



Runway rehabilitation for FPO

Pavement improvements and airfield lighting upgrades

Grand Bahama Airport Company

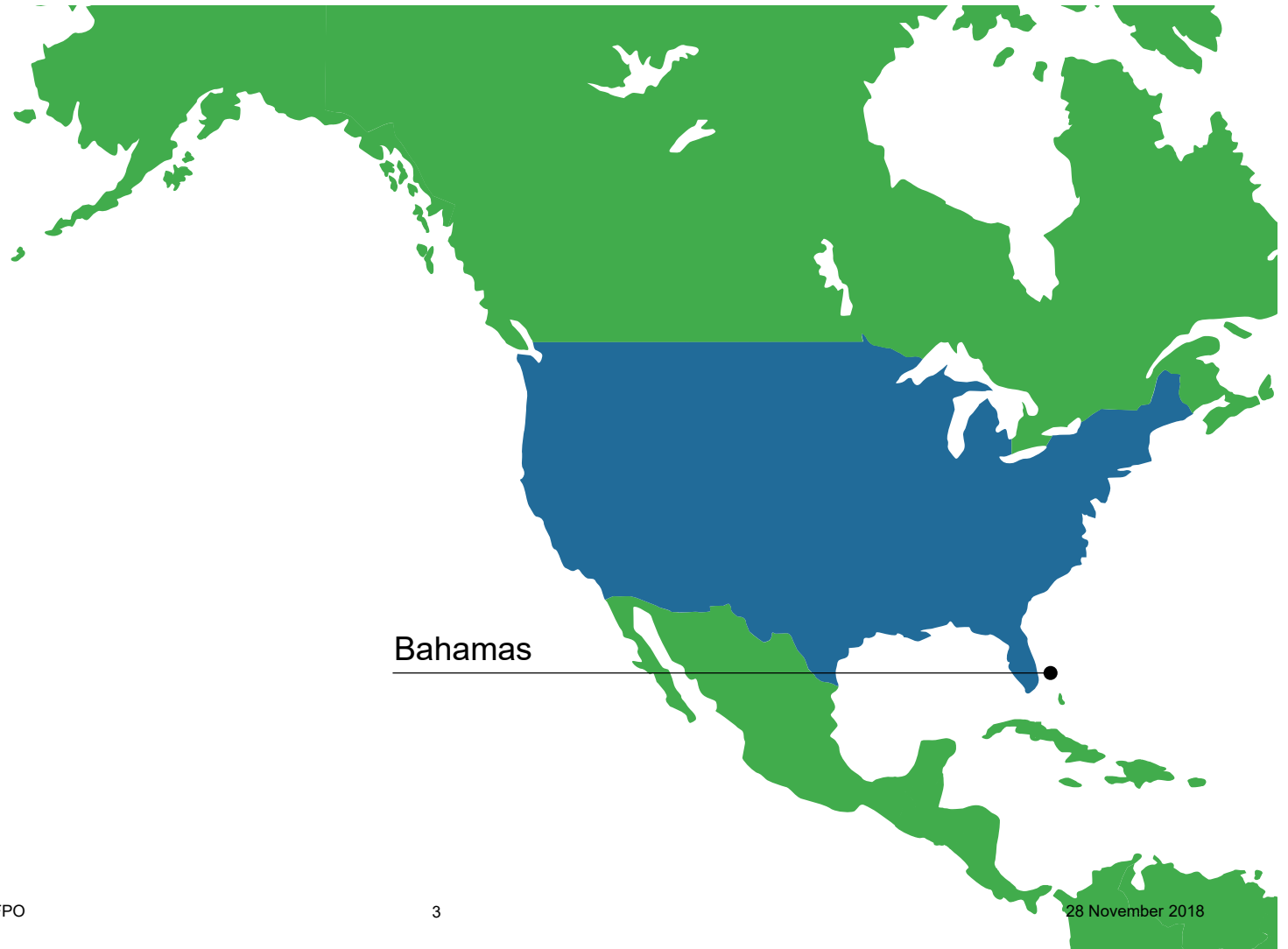




Location

Freeport, Grand Bahama, Bahamas

Location







Source: Google



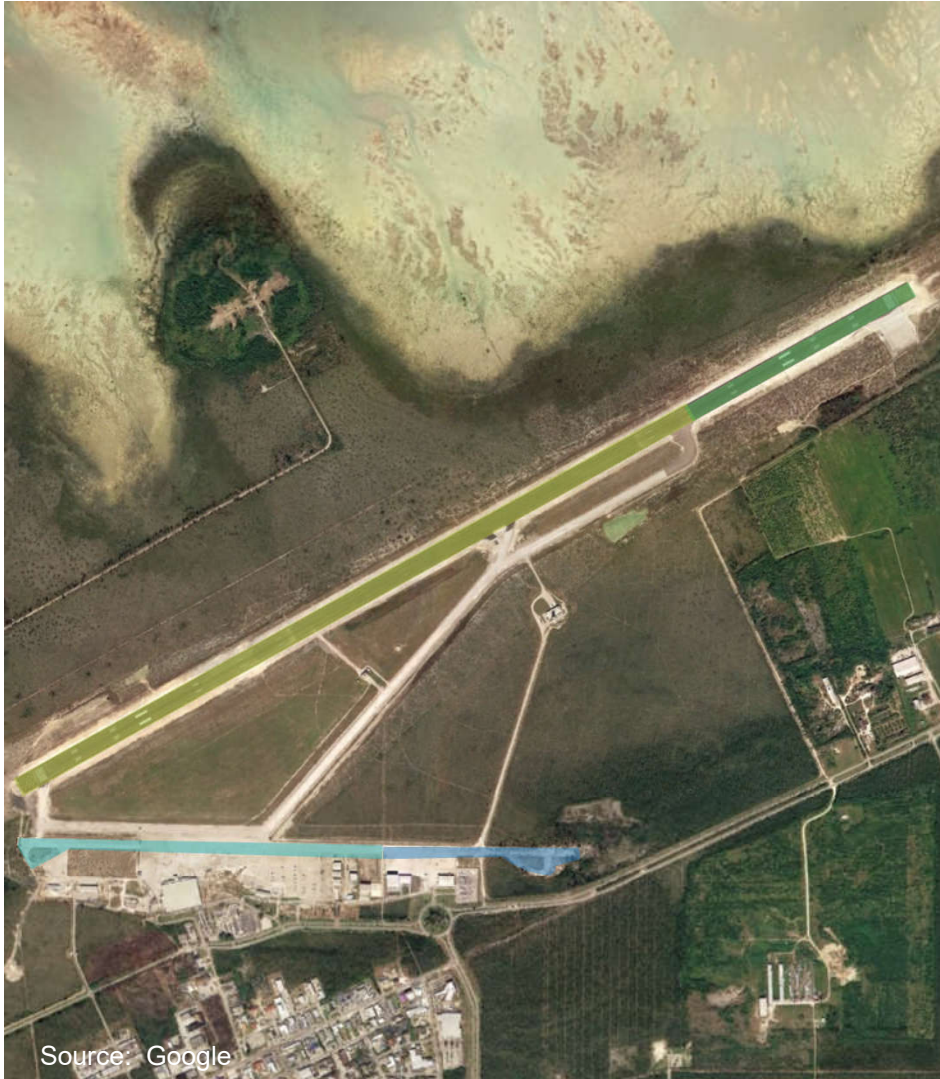
Source: Google



Historical data

Freeport, Grand Bahama





Historical layout

1957

Original east-west runway constructed (600-foot-long coral rock strip)

1957-1958

Runway extended to 4,200 feet

Late 1960s

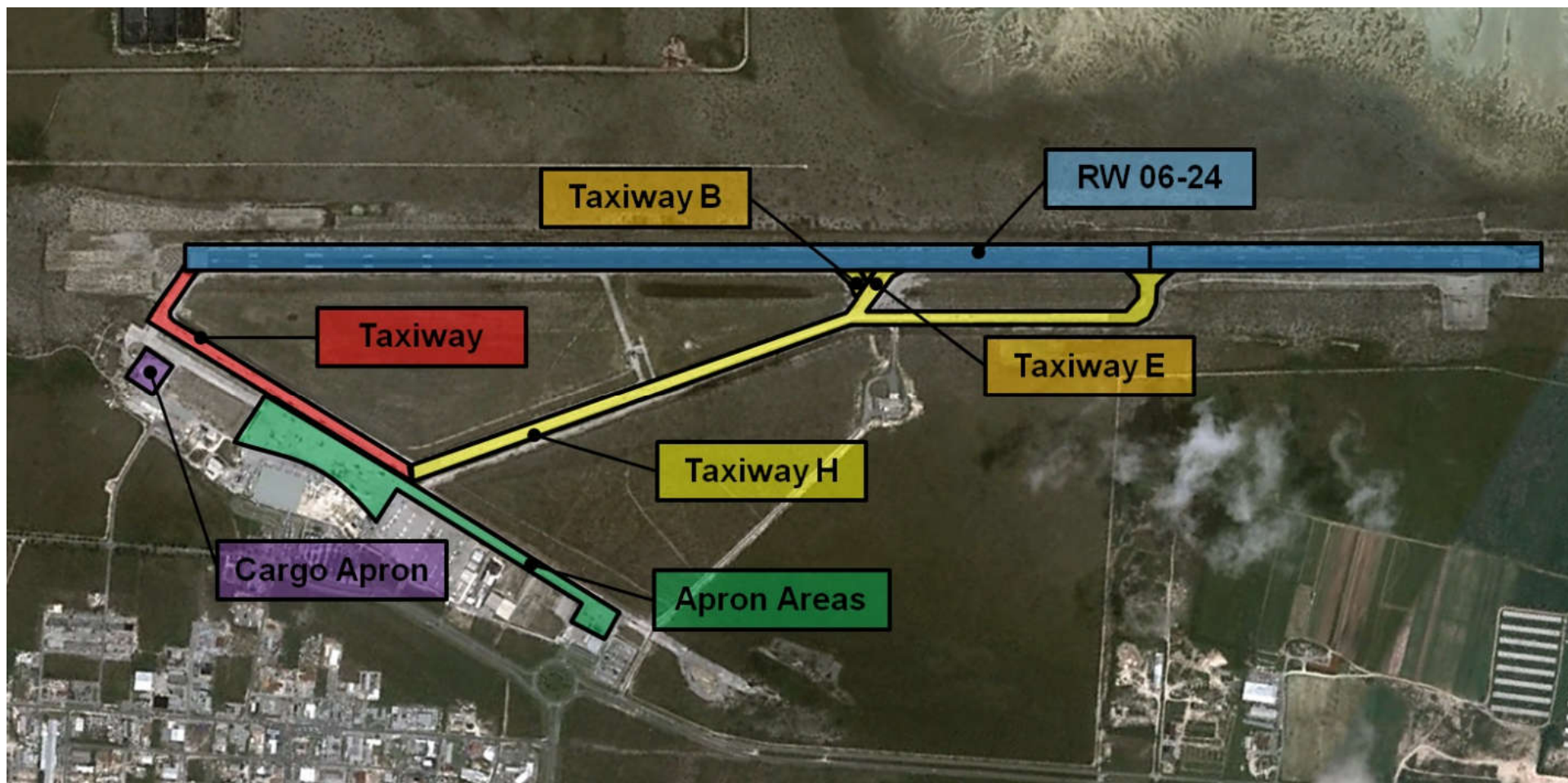
Runway relocated to today's northeast/southwest configuration and expanded to 8,300 feet x 150 feet

1977

Runway 6-24 lengthened to 11,000 feet (section to match previous)

2002-2003

Runway 6-24 rehabilitation (mill and overlay)



Runway map.



Design



Design challenges and goals

Civil

Pavement

- Pavement
- Drainage
- Tidal fluctuation

ICAO Annex 14

Precision approach
Category I

- Runway end/threshold
- Runway edge
- Alternating circuits
- Signage Updates

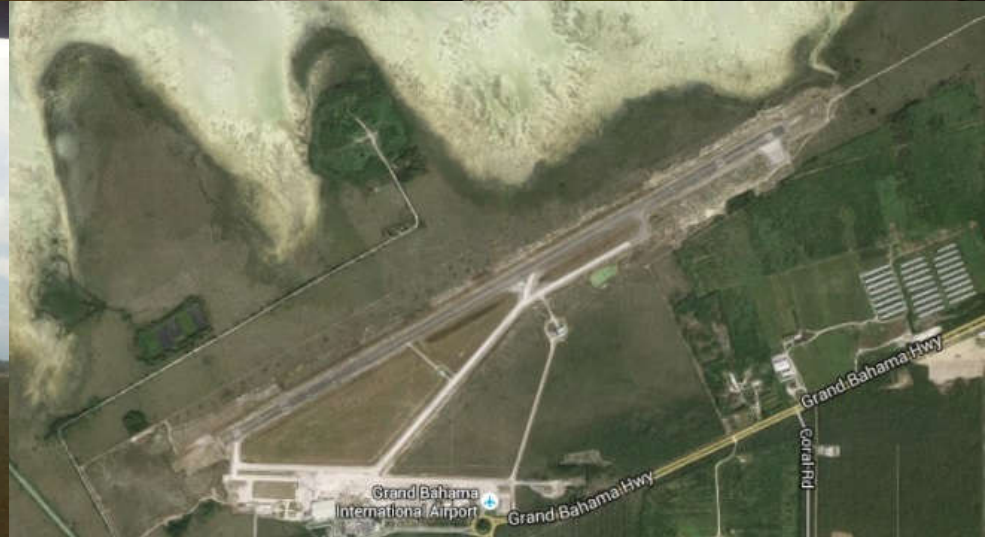
Resilience

Site is subject to tropical
weather

- Survive storm surge
- Reduce lightning
losses

Sustainability

Making the case for
LEDs





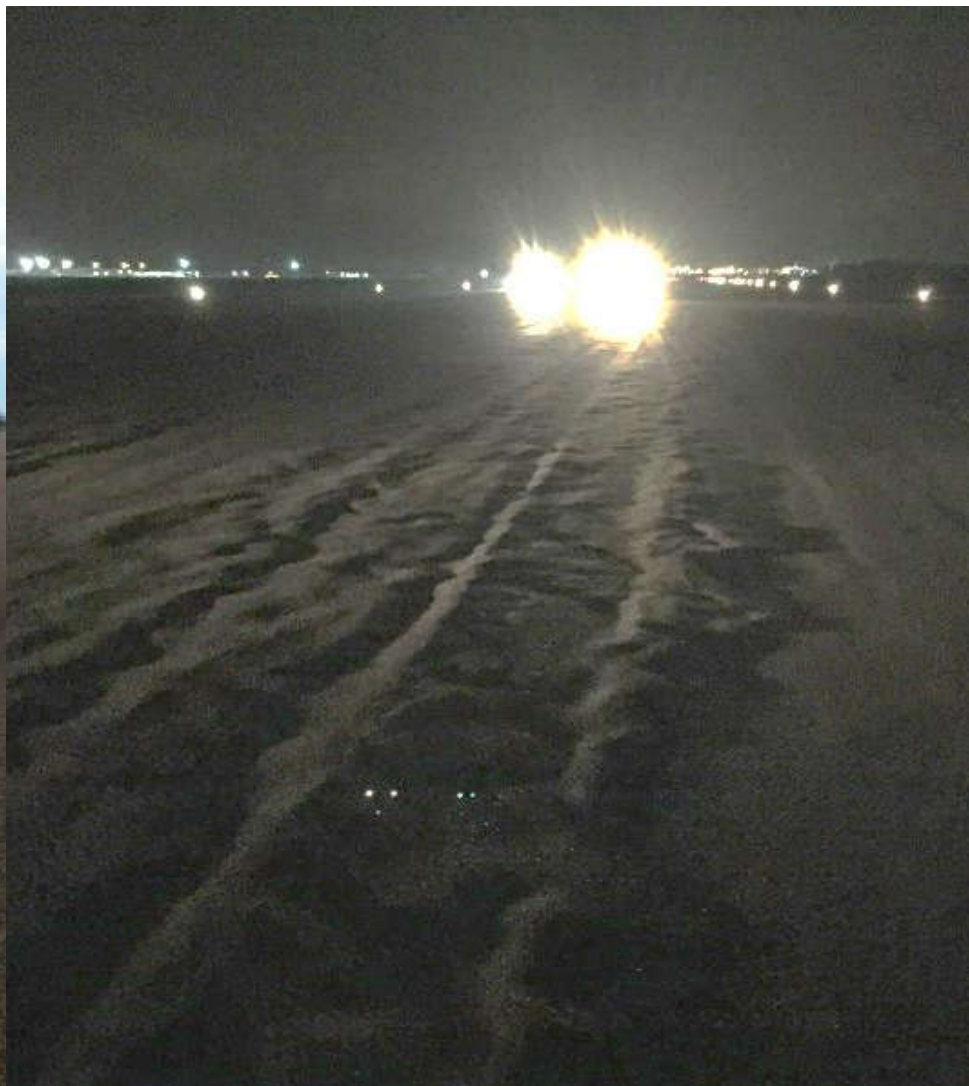




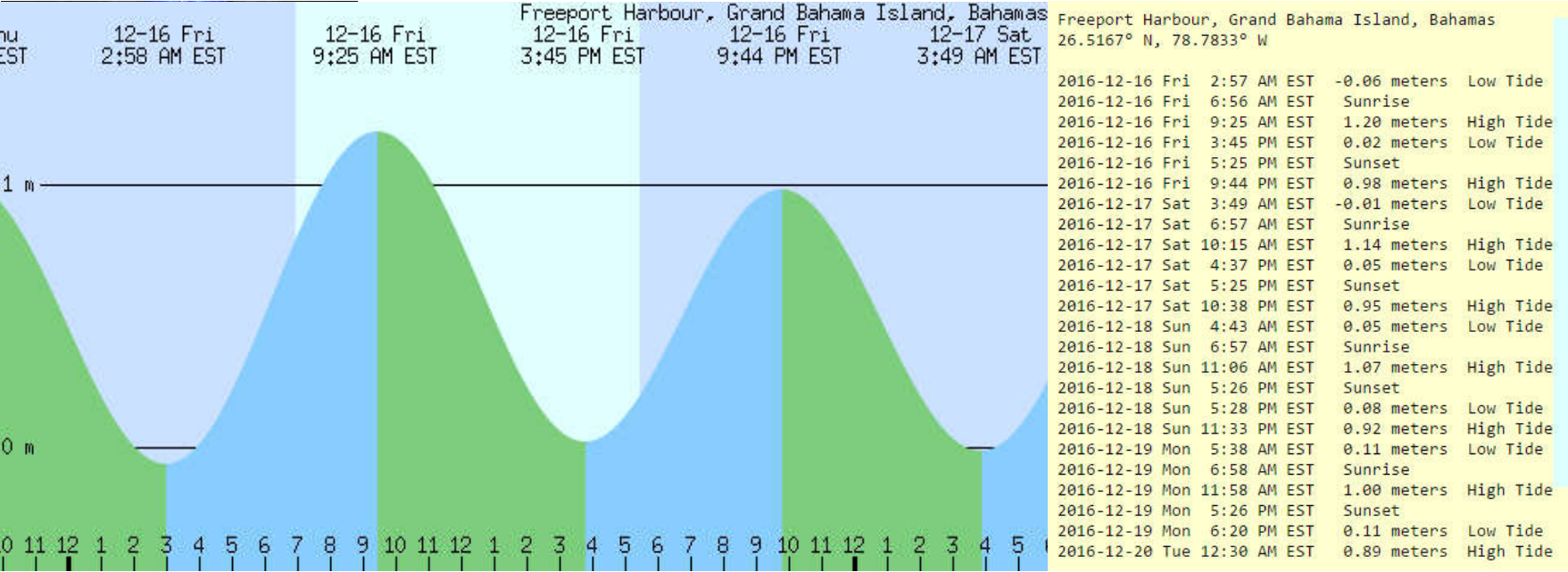


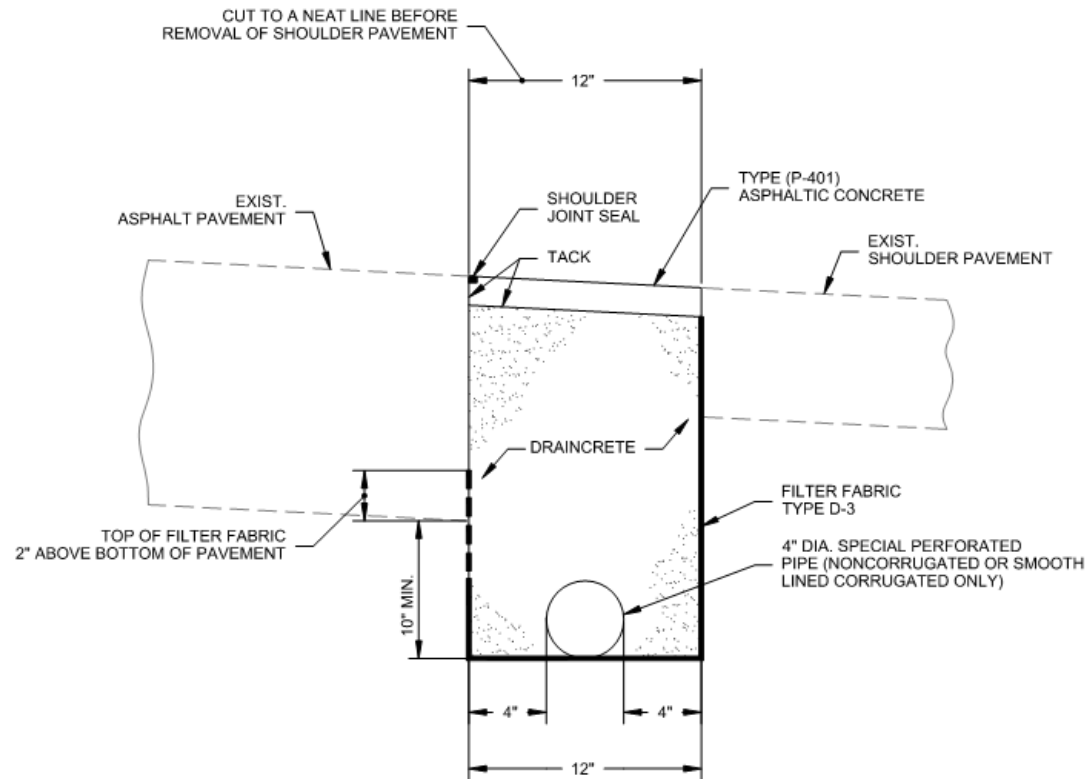






Tidal fluctuation

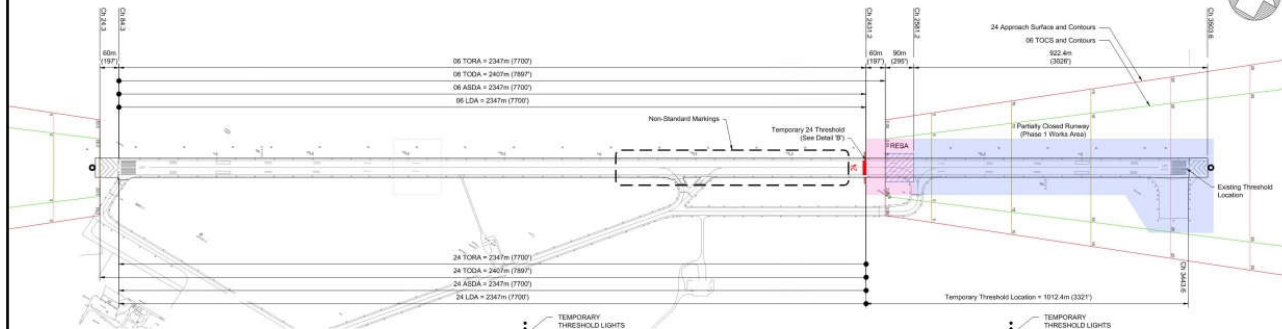




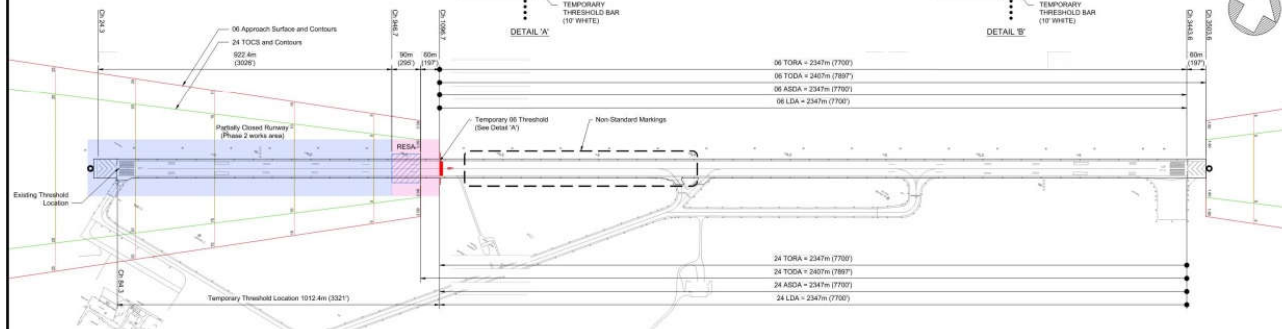
EDGE DRAIN DETAIL

N.T.S.

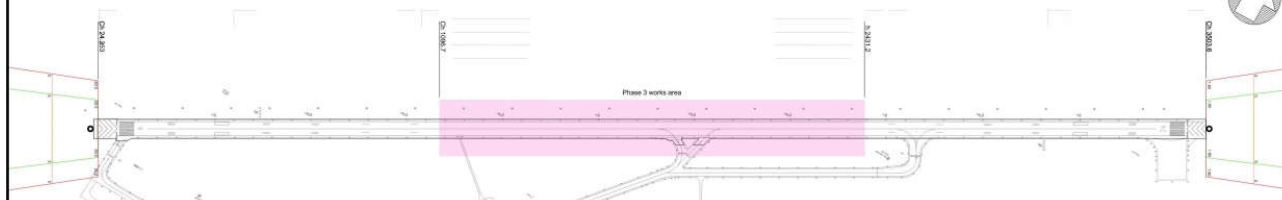
Phase 1
May 9, 2016 - June 10, 2016



Phase 2
June 11, 2016 - July 20, 2016



Phase 3
July 21, 2016 - August 24, 2016



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New Mandatory Instruction and Guidance signs.



New Mandatory Instruction and Guidance signs.

Taxiway intersection



Aerial view.



Ground view.



Receding tide, receding water level.



Inset Fixtures used. Edge light in shoulder.



Lightning protection

Opportunity

The airfield lighting system was plagued by lightning damage.

Solution

Installed a counterpoise loop with 10-foot ground rods at each light fixture. Line surge protectors were included.

Bonus: The LED fixtures used included lightning protection.

Outcome

Since installation in December 2016, the Grand Bahama Airport Company has reported zero Airfield Ground lighting related outages or issues.



2016/05/25



The case for LED fixtures

Opportunity

Grand Bahama Airport Company was interested in LED fixtures, but unsure of the extra capital costs required. As a precursor to the airfield project, the company had an in-progress project reworking the electrical system.

Solution

We performed a quick Return on Investment calculation, looking at cost differences between the following:

- Fixtures
- Transformers
- Constant Current Regulators
- Energy

Outcome

ROI calculation showed the following:

- ~\$24,000 savings in energy and labor
- ~\$90,000 additional costs
- ROI of less than 4 years

This is without considering costs that would be incurred for reworking electrical distribution work in progress.

Biggest challenge



Perception.



Reality.