

Replacement Airport in St. George, Utah

# Construction of the New St. George Municipal Airport (SGU)

Annual IES ALC Fall Conference 2011 • Hilton Wilmington Riverside, Wilmington, NC • Oct. 16-20, 2011

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Presented to



**IESALC** | ILLUMINATING ENGINEERING SOCIETY of NORTH AMERICA  
AVIATION LIGHTING COMMITTEE



2011-IESALC  
Wilmington, NC

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# AGENDA

- AIRPORT RELOCATION
- CHALLENGES
- AIRFIELD LIGHTING & SIGNAGE
- NAVAIDS
- AIRFIELD LIGHTING VAULT
- APRON FLOODLIGHTING
- QUESTIONS



# LILY ADAMS

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# AIRPORT RELOCATION



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# SGU AIRPORT RELOCATION

- PLANNING
  - 20+ YEARS
  - 3.9% ANNUAL GROWTH
  - GOLF
  - NATIONAL PARKS





# SGU AIRPORT RELOCATION

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*BRYCE CANYON*



*ZION NATIONAL PARK*

# FORMER SGU AIRPORT



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# FORMER SGU AIRPORT



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# FORMER SGU AIRPORT



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# FORMER SGU AIRPORT



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# FORMER SGU AIRPORT

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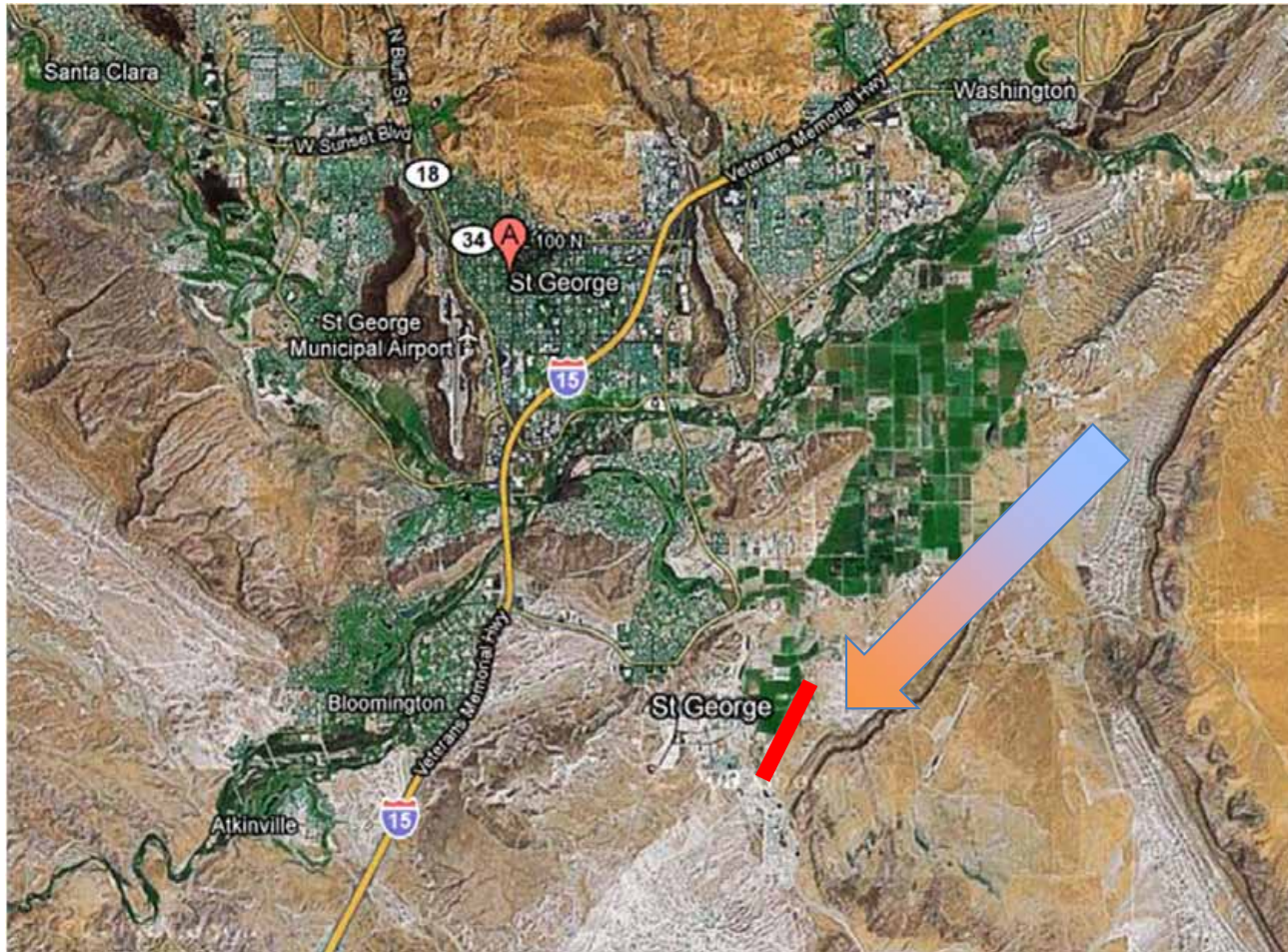
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# NEW SGU AIRPORT

- 2006 FAA GRANT
- 15 LOCATIONS EVALUATED
- 1,200 ACRES USED AS LANDING STRIP
- 5 MILES SW OF DOWNTOWN
- EXPANDABLE
- MEETS FAA SAFETY REQUIREMENTS
- FULL CAT I ILS & NAVAIDS

# NEW SGU AIRPORT

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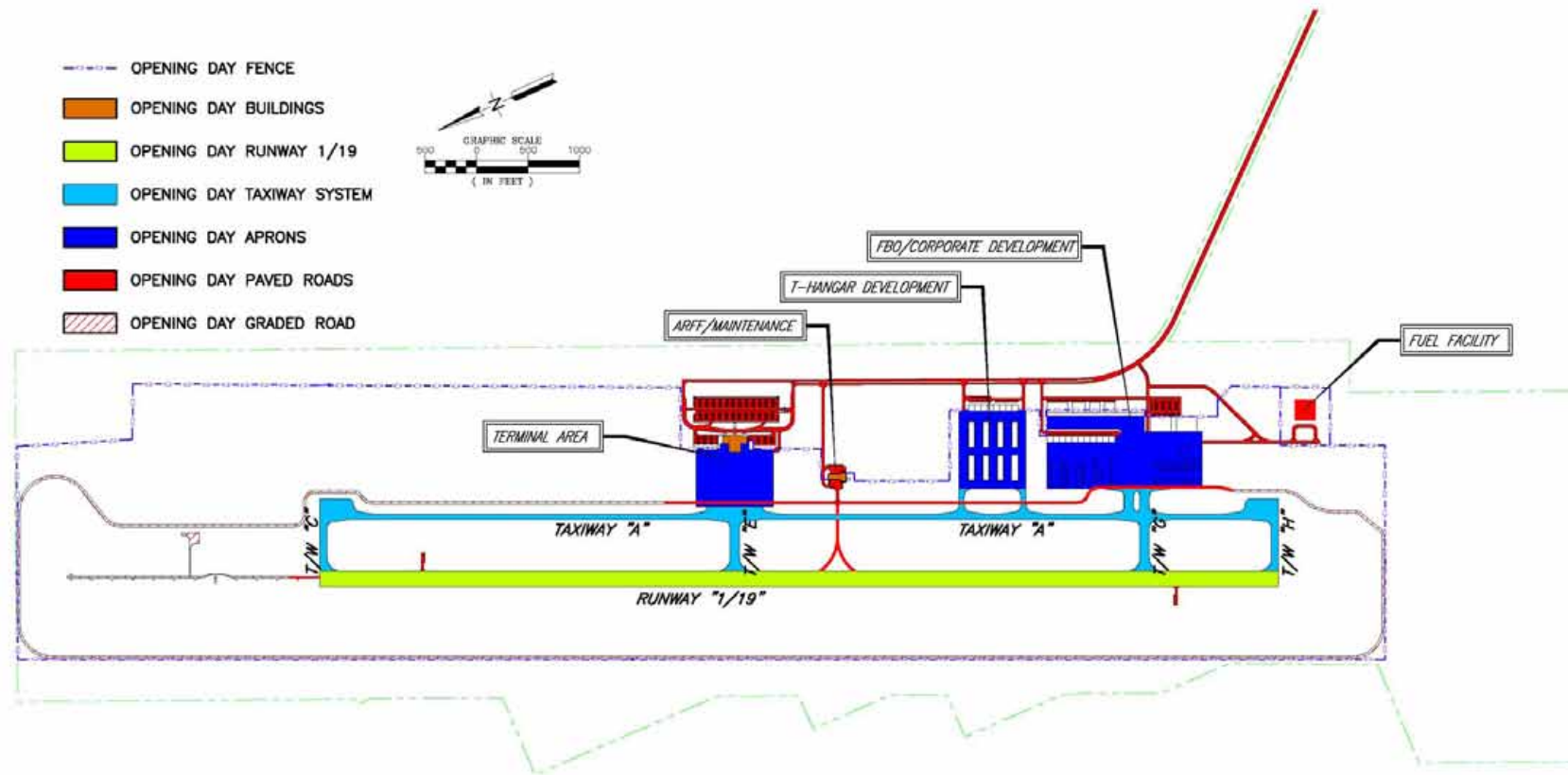


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# PRELIMINARY DESIGN

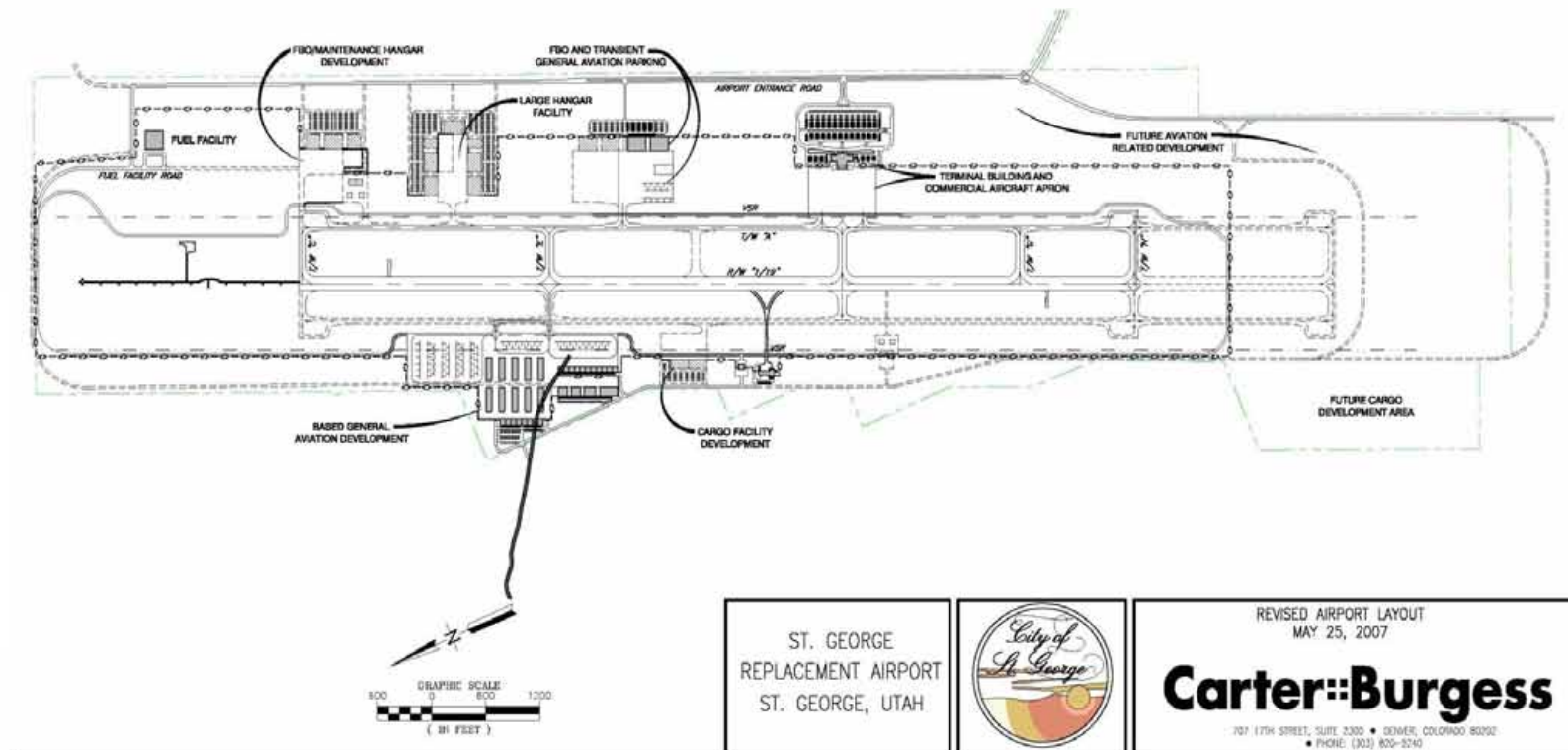
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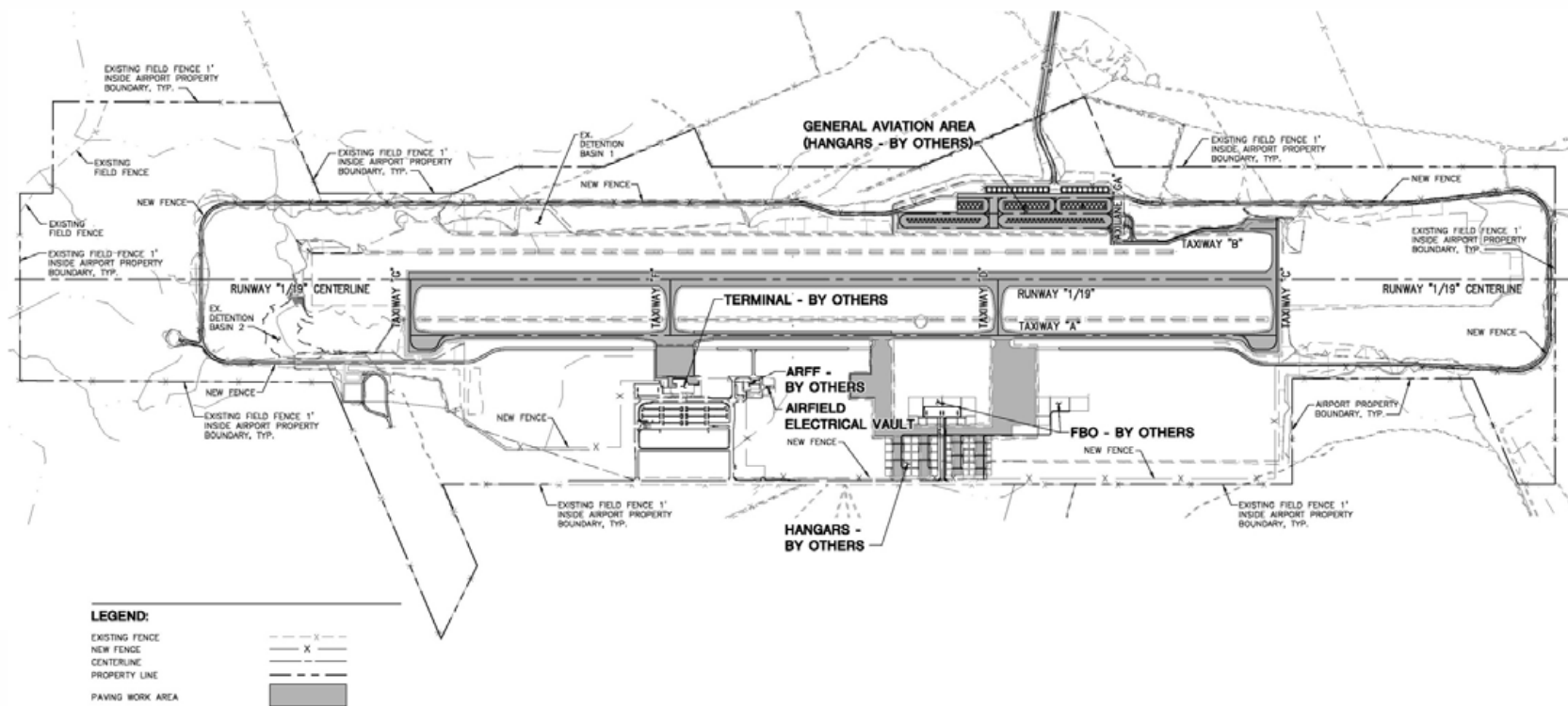
# MODIFIED DESIGN

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# FINAL DESIGN





# COMPARISON

## FORMER AIRPORT

- 6,500 FOOT RUNWAY  
(NOT EXPANDABLE)
- 274 ACRES
- 15,000 SF TERMINAL

## NEW AIRPORT

- 9,300 FOOT RUNWAY  
(EXPANDABLE 11,500 FEET)
- 1,203 ACRES
- 35,000 SF TERMINAL

# NEW SGU AIRPORT

- CONSTRUCTION
  - \$160 MILLION
  - 95 PHASES
  - 455 DAYS
  - 3 CONTRACTS
    - MASS GRADING
    - FINISH GRADING
    - PAVING AND LIGHTING



# NEW SGU AIRPORT



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# NEW SGU AIRPORT

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# NEW SGU AIRPORT



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# CHALLENGES



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# CHALLENGES

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# CHALLENGES

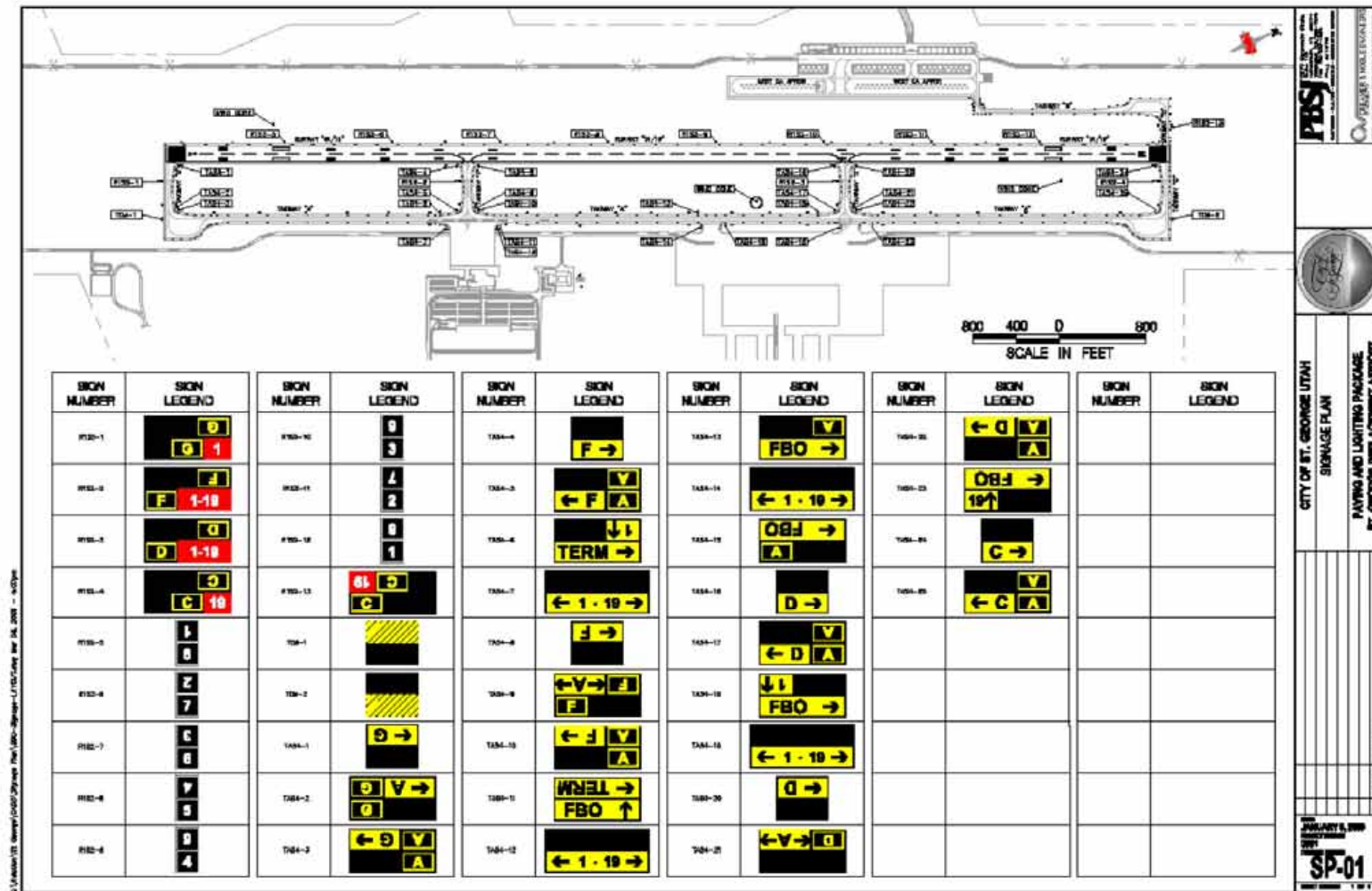
- NEW AIRPORT DIRECTOR
- TAXIWAY NAMES



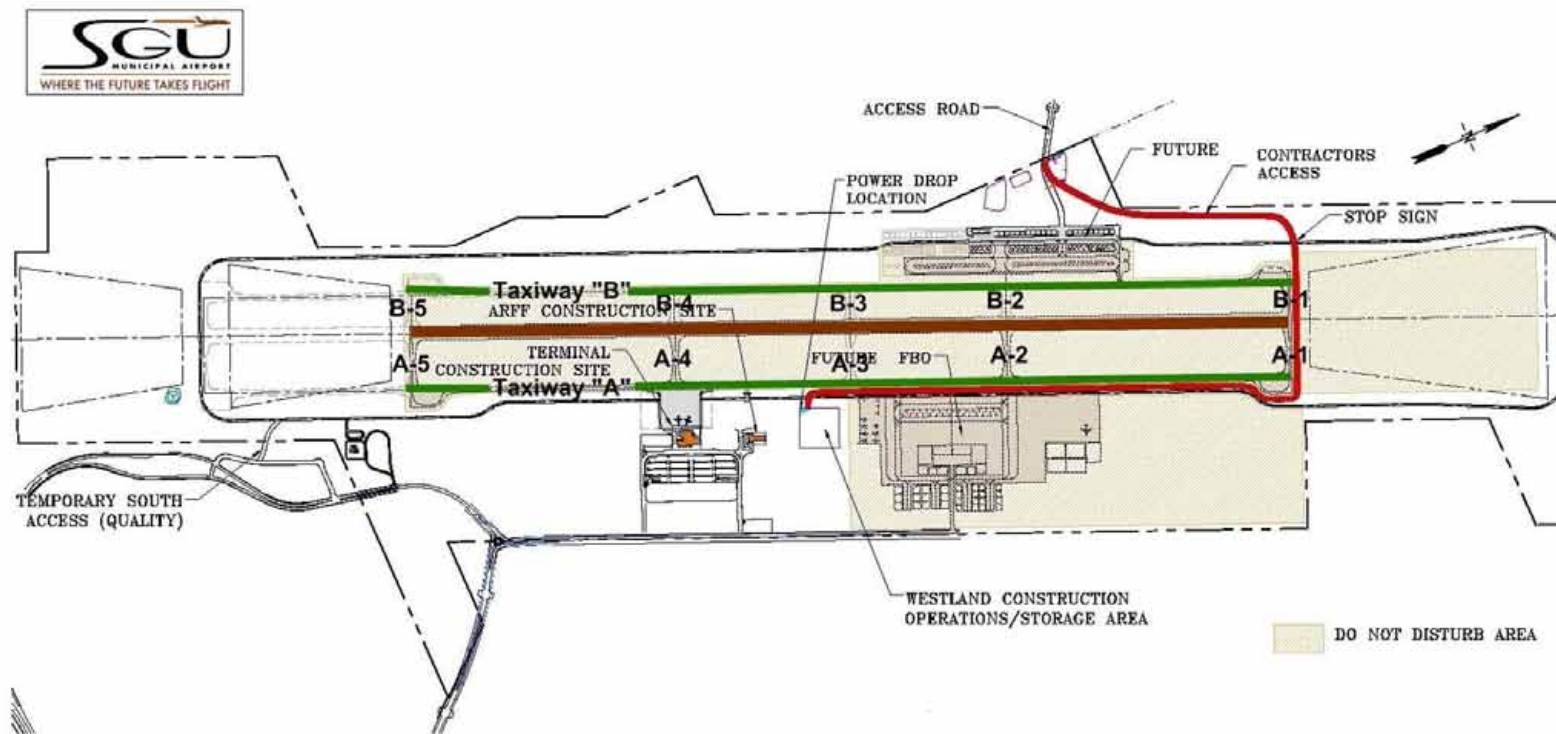


# TAXIWAY NAMES

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# TAXIWAY NAMES



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# CHALLENGES

- ROCK
- BID ITEMS



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# CHALLENGES

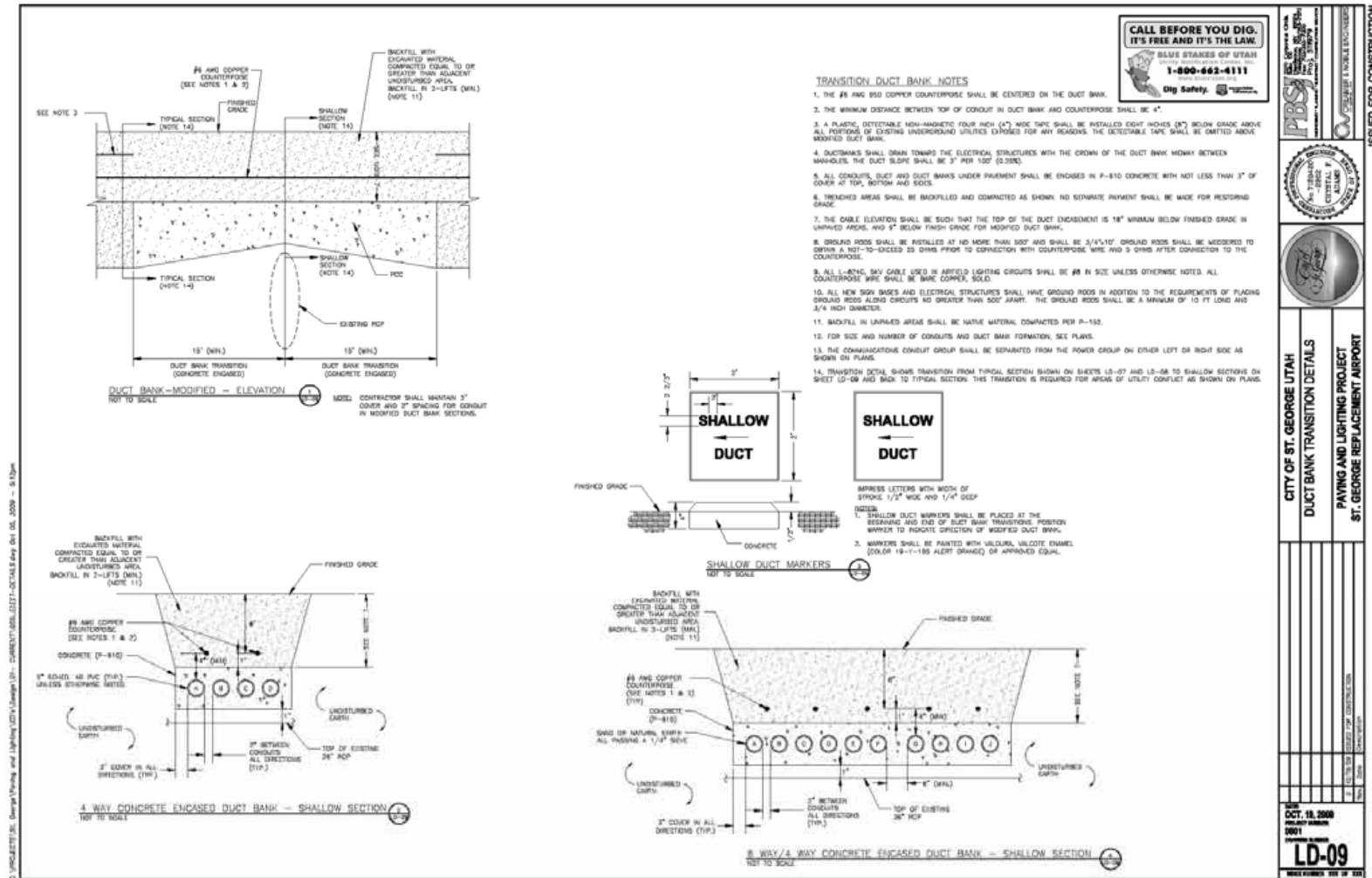
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# CHALLENGES

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# AIRFIELD LIGHTING & SIGNAGE



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# AIRFIELD LIGHTING & SIGNAGE

- ROTATING BEACON
- 90 RW EDGE LIGHTS
- 246 TW EDGE LIGHTS
- 102 TW REFLECTORS → TW EDGE LIGHTS
- 42 SIGNS
- 3 WIND CONES
- REILS
- FUTURE ELEVATED RGLS



# AIRFIELD LIGHTING & SIGNAGE

- DEDICATED SIGN CIRCUITS (STYLE 5)
- ROCK EXCAVATION



# AIRFIELD LIGHTING & SIGNAGE

- 130,000'+ 5KV CABLE
- 60,000' OF 2" PVC
- 22,500' OF DUCT BANK
- 16 MANHOLES
- 58 BASE CAN PLAZAS





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# BASE CAN PLAZA

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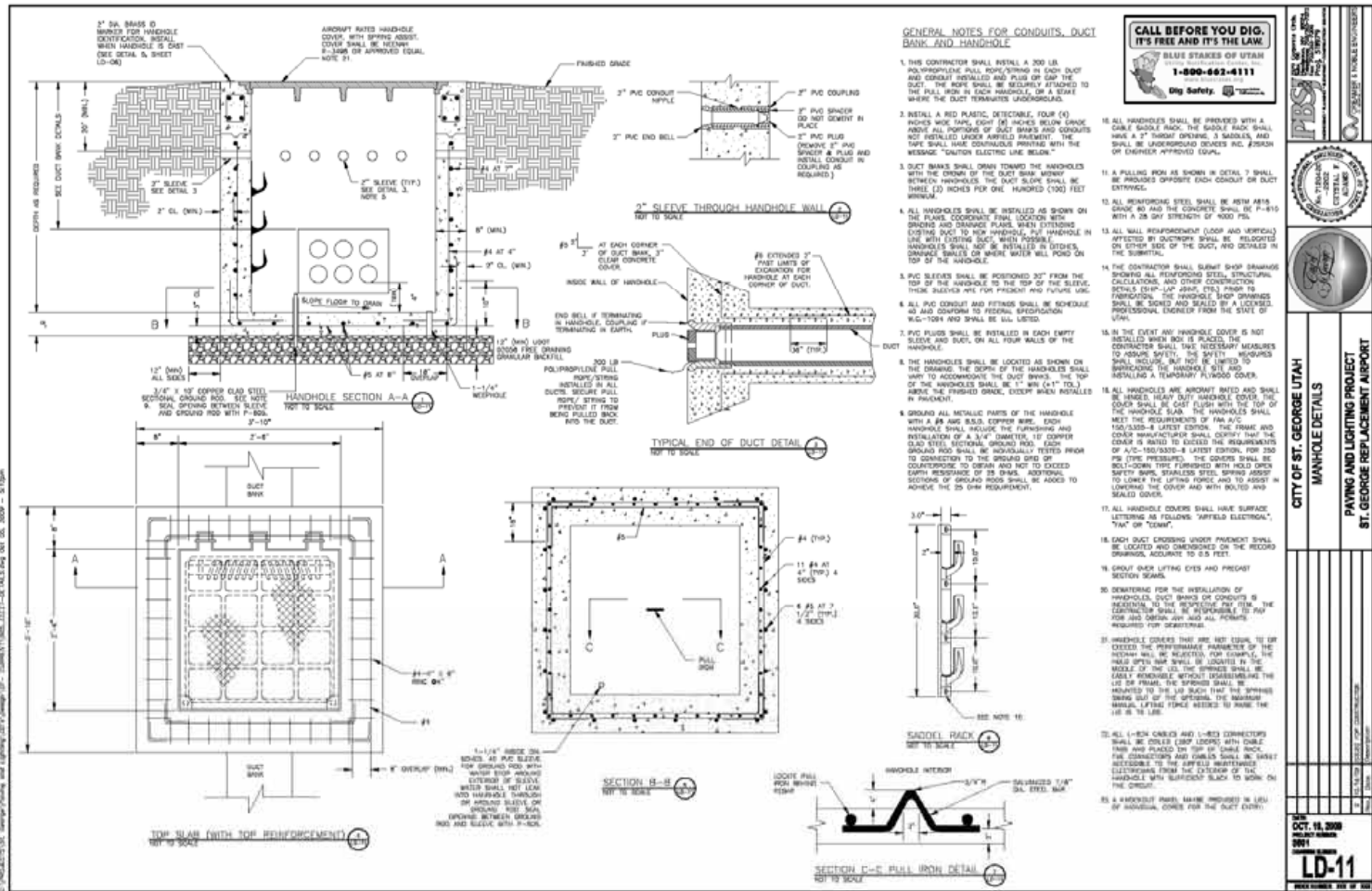
# BASE CAN PLAZA



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# MANHOLE



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# AIRFIELD LIGHTING & SIGNAGE

- LED LIFE CYCLE
- FAA'S PROCESS



# RATE OF RETURN

## ► TAXIWAY EDGE LIGHTS



Assumptions	LED	Quartz	
Number of fixtures	270	270	No heater
Fixture cost	\$190	\$60	
CCR cost	\$12,000	\$16,600	10KW vs. 20KW
Fixture load (VA)	11	27	Step 2, including losses
Energy cost (KWH)	\$0.07	\$0.07	
Operating time (hours/year)	3,650	3,650	10 hours/day
Replacements/year	0	1	
Lamp replacement cost	N/A	\$7.75	
Maintenance hourly rate	\$70	\$70	Includes overhead

# RATE OF RETURN

Initial Investment	LED	Quartz	Total Cost
Fixture	\$51,300	\$16,200	\$35,100
CCR	\$12,000	\$16,600	-\$4,600
			<b>\$30,500</b>

Yearly Savings	LED	Quartz	Total Cost
Energy	\$759	\$1,963	\$1,104
Lamp replacement	N/A	\$2,093	\$2,093
Maintenance labor	N/A	\$4,725	<b>\$4,725</b>
			<b>\$7,921</b>

LED Taxiway Edge Lights	
Initial Investment	\$30,500
Yearly Savings	\$7,921
Return on Investment	3.9 years



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# RATE OF RETURN



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## ► RUNWAY END IDENTIFIER LIGHTS (REIL)

Assumptions	LED	Xenon	
Number of REIL sets	1	1	
Fixture cost	\$9,500	\$6,500	Style E
XFMR vs. Power Adaptor	\$170	\$2,100	
Load (VA)	220	3,000	50%, including losses
Energy cost (KWH)	\$0.07	\$0.07	
Operating time (hours/year)	3,650	3,650	10 hours/day
Replacements/year	0	2	
Lamp replacement cost	N/A	\$115	
Maintenance hourly rate	\$70	\$70	Includes overhead



# RATE OF RETURN

Initial Investment	LED	Xenon	Total Cost
REIL & XFMR/PA	\$9,670	\$8,600	\$1,070
			<b>\$1,070</b>

Yearly Savings	LED	Xenon	Total Cost
Energy	\$56	\$766	\$710
Lamp replacement	N/A	\$230	\$230
Maintenance labor	N/A	\$140	<b>\$140</b>
			<b>\$1,080</b>

LED REIL	
Initial Investment	\$1,070
Yearly Savings	\$1,080
Return on Investment	1 year



# RATE OF RETURN

## ► ELEVATED RUNWAY GUARD LIGHTS



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Assumptions	LED	Quartz	
Number of ERGLs	8	8	
Fixture & XFMR cost	\$2,275	\$1,795	
Fixture load (VA)	31.5	65	50%, including losses
Energy cost (KWH)	\$0.07	\$0.07	
Operating time (hours/year)	8,760	8,760	24 hours/day
Replacements/year	0	4	
Lamp replacement cost	N/A	\$40	
Maintenance hourly rate	\$70	\$70	Includes overhead

# RATE OF RETURN

Initial Investment	LED	Quartz	Total Cost
Fixture	\$18,200	\$14,360	\$3,840
			<b>\$3,840</b>

Yearly Savings	LED	Quartz	Total Cost
Energy	\$154	\$318	\$164
Lamp replacement	N/A	\$1,280	\$1,280
Maintenance labor	N/A	\$1,254	<b>\$1,254</b>
			<b>\$2,698</b>

LED ERGLs	
Initial Investment	\$3,840
Yearly Savings	\$2,698
Return on Investment	1.4 years





# AIRFIELD LIGHTING & SIGNAGE

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# NAVAIDS

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# NAVAIDS

- GLIDE SLOPE
- LOCALIZER
- MALSR
- PAPI
- VOR

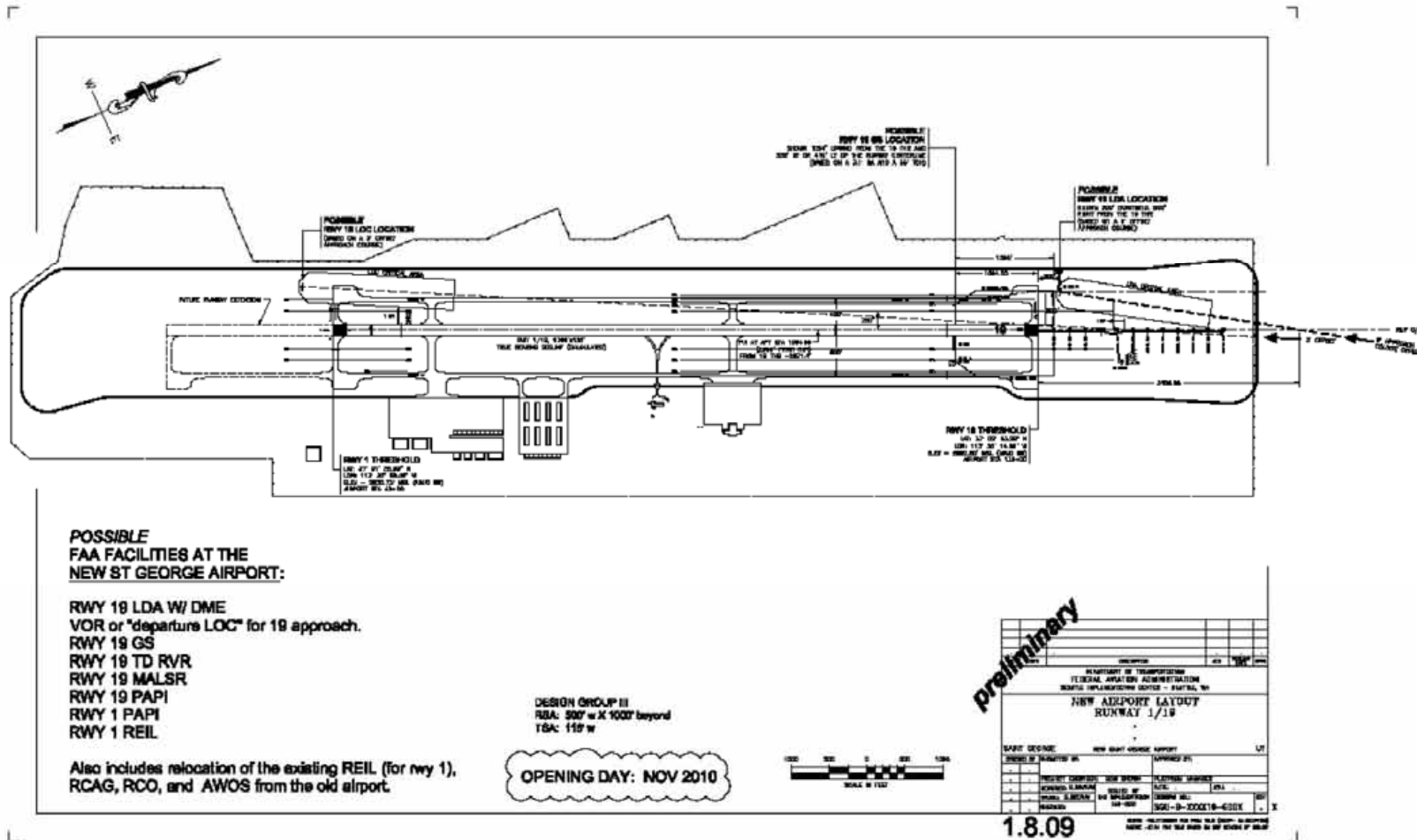


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# NAVAIDS

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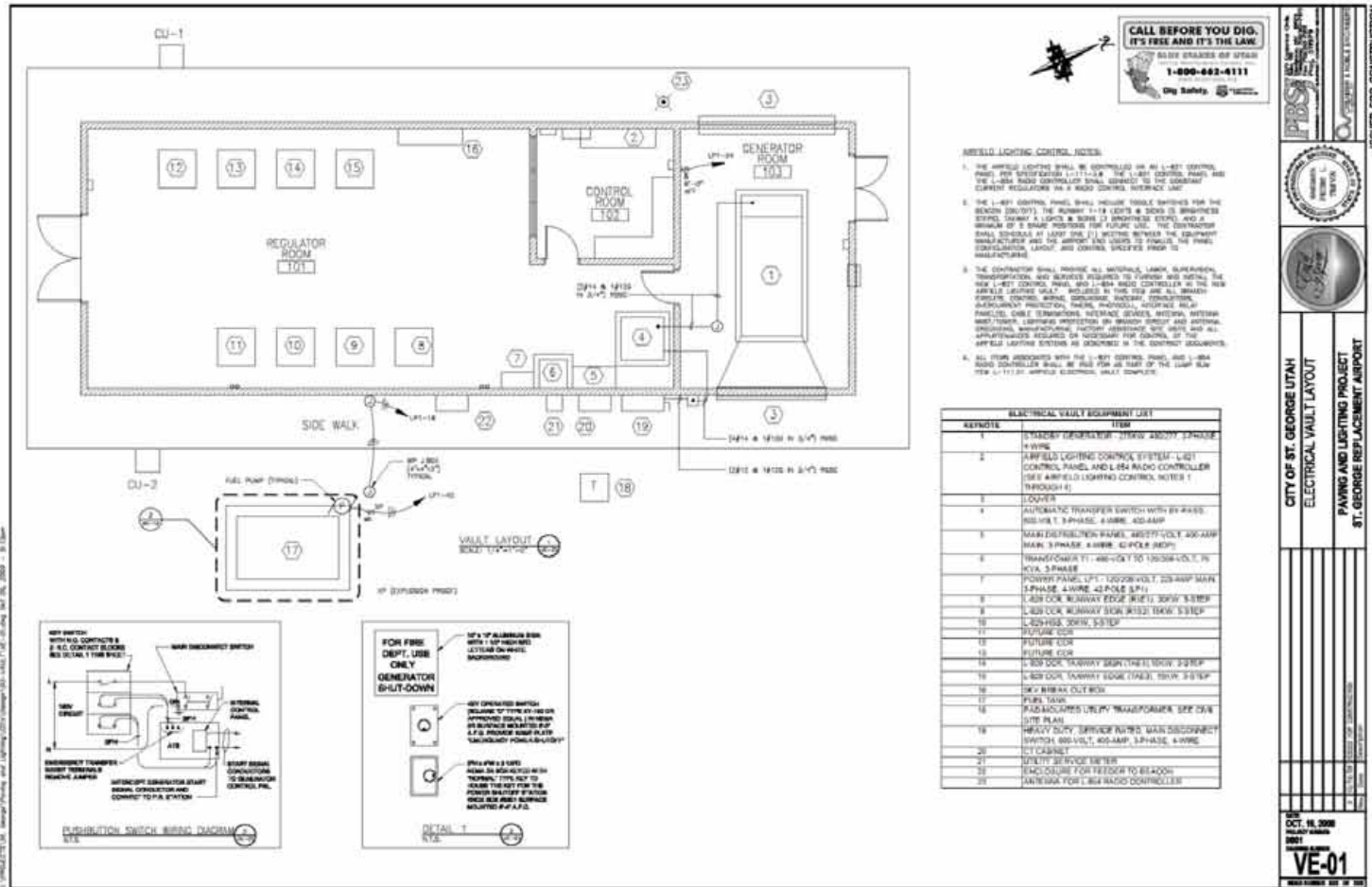
# AIRFIELD LIGHTING VAULT



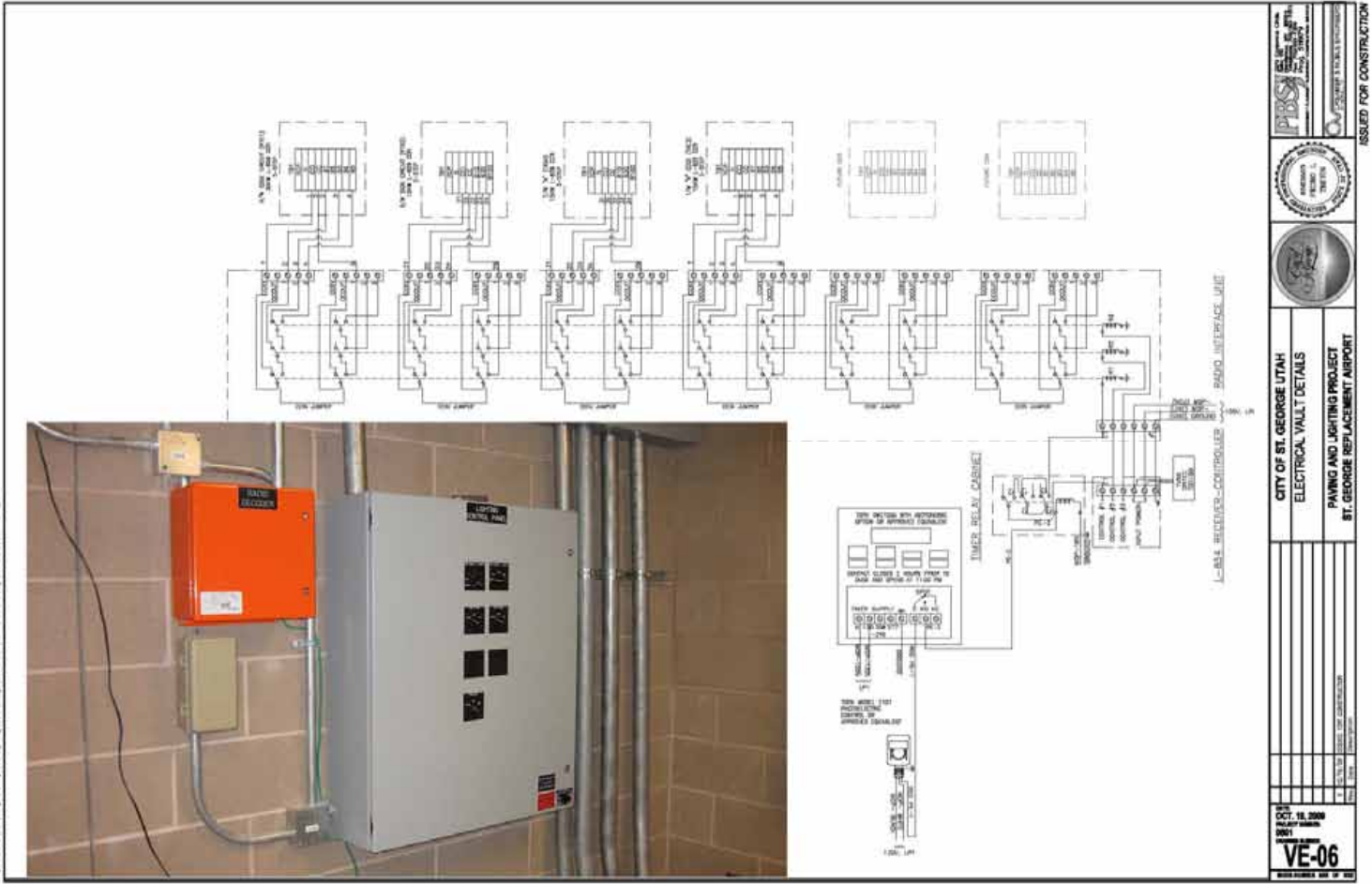
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# AIRFIELD LIGHTING VAULT

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# APRON FLOODLIGHTING



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# APRON FLOODLIGHTING

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# APRON FLOODLIGHTING

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# QUESTIONS



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**WELCOME TO ST. GEORGE MUNICIPAL AIRPORT!**

*PICTURE COURTESY OF DME ASTRONICS*