and airfield performance throughout delivery. In addition, this approach mirrors successful openings at LGA Terminal B, SFO T1, and LAX MSC South.

6.1.1 GATE, CONCOURSE, AND AIRFIELD CONTINUITY

- **Phased gate sequencing** preserves hub integrity and minimizes peak hour disruptions.
- **Swing gates and temporary hardstands** provide operational flexibility during concourse transitions.
- **Airfield work windows** are coordinated with FAA and MWAA to avoid runway configuration impacts, especially during North/South flow transitions.

6.1.2 BAGGAGE, APM, AND PASSENGER FLOW MANAGEMENT

- **Baggage Handling System** cutovers are executed during low volume periods with redundant routing and temporary conveyors.
- **APM tie-ins and extensions** are staged to maintain continuous service to A/B/C concourses.
- **Passenger flow modeling** ensures uninterrupted TSA, CBP, and international arrivals processing.

6.1.3 ORAT (OPERATIONAL READINESS AND AIRPORT TRANSFER)

- Airline move-in sequencing
- TSA/CBP certification
- Staff training and simulation exercises
- Full-scale trials of passenger, baggage, and APM systems

6.2 DIGITAL TWIN–ENABLED DISRUPTION MITIGATION

Digital twin technology will be deployed across planning, design, and construction to reduce operational risk, which reduces rework, accelerates approvals, and provides auditable data for federal partners, and includes the following components:

- **Phasing validation** to test construction sequences against live operations
- **Clash detection** across structural, utility, and airfield interfaces
- **Operational simulation** for passenger flow, baggage performance, and APM operations
- **Safety modeling** for airfield access, crane operations, and RPZ/OFA compliance

6.3 UNIFIED PMO: CENTRALIZED GOVERNANCE FOR A LIVE-AIRPORT MEGAPROJECT

Delivering a multi package, multi year program within an active hub airport requires a single, empowered governance structure. The Unified PMO establishes clear accountability, integrated decision making, and consistent standards across all design, construction, and operational partners.

6.3.1 CORE PMO FUNCTIONS

- **Integrated phasing and logistics** across concourses, APM, utilities, and landside works
- **Standardized design criteria** to ensure consistency across multipackage delivery
- **Regulatory coordination** with FAA, TSA, CBP, NEPA teams, and Section 106 stakeholders
- **Airline engagement**, particularly with United Airlines, to maintain hub continuity
- **Real-time reporting** on schedule, cost, safety, and operational impacts

6.3.2 PMO BENEFITS

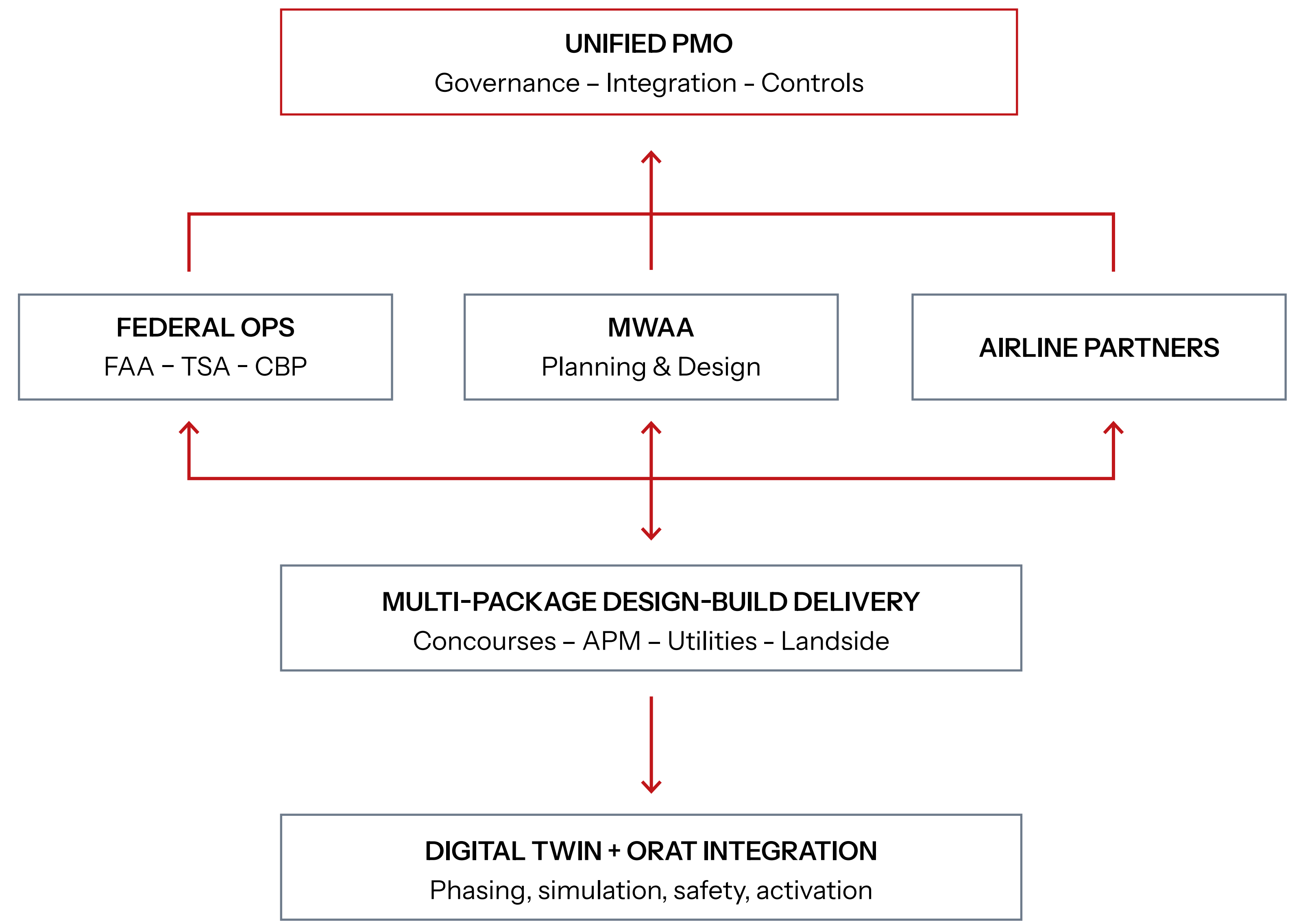
- Eliminates scope gaps and package interference
- Enables parallel construction streams
- Accelerates decision-making
- Reduces change orders and rework
- Ensures federal, MWAA, and airline alignment throughout delivery

6.4 VISUAL INTEGRATION MODEL: HOW THE PMO CONTROLS OPERATIONAL IMPACT

This proposed structure ensures that every design and construction decision is evaluated against its operational impact before execution.

Through disciplined phasing, digital twin modeling, a robust ORAT program, and a unified PMO governing all delivery packages, the IAD revitalization can be executed with minimal disruption to passengers, airlines, and federal operations.

These strategies reflect the highest standards of global aviation practice and align with the Administration's vision for a bold, efficient, and future-ready gateway for the Nation's capital.



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JANUARY 20, 2026

Revitalizing Washington Dulles International Airport

Bermello Ajamil & Partners LLC
in partnership with **Zaha Hadid Architects**

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