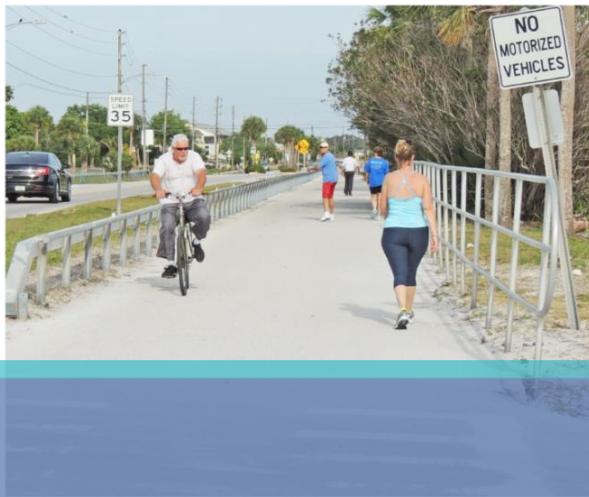




Dunedin Causeway Bridges Project Development and Environment Study

County Project Number: PID 00432A

Public Alternatives Workshop Results Screening



June 21, 2016

Pinellas County Board of County Commissioners

PD&E Process

- Engineering, Social & Environmental Studies
- Community Input
- Develop and Evaluate Alternatives
- **County Selects Recommended Alternative**
- Obtain FHWA Approval



Key Factors Considered – Evaluation of Alternatives

- Community Input
- Impacts to Adjacent Property and Utilities
- Impacts to Navigation
- Impacts to Recreation Areas and Parks
- Impacts to Cultural Resources
- Air and Noise Impacts
- Impacts to Wildlife and Habitat, Wetlands
- Need for Safe Pedestrian and Bicycle Facilities
- Need for Safe and Efficient Transportation
- Visual Impacts and Aesthetics
- Construction Impacts and Costs



Public Alternatives Workshop - March 29, 2016

Purpose

- Present Viable Alternatives & Potential Impacts
- Obtain Community Input

Alternatives Presented

Tide Relief Bridge

- No-Build
- Low-Level Fixed Bridge

Main Bridge

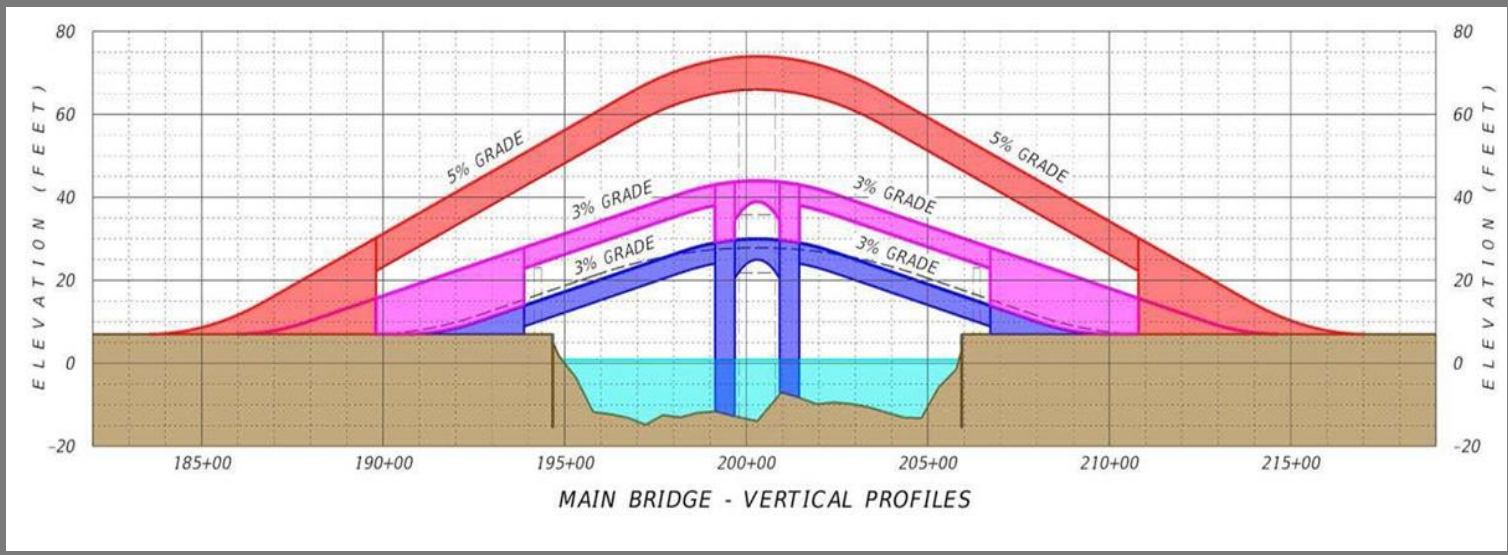
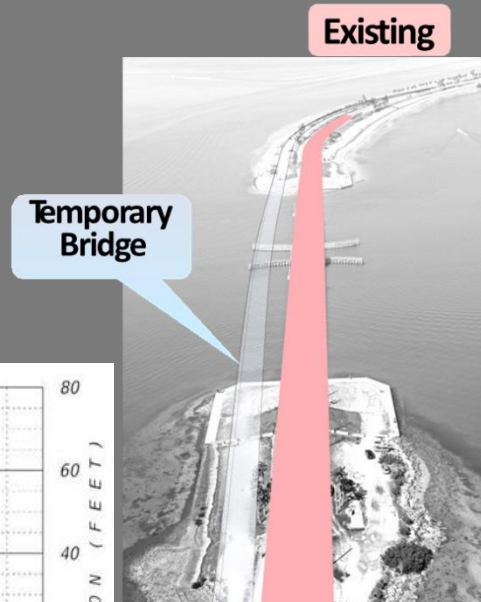
- No-Build
- Low-Level Movable Bridge
- Mid-Level Movable Bridge
- High-Level Fixed Bridge



Dunedin Causeway Bridges
Project Development and Environment Study

Main Bridge Alternatives

- On Existing Alignment with Temporary Bridge
- Low-Level Movable Bridge - 21 ft Vertical Clearance
- Mid-Level Movable Bridge - 35 ft Vertical Clearance
- High-Level Fixed Bridge - 65 ft Vertical Clearance



Public Participation

364 Attendees at Public Alternatives Workshop

Website

- 304 Respondents
 - 297 Questionnaires
 - 72 Comments

Other*

- 3 Questionnaires
- 88 Comments

*Other input received at the workshop, by mail or email

NOTE: As of 5/19/2016



Public Input Results – Main Bridge

Rank Alternative	1	2	3	4	Total Responses
Movable Bridge (Low/Mid)	32.80%	35.53%	28.78%	2.89%	
	204	221	179	18	622
Fixed Bridge (High)	35.65%	9.46%	14.51%	40.38%	
	113	30	46	128	317
No-Build	20.48%	10.92%	17.41%	51.20%	
	60	32	51	150	293

Bridge Aesthetics Options

- Two Themes
 - Florida Vernacular
 - Modern



Alternatives Evaluation Matrix

IMPACT EVALUATION CRITERIA	MAIN BRIDGE				TIDE RELIEF BRIDGE	
	NO BUILD	LOW-LEVEL MOVABLE BRIDGE	MID-LEVEL MOVABLE BRIDGE	HIGH-LEVEL FIXED BRIDGE	NO BUILD	LOW-LEVEL FIXED BRIDGE
ROADWAY/BRIDGE ISSUES						
Overall Bridge Width	40'1"	62'7"	62'7"	62'7"	40'1"	62'7"
Width of Vehicular Travel Lanes	11'	11'	11'	11'	11'	11'
Shoulders (both sides)	2'	8'	8'	8'	2'	8'
Sidewalks	3' 6" (north side)	5' (north side)	5' (north side)	5' (north side)	3' 6" (north side)	5' (north side)
Pinellas Trail Spur	6' (south side)	15' (south side)	15' (south side)	15' (south side)	6' (south side)	15' (south side)
Vertical/Horizontal Clearance	20*/90'	21'/100'	35'/100'	65'/100'	12.5'/45'	14.5'/144'
Meets Current Design/Safety Standards?	No	Yes	Yes	Yes	No	Yes
Structural Deficiencies Corrected?	No	Yes	Yes	Yes	No	Yes
Bridge Openings	No Change	No Change	50% Reduction	N/A	N/A	N/A
SOCIAL & ENVIRONMENTAL IMPACTS						
Private Property/Land Acquisition	None	None	None	None	None	None
Relocations	None	None	None	None	None	None
Visual Impacts	None	Minimal	Moderate	High	None	Minimal
Parks/Recreation	Temporary	None	0.93 acres	0.93 acres	1.48 acres	None
	Permanent	None	None	Gain 0.31 acres	Gain 0.94 acres	Lose 0.36 acres
Historic & Archaeological Resources	None	None	None	None	None	None
Wetlands (Temporary/Permanent)	None	0.21/0.11 (acres)	0.21/0.11 (acres)	0.24/0.27 (acres)	None	None
Seagrasses (Temporary/Permanent)	None	0.04 acres/None	0.04 acres/None	0.04 acres/None	None	None
Wildlife	None	Minimal	Minimal	Minimal	None	Minimal
Major Utilities	None	None	None	None	None	None
Potential Noise Impacts (Residential/Recreation)	None	None/Minimal	None/Minimal	None/Minimal	None	None/Minimal
COSTS						
Total Project Costs** (millions)	N/A	\$74.9	\$76.0	\$48.9	N/A	\$9.25
CONSTRUCTION IMPACTS						
Temporary Bridge Required	N/A	Yes	Yes	Yes	N/A	No***
Total Construction Time	N/A	4 years****	4 years****	4 years****	N/A	18 months
Anticipated Service Life	15 years	75 years	75 years	75 years	15 years	75 years

* Does not meet United States Coast Guard vertical clearance requirements (21 feet)

** Costs include demolition, roadway and bridge construction, mobilization, maintenance of traffic, aesthetic enhancements, engineering design, construction engineering inspection (CEI) and contingency.

*** Phased construction (traffic will be maintained)

**** Disruption to traffic and recreational areas is anticipated to only occur for 2.5 years

High-Level Fixed Bridge – Cost Estimate

FPID:		High-Level Fixed Bridge Alternative
Project: Dunedin Cswy. PD&E		
Description: Bridge Construction Cost Estimate		

- Estimated Cost \$48.9 million
- Conventional Construction

Item Description	Unit	SDG 2016 Unit Cost
Demolition of Existing Structure	SF	\$40.00
Superstructure Concrete (Class II Deck)	CY	\$700.00
Substructure Concrete (Class IV)	CY	\$740.00
Bridge Deck Grooving & Planing, 8.5" & Greater	SY	\$9.50
Neoprene Bearings	CF	\$900.00
32" Corral Railing	LF	\$130.00
Pedestrian Railing	LF	\$130.00
Reinforcing Steel (Superstructure)	LB	\$0.95
Reinforcing Steel (Substructure)	LB	\$0.90
Florida-I Beam 72	LF	\$270.00
Prestressed Concrete Piling (F&I) (24")	LF	\$90.00
Mechanically Stabilized Earth Wall (Permanent))	SF	\$28.00
Poured Joint with Backer Rod	LF	\$40.00
Fender System	LS	\$1,250,000.00
Temporary Detour Bridge	LS	\$13,250,000.00
Movable Bridge Operator	DA	\$485.00
Movable Bridge Prev Maintenance	DA	\$175.00
Roadway	LS	\$861,945.00

Hammerhead Pier Option	
Quantity	Cost
47,402	\$ 1,896,072
4,189	\$ 2,932,010
3,298	\$ 2,440,223
9,880	\$ 93,860
174	\$ 156,825
6,360	\$ 826,800
6,360	\$ 826,800
858,660	\$ 815,727
594,731	\$ 535,258
14,025	\$ 3,786,750
20,400	\$ 1,836,000
30,220	\$ 846,160
375	\$ 15,020
1	\$ 1,250,000
1	\$ 13,250,000
1,095	\$ 531,075
1,095	\$ 191,625
1	\$ 861,945

Multi-Column Pier Option	
Quantity	Cost
47,402	\$ 1,896,072
4,189	\$ 2,932,010
2,530	\$ 1,872,028
9,880	\$ 93,860
174	\$ 156,825
6,360	\$ 826,800
6,360	\$ 826,800
858,660	\$ 815,727
591,502	\$ 532,352
14,025	\$ 3,786,750
18,480	\$ 1,663,200
30,220	\$ 846,160
375	\$ 15,020
1	\$ 1,250,000
1	\$ 13,250,000
1,095	\$ 531,075
1,095	\$ 191,625
1	\$ 861,945

SUB-TOTAL per bridge		
SITE ADJUSTMENT FACTOR (RURAL)	-6%	
SITE ADJUSTMENT FACTOR (URBAN)	6%	
SITE ADJUSTMENT FACTOR (OVER WATER)	3%	
SITE ADJUSTMENT FACTOR (PHASED CONST.)	20%	
MOBILIZATION	7%	
MAINTENANCE OF TRAFFIC	7%	
AESTHETICS	3%	
ENGINEERING	10%	
CONSTRUCTION ENGINEERING AND INSPECTION	10%	
CONTINGENCY	10%	
TOTAL per bridge		

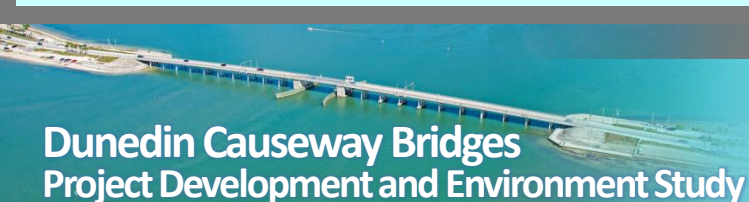
	\$33,092,151
N	\$0
N	\$0
Y	\$992,765
N	\$0
Y	\$2,316,451
Y	\$2,316,451
Y	\$827,304
Y	\$3,309,215
Y	\$3,309,215
Y	\$3,309,215
\$49,472,765	

	\$32,348,249
N	\$0
N	\$0
Y	\$970,447
N	\$0
Y	\$2,264,377
Y	\$2,264,377
Y	\$808,706
Y	\$3,234,825
Y	\$3,234,825
Y	\$3,234,825
\$48,360,632	

Bridge Length	FT	
Bridge Width	FT	
Deck Area & Cost per Square Foot	SF & \$/SF	
Cost per SF without Demolition	\$/SF	

2,340.00	
62,583	
146,444	\$338
	\$241

2,340.00	
62,583	
146,444	\$330
	\$235



Low-Level Movable Bridge – Cost Estimate

FPID:		Low-Level Movable Bridge Alternative
Project:	Dunedin Cswg. PD&E	
Description:	Bridge Construction Cost Estimate	

- Estimated Cost \$74.9 million
- Conventional Construction for Approach Spans
- Additional Costs Specific to Movable Bridge (Approximately \$21 million)

Item Description	Unit	SDG 2016 Unit Cost
Demolition of Existing Structure	SF	\$40.00
Superstructure Concrete (Class II Deck)	CY	\$700.00
Substructure Concrete (Class IV)	CY	\$740.00
Bridge Deck Grooving & Planing, 8.5" & Greater	SY	\$9.50
Neoprene Bearings	CF	\$900.00
32" Corral Traffic Railing	LF	\$130.00
Pedestrian Railing	LF	\$120.00
Reinforcing Steel (Superstructure)	LB	\$0.95
Reinforcing Steel (Substructure)	LB	\$0.90
Florida-I Beam 63	LF	\$225.00
Prestressed Concrete Piling (F&I) (24")	LF	\$90.00
Mechanically Stabilized Earth Wall (Permanent)	SF	\$28.00
Poured Joint with Backer Rod	LF	\$40.00
Fender System	LS	\$1,250,000.00
Temporary Detour Bridge	LS	\$13,250,000.00
Movable Bridge Operator	DA	\$485.00
Movable Bridge Prev Maintenance	DA	\$175.00
Structural Steel, Bascule Leaves	LS	\$8,250,000.00
Roadway Floor, Steel, 5" Armored	LS	\$1,000,000.00
Movable Bridge Mechanical Equipment	LS	\$7,500,000.00
Movable Bridge Electrical Equipment	LS	\$3,500,000.00
Movable Bridge Control House	LS	\$900,000.00
Movable Bridge Counterweight (Balance Blocks)	LS	\$500,000.00
Movable Bridge Counterweight (Steel Ballast)	LS	\$750,000.00
Cofferdam and Seal for Bascule Piers	EA	\$600,000.00
Roadway	LS	\$795,375.00

Wall Pier Option	
Quantity	Cost
47,402	\$ 1,896,072
1,759	\$ 1,231,486
5,399	\$ 3,995,193
4,150	\$ 39,423
82	\$ 73,800
2,520	\$ 327,600
2,520	\$ 302,400
360,649	\$ 342,617
1,337,226	\$ 1,203,503
5,897	\$ 1,326,825
18,200	\$ 1,728,000
0	\$ -
250	\$ 10,013
1	\$ 1,250,000
1	\$ 13,250,000
1,460	\$ 708,100
1,460	\$ 255,500
1	\$ 6,250,000
1	\$ 1,000,000
1	\$ 7,500,000
1	\$ 3,500,000
1	\$ 900,000
1	\$ 500,000
1	\$ 750,000
2	\$ 1,200,000
1	\$ 795,375

Multi-Column Pier Option	
Quantity	Cost
47,402	\$ 1,896,072
1,759	\$ 1,231,486
4,937	\$ 3,653,727
4,150	\$ 39,423
82	\$ 73,800
2,520	\$ 327,600
2,520	\$ 302,400
360,649	\$ 342,617
1,284,441	\$ 1,155,997
5,897	\$ 1,326,825
18,480	\$ 1,663,200
0	\$ -
250	\$ 10,013
1	\$ 1,250,000
1	\$ 13,250,000
1,460	\$ 708,100
1,460	\$ 255,500
1	\$ 6,250,000
1	\$ 1,000,000
1	\$ 7,500,000
1	\$ 3,500,000
1	\$ 900,000
1	\$ 500,000
1	\$ 750,000
2	\$ 1,200,000
1	\$ 795,375

SUB-TOTAL per bridge	
SITE ADJUSTMENT FACTOR (RURAL)	-6%
SITE ADJUSTMENT FACTOR (URBAN)	6%
SITE ADJUSTMENT FACTOR (OVER WATER)	3%
SITE ADJUSTMENT FACTOR (PHASED CONST.)	20%
MOBILIZATION	7%
MAINTENANCE OF TRAFFIC	7%
AESTHETICS	3%
ENGINEERING	10%
CONSTRUCTION ENGINEERING AND INSPECTION	10%
CONTINGENCY	10%
TOTAL	per bridge

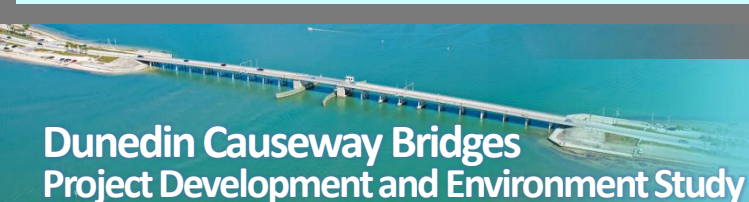
\$50,335,908	
N	\$0
N	\$0
Y	\$1,510,077
N	\$0
Y	\$3,523,514
Y	\$3,523,514
Y	\$1,258,398
Y	\$5,033,591
Y	\$5,033,591
Y	\$5,033,591
\$75,252,182	

\$49,882,135	
N	\$0
N	\$0
Y	\$1,496,464
N	\$0
Y	\$3,491,749
Y	\$3,491,749
Y	\$1,247,053
Y	\$4,988,213
Y	\$4,988,213
Y	\$4,988,213
\$74,573,791	

Bridge Length	FT	1,200.00
Basculer Span Length	FT	214.67
Bridge Width	FT	62.583
Deck Area & Cost per Square Foot	SF & \$/SF	75,100 \$1,002
Cost per SF Movable Span	SF & \$/SF	13,435 \$1,608
Cost per SF without Demolition	\$/SF	\$729

1,200.00	
214.67	
62.583	
75,100	\$1,002
13,435	\$1,608
\$729	

1,200.00	
214.67	
62.583	
75,100	\$993
13,435	\$1,608
\$722	



Mid-Level Movable Bridge – Cost Estimate

FPID:		Mid-Level Movable Bridge Alternative
Project: Dunedin Cswg. PD&E		
Description: Bridge Construction Cost Estimate		

Item Description	Unit	SDG 2016 Unit Cost
Demolition of Existing Structure	SF	\$40.00
Superstructure Concrete (Class II Deck)	CY	\$700.00
Substructure Concrete (Class IV)	CY	\$740.00
Bridge Deck Grooving & Planing, 8.5" & Greater	SY	\$9.50
Neoprene Bearings	CF	\$900.00
32" Corral Traffic Failing	LF	\$130.00
Pedestrian Failing	LF	\$120.00
Reinforcing Steel (Superstructure)	LB	\$0.95
Reinforcing Steel (Substructure)	LB	\$0.90
Florida-Beam 63	LF	\$225.00
Prestressed Concrete Piling (F&I) (24")	LF	\$30.00
Mechanically Stabilized Earth Wall (Permanent)	SF	\$28.00
Poured Joint with Backer Rod	LF	\$40.00
Fender System	LS	\$1,250,000.00
Temporary Detour Bridge	LS	\$13,250,000.00
Movable Bridge Operator	LS	\$485.00
Movable Bridge Prev Maintenance	DA	\$175.00
Structural Steel, Bascule Leaves	DA	\$6,250,000.00
Roadway Floor, Steel, 5" Armored	LS	\$1,000,000.00
Movable Bridge Mechanical Equipment	LS	\$7,500,000.00
Movable Bridge Electrical Equipment	LS	\$3,500,000.00
Movable Bridge Control House	LS	\$900,000.00
Movable Bridge Counterweight (Balance Blocks)	LS	\$500,000.00
Movable Bridge Counterweight (Steel Ballast)	LS	\$750,000.00
Cofferdam and Seal for Bascule Piers	EA	\$600,000.00
Roadway	LS	\$1,190,385.00

Hammerhead Pier Option		Quantity	Cost
		47,402	\$ 1,896,072
		2,728	\$ 1,909,566
		6,410	\$ 4,743,490
		6,435	\$ 61,129
		123	\$ 110,700
		5,162	\$ 671,103
		5,162	\$ 619,480
		559,230	\$ 531,268
		1,599,801	\$ 1,439,820
		9,144	\$ 2,057,400
		26,880	\$ 2,419,200
		19,437	\$ 544,222
		375	\$ 15,020
		1	\$ 1,250,000
		1	\$ 13,250,000
		1,460	\$ 708,100
		1,460	\$ 255,500
		1	\$ 6,250,000
		1	\$ 1,000,000
		1	\$ 7,500,000
		1	\$ 3,500,000
		1	\$ 900,000
		1	\$ 500,000
		1	\$ 750,000
		0	\$ -
		1	\$ 1,190,385

Multi-Column Pier Option		Quantity	Cost
		47,402	\$ 1,896,072
		2,728	\$ 1,909,566
		6,793	\$ 5,026,523
		6,435	\$ 61,129
		123	\$ 110,700
		5,162	\$ 671,103
		5,162	\$ 619,480
		559,230	\$ 531,268
		1,753,656	\$ 1,578,291
		9,144	\$ 2,057,400
		25,889	\$ 2,311,978
		19,437	\$ 544,222
		375	\$ 15,020
		1	\$ 1,250,000
		1	\$ 13,250,000
		1,460	\$ 708,100
		1,460	\$ 255,500
		1	\$ 6,250,000
		1	\$ 1,000,000
		1	\$ 7,500,000
		1	\$ 3,500,000
		1	\$ 900,000
		1	\$ 500,000
		1	\$ 750,000
		0	\$ -
		1	\$ 1,190,385

SUB-TOTAL per bridge			
SITE ADJUSTMENT FACTOR (RURAL)	-6%		\$0
SITE ADJUSTMENT FACTOR (URBAN)	6%		\$0
SITE ADJUSTMENT FACTOR (OVER WATER)	3%	\$1,622,174	\$1,631,602
SITE ADJUSTMENT FACTOR (PHASED CONST.)	20%		\$0
MOBILIZATION	7%	\$3,785,072	\$3,807,072
MAINTENANCE OF TRAFFIC	7%	\$3,785,072	\$3,807,072
AESTHETICS	3%	\$1,351,811	\$1,359,668
ENGINEERING	10%	\$5,407,246	\$5,438,674
CONSTRUCTION ENGINEERING AND INSPECTION	10%	\$378,507	\$380,707
CONTINGENCY	10%	\$5,407,246	\$5,438,674
TOTAL per bridge		\$75,809,583	\$76,250,204

		\$54,072,456	
N		\$0	
N		\$0	
Y		\$1,622,174	
N		\$0	
Y		\$3,785,072	
Y		\$3,785,072	
Y		\$1,351,811	
Y		\$5,407,246	
Y		\$378,507	
Y		\$5,407,246	
		\$75,809,583	

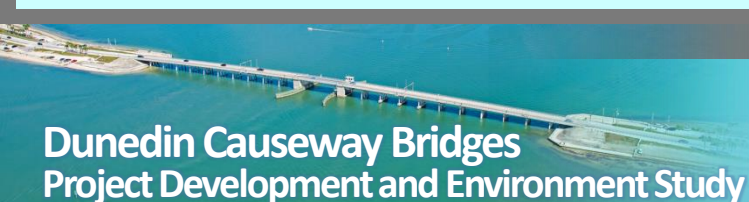
		\$54,386,736	
N		\$0	
N		\$0	
Y		\$1,631,602	
N		\$0	
Y		\$3,807,072	
Y		\$3,807,072	
Y		\$1,359,668	
Y		\$5,438,674	
Y		\$380,707	
Y		\$5,438,674	
		\$76,250,204	

Bridge Length	FT	1,741.17	
Bascule Span Length	FT	214.67	
Bridge Width	FT	62.583	
Deck Area & Cost per Square Foot	SF & \$/SF	108,967	\$696
Cost per SF Movable Span	SF & \$/SF	13,435	\$1,518
Cost per SF without Demolition	\$/SF		\$541

		1,741.17	
		214.67	
		62.583	
		108,967	\$696
		13,435	\$1,518
			\$541

		1,741.17	
		214.67	
		62.583	
		108,967	\$700
		13,435	\$1,518
			\$544

- Estimated Cost \$76.0 million
- Conventional Construction for Approach Spans
- Additional Costs Specific to Movable Bridge (Approximately \$21 million)



Key Dates

June 8, 2016

- **County Staff, MPO, City of Dunedin, Ad Hoc Committee Chair**

June 13, 2016

- **Ad Hoc Committee**

June 16, 2016

- **Dunedin City Commission**

August 4, 2016

- **Workshop with County Commissioners**

August 23, 2016

- **Commission Action to Select Recommended Alternative**

November, 2016

- **Final Public Meeting**



Thank You!