

Table A-23 Inaugural Airport – Air Cargo Concept Alternatives Evaluation Methodology		
No.	Criteria	Methodology
1	Ability to maximize airfield operational efficiency	This criterion estimated taxiing times based on the taxiing distances, runway crossings and taxiway crossings. Plan diagrams were prepared showing the taxiing route of the aircraft. Taxiing distances were calculated from the center of the cargo apron to both runway 09 and 27. Taxiing times were calculated for both east and west air traffic flow, assuming a taxiing speed of 15 mph, 3 minutes waiting time at runway crossings and 1 minutes waiting time at taxiway crossings. The scores were weighted according to the estimated traffic flow configurations: 33% for the east and 67% for the west. (see "Facilities Requirement 3.1.6). These ratings were then combined into a final rating for each alternative. Alternatives with shorter taxiing time rated higher than those with longer taxiing time.
2	Landside access	It is assumed that primary truck access to the airport will be via Interstate Highway I-57. Each concept alternative was evaluated to determine the access distance from I-57 to the air cargo facility.
3	Compatibility with future airport plan.	Each concept alternative was evaluated to determine if it was in conflict with the intermediate and ultimate airport plans. If there was a significant conflict with the future plan the concept alternative was considered to not be compatible with the future airport plan.
4	Ability to minimize adverse land use impacts and community disruption	
a	Avoid/minimize conflicts with the comprehensive land-use plans of the neighboring communities.	<i>The Northeastern Illinois Planning Commission (NIPC) released the "Land Use Plan for the Eastern Will County Area" in August 1997, the most recently published land use plan for the area that specifically accounts for the airport. This document was used as the baseline to determine if conflicts with local plans would result from a concept alternative. Conflicts were defined as airport facilities being located outside of the previously defined airport boundary (as depicted on the land use map within the NIPC report), on land planned for other uses by the communities within the airport boundary as indicated in the NIPC report.</i>
b	Minimize population displacement	<i>The number of residences that would be impacted by each concept alternative was determined through use of GIS. The GIS database established during the Phase 1 Engineering Study and updated for the Tier 1 EIS was used as a baseline. The number of existing residences was verified and modified from aerial photography of the site obtained by IDOT in 2002 and a windshield survey performed by TAMS in spring of 2004. Based on U.S. Census results from the 2000 Census, each house or farmhouse was assumed to contain 2.7 people; each mobile home was assumed to contain 2.0 people. All residences within the AOA for each concept alternative were counted, and then the appropriate ratio of people per residence was applied to determine potential population displacement.</i>

Table A-23 Inaugural Airport – Air Cargo Concept Alternatives Evaluation Methodology		
No.	Criteria	Methodology
c	Minimize local traffic disruption due to additional traffic being placed on local roads	The Average Daily Traffic volume that would be placed on local roadways was determined for each concept alternative. Each concept was evaluated based on the average daily volume of traffic that would be added to local roads. Concepts with a lower ADT volume were evaluated more favorably than concepts that would add a higher ADT volume to local roads.
5	Ability to minimize impacts on natural resources	
a	Wetlands	Potential wetland impacts were calculated based on a GIS analysis of a wetlands database for the site created during the Phase 1 Engineering Study. A wetland delineation of the site was conducted in 1996 (see "Wetland Delineation Report", TAMS Consultants, Inc., January 1996). A review of the wetland delineation was conducted in 2004 to determine potential changes to wetland boundaries that have occurred since the delineation. The GIS database has been updated to include those changes, which are being documented in a revised Wetland Delineation Report (in progress). It was assumed that any wetland or portion of wetland located within the AOA of each concept alternative would be potentially impacted. Updated wetland boundaries within the airport site are depicted on Exhibit A-4 (see Inaugural Airport Primary Runway (09-27) Concept Alternatives section).
b	Floodplains	Potential floodplain impacts were calculated based on a GIS analysis of Q3 digital flood data purchased from FEMA for Will County. It was assumed that any 100-year floodplain or portion of 100-year floodplain located within the AOA for each concept alternative would be potentially impacted. Existing floodplain boundaries within the airport site are depicted on Exhibit A-4 (see Inaugural Airport Primary Runway (09-27) Concept Alternatives section).
c	Water Resources	Potential impacts to water resources were calculated by determining the linear extent of existing stream channel that would be contained within the AOA for each concept alternative. Stream channels were identified from the GIS database established for this project, and are shown on Exhibits 3-1 through 3-9.
d	Prime Farmland	Potential impacts to prime farmland were calculated by determining the amount of prime farmland soils contained within the AOA of each concept alternative. A soil map of the entire site was digitized from the Will County Soil Survey and input into the project GIS. Prime and important farmland designation for each soil type was obtained from the U.S. Department of Agriculture. Figure 5.15-3 from the Tier 1 FEIS ¹ depicts the prime and important farmland soils database used for this analysis.

¹ Final Environmental Impact Statement, Tier 1: FAA Site Approval and Land Acquisition by the State of Illinois, Proposed South Suburban Airport, FAA, April 2002.

Table A-23 Inaugural Airport – Air Cargo Concept Alternatives Evaluation Methodology		
No.	Criteria	Methodology
6	Relative Cost Comparison	Relative costs were estimated based on earthwork, site preparation, access road length, creek crossings, taxiway length and environmental impact on wetlands, floodplains, and water resources . Ratings for each item were established separately, and then averaged together to obtain an overall rating for this criterion (see Table A-27).

Source: TAMS, an Earth Tech Company, 2005.

Table A-24 Inaugural Airport Air Cargo Concept Alternatives Evaluation Matrix Data						
No.	Criteria	C-1	C-2	C-3	C-4	C-5
1	Ability to maximize airfield operational efficiency <i>Aircraft taxiing distance (feet)</i>	Table A-26	Table A-26	Table A-26	Table A-26	Table A-26
2	Landside access <i>Proximity to I-57 (miles)</i>	6.7	2.9	5.8	7.8	6.5
3	Compatibility with future airport plan (refer to Table 9-3)	No - 1	Yes - 5	No - 1	No - 1	Yes - 5
4	Ability to minimize adverse land use impacts and community disruption					
a	<i>Avoid/minimize conflicts with the comprehensive land-use plans of the neighboring communities</i>	0 conflict	0 conflict	0conflicts	0 conflicts	0 conflicts
b	<i>Minimize population displacement (population impacted)</i>	11 people	3 people	0 people	6 people	27 people
c	<i>Minimize traffic disruption on local roads (average number of vehicles added on local roads daily)</i>	188 ADT	0 ADT	188 ADT	188 ADT	188 ADT
5	Ability to minimize impacts on natural resources					
a	<i>Wetlands (acres impacted)</i>	0.71	1.04	0.51	0.88	1.52
b	<i>Floodplains (acres impacted)</i>	0	12.05	0	0	0
c	<i>Water Resources (miles of stream impacted)</i>	0	0.14	0	0	0
d	<i>Prime Farmland (acres impacted)</i>	15.77	41.37	25.2	25.76	26.34
6	Relative Cost Comparison	Table A - 28	Table A - 28	Table A - 28	Table A - 28	Table A - 28

Source: TAMS, an Earth Tech Company, 2005.

Table A-25 Inaugural Airport – Air Cargo Facility Concept Alternatives Evaluation Matrix Scoring Assignments																				
Alternative	Criterion 1		Criterion 2		Criterion 3		Criterion 4a		Criterion 4b		Criterion 4c		Criterion 5a		Criterion 5b		Criterion 5c		Criterion 5d	
	Taxiing Time (minutes)		Landside Access Proximity to I-57		Compatibility with future airport plan		Compatibility with regional land use plans		Population Displacement		Traffic Disruption		Wetlands		Floodplains		Water resources (streams)		Prime Farmland	
	(min.)	Score	(miles)	Score	(conflicts)	Score	(conflicts)	Score	(people)	Score	Avg. Daily Trucks	Score	(acres)	Score	(acres)	Score	(people)	Score	(acres)	Score
C-1	13.4	5	6.7	2	1	1	0	5	11	3	188	1	0.71	4	0	5	0	5	15.77	5
C-2	19.2	1	2.9	5	0	5	0	5	3	5	0	5	1.04	3	12.05	1	0.14	1	41.37	1
C-3	14.6	4	5.8	3	1	1	0	5	0	5	188	1	0.51	5	0	5	0	5	25.20	4
C-4	17.1	2	7.8	1	0	1	0	5	6	4	188	1	0.88	4	0	5	0	5	25.76	4
C-5	14.8	4	6.5	2	0	5	0	5	27	1	188	1	1.52	1	0	5	0	5	26.24	3
Max Value	19.2		7.8		1		0		27		188		1.52		12.05		0.14		41.37	
Min Value	13.4		2.9		0		0		0		0		.51		0		0		15.77	
Range of Values	5.8		4.9		1		0		27		188		1.01		12.05		0.14		25.6	
20% of Range	1.2		0.98		0.2		0		5		37.6		0.20		2.41		0.03		5.12	
SCORE	Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	18.1	19.2	6.9	7.8	0.8	1.0	0	0	21.6	27.0	150.4	188	1.32	1.52	9.64	12.05	0.11	0.14	36.25	41.37
2	16.9	18.09	5.9	6.8	0.6	0.79	0	0	16.2	21.3	112.8	150.4	1.12	1.31	7.23	9.52	0.08	0.11	31.13	35.99
3	15.7	16.89	4.9	5.8	0.4	0.59	0	0	10.8	15.9	75.2	112.8	0.91	1.11	4.82	7.11	0.06	0.08	26.01	30.87
4	14.6	15.69	3.9	4.8	0.2	0.39	0	0	5.4	10.5	37.6	75.2	0.71	0.90	2.41	4.70	0.03	0.05	20.89	25.75
5	13.4	14.59	2.9	3.8	0.0	0.19	0	0	0.0	5.1	0	37.6	0.51	0.70	0.0	2.29	0.00	0.03	15.77	20.63

Source: TAMS, an Earth Tech Company, 2005.

Table A-26 Inaugural Airport - Air Cargo Facility Concept Alternatives Criterion 1 – Taxiing Times and Distance Calculations										
Taxiing Times	C1		C2		C3		C4		C5	
	West Flow		West Flow		West Flow		West Flow		West Flow	
	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)
	1.97	11.09	14.68	4.56	13.15	1.13	2.37	14.41	2.68	11.81
	East Flow		East Flow		East Flow		East Flow		East Flow	
	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)	Depart (min)	Arrive (min)
	12.09	1.97	5.56	13.68	1.13	14.15	15.41	2.37	12.81	2.68
Total Weighted Taxiing Time										
13.4		19.2		14.6		17.1		14.8		
Taxiing Distances	West Flow		West Flow		West Flow		West Flow		West Flow	
	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)
	2,606	12,001	15,414	6,019	12,083	1,488	3,128	13,739	3,540	12,951
	Total Taxi Path Length West Flow									
	14,607		21,433		13,571		16,867		16,491	
	East Flow		East Flow		East Flow		East Flow		East Flow	
	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)	Arrive (feet)	Depart (feet)
12,001	2,606	6,019	15,414	1,488	12,083	13,739	3,128	12,951	3,540	
Total Taxi Path Length East Flow										
14,607		21,433		13,571		16,867		16,491		

Assumptions:

1. All taxiing paths originate or end at the mid-point of the apron of the cargo building.
2. Taxi Speed: 15 miles per hour or 1,320 feet per minute.
3. Waiting Time: Runway/Taxiway Crossing = 3 minutes; Taxiway/Taxiway Crossing = 1 minute.
4. West flow configuration assumed to occur 67% of the time; East flow configuration assumed to occur 33% of the time

Calculation Methodology: Departure and arrival times were summed for West and East Flow. Total taxi time was calculated by multiplying West flow total time by .67 and East Flow total time by .33 and adding weighted West total plus weighted East total. Scoring assignments for Criterion 1 are shown on Table A-25.

Table A-27
Inaugural Airport – Air Cargo Facility Concept Alternatives
Criterion 2 – Landside Access Distance

Alternative	West I-57 (miles)
C-1	6.7
C-2	2.9
C-3	5.8
C-4	7.8
C-5	6.5

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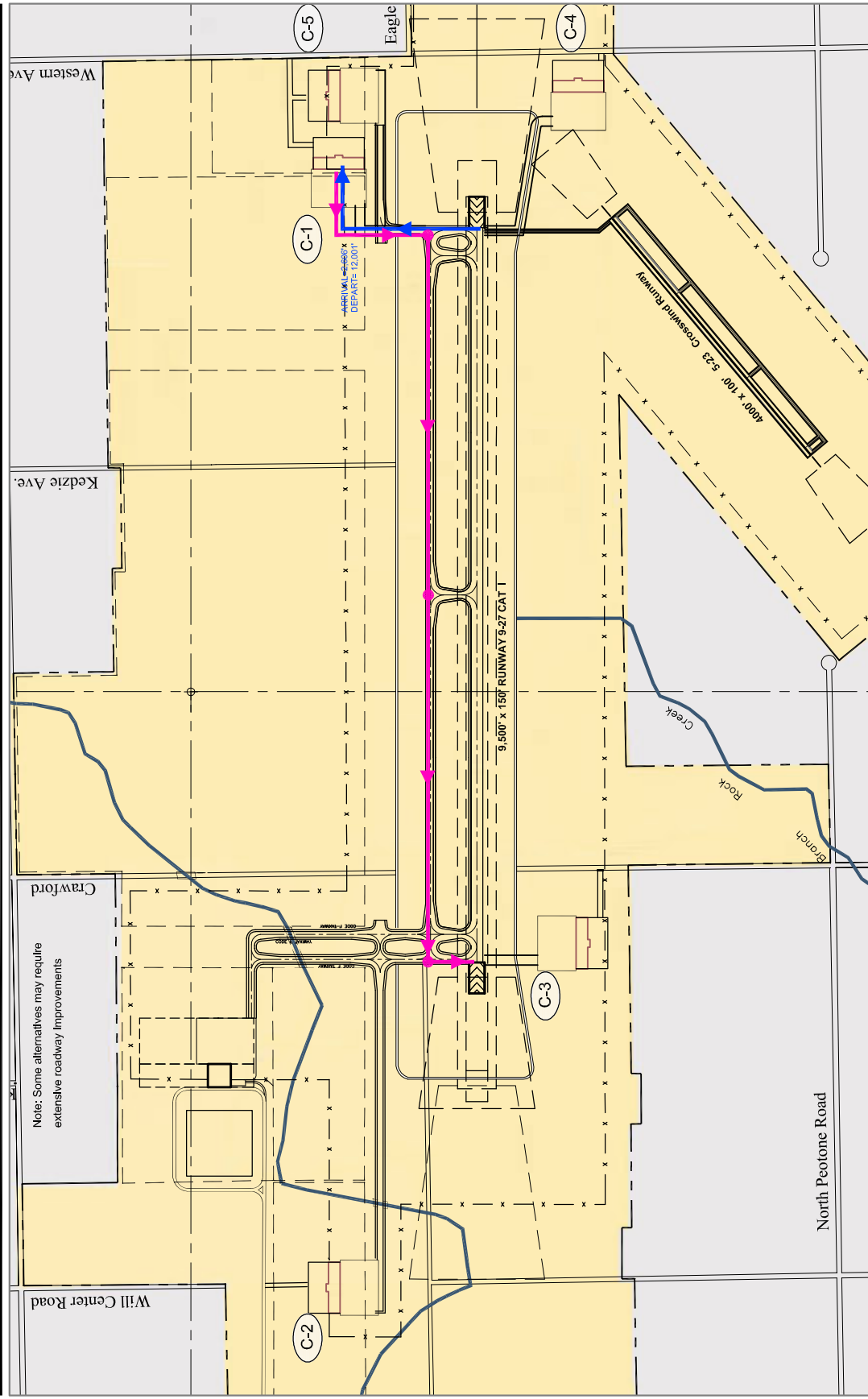
**Table A-28
Inaugural Airport – Air Cargo Facility Concept Alternatives
Criterion 6 - Relative Cost Comparison Scoring Assignments**

Alternative	Earth-work (cubic yards)	Score	Constructi on Site Area (acres)	Score	Access Roadway Improvement Length (miles)	Score	Estimated Cost – Creek Crossings (dollars)	Score	Taxiway length (feet)	Score	Wetlands (acres)	Score	Floodpl ains (acres)	Score	Streams (miles)	Score	Combined Score	Average Score
C-1	382,323	2	34.2	5	5.52	1	1 mill	5	1,245	5	0.71	4	0	5	0	5	35	4.375
C-2	424,888	1	82.1	1	1.25	5	1 mill	5	4,576	1	1.04	3	12.05	1	0.14	1	14	1.75
C-3	260,268	5	31.7	5	4.09	3	4.5 mill	1	814	5	0.51	5	0	5	0	5	32	4
C-4	340,382	3	41.5	4	6.05	1	4.5 mill	1	2,288	3	0.88	4	0	5	0	5	26	3.25
C-5	400,000	1	60.7	3	5.64	1	1 mill	5	2,201	4	1.52	1	0	5	0	5	28	3.5
Max Value	424,888		82.1		6.05		4.5 mill		4,576		8.3		12.05		0.6			
Min Value	260,268		31.7		1.25		1.0 mill		814		0.7		0		0			
Range of Values	164,614		50.4		4.8		3.5 mill		3,762		7.6		12.05		0.6			
20% of Range	32,923		10.1		.96		0.7 mill		752.4		1.52		2.41		0.12			
Score	Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range		Scoring Range			
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High		
1	391,959	424,882	72.04	82.11	5.09	6.05	3.8 mill	4.5 mill	3,823.6	4,576	1.318	1.52	9.64	12.05	0.112	0.14		
2	359,036	390,313	61.96	71.5	4.13	5.04	3.1 mill	3.8 mill	3,071.2	3,785.098	1.116	1.308	7.23	9.52	0.084	0.111		
3	326,113	357,390	51.88	61.45	3.17	4.08	2.4 mill	3.1 mill	2,318.8	3,033.58	0.914	1.106	4.82	7.11	0.056	0.083		
4	293,191	324,467	41.81	51.38	2.21	3.12	1.7 mill	2.4 mill	1,566.4	2,281.18	0.712	0.904	2.41	2,294.70	0.028	0.055		
5	260,268	291,545	37.71	41.31	1.25	2.16	1.0 mill	1.7 mill	814	1,528.78	0.51	0.701	0.0	2.29	0	0.027		

Source: TAMS, an Earth Tech Company, 2005

- Note:
 1) Creek Crossings refer to the costs associated with structures required where roadways or other site elements cross creeks. Costs associated with Streams refers to costs related to work on stream bed, embankment and mitigation.
 2) Access roadway improvement length is the estimated length of roadway that must be improved to provide access to the air cargo facility. Access distance is an estimate of the average distance of travel from a major highway to the air cargo facility.

Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
 Aircraft Taxiing Analysis
 Air Cargo C-1 East Flow

TAMS an Earth Tech Company

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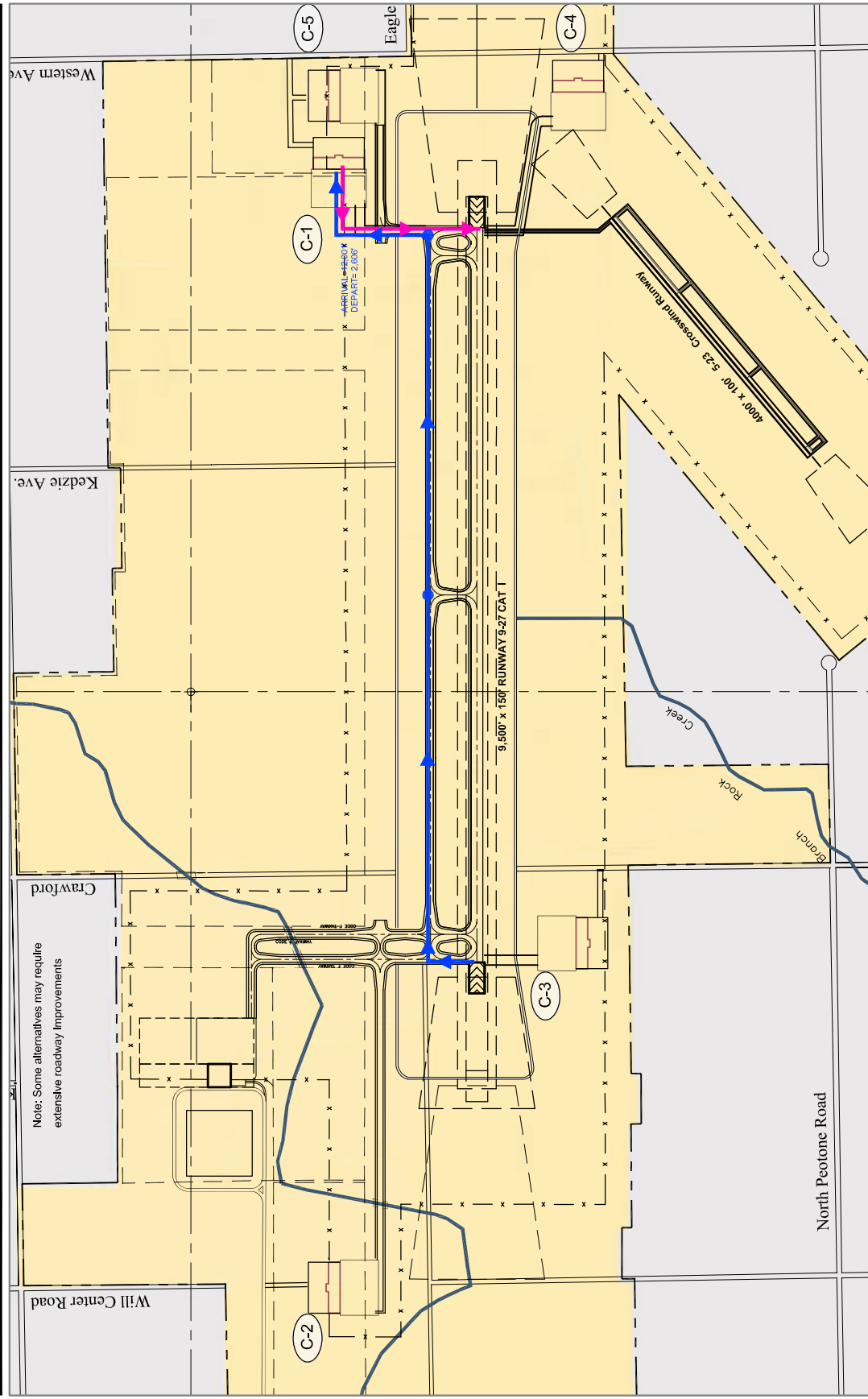
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- DEPARTURE FLOW
- TAXIWAY CROSSING
- RUNWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY

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North

Exhibit: A-10.1

Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
 Aircraft Taxiing Analysis
 Air Cargo C-1 West Flow

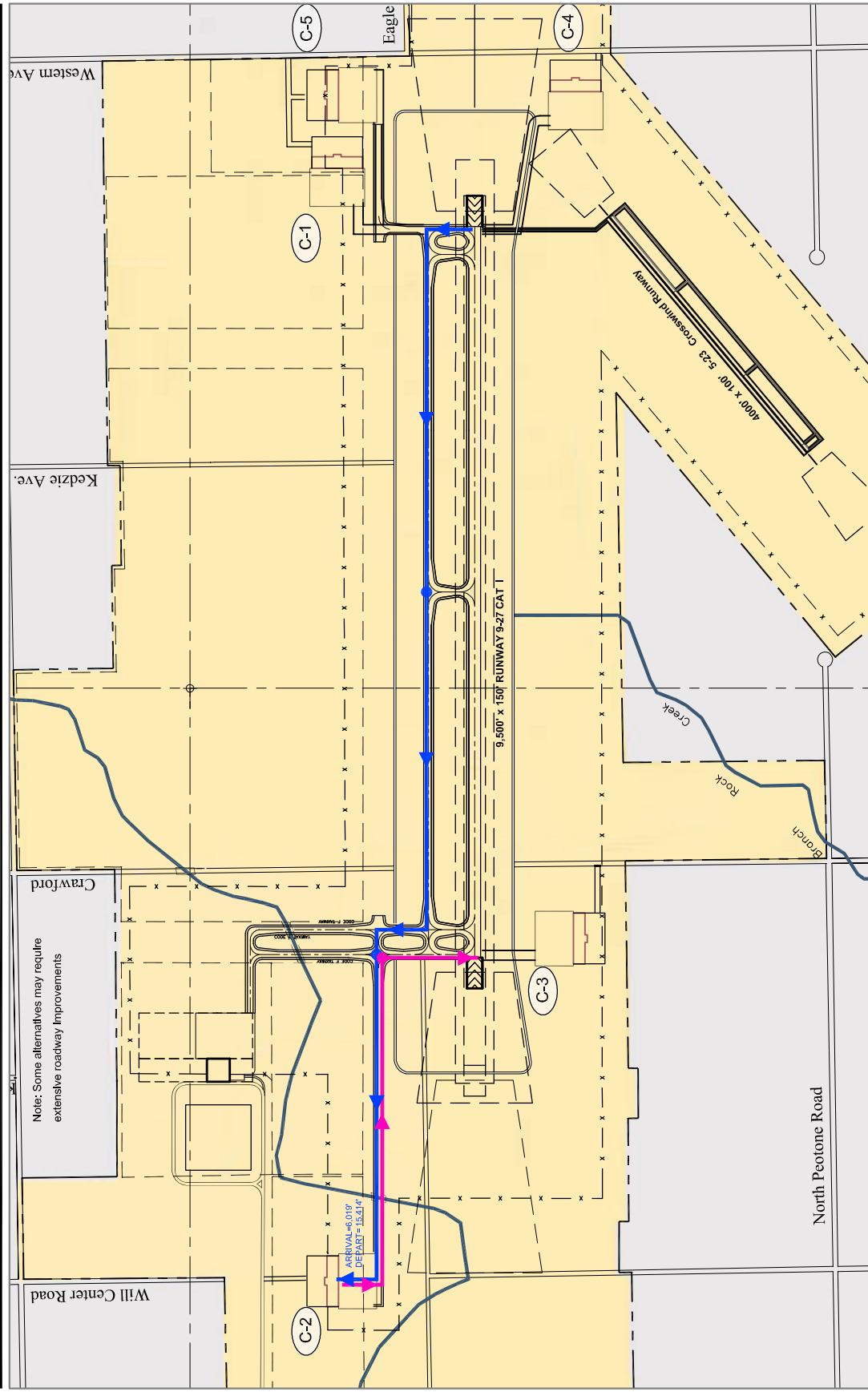
TAMS an Earth Tech Company

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- ARRIVAL FLOW
- DEPARTURE FLOW
- TAXIWAY CROSSING
- RUNWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY

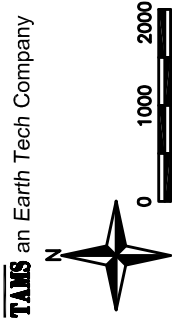
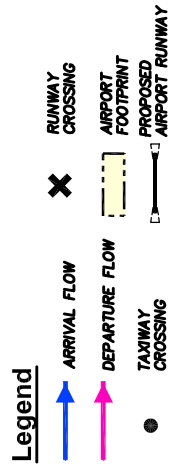
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Draft Concept Alternatives Analysis for the Inaugural Airport Program

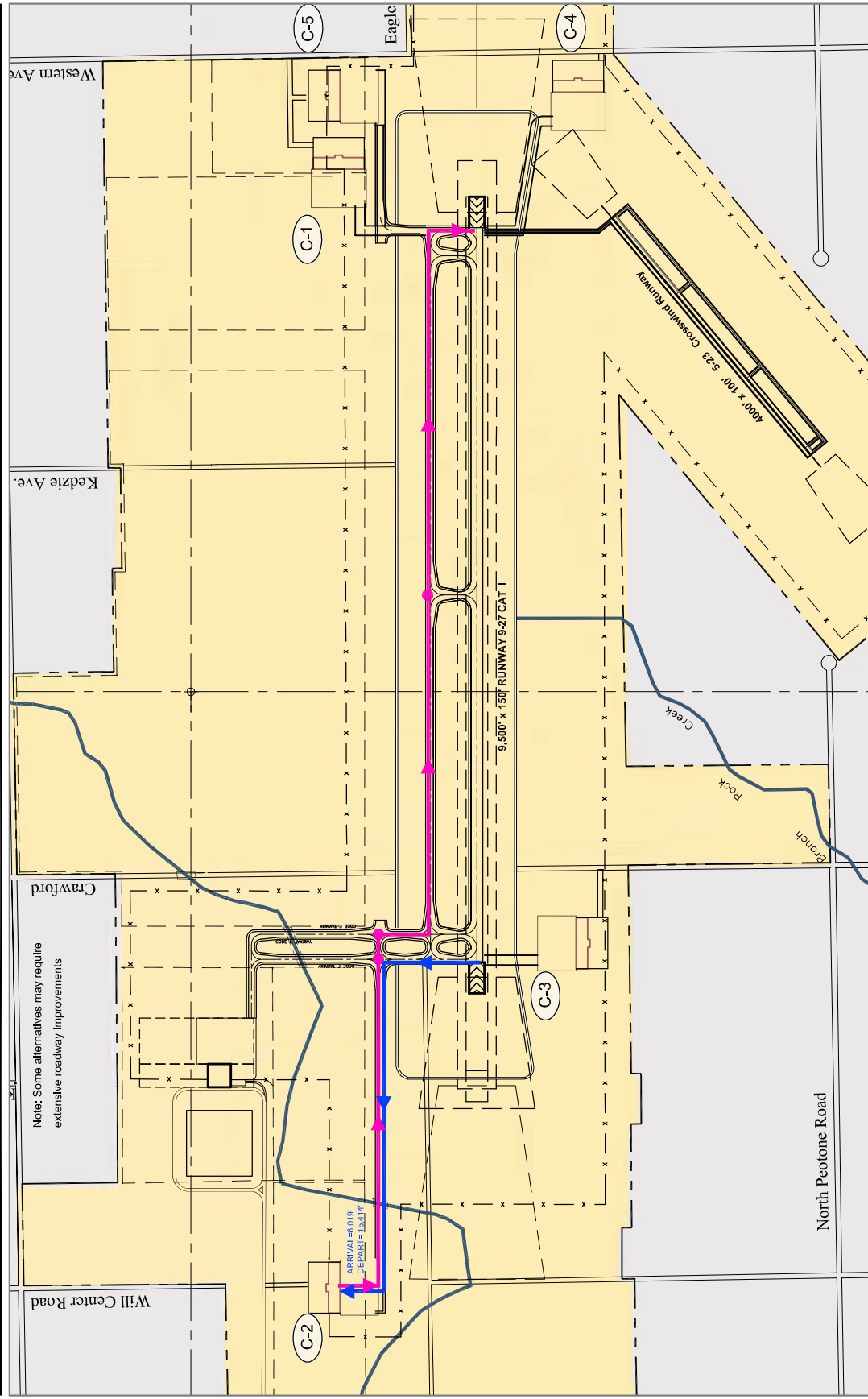


Note: Some alternatives may require extensive roadway improvements

Inaugural Airport Program
Aircraft Taxiing Analysis
Air Cargo C-2 East Flow



Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
 Aircraft Taxiing Analysis
 Air Cargo C-2 West Flow

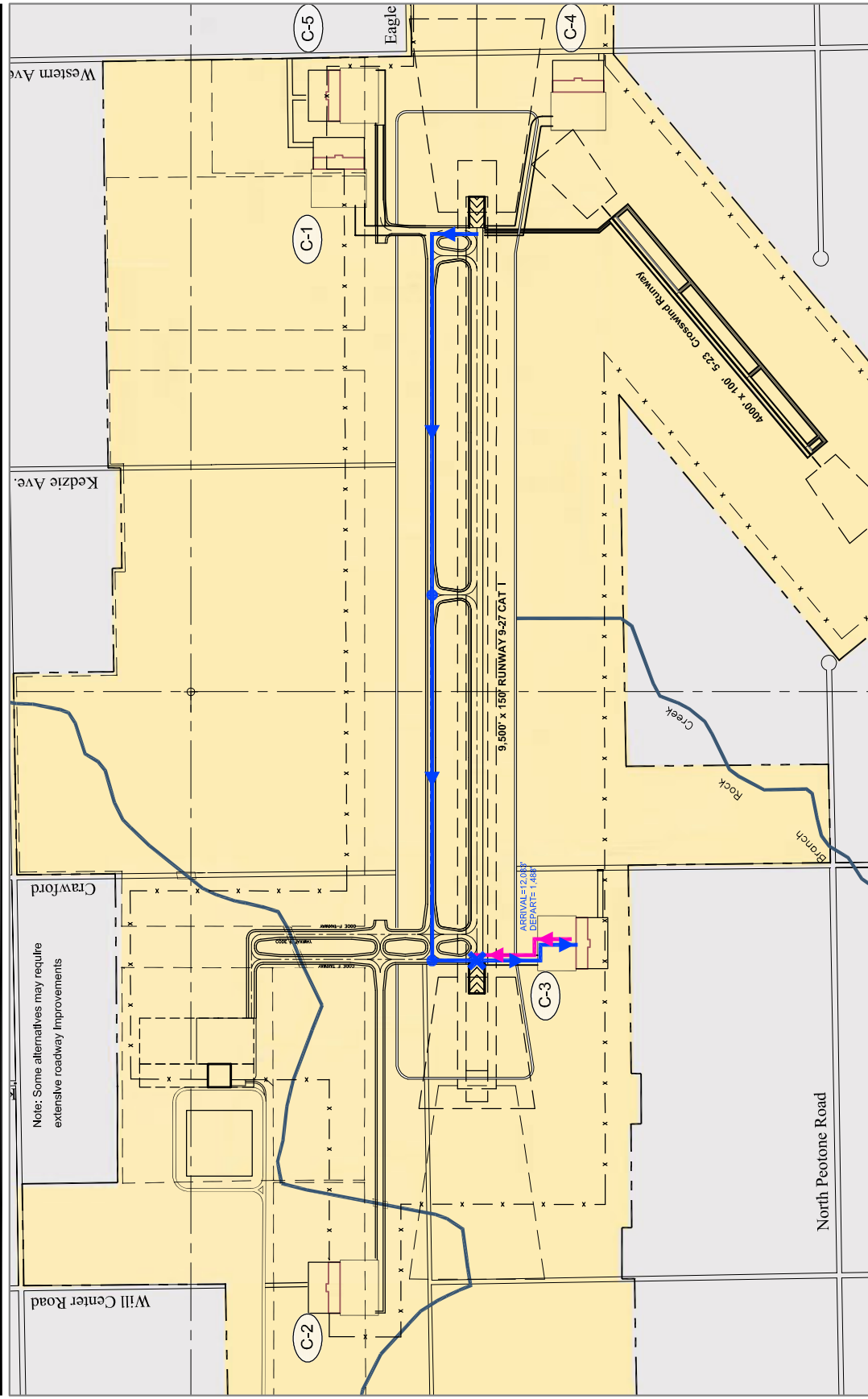
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- ARRIVAL FLOW
- DEPARTURE FLOW
- RUNWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY
- TAXIWAY CROSSING
- RUNWAY CROSSING

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Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
Aircraft Taxiing Analysis
Air Cargo C-3 East Flow

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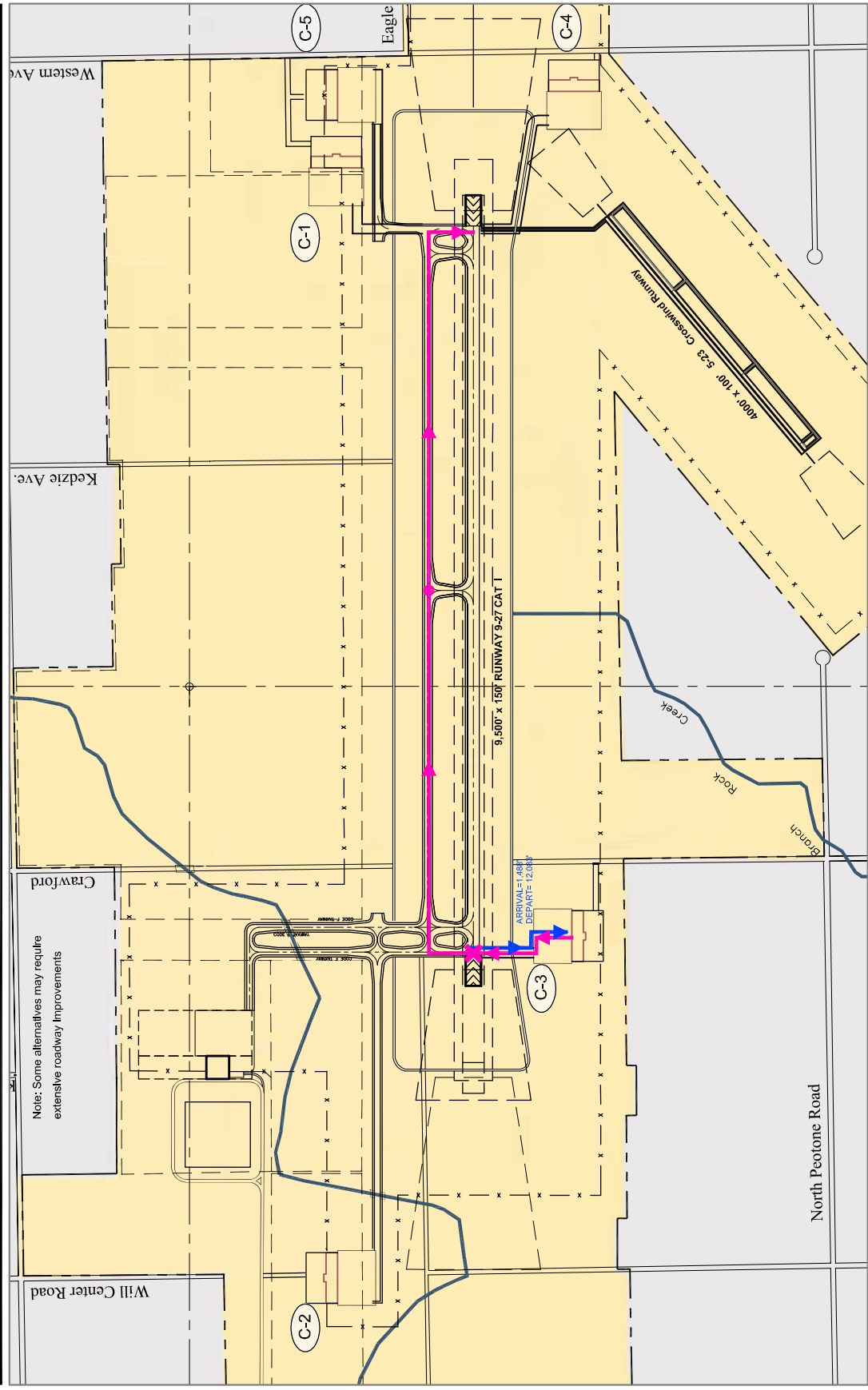
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- Blue arrow: ARRIVAL FLOW
- Pink arrow: DEPARTURE FLOW
- Black 'X': RUNWAY CROSSING
- Dashed line: AIRPORT FOOTPRINT
- Black line with cross-ticks: PROPOSED AIRPORT RUNWAY
- Black dot: TAXIWAY CROSSING

0 1000 2000 ft

North Arrow

Draft Concept Alternatives Analysis for the Inaugural Airport Program



**Inaugural Airport Program
Aircraft Taxiing Analysis
Air Cargo C-3 West Flow**

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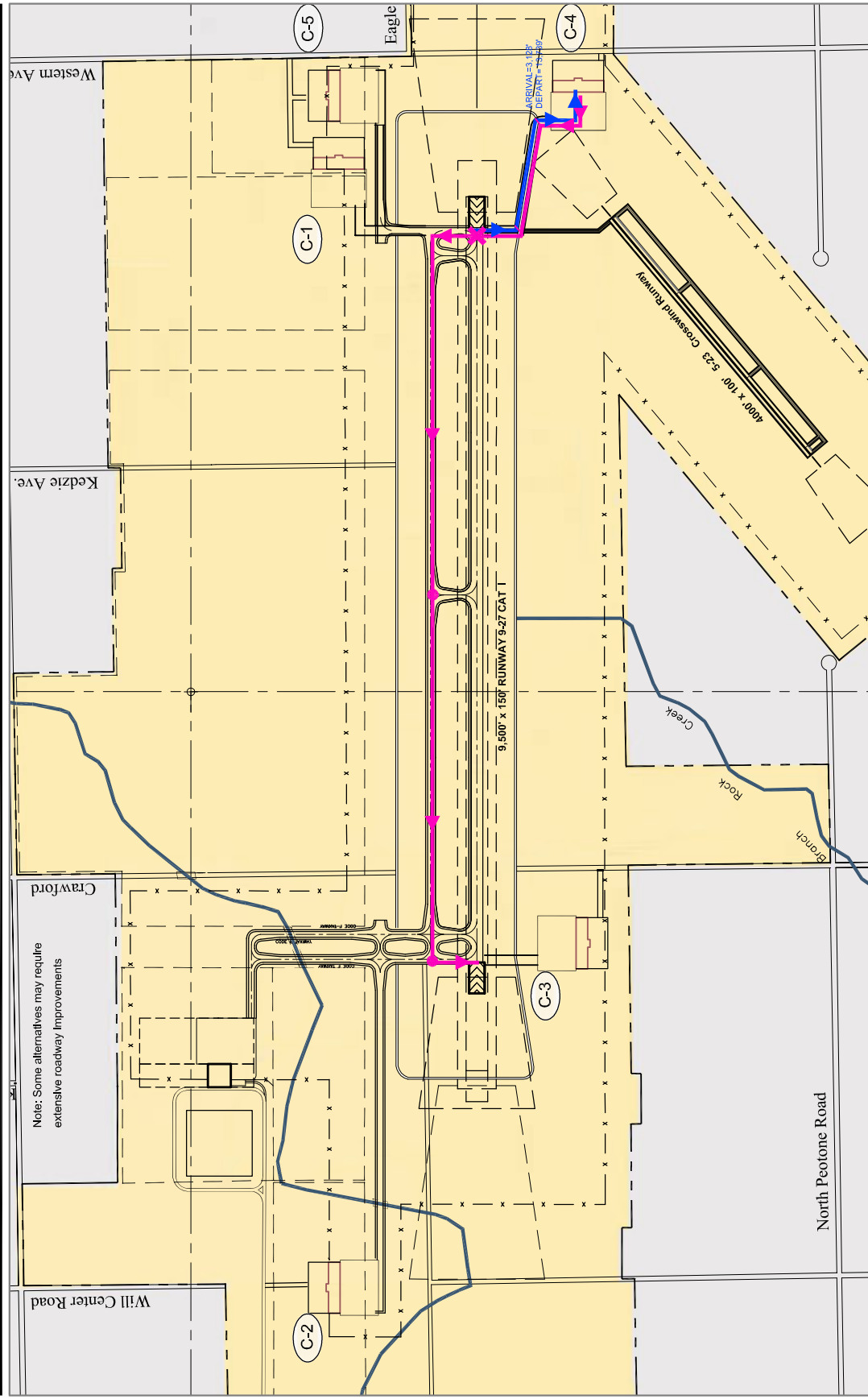
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- DEPARTURE FLOW
- TAXIWAY CROSSING
- RUNWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY

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North Arrow

Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
 Aircraft Taxiing Analysis
 Air Cargo C-4 East Flow

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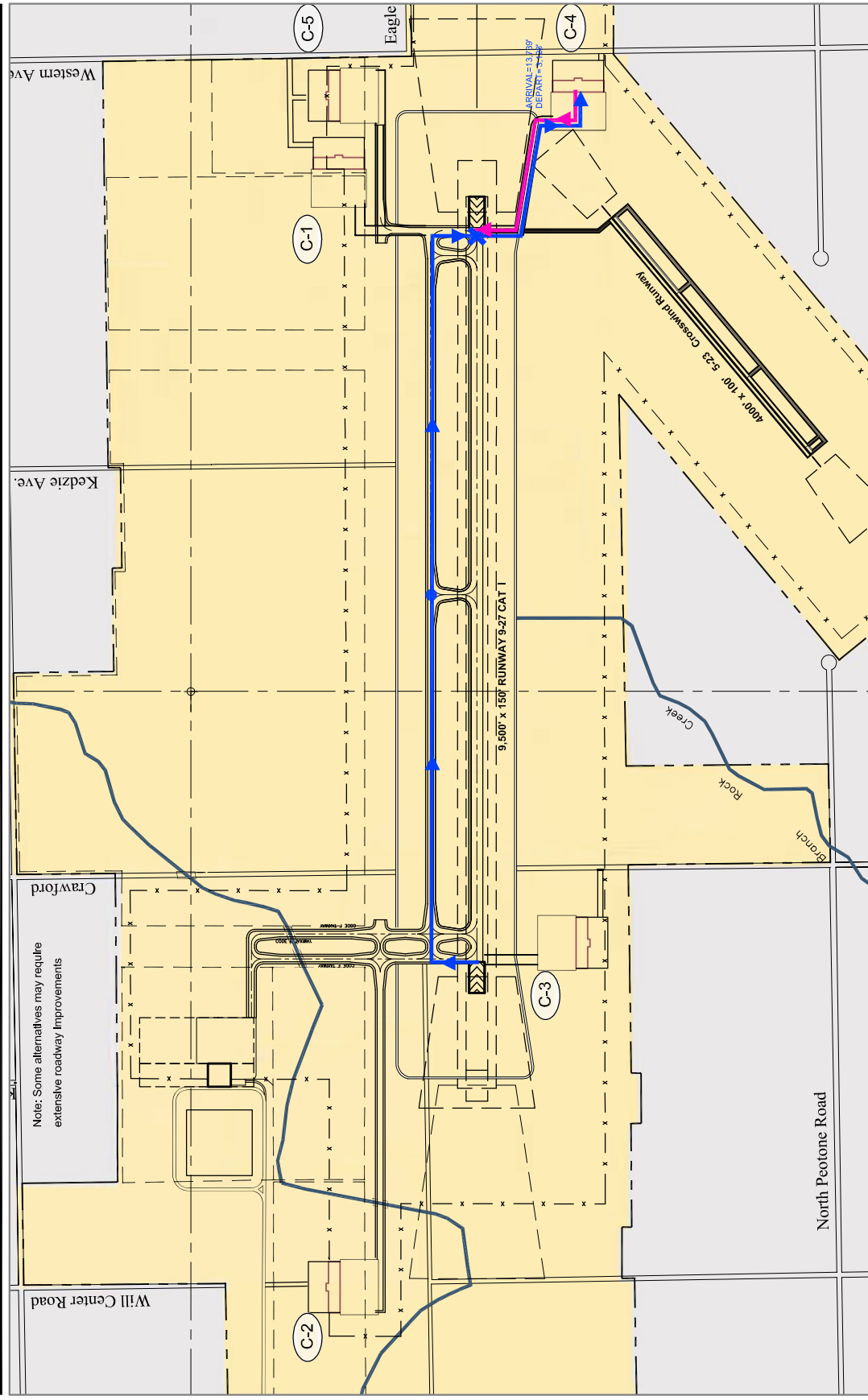
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- ARRIVAL FLOW
- DEPARTURE FLOW
- RUNWAY CROSSING
- TAXIWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY

0 1000 2000 ft

Exhibit: A-10.7

Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
 Aircraft Taxiing Analysis
 Air Cargo C-4 West Flow

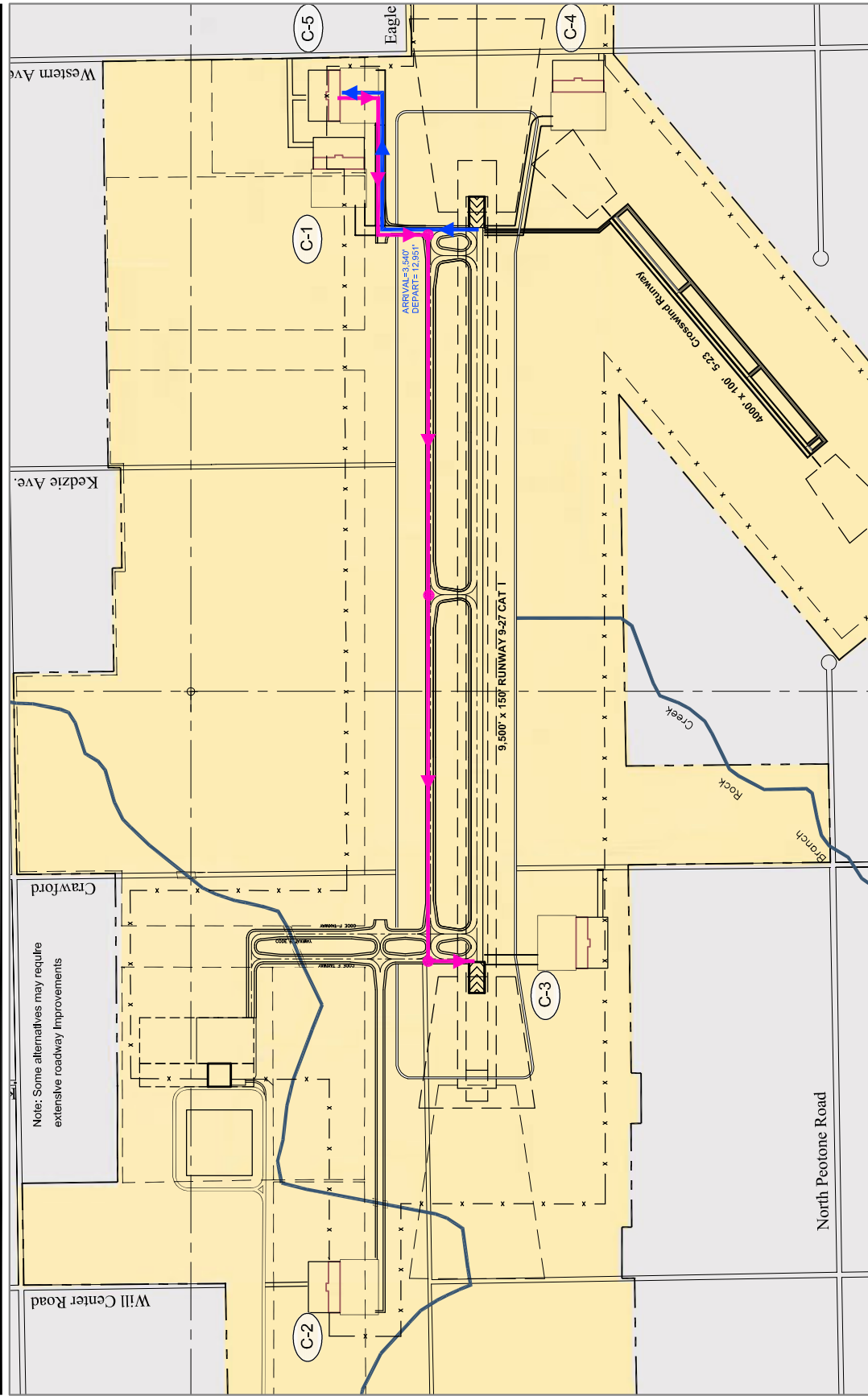
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- DEPARTURE FLOW
- RUNWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY
- TAXIWAY CROSSING

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Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
Aircraft Taxiing Analysis
Air Cargo C-5 East Flow

TAMS an Earth Tech Company

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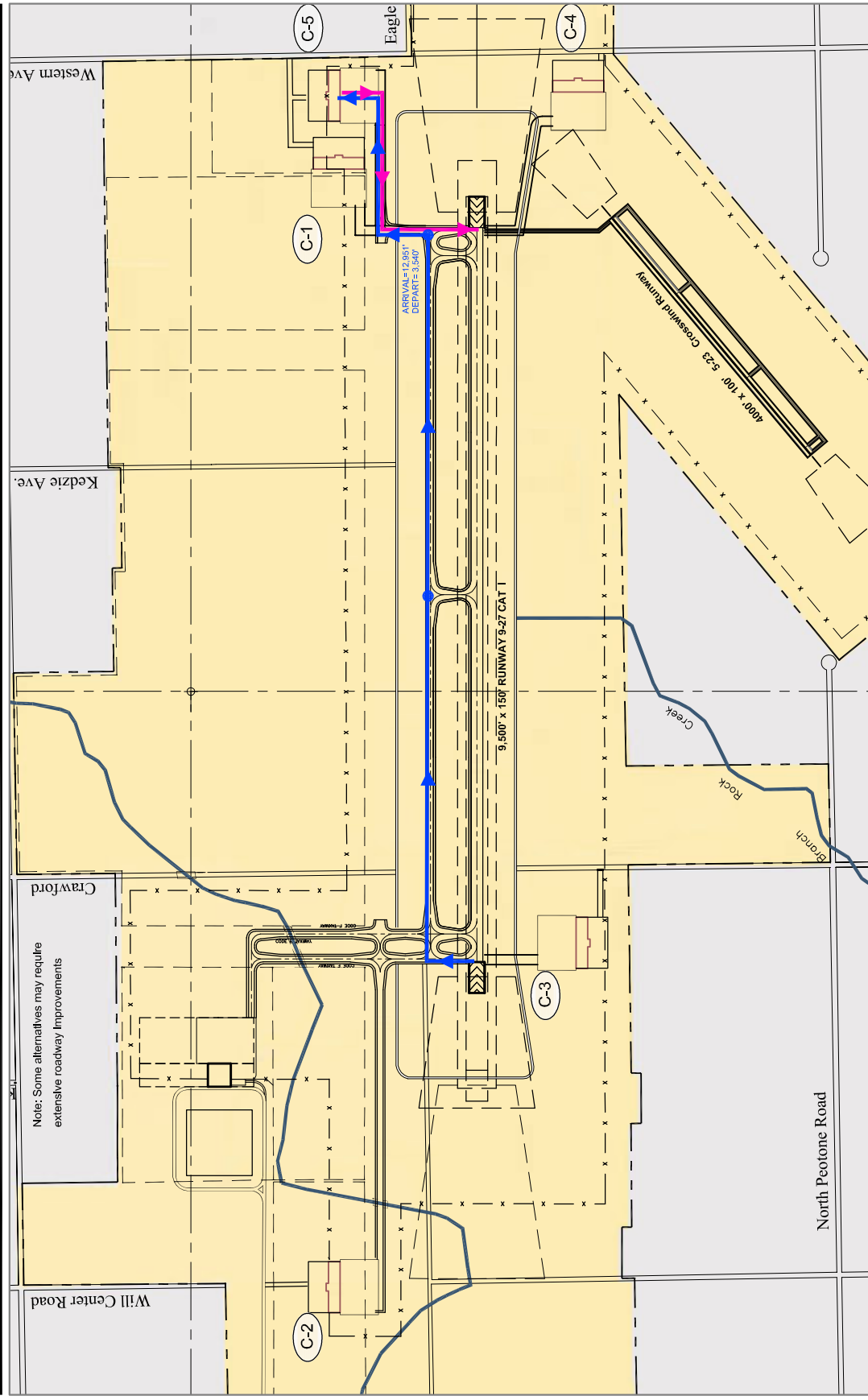
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- TAXIWAY CROSSING
- RUNWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY

0 1000 2000 ft

North

Exhibit: A-10.9

Draft Concept Alternatives Analysis for the Inaugural Airport Program



Inaugural Airport Program
Aircraft Taxiing Analysis
Air Cargo C-5 West Flow

TAMS an Earth Tech Company

Legend

- ARRIVAL FLOW
- DEPARTURE FLOW
- TAXIWAY CROSSING
- RUNWAY CROSSING
- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY

0 1000 2000 ft

North

Exhibit: A-10.10