6.0 EVALUATION OF ALTERNATIVES

The primary purpose of this element of the Master Plan Update is to describe the development and evaluation of major alternatives considered for key components of overall Airport development. The alternatives identified represent a level of detail that is common to a master planning effort, not a level of detail that is equivalent to an architectural or engineering design study.

6.1 TERMINAL AREA ALTERNATIVES

This section presents alternative physical configurations for the passenger terminal area, including the coordinated development of the following major landside facilities and infrastructure components:

- *Passenger Terminal Facilities*
- *Aircraft Parking*
- *Ingress/Egress and Curbside Roadways*
- *Vehicular Parking Facilities*

6.1.1 Facilities Requirements

As described in detail in Chapter 5.0 Landside Facilities Requirements, increases in passenger demand over the 20-year period will require an expansion of the passenger terminal to accommodate approximately 70 gates. The overall facilities development will expand to meet Planning Activity Level 3 (PAL 3) requirements. The total area of the terminal facilities will increase to approximately 1,288,000 square feet and will necessitate significant increases in vehicular parking capacity, as well as access/egress roadways and curbside roadway frontage. Each Terminal Area alternative evaluated in this chapter was configured to meet all PAL 3 facilities requirements at an acceptable level of service.

6.1.2 Opportunities and Constraints

The existing terminal area consists of approximately 180 acres between the airfield and the regional access roadway system at Howell Avenue. In discussion with GMIA management and staff, major working assumptions regarding the opportunities for and constraints affecting future development were established to guide the configuration of specific Terminal Area alternatives. As described graphically on **Exhibit 6.1-1**, these working assumptions are:

- **Central Utilities Building.** The existing location of the facility is operationally efficient and the facilities and equipment can be expanded on this site to serve the future terminal area improvements. In addition, based on its proximity to Runway 7L-25R, this site is not considered viable for future expansion of terminal facilities.

- **International Arrivals Building.** Over the 20-year planning horizon, the international arrivals and Federal Inspection Services (FIS) facilities will be combined with the main passenger terminal.

- **Airport Office Wing.** Based on prior planning studies, the conversion of the Airport offices to a passenger concourse is not considered feasible.

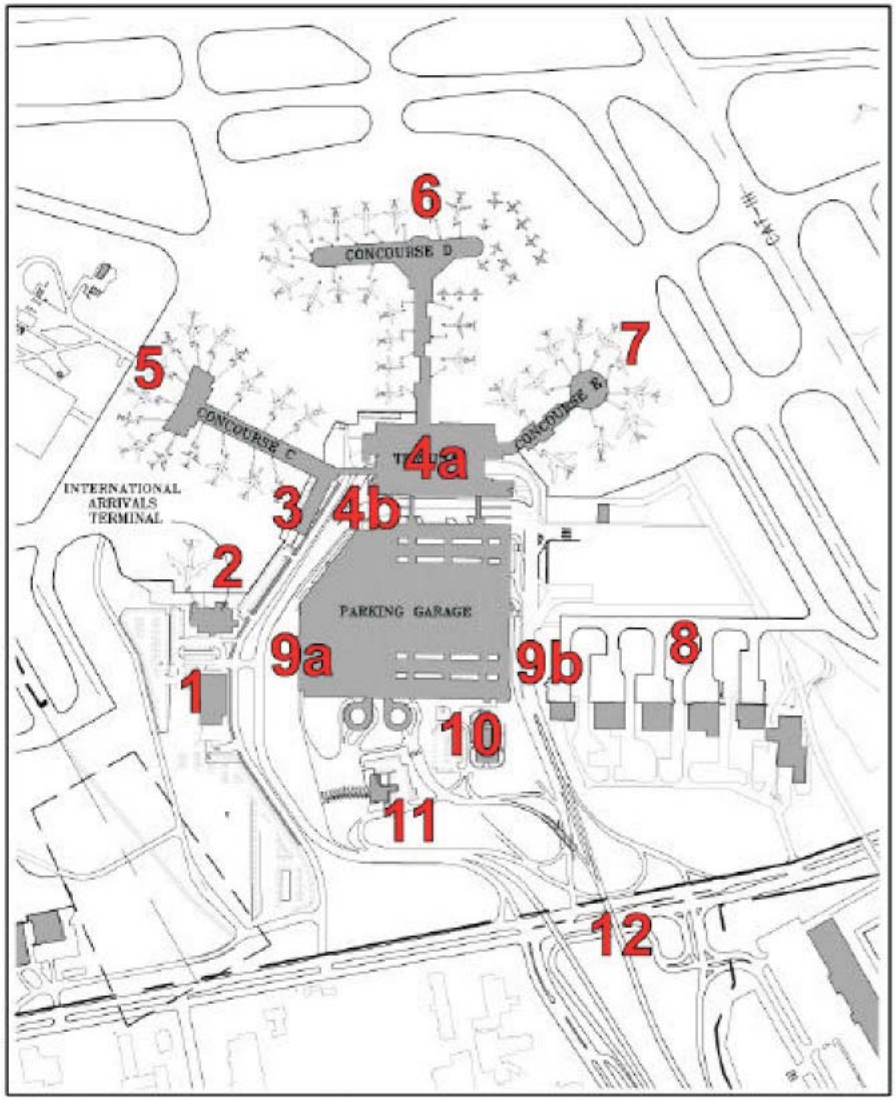
- **Main Terminal.** Terminal Area alternatives will explore potential facilities and roadway expansion alternatives.

- **Concourse C.** Maintain through the 20-year planning period with the addition of the "hammerhead" expansion of the concourse. Further expansion of the concourse will only be considered if this is required to reach the Planning Activity Level 3 (PAL 3) aircraft parking requirement for approximately 70 gates.

- **Concourse D.** Will be maintained through the 20-year planning period.

- **Concourse E.** Will be maintained through the 20-year planning period, unless there would be a significant operational benefit from modification or replacement of the concourse.

- **Future Development Area.** The area south of the existing Parking Garage is considered available for future terminal/concourse improvements.



1. **Central Utilities Building:** Existing location is good and facility can be expanded to serve future Terminal Area improvements thru the 20-year planning period.
2. **International Arrivals Building:** Combine w/ future domestic terminal/concourse improvements.
3. **Airport Office Wing:** Based on prior studies, conversion to use as a passenger concourse is not feasible.
4. **Main Terminal:** Develop potential facilities (4a) and roadway (4b) expansion alternatives.
5. **Concourse C:** Maintain thru 20-year planning period w/ addition of hammerhead. Also, consider further expansion of hammerhead, only if required to reach the PAL 3 aircraft gate requirement (approximately 70 gates).
6. **Concourse D:** Maintain thru 20-year planning period.
7. **Concourse E:** Maintain thru 20-year planning period unless significant benefit from modification.
8. **Future Development Area:** Available for future terminal/concourse improvements.
9. **Garage Expansion:** Assume Parking Garage Expansion Phase 2 (9a) will be implemented and Terminal Area Alternatives will explore potential further expansion sites (9b) or remote from the existing garage.
10. **Air Traffic Control Tower (ATCT):** Consider potential relocation for alternative use only if this provides major operational or implementation cost benefit.
11. **Fare Collection Plaza:** Existing location is good, but alternatives must consider future expansion capability.
12. **Connection to Regional Roadways:** Consider effects on operational conditions and extent of potential re-work.

GENERAL MITCHELL INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

WORKING ASSUMPTIONS
TERMINAL AREA ALTERNATIVES

EXHIBIT
6.1-1

- **Parking Garage Expansion.** Assume the Parking Garage expansion Phase 2 (northeast corner of the existing garage) will be implemented. The various Terminal Area alternatives will explore potential sites for further expansion either contiguous with or remote from the existing structure.

- **Air Traffic Control Tower (ATCT).** Consider potential relocation of the ATCT for an alternative use only if this provides a major operational benefit.

- **Parking Fee Collection Plaza.** The existing site is considered operationally viable, but future expansion capability must be considered in overall terminal Area alternatives.

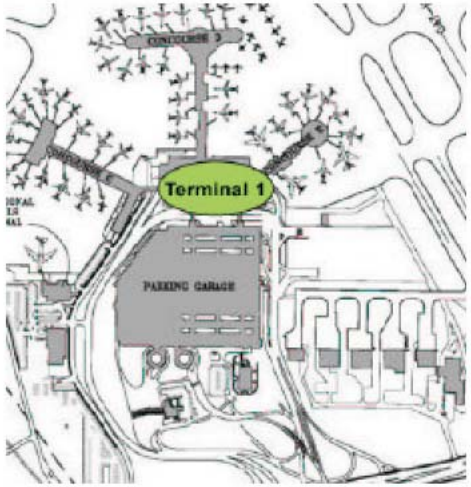
- **Connection to Regional Roadways.** In developing the Terminal Area alternatives, consider the operational effects and extent of potential re-work on the vehicular roadways.

6.1.3 Description of Alternatives

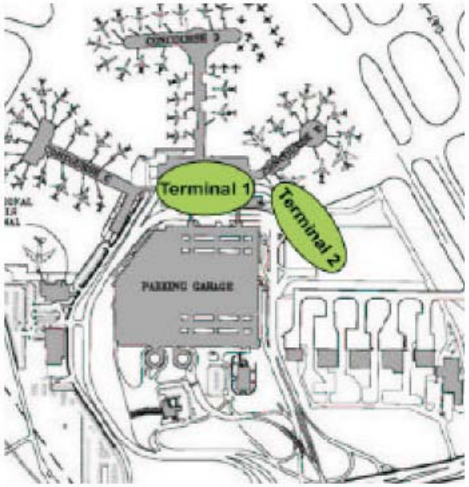
Sixteen Preliminary Terminal Area alternatives were developed for evaluation. These alternatives represent a range of physical configurations from the most centralized to the most decentralized use of the available development area. The individual Exhibits depicting these preliminary alternatives are presented in Appendix A, Exhibits A-1 through A-16. As shown on **Exhibit 6.1-2**, the alternatives were grouped into six (6) major "families" (A-F) representing their overall Terminal Area development concepts, as follows:

- **Alternatives A1 to A4.** These alternatives are all based on the concept of serving all existing and future concourses from one Central Terminal. The existing passenger terminal would be reconfigured and expanded to provide new ticketing/baggage check-in facilities at the Concourse Level served by a new elevated dropoff curbside roadway. Expanded baggage handling/claim facilities and airline operations space would be developed at the Ground Level, served by an expanded pickup curbside roadway. The variations from Alternatives A1 to A4 represent a range from the most to least centralized arrangement of vehicular parking facilities and the resulting configuration of future concourse development.

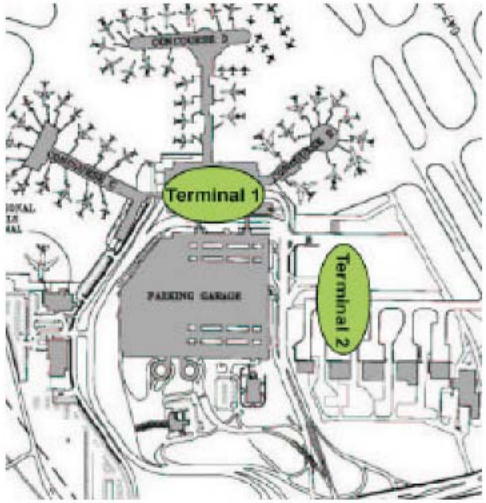
ALT. A



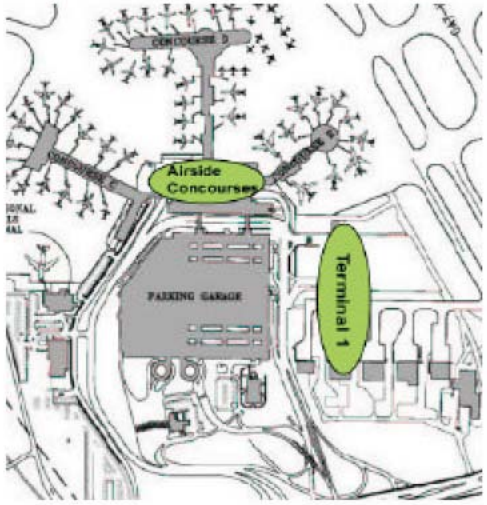
ALT. B



ALT. C

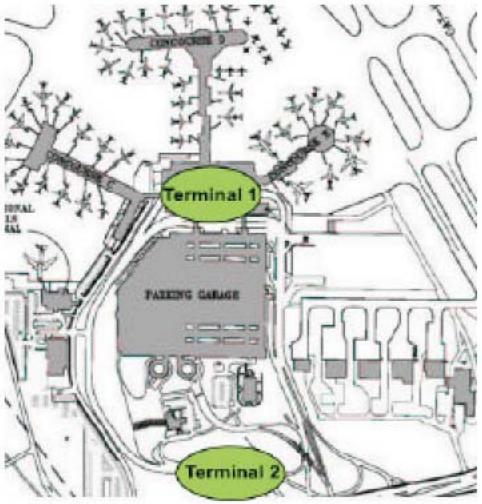


ALT. D



ALT. E

ALT. F



GENERAL MITCHELL INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

MAJOR TERMINAL AREA ALTERNATIVES

EXHIBIT
6.1-2

- **Alternatives B1 to B4.** These alternatives are all based on the concept of serving all existing and future concourses by expanding the existing ticketing and baggage claim facilities to the south. These expanded facilities would be served by extensions of the existing Ground Level dropoff and pickup curbside roadways. The variations from Alternatives B1 to B4 represent a range from the most to least centralized arrangement of vehicular parking facilities and the resulting configuration of future concourse development.

- **Alternatives C1 to C5.** These alternatives are all based on the concept of serving all future concourse development from a new Unit Terminal located south of the existing Parking Garage. The new Unit Terminal would provide fully-independent ticketing/baggage check-in and baggage claim facilities as well as new dropoff and pickup curbside roadways at the Ground Level. The variations from Alternatives C1 to C5 represent a range from the most to least centralized arrangement of vehicular parking facilities and the resulting configuration of future ticketing, baggage claim and concourse development.

- **Alternative D1.** This alternative is based on the concept of serving all existing and future concourses from a new multi-level Central Terminal that would completely replace all ticketing, baggage claim and dropoff/pickup curbside roadways in the existing passenger terminal. Existing Concourses C and D would be modified to be accessible from the new Central Terminal by an Automated People Mover (APM).

- **Alternative E1.** Similar to Alternatives Type C, this alternative is based on the concept of serving all future concourse development from a new Unit Terminal. However, in Alternative E1, the new Unit terminal would be located between the existing Parking Garage and Howell Ave. The new Unit Terminal would provide fully-independent ticketing/baggage check-in and baggage claim facilities. In addition, a multi-level roadway system would serve new dropoff and pickup curbside roadways as well as maintain access/egress from the existing terminal and parking facilities.

- **Alternative F1.** Similar to Alternatives Type C, this alternative is based on the concept of serving all future concourse development from a new Unit Terminal. However, in Alternative F1, the new Unit Terminal would be located west of Howell Ave. The new Unit Terminal would provide fully-independent ticketing/baggage check-in and baggage claim facilities as well as new dropoff and pickup curbside roadways at the Ground Level.

6.1.4 Evaluation Criteria

Three basic types of criteria were used in the evaluation of the Terminal Area alternatives:

- **Level 1 Operational Criteria.** These operational criteria were taken directly from the Visioning Statement outlined in *Chapter 1.0, Introduction,* developed by GMIA at the outset of the Master Plan Update. These criteria represent goals for Airport development that are specific to GMIA.

- **Level 2 Operational Criteria.** These operational criteria represent the interests of the Airport, airlines, tenants, passengers and Airport visitors on a wide range of issues necessary to provide an overall balance terminal area complex.

- **Comparative Cost Estimate.** All terminal area alternatives were ranked for their relative implementation cost. These rankings are based on concept-level estimates for overall Capital Development Cost (including A/E design, construction and administrative supervision for all facilities, roadways, infrastructure, and landscaping development of the terminal area alternatives.) Along with the cost of new construction, allowances were included for demolition, relocation and/or modification and re-use of all existing facilities within the Terminal Area.)

6.1.5 Preliminary Evaluation

As shown on **Table 6.1-1**, each of the 16 Terminal Area alternatives was scored and ranked based on Level 1 and Level 2 Criteria and was also evaluated for comparative Capital Development Cost (CDC) over both 10-year and 20-year periods. Facilities development in the 10-year CDC would meet the PAL 1 requirements described in detail in *Chapter 5.0, Landside Facilities Requirements*. Facilities development in the 20-year CDC would meet the total of PAL 1, PAL 2, and PAL 3 requirements.

TABLE 6.1-1
General Mitchell International Airport
GMIA TERMINAL AREA ALTERNATIVES

LEVEL 1 CRITERIA	TERMINAL AREA ALTERNATIVES																BASIS for EVALUATION	EVALUATION KEY:
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	C5	D1	E1	F1		
FACILITIES																		
Efficient & Flexible Terminal Facilities	9	9	9	8	8	8	8	8	6	6	6	6	6	8	5	5	**Centralized passenger circulation vs. Unit Terminals**	**9 to 10 = Excellent**
Simple Wayfinding--Ease of Terminal Use	9	9	9	9	8	8	8	9	9	9	9	8	9	4	8	9	**Clear/horizontal vs. complicated/level change-dependent circulation path**	**7 to 8 = Good**
Improved LOS	6	6	6	6	6	6	6	6	6	6	6	6	6	4	6	6	**Short vs. long circulation path**	**5 to 6 = Fair**
Improved Concession Choice and Revenue	9	9	9	8	8	8	8	8	7	7	7	7	7	8	7	7	**Centralized passenger circulation vs. Unit Terminals**	**3 to 4 = Poor**
Flexible Security Screening Operations	9	9	9	9	8	8	8	8	6	6	6	6	6	9	6	6	**Centralized passenger circulation vs. Unit Terminals**	**1 to 2 = System Breakdown**
Opportunities for New Entrants	8	8	8	9	8	8	8	8	8	8	8	8	9	8	8	9	**Overall ease of providing gates and support facilities at each construction phase**	
Sub-Totals for Facilities Criteria:	**50**	**50**	**50**	**49**	**46**	**46**	**46**	**47**	**42**	**42**	**42**	**41**	**43**	**41**	**40**	**42**		
ACCESS																		
Simple Wayfinding--Ease of Roadway Use	5	6	9	9	4	5	8	8	2	3	8	6	5	9	4	4	**Clear/safe vs. complicated/tight roadway geometry and decision distances**	**9 to 10 = Excellent**
Efficient & Flexible Roadway Use	5	6	9	9	3	4	7	7	2	3	6	6	5	9	4	4	**Simple/shared roadways vs. complicated/special use roadways**	**7 to 8 = Good**
Improved Curbside LOS	5	6	9	9	2	3	6	6	4	5	6	8	6	9	8	8	**Overall curb lengths provided**	**5 to 6 = Fair**
Flexible Utilization of Parking Garage	9	8	6	6	9	8	7	7	9	8	6	6	6	9	9	6	**Centralized/shared use vs. multiple locations of parking garage(s)**	**3 to 4 = Poor**
Flexible Response to TSA Requirements	9	9	9	9	6	6	6	6	6	6	6	6	8	8	8	8	**Generous/flexible separation of parking from high occupancy facilities**	**1 to 2 = System Breakdown**
Opportunities for Future Transit Connection	9	9	9	9	8	8	8	8	7	7	7	7	7	9	7	7	**Centralized Terminal vs. Unit Terminals**	
Sub-Totals for Access Criteria:	42	44	51	51	32	34	42	42	30	32	39	39	37	53	40	37		
Sub-Totals for Level 1 Criteria:	**92**	**94**	**101**	**100**	**78**	**80**	**88**	**89**	**72**	**74**	**81**	**80**	**80**	**94**	**80**	**79**		
Ranking based on Best Level 1 Criteria	**5**	**3**	**1**	**2**	**14**	**9**	**7**	**6**	**16**	**15**	**8**	**9**	**9**	**3**	**9**	**13**		
LEVEL 2 CRITERIA	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**C5**	**D1**	**E1**	**F1**	**BASIS for EVALUATION**	
Overall Airline Operations	9	9	9	8	8	8	8	8	8	8	8	6	8	6	8	8	**Centralized/compact versus spread-out/split operations**	**9 to 10 = Excellent**
Overall Airport Facilities Operations	9	9	9	8	8	8	8	8	8	8	8	6	8	6	8	8	**Centralized/compact versus spread-out/split operations**	**7 to 8 = Good**
Coordination w/ Airfield Operations	5	6	9	8	5	6	9	8	5	6	9	7	9	6	7	6	**Independent taxilanes versus pushbacks into taxiways**	**5 to 6 = Fair**
Coordination w/ Regional Access Roadways	5	6	9	9	5	6	9	9	4	5	8	8	8	8	4	4	**Sufficient versus insufficient decision distance and roadway geometry**	**3 to 4 = Poor**
Coordination w/ Overall Airport Development	8	8	8	8	8	8	8	8	8	8	8	8	8	8	6	4	**Greenfield development sites versus "domino effects" requiring multiple relocations**	**1 to 2 = System Breakdown**
Operation & Maintenance Cost (O&M)	9	9	9	8	8	8	8	8	8	8	8	7	8	4	6	6	**Compact/easily maintained facilities versus spreadout/labor-intensive facilities and equipment**	
Construction Feasibility	4	4	4	4	6	6	6	6	7	7	8	8	8	6	6	8	**Independent construction sites versus directly adjacent or overhead construction**	
Extent of Temporary Construction	4	4	4	4	6	6	6	6	8	8	9	9	9	6	4	6	**Sufficient versus insufficient clearance from passenger, airline or other airport operations**	
Time to Implement	6	6	6	6	8	8	8	8	8	8	9	9	9	6	6	6	**Possibility of phased incremental versus requirement for major construction increments**	
Sub-Totals for Level 2 Criteria	**59**	**61**	**67**	**63**	**62**	**64**	**70**	**69**	**64**	**66**	**75**	**68**	**75**	**56**	**55**	**56**		
Ranking based on Best Level 2 Criteria	**13**	**12**	**6**	**10**	**11**	**8**	**3**	**4**	**8**	**7**	**1**	**5**	**1**	**14**	**16**	**14**		
Totals for Level 1 + 2 Criteria	**151**	**155**	**168**	**163**	**140**	**144**	**158**	**158**	**136**	**140**	**156**	**148**	**155**	**150**	**135**	**135**		
Ranking based on Best Level 1 + 2 Criteria	**8**	**6**	**1**	**2**	**12**	**11**	**3**	**3**	**14**	**12**	**5**	**10**	**6**	**9**	**15**	**15**		
COST COMPARISON	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**C5**	**D1**	**E1**	**F1**	**BASIS for EVALUATION**	
10-Year Capital Development Cost (in $Millions)	**402**	**402**	**402**	**399**	**275**	**272**	**254**	**254**	**270**	**267**	**270**	**268**	**267**	**671**	**438**	**415**	**See Cost Estimate Sheets**	
20-Year Capital Development Cost (in $Millions)	**795**	**803**	**805**	**802**	**657**	**661**	**641**	**644**	**644**	**649**	**650**	**657**	**653**	**1,167**	**830**	**820**	**See Cost Estimate Sheets**	
Ranking Based on Least 10-Year Cost	**11**	**11**	**11**	**10**	**9**	**8**	**1**	**1**	**6**	**3**	**6**	**5**	**3**	**16**	**15**	**14**		
Ranking Based on Least 20-Year Cost	**10**	**12**	**13**	**11**	**7**	**9**	**1**	**2**	**2**	**4**	**5**	**7**	**6**	**16**	**15**	**14**		

A first draft of the Preliminary Evaluation Matrix was reviewed by GMIA management and staff and then discussed with the consultant team. GMIA comments have been incorporated into Table 6.1-1. Preliminary Findings about specific alternatives are as follows:

- **Alternatives A3, A4, B3, B4 and C3.** The preliminary evaluation indicated that these alternatives warranted further consideration in the Final Evaluation phase. Each alternative will be studied to assess specific operational performance, mitigate weaknesses and better define the comparative costs and implementation challenges.

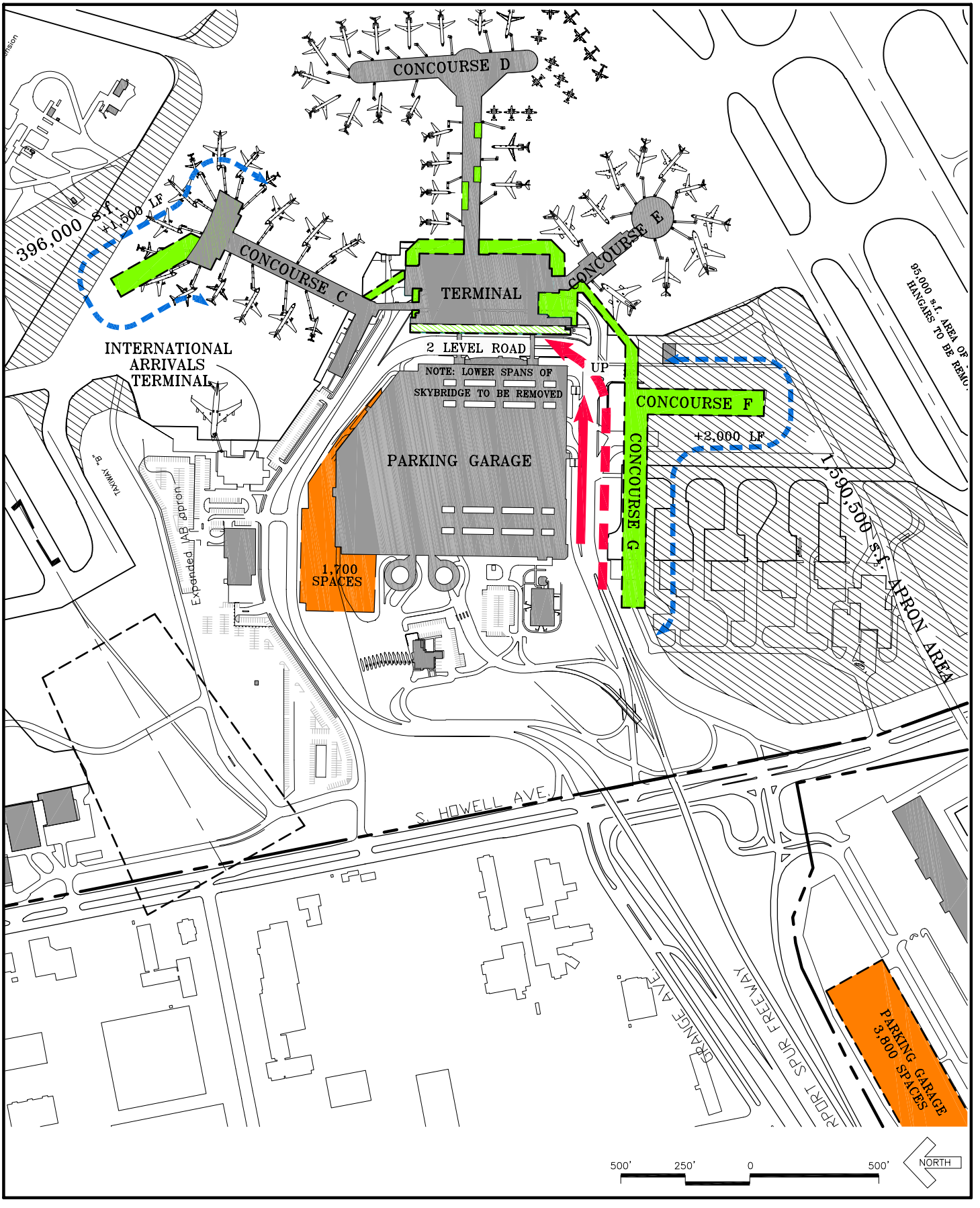
- **Alternatives A1, A2, B1, B2, C1 and C2.** Each of these alternatives includes a substantial southward expansion of the existing parking garage which would significantly reduce the land area available for either vehicular access, terminal facilities and/or aircraft parking. Therefore, these alternatives received lower scores in several criteria representing vehicular access, terminal facilities and airfield operations. Essentially, expanding the existing Parking Garage southward was considered a "fatal flaw" of these concepts. Therefore these alternatives were not recommended for further evaluation.

- **Alternatives D1, E1 and F1.** Each of these alternatives provided some benefits relative to specific criteria, but overall received relatively low scores on operational criteria and were all comparatively high in development cost. Therefore these alternatives were not recommended for further evaluation.

- **Alternatives C4 and C5.** Each of these alternatives were compared quite closely with Alternative C3. Alternative C4 had two significant operational deficiencies, i.e. the underground connector corridor and the extremely tight aircraft taxiing and parking configuration. Similarly, Alternative C5 had significant operational deficiencies in providing access, egress and curbside roadways which could work well with the existing access roadways. For these reasons, Alternatives AC4 and C5 were not recommended for further evaluation.

6.1.6 Refinement of Alternatives

As shown on **Exhibits 6.1-3 thru 6.1-7** respectively, Alternatives A3, A4, B3, B4 and C3 were selected for Final Evaluation. Each alternative was refined to optimize its performance based on the assessments made during the Preliminary Evaluation. Specific refinements include:



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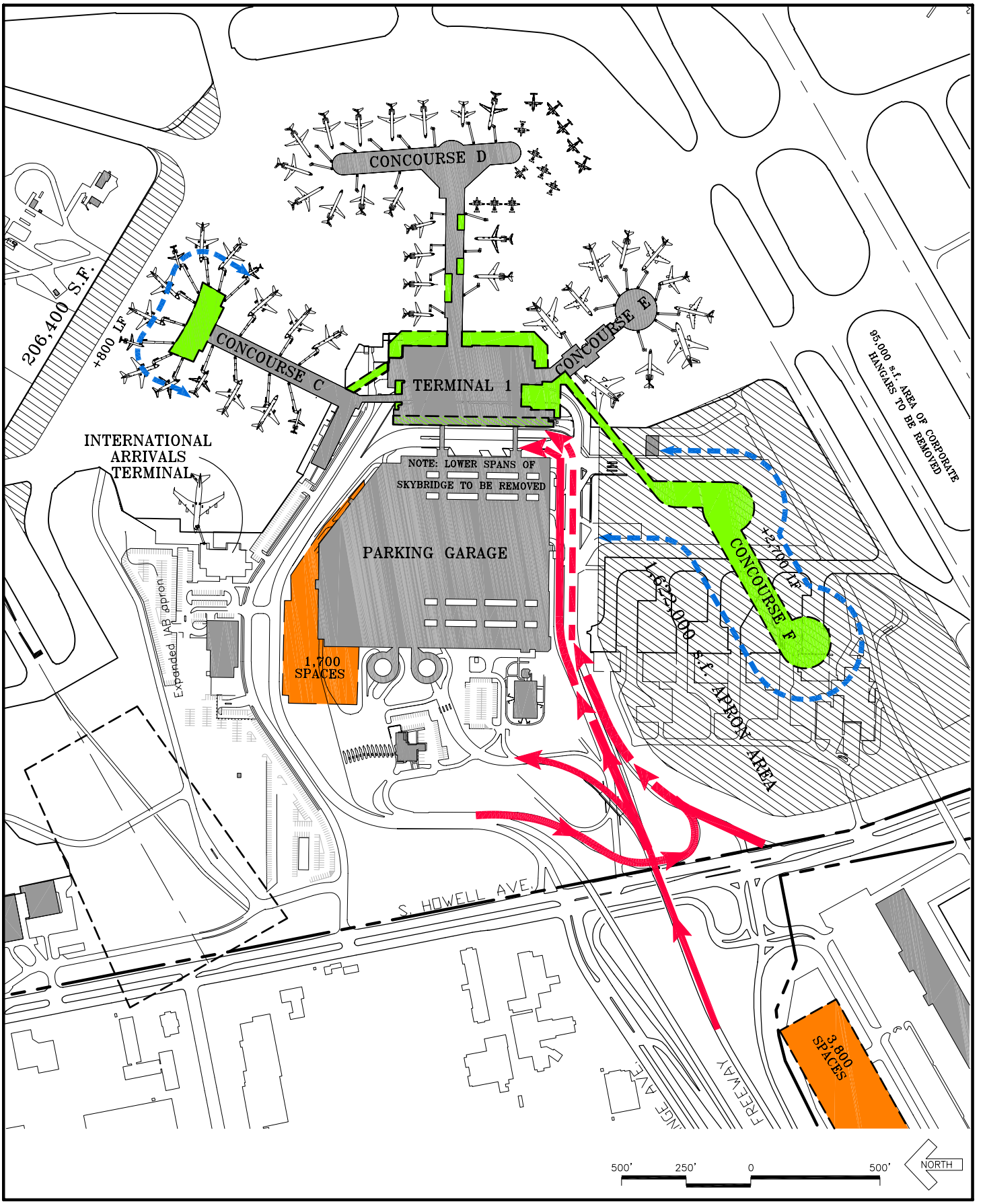
FINAL TERMINAL AREA ALTERNATIVE A3

EXHIBIT 6.1-3

Milwaukee\term-bldg\Term_A3.dwg 02/25/05 PB AVIATION



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TERMINAL AREA ALTERNATIVE A4

EXHIBIT
6.1-4

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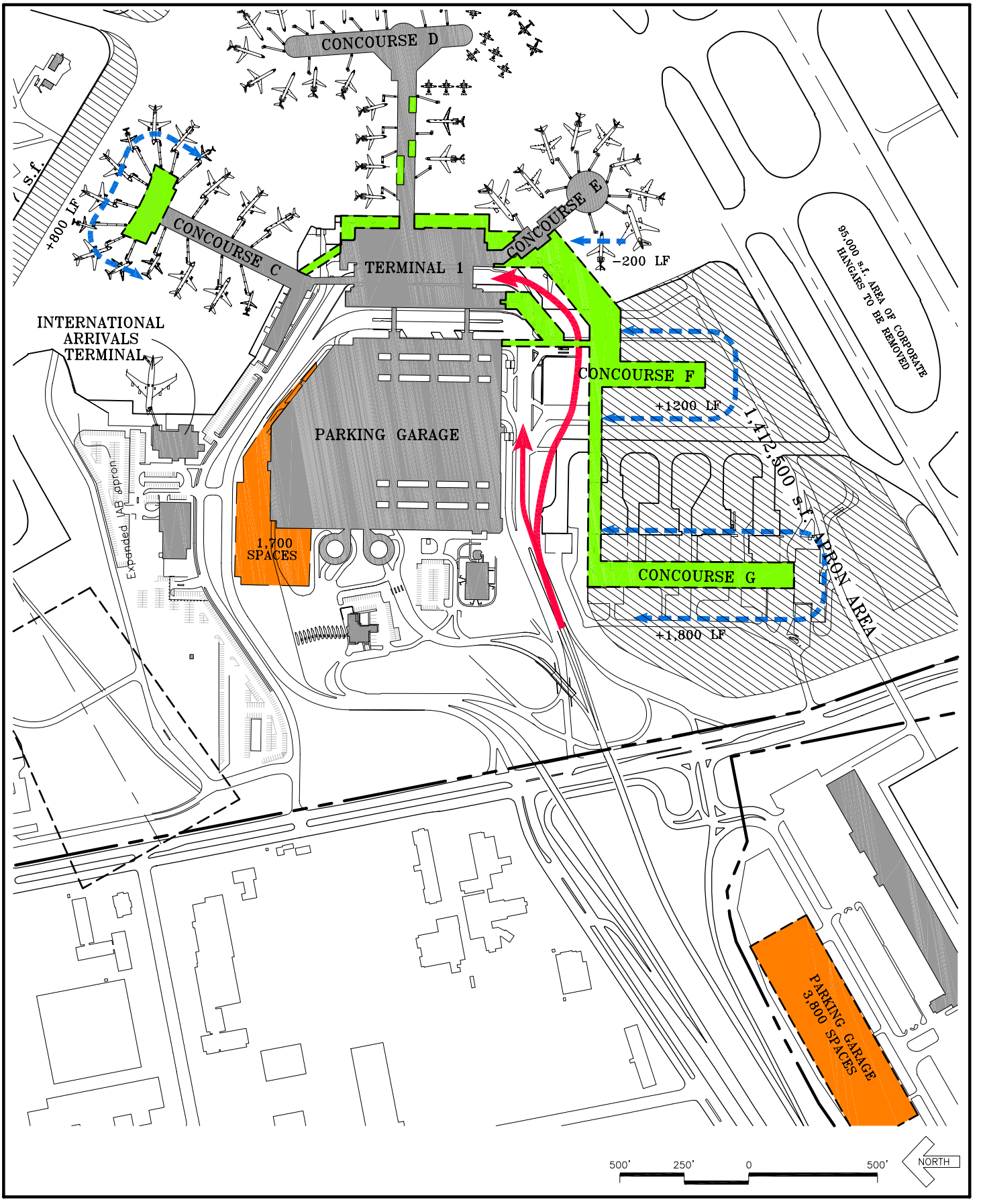

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TERMINAL AREA ALTERNATIVE B3

EXHIBIT 6.1-5

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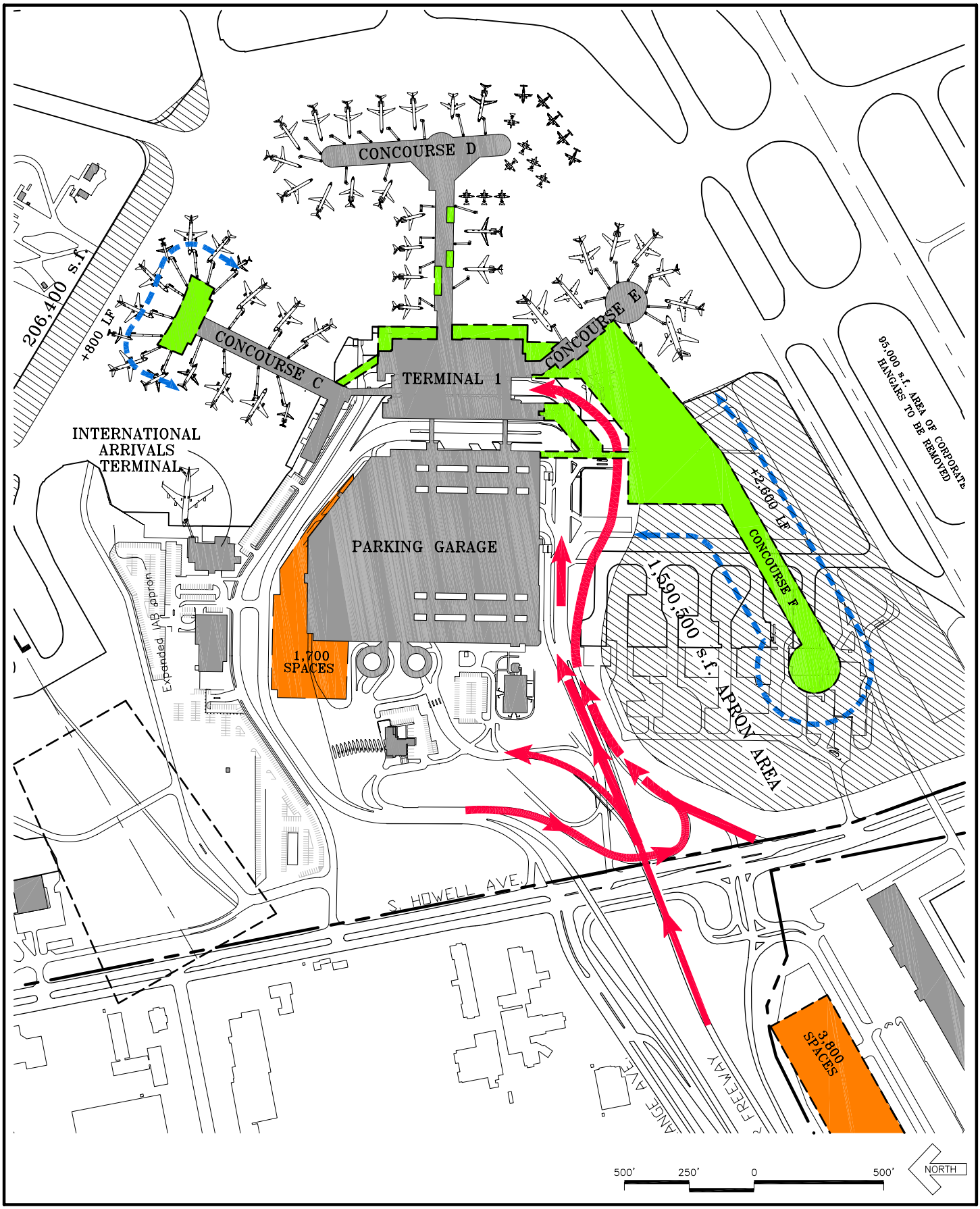

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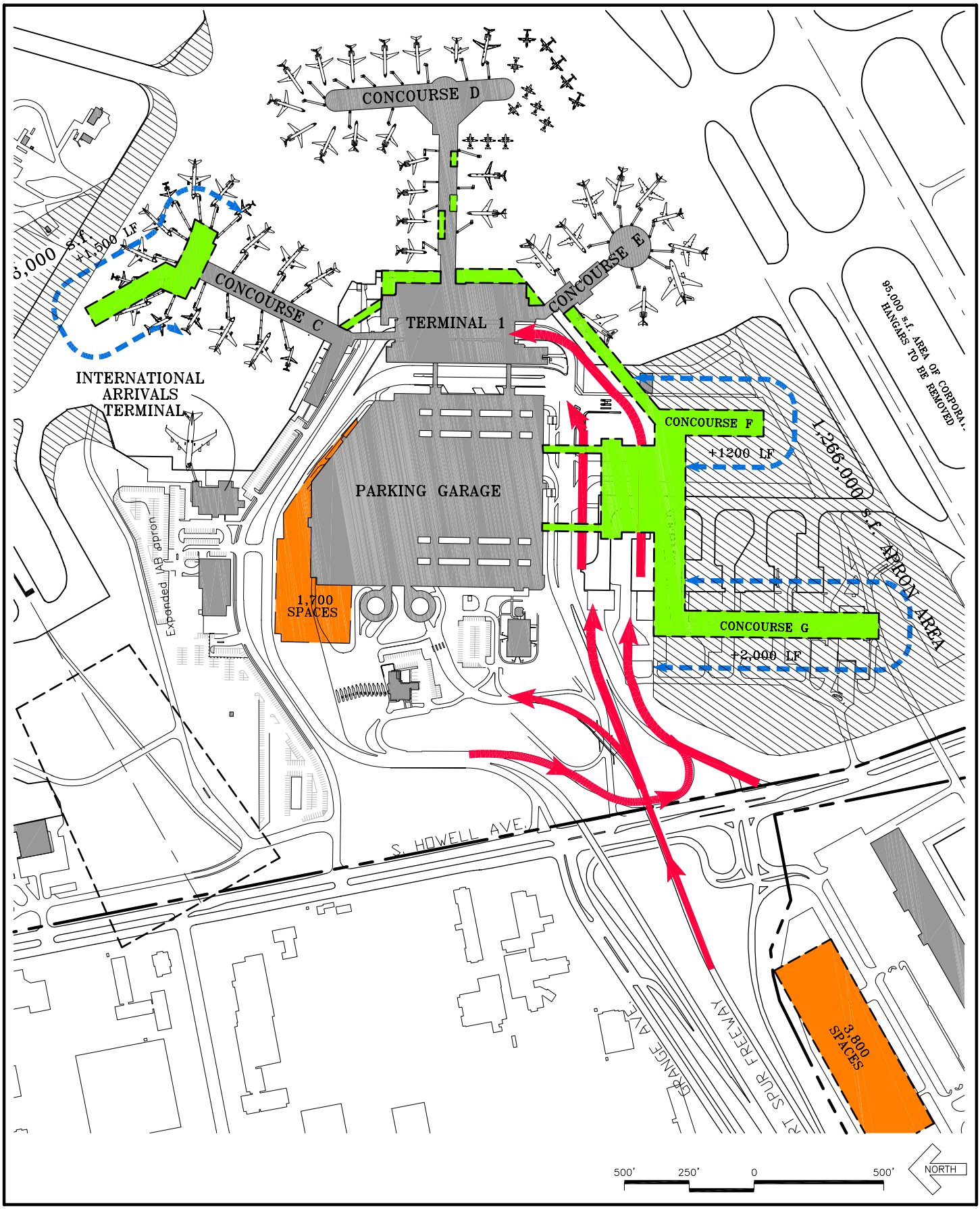
TERMINAL AREA ALTERNATIVE B4

EXHIBIT
6.1-6

Milwaukee\Term-Bldg\Term_B4.dwg 02/25/05

PB AVIATION



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TERMINAL AREA ALTERNATIVE C3

EXHIBIT
6.1-7

Milwaukee\Term-Bldg\Term_C3.dwg 02/25/05

PB AVIATION

- **Alternatives A3 and A4.** Since these alternatives require significantly more complicated construction phasing, more detailed diagrammatic floor plans than are normally associated with a Master Plan Update were prepared to assess both construction feasibility and access roadway capacity. The more detailed examination confirmed that additional roadway capacity could be provided, but that this would come at the cost of additional construction complexity and extent of temporary construction. In addition, based on review comments from the Preliminary Evaluation, the underground pedestrian connector in Alternative A4 was changed to a Concourse Level connector.

- **Alternatives B3 and B4.** Relatively few changes were made to the original configurations.

- **Alternative C3.** The lengths and locations of future Concourses F and G were modified to provide a better balance between aircraft parking and aircraft taxiing capacity.

6.1.7 Final Evaluation

As shown on **Table 6.1-2**, the final five alternatives were evaluated based on Level 1 and Level 2 operational criteria with additional input based on the following specific operational criteria:

- **Construction Feasibility, Extent of Temporary Construction and Time to Implement.** As shown on **Exhibits 6.1-8 and 6.1-9,** double-decking the roadways in Alternatives A3 and A4 would require a significantly more complicated construction phasing scheme than the phasing for other alternatives. Consequently, the scoring for these criteria was refined by consideration of the more complicated construction phasing and its disruptive effects on Airport, airline and passenger activities.

- **Simple Wayfinding – Ease of Terminal Use.** As shown on **Table 6.1-3**, a comparison of the number of level changes made by enplaning and deplaning passengers was prepared and used to guide the scoring on this criterion.

- **Improved Level of Service (LOS).** As shown on **Table 6.1-4**, a comparison of the average walking distance resulting from each alternative was prepared and used to guide the scoring on this criterion.

TABLE 6.1-2
General Mitchell International Airport
DETAILED EVALUATION SCORING MATRIX

LEVEL 1 CRITERIA	FINAL EVALUATION TERMINAL AREA ALTERNATIVES A3	A4	B3	B4	C3	BASIS for EVALUATION	EVALUATION KEY:
FACILITIES							
Efficient & Flexible Terminal Facilities	9	8	8	8	6	Centralized passenger circulation vs. Unit Terminals	9 to 10 = Excellent
Simple Wayfinding--Ease of Terminal Use	9	9	8	9	9	Clear/horizontal vs. complicated/level change-dependent circulation path	7 to 8 = Good
Improved LOS	6	6	6	6	6	Short vs. long circulation path	5 to 6 = Fair
Improved Concession Choice and Revenue	9	8	8	8	7	Centralized passenger circulation vs. Unit Terminals	3 to 4 = Poor
Flexible Security Screening Operations	9	9	8	8	6	Centralized passenger circulation vs. Unit Terminals	1 to 2 = System Breakdown
Opportunities for New Entrants	8	9	8	8	8	Overall ease of providing gates and support facilities at each construction phase	
Sub-Totals for Facilities Criteria:	**50**	**49**	**46**	**47**	**42**		
ACCESS							
Simple Wayfinding--Ease of Roadway Use	9	9	8	8	8	Clear/safe vs. complicated/tight roadway geometry and decision distances	9 to 10 = Excellent
Efficient & Flexible Roadway Use	9	9	7	7	6	Simple/shared roadways vs. complicated/special use roadways	7 to 8 = Good
Improved Curbside LOS	9	9	6	6	6	Overall curb lengths provided	5 to 6 = Fair
Flexible Utilization of Parking Garage	6	6	7	7	6	Centralized/shared use vs. multiple locations of parking garage(s)	3 to 4 = Poor
Flexible Response to TSA Requirements	9	9	6	6	6	Generous/flexible separation of parking from high occupancy facilities	1 to 2 = System Breakdown
Opportunities for Future Transit Connection	9	9	8	8	7	Centralized Terminal vs. Unit Terminals	
Sub-Totals for Access Criteria:	**51**	**51**	**42**	**42**	**39**		
Sub-Totals for Level 1 Criteria:	**101**	**100**	**88**	**89**	**81**		
Ranking based on Best Level 1 Criteria	**1**	**2**	**4**	**3**	**5**		

LEVEL 2 CRITERIA	A3	A4	B3	B4	C3	BASIS for EVALUATION	
Overall Airline Operations	9	8	8	8	8	Centralized/compact versus spread-out/split operations	9 to 10 = Excellent
Overall Airport Facilities Operations	9	8	8	8	8	Centralized/compact versus spread-out/split operations	7 to 8 = Good
Coordination w/ Airfield Operations	9	8	9	8	9	Independent taxilanes versus pushbacks into taxiways	5 to 6 = Fair
Coordination w/ Regional Access Roadways	9	9	9	9	8	Sufficient versus insufficient decision distance and roadway geometry	3 to 4 = Poor
Coordination w/ Overall Airport Development	8	8	8	8	8	Greenfield development sites versus "domino effects" requiring multiple relocations	1 to 2 = System Breakdown
Operation & Maintenance Cost (O&M)	9	8	8	8	8	Compact/easily maintained facilities versus spreadout/labor-intensive facilities and equipment	
Construction Feasibility	4	4	6	6	8	Independent construction sites versus directly adjacent or overhead construction	
Extent of Temporary Construction	4	4	6	6	9	Sufficient versus insufficient clearance from passenger, airline or other airport operations	
Time to Implement	6	6	8	8	9	Possibility of phased incremental versus requirement for major construction increments	
Sub-Totals for Level 2 Criteria	**67**	**63**	**70**	**69**	**75**		
Ranking based on Best Level 2 Criteria	**4**	**5**	**2**	**3**	**1**		

Totals for Level 1 + 2 Criteria	**168**	**163**	**158**	**158**	**156**		
Ranking based on Best Level 1 + 2 Criteria	**1**	**2**	**3**	**3**	**5**		

COST COMPARISON	A3	A4	B3	B4	C3	BASIS for EVALUATION	
10-Year Capital Development Cost (in $Millions)	402	399	254	254	270	See Cost Estimate Sheets	
20-Year Capital Development Cost (in $Millions)	805	802	641	644	650	See Cost Estimate Sheets	
Ranking Based on Least 10-Year Cost	5	4	1	1	3		
Ranking Based on Least 20-Year Cost	5	4	1	2	3		

PHASE 1 : New Space Above

PHASE 2a : New Out Bound Baggage Handling & Baggage Screening

PHASE 3a : Remove Existing Drop-Off Roadway & Construct New Tug Drives

PHASE 1 : New Space Above

PHASE 2a : Demolish Portion of Existing Bag Claim Necessary for New Roadway Structure

NORTH

75' 0 150'

GENERAL MITCHELL INTERNATIONAL AIRPORT

TERMINAL AREA ALTERNATIVE TYPE A
Ground Level Construction Phasing

EXHIBIT 6.1-8

Milwaukee\Term-Bldg\Phasing.dwg 02/21/05

PB AVIATION

PHASE 1 :
Replacement Concessions

PHASE 1 :
Replacement Concessions

PHASE 2a :
Replacement
Security Screening

Phase 3a : Replace Existing
Circulation with New Circulation

PHASE 2a :
Replacement
Ticketing

PHASE 2a :
Replacement
Ticketing

PHASE 1 :
Replacement
Ticketing

PHASE 2b : Demo Level 3
Skybridges and Build
Upper Lever Roadway

NORTH

75' 0 150'

GENERAL MITCHELL INTERNATIONAL AIRPORT

TERMINAL AREA ALTERNATIVE TYPE A
Concourse Level Construction Phasing

EXHIBIT
6.1-9

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PB AVIATION

TABLE 6.1-3
General Mitchell International Airport
WALKING DISTANCE COMPARISON

ALT. NO.	CONCOURSE	NO. OF GATES	UNASSISTED WALKING DISTANCE [1]					ASSISTED TRAVEL DISTANCE		TOTAL TRAVEL DISTANCE [4]		RANK BY BEST AVG. UNASSISTED WALKING DISTANCE (Total Ticketing to Gates) [1]	RANK BY BEST AVG. TOTAL TRAVEL DISTANCE (Total Ticketing to Gates) [4]
			Ticketing to Security [2]	Security to Gates [3]		Total Ticketing to Gates		Moving Walkways	Automated People Movers (APMs)				
				Avg.	Max.	Avg.	Max.			Avg.	Max.		
EXISTING	**ALL**	**42**	**290**	**600**	**1,250**	**890**	**1,490**			**890**	**1,490**		
	C	8	500	320	520	820	1,020		-	820	1,020		
	D	24	240	810	1,250	1,050	1,490	-	-	1,050	1,490		
	E	10	240	340	480	580	720	-	-	580	720		
A4	**ALL**	**71**	**270**	**830**	**1,330**	**1,100**	**1,600**			**1,320**	**2,080**	**1**	**4**
	C	16	270	900	1,130	1,170	1,400	200	-	1,370	1,600		
	D	24	270	890	1,330	1,160	1,600	-	-	1,160	1,600		
	E	10	270	650	790	920	1,060	-	-	920	1,060		
	F	21	270	800	1,210	1,070	1,480	600	-	1,670	2,080		
C3	**ALL**	**71**	**430**	**720**	**1,330**	**1,150**	**1,730**			**1,260**	**1,930**	**2**	**2**
	C	20	600	900	1,130	1,500	1,730	200	-	1,700	1,930		
	D	24	340	890	1,330	1,230	1,670	-	-	1,230	1,670		
	E	9	340	650	790	990	1,130	-	-	990	1,130		
	F	6	400	200	400	600	800		-	600	800		
	G	12	400	400	700	800	1,100	300	-	1,100	1,400		
A3	**ALL**	**71**	**270**	**880**	**1,550**	**1,150**	**1,820**			**1,370**	**2,220**	**2**	**5**
	C	20	270	1,000	1,550	1,270	1,820	200	-	1,470	2,020		
	D	24	270	890	1,330	1,160	1,600	-	-	1,160	1,600		
	E	9	270	650	850	920	1,120	-	-	920	1,120		
	F	12	270	860	800	1,130	1,070	600	-	1,730	1,670		
	G	6	270	860	1,250	1,130	1,520	700	-	1,830	2,220		
B3	**ALL**	**71**	**420**	**740**	**1,330**	**1,160**	**1,730**			**1,300**	**2,000**	**4**	**3**
	C	16	600	900	1,130	1,500	1,730	200	-	1,700	1,930		
	D	24	340	890	1,330	1,230	1,670	-	-	1,230	1,670		
	E	9	340	650	790	990	1,130	-	-	990	1,130		
	F	10	400	250	500	650	900		-	650	900		
	G	12	400	700	1,000	1,100	1,400	600	-	1,700	2,000		
B4	**ALL**	**71**	**420**	**770**	**1,330**	**1,190**	**1,730**			**1,230**	**1,930**	**5**	**1**
	C	16	600	900	1,130	1,500	1,730	200	-	1,700	1,930		
	D	24	340	890	1,330	1,230	1,670	-	-	1,230	1,670		
	E	8	340	650	790	990	1,130	-	-	990	1,130		
	F	23	400	600	110	1,000	510		-	1,000	510		

Source: PB Aviation

FOOTNOTES:

(1) Excluding moving walkways or Automated People Movers (APMs)

(2) Measured from midpoint of ticket counters to midpoint of Security Screening Area

(3) Measured from midpoint of Security Screening Area to the Loading Bridge Boarding Door

(4) Including moving walkways or Automated People Movers (APMs)

TABLE 6.1-4
General Mitchell International Airport
COMPARISON OF NUMBER OF ENPLANING AND DEPLANING LEVEL CHANGES

	CIRCULATION PATH SPLITS			EXISTING TERMINAL CONFIGURATION			ALTS. A3 & A4 (DOUBLE-DECK ROADWAY)			ALTS. B3 & B4: (EXTEND EXISTING TERMINAL)			ALT. C3: (UNIT TERMINAL w/ ROADWAY SIM. TO EXISTING)			ALT. C6: (UNIT TERMINAL w/ SINGLE ROADWAY)		
	ENPLANING CIRCULATION																	
	% of Passengers	Split for Use of Ticketing/Bag Check-in	% of Passengers	Avg. No. of Level Changes			Avg. No. of Level Changes			Avg. No. of Level Changes			Avg. No. of Level Changes			Avg. No. of Level Changes		
				Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total
ENPLANING CIRCULATION																		
From Garage--Public Parking	37%																	
Use Ticketing/Bag Check-in		65%	24%	0.75	2.00	2.75	1.25	1.00	2.25	0.75	2.00	2.75	0.75	2.00	2.75	0.75	2.00	2.75
No Ticketing/Bag Check-in		35%	13%	0.75	0.00	0.75	1.25	1.00	2.25	0.75	0.00	0.75	0.75	0.00	0.75	0.75	0.00	0.75
From Garage--RAC Dropoff	14%																	
Use Ticketing/Bag Check-in		65%	9%	1.00	2.00	3.00	1.50	0.50	2.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00
No Ticketing/Bag Check-in		35%	5%	1.00	0.00	1.00	1.50	0.50	2.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
From Dropoff Curbsides	49%																	
Use Ticketing/Bag Check-in		75%	37%	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
No Ticketing/Bag Check-in		25%	12%	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
AVG. NO. of ENPLANING LEVEL CHANGES	100%		100%	0.42	1.15	1.60	0.67	0.44	1.10	0.42	1.15	1.60	0.42	1.15	1.60	0.42	1.15	1.60

	DEPLANING CIRCULATION																	
	% of Passengers	Split for Use of Bag Claim	% of Passengers	Avg. No. of Level Changes			Avg. No. of Level Changes			Avg. No. of Level Changes			Avg. No. of Level Changes			Avg. No. of Level Changes		
				Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total	Primarily Via Elevators	Primarily Via Escalators	Total
DEPLANING CIRCULATION																		
To Garage--Public Parking	37%																	
Use Bag Claim		65%	24%	1.75	1.00	2.75	1.75	1.00	2.75	1.75	1.00	2.75	1.75	1.00	2.75	1.75	1.00	2.75
No Bag Claim		35%	13%	0.75	0.00	0.75	0.75	1.00	1.75	0.75	0.00	0.75	0.75	0.00	0.75	0.75	0.00	0.75
To Garage--RAC Pickup	14%																	
Use Bag Claim		65%	9%	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
No Bag Claim		35%	5%	1.00	0.00	1.00	1.50	0.50	2.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
To Pickup Curbsides	49%																	
Use Bag Claim		75%	37%	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
No Bag Claim		25%	12%	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
AVG. NO. of DEPLANING LEVEL CHANGES	100%		100%	0.57	0.82	1.40	0.59	0.98	1.60	0.57	0.82	1.40	0.57	0.82	1.40	0.57	0.82	1.40

AVG. NO. of ENPLANING + DEPLANING LEVEL CHANGES						1.5			1.35			1.5			1.5			1.5

Source: PB Aviation

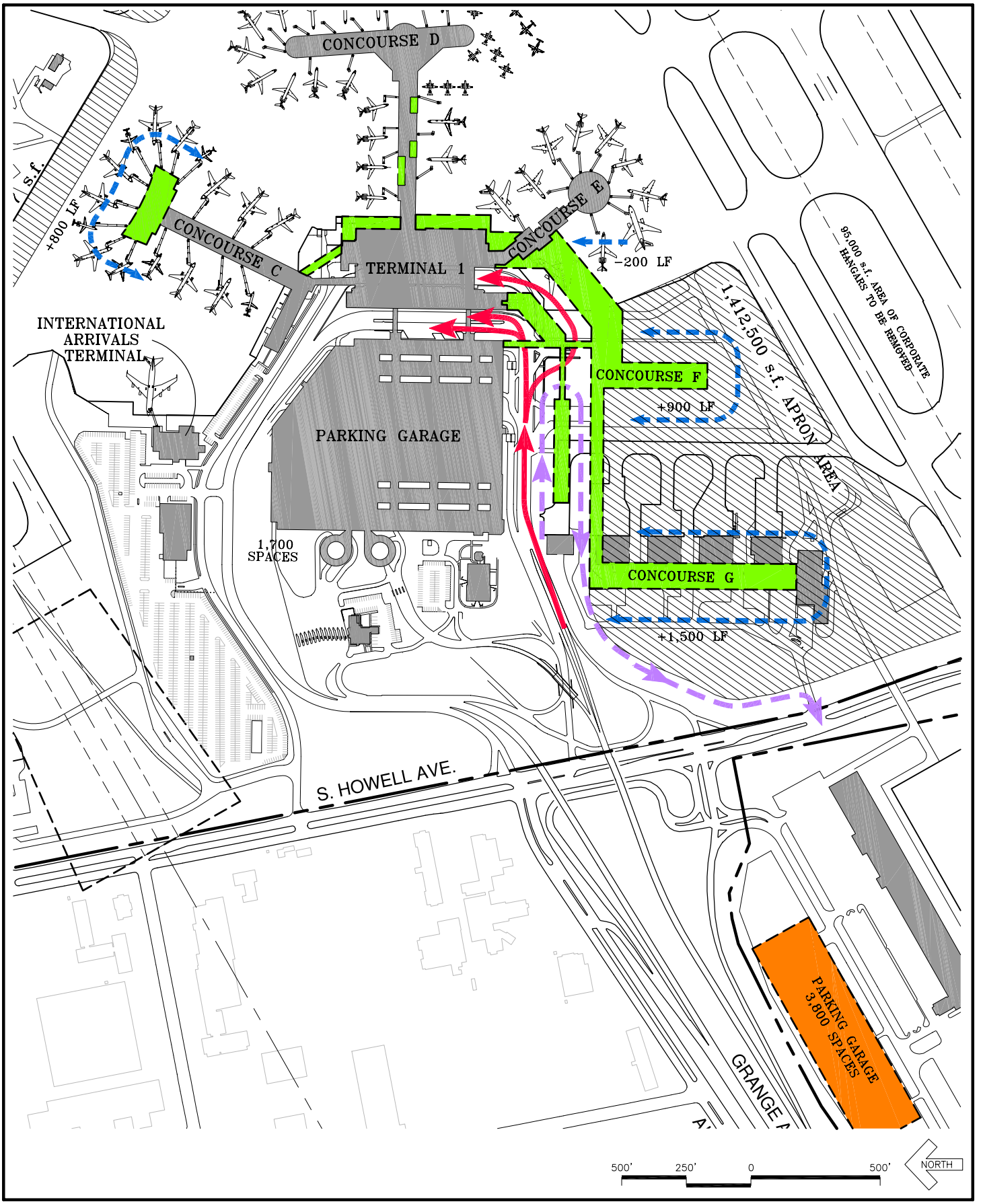
The Level 2 evaluation indicates that the five alternatives are comparable in the overall evaluation, with each slightly better or worse in the individual categories. The exception is capital development cost. Alternatives B3 and B4 are approximately $100 million less expensive the A Alternatives, primarily related to the cost of constructing a two-level roadway and reconstructing the existing terminal while it must remain active.

6.1.8 Refinement of the "B" Alternatives

With the projected number of vehicles passing through the terminal area, the curbfront roadways in Alternatives B3 and B4 will reach capacity by the end of the planning period. Adding additional lanes with this configuration is not possible because of the parking garage to the east and the terminal itself to the west. In order to reduce the throughput traffic some segment of traffic must be removed from the mix.

To address this problem several alternatives were considered. All commercial transportation could be shifted to the future remote parking garage where passengers would transfer to a shuttle bus to the terminal. This mode shift reduces passenger convenience and increases travel time to and from the terminal and therefore was not considered further.

A terminal-area ground transportation center was also evaluated. This concept was designed to take advantage of the approximately 250 feet between the south face of the parking garage and the proposed concourses. With this option, a separate curbfront and waiting area would be located along the entrance roadways to the curbfront, as depicted in **Exhibit 6.1-10**. This would allow commercial vehicles to drop off on one side and pick up on the other and circulate out via a separate road to Howell Avenue. However, moving from baggage claim to this center significantly adds to walking distances and level changes (over the departure roadway). The route for commercial vehicle to the Airport Spur westbound to I-94 is also more complicated as this traffic would have to exit onto Howell Avenue and then cross to the Airport Spur.



GENERAL MITCHELL INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

TERMINAL AREA ALTERNATIVE B3
Ground Transportation Refinement

EXHIBIT
6.1-10

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PB AVIATION

The third option is to modify to parking garage in order to add an additional curbfront and lanes on the ground level. This would require the removal of the second floor of the parking garage above the new curbfront area (the first 40 feet of the second floor) in order to provide adequate van and bus clearances. Preliminary investigations by structural engineers responsible for the garage expansion confirm that this type of modification to the garage is feasible. Commercial vehicles would be the likely group to be assigned to this curbfront. The new curbfront would provide waiting areas for passengers along with 3 lanes for traffic, as shown in **Exhibit 6.1-11**. The existing rental car center, which includes the counters and offices, would remain in place.

This alterative was selected as it provides the necessary capacity at a lower capital cost than the A alternatives while not significantly decreasing the level of service for the passenger.

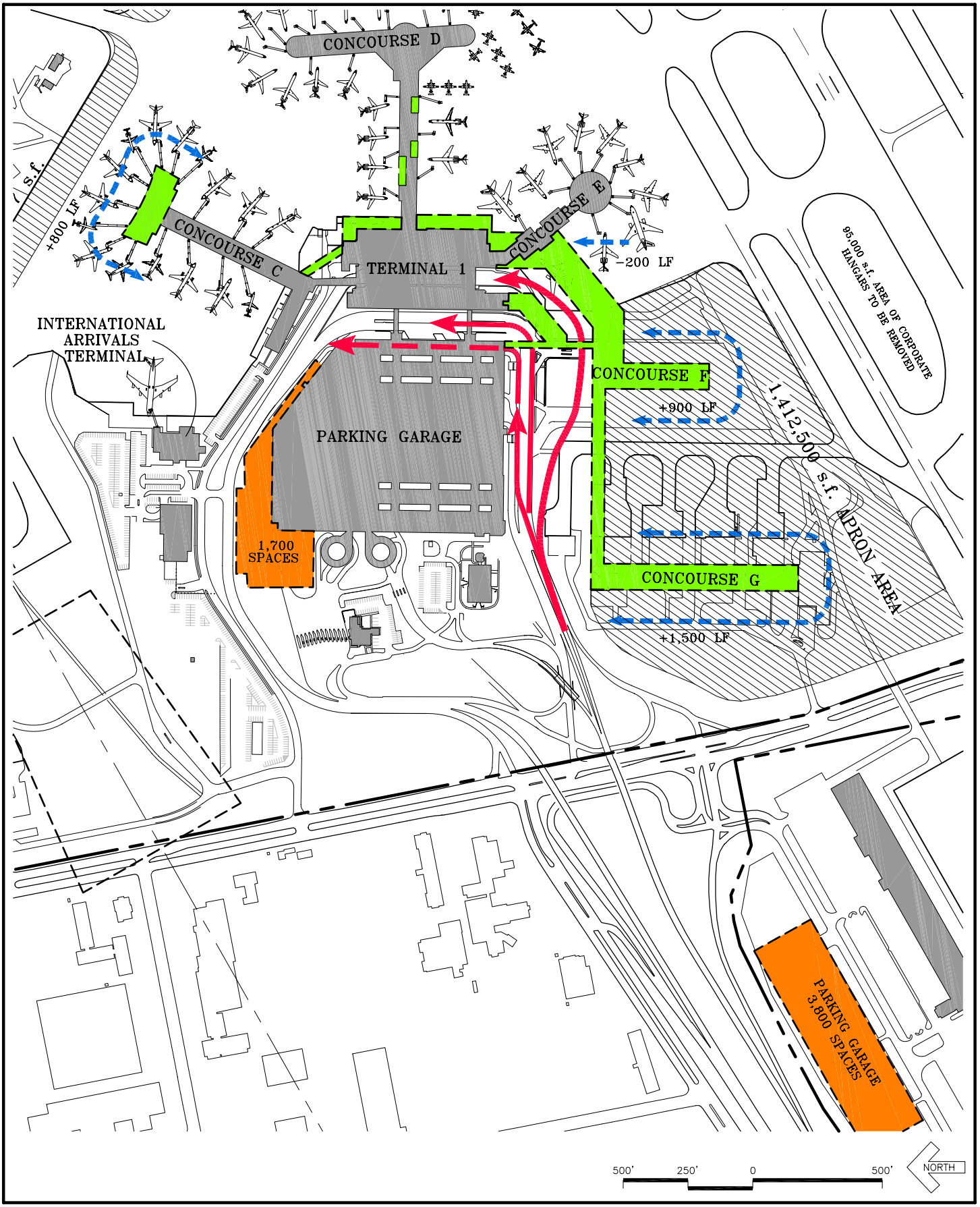
Alternative B3 was selected over Alternative B4 to be carried forward as the preferred terminal development plan. As previously noted, both alternatives were comparable in level of service, customer convenience, constructability and implementation costs. The differentiating factor was the greater ability of Alternative B3 to be incrementally expanded over time as demand warrants. The remainder of the Master Plan Update will use be based on Alternative B3.

6.1.9 Long Range Terminal Development

While the Master Plan Update includes facilities to be developed over the 20-year planning period, it is important to think beyond that time frame so that the development plan does not preclude or limit options for expansion beyond 20 years. In developing the terminal alternatives for the Master Plan Update, it was determined that the existing terminal area can accommodate the PAL 3 facility requirements. But beyond that level of activity, it becomes difficult to accommodate more terminal related facilities within the existing terminal area. Therefore, it is important to identify where the next terminal facilities should be located so that land is reserved or developed in such a way to allow for a future terminal.

The land area between Runway 7R/25L and the future C-1 Runway would be the next logical area where terminal facilities could be sited. A prototype terminal on this site is depicted in **Exhibit 6.1-12**. It is important to note that this concept is presented only to illustrate that a terminal facility could function at this location on the airfield. The ultimate design will be determined by passenger demand and facility requirements of the terminal tenant.

Exhibit 6.1-11



GENERAL MITCHELL INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

TERMINAL AREA ALTERNATIVE B3
Garage Curbfront Refinement

EXHIBIT
6.1-11

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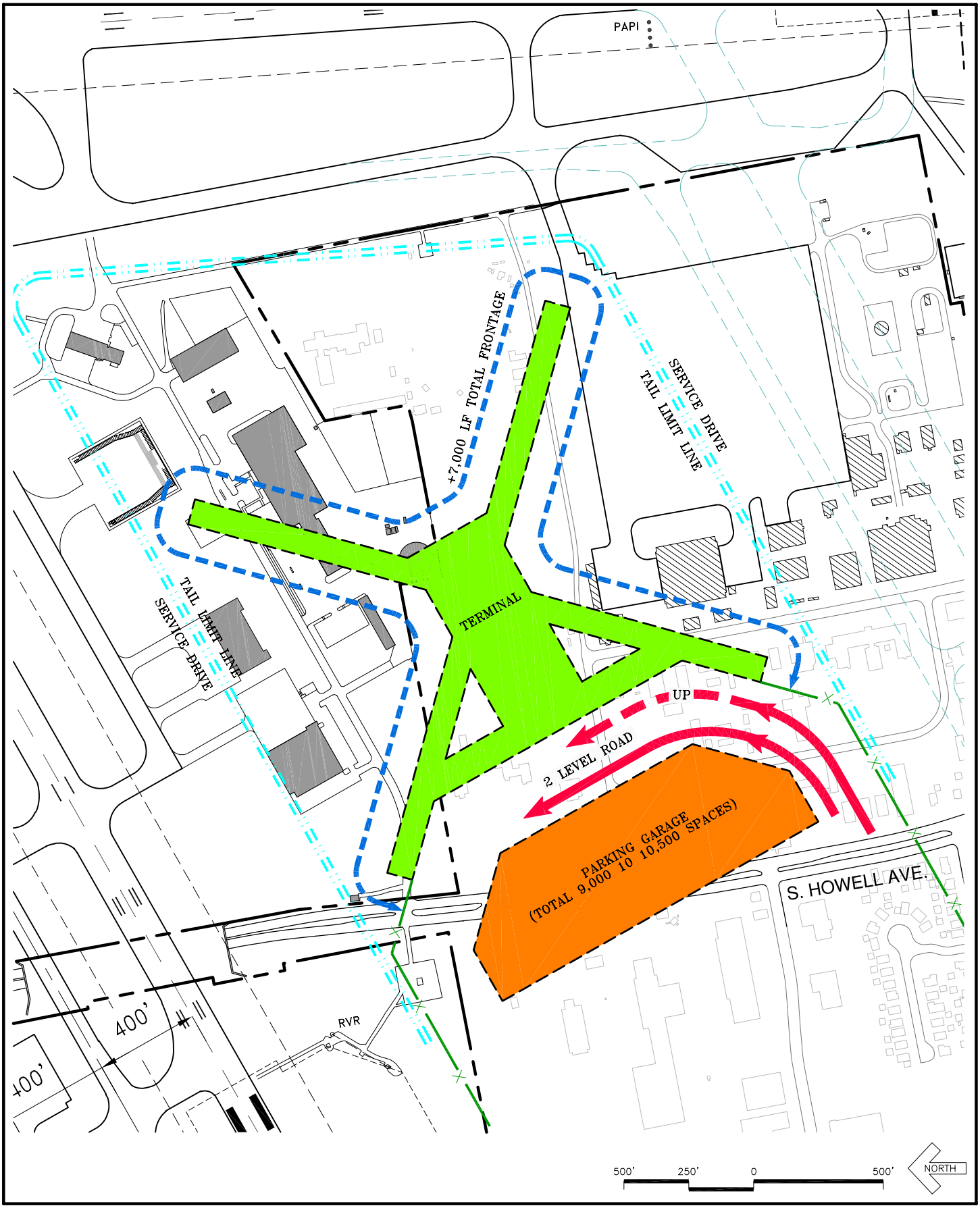
PB AVIATION



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MASTER PLAN UPDATE

LONG RANGE TERMINAL LOCATION

EXHIBIT
6.1-12

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PB AVIATION