

The Underline - Segment 6

BUILD Grant FY 2018

Appendix C

Operations & Maintenance Analysis

THE UNDERLINE

MAINTENANCE AND OPERATIONS REVIEW

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INTRODUCTION

The Underline is a proposed 10-mile trail, linear park, and living art destination below the southern half of Miami’s Metrorail line. The trail is meant to serve many purposes: as a link between neighborhoods and other trails, as a green corridor, as a multimodal corridor, and as a space for programming and art. Two demonstration projects were proposed in the Framework Plan for The Underline – the Brickell Backyard and the UM Colonnade. The master plan framework and details for the two demonstration projects are being created by James Corner Field Operations (JCFO), supported by a team of subconsultants.

ETM was approached by the Friends of The Underline to develop preliminary maintenance estimates for a “typical trail mile” of The Underline and for Brickell Backyard, the first demonstration project. This memo provides an overview of the anticipated order of magnitude maintenance needs for these two areas, including the estimated annual cost for maintenance of both a typical mile of The Underline and the Brickell Backyard project. Estimates are based on The Underline Framework Plan and Demonstration Projects (Framework Plan), the 60% Construction Drawing Technical Set for the Brickell Backyard, SD designs for the Broadway Park and River Trail sections of the Brickell Backyard, on CAD files provided by JCFO in June 2017, calls with JCFO and the Friends group, and supplemental documents on materials and plantings.

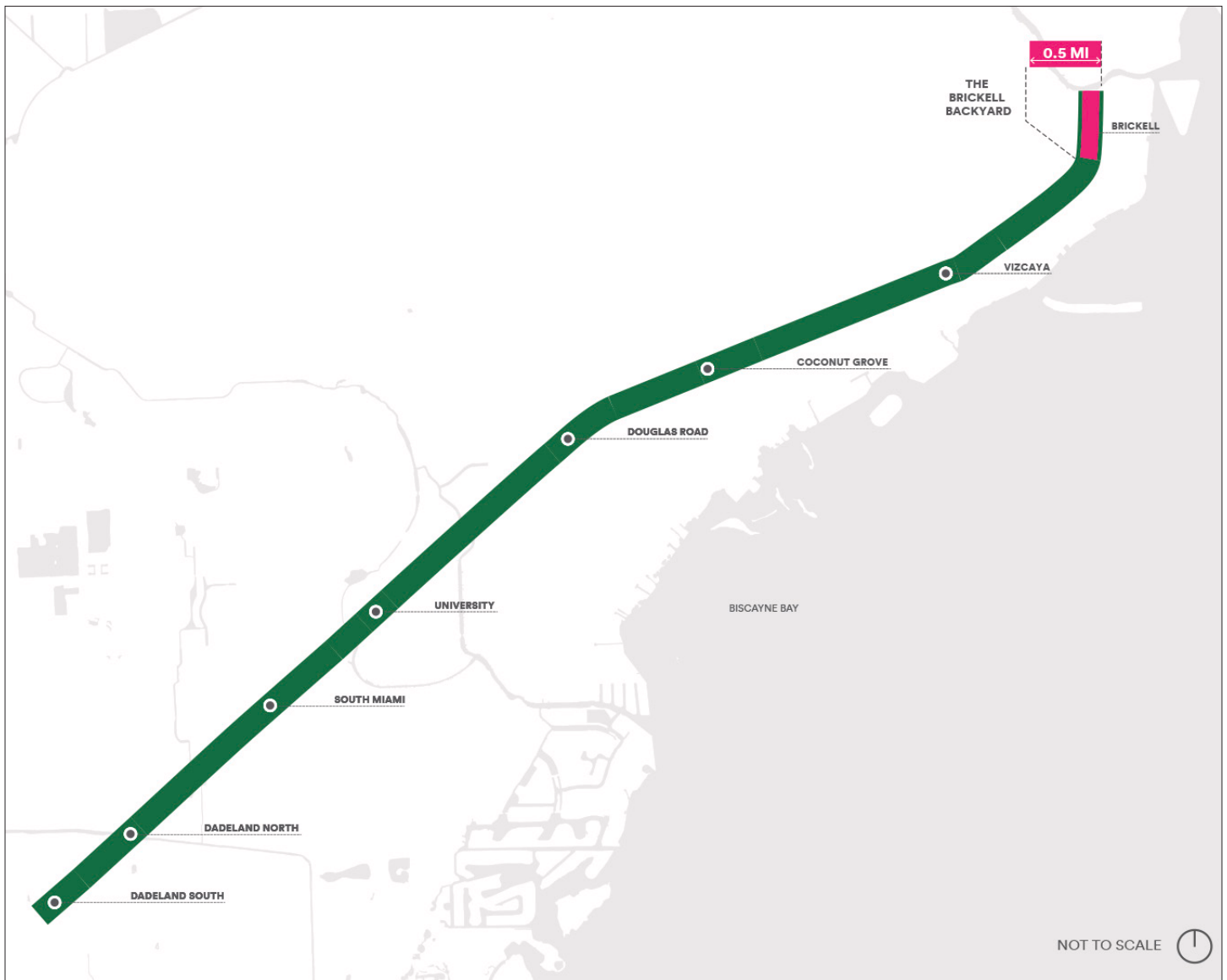


Figure 1. Concept plan of The Underline, from The Underline Framework Plan by JCFO

THE IMPORTANCE OF MAINTENANCE AND MANAGEMENT

Effective maintenance and management will be critical to ensuring the capital investment of The Underline is enjoyable, safe, and usable for years to come. It will be especially important that the Brickell Backyard project is properly maintained and managed since it is a showcase project that can encourage future fundraising and support for the rest of The Underline. This memo assumes that a new 501(c)(3), referred to in this document as the Underline Maintenance Organization (UMO), will be responsible for managing and operating The Underline.

Ultimately, the maintenance plan developed for The Underline will need to balance fiscal considerations, usage, and maintenance needs.

Maintenance and Management Principles

In order to achieve the highest levels of service for maintenance, maintenance work should be guided by several key principles: classifying maintenance standards, having an effective management and maintenance process, and ensuring that those performing maintenance and repair have the needed skills and equipment for the tasks.

Although most organizations operate on the basis of a fiscal or calendar year broken down into four equal quarters, this structure is not necessarily meaningful for park maintenance work. Experience has shown that organization of maintenance around the seasons is the most effective approach, quite simply because some of the most important factors shaping the pattern of work are tied to seasons. These factors include level of park use, growing conditions, and weather. It is recommended that the UMO define seasons for The Underline around which to structure park maintenance.

Maintenance work should be performed when most appropriate. For example, low impact maintenance tasks, such as litter removal, may take place throughout the day. When possible, disruptive maintenance tasks, such as power washing, should be performed during early morning or off-hours when there are fewer park visitors. Similarly, maintenance work that will affect the use of or limit access to park features, such as lawn renovation, should be announced prior to scheduled work whenever possible. Notification may be done through postings on bulletin boards, social media, or temporary signage throughout the park.

Standards of Care

The standards of care for maintenance of any public space directly affect the annual maintenance budget and also influence perceptions of safety and use. For example, a maintenance plan in which all tasks are carried out at or above recommended best maintenance practices may create a pristine landscape but may ultimately prove to be financially unsustainable. Alternatively, a maintenance plan in which tasks and repairs are carried out at minimal levels may reduce annual costs, but will likely result in high capital costs required for replacement or repairs that could have been prevented with regular care. Low standards of care can also create an unsafe environment for users.

The maintenance budget is also influenced by intensity of use – areas of higher use typically require greater maintenance. However, park use is also affected by the level of maintenance: a well-maintained park will attract visitors, whereas a poorly maintained site discourages visitors and often invites misuse and vandalism. Given this relationship between use and the standards of care, it is important to develop a maintenance plan that balances fiscal considerations with maintenance needs in order to provide a sustainable, high-quality visitor experience.

Special Event Maintenance Impacts

Special events are an important component of a park's activity schedule, as they have the potential to attract a great number of visitors and generate revenue. Precisely because these types of events draw substantial users, it is essential that they are carefully planned, scheduled and operated. Even with excellent planning, special events can cause significant damage to a park's landscape, and this damage must be addressed quickly in order to maintain park standards.

Special events that are not managed properly or are too large for the park to adequately accommodate them can contribute to turf deterioration and increased maintenance costs due to overuse and inadequate resting time between events. Oversized or poorly managed special events can also damage other landscape areas, e.g. if path systems are inadequate for the influx of event crowds, pedestrians may spill onto adjacent landscape areas, trampling plant material and compacting additional soil. Damage to the landscape also often occurs during the set-up, break-down, and clean-up of special events.

A secondary impact of special events is on site furnishings, restroom facilities, and hardscape areas. Site furnishings can be damaged through overuse. Restroom capacities and supplies can be overwhelmed by large influxes of event goers, and these facilities may need to be supplemented with portable options. Hardscape areas are commonly dirtied with litter, food residue and other waste, and additional trash/recycling collection may be necessary. Pedestrian areas must be inspected, cleaned and repaired promptly after special events in order to prevent undue deterioration to park amenities.

MAINTENANCE CONSIDERATIONS

Hardscapes

Overall, hardscape maintenance will be straightforward, requiring regular litter removal and cleaning. However, due to the specialized finishes of several of the hardscapes, repair may be more time consuming and/or costly compared to plain surfaces. For all repairs, care should be taken to match the surface's finish and color. As an example, the asphalt bike path will have an epoxy modified acrylic topping for the entire path. Keeping attic stock of the topping for future repairs is recommended to maintain consistency.

Additionally, some surfaces will need full replacement after several years (e.g. synthetic turf and engineered wood fiber), and should be planned for accordingly. Attic stock for hardscapes should be kept as appropriate (which will require storage space), and records of what color and finish of materials should be readily available for use in specifying materials for repairs and replacement.

Planting Maintenance

Key maintenance tasks for plantings will be weeding, managing the growth of plants, and keeping proper clearance around the Metrorail columns and powerlines. It should be noted that plants will not be "photo-ready" at the opening of The Underline – they will need a few years to mature and complete the "look" of the trail. During these establishment years, the plants will need extra care to ensure they are healthy, are not being overtaken by weeds or undesirable species, and survive what could be a somewhat harsh environment. JCFO is specifying hand watering for the first year to aid with plant establishment.

Palm trees should be properly maintained – only palm-specific fertilizers should be used and palms must not be over-pruned, i.e. only remove dead fronds and leave at least two rows of mature fronds on the tree. Over-pruning is highly detrimental: it can limit growth and increase the palm's susceptibility to disease.

If not already being done, the client and design team should consider mulched (or similar) pathways through planting beds where access is needed to columns, utilities, etc. so that plants are not damaged when access is needed.

Furnishings and Amenities

Many furnishings for The Underline are custom. Some custom items may require special tools, and it may take longer to get parts for repairs or to get replacement pieces, which the UMO should plan for accordingly. For example, regularly inspecting/monitoring items can help determine when upcoming repairs or replacements will be needed and give enough time for ordered parts to arrive. Additionally, some custom items may have specialized pieces that can be kept as attic stock (appropriate storage space would be needed for attic stock).

Kiosks will be located in a few areas within the Brickell Backyard. The kiosks will sell both merchandise and concessions, though it is assumed that any food being sold will be snacks and packaged goods that do not require power. Kiosks will have power hookups, but will not have water or waste hookups. The kiosks will need to be able to be moved and stored, and are anticipated to have wheels to allow for mobility along The Underline and transportation to a storage area. At this time, it has not been determined if the kiosks will be stored on or off-site. Maintenance estimates for both scenarios have been provided for comparison. Other maintenance needs for the kiosks include cleaning, set-up and break-down of wares, and repairs. It is to be determined if the vendor or the UMO will be responsible for these tasks.

Wayfinding on Metrorail columns will be applied by spray paint using re-usable stencils. Friends of The Underline has confirmed that they are applying a protective coating on the spray-painted signage. In case of graffiti, the protective coating would be removed along with the graffiti and would then be reapplied, instead of removing both the sign and the graffiti, and having to repaint the sign.

Monitoring

Monitoring of the trail and Brickell Backyard site, keeping maintenance records, and evaluating the records will be important for preventative maintenance (rather than reactive maintenance) for the site. The project will require more oversight in the first few years after construction, and during this time records should be evaluated on a trimester basis in order to identify any issues early on. Once the site is established, planting records should be evaluated semi-annually and records for the other areas and features of the site should be evaluated annually. Maintenance practices should be adjusted as needed based on the results of the evaluation.

Hurricane Impacts

Miami-Dade County – and thus The Underline – is at risk of being impacted by hurricanes during the six-month Atlantic hurricane season. This threat must be taken into consideration for maintenance estimates and plans for The Underline. For smaller storms, in-house and contracted staff may have to devote a little extra time to maintenance work, such as picking up more debris, pruning broken branches, etc. Larger storms may require hiring a special crew to assist with cleanup, especially if large trees come down or if there is extensive debris.

MAINTENANCE ESTIMATES

Assumptions

Maintenance hour and cost estimates have been developed for the Brickell Backyard and for a “typical trail mile” of The Underline using the following assumptions:

- A new 501(c)(3), the UMO, will be responsible for the maintenance of The Underline, with the following exceptions:
 - Street crossings will be maintained by the Department of Transportation and Public Works (DTPW), except for the non-standard green bicycle paths which will be the responsibility of the UMO
 - Metrorail columns will be maintained by the Miami-Dade Transit (MDT), but any signage painted on the column will be the UMO’s responsibility
 - Any art placed on the Metrorail columns will be a collaborative effort between the MDT and the UMO, but art will ultimately be the responsibility of the UMO, including art wraps, art removal, etc.
 - Maintenance hours and costs associated with these exceptions were not included in our estimates
- Maintenance work will be performed by a combination of in-house and contracted staff:
 - Basic maintenance, such as litter removal and cleaning, will be done by in-house staff
 - Horticulture maintenance will be contracted out
 - Repairs, replacements, and other trades work will be contracted out
 - Volunteer groups may assist with maintenance work; volunteers may need supervision and/or training for some tasks
- A “typical trail mile” consists of the bike path, the pedestrian path, planting areas, lighting, some amenities (e.g. benches, bike racks, water fountains), small gathering areas and programmed areas
 - Typical MDT right-of-way (ROW) averages 85 feet wide; typical trail is a 10-foot wide bike path and 8-foot wide pedestrian path, both bound by 2-foot shoulders on both sides
 - Average of 20,000 sf of gathering spaces
 - Average of 5,000 sf of high use programmed spaces
 - Average 375,000 sf of plantings, with 80% as standard plantings, 15% as visited plantings, and 5% as feature plantings
- The concession kiosks in the Brickell Backyard will be primarily operated and maintained by third-party vendors. The UMO will contribute some maintenance work for the exterior of the kiosk, and will also coordinate the daily storage and delivery of the kiosks.



Figure 2. Brickell Backyard Room Diagram

Methodology

In order to estimate the maintenance needs for The Underline, ETM first defined several “landscape categories” that would be found throughout the entirety of the trail. These include:

- The Bike Path
- The Pedestrian Path
- Gathering Spaces/Plaza Areas
- High Use Programmed Areas (such as playgrounds or dog parks)
- Standard Plantings (lower maintenance, found along pathways)
- Visited Gardens (located adjacent to programmed/active areas of The Underline, such as plazas)
- Feature Gardens (specialty plantings and display gardens)

Specific maintenance tasks were identified for each category and used to determine the annual hours required for maintenance for one unit of the category. Units are established based on what is most appropriate for the landscape category – for example, the units for paths are a half mile, while the units for plantings are 10,000 square feet. From there, ETM determined how much of each unit would be found in a typical trail mile (see “Assumptions”), and then multiplied the number of hours per unit by the number of units to arrive at the total number of hours it would take to maintain a typical trail mile.

A similar method was employed for estimating the maintenance needs for the Brickell Backyard. Each “room” within the Brickell Backyard contains specialized features and as such, was defined as its own landscape category. The rooms are shown in Figure 2. The hours for the features of each room were used in conjunction with the typical landscape categories found within the room (i.e. bike path and visited gardens) to estimate the annual hours for maintenance for each room. The totals for each room were then added together to get the total annual maintenance hours for the Brickell Backyard.

Annual maintenance was divided into “core” and “non-core” tasks and hours. Core tasks and hours are routine maintenance needs that must be done on a regular basis, such as cleaning, trash removal, and horticulture care. The total core hours represent the minimal maintenance that will be needed for the site. Non-core tasks and hours are those variable tasks that may not need to be done on an annual basis – they may be seasonal and weather dependent (e.g. hurricane clean-up), or a result of failure, vandalism, or wear-and-tear (e.g. repairs and replacements). The total non-core hours represent additional maintenance that, while not routinely scheduled and performed, must still be accounted for in developing an annual maintenance plan.

In addition, hours for maintenance of plantings were given for both the establishment period (typically the first 2 to 5 years) and post-establishment period. A summary of the annual maintenance hours can be found in Figures 3 to 5. The full task hours for each landscape category and room can be found in the Appendix.

Based on the task hours, ETM developed preliminary annual maintenance budgets for a typical trail mile and the Brickell Backyard. Annual hours were assigned to different categories of personnel based on the intended management strategy for The Underline at the time of this report (see “Assumptions”). Hourly rates were applied to each category based on the prevailing wage rates of Miami-Dade County. ETM also estimated additional expenses that would be needed for annual maintenance, such as material and supplies costs, fuel, equipment and vehicle rentals, plant replacement, and utilities. Like the task hours, both core and non-core maintenance costs were estimated. Core hours and expenses represent the total base cost that should be expected for maintenance each year. Non-core costs will vary from year to year, and when added to the base costs, represent the total potential cost for maintenance each year.

Figure 3. Typical Trail Mile Estimated Annual Maintenance Hours for Establishment Period

Landscape Category	Unit	Total Hours per Unit	Core Hrs per Unit	Non-core Hrs per Unit	# of Units	Total Hours	Core Hours	Non-core Hours
Bike Path	0.5 mile	85	53	32	2	170	106	64
Pedestrian Path	0.5 mile	104	80	24	2	208	160	48
Gathering Space/Plaza	10,000 sf	139	123	16	2	279	247	32
High Use Program Spaces	10,000 sf	277	224	53	0.5	139	112	27
Standard Plantings	10,000 sf	125	120	5	30.0	3,747	3,597	150
Visited Gardens	10,000 sf	161	156	5	5.6	906	878	28
Feature Gardens	10,000 sf	189	179	10	1.9	354	335	19
Total Establishment Annual Maintenance Hours						5,803	5,435	368

Figure 4. Typical Trail Mile Estimated Annual Maintenance Hours for Post-Establishment Period

Landscape Category	Unit	Total Hours per Unit	Core Hrs per Unit	Non-core Hrs per Unit	# of Units	Total Hours	Core Hours	Non-core Hours
Bike Path	0.5 mile	85	53	32	2	170	106	64
Pedestrian Path	0.5 mile	104	80	24	2	208	160	48
Gathering Space/Plaza	10,000 sf	139	123	16	2	279	247	32
High Use Program Spaces	10,000 sf	277	224	53	0.5	139	112	27
Standard Plantings	10,000 sf	69	65	4	30.0	2,086	1,966	120
Visited Gardens	10,000 sf	101	95	6	5.6	571	538	34
Feature Gardens	10,000 sf	140	125	15	1.9	263	235	28
Total Post-Establishment Annual Maintenance Hours						3,716	3,363	353

Figure 5. Brickell Backyard Estimated Annual Maintenance Hours

Room	Establishment Period			Post-Establishment Period		
	Core Hours	Non-core Hours	Total Hours	Core Hours	Non-core Hours	Total Hours
The River Trail	307	31	339	221	33	253
The Gym	405	98	503	376	99	475
The Promenade*	1,501	135	1,635	1,350	135	1,485
The Bike Lot	330	28	358	290	29	319
The Oolite Room	568	50	619	442	53	494
Meadow Arc	11	7	18	28	12	39
Broadway Park	1,115	110	1,226	920	114	1,034
Total Annual Maintenance Hours	4,237	460	4,697	3,627	474	4,100

*Hours assume kiosks are stored off-site and UMO is fully responsible for maintenance of the kiosks. Hours would be reduced by 273 hours (243 core, 30 noncore) if the kiosks are stored on-site, and by 142 hours (122 core, 20 noncore) if the vendors are responsible for cleaning, set-up, breakdown, and some repairs of the kiosks.

Note: Since definitive roles and responsibilities for the maintenance of The Underline have yet to be determined as of the time of this report, annual hours and annual costs should be taken as **order of magnitude estimates/preliminary estimates only**.

Figure 6. Typical Trail Mile Estimated Annual Budget for Establishment Period

Item	Hours	\$/Hr	Cost	Comments
Core Costs				
Core Personnel Costs			\$107,459	
In-house Staff	438	\$20	\$8,752	General cleaning and maintenance, plus volunteer supervision & training (approx. 75 hours annually)
Contracted Horticulture Staff	4,810	\$20	\$96,206	All horticulture care
Contracted Trades Staff	63	\$40	\$2,500	Skilled/specialized maintenance work and repairs
Volunteers	200	\$0	\$0	Levels may vary from year to year
Core Maintenance Expenses			\$52,500	
Materials & Supplies			\$7,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Equipment & Vehicle Maintenance & Replacement			\$3,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$3,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,500	Parts, repair and fuel (Allowance)
Plant Replacement*			\$5,000	Replacement for diseased or dead plants; includes seed
Utilities			\$25,000	Placeholder; estimated allowance
Insurance			\$8,000	Placeholder; estimated insurance for art installations
Non-Core Costs				
Non-Core Personnel Costs			\$27,693	
In-house Staff	153	\$20	\$3,069	General cleaning and maintenance
Contracted Horticulture Staff	197	\$20	\$3,942	All horticulture care
Contracted Trades Staff	17	\$40	\$682	Skilled/specialized maintenance work and repairs
Hurricane Clean-up			\$20,000	Assumes \$5,000 per event, 4x per year
Non-Core Maintenance Expenses			\$23,000	
Materials & Supplies			\$6,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Equipment & Vehicle Maintenance & Replacement			\$1,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$5,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,000	Parts, repair and fuel (Allowance)
Plant Replacement*			\$10,000	Replacement for diseased or dead plants; includes trees
Total Base Annual Maintenance Costs			\$159,959	Minimum maintenance costs in 2017 dollars (Core costs only)
Total Potential Annual Maintenance Costs			\$210,651	Total possible maintenance costs in 2017 dollars (Core + Non-Core Costs)

*Reduced during warranty period, then increase to cost shown here during the remainder of the establishment period

Note: The amount of planting in a typical trail mile is a significant driver in the cost of maintenance for the trail. The lack of irrigation in most planting areas means that more time and effort will be needed for these planting areas during the establishment period to ensure that they are adequately watered. JCFO is specifying hand watering for the first year to aid with plant establishment.

Figure 7. Typical Trail Mile Estimated Annual Budget for Post-Establishment

Item	Hours	\$/Hr	Cost	Comments
Core Costs				
Core Personnel Costs			\$66,014	
In-house Staff	438	\$20	\$8,752	General cleaning and maintenance, plus volunteer supervision & training (approx. 75 hours annually)
Contracted Horticulture Staff	2,738	\$20	\$54,762	All horticulture care
Contracted Trades Staff	63	\$40	\$2,500	Skilled/specialized maintenance work and repairs
Volunteers	200	\$0	\$0	Levels may vary from year to year
Core Maintenance Expenses			\$50,500	
Materials & Supplies			\$5,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Equipment & Vehicle Maintenance & Replacment			\$3,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$3,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,500	Parts, repair and fuel (Allowance)
Plant Replacement			\$5,000	Replacement for diseased or dead plants; includes seed
Utilities			\$25,000	Placeholder; estimated allowance
Insurance			\$8,000	Placeholder; estimated insurance for art installations
Non-Core Costs				
Non-Core Personnel Costs			\$27,392	
In-house Staff	153	\$20	\$3,069	General cleaning and maintenance
Contracted Horticulture Staff	182	\$20	\$3,641	All horticulture care
Contracted Trades Staff	17	\$40	\$682	Skilled/specialized maintenance work and repairs
Hurricane Clean-up			\$20,000	Assumes \$5,000 per event, 4x per year
Non-Core Maintenance Expenses			\$21,000	
Materials & Supplies			\$6,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Equipment & Vehicle Maintenance & Replacment			\$1,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$5,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,000	Parts, repair and fuel (Allowance)
Plant Replacement			\$8,000	Replacement for diseased or dead plants; includes trees
Total Base Annual Maintenance Costs			\$116,514	Minimum maintenance costs in 2017 dollars (Core costs only)
Total Potential Annual Maintenance Costs			\$164,907	Total possible maintenance costs in 2017 dollars (Core + Non-Core Costs)

Figure 8. Brickell Backyard Estimated Annual Budget for Establishment Period

Item	Hours	\$/Hr	Cost	Comments
Core Costs				
Core Personnel Costs			\$87,019	
In-house Staff	2,225	\$20	\$44,506	General cleaning and maintenance, plus volunteer supervision & training (approx. 150 hours annually)
Contracted Horticulture Staff	1,598	\$20	\$31,956	All horticulture care
Contracted Trades Staff	264	\$40	\$10,557	Skilled/specialized maintenance work and repairs
Volunteers	300	\$0	\$0	Levels may vary from year to year
Core Maintenance Expenses			\$52,500	
Materials & Supplies			\$5,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Structure Maintenance/Repair Materials			\$2,000	Roof, Wheels, Exterior, Etc. for kiosks (Allowance)
Equipment & Vehicle Maintenance & Replacment			\$3,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$3,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,500	Parts, repair and fuel (Allowance)
Plant Replacement*			\$3,000	Replacement for diseased or dead plants; includes seed
Utilities			\$20,000	Placeholder; estimated allowance
Insurance			\$15,000	Placeholder; estimated insurance for art installations & playground
Non-Core Costs				
Non-Core Personnel Costs			\$36,139	
In-house Staff	61	\$20	\$1,224	General cleaning and maintenance
Contracted Horticulture Staff	52	\$20	\$1,047	All horticulture care
Contracted Trades Staff	347	\$40	\$13,868	Skilled/specialized maintenance work and repairs
Hurricane Clean-up			\$20,000	Assumes \$5,000 per event, 4x per year
Non-Core Maintenance Expenses			\$22,000	
Materials & Supplies			\$6,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Structure Maintenance/Repair Materials			\$2,000	Roof, Wheels, Exterior, Etc. for kiosks (Allowance)
Equipment & Vehicle Maintenance & Replacment			\$1,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$5,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,000	Parts, repair and fuel (Allowance)
Plant Replacement*			\$7,000	Replacement for diseased or dead plants; includes trees
Total Base Annual Maintenance Costs			\$139,519	Minimum maintenance costs in 2017 dollars (Core costs only)
Total Potential Annual Maintenance Costs			\$197,658	Total possible maintenance costs in 2017 dollars (Core + Non-Core Costs)

*Reduced during warranty period, then increase to cost shown here during the remainder of the establishment period

Figure 9. Brickell Backyard Estimated Annual Budget for Post-Establishment

Item	Hours	\$/Hr	Cost	Comments
Core Costs				
Core Personnel Costs			\$74,844	
In-house Staff	2,240	\$20	\$44,803	General cleaning and maintenance, plus volunteer supervision & training (approx. 150 hours annually)
Contracted Horticulture Staff	971	\$20	\$19,418	All horticulture care
Contracted Trades Staff	266	\$40	\$10,623	Skilled/specialized maintenance work and repairs
Volunteers	300	\$0	\$0	Levels may vary from year to year
Core Maintenance Expenses			\$52,500	
Materials & Supplies			\$5,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Structure Maintenance/Repair Materials			\$2,000	Roof, Wheels, Exterior, Etc. for kiosks (Allowance)
Equipment & Vehicle Maintenance & Replacment			\$3,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$3,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,500	Parts, repair and fuel (Allowance)
Plant Replacement			\$3,000	Replacement for diseased or dead plants; includes seed
Utilities			\$20,000	Placeholder; estimated allowance
Insurance			\$15,000	Placeholder; estimated insurance for art installations & playground
Non-Core Costs				
Non-Core Personnel Costs			\$36,494	
In-house Staff	62	\$20	\$1,239	General cleaning and maintenance
Contracted Horticulture Staff	61	\$20	\$1,218	All horticulture care
Contracted Trades Staff	351	\$40	\$14,037	Skilled/specialized maintenance work and repairs
Hurricane Clean-up			\$20,000	Assumes \$5,000 per event, 4x per year
Non-Core Maintenance Expenses			\$22,000	
Materials & Supplies			\$6,000	Small tools, equipment (hoses, brooms, paint, etc.), parts, lighting, trash bags, sand, aggregate, mulch, fertilizer, etc. (Allowance)
Structure Maintenance/Repair Materials			\$2,000	Roof, Wheels, Exterior, Etc. for kiosks (Allowance)
Equipment & Vehicle Maintenance & Replacment			\$1,000	Utility vehicles, power washers, trimmers, backpack blowers, small equipment etc. (Allowance)
Equipment Rentals			\$5,000	Rental of trucks, hi-boy, scissor lift, etc. (Allowance)
Equipment & Vehicle Fuel & Repair			\$1,000	Parts, repair and fuel (Allowance)
Plant Replacement			\$7,000	Replacement for diseased or dead plants; includes trees
Total Base Annual Maintenance Costs			\$127,344	Minimum maintenance costs in 2017 dollars (Core costs only)
Total Potential Annual Maintenance Costs			\$185,838	Total possible maintenance costs in 2017 dollars (Core + Non-Core Costs)

APPENDIX

Task Hour Tables

Below is a summary of the methodology behind determining the necessary task hours to annually maintain of unit of each landscape category, as defined in the body of the memo. The standards of care in the task hour tables have been developed to reflect the climate and anticipated usage of the site. The frequencies represent an average to be performed over the course of the year. Actual maintenance will ultimately be based on usage, weather, season, and available resources.

The task hour charts on the following pages include the following terms and abbreviations:

- TASK – The specific maintenance task
- QTY – The estimated quantity over which a task is performed (Many of the tasks are estimated as a percentage of the total quantity.)
- UNIT – A unit is a commonly accepted unit of measurement for each landscape type and its associated tasks. The unit abbreviations used throughout this project include:
 - ACRE - 43,560 Square Feet
 - MSF - 1,000 Square Feet
 - CSF - 100 Square Feet
 - CLF - 100 Linear Feet
 - XSF - 10 Square Feet
 - XLF - 10 LF
 - Each or EA - 1 of a particular item
 - Allow – Allowance of time for a particular task
- UNIT (MIN) – Time standard necessary to complete 1 UNIT of a task in minutes (These time standards are based on the “Park Maintenance Standards” published by the National Recreation and Park Association (NRPA) and adjusted for the individual project’s location and management goals.)
- ONCE (MIN) – The quantity of the task multiplied by the time standard and shown in minutes
- ONCE (HOURS) – The time in minutes converted into hours
- ANNUAL FREQUENCY – Number of times the task is performed annually
- TOTAL HOURS – The annual frequency multiplied by the time in hours for performing the task once

$$QTY \times UNIT = ONCE (MIN) / ONCE (HOURS) \times ANNUAL FREQUENCY = TOTAL HOURS/UNIT/YEAR$$

As an example of how to read the task hours, the sample line item below is for mowing turf (open area). The task’s units are 1,000 sf (msf). The quantity for each time the task is performed is 28,000 square feet (28 x 1,000 sf), which is approximately 65% of an acre (see comments). It is estimated that doing this task once for 1,000 sf would be three minutes, so doing the task once for 28,000 sf would take 84 minutes (or approximately 1.4 hours). If the task would be done 28 times per year, it would require about 39 hours per year.

Figure A.2. Sample Task Hour Line Item

TASK	QTY	UNIT	UNIT (min)	ONCE (min)	ONCE (hours)	ANNUAL FREQ.	TOTAL HOURS	COMMENTS
Mow turf (open area)	28	msf	3	84	1.4	28	39	65% of an acre with ride-on mower; 1x/week during growing season

BIKE PATH

The bike path will run continuously along The Underline. The bike path will be a minimum of 10 feet wide, with a minimum 2 foot shoulder on both sides of the path, for a typical path width of 14'. The main path will be a warm mix asphalt with an epoxy modified acrylic topping along its entire width. The shoulders will be resin-bonded aggregate. A line down the middle of the path will separate the directions of bike traffic, and will be painted on the acrylic topping.

Unit = 0.5 mile
 36,000 sf or 0.82 acre (assumes 2,600 lf and 14' wide)

Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments
Core (Routine) Maintenance							53	Annual Hours/0.5 mile
Monitoring & record-keeping		allow					6	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis
Remove litter/debris	4	msf	4	14	0	52	12	10% of path, average of 1x/week
Clean paths with sweeper	18	msf	5	90	2	6	9	50% of area, done every two months with sweep attachment on tractor or small street sweeper
Pest control	4	msf	8	29	0	12	6	10% of surfaces
Bike rack cleaning & maintenance		allow					6	Done monthly
Lighting - inspection & cleaning		allow					4	Mainly pole lights
Signage - inspection & cleaning		allow					5	Includes both hanging and painted signage
Graffiti removal		allow					5	As needed
Non-Core (Non-Routine) Maintenance							32	Annual Hours/0.5 mile
Trail maintenance - main path		allow					8	Necessary repair work on asphalt path; epoxy modified acrylic topping should match rest of existing path
Trail maintenance - path lines		allow					6	Repainting middle line of bike path; will need to be done every 5 to 7 years; also includes repainting bike path markings at street crossings on an as needed basis
Trail maintenance - shoulders		allow					10	Necessary repair work on resin-bonded shoulders, including refilling and rebonding as needed; surface typically lasts 5 to 7 years
Repair lights		allow					4	Repair damaged lighting and/or replace LED boards
Signage - repair		allow					4	Repair of signage, including repainting signage on bike paths and Metrorail columns
Major hurricane/storm cleanup		allow						See annual budget
Bike Paths Total							85	Annual Hours/0.5 mile

PEDESTRIAN PATH

The pedestrian path will run continuously along The Underline. This path will be a minimum of 8 feet wide, with a minimum 2 foot shoulder on both sides of the path, for a typical path width of 12 feet. The path may be concrete or asphalt, depending on the location. The shoulders will be resin-bonded aggregate. The asphalt path will have an epoxy modified acrylic topping.

Unit = 0.5 mile
 31,000 sf or 0.72 acre (assumes 2,600 lf and 12' wide)

Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments
Core (Routine) Maintenance							80	Annual Hours/0.5 mile
Monitoring & record-keeping		allow					8	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis
Remove litter/debris	3	msf	3	9	0	52	8	10% of path, average of 1x/week
Clean paths with sweeper	16	msf	5	78	1	6	8	50% of area, done every two months with sweep attachment on tractor or small street sweeper
Pest control	3	msf	8	25	0	12	5	10% of unit
Empty trash/recycling cans	2	each	5	10	0	156	26	Assumes average of one T/R station per half mile; done an average of 3x/week
Clean & maintain furnishings		allow					6	Includes trash cans, benches, bike racks, etc.
Lighting - inspection & cleaning		allow					4	Pole lights and accent lighting
Signage - inspection & cleaning		allow					5	Includes both hanging and painted signage
Graffiti removal		allow					10	As needed
Non-Core (Non-Routine) Maintenance							24	Annual Hours/0.5 mile
Trail maintenance - main path		allow					8	Necessary repair work on path; proper measures should be taken to ensure repaired surface matches pattern of existing surface, e.g. using same color concrete/asphalt with same finish
Trail maintenance - shoulders		allow					8	Necessary repair work on resin-bonded shoulders, including refilling and rebonding as needed; surface typically lasts 5 to 7 years
Repair lights		allow					4	Repair damaged lighting and/or replace LED boards
Signage - repair		allow					4	Repair of signage, including repainting signage on pedestrian paths and Metrorail columns
Major hurricane/storm cleanup		allow						See annual budget
Pedestrian Paths Total							104	Annual Hours/0.5 mile

GATHERING SPACES / PLAZAS									
Gathering spaces and plazas will be located along The Underline, mostly around the Metrorail stations. The surface is assumed to be concrete, based on gathering areas in the Brickell Backyard. They will include various furnishings and amenities, such as movable tables and chairs, bike racks, trash and recycling cans, benches, and water fountains.									
Unit = 10,000 sf									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							123	Annual Hours/10,000 sf	
Monitoring & record-keeping		allow					6	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	2	msf	4	6	0	52	5	15% of unit, weekly	
Clean surface	2	msf	10	15	0	52	13	15% of unit, weekly; with hand sweeper, broom, or backpack blower	
Powerwash	2	msf	15	30	1	26	13	20% of unit, done every two months to remove stains	
Pest control	1	msf	8	8	0	12	2	10% of unit	
Empty trash/recycling cans	2	each	5	10	0	364	61	Assumes average of one T/R station per 10,000 sf; done an average of 7x/week	
Drinking fountain cleaning & maintenance	1	each	15	15	0	12	3	Assumes 1 per 10,000 sf; includes regular cleaning and inspection, with repairs as needed	
Clean & maintain furnishings		allow					8	Includes trash cans, benches, movable tables and chairs, bike racks, bollards, etc.	
Lighting - inspection & cleaning		allow					4	Pole lights, furniture lighting, and accent lighting	
Signage - inspection & cleaning		allow					4	Includes both hanging and painted signage	
Graffiti removal		allow					5	As needed	
Non-Core (Non-Routine) Maintenance							16	Annual Hours/10,000 sf	
Hardscape maintenance		allow					8	Necessary repair work for hardscape; proper measures should be taken to ensure repaired surface matches pattern of existing surface, e.g. using same color material with same finish	
Repair lights		allow					4	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					4	Repair of signage, including repainting signage on pedestrian paths and Metrorail columns	
Major hurricane/storm cleanup		allow						See annual budget	
Gathering Spaces / Plazas Total							139	Annual Hours/10,000 sf	

HIGH USE PROGRAMMED SPACES									
High use programmed spaces, such as playgrounds and dog parks, will be peppered throughout the 10 miles of The Underline. Because of the high intensity of use and potential for specialized features, these areas will require high levels of maintenance. Specific maintenance tasks will vary widely depending on what the space ultimately is; however, all spaces will need to be kept safe, clean, and functional. Estimates presented here are an average of expected maintenance needs for different types of high use programmed spaces.									
Unit = 10,000 sf									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							224	Annual Hours/10,000 sf	
Monitoring & record-keeping		allow					10	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	2	msf	4	6	0	52	5	15% of unit, weekly	
Clean surface	1	msf	10	10	0	52	9	10% of unit, weekly, as appropriate for the surface material	
Powerwash	1	msf	15	15	0	26	7	10% of unit where applicable	
Pest control	1	msf	8	8	0	12	2	10% of unit	
Empty trash/recycling cans	4	each	5	20	0	364	121	Assumes average of two T/R stations per 10,000 sf; done an average of 7x/week	
Clean & maintain standard furnishings		allow					8	Includes trash cans, benches, tables, chairs, bike racks, bollards, etc.	
Clean & maintain specialized furnishings & amenities		allow					50	Clean as appropriate for the item, check for safety hazards, damage, etc.	
Lighting - inspection & cleaning		allow					4	Pole lights, furniture lighting, and accent lighting	
Signage - inspection & cleaning		allow					4	Includes both hanging and painted signage	
Graffiti removal		allow					5	As needed	
Non-Core (Non-Routine) Maintenance							53	Annual Hours/10,000 sf	
Miscellaneous surface maintenance		allow					20	Necessary replacement and/or repair work for surfaces; proper measures should be taken to ensure repaired surface matches existing surface; some surfaces (e.g. EWF mulch and synthetic turf) may require full replacement every several years depending on level of use	
Miscellaneous feature maintenance		allow					25	Repair as needed, may include replacing individual components or entire feature	
Repair lights		allow					4	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					4	Repair of signage, including repainting signage on pedestrian paths and Metrorail columns	
Major hurricane/storm cleanup		allow						See annual budget	
High Use Programmed Areas Total							277	Annual Hours/10,000 sf	

STANDARD PLANTINGS

The "standard" garden describes the typical planting areas along The Underline. They are expected to receive minimal impact from Underline users and will require low maintenance once established. Plants include palm trees, deciduous trees, shrubs, grasses, perennials, and vines. Species should be drought-tolerant once established. The standard planting areas will not have irrigation.

Unit = 10,000 sf

Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Estab. Freq (Annual)	Estab. Total Hours	Post-Estab. Freq (Annual)	Post-Estab. Total Hours	Comments
Core (Routine) Maintenance							120		65	Annual Hours/10,000 sf
Monitoring & record-keeping		allow					8		8	Inspect for damage & concerns during regular maintenance; record maintenance work, repairs, replacements; evaluate records on a semiannual basis
Remove litter/debris	2	msf	4	6	0	52	5	52	5	15% of planting areas, 1x/week
Weeding (by hand)	2	msf	30	60	1	24	24	8	8	20% of planting areas
Pest control	2	msf	20	40	1	5	3	3	2	20% of planting areas
Seasonal cleanup & prep	3	msf	75	225	4	2	8	2	8	30% of area; spring and fall
Planting maintenance (non-trees)	3	msf	45	135	2	8	18	4	9	30% of planting areas; includes deadheading, trimming, minor cutbacks, pruning, fertilizing, etc.
Palm tree maintenance	3	each	45	135	2	3	7	1	2	Assumes maint. for 3 palms; includes pruning dead fronds and flowers, cleaning up fallen dead fronds, and fertilizing (use only palm-specific fertilizers)
Tree maintenance - small caliper	4	each	60	240	4	3	12	1	4	Assumes maintenance for 4 trees; includes inspection, monitoring & control for pests, disease, damage, etc., pruning, and fertilizing
Tree maintenance - larger caliper/established trees	2	each	120	240	4	1	4	1	4	Assumes maintenance for 2 trees; includes inspection, monitoring & control for pests, disease, damage, etc., pruning, and fertilizing
Spot watering	2	msf	30	60	1	24	24	12	12	20% of planting areas, as needed
Plant replacement	1	msf	90	90	2	4	6	2	3	10% of planting areas
Temporary fencing	1	mlf	15	15	0	4	1	2	1	Install/maintain temporary fencing; assumes 1,000 lf
Non-Core (Non-Routine) Maintenance							5		4	Annual Hours/10,000 sf
Tree replacement		allow					5		4	As needed
Major storm/hurricane cleanup		allow								See annual budget
Standard Plantings Total							125		69	Annual Hours/10,000 sf

VISITED GARDENS

Visted gardens are slightly more heavily-planted areas located adjacent to programmed/active areas of The Underline. Due to the higher levels of use around them, these plantings will require higher levels of maintenance. The type of plants are similar to the standard planting areas, but the species mix and composition may be different. These planting areas will not have irrigation.

Unit = 10,000 sf

Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Estab. Freq (Annual)	Estab. Total Hours	Post-Estab. Freq (Annual)	Post-Estab. Total Hours	Comments
Core (Routine) Maintenance							156		95	Annual Hours/10,000 sf
Monitoring & record-keeping		allow					10		10	Inspect for damage & concerns during regular maintenance; record maintenance work, repairs, replacements; evaluate records on a semiannual basis
Remove litter/debris	2	msf	4	6	0	104	10	104	10	15% of planting areas, 2x/week
Weeding (by hand)	2	msf	30	60	1	24	24	12	12	20% of planting areas
Pest control	3	msf	20	50	1	6	5	4	3	25% of planting areas
Seasonal cleanup & prep	4	msf	60	240	4	2	8	2	8	40% of area; spring and fall
Planting maintenance (non-trees)	3	msf	60	180	3	12	36	6	18	30% of planting areas; includes deadheading, trimming, minor cutbacks, pruning, fertilizing, mulching, etc. Assumes maintenance for 3 palms; includes pruning dead fronds and flowers, cleaning up fallen dead fronds, and fertilizing (use only palm-specific fertilizers)
Palm tree maintenance	3	each	45	135	2	4	9	2	5	
Tree maintenance - small caliper	4	each	60	240	4	4	16	1	4	Assumes maintenance for 4 trees; includes inspection, monitoring & control for pests, disease, damage, etc., pruning, and fertilizing
Tree maintenance - larger caliper/established trees	2	each	120	240	4	1	4	2	8	Assumes maintenance for 2 trees; includes inspection, monitoring & control for pests, disease, damage, etc., pruning, and fertilizing
Spot watering	2	msf	30	60	1	24	24	12	12	20% of planting areas, as needed
Plant replacement	1	msf	90	90	2	5	8	3	5	10% of planting areas
Temporary fencing	1	mlf	15	15	0	8	2	3	1	Install/maintain temporary fencing; assumes 1,000 lf
Non-Core (Non-Routine) Maintenance							5		6	Annual Hours/10,000 sf
Tree replacement		allow					5		6	As needed
Major storm/hurricane cleanup		allow								See annual budget
Visited Gardens Total							161		101	Annual Hours/10,000 sf

FEATURE GARDENS

Feature gardens boast speciality plantings that require unique care compared to other plantings along The Underline. These gardens may also be used for educational purposes. These planting areas will require high levels of specialized maintenance, are assumed to be irrigated, and are found as small gardens throughout The Underline.

Unit = 10,000 sf

Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Estab. Freq (Annual)	Estab. Total Hours	Post-Estab. Freq (Annual)	Post-Estab. Total Hours	Comments
Core (Routine) Maintenance							179		125	Annual Hours/10,000 sf
Monitoring & record-keeping		allow					10		10	Inspect for damage & concerns during regular maintenance; record maintenance work, repairs, replacements; evaluate records on a semiannual basis
Remove litter/debris	1	msf	4	4	0	208	14	208	14	10% of planting areas, 4x/week
Weeding (by hand)	2	msf	30	60	1	30	30	20	20	20% of planting areas
Pest control	3	msf	20	50	1	10	8	6	5	25% of planting areas
Seasonal cleanup & prep	4	msf	60	240	4	2	8	2	8	40% of area; spring and fall
Planting maintenance (non-trees)	3	msf	75	225	4	14	53	8	30	30% of planting areas; includes deadheading, trimming, minor cutbacks, pruning, fertilizing, mulching, etc. Assumes maintenance for 3 palms; includes pruning dead fronds and flowers, cleaning up fallen dead fronds, and fertilizing (use only palm-specific fertilizers)
Palm tree maintenance	3	each	50	150	3	4	10	2	5	
Tree maintenance - small caliper	4	each	60	240	4	4	16	1	4	Assumes maintenance for 4 trees; includes inspection, monitoring & control for pests, disease, damage, etc., pruning, and fertilizing
Tree maintenance - larger caliper/established trees	2	each	100	200	3	1	3	3	10	Assumes maintenance for 2 trees; includes inspection, monitoring & control for pests, disease, damage, etc., pruning, and fertilizing
Spot watering	1	msf	30	30	1	16	8	10	5	As needed to supplement irrigation
Plant replacement	1	msf	90	90	2	4	6	2	3	10% of planting areas
Temporary fencing	1	mlf	15	15	0	10	3	5	1	Install/maintain temporary fencing; assumes 1,000 lf
Irrigation inspection and maintenance		allow					10		10	Check for damage and functionality; clean system components
Non-Core (Non-Routine) Maintenance							10		15	Annual Hours/10,000 sf
Tree replacement		allow					5		10	As needed
Irrigation repair		allow					5		5	Repair system components and repair/replace quick couplers as needed
Major storm/hurricane cleanup		allow								See annual budget
Feature Gardens Total							189		140	Annual Hours/10,000 sf

THE RIVER TRAIL									
The River Trail is the first "room" of the Brickell Backyard, located between the Miami River and SW 7th Street. It features a central path, gently sloping terrain, a stepping stone trail, and U-swings on bonded aggregate over asphalt areas along the path.									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							76	Annual Hours	
Monitoring & record-keeping		allow					6	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	2	msf	4	6	0	52	6	15% of paved areas, weekly	
Clean surfaces	2	msf	10	21	0	52	19	20% of area, 1x per week; with hand sweeper or broom, backpack blower only if needed for bonded aggregate; powerwash concrete surfaces as needed to remove stains	
Pest control	1	msf	8	9	0	12	2	10% of surface	
Empty trash/recycling cans	0	each	5	0	0	260	0	Done an average of 5x/week	
Clean & maintain furnishings	2	each	15	36	1	24	14	20% of items cleaned every two weeks; includes benches, bike racks, U-swings, etc.; maintenance (tightening connections, touch-up paint, etc.) as needed	
Stepping stones inspection & cleaning		allow					6	Inspect to ensure stepping stones are safe for use, clean and repair as needed	
Bollards inspection & cleaning	6	each	10	60	1	2	2	Inspection, cleaning and oiling; 2x annually	
Clean & maintain fence	4	clf	4	14	0	12	3	Inspect for damage, clear debris, etc.; minor repairs and touch-up as needed	
Lighting - inspection & cleaning		allow					4		
Signage - inspection & cleaning		allow					4	Includes both hanging and painted signage	
Minor repairs		allow					6	Damage as a result of infrastructure maintenance that is not covered by Public Works	
Graffiti removal		allow					5	As needed	
Non-Core (Non-Routine) Maintenance							20	Annual Hours	
Hardscape maintenance		allow					5	Necessary repair work for hardscape; proper measures should be taken to ensure repaired surface matches pattern of existing surface, e.g. using same color concrete/asphalt with same finish	
Bonded aggregate surface renovation and repairs	0.1	msf	240	35	1	1	1	5% of surface; may include filling, leveling, and restabilizing; may require bringing in new material	
Furnishing repair & replacement		allow					6	As needed due to vandalism, use, etc.; includes fencing, furnishings and stepping stones	
Repair lights		allow					4	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					4	Repair and/or repainting of signage	
River Trail Total							96	Annual Hours	

THE GYM									
The Gym is located between SW 7th and SW 8th Streets. It features a running track, basketball court, climbing area, and stretching area with balance blocks, as well as planting areas and The Underline bike path. An area for a concession kiosk is located on the south end of the parcel.									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							325	Annual Hours	
Monitoring & record-keeping		allow					10	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	3	msf	4	13	0	52	11	15% of paved areas, weekly	
Clean paved areas	4	msf	10	44	1	52	38	20% of paved surfaces, weekly; with backpack blower	
Powerwash	7	msf	15	98	2	12	20	30% of paved surface, done monthly to remove stains	
Pest control	2	msf	8	17	0	12	3	10% of surface	
Empty trash/recycling cans	2	each	5	10	0	364	61	Done an average of 7x/week	
Drinking fountain spot cleaning	1	each	10	10	0	208	35	Clean the spout, remove any debris from drain, and check for proper operation (e.g. proper flow, no clogs)	
Drinking fountain inspection & maintenance	1	each	30	30	1	12	6	Regular inspection and routine maintenance, e.g. checking lines, flushing, etc., with repairs as needed	
Clean & maintain furnishings	4	each	15	60	1	52	52	20% of items cleaned weekly; includes trash cans, benches, bike racks, etc.; maintenance (tightening connections, touch-up paint, etc.) as needed	
Clean & maintain fence and gate	4	clf	5	21	0	26	9	Inspect for damage, clear debris, etc.; minor repairs and touch-up as needed	
Inspect, clean & maintain equipment		allow					25	Basketball hoops, climbing bars, balance steps, etc.	
Lighting - inspection & cleaning		allow					15	Pole lights and column lights	
Signage - inspection & cleaning		allow					15	Includes both hanging and painted signage	
Minor repairs		allow					6	Damage as a result of infrastructure maintenance that is not covered by Public Works	
Graffiti removal		allow					20	As needed	
Non-Core (Non-Routine) Maintenance							92	Annual Hours	
Hardscape maintenance		allow					15	Necessary repair work for hardscape; proper measures should be taken to ensure repaired surface matches pattern of existing surface, e.g. using same color concrete/asphalt with same finish	
Reline courts & recolor play areas		allow					35	Repainting line and text details on paving by reapplying color; will need to be done every 5 to 7 years	
Amenity repair & replacement		allow					30	As needed due to vandalism, use, etc.; includes fencing, furnishings and equipment	
Repair lights		allow					6	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					6	Repair and/or repainting of signage	
The Gym Total							417	Annual Hours	

THE PROMENADE									
The Promenade is set between SW 8th and SW 10th Streets. It features several gathering and entertainment spaces: a stage plaza, porch swing, a dining area, a game room, and the grove plaza. The primary hardscape is concrete.									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							1,114	Annual Hours	
Monitoring & record-keeping		allow					18	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	5	msf	4	20	0	52	17	15% of paved areas, weekly	
Clean paved areas	7	msf	10	67	1	52	58	20% of paved surfaces, weekly; with backpack blower	
Powerwash	13	msf	15	200	3	26	87	40% of paved surface, done every two weeks to remove stains	
Pest control	3	msf	8	27	0	12	5	10% of paved areas	
Empty trash/recycling cans	6	each	5	30	1	364	182	Done an average of 7x/week	
Clean & maintain furnishings	26	each	6	156	3	26	68	20% of items cleaned every two weeks; includes trash cans, tables and chairs, porch swing, seatwall benches, lighting, bike racks, etc.; maintenance (tightening connections, touch up paint, etc.) as needed	
Relocate furnishing	18	each	0.5	9	0	365	54	Relocate movable furnishing items to intended locations; assumes 20% daily	
Bollards inspection & cleaning	32	each	10	320	5	2	11	Inspection, cleaning and oiling; 2x annually	
Seatwall inspection & cleaning	2	clf	15	34	1	12	7	20% of linear footage; inspect for damage and clean monthly	
Stage inspection & cleaning		allow					25	Placeholder; the need for cleaning and maintenance will be dependent on the event schedule	
Lighting - inspection & cleaning		allow					8	Pole lights and column lights	
Signage - inspection & cleaning		allow					8	Includes both hanging and painted signage	
Concession kiosk cleaning	2	each	120	240	4	12	48	Exterior cleaning as needed	
Concession kiosk set up and break down, cleaning	2	each	10	20	0	365	122	Done daily after arrival from storage and before transportation to storage	
Concession kiosk storage and installation	2	each	30	60	1	365	365	Daily storage of kiosks at location 10 minutes away from the site; includes breakdown, transportation to and from storage, and re-installation of kiosk; assumes that kiosks can be towed	
Minor repairs		allow					12	Damage as a result of infrastructure maintenance that is not covered by Public Works	
Graffiti removal		allow					20	As needed	
Non-Core (Non-Routine) Maintenance							111	Annual Hours	
Hardscape maintenance		allow					20	Necessary repair work for hardscape; proper measures should be taken to ensure repaired surface matches pattern of existing surface, e.g. using same color concrete/asphalt with same finish	
Reline hopscotch markings		allow					5	Repainting line and text on paving by reapplying color; will need to be done every 2 to 4 years	
Furnishings repair & replacement		allow					24	As needed due to vandalism, use, etc.	
Repair lights		allow					6	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					6	Repair and/or repainting of signage	
Concession kiosk repair		allow					50	Includes material replacement, roof repair, etc.; assumes some damage from transport to and from storage	
The Promenade Total							1,225	Annual Hours	

Kiosk Alternate Hours (stored on site)									
Core (Routine) Maintenance							291	Annual Hours	
Concession kiosk cleaning	2	each	120	240	4	12	48	Exterior cleaning as needed	
Concession kiosk set up and break down	2	each	10	20	0	365	122	Done daily after arrival from storage and before transportation to storage	
Concession kiosk storage and installation	2	each	10	20	0	365	122	Daily storage of kiosks on the site; includes breakdown, transportation to and from storage, and re-installation of kiosk; assumes kiosks have wheels	
Non-Core (Non-Routine) Maintenance							20	Annual Hours	
Concession kiosk repair		allow					20	Assumes some damage from transport to and from storage	
Kiosk Alternate Total							311	Annual Hours	

Kiosk Alternate Hours (Vendor/UMO Split Responsibility)									
Concession kiosk set up and break down, cleaning	0	each	10	0	0	365	0	Assumes third-party vendor responsibility	
Concession kiosk repair		allow					15-30	Assumes third-party vendor is responsible for the upkeep of the interior of the kiosk, UMO responsible for exterior; includes material replacement, roof repair, etc.; 15 assumes on site storage, 30 assumes off-site storage	

THE BIKE LOT									
The Bike Lot is located between SW 10th and SW 11th Streets. It features many bike-focused amenities, including bike parking, a custom Underline bike rack, and a bike share area.									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							219	Annual Hours	
Monitoring & record-keeping		allow					10	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	1	msf	4	3	0	52	3	15% of paved areas, weekly	
Clean paved areas	1	msf	10	10	0	52	9	20% of paved surfaces, weekly; with backpack blower	
Powerwash	2	msf	15	23	0	18	7	30% of paved surface, done twice a month for half of the year and monthly the other half, to remove stains	
Pest control	1	msf	8	4	0	12	1	10% of unit	
Empty trash/recycling cans	4	each	5	20	0	364	121	Done an average of 7x/week	
Clean & maintain bike parking	3	each	20	60	1	26	26	Inspect weekly and clean as needed; maintenance (tightening connections, touch-up paint, etc.) as needed	
Clean & maintain custom Underline bike rack	1	each	60	60	1	26	26	Inspect weekly and clean as needed; maintenance (tightening connections, touch-up paint, etc.) as needed	
Wall inspection & cleaning	0.3	clf	8	2	0	26	1	20% of linear footage; inspect for damage and clean every two weeks	
Lighting - inspection & cleaning		allow					4	Pole lights and accent lights	
Signage - inspection & cleaning		allow					4	Includes both hanging and painted signage	
Minor repairs		allow					3	Damage as a result of infrastructure maintenance that is not covered by Public Works	
Graffiti removal		allow					5	As needed	
Non-Core (Non-Routine) Maintenance							22	Annual Hours	
Hardscape maintenance		allow					3	Necessary repair work for hardscape; proper measures should be taken to ensure repaired surface matches pattern of existing surface, e.g. using same color concrete/asphalt with same finish	
Bike parking repair & replacement		allow					5	As needed due to vandalism, use, etc.	
Custom bike rack repair & replacement		allow					8	As needed due to vandalism, use, etc.; assumes higher hours due to specialized components	
Repair lights		allow					3	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					3	Repair and/or repainting of signage	
The Bike Lot Total							241	Annual Hours	

OOLITE ROOM									
The Oolite Room takes its name from the boulders and oolite outcroppings in this section of The Underline. It is located between SW 11th and SW 13th Streets. Pedestrian and bike paths are asphalt with epoxy coating separated by a 2-foot wide oolite stone paving strip. The boulder garden rooms are stabilized screenings.									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							208	Annual Hours	
Monitoring & record-keeping		allow					14	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	2	msf	4	10	0	52	8	15% of area, weekly	
Clean surface	3	msf	10	32	1	100	53	20% of area, 2x per week; with hand sweeper or broom, backpack blower only if needed for stabilized screenings; powerwash asphalt surfaces as needed to remove stains	
Pest control	2	msf	8	13	0	12	3	10% of surface	
Empty trash/recycling cans	2	each	5	10	0	364	61	Done an average of 7x/week	
Clean & maintain trash/recycling cans	2	each	10	20	0	12	4	Inspect clean monthly; maintenance (tightening connections, touch-up paint, etc.) as needed	
Boulder & oolite outcrops inspection & cleaning		allow					25	Monthly inspections to check for damage and safety concerns; clean as needed	
Lighting - inspection & cleaning		allow					10	Solar paver lights and pole lights	
Signage - inspection & cleaning		allow					10	Includes both hanging and painted signage	
Minor repairs		allow					6	Damage as a result of infrastructure maintenance that is not covered by Public Works	
Graffiti removal		allow					15	As needed	
Non-Core (Non-Routine) Maintenance							26	Annual Hours	
Stabilized screening surface renovation and repairs	0.2	msf	240	43	1	1	1	5% of surface; may include filling, leveling, and restabilizing; may require bringing in new material	
Boulder & oolite outcrops maintenance		allow					15	Leveling, vandalism repair, safety repairs, etc.	
Repair lights		allow					5	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					5	Repair and/or repainting of signage	
Oolite Rooms Total							234	Annual Hours	

BROADWAY PARK									
Broadway Park will be between SW 15th and SW 17th Streets. Its main features are a playground and a dog park. Based on the SD drawings, the playground will feature natural play features and a synthetic turf surface. The dog park will include a synthetic turf and engineered wood mulch surface.									
Task	QTY	Unit	Unit (mins)	Once (mins)	Once (hours)	Annual Freq.	Total Hours	Comments	
Core (Routine) Maintenance							605	Annual Hours	
Monitoring & record-keeping		allow					30	Inspect for damage & wear-and-tear, monitor levels of use during regular maintenance; record maintenance work, repairs, replacements; evaluate records on an annual basis	
Remove litter/debris	3	msf	4	13	0	52	11	15% of surfaces, weekly	
Clean paved areas	3	msf	10	28	0	52	24	20% of paved surfaces, weekly; with backpack blower	
Powerwash	7	msf	15	104	2	12	21	50% of paved surface, done monthly to remove stains	
Pest control	2	msf	8	17	0	12	3	10% of all surfaces	
Empty trash/recycling cans	6	each	5	30	1	364	182	Done an average of 4x/week; pet station trash receptacle also included	
Drinking fountain spot cleaning	2	each	10	20	0	208	69	Clean the spout, remove any debris from drain, and check for proper operation (e.g. proper flow, no clogs)	
Drinking fountain inspection & maintenance	2	each	30	60	1	12	12	Regular inspection and routine maintenance, e.g. checking lines, flushing, etc., with repairs as needed	
Clean & maintain furnishings	4	each	15	66	1	26	29	20% of items cleaned every two weeks; includes trash cans, benches, picnic tables, etc.; maintenance (tightening connections, touch-up paint, etc.) as needed	
Wall inspection & cleaning	0.2	clf	8	2	0	26	1	20% of linear footage; inspect for damage and clean every two weeks	
Dog park surface maintenance							35	Surface will be synthetic turf and engineered wood fiber; regular maintenance will include brushing, refilling, misting, and decompacting for synthetic turf, while engineered wood fiber will need refilling, regrading, sanitizing, and raking (dogs may paw at the surface)	
Pet station refilling and maintenance	2	each	5	10	0	156	26	Restock bag dispenser an average of 3x per week, maintenance as needed	
Dog park furnishings inspection & cleaning		allow					30	Weekly inspection, check for safety hazards, damage, etc.; clean as needed	
Clean & maintain fence and gate	9	clf	5	44	1	26	19	Inspect for damage, clear debris, etc.; minor repairs and touch-up as needed	
Playground surface cleaning & maintenance		allow					20	Synthetic turf surface will require brushing, refilling, misting, testing for proper compaction, and decompacting	
Play features inspection & cleaning		allow					50	Weekly inspection, check for safety hazards, damage, etc.; clean as needed to ensure safe playing environment; includes time for inspection by a certified playground inspector twice annually	
Lighting - inspection & cleaning		allow					6	Pole lights	
Signage - inspection & cleaning		allow					6	Includes both hanging and painted signage	
Minor repairs		allow					10	Damage as a result of infrastructure maintenance that is not covered by Public Works	
Graffiti removal		allow					20	As needed	
Non-Core (Non-Routine) Maintenance							90	Annual Hours	
Hardscape maintenance		allow					8	Necessary repair work for hardscape; proper measures should be taken to ensure repaired surface matches pattern of existing surface, e.g. using same color concrete/asphalt with same finish	
Synthetic turf repair & replacement		allow					20	Refill/repair and deep clean as needed; full replacement needed every 7 to 10 years depending on level of use	
EWf mulch repair & replacement		allow					10	Refill as needed; full replacement needed every 2 to 5 years depending on level of use	
Repair dog park features		allow					15	Repair as needed, may include replacing individual components or entire feature	
Repair play features		allow					25	Repair as needed, may include replacing individual components or entire play feature	
Repair lights		allow					6	Repair damaged lighting and/or replace LED boards	
Signage - repair		allow					6	Repair and/or repainting of signage	
Broadway Park Total							695	Annual Hours	