

The Underline - Segment 6

Miami-Dade County Multimodal Mobility Corridor



Current Condition



Future Underline

CAPITAL GRANT APPLICATION

Applicant type: Local Government

BUILD FY 2018 Funds Request: \$16,397,600

Submitted by: Miami-Dade County Department of
Transportation and Public Works (DTPW)

Project Webpage:
theunderline.org/2018/07/14/buildgrantfy2018/

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*** Access Appendices and additional Underline BUILD Grant FY 2018 supporting documents at: theunderline.org/2018/07/14/buildgrantfy2018/**

I. PROJECT SUMMARY

Project Name:	The Underline – Segment 6
Applicant:	Miami-Dade County Dept. of Transportation and Public Works
Project Partner:	City of Coral Gables
Contact Information	Miami-Dade County Department of Transportation and Public Works (DTPW) Overtown Transit Village 701 N.W. 1 st Court, Suite 1700 Miami, FL 33136 Phone: (786) 469-5406 Fax: (786) 469-5580 Email: alice.bravo@miamidade.gov
Project Type:	Urban
Project Description	The proposed project, The Underline – Segment 6 (“Segment 6,”) is 1.98 miles of a whole planned 10-mile mobility corridor known as “The Underline.” The Underline repurposes underutilized industrial space beneath the most widely used regional transit heavy rail system to improve multimodal safety and access to Metrorail and the greater regional mass transit system. The project includes the design and construction of dedicated pedestrian and bicycle trails; the modification and improvement of six intersections; the addition of a bicycle/pedestrian bridge over the Coral Gables Waterway; the reconfiguration of the University Station parking lot to allow for the expansion of services to transit users, walkers, bikers, students, and staff; new lighting; signage and wayfinding.
Project Cost:	\$20,497,000
BUILD Funds Requested:	\$16,397,600
Local Match Sources and Amounts for requested funds:	\$4,099,400 The City of Coral Gables
NEPA Status:	This project received a Type 1 Categorical Exclusion February 2, 2016. <i>See</i> Appendix J.
Project Construction Schedule:	July 2019 - August 2023

Project Benefits:

The Underline - Segment 6 is of particular significance because of its connection to the University Metrorail station, one of the most frequented stations along the corridor, given its direct relationship to the University of Miami and the City of Coral Gables. The diverse range of users, including students, faculty, University employees, visitors and neighbors, inspires a program that balances transportation, education, culture and innovation with opportunities for retail and recreation. The project will enhance first and last mile connectivity to the University Metrorail Station and improve safety by redesigning six intersections, adding a new pedestrian/bike bridge over the Coral Gables Waterway and providing new lighting. In addition, the project will increase Metrorail ridership and reduce congestion along the U.S.1 corridor. It will become an alternative mode of transportation with inviting spaces that foster community, increase property values, remediate contaminated conditions, accommodate recreation, facilitate connectivity, improve social exchange and activate residents to a healthier lifestyle.

Benefit-Cost Analysis:

The results of the Benefit-Cost Analysis demonstrate a positive ratio of 4.32 times benefit to cost. The Benefit-Cost Analysis is included as Appendix A: Benefit-Cost Analysis with Supporting Worksheet.

1. PROJECT DESCRIPTION

The proposed Segment 6 consists of 1.98 miles of the total 10-mile, 120-acre corridor spanning from Miami's Financial District to Dadeland South Metrorail in South Miami-Dade County. Segment 6 extends from SW 42nd to SW 57th avenues within the City of Coral Gables. When completed, it will serve as a first and last mile accessibility solution to the University Metrorail Station by providing separate pedestrian and bicycle paths, improvements to six intersections along U.S.1, a pedestrian and bicycle bridge over the Coral Gables Waterway, lighting and path-marking signage.

The Underline is a “shovel ready” project – with all requisite approvals and funding of over 65% of capital costs by commitments from local, state, Federal and private sources. The Underline will unite all modes of transportation enhancing accessibility to the existing eight Metrorail stations within its path and the neighboring communities. As a continuous multimodal corridor, The Underline transverses three municipalities (City of Miami, City of Coral Gables and City of South Miami) as well as portions of unincorporated Miami-Dade County and will be the primary bicycle and pedestrian connection from southern neighborhoods and cities to downtown Miami and other destinations. It will also be a link between neighborhoods and the central spine of a regional network of over 180 miles of existing and proposed trails, significantly enhancing connectivity for area residents and businesses for safer accessibility to jobs, businesses, schools, residential and commercial districts and key countywide destinations. The Underline serves as a transportation solution, a safety strategy, and an economic catalyst.

When completed, the 10-mile Underline will provide access to multimodal transportation to one university and twenty-four schools, two hospitals, three urgent care facilities, four major malls, 120,000 residents and 11,000 businesses within a ten minute or one-half mile walk and 203,000 residents and 15,600 businesses within a ten minute or one-mile bike ride. Segment 6 serves 24,700 residents and 2,800 businesses within a ten minute or one-half mile walk and 62,000 residents and 4,385 businesses within a ten minute or one mile bike ride. *See Underline Demographic Data**.

1.1 Project History

The Underline project began as a grassroots effort led by Miami's Friends of The Underline (“FUL”), a 501(c)(3). FUL partnered with Miami-Dade County Department of Transportation and Public Works (“DTPW”) and Miami-Dade County Parks, Recreation and Open Spaces Department (“PROS”). Through FUL, local activists promoted the transformation of the underutilized land below Metrorail transit (Miami-Dade County's twenty-six mile elevated heavy rail) into Miami-Dade County's first urban trail connecting to eight of Metrorail's stations. The Underline is supported by the Miami-Dade County Parks and Open Space System Master Plan that envisions a system of great parks, public spaces, natural and cultural areas, streets, greenways, blueways, and trails.

Public support quickly grew among municipal leaders, cycling groups, neighborhood associations and business organizations who rushed to endorse the project. The University of Miami (UM) School of Architecture, whose campus is adjacent to The Underline, also embarked on a publically-reviewed design studio class for local students to craft a vision for the space.

The Underline is the premier example of a public/private partnership in Miami-Dade County. With leadership from DTPW as well as FUL and supported by funding from the Cities of Miami, Coral Gables, and South Miami, and contributions from the John S. and James L. Knight Foundation, Miami Foundation, Health Foundation of South Florida and private donors, a design team was selected, through a competitive process to create The Underline Master Plan (“Master Plan”). Award-winning James Corner Field Operations with Kimley Horn were selected as the Master Plan design team. To support the Master Plan, a Health Impact Assessment informed by public workshops was also completed.

With regard to funding, over \$91 million has been committed to the overall project of which \$36 million is available. Segment 1 has been designed and permitted and is in procurement. Segment 2 design/build will begin work in 2019. Segment 5 will be built almost completely by private developers. Three million has been raised privately and thousands of volunteer and professional hours have been committed to support design and FUL operations.

In less than three years, public and private partners, including FUL, have executed over 300 free public events, such as group bike rides, outdoor yoga, festivals and public meetings. The Underline has received substantial local, national and international press with features in *The New York Times* “T” magazine, *Travel + Leisure*, *Curbed National* and the *Miami Herald*. Focal to these features was the urban trail transportation component as an innovative way to mitigate congestion and support sustainability with live, work, play environments tied to multimodal connectivity. A June 26, 2018, *Miami Today* article titled *Plans for Brickell’s Dual-Flag Hotels* underscores the impact of development of The Underline and its connection to mass transit, noting that “[t]he [hotel] project is comprised of roughly .66 acres and located in one of the most dynamic evolving urban core neighborhoods in Miami, immediately adjacent to Segment 1 of The Underline in Brickell and well-served by transit.”

The Underline has emerged as the most significant potential bicycle and pedestrian connector in a countywide system of trails and of the Miami Loop, a future 22-mile off-road trail network combining The Underline, Ludlum Trail and the Miami River Greenway. The Miami Loop will connect The Underline destinations, the University of Miami, Vizcaya Museum and Gardens, and numerous unique communities and neighborhoods from the Brickell business center to Little Havana. It also connects businesses of all sizes, to downtown and Miami International Airport (MIA). The Underline will also serve as a spine to a 180-mile network of existing and proposed trails in Miami-Dade County. See Miami-Dade County Parks and Open Space System Master Plan.* It will link to other municipal biking plans and systems to maximize safe connections and a wider system.

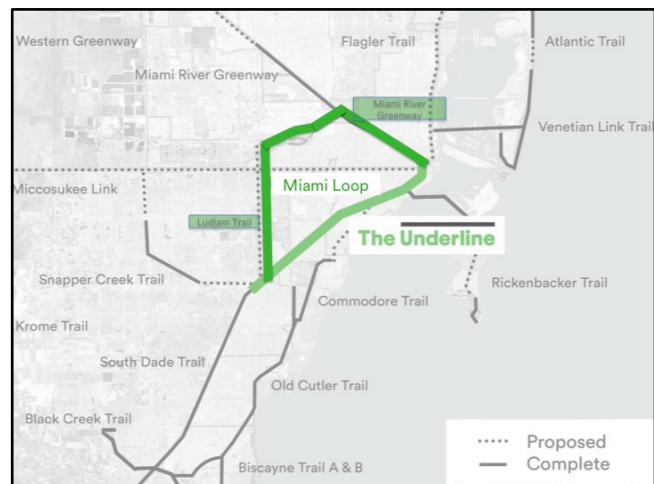


Figure 1: Underline Spine of Miami Loop

Source: The Underline Master Plan

II. PROJECT LOCATION

SW 42nd Avenue to SW 57th Avenue in Coral Gables, Florida, 1.98 miles

Geo Coordinates: 25.727419, -80.261704 to 25.707794, -80.285643

The Underline will be located within the Miami-Dade County Rapid Transit Zone within the county's urban core (*see* Figures 2, 3, and 4). The 10-mile corridor extends from the Miami River to Dadeland South Boulevard and connects to eight Metrorail stations and the future SMART Plan (*see* Figure 3). To see all of The Underline project segments, *see* Appendix D: Underline Project Segments and Costs.

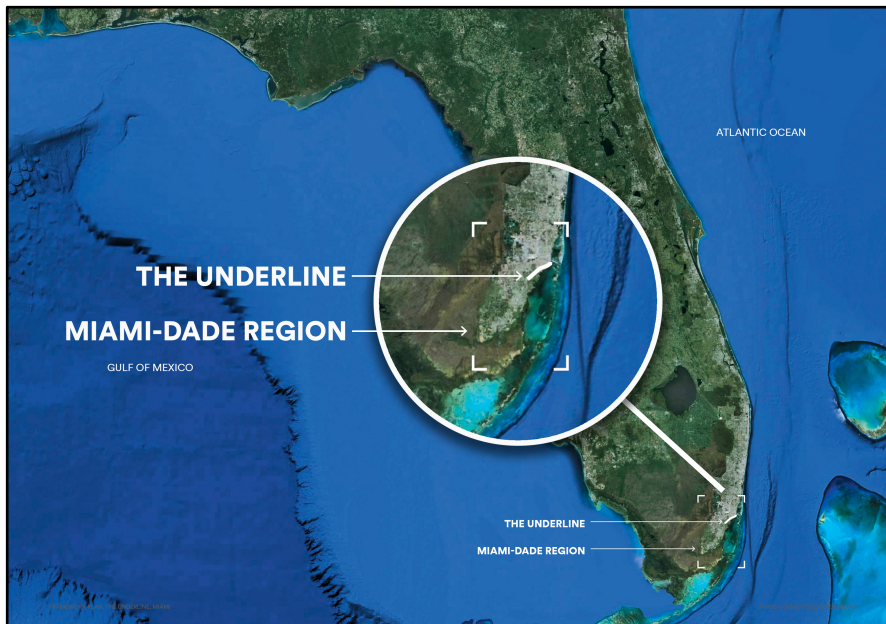


Figure 2: The Underline's location in Miami-Dade County, Florida

Source: The Underline Master Plan

The funds requested under this application are for Segment 6 from SW 42nd Avenue to SW 57th Avenue in Coral Gables. If funded, this critical 1.98 mile segment will complete the three miles within Coral Gables of The Underline, serve thousands of residents and University of Miami students, faculty and staff and provide a strong, safe connection to the City of South Miami center, which serves as the commercial district for the University of Miami and residents of south Coral Gables and South Miami.

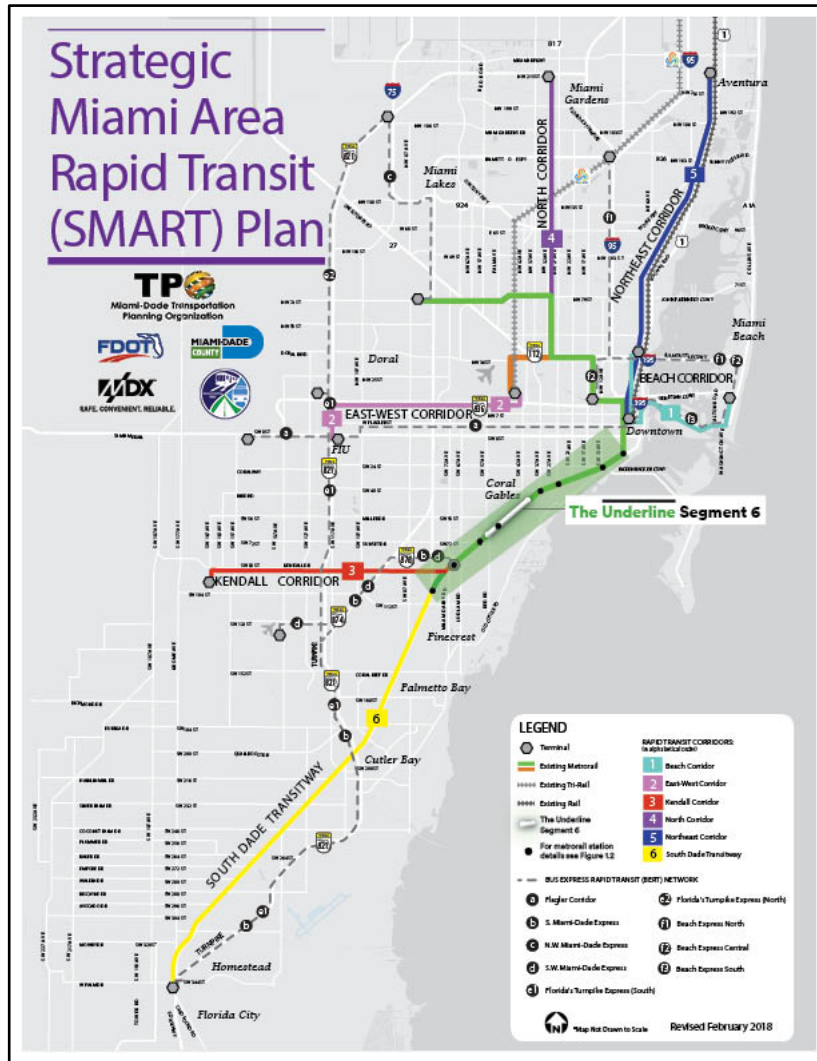


Figure 3: The Underline's Connection to 8 Metrorail Stations and SMART Plan
Source: Miami-Dade County SMART Plan

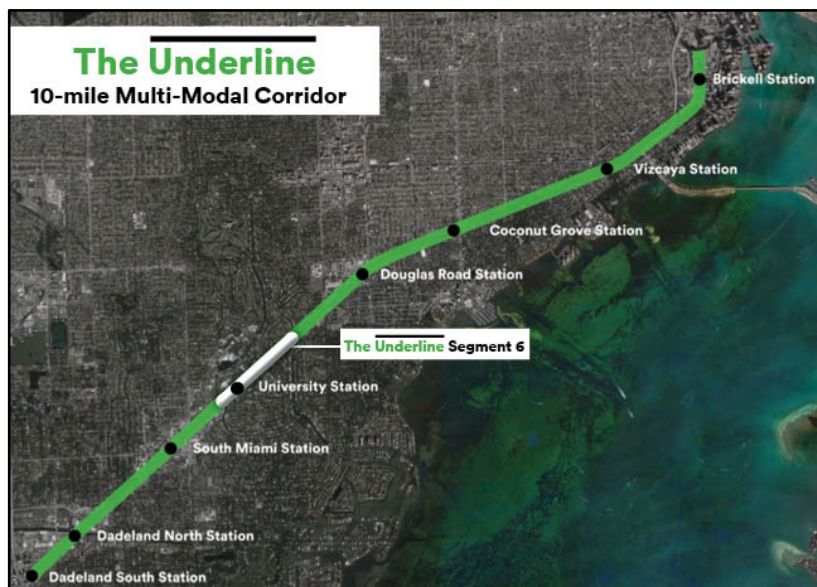


Figure 4: The Underline's Segment 6
Source: The Underline Master Plan

III. GRANT FUNDS, SOURCES AND USES OF ALL PROJECT FUNDING

The estimated capital cost for the proposed project is \$26.5 million. The BUILD grant amount requested is \$16,397,600. A breakdown of estimated capital costs is presented in Table 1 below.

Item Number	Item Description	Unit	Quantity	Unit Price	Extended Amount
1	DESIGN COSTS FOR DESIGN BUILD PROJECT	LS	1.000	\$1,140,954.00	\$1,140,954.00
2	GENERAL CONDITIONS	LS	1.000	\$2,700,000.00	\$2,700,000.00
3	EROSION CONTROL	LF	10,454.000	\$14.20	\$148,478.16
4	DEMOLITION	LF	10454.000	\$5.33	\$55,719.82
5	SOIL CONTAMINATION	LS	1.000	\$3,840,000.00	\$3,840,000.00
6	DRAINAGE	LS	1.000	\$240,000.00	\$240,000.00
7	DEEP INJECTION WELLS	EA	14.000	\$50,000.00	\$700,000.00
8	SPECIALTIES AND WAY FINDING SIGNAGE	LS	1.000	\$80,000.00	\$80,000.00
9	ELECTRICAL	LS	1.000	\$2,996,000.00	\$2,996,000.00
10	PAVING IMPROVEMENTS/TRAILS	LS	1.000	\$3,500,000.00	\$3,500,000.00
11	SITE UTILITIES	LF	10454.000	\$15.00	\$156,810.00
12	CONCRETE	LS	1.000	\$10,000.00	\$10,000.00
13	EXTERIOR IMPROVEMENTS	LS	1.000	\$88,338.00	\$88,338.00
14	INTERSECTION IMPROVEMENTS-LOW	LS	3.000	\$48,000.00	\$144,000.00
15	INTERSECTION IMPROVEMENTS-INTERMEDIATE	LS	1.000	\$70,000.00	\$70,000.00
16	INTERSECTION IMPROVEMENTS-HIGH	LS	2.000	\$1,460,000.00	\$2,920,000.00
17	NEW BRIDGE OVER CORAL GABLES WATERWAY	LS	1.000	\$1,500,000.00	\$1,500,000.00
18	LANDSCAPING	LS	1.000	\$900,000.00	\$900,000.00
19	SIGNAGE	LS	1.000	\$58,000.00	\$58,000.00
20	FURNISHINGS	LS	1.000	\$560,000.00	\$560,000.00
21	PERMITS	LS	1.000	\$237,000.00	\$237,000.00
22	CEI INSPECTIONS	LS	1.000	\$1,696,000.00	\$1,696,000.00
23	SURVEYS	LS	1.000	\$302,000.00	\$302,000.00
24	CONTINGENCY	LS	1.000	\$2,456,700.00	\$2,456,700.00
Total:					\$26,500,000

Table 1: The Underline Segment 6 Estimated Capital Costs, Appendix E

Capital Sources of Funds

Segment 6 Total Project Cost	\$26,500,000
Segment 6 Costs allowed for participation	\$20,497,000
BUILD Funds requested	\$16,397,600
Match	\$4,099,400

The City of Coral Gables has committed \$15 million to the project. For the purposes of this grant, funds from the City of Coral Gables will be used to fulfill the match requirements.

Segment 6 project cost is for 1.98 miles and consists of improvements to six intersections, a new pedestrian/bicyclist bridge over the Coral Gables Waterway, the addition of separate pedestrian and bicycle trails, environmental remediation, lighting, landscaping, amenities, wayfinding and signage. *See* Appendix E: Underline Segment 6 Estimated Capital Costs.

Federally Eligible Project Costs:

The preliminary project cost breakdown for Segment 6 from 42nd Avenue to 57th Avenue – 1.98 miles is:

\$10,600,000	Pedestrian and bicycle trails, pavement markings
\$237,000	Permits
\$4,200,000	Environmental remediation
\$3,960,000	Intersection improvements
<u>\$1,500,000</u>	New Bridge Coral Gables Waterway
\$20,497,000	Total

Federally Non-Eligible Costs:

\$4,307,000	Landscaping, wayfinding signage, amenities
\$1,394,000	CE&I Consultant
\$12,000	Bonneted bat survey
\$160,000	Limited Phase 2 environmental and ground water
<u>\$130,000</u>	Environmental monitoring
\$6,003,000	Total

IV. MERIT CRITERIA

a. Safety

The Underline, when completed, will enhance safety for pedestrians, bicyclists and automotive drivers by mediating conflicts between users primarily through the separation of modes. The Underline crosses thirty-six intersections along U.S.1, a major arterial highway and designated freight corridor. Five of the project intersections are, themselves, major arterial roads. The Master Plan identifies five intersections requiring major improvements, seven intersections requiring medium improvements, and twenty-four intersections requiring minor improvements.

Overcoming Safety Barriers to Pedestrian & Bicycle Connections to Transit

Between 2005 and 2014, a total of 46,149 people were struck and killed by cars while walking in the U.S. See *Dangerous by Design 2016**, prepared by Smart Growth America and National Complete Streets Coalition. In 2014, the most recent year for which data are available, 4,884 people were killed by a car while walking—105 more than 2013. On average thirteen people were struck and killed by a car while walking every day in 2014. Moreover, between 2005 and 2014, Americans were 7.2 times more likely to die as a pedestrian than from a natural disaster.

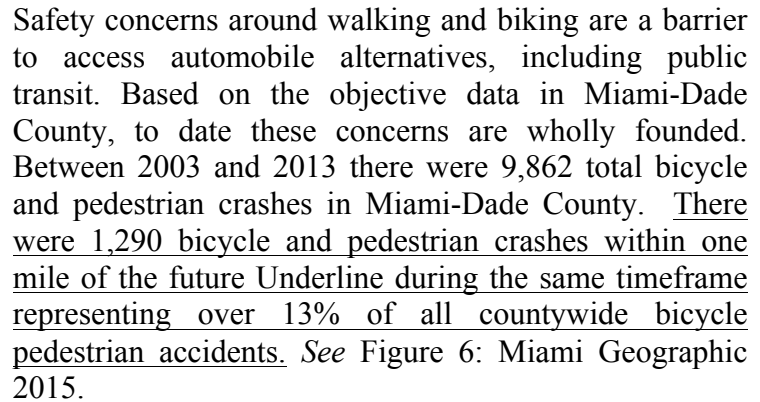
In Miami, users face the same challenges. Florida is the most dangerous state to walk and bike in the country and Miami-Dade County, specifically, is the 11th most dangerous place to walk in the country. Conditions continue to grow more perilous each day. The number of bicyclist injuries in Miami-Dade County has more than doubled since 2006. Together, bicyclists and pedestrians account for over one-third of all traffic deaths in Miami-Dade. See *Safer People, Safer Streets Local Action Plan**, An Initiative of the USDOT Mayor's Challenge for creating Safer People, Safer Streets.

According to Federal Transit Administration Report No. 0111, *Manual on Pedestrian and Bicycle Connections to Transit**, August 2017, walking and biking are integral to public transit ridership. For 85% of transit trips recorded in 2009, the first mode of access to get to transit was walking and 83% of riders walked as their last mode to get to their final destination. Nearly one in six walking trips in the U.S. is made to access transit. One out of every one-hundred transit trips involves a bicycle to get to or from the stop or station; though, with rates of bicycling in urban areas, this number grows daily.

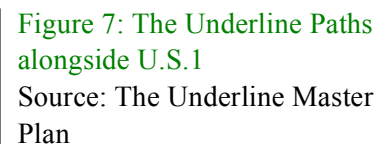
Most dangerous metro areas for people walking based on PDI, 2016		
2016 rank	Metro area	2016 PDI
1	Cape Coral-Fort Myers, FL	283.1
2	Palm Bay-Melbourne-Titusville, FL	235.2
3	Orlando-Kissimmee-Sanford, FL	234.7
4	Jacksonville, FL	228.7
5	Deltona-Daytona Beach-Ormond Beach, FL	228.2
6	Lakeland-Winter Haven, FL	200.6
7	Tampa-St. Petersburg-Clearwater, FL	192.0
8	Jackson, MS	189.6
9	Memphis, TN-MS-AR	153.3
10	North Port-Sarasota-Bradenton, FL	148.2
11	Miami-Fort Lauderdale-West Palm Beach, FL	145.1
12	Bakersfield, CA	132.8
13	Birmingham-Hoover, AL	132.1
14	Little Rock-North Little Rock-Conway, AR	127.9
15	Houston-The Woodlands-Sugar Land, TX	127.2
16	Phoenix-Mesa-Scottsdale, AZ	125.1
17	Detroit-Warren-Dearborn, MI	124.2
18	Riverside-San Bernardino-Ontario, CA	123.4
19	Baton Rouge, LA	120.6
20	McAllen-Edinburg-Mission, TX	118.8

Figure 5: Most Dangerous Metro Areas for walking based on PDI, 2016

Source: Dangerous by Design 2016



Segment 6 places priority in designing for safety to reduce minor and major accidents and injuries. In particular, strategic improvements to intersection design, as well as the separation of bicycle and pedestrian modes, among other measures, is conservatively calculated to generate an economic benefit exceeding \$32 million per year. *See* Appendix A: Benefit-Cost Analysis with Supporting Worksheet.



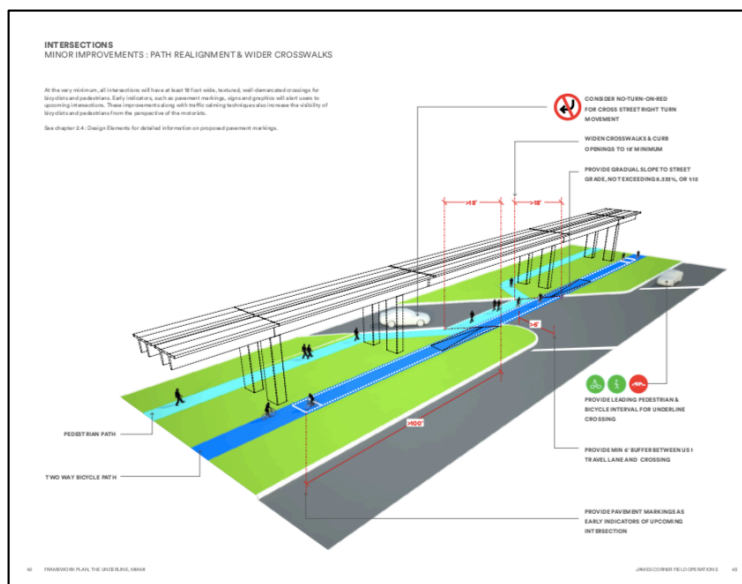
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Assessment (“The Underline HIA”). These factors limit use of the corridor by any mode and render it more dangerous by every mode.

Community consultation participants surveyed for The Underline HIA felt that, in addition to palpably unsafe conditions, there were also insufficient places to socialize. Places that were present were underused due to lack of lighting and a large homeless population that gravitates to poorly maintained, inconspicuous locations. The participants also noted that access across U.S.1 was a significant barrier to The Underline and mass transit. Of the 36 intersections that will be improved along The Underline, 29 of them are adjacent to U.S.1. *See Appendix O: The Underline Health Impact Assessment.*

Crosswalk Improvements

Prioritizing safety improvements, the Master Plan (*See Appendix F*) proposes investing \$20 million of the total project cost in crosswalk/crossing improvements. Segment 6 of The Underline improves six intersections, two are considered major improvements and the remaining four are considered minor improvements. Additionally a pedestrian bridge will be added to cross the Coral Gables canal where the existing bridge does not meet the minimum width standard for pedestrian and bicycle trails.



To improve pedestrian and bicyclist safety, The Underline proposes modifications, such as:

1. Total 18 feet minimum path width, 10 feet for bicyclists (skip green) and 8 feet for pedestrians;
2. Provide leading pedestrian and bicycle interval;
3. Consider no turn on red for cross street right turn movement;
4. Provide 6' buffer between U.S.1 travel lane and crossings;
5. Provide gradual slope to street grade on trails; and
6. Desire line connections from trail across streets.

Figure 8: Underline Minor Intersection Improvement

Source: The Underline Master Plan

See Appendix I for examples of comparable crosswalk improvements engineered by the Florida Department of Transportation (FDOT) District 6 in Segment 2 for Underline street crossings at SW 16th, 17th and 19th Streets in Miami, Florida.

The Underline	Segment 6 Crosswalks & New Bike/Ped Bridge
Location	Recommendation
<p>1. SW 42nd Avenue & Grand Avenue</p> 	<p>Two stage crossing at busy intersection (see cars blocking crosswalk at SW 42nd Avenue)</p> <ol style="list-style-type: none"> 1. Grade separation and/or 2. Diagonal crosswalk
<p>2. Riviera Drive</p> 	<p>Early indicators, 6' buffer, 18' crossing width, no turn on red for cross street right turn, leading pedestrian interval, widen path to new proposed bridge west of Riviera Drive.</p>
<p>3. New bridge at Coral Gables Waterway</p> 	<p>Path width is currently 5' or less. We propose a new bike/ped bridge to cross waterway.</p>
<p>4. Granada Boulevard</p> 	<p>Early indicators, 6' buffer, 18' crossing width, no turn on red for cross street right turn, leading pedestrian interval.</p>
<p>5. Stanford Drive</p> 	<p>Re-align path approach. Early indicators, 6' buffer, 18' crossing width, no turn on red for cross street right turn, leading pedestrian interval.</p>
<p>6. Alhambra Circle</p> 	<p>Move crossing to Ponce de Leon side. Early indicators, 6' buffer, 18' crossing width, no turn on red for cross street right turn, leading pedestrian interval.</p>
<p>7. SW 57th Avenue</p> 	<p>Grade separation and/or no right hand turn south bound US1. Early indicators, 6' buffer, 18' crossing width, no turn on red for cross street right turn, leading pedestrian interval.</p>

Figure 9: Underline Segment 6 Crosswalks and Proposed Bridge

First and Last Mile Transit Connection

Since The Underline runs below the Metrorail guideway and connects to eight transit stations that are on average one mile apart, the entire corridor is a first and last mile pedestrian and bicycle connector. Improving safety by design in these strategic locations lowers barriers to access transit and increases access to car-alternatives.

The Miami-Dade County Local Action Plan for Safer People, Safer Streets recommended “Fix Barriers” and “Design Right.” The Underline Master Plan has addressed those challenges and relied on a variety of resources to create the safest conditions for Underline crosswalk design modifications, including ThinkBike 2015, Miami-Dade County MPO Application of Innovative Strategies to Improve Bicycle Safety and Mobility 2014 and NACTO Urban Street Design Guide, among other resources.

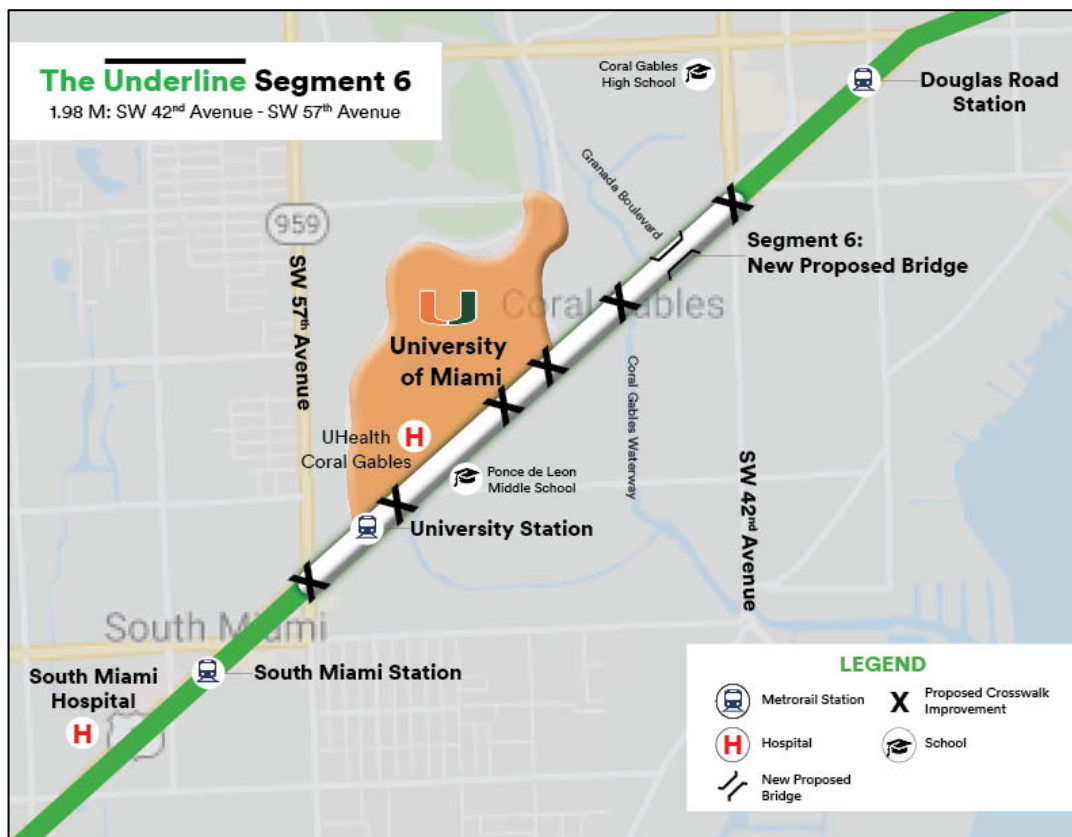


Figure 10: Underline Segment 6 and University of Miami

Source: Google Maps

The Underline directly fronts The University of Miami, one of the project’s principal stakeholders and strategic partners. Segment 6 of The Underline construction will serve the 14,000 students and nearly 3,500 staff at the Coral Gables campus.

About the University of Miami Mobility Plan

University of Miami (the “University”) has three campuses, which are all served by Miami-Dade County Metrorail.

The Coral Gables campus is a medium-sized, semi-urban campus, surrounded on three sides by single-family residential neighborhoods and on one side by the heavily-travelled U.S.1/Ponce de Leon Boulevard commercial corridor. As of Fall 2017, the Coral Gables campus population was 14,572 students (4,199 resident students) and 3,447 faculty, staff, and administration.

Each year, the Coral Gables campus prepares a Mobility Plan,* which documents mobility programs and strategies to reduce single-occupant vehicle trips and maximize efficiency for moving to, from, within and around the Coral Gables campus. These mobility policies contribute to a reduction in the amount of traffic coming to and moving around campus and reduce the carbon footprint of the University.

The Coral Gables campus Mobility Plan encourages walking, biking and public transit usage. The University has been named a Bike-Friendly University, Bronze level, by the League of American Bicyclists in 2012 and again in 2016, validating the University’s continued efforts to develop and support a healthy bike culture on campus. From shuttle services, bike parking and education classes, to eliminating cars on campus for resident freshman, the University’s mobility strategies and neighborhood traffic improvements have resulted in a **14.3% decline** in overall Coral Gables University traffic during peak morning and evening periods between 2012 and 2018.

The proposed enhancement provides a more active and engaging linear park experience for pedestrians and bicyclists, while improving safety for students, faculty and staff crossing major intersections near the campus.

b. State of Good Repair

Improvements Offer Safety, Accessibility, Resilience, and Economic Sustainability Congruent with Local Planning Goals

The existing infrastructure in the project vicinity does not adequately serve many area residents, but instead promotes dangerous conditions, sets barriers to accessibility and underutilizes available resources. The proposed Underline improvements rehabilitate the transportation infrastructure and bring the space in compliance with setback conditions from Metorail, ADA standards, and local mobility plans.

Safety and Security

The greatest current challenges are traffic conflicts. These occur in the project area because of the confluence of varying transportation modes carrying users with competing needs and expectations. Most notably, the nearly 93,000 automobile vehicle users which traverse U.S.1—the only major roadway that provides a direct route between the southwest portion of the county and the financial district, principal business center and port—encounter the nearly 57% of commuters

in the University area who report commuting by walking or biking. *See* Appendix O: The Underline Health Impact Assessment. U.S.1 is also a freight corridor supporting approximately 3,000 trucks per day with exceptional stop and acceleration requirements. These users also commonly converge at transit nodes like the project subject, University Metrorail Station, which supports thousands of riders daily.

With each existing mode—sidewalk, street and rail—having been developed independently and at different points in time, The Underline will be the first integrated intermodal design effort. As more fully detailed in the merits criterion section on Safety, distinct intersection improvements will support safety by helping to mediate competition between users with such measures as realigning paths, lighting and improving wayfinding.

The installation of lighting will also improve safety of the project area. Studies show users are most active in this space from 5-8 p.m.—hours in which there is normally sunlight in South Florida for much of the year. *See* Appendix O. The installation of 2,650 light posts installed at forty feet of distance for each path and uplights on columns with wayfinding will allow users to safely activate the space outside of sunlight hours, increasing opportunities for access and activity.

The project also improves safety by thoughtfully planning for rare, but potentially catastrophic, harms. For instance, bollards installed at intersections at the entrance and exit to user paths avoid conflicts by preventing accessibility by automobiles on bicycle and pedestrian paths. Additionally, strengthening this infrastructure supports security efforts by adding capacity to move people in the event of emergencies, such as terrorism, blackouts, hurricanes or major events that could disable roadway networks in and around the metropolitan area.

Accessibility

The proposed project area also introduces innovative universal design concepts. This produces environments that are inherently more accessible to the extensive elderly and disabled population who experience exceptional barriers to transit use. Improved wayfinding and installation of Federal Highway Administration (“FHWA”) approved and Manual on Uniform Traffic Control Devices (“MUTCD”) compliant conspicuous markings and signage, both on bicycle/pedestrian paths and elsewhere in the project space, also reduces physical barriers and brings the project space up to standards.

Resilience

South Florida faces unique challenges managing stormwater in the context of rising sea levels and unpredictable hurricane seasons. Each year the subject project area receives an average of 61.9 inches of rainfall, which ranks among the highest in the nation. Existing conditions of the project area have not been graded to reduce the export of surface water to surrounding properties, including the vital U.S.1 corridor as well as private owners and local businesses. By installing stormwater controls and enhanced green infrastructure, The Underline will mitigate the downstream impacts of stormwater. The Underline will incorporate catch basins and deep injection wells. The grading plans will slope stormwater toward the planting beds (permeable

surfaces) designed with catch basins and will mitigate the impact of run-off water into adjacent public right-of-ways and properties.

In addition to resilient engineering, The Underline is also a laboratory for incubating thought leadership on smart growth principles focused on transit-oriented development in low-risk areas for storm surge and flooding. Advocates in this area have coalesced around this project and many are represented in the various support letters submitted as Appendix S.

Ongoing Management and Maintenance

Maintaining transportation infrastructure in good repair is a frequent challenge for local governments. To ensure an ongoing high level of maintenance and management, Miami-Dade County's Board of County Commissioners approved The Underline Management Organization (TUMO), a unique non-profit with broad public and private representation. TUMO will be supported with a private endowment, among other revenue sources, to support the \$3-\$4 million annual maintenance needed to ensure that the facility is maintained at world-class levels. *See Appendix Q: The Underline Management Organization Agreement with Miami-Dade County.* TUMO's professional performance is enforceable by the local government, which maintains broad auditing rights and reporting requirements. This innovative partnership ensures every investment made in the corridor is preserved in a state that is even better than "good repair."

The cost of ongoing maintenance, which has already been extensively studied, is optimized by efficient design innovations. For instance, installing proper infrastructure for ingress and egress of maintenance vehicles, which routinely service and inspect the adjacent Metrorail, will also allow for better state of repair of facilities. These vehicles, as well as tree pruners and emergency vehicles, will now be able to enter the space in areas designed to support maintenance and without contributing to erosion or destruction of facility elements. This avoids ongoing issues of maintenance of one element contributing to the deterioration of another and lowers the potential overall cost of maintenance. Additionally, by offering transportation options aside from the automobile in a manner that reduces automobile traffic by an estimated 5%, existing road infrastructure will receive less wear, easing congestion and reducing road maintenance costs. *See Appendix C: Operations and Maintenance Analysis.*

c. Economic Competitiveness

Segment 6 is within the City of Coral Gables, one of the three municipalities through which The Underline runs. The Underline's multimodal accessibility encourages alternate modes of transportation and attracts new users to mass transit, including the Metrorail. A two-part system of off-road, dedicated, non-motorized pathways for bicyclists and pedestrians will resolve issues of safety and mediate conflict between various user groups. The adjacency to the Metrorail and to U.S.1 can be leveraged to ensure multiple points and means of access along the ten mile stretch.

This corridor will provide access to eight Metrorail transit stations and Metrobus transfer terminals, one university, twenty-four schools, two hospitals, three urgent care facilities, three major malls and over 11,000 businesses. Segment 6 serves 2,800 businesses within a ten minute or half a mile walk and 4,385 businesses within a ten minute or one mile bike ride. *See Underline*

Demographic Data*. The Underline is designed to make accessibility to these facilities and businesses safer, faster and to reduce travel times. The Underline will encourage residents to get out of their vehicles as well as walk, bike and take mass transit as an alternative to driving.

Traffic Reduction Impact

The Underline Miami-Dade Road Impact Fee Traffic Study 2016 prepared by Kimley Horn on behalf of Miami-Dade County in February of 2016 (See Appendix G) measures the potential impact of The Underline on U.S.1 traffic volumes. Most of U.S.1 adjacent to The Underline currently operates at level of service “F.” The usage forecasting analysis shows that approximately 8,600 trips per day are anticipated to be served on The Underline; an average of approximately 1,700 Underline users per day are anticipated at individual locations along the corridor.

The Underline improves traffic conditions on U.S.1 by providing a highly attractive non-motorized transportation alternative to congested travel conditions on U.S.1, along with direct connections to eight Miami-Dade Metrorail Stations, which ultimately will reduce traffic volumes on U.S.1.

- The amount of motor vehicle traffic reduction on U.S.1 as a direct result of The Underline is anticipated to range from 643 vehicles per day to 1,007 vehicles per day depending on the location along the corridor.
- The percentage reduction in traffic volumes on U.S.1 as a direct result of The Underline is anticipated to range from -1.04% to -2.66%.
- Intersection capacity analyses conducted at five intersections demonstrate that The Underline is anticipated to result in delay reductions at intersections of up to -3.89% for total intersection delay in the A.M. peak period at the SW 72nd Street intersection. Northbound and southbound traffic approaches on U.S. 1 are anticipated to receive direct delay reduction benefits since The Underline parallels these movements. Individual approach delays are anticipated to range up to -5.63%.
- The Underline corridor is unique in that rail transit still exists in the corridor where The Underline will be built. Many of the peer facilities (including the 606 Trail and the Atlanta BeltLine) exist in former railroad corridors that no longer or currently do not carry train traffic, making estimation of transit ridership increase speculative. For example, if 25% of the anticipated 8,678 daily users connect to Metrorail, this represents a Metrorail ridership increase of 2,170 passengers per day, which is an increase of 2.8% above existing Metrorail ridership of approximately 77,000 passengers per weekday.

Increasing Retail Visibility and Sales Volume

In growing urban communities, protected bike lanes and off road, non-motorized trail networks encourage more people to ride bikes for everyday trips. Those who use bikes for errands are the ideal kind of retail customers; they are regulars. Evidence indicates they stop by often and spend as much or more per month as people who arrive in cars. See *“Protected Bike Lanes Mean Business,”** by People for Bikes and Alliance for Biking and Walking.

Underline Economic Impact

The Underline’s economic impact is detailed in a study prepared by HR&A of NYC in 2015 (*See Appendix B: HR&A Economic Impact Assessment: The Economic Impacts of The Underline*):

- The Underline will become a valuable amenity for surrounding neighborhoods, creating \$300-\$485 million in incremental assessed value for property owners.
- Increased property values will equate to \$6-\$10 million in new annual tax revenue for Miami-Dade County and the cities of Miami, Coral Gables and South Miami.
- The Underline will enhance and accelerate opportunities for more than 20 million square feet of potential new development across the corridor, with a total estimated \$3 billion in new gross taxable value.
- For these new projects, The Underline is projected to add \$150 million in incremental assessed value, generating up to \$3 million in additional fiscal revenue each year once fully built out.
- Studies of similar signature linear parks across the country indicate that the value of nearby residential and commercial properties increases by about 3-5% with the creation of nearby open space, with the greatest impact occurring on properties directly adjacent to the corridor.¹
- The Underline will create more than 1,000 jobs during construction and 400+ permanent jobs during operations of the park.
- These activities will increase spending throughout the local economy, including: \$170 million in total economic output during construction; and \$50 million in economic activity every year following completion.
- A significant new regional amenity can help to improve quality of life of residents and attract and retain residents and businesses, including in in-demand “innovation” industries.
- Annual spending on parks and recreation per resident in Miami is below the national average. The region spends only \$80 per resident annually, compared to the national median of \$89 and up to \$160 per resident by competitive peers, such as San Jose, New York, Los Angeles, San Antonio and Austin.
- Parks are social infrastructure that support quality of life for all residents. The Underline will be Miami-Dade County’s first multimodal mobility corridor, connecting to transit on bike or foot and alleviating traffic. Investment in The Underline could be critical to re-stitching divided communities, bolstering the impacts of transit nodes with a free public health amenity, helping support a unified and economically vibrant Miami.

¹ Consider three examples: (1) A 2014 study of Indianapolis, Indiana’s eight-mile Indianapolis Cultural Trail by the Indiana University Public Policy Institute found that since its opening in 2008, the value of properties within a block of this high-quality biking and walking trail have risen an astonishing 148%. The value of the nearly 1,800 parcels within 500 feet of the trail increased by more than \$1.01 billion over the same period. (2) Since the opening of the 3.5-mile Katy Trail in the Uptown neighborhood of Dallas, Texas in 2006, property values climbed nearly 80%, to \$3.4 billion, according to Uptown’s business improvement district. (3) The BeltLine in Atlanta, Georgia is a transit and trail loop around Atlanta that will include a planned thirty-three miles of pedestrian and bike trails, as of 2014. Over \$400 million had been invested into the Atlanta BeltLine project from public and private sources, leading to more than \$2.4 billion in private development along the BeltLine corridor. In 2014, real estate inventory along the corridor which stayed on the market for sixty to ninety days is now selling within twenty-four hours.

d. Environmental Protection

The Underline, as a mobility corridor has a very low energy consumption and its goal is to reduce the number of private vehicles from the road and increase use of public transportation. Both items contribute to reducing emissions created by automobiles. In addition, The Underline is a linear open space corridor and is designed to increase shade, safety and connectivity to public transit.

NEPA

This project received a Type 1 Categorical Exclusion on February 2, 2016.

Environmental Reports and Findings

A Segment 1 and Limited Segment 2 Environmental Site Assessment were performed for The Underline ten mile corridor. These reports were required to comply with the NEPA Type 1 Categorical Exclusion received on February 2016. The report indicates soil analytical data concentrations of Benzo(a)pyrene (B(a)P), arsenic (As) and lead (Pb) slightly above the Residential and/or Commercial/Industrial cleanup target levels. The SPLP/TCLP results showed concentrations of arsenic and lead slightly exceeding the groundwater cleanup target levels. Based on the soil analytical results obtained during the site assessment activities performed in July 2017, horizontal and vertical delineation of contaminated soil near the soil borings that exhibited exceedances are recommended.

Based on the results of the July 2017 Limited Phase I Environmental Site Assessment (ESA) and as requested by DTPW in conjunction with the Miami-Dade Department of Regulatory Economic Resources Management (“DERM”), a report for Limited Groundwater Assessment was prepared on February 2018 for Segment 1. Temporary monitoring wells were installed and groundwater samples collected. The samples were analyzed for polychlorinated biphenyls (PCBs), metals (Aluminum, Selenium, Silver, and Mercury), polycyclic aromatic hydrocarbons (PAHs), and Dioxins. Out of the eight monitoring wells installed, two indicated arsenic concentrations above the applicable GCTs. A resampling took place to reconfirm the findings. All other samples tested for arsenic and lead were not detected above the laboratory method detection limit or applicable GCTL. Based on the results, the design for Segment 1 was modified to include deep injection wells as part of the site drainage design. This approach will be revisited per segment based on final design and review by DERM. *See Appendices K, L, M, N.*

DTPW and DERM have devised remediation strategies for both soil and groundwater tailored to each segment based on final design. The proposed project cost for Segment 6 includes funding for these environmental remediation strategies.

Several strategies have been created to be environmentally responsible, improve energy efficiency and reduce energy use as well as both air and water pollution.

Urban Heat Island Effect

The pedestrian and bicycle trails are asphalt with a special light-colored coating that is designed to cool surface temperatures. This coating reduces urban temperatures by a full degree and help fight against Urban Heat Island Effect. *See Unintended Consequences**, A Research Synthesis Examining the Use of Reflective Pavements to Mitigate the Urban Heat Island Effect by Jiachuan Yang; Zhihua Wang, Ph.D. and Kamil E. Kaloush, Ph.D., P.E. Arizona State University National Center of Excellence for SMART Innovations.

Urban Reforestation with Native Plant Species for Low Maintenance, Sustainability

In conjunction with partners Fairchild Tropical Botanic Garden, PROS and DOT District 6 landscape teams, The Underline planting palette was selected based on the historical, low-maintenance plant communities that once dominated the area maintenance: pine rockland, hardwood hammock, freshwater marshes, and wet prairies. These communities were home to many plant and wildlife species that are now struggling to find a habitat and will benefit from reintroduction of these historic native species.

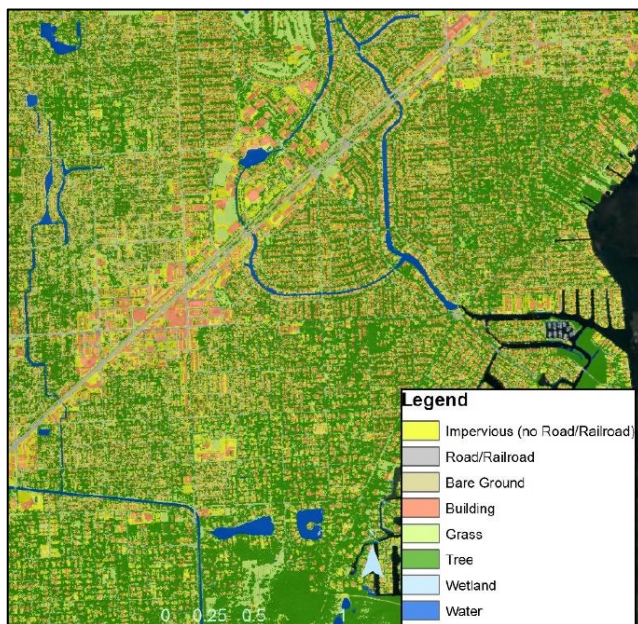


Figure 11: Transit Corridor Poor Tree Canopy

Source: The Underline Health Impact Assessment

The Underline is located on the Miami Rock Ridge, a continuous limestone outcrop which spans Miami-Dade County to the Florida Keys and west to the Everglades.

- The coastal ridge featured the now endangered pine rockland species community, which supported numerous endemic plant species; twenty percent of which occur nowhere else in the world.

- Many of the rockland community species provide habitat and food for butterflies. The Underline will have twenty butterfly gardens providing food and habitat for endangered and migratory butterflies.

- There are several places where The Underline crosses existing canals and waterways. At these locations, the planting will accommodate stormwater runoff and the possibility of rising canal levels and saltwater.

The Master Plan calls for planting 800 canopy trees in the 1.98 miles of Segment 6 of 4,000 new canopy trees along the 10-mile corridor. The Underline's 800 trees in Segment 6 will store 10,400 pounds of carbon per year or 5.2 tons per year. The ten mile Underline's 4,000 trees will store 52,000 pounds of carbon per year or twenty-six tons per year. *See NC State University College of Horticulture & Life Sciences, Department of Horticultural Science: Project Trees of Strength, 2002, Erv Evans.* <https://projects.ncsu.edu/project/tressofstrength/benefits.htm>.

The Underline's trees are also included in the Fairchild Tropical Botanic Garden's One Million Orchid project. This project endeavors to propagate an unprecedented number of native orchids for reintroduction into South Florida's urban landscapes.

Stormwater Strategies

Strategies for The Underline dictate that stormwater within The Underline stays within the corridor. For Segment 1, the engineered plans have eight deep injection wells which redirect stormwater to catch basins and wells. More details on storm water strategies and resilience planning may be found in "State of Good Repair."

e. Quality of Life

Providing an option to walk and bike as an alternative to driving will increase our community's mobility and activity levels. The Underline, within the unique space created by the distinctive overhead structure of the Metrorail viaduct, the large amount of adjacent undeveloped land and the relationship to existing neighborhoods, institutions, parks, canals, creeks and the Miami River, will create a healthy transportation solution connecting communities and people to employment, healthcare, educational and other critical destinations.

The Underline will encourage a healthier lifestyle. In 2016, Gallup and Sharecare polled adults in 189 U.S. metro areas about their exercise habits over the prior week. People were considered "regular exercisers" if they said they exercised for at least thirty minutes a day, three or more days a week. The Miami-Ft. Lauderdale Metropolitan area scored 95th out of 189 with 53.3% of the population as "regular exercisers." See *The State of American Well-Being**, 2016 Community Rankings for Exercise.

Health Impact Assessment

FUL commissioned the Georgia Health Policy Center of Georgia State University to conduct The Underline HIA, which was funded by the Health Foundation of South Florida. This comprehensive study systematically compiled an array of data sources and analytic methods. This assessment also factored input from stakeholders to determine the potential effects of a proposed policy, plan, program or project on the health of a population and the distribution of those effects within the population. In February 2017, the Technical Report was published with recommendations to design, build and operate The Underline in ways to maximize healthy living for all. See Appendix O: The Underline Health Impact Assessment.

Findings

Physical activity is one of the most important determinants of health and wellness.

- Regular physical activity is associated with reduced risk for heart disease, diabetes, cancer, bone and joint problems and mental illness.
- Miami residents suffer from high rates of disease, compared to other areas of the country, which are preventable with regular physical activity.

- The Underline has high potential to increase physical activity by providing places to walk or ride a bike. Recreational facilities and open green space elements will also present opportunities for people to be active.

Social connections have direct and indirect links to health.

- Adequate access to ‘social capital’ is directly correlated with income, family stability, mental health and overall life expectancy.
- While Miami-Dade residents have high levels of social interaction within their communities, different communities do not necessarily connect with each other.
- The Underline will likely increase social interaction by creating safe public places to gather, and featuring art, culture and events that highlight unique aspects of local communities.

Exposure to traffic hazards lead to increased risks for injuries and other health risks.

- Injuries are common concerns for pedestrians and cyclists near the corridor.
- The Underline could promote a “safety in numbers” effect to reduce pedestrian and cycling injuries.

Other HIA Observations

Transit use in neighborhoods along the corridor ranges from less than one percent, to over thirty percent in the Brickell area (See Appendix O). Ten to fifteen percent of Dadeland area residents commute by transit. Transit trips are considered a form of active transportation, since nearly all involve some walking or bicycling at one or both ends of the trip. Additionally, the HIA’s Tables 3 and 4 demonstrate the current volume of people boarding at Metrorail stations along The Underline and parking at station park-and-ride lots. These numbers indicate the total volume of commuters whose travel patterns could potentially involve The Underline in the future—over 31,000 transit commuters of which at least 4,700 are currently driving to the corridor. These numbers also indicate that some Metrorail stations have extra capacity to provide parking for activities on The Underline. Participants in the Community Consultations indicated that active commute rates are generally low for several reasons, including insufficient bicycle parking, lack of accommodations for managing sweat, lack of driver compliance at crosswalks and difficulty of using the M-Path for long distance bicycle travel due to unsafe crossings.

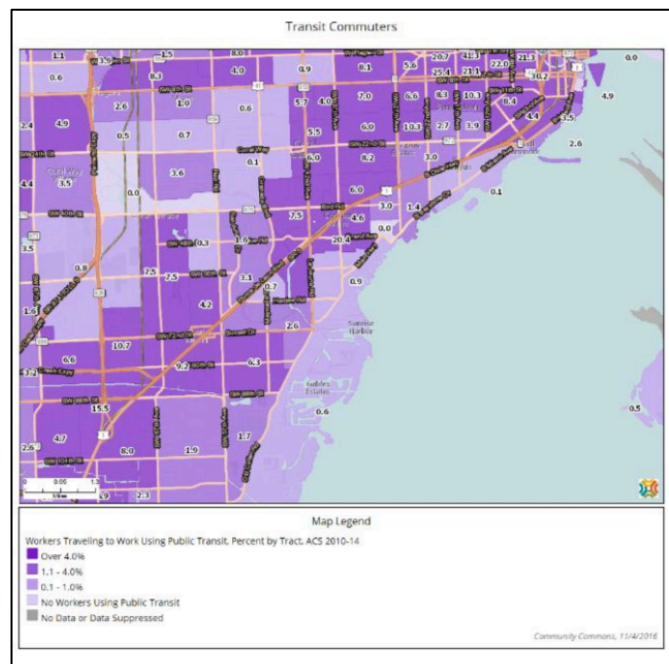


Figure 12: Transit Use Alongside Underline

Source: The Underline Health Impact Assessment

Health Benefits of Walking, Biking and Transit

Evidence shows that people who use transit get more than three times the amount of physical activity per day than those who do not use transit. Transit users get an average of nineteen minutes of exercise daily compared to six minutes for those who do not use transit. Also, there is a close corollary between obesity and unwalkable, car-dependent neighborhoods. In addition to better transit, designing neighborhoods that encourage walking and biking is crucial to public health.

Last, well-designed cities across the planet are healthier cities, according to a recent study. Researchers who “followed 14,000 people in 14 cities around the globe, conclude[ed] that people living in dense, walkable, bikeable neighborhoods with various amenities and access to transit enjoy up to 90 extra minutes of exercise a week.” See “*The Road to Good Health is Paved with Walking, Biking, and Transit*,” Goffman, Ethan. <https://mobilitylab.org/2017/10/02/road-good-health-paved-walking-biking-transit/>.

Programming

As The Underline HIA noted, The Underline will offer a wide array of free accessible health and wellness programming along the ten mile corridor. Even in advance of construction and enhancements, FUL offers group bike rides and free weekly Yoga classes to build demand and test programming preferences.

Canvas for Public Art

Partnering with Miami-Dade County Art in Public Places, The Underline will be a living art destination providing a platform for local, regional, national and international artists for temporary and permanent visual art and a variety of performance art. The Underline’s Segment 1 has a permanent community stage for people of all ages and backgrounds to come together and engage with each place and with each other. All Underline art programming will encourage play and physical activity as well as inspire community discussion.

f. Innovation

The entire Underline project is innovative by revitalizing and repurposing the residual 120 acres below ten miles of government-owned land of Metrorail into a vibrant, active, safe multimodal corridor. The project leverages an underutilized asset into a multimodal connector unlocking the potential to connect to Metrorail, Metrobus and the larger regional transportation system.

Of the few comparable projects, Underground at Ink Block in Boston and The Bentway in Toronto, only the New York City Department of Transportation proposes a similar large-scale revitalization of residual land. Its project, “Under The Elevated,” repurposes 700 miles of space below elevated bridges, highways, subway and rail lines into millions of square feet of public space – nearly four times the size of Central Park. See DesignTrust.org/projects/under-elevated.

g. Innovative Technologies

Material Innovation

- Using epoxy modified acrylic coatings over the asphalt paths reducing heat gain to combat Urban Heat Island Effect.
- Installing Superpave warm mix asphalt intended to last longer and reduce air emissions and fumes during installation.
- Using powder-coated, corrosion-resistant aluminum, which also has less heat gain increasing human comfort.
- Install LED lighting which has a longer life span and uses less energy than other lighting types.
- Revitalize an ecological corridor with all native planting requiring no irrigation systems. Drainage is designed to direct stormwater to planting beds. The native planting will host a variety of insects and other animal species.
- Using the Metrorail Columns and Paths as a surface for signage and wayfinding reduces additional material usage.
- Installing free, open access broadband WiFi for the entire corridor improves public access to information.

Innovative Design

- Skip green elephant ear crossings become essential for the safety improvement. It provides for a well-demarcated path for pedestrians and bicyclists, but also provides greater visibility to vehicular users.
- The bicycle path is designed to withstand emergency vehicles as well as inspection trucks. This not only provides double usage of investment, but it also eliminates disruption to adjacent areas.
- For information on additional design innovations see stormwater and landscape sections under “Environmental Protection” as well as “State of Good Repair.”

Leveraging Technology

FUL’s Technology Council is presently planning a study to identify ways to leverage technology supported by Broadband WiFi to assist with maintenance, security, safety, enhance user experience (storytelling, art and education through augmented reality) and health and wellness performance as well as documentation. The study and recommendations are expected to be completed by Spring 2019 for implementation in future segments.

h. Innovative Project Delivery

Miami-Dade County is currently developing a design criteria package to procure Design-Build Services. The design criteria package identifies all standards, alignments and required intersection improvements. In addition, it will provide cost estimates for each of the phases to be designed and

developed. Once the design criteria is completed, it will allow for a swift and efficient procurement process, integrating design and construction simultaneously with permitting processes for the entire ten miles of The Underline. This will also shorten the approval process, provide for a cohesive project delivery and lower administrative costs.

i. Innovative Financing

The Underline is a premier example of a Public-Private Partnership project in Miami-Dade County. Mobilized by FUL, a 501(c)(3) non-profit organization, many private stakeholders have become partners and supporters of the project providing a robust and active role in the delivery, financing and management components, allowing us to incorporate innovation and efficiency into the design, construction and maintenance. The Underline Management Agreement between Miami-Dade County and FUL Management Organization, a 501(c)(3) nonprofit, transfers all maintenance, security and programming responsibilities from Miami-Dade County to this organization. The organization is responsible for raising the necessary funds to operate The Underline at a world-class facility level. See Appendix Q: The Underline Management Organization Agreement with Miami-Dade County.

Many of the segments of the ten mile Underline, including portions of Segment 6, are funded by municipal Park and Mobility Impact Fees. By leveraging localized impact fees—for development within 1,000 feet of The Underline—for capital costs, The Underline is partially funded by the precise private real estate investment, which will most directly benefit from the installation of the urban trail and open space. In this way the success of the public project has a close symbiotic relationship with the private real estate market. Each is invested in the other. While many sources of revenue at Miami-Dade County are collected and distributed County-wide, local expenditures close to points of collection of park impact fees are an innovative funding mechanism that gives residents and businesses pride of ownership of local public assets like The Underline.

j. Partnership/Stakeholders

Led by DTPW with partner City of Coral Gables, Segment 6 is another example of robust partnerships to fund and facilitate construction of The Underline. Located southwest of Downtown Miami, The City of Coral Gables has 51,095 residents according to 2017 United States Census Bureau estimates. Three of the ten miles of The Underline run through the City of Coral Gables. The City of Coral Gables has been a steadfast supporter of the project assisting the funding of the Master Plan and now up to \$15 million of park and mobility impact fees collected from development within 1,000 feet of The Underline.

The support of The Underline is broad-based representing stakeholders from the public and private sector. FUL, a 501(c)(3), is DTPW's public/private partner advocating and advancing the project through funding, advocacy and volunteer manpower. For Underline Segments 1 and 2 the City of Miami has directed up to \$50 million for construction, the State of Florida committed \$8.5 million with three appropriations and FDOT has awarded Transportation Alternative grants. The City of South Miami committed funding for development of the Master Plan.

Friends of The Underline has received fifty-eight endorsements from both private and public entities and secured \$3 million in both in-kind and private contributions from John S. and James L. Knight Foundation, Swire Properties U.S., Inc., Hogan Lovells U.S. LLP among others. FUL has over 800 volunteers, including the President/CEO, Board of Directors, committee members and community volunteers. The public has coalesced support around the fundraising and advocacy partner FUL, which has an active social media community of over 12,000 followers.

Non-Federal Revenue for Transportation Infrastructure

Miami-Dade County received \$1.5 million for the development of a design criteria package for the remaining segments of The Underline (Segments 3 thru 8). In addition, Miami-Dade County is contributing \$500,000 to complement the funding required for the work. When the design criteria is completed (estimated in to be done by the third quarter of 2019), the project will be ready to move forward with the selection of the design/build firms for each of the phases as the funding becomes available. It is important to note that Segment 1 and Segment 2 are already moving forward, as funding has been secured. Segment 1 is under procurement and award. Award to a contractor is expected by the end of 2018. The Segment 2 design criteria package was completed and will move to procurement in 2019.

k. Demonstrate Project Readiness

Procurement of a Design/Build Contractor firm can commence as early as March 2020.

V. PROJECT READINESS

Miami-Dade County, together with FUL is committed to implementing this important project on time and on budget. The following sections discuss the project's readiness, including Technical Feasibility, Project Schedule and Requirement Approvals.

a. Technical Feasibility

The Master Plan for The Underline was developed and approved by the Board of County Commissioners in 2015. The design process was premised on the overarching concepts of the Master Plan and, as a result, Segment 1 has been fully designed and is currently under procurement for its construction. In addition, the Design-Build Criteria Package for Segment 2 has been finalized and will proceed with the procurement for Design/Build contractor services. This year, the State of Florida awarded DTPW funds to procure the consultant to develop a Design/Build Criteria Package for the rest of The Underline corridor, which includes Segments 3 thru 8 and totals approximately 6.9 miles.

Segment 6 of The Underline will be part of The Design/Build Design Criteria Package. This process will allow the proposed project to be ready for the procurement of the Design/Build contractor by March 2020.

The scope of this project includes:

- The creation of separate pedestrian and bicycle trails;
- Improvements to six intersections along U.S.1, including new pavement markings already reviewed and approved by the Federal Highway Administration;
- A new pedestrian/bicycle bridge over the Coral Gables Waterway, as the existing bridge is too narrow to adequately incorporate pedestrian and bicycle lanes;
- Environmental remediation;
- The installation of new lighting;
- New signage and wayfinding; and
- Landscaping and amenities for the community.

The total project cost estimate of \$26.5 million associated with this project is based on historical experience obtained from Segment 1 and Segment 2. Technical challenges have been identified and constructability challenges with the project have been accounted for.

b. Project Schedule

There is no right-of-way acquisition or land acquisition of any kind anticipated. This project is shovel ready. NEPA compliance has been addressed and the Design/Build Criteria Package will be complete by February 2020. The project completion will be well before the 2025 deadline.

The project delivery type for this project is Design/Build. DTPW has already allocated project management and oversight resources to ensure schedule compliance.

	2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Procurement of Design/Build Contractor																				
Award of Design/Build Contractor																				
Design/Construction																				

Table 2: Project Schedule

c. Required Approvals

i. Environmental Permits and Reviews

A NEPA Type 1 Categorical Exclusion for The Underline was issued on February 25, 2016. Phase 1 and Limited Phase 2 Environmental Assessments were completed for the full ten miles. In addition, The Underline received approval for Incidental Use by the Federal Transit Administration (FTA) on July 10, 2017. *See Appendix H: Underline FTA Concurrence.*

ii. State & Local Approvals

- Florida Department of Transportation
- Florida Department of Environmental Protection: National Pollutant Discharge Elimination System
- South Florida Water Management District
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- Miami-Dade County: Building, Planning, Zoning, Plumbing, Electrical, Public Works, DERM, Water and Sewer Department (WASA), Tree Removal
- Miami-Dade County Department of Transportation and Public Works: Drainage, Highway Division (ADA), Signals (TSS), Traffic Engineering Division
- City of Coral Gables: Public Works, Planning, National Pollutant Elimination System, Landscaping

iii. Public Engagement

Throughout 2015, The Underline Master Plan design was supported by a robust public process, including community informational meetings, six public meetings and on and offline surveys plus group charrettes involving over 1,000 residents and multiple stakeholders. The Underline Master Plan was published in early 2016; the foundational elements were a ten mile multimodal corridor (urban trail connected to transit), destination parks and public art. Highlights from the Master Plan Make It Yours on and offline survey include:

- 78% of respondents liked the urban trail component best;
- Over 50% of respondents said they would use The Underline for commuting; and
- 85% of respondents wanted lighting on the trail and 83% wanted bicycle facilities physically separated from pedestrian.

For each of the eight segments of The Underline, the community will have the opportunity to comment at a public meeting and participate in on and offline surveys when a segment reaches the 30% design document stage. For Segment 1, the 30% design document public meeting took place January 2017. All public meeting notes and videos are published at theunderline.org. Other examples of community input gathered, which inform the subject project include:

- The Underline HIA had three public stakeholder meetings to gather input for the report.
- ThinkBike 2015, a three-day public conference with the Dutch Cycling Embassy focused on safety recommendations for The Underline to increase bicycle use countywide.
- The University of Miami School of Architecture dedicated a semester-long studio class as a visioning exercise for the future Underline with public reviews of student work.
- Fall 2014, three-month long exhibit of University of Miami study at MCAD/American Institute of Architects.
- Coral Gables Museum hosted The Underline: Make it Yours exhibit March-May, 2015 about The Underline impact and master plan design.



Figure 13: A & B: Public Meetings 2015-17, C: MDC Mayor Carlos Gimenez Free Underlounge Festival 2016 D & E: Underline Cycling Club Free Monthly bike rides, F: UnderFit Yoga free monthly sessions.

Source: FUL

iv. Federal Transportation Requirements Affecting State and Local Planning

The Transportation Improvement Program (TIP), a major document of the Transportation Planning Organization (TPO) for the Miami Urbanized area, specifies proposed transportation improvements to be implemented in Miami-Dade County over the next five years. As required by federal regulations, projects receiving federal funds from October 1, 2017 to September 30, 2022 are to be drawn from those listed in this document. In addition, projects not using federal funds, but which are part of the area's program of improvements, are shown in the TIP. Projects shown for FY 2018 and beyond, regardless of their funding source, are included as proposed. While it is anticipated that most of these projects will be implemented as programmed, they will be periodically evaluated by the TPO as the TIP is updated or amended as necessary. Included in the TIP are Intermodal, Highway, Transit, Aviation, Seaport and Non-Motorized improvements costing in excess of \$9.02 billion. There are two Underline projects in the TIP 2018. See Appendix R: Underline TIP 2018

- #4355011: The Underline-M-Path/Brickell Backyard Project (page A1-670)
- #4355012: Underline Segment A from SW 13 St to SW 19 Ave (page A1-671)

v. Assessment of Project Risks and Mitigation Strategies

The principal project risks lie in the construction by segment approach, procurement process and in environmental regulatory compliance.

Because The Underline is being funded, designed and built in segments, each segment will be procured individually. Because of the critical significance of Segment 6 and its proximity to the University and Metrorail stations, it is an independently viable project that does not rely on the completion of additional segments, but will be augmented by them as future segments are completed.

To mitigate the time risk associated with conventional procurement, and to accelerate the whole project's success, DTPW will complete a Design Criteria Package for Segments 3 through 8 in 2019. The Design Criteria Package includes surveys, geotechnical data, Environmental Phase 2

reports, path alignment, and crosswalk design. This advance work will allow for the rapid procurement and Design/Build construction of any of those segments as funding becomes available.

Environmental studies commissioned and completed for the entire 10-mile corridor (see Appendix K, L, M, N) indicate levels of contamination. (See Section C.i. Environmental Permits and Review for more detail). Because similar remediation will need to be completed for The Underline Segment 1, under construction 2019, Segment 6, and other segments will benefit from project management's accumulated experience in remediation strategy of comparable conditions.

The proposed pedestrian/bicyclist bridge requires approval from the U.S. Coast Guard and U.S. Army Corps of Engineers. The City of Coral Gables recently completed a similar project over the Coral Gables Waterway in a different part of the City through its Public Works Department. To ensure the project is not delayed for those approvals, our team will proactively engage with the necessary parties well in advance of design and engineering.

vi. The Underline Benefit-Cost Analysis

Following the guidance provided in the U.S. Department of Transportation ("DOT") Benefit-Cost Analysis (BCA) guidelines, a cash flow analysis was developed to evaluate the benefits and costs for Segment 6 of The Underline, as summarized below.

The results demonstrate a positive Benefit to Cost Ratio of 4.32 times. The results are summarized in the table below with the details for the Benefit-Cost Analysis included in Appendix A to the application. Overall, the project provides excellent benefits for the cost of Segment 6 of the Underline, as The Underline focuses first on safety of pedestrians and bicyclists both crossing major interactions and in using The Underline. As such, safety improvements are the largest benefit of The Underline. Segment 6 of The Underline also helps relieve congestion on U.S.1 and also will foster major growth in property values in the corridor. These benefits are further outlined in the Benefit-Cost Analysis in Appendix A: Benefit-Cost Analysis with Supporting Worksheet.

Cash Flow Ratio Analysis 30-Year Time Horizon		
Discount Factor		7%
	2017 Base Year	
	Real Dollars	Future Dollars
Costs		
Capital Costs	\$ 26,500,000	\$ 26,500,000
Annual Operations and Maintenance	\$ 51,610,691	\$ 152,570,944
Total	\$ 78,110,691	\$ 179,070,944
Benefits		
Safety	\$ 323,758,417	\$ 936,816,000
Existing Real Estate Value Increase - Property Tax	\$ 7,045,108	\$ 26,505,000
New Development Value Increase - Property Tax	\$ 3,408,923	\$ 12,825,000
New Development on County Property	\$ 1,598,131	\$ 1,710,000
Vehicular Savings (Traffic Reduction)	\$ 1,671,661	\$ 4,837,061
Total	\$ 337,482,242	\$ 982,693,061
BCA Ratio	4.32	5.49

Table 3: Benefit Cost Analysis, Appendix A