7. Capital Improvement Program Implementation Plan

7.1 Introduction

The Capital Improvement Program (CIP) implementation plan presented herein outlines the estimated costs, potential funding sources, and proposed timing for the proposed capital projects identified for the 20-year planning horizon for HWO. The CIP implementation plan is intended to provide general financial guidance for BCAD to support decision-making relative to recommended enhancements or development at the Airport. It is assumed and anticipated that adjustments, amendments, or updates to this implementation plan by BCAD may occur as necessary to support the needs of HWO, the Airport system, and/or changing conditions.

The CIP implementation plan addresses BCAD's planned HWO capital projects to ensure adequate funding, scheduling, and other resources are available throughout the planning period. The implementation plan considers the ongoing BCAD capital projects, recommendations carried forward from the ASEG Study[1], and the proposed airport development plan of the MPU. These items are prioritized in a way to leverage federal and state funding eligibility, serve the aviation activity forecasts, and address concerns relative to economic development. Capital projects known or anticipated to be funded and implemented by tenants within their respective leasehold areas are not included in this listing of CIP Projects.

The projects described in this section focus on those identified as part of the master planning process, as well as operational needs, existing aging infrastructure, and other capital enhancements identified separately by the ASEG Study. These other capital enhancements include airfield electrical and pavement geometry modifications. The projects described herein do not include other Airport operating and maintenance project expenditures or capital investments in equipment.

The information provided in this section can be used to update the annual Airport Capital Improvement Program (ACIP) prepared by BCAD; for capital budgeting purposes; and to facilitate discussions with stakeholders, such as the Broward County Board of County Commissioners (BOCC), Airport tenants, the FAA, FDOT, and airport users. The information contained herein was developed in consultation with BCAD staff. The following information is provided throughout the section relative to each proposed project identified in the MPU:

[1] Kimley-Horn and Associates, Inc., *HWO Airfield Safety Enhancement and Geometry Study*, April 2017.

- project name, description, and location
- anticipated project timing
- rough order of magnitude (ROM) cost estimate
- potential sources of funding for the projects

The ultimate implementation of projects will be influenced by funding availability and the capital investment decisions made by the BOCC, BCAD, and/or Airport tenants. ROM cost estimates were generated for each project identified and are presented in 2018 dollars. Airfield enhancements recommended as part of the ASEG Study and carried forward by the MPU have been escalated from 2016 dollars to 2018 dollars by applying a factor of 3.5 percent per year for inflation.

The ROM cost estimates consider both hard and soft program costs. Hard costs reflect the direct costs associated with construction activities, including all physical items and labor. Soft costs include design fees, construction management and inspection services, contingency, design services during construction, geotechnical fees, quality testing, and surveying costs.

The following sections describe potential funding sources and the implementation periods for the recommended projects based on the near-term (fiscal year [FY] 2020 to FY 2024), intermediate-term (FY 2025 to FY 2029), and long-term (FY 2030 to FY 2035) planning periods. Ultimately, the timing of projects will be determined based on operational demand, funding availability, environmental approvals, and tenant and County priorities. Consequently, BCAD may periodically update this implementation plan to reflect the changing needs of the Airport and the tenants.

7.2 Potential Funding Sources

Project funding sources include grants from the FAA's Airport Improvement Program (AIP), grants from the FDOT, and local funds from the BCAD or other agencies. It is important to note that specific project eligibility for federal and state grant funding may vary depending on the type of project. It is necessary to examine the planned development projects in the ACIP to determine each project's eligibility for each funding source. The following subsections detail the typical funding sources for airport development projects.

7.2.1 FEDERAL AVIATION ADMINISTRATION

The primary source of FAA-related funds is the AIP, which was established by the Airport and Airway Improvement Act of 1982 (Public Law 97-248). Since then, the AIP has been amended several times, most recently with the passage of the FAA Reauthorization Act of 2018. Funds obligated for the AIP are drawn from the Airport and Airway Trust Fund, which is supported by user fees, fuel taxes, and other similar revenue sources. Funds deposited into the Airport and Airway Trust Fund are distributed to eligible airports throughout the United States and its territories via FAA grants under appropriations limits established by Congress. Public-use airports are eligible for AIP grant funding when the airport meets the following criteria:

- publicly owned, or
- privately owned, but designated by the FAA as a reliever, or
- privately owned but having scheduled commercial service and at least 2,500 annual passenger enplanements.

In addition to these criteria, the airport must be included in the National Plan of Integrated Airport Systems (NPIAS). The NPIAS is published every 2 years; it identifies public-use airports that are important to public transportation and contribute to the needs of civil aviation, national defense, and/or the U.S. Postal Service. HWO is included in the NPIAS as publicly owned airport.

The FAA distributes federal grants under the AIP to airport operators in two ways: through entitlement grants and discretionary grants. Entitlement grants for general aviation (GA) airports that are included in the NPIAS, such as HWO, are referred to as non-primary entitlement grants. BCAD is eligible to receive up to $150,000 annually in non-primary entitlement grants for airfield capital projects and eligible maintenance projects. Discretionary grants are distributed for individual projects based on funding availability and the priority of projects at airports nationwide. Projects given the highest priority according to the AIP are those that satisfy objectives related to safety, security, reconstruction, capacity, and standards. As it relates to GA airports, AIP grants cannot be used for fixed base operator (FBO) terminals, hangars, or nonaviation development. Any professional services that are necessary for eligible projects, such as planning, surveying, and design, are also eligible; however, operating expenses associated with AIP projects are not eligible. Aviation demand at an airport must justify the projects, which must also meet federal environmental and procurement requirements.

Should the Airport not receive the projected AIP grants, BCAD may have to re-evaluate the phasing of the CIP and/or a project's potential funding eligibility from other sources. Historically, HWO's eligible projects have received 90 percent to 95 percent AIP participation.

7.2.2 FLORIDA DEPARTMENT OF TRANSPORTATION

The FDOT grant program was established to fund projects relating to airport planning and capital improvements that address safety, security or capacity improvements, land acquisition, and economic development. Historically, for projects that receive AIP grants, FDOT contributes up to 50 percent of the remaining share of the project cost. For projects that do not receive AIP funding, FDOT will provide up to 80 percent of the funding for most non-FAA-supported project costs. For economic development projects, FDOT may provide up to 50 percent of the costs to build on-airport, revenue-producing capital improvements.

To be eligible for FDOT funding, projects should be included in the Joint Automated Capital Improvement Program (JAICP), which is a cooperative funding program mechanism used by the FAA and FDOT for coordination of annual funding and programming of Florida airport projects. The FDOT develops a 5-year work program based on project priority and funding availability from the projects in the JACIP.

7.2.3 LOCAL FUNDING

Local funds may be provided by BCAD or other local funding agencies for projects not eligible for federal or state funding and to account for shortfalls in funding levels. Local funding shares can be as little as 5 percent for projects that receive a combination of FAA and FDOT grants. For projects not funded through the FAA, the FDOT may fund between 50 and 80 percent of the project costs, thereby requiring the local share to be as much as 50 percent. Projects not funded by either the FAA or the FDOT would require BCAD or other local sources to fund the project in its entirety. Local funds are typically obtained from Airport revenues or other local agencies and are identified in the County's fiscal budgeting cycles.

BCAD has demonstrated the ability to generate adequate revenue to maintain daily operations and fund projects identified in this MPU. Primarily, revenues at the Airport are generated by commissions on products and services provided by its tenants, apron rental fees, and land leases. Additionally, the undeveloped and underutilized land areas on the Airport represent the greatest opportunity to generate additional revenues to implement the MPU airport development plan.

7.3 Project Sequencing

The proposed sequencing of projects has been separated into three phases representing near-, intermediate-, and long-term improvements:

- near-term improvements (FY 2020 through FY 2024)
- intermediate-term improvements (FY 2025 through FY 2029)
- long-term improvements (FY 2030 through FY 2035)

Although these three phases estimate the general period (in FYs) for future Airport enhancements, periodic re-evaluation of the proposed timing may be necessary. This would allow BCAD to adjust to evolving development needs or priorities due to potential deviations from the operational demand levels projected in the aviation activity forecasts or other unforeseen factors. It is also possible that other enhancements not identified in this implementation plan may be identified in the future to support Airport operations and/or to improve operational efficiency.

Throughout this section, projects are identified using an alpha numeric naming convention based on their functional area of the Airport and BCAD priority. Project priority in some instances will correspond with project sequencing due to a variety of factors, including funding considerations. For each alpha numeric designation, the letter prefixes correspond with the following project types:

- A – Airfield
- S – Airport Support Facilities
- L – Landside Improvements
- G – General and Administrative

7.3.1 NEAR-TERM PROJECTS

The near-term implementation plan includes mitigation of the airfield's three hot spots, partial construction of Taxiway A, construction of the separated shared-use path along Airport Road, replacement of the ATCT, and an expansion of the BCAD Administration and Maintenance Facility. **Exhibit 7.3-1** illustrates the near-term projects. The near-term projects identified as a part of the MPU are described as follows:

- A1: Mitigate Hot Spot 2: Modify Entrances to Runways 1L and 10R and Construct New Runup Pads – HS 2 will be mitigated by relocating the west end of Runway 10R-28L to the west 208 feet and shortening Runway 1L-19R by 367 feet. This would increase the length of Runway 10R-28L from 3,255 feet to 3,463 feet, while Runway 1L-19R would be reduced from 3,350 feet to 2,983 feet. This would decouple the entrances to Runways 1L and 10R. Also, this project would relocate the entrance/exit connectors between the Runway 10R end and Taxiways L and M to a point beyond the extended runway centerline alignment of Runway 1L-19R. This would improve bypass capability along Taxiway L by providing distinct holding points for the 10R threshold and 10R end, thereby reducing the potential for confusion and miscommunication. The project would include the programming, design, and construction of the following:
  - relocation of the Runway 10R end by 208 feet to the west
  - extending Taxiways L and M by 208 feet to the west
  - shortening of the south end of Runway 1L by 367 feet
  - demolition of pavements between Runway 10R and Taxiways L and M
  - pavement markings, airfield signage, and airfield lighting
  - demolition of Taxiway R and construction of two runup pads along Taxiways L and B
- A2: Airfield Lighting Enhancements – This project would be triggered by the shortening of Runway 1L-19R by 367 feet to mitigate existing Hot Spot 2. In order to provide a suitable replacement runway of comparable length during low visibility conditions, it is recommended that edge lights and signage be installed on Runway 1R-19L and Taxiway E. The construction of a new airfield electrical vault in a new location would provide additional space for apron construction to accommodate future tenant demand; accommodate increased lighting demands; and modernize portions of the equipment and controls.

  Note: This project must be completed prior to or concurrently with other airfield enhancement projects to mitigate Hot Spots 1, 2, and 3, as well as prior to or concurrently with the Mitigate Runway 1L-19R Crossings and Extend Taxiway A project.

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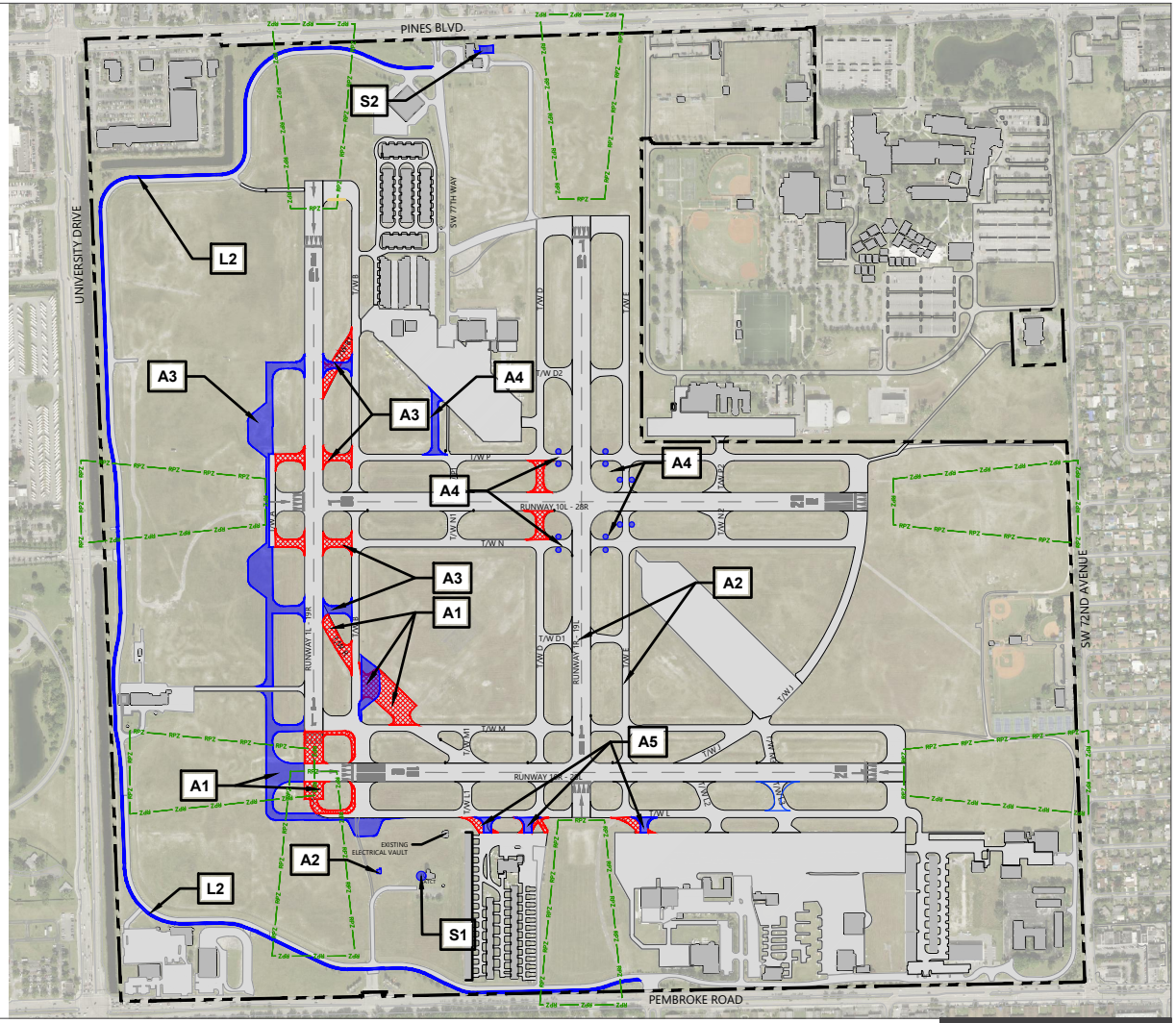
CAPITAL IMPROVEMENT PROJECTS - (NEAR TERM)

A1 - Mitigate Hot Spot #2: Modify Entrances to Runways 1L and 10R and Construct New Runup Pads
A2 - Airfield Lighting Upgrades
A3 - Mitigate Runway 1L-19R Crossings and Extend Taxiway A
A4 - Mitigate Hotspot #1: Modify Taxiway Crossings to Runways 10L-28R and 1L-19R
A5 - Mitigate Hotspot #3: Reconfigure Apron Entrance Taxilanes South of Taxiway L
L2 - Shared-Use Path and Landscaping Along Airport Road
S1 - Air Traffic Control Tower Replacement
S2 - BCAD Administration/Maintenance Facility Expansion

CURRENT BCAD AIRPORT CAPITAL IMPROVEMENT PROGRAM PROJECTS - (NEAR TERM) - PROJECTS NOT DEPICTED

1 - Phase II Security Improvements
2 - Dual Taxilane (Wayman Aviation)
3 - Runway 10R-28L Rehabilitation



LEGEND

- EXISTING AIRPORT PROPERTY LINE
- RUNWAY PROTECTION ZONE
- RUNWAY GUARD LIGHTS
- PAVEMENT DEMOLITION
- PROPOSED PROJECTS

SOURCES: Broward County Aviation Department, 2018 (HWO Aerial Photograph); Kimley-Horn and Associates, Inc., HWO *Airfield Safety Enhancements and Geometry Study*, April 2017; Ricondo & Associates, Inc., April 2019.
PREPARED BY: American Infrastructure Development, Inc., August 2019.

EXHIBIT 7.3-1

NORTH 0 1,000 ft.

Near-Term Improvement Projects (FY 2020 - FY 2024)

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- A3: Mitigate Runway 1L-19R Crossings and Extend Taxiway A – This project consists of the programming, design, and construction of a partial parallel Taxiway A west of Runway 1L-19R and the relocation of the runway crossings at Taxiways N and P. It also includes new crossings to Taxiway B, two hold pads along Taxiway A on both sides of Runway 10L, and the removal of Taxiway B1. The offset crossings will reduce the potential for runway incursions by adding a situational awareness turn, which could be further enhanced with the addition of wig-wag lights. To eliminate taxiway crossings within the high-energy portion of the runway (center third), a portion of Taxiways N and P will be demolished west of Taxiway B. Two new runway crossing taxiways will be established immediately north and south of the high-energy portion of Runway 1L-19R.
- A4: Mitigate Hot Spot 1: Modify Taxiway Crossings to Runways 10L-28R and 1L-19R – This project consists of the programming, design, and construction of the mitigation of FAA-identified Hot Spot 1. This project would include a new connector taxilane between Taxiway P and the expanded apron at Bobby's Landing. It also includes the removal of Taxiway D between Taxiways P and N, the reduction of the associated wide apron connector, and the installation of runway guard lights on Taxiways P, N, and E. Runway guard lights would require an independent circuit to be installed to the electrical vault.
- A5: Mitigate Hot Spot 3: Reconfigure Apron Entrance Taxilanes South of Taxiway L – This project consists of the programming, design, and construction associated with the mitigation of FAA-identified Hot Spot 3. The project includes reconfiguration of three connector taxilanes between Taxiway L and the south aircraft parking aprons. These connector taxilanes are located:
  - adjacent to the intersection of Taxiways D and L
  - adjacent to the intersection of Taxiways E and L
  - adjacent to the intersection of Taxiways L1 and L
- S1: Air Traffic Control Tower Replacement – This project includes the programming, design, and construction of a replacement ATCT. The existing ATCT is in poor condition and is nearing the end of its useful life. The siting of a replacement ATCT was performed as part of the HWO MPU, and it was concluded that the replacement tower should be located immediately west of the existing ATCT site. This location would minimize the height of the control tower cab, while also minimizing site preparation and utility connection costs. The first phase of this project will include advanced planning to validate the proposed siting identified as part of the HWO MPU, and it will include coordination with several FAA lines of business and stakeholders. The ultimate location will be verified through the FAA Airway Facilities Tower Integration Laboratory process.
- L1: Separated Shared-Use Path – This project includes approximately 12,000-linear-feet of paved shared-use bike/walking path; the project focuses on connecting existing pedestrian facilities and installing safety measures at intersections, including low profile bollard lighting, markings, and signage. The proposed 12-foot-wide (maximum) path would parallel Airport Road, commencing west of the SW 77th Way, and it traverses west and then south adjacent to the Airport Road swale. This project would increase safety by segregating pedestrian and bicycle traffic from vehicular traffic; enhance accessibility to the public; and increase synergy with the Broward County Greenway Master Plan.

- G1: Professional Services for Master Plan –This line item would cover the potential cost associated with advanced planning efforts for the MPU projects, which may include preparation of project definition documents (PDD), basis of design (BOD) documents, and environmental reviews for proposed facilities and development. This would also include airspace obstruction mitigation efforts identified on the ALP.

- S2: BCAD Administration and Maintenance Facility Expansion – This project includes the programming, design, and construction of a standalone building to meet BCAD's growing Airport administration and maintenance space needs. An additional 2,900 square feet of enclosed building space is needed to accommodate the Airport's administration/maintenance staffing needs and materials/equipment storage.

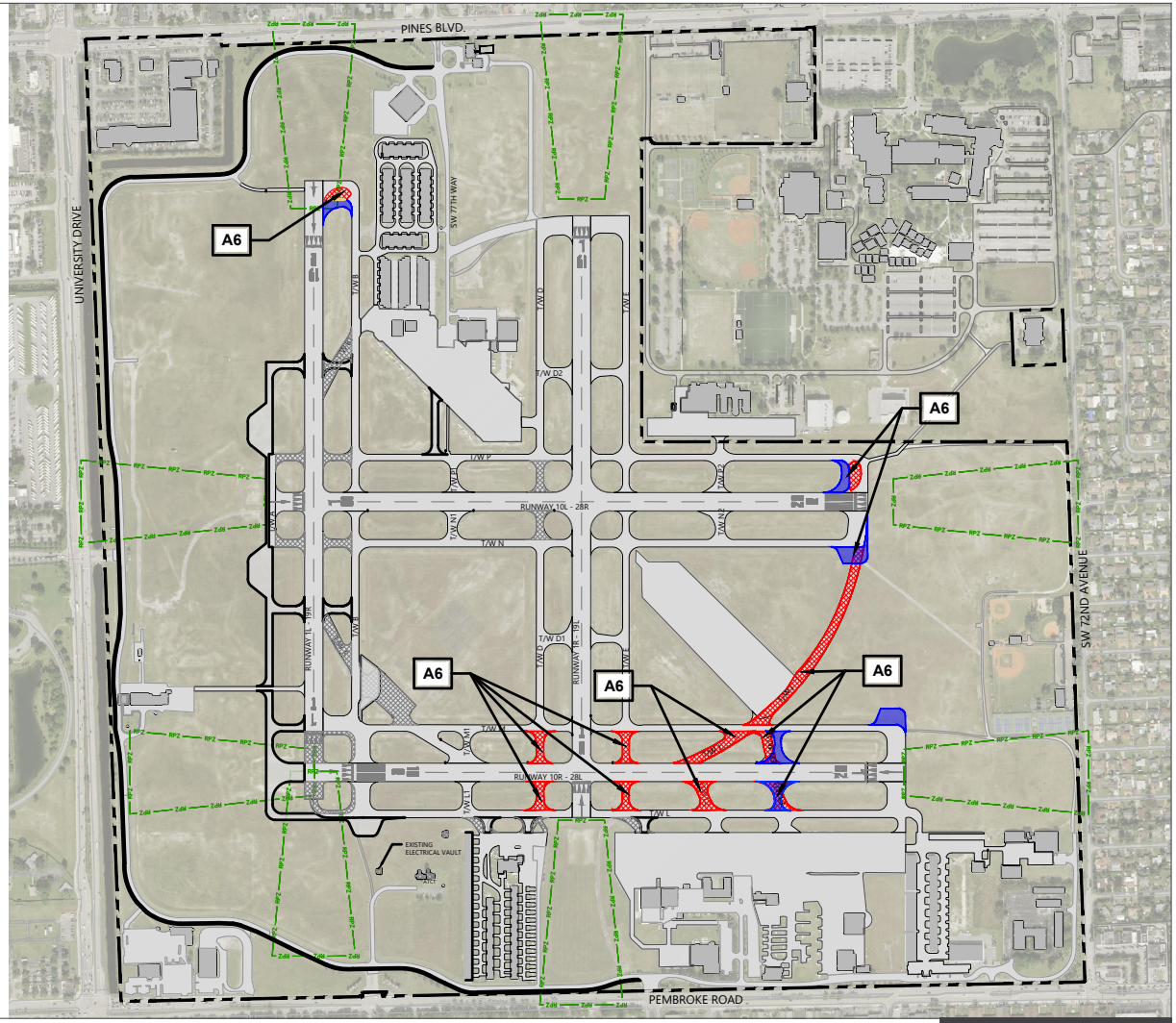
7.3.2 INTERMEDIATE-TERM PROJECTS

The intermediate-term implementation plan includes airfield enhancements, which are illustrated on **Exhibit 7.3-2.** The intermediate-term projects identified as part of the MPU are described as follows:

- A6: Phase 2 Airfield Enhancements – This project(s) includes the programming, design, and construction of the intermediate-term airfield enhancements recommended in the ASEG Study and validated as part of the MPU. The project(s) would consist of the following airfield modifications:
  - decommission Taxiway L2
  - reconfigure Taxiway L3
  - decommission Taxiway M3
  - remove Taxiway J
  - reconfigure Taxiway L entrance to Runway 28L and construct bypass taxiway
  - reconfigure Taxiway M entrance to Runway 28L and construct hold pad
  - relocate apron connector between Taxiway P and Broward College apron
  - reconfigure Taxiway P entrance to Runway 28R and construct bypass taxiway
  - installation of edge lighting on Runway 10L-28R
  - reconfigure Taxiway N entrance to Runway 28R and construct hold pad
  - partial decommission of Taxiways D and E between Taxiways L and M
  - reconfigure Taxiway B entrance to Runway 19R and construct bypass taxiway

CAPITAL IMPROVEMENT PROJECTS - (INTERMEDIATE TERM)

A6 - Phase 2 Airfield Improvements



LEGEND

- EXISTING AIRPORT PROPERTY LINE
- RUNWAY PROTECTION ZONE
- PAVEMENT PREVIOUSLY DEMOLISHED
- PAVEMENT DEMOLITION
- PROPOSED PROJECTS

SOURCES: Broward County Aviation Department, 2018 (HWO Aerial Photograph); Kimley-Horn and Associates, Inc., HWO *Airfield Safety Enhancements and Geometry Study*, April 2017; Ricondo & Associates, Inc. April 2019.
PREPARED BY: American Infrastructure Development, Inc., August 2019.

EXHIBIT 7.3-2

NORTH 0 1,000 ft.

Intermediate-Term Improvement Projects (FY 2025 - FY 2029)

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7.3.3 LONG-TERM PROJECTS

The long-term implementation plan includes airfield enhancements, which are illustrated on **Exhibit 7.3-3.** The long-term project identified as part of the MPU is described as follows:

- A7: Phase 3 Airfield Enhancements – This project(s) includes the programming, design, and construction of the long-term airfield enhancements recommended in the ASEG Study and validated as part of the MPU. The project(s) would consist of the following airfield modifications:
  - completion of parallel Taxiway A
  - construction of a hold pad at Runway 19R
  - shifting of Taxiways L, N, B, and D by 15 feet to provide a runway centerline to taxiway centerline separation distance of 240 feet to meet future Airplane Design Group (ADG) II standards
  - reconfigure Taxiway D entrance to Runway 28L and construct hold pad
  - reconfigure Taxiway E entrance to Runway 28L and construct bypass taxiway

7.4 Project Timing Considerations

At the request of BCAD, the following project development progression was created to guide future project planning and implementation. For aviation development projects to be successfully completed without undue delay, projects must be programmed and vetted well in advance of anticipated construction. Obtaining stakeholder buy-in early in the process is an effective means of ensuring a smooth project, and it limits the possibility that projects compete for limited resources. Environmentally sensitive projects, complex projects, and projects delivered via alternative delivery methods will require extra time to procure, while smaller projects can typically be designed and constructed in one year. The following timeline should be considered when planning and programming Airport development projects[2].

6 Years Prior to Construction (Planning)

- Identify need for cost-benefit analysis
- Coordinate Airport needs with users and tenants
- Identify resilient design opportunities in coordination with users and tenants
- Review MPU, ALP, and Exhibit A Airport Property Map
- Clearly define the scope of the planning initiative

[2] Adapted from Federal Aviation Administration, Checklist for Typical AIP Development Projects, https://www.faa.gov/airports/central/airports_resources/media/checklist_AIP_development.pdf (accessed July 19, 2019).

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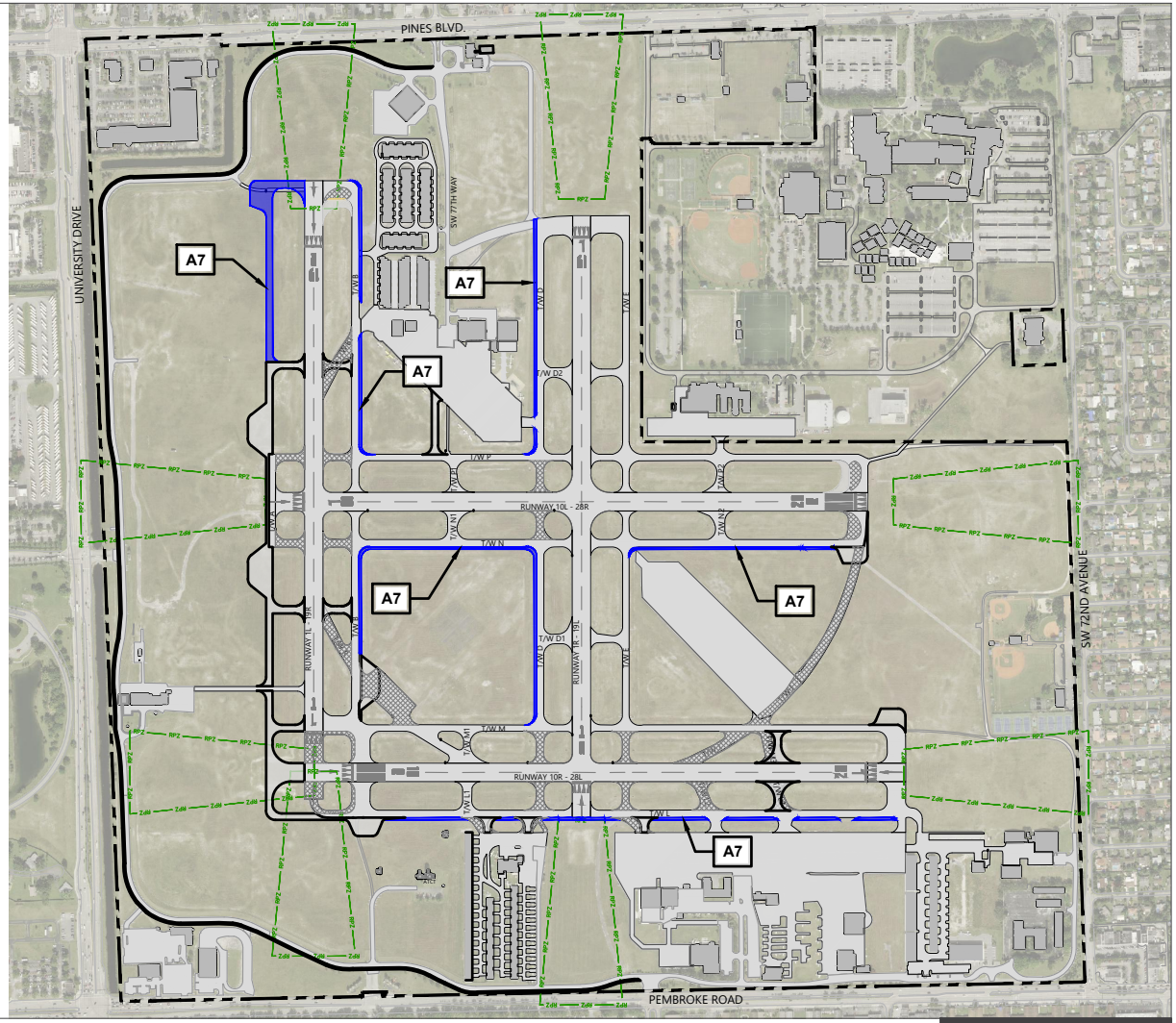
CAPITAL IMPROVEMENT PROJECTS - (LONG TERM)

A7: Phase 3 Airfield Improvements



LEGEND

- EXISTING AIRPORT PROPERTY LINE
- RUNWAY PROTECTION ZONE
- SHORT-TERM PAVEMENT DEMOLITION
- PROPOSED PROJECTS

SOURCES: Broward County Aviation Department, 2018 (HWO Aerial Photograph); Kimley-Horn and Associates, Inc., HWO *Airfield Safety Enhancements and Geometry Study*, April 2017; Ricondo & Associates, Inc., April 2019.
PREPARED BY: American Infrastructure Development, Inc., August 2019.

EXHIBIT 7.3-3

NORTH 0 1,000 ft.

Long-Term Improvement Projects (FY 2030 - FY 2039)

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5 Years Prior to Construction (Advanced Planning)

- Complete PDD, including but not limited to:
  - Identify funding sources
  - Define funding plan
  - Complete benefit-cost analysis (if necessary)
  - Identify environmental documentation
  - Preliminary airspace evaluation
  - Identify sustainability initiatives and resilient design opportunities and evaluate opportunity to pursue LEED certification
- If requesting Airport Improvement Program (AIP) funding:
  - By **February 15**, submit CIP Data Sheet showing Environmental Assessment next year, if required

4 Years Prior to Construction

- Establish scope and cost estimate
- Update Master Plan or ALP, as necessary
- Initiate Disadvantaged Business Enterprise (DBE) / County Business Enterprise (CBE) plan that meets federal requirements but also supports county annual CBE goals
- If requesting AIP funding:
  - By **February 15**, submit CIP Data Sheet showing construction is 4-years out and reimbursement for necessary land acquisition

3 Years Prior to Construction

- Determine level of NEPA documentation and begin applicable Environmental Analysis, if required
- Establish sustainable design and operational goals for the project, and define commissioning requirements and operational readiness strategies
- Revise initial project cost
- Verify DBE/CBE program approval
- Confirm AIP participation is justified
- Begin preliminary design
- If requesting AIP funding:
  - By **February 15**, submit CIP Data Sheet showing construction is 3-years out and project design begins the following year depending on project scope and complexity

2 Years Prior to Construction (Design)

- Verify ALP approval and proposed development are included on the ALP
- Refine cost estimate
- Verify funding sources and AIP participation with the FAA
- Verify environmental clearance
- Discuss potential impacts to NAVAIDs and/or approach procedures with the FAA
- Procure engineering design consultant
- Begin design if warranted based on project scope and complexity (which should include commissioning requirements and operational readiness strategies)
- If requesting AIP funding:
  - By **February 15**, submit CIP Data Sheet showing construction is 2-years out and project design begins the following year depending on project scope and complexity

1 Year Prior to Construction

- Continue design on larger more complex projects. Begin design for projects with 1-year design schedule
- Work through design alternatives and establish construction safety and phasing plan
- Review commissioning requirements and implement operational readiness strategies
- Final submission/coordination with FAA for OE/AAA review to include construction safety and phasing plan and final airspace evaluation
- If requesting AIP funding:
  - By **February 15**, submit CIP Data Sheet showing construction is next year

Year of Construction

- Complete final design
- Confirm Construction Safety and Phasing Plan (CSPP)
- Obtain any required permits
- Discuss Safety Risk Management (SRM) with the FAA
- Solicitation and procurement of bids
- Prepare grant application and accept grant
- Implement project and monitor construction
- If requesting AIP funding:
  - By **May 1**, submit grant application for construction based on bid

Post Construction

- Complete and submit as-built drawings
- Update ALP and Airports Geographic Information System (AGIS) to incorporate as-built conditions
- Execute commissioning plans
- Complete final report and project closeout

7.5 Rough Order of Magnitude Costs

The estimated ROM project costs were developed using 2018 U.S. dollars. Cost estimates for CIP projects recommended by the ASEG Study were calculated using 2016 dollars. For the purpose of this MPU, ASEG Study project cost estimates were adjusted for an anticipated 3.5 percent inflation rate per year to 2018 dollars.

Cost estimates for projects presented in this MPU include soft cost assumptions to better reflect the overall anticipated project cost. These assumptions include services related to preconstruction services, such as design, permitting, geotechnical, surveying, and legal services, among others. Additionally, assumed construction-related soft costs include construction administration and management services and a contingency in the event of unforeseen issues during construction. The soft cost items included in these ROM cost estimates and the assumed percentages relative to the total estimated construction costs are as follows:

- Contingency – 10.0 percent[3]
- Design and Bidding Services – 10.0 percent
- Legal Services – 0.75 percent
- Permitting – 0.75 percent
- Surveying Services – 4.0 percent
- Geotechnical Investigation – 2.0 percent
- Utility Location Services – 2.0 percent
- Construction Administration – 4.0 percent
- Construction Management – 5.0 percent

Each project also contains a quality assurance material testing allowance which varies between $20,000 for flat work and $80,000 for above ground projects such as the BCAD Administration and Maintenance Facility Expansion and the ATCT replacement.

[3] The airfield lighting improvements (Project A2) has a contingency of 25 percent to account for uncertainties associated with the location and condition of the existing airfield lighting and adjacent utilities.

Due to the conceptual nature of this MPU's Airport plans, further refinement of the cost estimates through architectural and engineering analyses will be required. As the project advances through the implementation stages, capital costs in this section should be viewed only as planning-level estimates subject to further refinement during design, as the scope for the project is confirmed or refined. **Table 7.5-1** presents the ROM cost estimates associated with the near-term, intermediate-term, and long-term MPU projects, as well as the current BCAD ACIP projects.

BCAD should periodically review the phasing of individual projects in the CIP to determine the need for changes based on variations in forecast demand, available funding, economic conditions, and/or unforeseen factors that influence Airport development. It is also possible that other enhancements not identified in this implementation plan may be required to support Airport operations and/or improve operational efficiency.

7.6 Capital Improvement Program

The CIP includes a proposed sequencing for each project recommended in this MPU. Additionally, the existing ACIP including upcoming repairs and continuing maintenance projects are also integrated with the proposed development. **Appendix G** contains the CIP Project Request Forms that BCAD staff use to initiate projects and circulate for internal planning purposes. The forms contain the following critical elements necessary to coordinate the implementation of the projects:

- project description and justification
- project alternatives
- project schedule and cost estimate by planning and design, construction, security component, and other costs
- total project cost by funding source and schedule
- primary objective of project

Near-term projects are given a higher priority as they are of a greater importance to the operational safety of the Airport. Many of the projects identified in the near-term planning period are programmed in the existing CIP and may have already secured FAA and FDOT grant funding. **Table 7.6-1** outlines the recommend CIP for the 20-year planning period and proposed funding sources. The numbers have been escalated at 3.5 percent annually to account for inflation. BCAD should periodically review and modify the CIP to ensure the sequencing of project continues to meet the demand at HWO.

Table 7.5-1: Capital Improvement Program Rough Order of Magnitude Costs (2018 Dollars)

PROJECT ID[1/]	PROJECT DESCRIPTION	UNESCALATED ROM COSTS[2/]
Near-Term Master Plan Projects		
A1	Mitigate Hot Spot 2 (Design)	$390,000
A1	Mitigate Hot Spot 2 (Construction)	$3,510,000
A2	Airfield Lighting Enhancements (Design)	$200,000
A2	Airfield Lighting Enhancements (Construction)	$1,800,000
A3	Mitigate Runway 1L-19R Crossings and Extend Taxiway A (Design)	$330,000
A3	Mitigate Runway 1L-19R Crossings and Extend Taxiway A (Construction)	$2,970,000
A4	Mitigate Hot Spot 1 (Design and Construction)	$880,000
A5	Mitigate Hot Spot 3 (Design and Construction)	$662,000
S1	Airport Traffic Control Tower Replacement (Design)	$383,000
S1	Airport Traffic Control Tower Replacement (Construction)	$3,447,000
S2	BCAD Administration and Maintenance Facility Expansion (Design and Construction)	$760,000
L1	Separated Shared-Use Path Along Airport Road (Design and Construction)	$1,960,000
G1	Professional Services for Master Plan	$950,000
	Subtotal Near-Term Master Plan Projects	**$18,242,000**
Intermediate-Term Master Plan Projects		
A6	Phase 2 Airfield Enhancements (Design)	$433,800
A6	Phase 2 Airfield Enhancements (Construction)	$3,904,200
	Subtotal Intermediate-Term Master Plan Projects	**$4,338,000**
Long-Term Master Plan Projects		
A7	Phase 3 Airfield Enhancements (Design)	$993,000
A7	Phase 3 Airfield Enhancements (Construction)	$8,937,000
	Subtotal Long-Term Master Plan Projects	**$9,930,000**
	Total Master Plan Project Costs	**$32,510,000**
Current BCAD Airport Capital Improvement Program Projects		
1	Phase II Security Improvements	$824,000
2	Dual Taxilane (Wayman Aviation)	$595,000
3	Runway 10R-28L Rehabilitation	$4,000,000
	Subtotal Current BCAD Airport Capital Improvement Program Projects	**$5,419,000**
	Grand Total Project Costs	**$37,929,000**

NOTES:

1/ A – Airfield; L – Landside Improvements; S – Airport Support Facilities; G – General and Administrative

2/ Design cost assumed to be 10 percent of the total project cost.

SOURCES: Kimley-Horn and Associates, Inc., *HWO Airfield Safety Enhancement and Geometry Study*, April 2017; American Infrastructure Development, Inc., May 2018 (Master Plan Cost Estimates); Ricondo & Associates, Inc., September 2019.

PREPARED BY: American Infrastructure Development, Inc., July 2019.

Table 7.6-1: Capital Improvement Program Funding Sources

PROJECT ID 2/	PROJECT NAME	TARGET CONSTRUCTION START DATE (FISCAL YEAR) 3/	TOTAL PROJECT COSTS (ESCALATED) 4/	ELIGIBLE FUNDING SOURCE 1/		
				FAA	FDOT	BCAD
Master Plan Projects						
Near-Term Master Plan Projects						
A1	Mitigate Hot Spot 2	2021	$4,400,000	$3,960,000	$220,000	$220,000
A2	Airfield Lighting Enhancements	2021	$2,200,000	$0	$1,760,000	$440,000
A3	Mitigate Runway 1L-19R Crossings and Extend Taxiway A	2021	$3,700,000	$0	$2,960,000	$740,000
A4	Mitigate Hot Spot 1	2024	$1,100,000	$990,000	$55,000	$55,000
A5	Mitigate Hot Spot 3	2023	$800,000	$720,000	$40,000	$40,000
S1	Air Traffic Control Tower Replacement	2022	$4,400,000	$0	$3,520,000	$880,000
S2	BCAD Administration and Maintenance Facility Expansion	2024	$1,000,000	$0	$500,000	$500,000
L2	Separated Shared-Use Path	2022	$2,250,000	$0	$1,800,000	$450,000
G1	Professional Services for Master Plan	2021	$950,000	$0	$0	$950,000
	Subtotal Near-Term Master Plan Projects		**$20,800,000**	**$5,670,000**	**$10,855,000**	**$4,275,000**
Intermediate-Term Master Plan Projects						
A6	Phase 2 Airfield Enhancements	2027	$6,000,000	$0	$4,800,000	$1,200,000
	Subtotal Intermediate-Term Master Plan Projects		**$6,000,000**	**$0**	**$4,800,000**	**$1,200,000**
Long-Term Master Plan Projects						
A7	Phase 3 Airfield Enhancements	2033	$16,700,000	$0	$13,360,000	$3,340,000
	Subtotal Long-Term Master Plan Projects		**$16,700,000**	**$0**	**$13,360,000**	**$3,340,000**
	Total Master Plan Project Costs		**$43,500,000**	**$5,670,000**	**$29,015,000**	**$8,815,000**
Current BCAD Airport Capital Improvement Program Projects						
1	Phase II Security Improvements	2020	$824,000	$0	$659,200	$164,800
2	Dual Taxilane (Wayman Aviation)	2020	$595,000	$0	$476,000	$119,000
3	Runway 10R-28L Rehabilitation	2020	$4,000,000	$3,600,000	$200,000	$200,000
	Subtotal Current BCAD Airport Capital Improvement Program Projects		**$5,419,000**	**$3,600,000**	**$1,335,200**	**$483,800**
	Grand Total Project Costs		**$48,919,000**	**$9,270,000**	**$30,350,200**	**$9,298,800**

NOTES: FAA = Federal Aviation Administration; FDOT = Florida Department of Transportation; BCAD = Broward County Aviation Department

1/ Project funding allocations are based on eligibility criteria. Actual project funding and/or time is subject to change.

2/ A – Airfield; L – Landside Improvements; S – Airport Support Facilities; G – General and Administrative

3/ For fiscal years ending September 30.

4/ Amounts shown are escalated dollars (3.5 percent annually from 2018).

SOURCES: American Infrastructure Development, Inc., May 2018 (Master Plan Cost Estimates); Kimley-Horn and Associates, Inc., *HWO Airfield Safety Enhancement and Geometry Study*, April 2017; Ricondo & Associates, Inc., April 2019.

PREPARED BY: American Infrastructure Development, Inc., July 2019.