

# Ted Stevens Anchorage International Airport

## 2014 MASTER PLAN UPDATE

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### *APPENDIX F - TONY KNOWLES COASTAL TRAIL GUIDING PRINCIPLES*

FINAL  
DECEMBER 2014

**RS&H**

IN ASSOCIATION WITH:

HDR

DOWL HKM

RIM Architects

ATAC



*Photo credit: Vanessa Bauman*



TED STEVENS  
ANCHORAGE INTERNATIONAL AIRPORT  
MASTER PLAN UPDATE

APPENDIX F  
TONY KNOWLES COASTAL TRAIL  
GUIDING PRINCIPLES

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**FINAL**

Prepared for:  
Ted Stevens Anchorage International Airport  
State of Alaska Department of Transportation & Public Facilities

Prepared by:

**RS&H**

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## PREFACE

The Ted Stevens Anchorage International Airport (Airport) Master Plan Update (Master Plan Update) provides Airport management and the Alaska Department of Transportation & Public Facilities (DOT&PF) with a strategy to develop the Ted Stevens Anchorage International Airport. The intent of the Master Plan Update is to provide guidance that will enable Airport management to strategically position the Airport for the future by maximizing operational efficiency and business effectiveness, as well as by maximizing property availability for aeronautical development through efficient planning. While long-term development is considered in master planning efforts, the typical planning horizon for the Master Plan Update is 20 years.

The Federal Aviation Administration provides guidance for Master Plan development in *FAA Advisory Circular 150 / 5070-6B, Airport Master Plans*. Although not required, the Advisory Circular strongly recommends airports prepare a Master Plan. Funding for the Master Plan Update is provided primarily by the Federal Aviation Administration through an Airport Improvement Program grant.

A comprehensive Master Plan Update was last prepared in 2002 and a partial update was undertaken between 2006 and 2008. This Master Plan Update was initiated in June 2012 and concluded in December 2014. The DOT&PF entered into a contract with the firm RS&H to lead this effort. The Master Plan Update included a robust public and stakeholder involvement program.

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## Appendix F - Tony Knowles Coastal Trail Guiding Principles

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## Acronyms and Abbreviations

ADA	Americans with Disabilities Act
Airport	Ted Stevens Anchorage International Airport
AWWU	Anchorage Water and Wastewater Utility
BWI	Baltimore Washington International Airport
Coastal Trail	Tony Knowles Coastal Trail
FAA	Federal Aviation Administration
Master Plan Update	Ted Stevens Anchorage International Airport Master Plan Update

## SECTION I

### TONY KNOWLES COASTAL TRAIL GUIDING PRINCIPLES

The Tony Knowles Coastal Trail (Coastal Trail) is a highly used and important community resource in Anchorage. During the Ted Stevens Anchorage International Airport (Airport) Master Plan Update (Master Plan Update) process, many comments were made on the need to protect and maintain the trail. These draft Tony Knowles Coastal Trail Guiding Principles have been developed for future use in context with the Master Plan Update. The Airport recognizes that should future Airport development impact the trail, mitigations and improvements should be considered in light of these guiding principles. Trail continuity is essential to meet community desires.

Guiding principles for future consideration:

1. Accommodate the full range of Coastal Trail users and maximize free-flow operations (i.e., minimize conflicting driveways, roads, crossings, etc.).
2. Continue to function as a stand-alone trail (not principally associated with a road or other right-of-way) and consider trail access during construction.
3. Minimize impacts to the natural resources, environment, and ambiance of the trail.
4. Minimize impacts to the existing viewsheds and accessibility to those viewsheds.
5. Provide access for trail users to the trail's surrounding natural environments.
6. Provide access and crossings for wildlife within and near the trail corridor.
7. Provide connections to other existing and planned trails.
8. Emphasize safety between trail users and wildlife, intersecting trails, access roads, and adjacent and nearby land uses.
9. Minimize long stretches that are highly exposed to prevailing winds.
10. Consider opportunities to enhance and diversify the trail experience.

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## SECTION 2

### COASTAL TRAIL – BEST PRACTICES AND CHALLENGES

Given the possibility that the trail could be rerouted due to potential future expansion of the Airport (if aviation demand increases significantly and significant new infrastructure is pursued), a number of challenges arise in upholding these guiding principles and preserving this portion of the Coastal Trail. The following challenges have been identified:

1. Winter weather exposure and lack of sun
2. Preservation of trail character
3. Wildlife habitat and movement
4. All-season trail use
5. Tide levels in relation to trail elevation
6. Feasibility of trail reroute from top of bluff down to shore level at Cook Inlet; significant elevation change
7. Integration with adjacent industrial land uses: Airport, Anchorage Water and Wastewater Utility (AWWU), power substation

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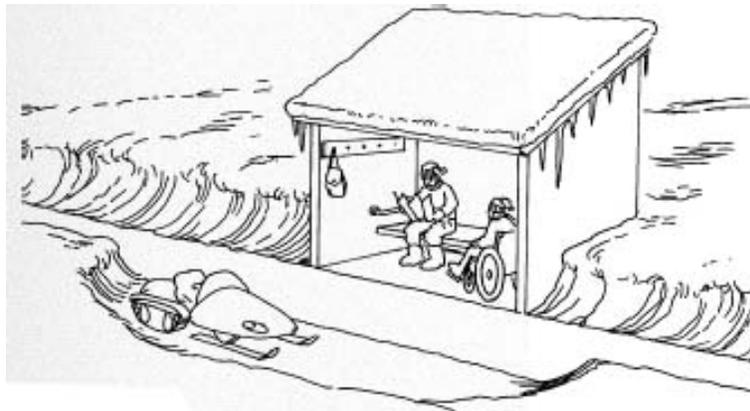
## SECTION 3 BEST PRACTICES AND TRAIL EXAMPLES

### 3.1 BEST PRACTICES

The following precedents and best practices used on other trail systems are offered as potential solutions to help address these challenges for consideration in future design and mitigation analysis. Details and additional photographs of example trails that utilize these suggested methods are included below.

#### 1. Winter weather exposure and lack of winter sun

- Install vegetative windbreak to shield trail users from the elements
- Include gaps in this windbreak to preserve views, enhance interaction and allow wildlife passage
- Consider shelter areas to provide relief from the elements
- Examples:
  - Olympic Discovery Trail (Washington)
  - Monterey Bay Coastal Recreation Trail (Monterey, California)
  - Historic Columbia River Highway Trail (Oregon)



Source: FHWA, 2014.

Example Trail Shelter

#### 2. Preservation of trail character

- Install scenic lookout areas in key locations
- Incorporate Americans with Disabilities Act (ADA)-accessible areas of the trail where feasible, particularly near parking areas and scenic overlooks
- Incorporate educational elements to highlight key trail and environmental features

- Incorporate historic and cultural elements
  - Use native vegetation for trail landscaping and planting
  - Examples:
    - Olympic Discovery Trail (Washington)
    - Historic Columbia River Highway Trail (Oregon)
    - The Bay Trail (San Francisco, California)
    - Monterey Bay Coastal Recreation Trail (Monterey, California)
    - Lower Guadalupe River Trail (San Jose, California)
    - Arlington Airport Trail (Arlington, Virginia)
    - Marjorie Harris Carr Cross Florida Greenway Bridge (Florida)
3. **Wildlife habitat and movement**
- Establish right of way outside of trail to accommodate wildlife
  - Use vegetative windbreak for habitat and passage
  - Examples:
    - Monterey Bay Coastal Recreation Trail (Monterey, California)
    - Lower Guadalupe River Trail (San Jose, California)
    - Marjorie Harris Carr Cross Florida Greenway Bridge (Florida)
4. **All-season trail use**
- Use weather-resistant surfaces and adequate drainage
  - Tunnels could provide artificial snow, accommodating skiers in the winter
  - Examples:
    - Historic Columbia River Highway Trail (Oregon)
    - Ski Tunnel (Torsby, Sweden)
    - Ski Tunnel (Vuokatti, Finland)
5. **Tide levels in relation to trail elevation**
- Generally place trail above projected 100-year coastal flood elevation
  - Raise trail on seawall
  - Examples:
    - Olympic Discovery Trail (Washington)
    - The Bay Trail (San Francisco, California)
    - Stanley Park Sea Wall Bike Path (Vancouver, British Columbia)

6. **Feasibility of trail reroute from top of bluff down to shore level at Cook Inlet; significant elevation change**
  - Use retaining walls for stability.
  - Incorporate designs to enhance the natural environment.
  - Address elevation changes using established safety guidelines for stability, slip resistance, proper grade, adequate drainage and rest areas.
  - Examples:
    - Historic Columbia River Highway Trail (Oregon)
    - Waud Bluff Trail (Portland, Oregon)
7. **Integration with adjacent industrial land uses: Airport, AWWU, power substation**
  - Install runway overlooks, aviation-related interpretive/educational/historic signage.
  - Provide access to airport to encourage trail use for transportation.
  - Incorporate other environmental, historical, and cultural resources.
  - Examples:
    - Baltimore Washington International Airport (BWI) Trail (Baltimore, Maryland)
    - Lower Guadalupe River Trail (San Jose, California)
    - Arlington Airport Trail (Arlington, Virginia)

### 3.2 TRAIL EXAMPLES

1. **Olympic Discovery Trail, Washington State**
  - Rails to trail facility, currently 40 miles long
  - Similar conditions to Coastal Trail: traverses mountains, rocky coast
  - Used for sporting events
  - Includes vegetative buffers/windbreaks, with periodic openings to view the sea
  - Trail is built up on seawall to achieve elevation above tides at specific locations



Source: RS&H, 2013.

**Olympic Discovery Trail  
(Vegetative Buffers)**



Source: RS&H, 2013.

**Olympic Discovery Trail  
(Seawall for Elevation)**



Source: RS&H, 2013.

### Olympic Discovery Trail (Seawall and Viewsheds)

## 2. Stanley Park Trail, Vancouver, British Columbia

- Approximately 5.5 mile trail follows seawall along Vancouver's waterfront
- Deep foundations allow trail to withstand tides



Source: mtbr.

### Stanley Park Trail (Tidal Elevation)

### 3. Monterey Bay Coastal Recreation Trail, Monterey, California

- Travels along coast in Monterey, California (18 miles, portions still along roadway shoulders)
- Began with an old abandoned railroad right of way
- Trail is raised up from water level via sea wall at specific locations
- Incorporates educational elements
- Includes wider trail areas/rights of way, which allows for wildlife interaction and passage
- Incorporates periodic vegetative buffers between the trail and coast, breaking the wind and allowing viewing opportunities



Source: RS&H, 2013.

#### Monterey Bay Coastal Recreational Trail (Vegetative Buffers and Viewing Areas)



Source: Images by RJM, 2012.

**Monterey Bay Coastal Recreational Trail  
(Seawall, Educational Opportunities and Viewing Areas)**

**4. Ski Tunnel – Torsby, Sweden**

- Tunnel is 1.3 kilometers long, 8 meters wide, 4 meters high
- Follows natural topography
- Artificial snow is made in the tunnel



Source: RS&H, 2013.

**Ski Tunnel – Sweden**

**5. Ski Tunnel – Vuokatti, Finland**

- 1.2 kilometers long
- Poured concrete

- Artificial snow is made in the tunnel



Source: RS&H, 2013.

#### Ski Tunnel - Finland

### 6. The Bay Trail, San Francisco, California

- Shoreline trail network around San Francisco Bay and San Pablo Bay
- Provides access to commercial, industrial (military, sewage treatment, landfills), and residential neighborhoods
- Recreational and educational opportunities, wildlife viewing



Source: RS&H, 2013.

## The Bay Trail (Different Adjacent Land Uses)



Source: RS&H, 2013.

## The Bay Trail (Viewsheds, Educational Opportunities)

### 7. Waud Bluff Trail, Portland, Oregon

- Trail traverses down a bluff to connect to an existing greenway
- Retaining walls help stabilize the trail along bluff
- Connects through an industrial area and across a railroad
- Includes a viewing area at the top of the bluff and along the trail down the bluff



© Jonathan Maus/BikePortland  
Source: Jonathan Maus/BikePortland.

Waud Bluff Trail  
(Retaining Walls along Bluff)



© Jonathan Maus/BikePortland  
Source: Jonathan Maus/BikePortland.

Waud Bluff Trail  
(Industrial Land Uses)

8. Baltimore Washington International Airport Trail, Baltimore, Maryland
  - Trail length of 12.5 miles
  - Encircles BWI Airport
  - Includes boardwalks in environmentally sensitive areas
  - Integrated with the other area cultural resources
  - Includes overlook of the general aviation runway, as well as access to the airport



Source: RS&H, 2013.

**BWI Trail  
(Environmental Compatibility and Interaction with Wildlife)**



Source: RS&H, 2013.

**BWI Trail  
(Industrial, Aviation and Commercial Land Uses)**



Source: RS&H, 2013.

**BWI Trail  
(Environmental Compatibility)**



Source: RS&H, 2013.

**BWI Trail  
(Educational Opportunities and Viewsheds)**

9. Lower Guadalupe River Trail, San Jose, California

- Trail length approximately 6.7 miles
- Runs along the Guadalupe River levees

- Includes aviation overlook
- Includes interpretive signage describing historical, cultural and environmental features
- Incorporates native vegetation and wildlife interaction



Source: RS&H, 2013.

**Lower Guadalupe River Trail  
(Interaction with Wildlife)**



Source: RS&H, 2013.

**Lower Guadalupe River Trail  
(Informational Areas)**



Source: RS&H, 2013.

**Lower Guadalupe River Trail  
(Environmental Compatibility and Views)**



Source: RS&H, 2013.

**Lower Guadalupe River Trail  
(Informational / Educational Opportunities)**



Source: RS&H, 2013.

### Lower Guadelupe River Trail (Interaction with Wildlife)

#### 10. Arlington Airport Trail, Arlington, Washington

- Length approximately 6 miles
- Encircles the Arlington Airport
- Incorporates access to the airport from the trail
- Includes nine interpretive stations documenting the history of the airport and uses historical airport documents and photos
- Includes aviation overlook



Source: RS&H, 2013.

### Arlington Airport Trail (Environmental Compatibility and Viewsheds)

## 11. Historic Columbia River Highway Trail, Oregon

- Trail reconstructed on historic highway built from 1913 to 1922; highway was abandoned and restoration for trail use began in 1980s
- Sections have been completed over time with restoration of historic tunnels, bridges and guardrails
- Trail includes original highway scenic overlooks and other design features:
  - Maximum of 5% grades with 100-foot curve radius
  - Included restoration of rest houses
  - Improved drainage to maintain stability and ensure uses throughout the year



Source: RS&H, 2013.

**Historic Columbia River Highway Trail  
(Adequate Drainage)**



Source: RS&H, 2013.

**Historic Columbia River Highway Trail  
(Viewsheds and Historical Restoration)**



Source: RS&H, 2013.

**Historic Columbia River Highway Trail  
(Vegetative Buffers and Historical Restoration)**



Source: RS&H, 2013.

**Historic Columbia River Highway Trail  
(Design Features, Stabilizing / Retaining Walls)**



Source: RS&H, 2013.

**Historic Columbia River Highway Trail  
(Design Features and All Season Use)**



Source: RS&H, 2013.

**Historic Columbia River Highway Trail  
(Rest Areas and Historic Restoration / Educational Opportunities)**

**12. Marjorie Harris Carr Cross Florida Greenway Land Bridge,  
Florida**

- Connects eastern and western portions of the Cross Florida Greenway over I-75
- Provides connectivity for both trail users and wildlife
- Landscaped with native vegetation; includes irrigation system and deep planters
- Includes traffic viewing area



Source: RS&H, 2013.



Source: RS&H, 2013.

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