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# USING *ENVISION* AS A TOOL TO ASSESS AND IMPROVE THE SUSTAINABILITY OF INFRASTRUCTURE PROJECTS

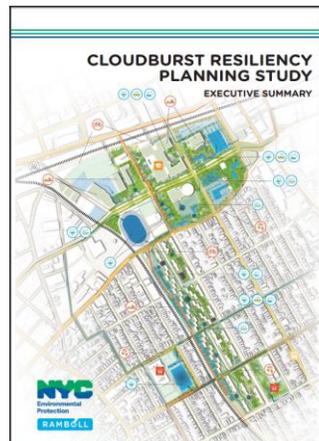
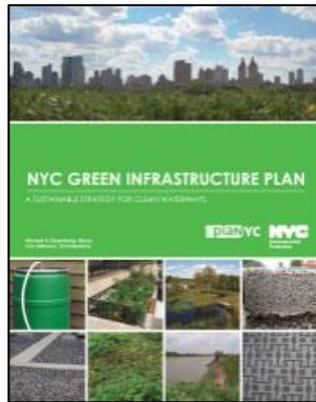
Sofia Zuberbuhler-Yafar **RLA, ENV SP**  
Program Director

Ankita Nalavade **LEED GA, ENV SP**  
Sustainability Coordinator

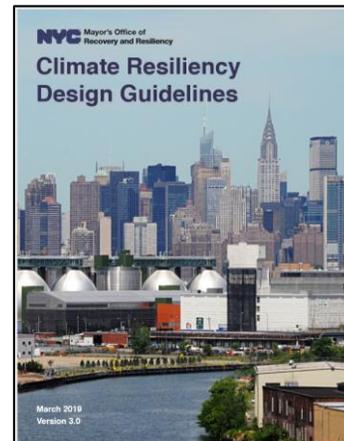
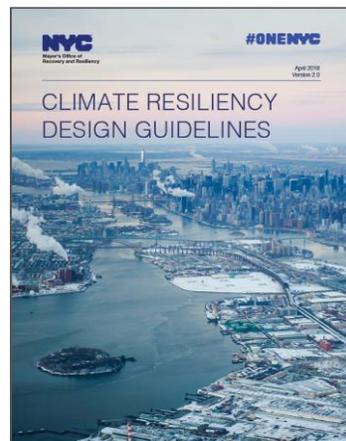
Kenneth Almario **ASSOC. AIA, ENV SP**  
Sustainability Coordinator

# Incorporating other agency sustainability efforts :

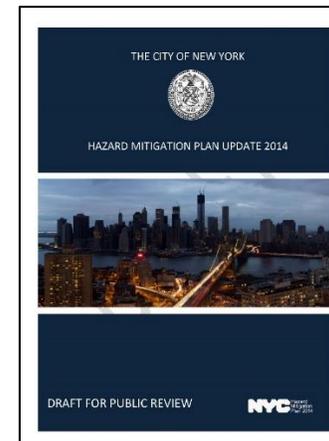
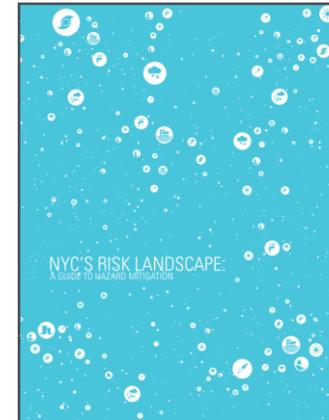
Collaborating with  
NYC Department of  
Environmental Protection



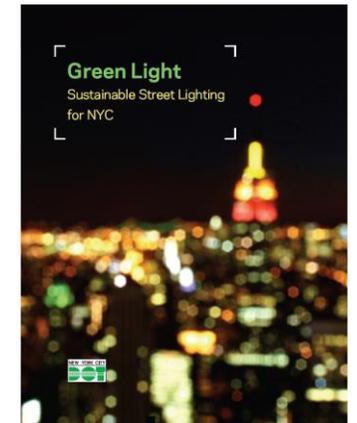
Collaborating with  
NYC Mayor's Office of Recovery  
and Resiliency



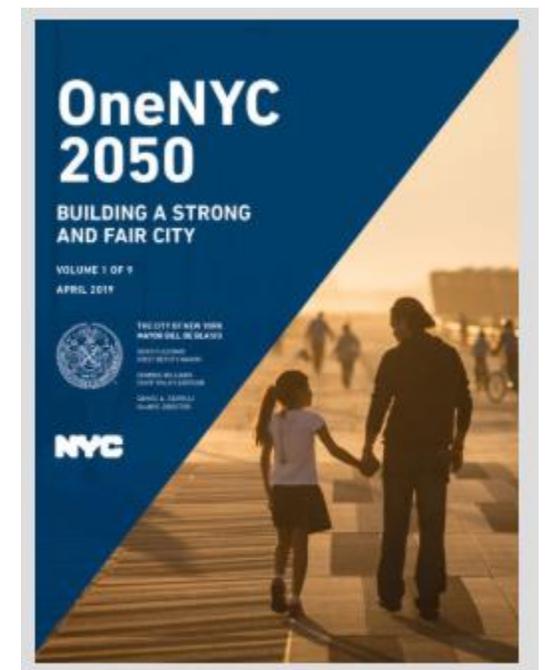
Collaborating with  
NYC Office of  
Emergency Management



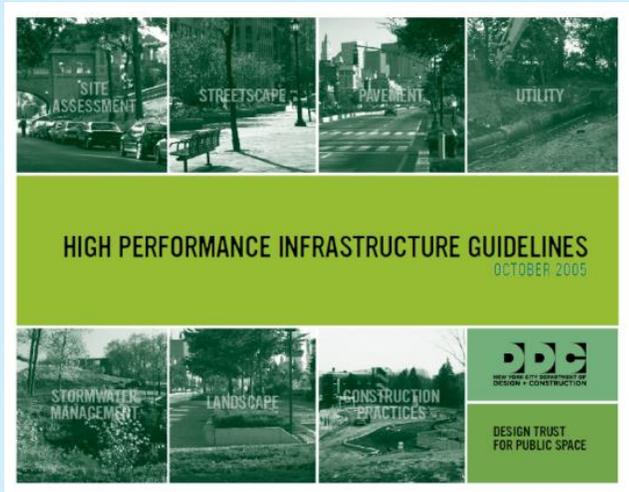
Collaborating with  
NYC Department of  
Transportation



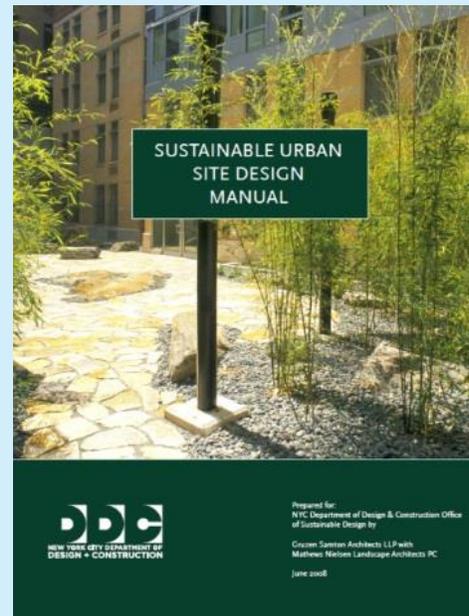
# We make sure that the city's goals are implemented



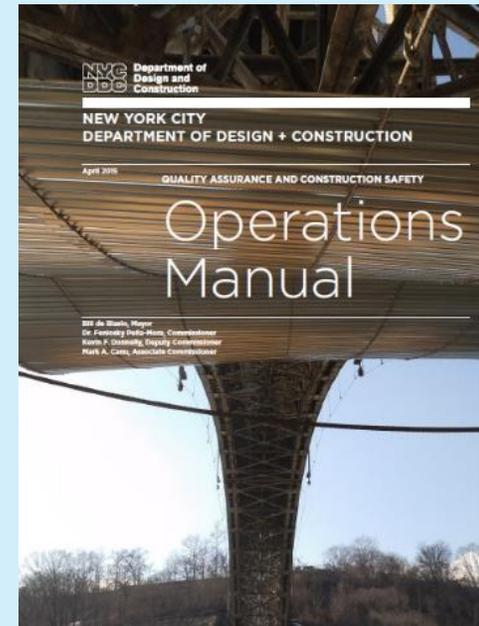
# NYC DDC's Efforts On Sustainable Design



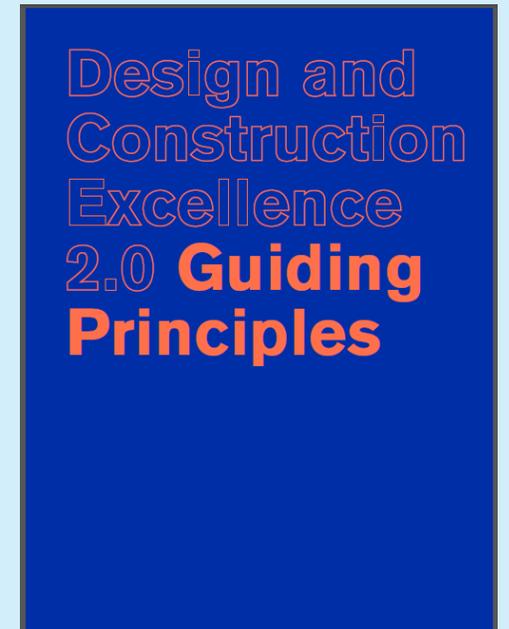
2004



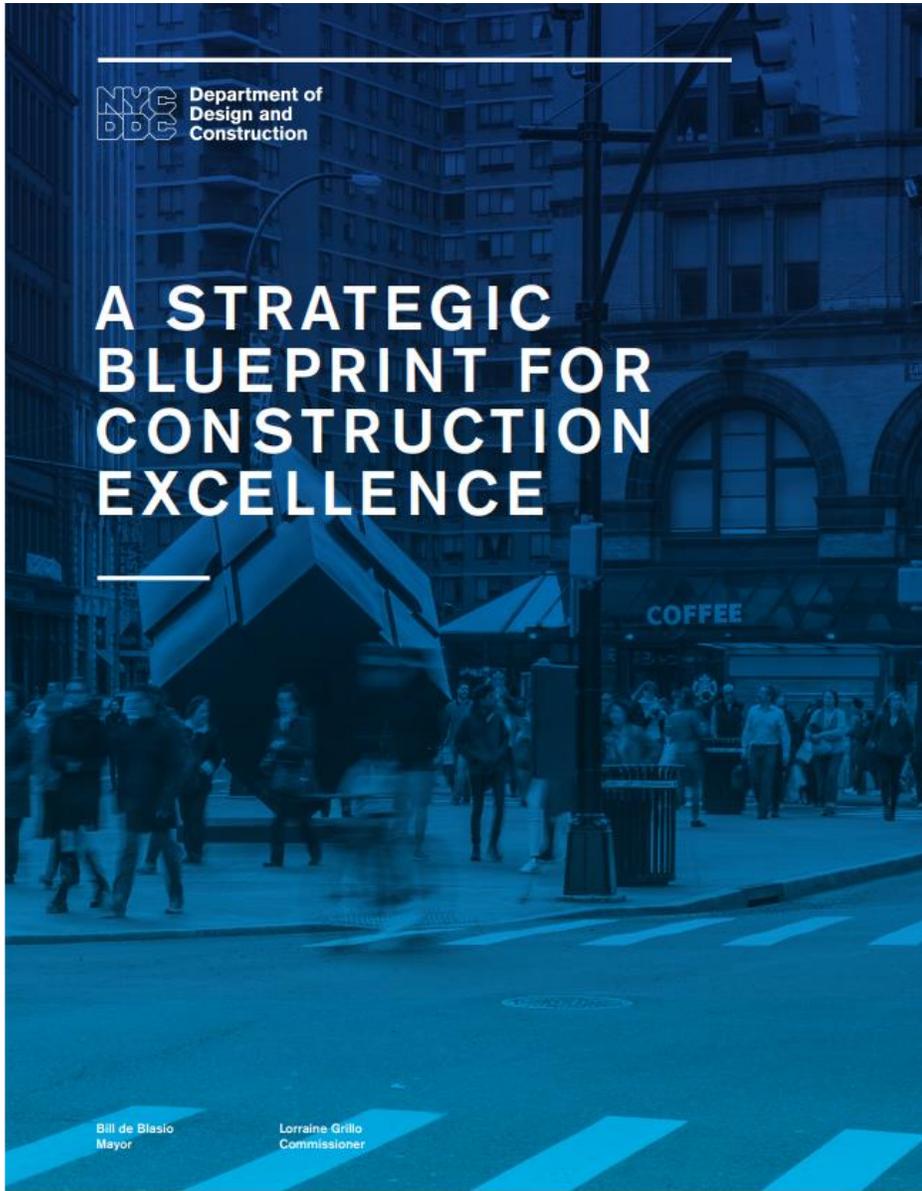
2008



2010



2016



## INFRASTRUCTURE

### The Infrastructure Division

delivers projects on behalf of the Department of Environmental Protection (DEP) and the Department of Transportation (DOT), and last year reconstructed 25 lane miles of New York City streets, and installed or replaced 118 miles of the City's sewers and water mains. The Infrastructure Division is also responsible for essential citywide programs strengthening the **resiliency, sustainability,** and livability of numerous connected communities. These include the City's Coastal Resiliency Program, the innovative Bluebelt stormwater management network in Staten Island, as well as the multi-year effort to make pedestrian ramps throughout the City **ADA compliant** and the \$1.9 billion initiative to improve streets and drainage in southeast Queens.

## DDC'S COMPREHENSIVE PLAN TO IMPROVE CAPITAL PROJECT DELIVERY; LAYS OUT THEMES TO DELIVER PROJECTS FASTER AND WITHIN BUDGET

DDC will leverage recent, significant advances in physical technologies to improve the constructability and **sustainability** of its projects. These include trenchless construction, allowing for the installation of underground infrastructure with minimal excavation, modular building techniques to reduce in-place construction, and porous pavement and concrete to improve ground permeability.

Another factor that DDC must now take into account for every project is **climate change**. The warming of the planet creates new infrastructure challenges related to higher temperatures, sea level rise, droughts, and storms.

VIBRANT DEMOCRACY  
INCLUSIVE ECONOMY  
THRIVING NEIGHBORHOODS

# OneNYC 2050

MODERN INFRASTRUCTURE  
HEALTHY LIVES  
LIVABLE CLIMATE  
EFFICIENT MOBILITY



NYC Parks



Communities



Neighborhood  
improvement



Equitable  
Vibrant City



Safety  
Mobility



Quality of Life

Innovate

Housing

Climate  
Resilient

Organization  
Excellence

Increase Public  
Awareness

Care - Not  
Just  
Maintenance

Economic  
Development

Public  
Engagement

Sustainable  
Services

Resiliency &  
Sustainability

Resiliency and  
Sustainability

Sustainability

Address Climate  
Change



Quality of Life



Leadership



Resource Allocation



Natural World



Climate and Resilience

What Is Envision?

# Envision Credit System

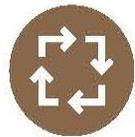
A framework that includes **64 sustainability and resilience indicators**, called ‘credits’, organized around five categories:



**Quality Of Life**  
14 Credits



**Leadership**  
12 Credits



**Resource Allocation**  
14 Credits



**Natural World**  
14 Credits



**Climate and Resilience**  
10 Credits



## Energy

Distribution  
Hydroelectric  
Coal  
Natural Gas  
Wind  
Solar  
Biomass



## Water

Treatment  
Distribution  
Capture / Storage  
Stormwater  
Flood Control  
Nutrient Management



## Waste

Solid waste  
Recycling  
Hazardous Waste  
Collection & Transfer



## Transportation

Airports  
Roads / Highways  
Bikes / Pedestrians  
Railways  
Transit  
Ports  
Waterways



## Landscape

Public Realm  
Parks  
Ecosystem Services  
Natural Infrastructure  
Environmental Remediation



## Information

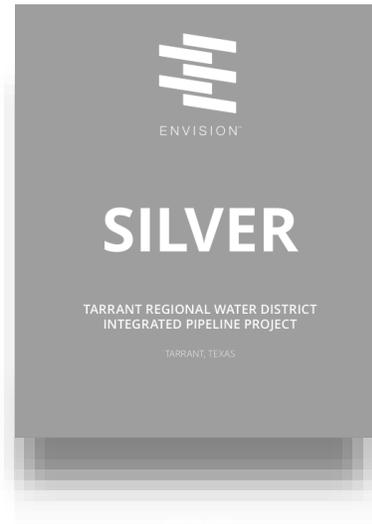
Telecom  
Cables  
Internet  
Phones  
Data Centers  
Sensors

# Envision award levels of applicable credits

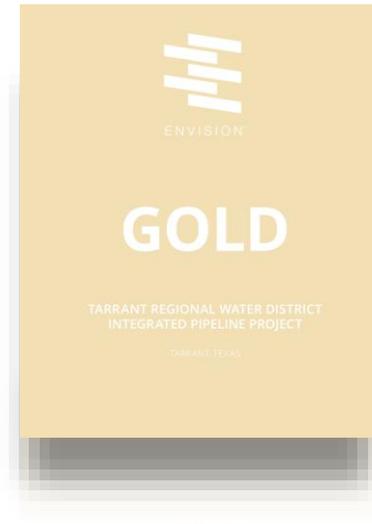
20%



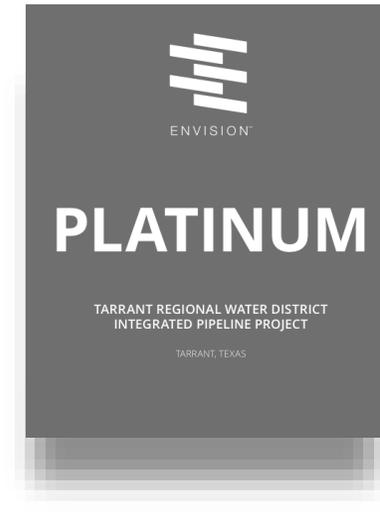
30%



40%



50%



# DDC Infra Projects + Envision

**With ENVISION as a TASK in our Design Contracts - DDC encourages brainstorming and creativity for design opportunities towards the HIGHEST LEVEL of verification.**

## TYOLOGY I



Comprehensive  
Site Work

## TYOLOGY IV



Plazas

## TYOLOGY VII



Coastal Resiliency

## TYOLOGY II



Engineered Wetland

## TYOLOGY VI



Step Streets

## TYOLOGY IX



Street Reconstruction

How is Envision used?

# Sustainability Workflow



Selects a Consultant for Design



Consultant Assigns Project ENV SP

**ENV SP**

The Project ENV SP will fill the Envision Sustainability Work Plan (SWP)

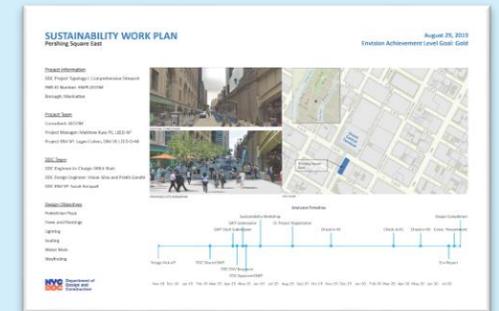
ENV	ENVIRONMENTAL	CLIMATE RESILIENCE	QUALITY OF LIFE	TRANSPORTATION	COMMUNITY ENGAGEMENT	LEADERSHIP
ENV-1	Improve Air Quality	Reduce Greenhouse Gas Emissions	Improve Public Health & Safety	Improve Transportation	Engage the Community	Leadership
ENV-2	Reduce Noise & Vibration	Improve Energy Efficiency	Improve Construction Safety	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-3	Reduce Light Pollution	Improve Water Quality	Minimize Noise & Vibration	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-4	Reduce Construction Impacts	Improve Air Quality	Improve Construction Safety	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-5	Improve Air Quality	Reduce Greenhouse Gas Emissions	Improve Public Health & Safety	Improve Transportation	Engage the Community	Leadership
ENV-6	Reduce Noise & Vibration	Improve Energy Efficiency	Improve Construction Safety	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-7	Reduce Light Pollution	Improve Water Quality	Minimize Noise & Vibration	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-8	Reduce Construction Impacts	Improve Air Quality	Improve Construction Safety	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-9	Improve Air Quality	Reduce Greenhouse Gas Emissions	Improve Public Health & Safety	Improve Transportation	Engage the Community	Leadership
ENV-10	Reduce Noise & Vibration	Improve Energy Efficiency	Improve Construction Safety	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-11	Reduce Light Pollution	Improve Water Quality	Minimize Noise & Vibration	Improve Access & Wayfinding	Engage the Community	Leadership
ENV-12	Reduce Construction Impacts	Improve Air Quality	Improve Construction Safety	Improve Access & Wayfinding	Engage the Community	Leadership

NYC DDC Reviews the SWP



## Sustainability Workshop

Consultants and DDC's team conduct a meeting to finalize the SWP.



Project Registration &

Uploading Documentation on the ISI Online portal

14 CREDITS	Quality of Life	0 OF 200 POSSIBLE POINTS - 0%
<b>Wellbeing</b>		
QL1.1	Improve Community Quality of Life	0/100
QL1.2	Enhance Public Health & Safety	0/100
QL1.3	Improve Construction Safety	0/100
QL1.4	Minimize Noise & Vibration	0/100
QL1.5	Minimize Light Pollution	0/100
QL1.6	Minimize Construction Impacts	0/100
<b>Mobility</b>		
QL2.1	Improve Community Mobility & Access	0/100
QL2.2	Encourage Sustainable Transportation	0/100
QL2.3	Improve Access & Wayfinding	0/100
<b>Community</b>		
QL3.1	Advance Equity & Social Justice	0/100
QL3.2	Preserve Historic & Cultural Resources	0/100
QL3.3	Enhance Views & Local Character	0/100
QL3.4	Enhance Public Space & Amenities	0/100
<b>Innovate or Exceed</b>		
QL0.0	Innovate or Exceed Credit Requirements	0/100



ISI (Third Party Verification)



ISI (Third Party Verification)

# Sustainability Work Plan [SWP] = Workshop

**SUSTAINABILITY WORK PLAN**  
Pershing Square East

August 29, 2019  
Envision Achievement Level Goal: Gold

**Project Information**  
DDC Project Typology I: Comprehensive Sitework  
FMS ID Number: HWPL2015M  
Borough: Manhattan

**Project Team**  
Consultant: AECOM  
Project Manager: Matthew Kusy PE, LEED AP  
Project ENV SP: Logan Cohen, ENV SP, LEED O+M

**DDC Team**  
DDC Engineer-In-Charge: Mihir Shah  
DDC Design Engineer: Vivian Silva and Pratik Gandhi  
DDC ENV SP: Sarah Korapat

**Design Objectives**  
Pedestrian Plaza  
Trees and Plantings  
Lighting  
Seating  
Water Main  
Wayfinding

**EXISTING CONDITIONS**  
**PROPOSED SITE RENDERING**  
**SITE PLAN**

**Envision Timeline**

The Envision Timeline chart shows the following milestones:

- Design Kick-off (Nov-18)
- DDC Shared SWP (Jan-19)
- SWP Draft Submission (Mar-19)
- DDC ENV Response (Apr-19)
- DDC Approved SWP (May-19)
- Sustainability Workshop (Jun-19)
- ISI Project Registration (Jul-19)
- Check-in #1 (Sep-19)
- Check-in #2 (Feb-20)
- Check-in #3 (Apr-20)
- Const. Procurement (May-20)
- Env Report (Jun-20)
- Design Completion (Jul-20)

**NYC DDC** Department of Design and Construction

A workshop is held to approve the SWP and to **set the game plan** for achieving the anticipated Envision Verification Award Level.

The Project ENV SP will issue Memo(s) outlining strategies to improve sustainability of the project.

# Sustainability Management Checklist



INFRASTRUCTURE

PERSHING SQUARE EAST

## SUSTAINABILITY MANAGEMENT CHECKLIST

The purpose of the sustainability management checklist is to provide the ENV SP and Sustainability Coordinators with a method of tracking progress of a project and ensuring sustainability goals are met. The checklist is in order by tasks and the credits which are revisited at each step of the project.

### PROJECT INFORMATION

Project ID: HWPLZ015M Preliminary Design: 0.0%  
 Project Typology: I Comprehensive Site Work Final Design: 0.0%  
 Borough: Manhattan Construction: 0.0%  
 Sponsor Agency: NYCDOT  
 Fiscal Year: '19  
 Project Start Date: 11/19/18  
 Project End Date: 07/10/20  
 Preliminary Design Fee: \$14,636  
 Final Design Fee: \$15,888

### PRELIMINARY DESIGN

<b>Task 01: Project Development/Identification</b> 0 22 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> QL3.3 Enhance Views and Local Characters
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	<input type="checkbox"/> QL3.4 Enhance Public Space and Amenities
<input type="checkbox"/> QL2.1 Improve Community Mobility and Access	<input type="checkbox"/> LD2.1 Establish a Sustainability Management Plan
<input type="checkbox"/> QL2.2 Encourage Sustainable Transportation	<input type="checkbox"/> LD2.4 Plan for End of Life
<input type="checkbox"/> QL2.3 Improve Access and Wayfinding	<input type="checkbox"/> LD3.1 Stimulate Economic Prosperity and Development
<input type="checkbox"/> QL3.2 Preserve Historic and Cultural Resources	<input type="checkbox"/> NW1.4 Preserve Undeveloped Land
<b>Task 03: Subsurface Exploration Program</b> 0 2 0.0%	
<input type="checkbox"/> QL3.2 Preserve Historic and Cultural Resources	
<input type="checkbox"/> QL3.3 Enhance Views and Local Character	
<b>Task 07: Schematic Bollard Layout Design</b> 0 2 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	
<b>Task 08: Schematic Landscape/Urban Design</b> 0 9 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> QL3.3 Enhance Views and Local Character
<input type="checkbox"/> QL1.4 Minimize Noise and Vibration	<input type="checkbox"/> QL3.4 Enhance Public Space and Amenities
<input type="checkbox"/> QL2.1 Improve Community Mobility and Access	<input type="checkbox"/> QL2.1 Establish a Sustainability Management Plan
<input type="checkbox"/> QL2.2 Encourage Sustainable Transportation	<input type="checkbox"/> QL1.4 Preserve Undeveloped Land
<input type="checkbox"/> QL3.2 Preserve Historic and Cultural Resources	
<b>Task 09: Vehicle Threat Vector Analysis</b> 0 4 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> CR2.1 Avoid Unsuitable Development
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	<input type="checkbox"/> CR2.4 Establish Resilience Goals and Strategies
<b>Task 10: Security Measure Research</b> 0 4 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> CR2.1 Avoid Unsuitable Development
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	<input type="checkbox"/> CR2.4 Establish Resilience Goals and Strategies

<b>Task 11: Security Measure Research</b> 0 4 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> QL2.1 Improve Community Mobility and Access
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	<input type="checkbox"/> QL2.3 Improve Access and Wayfinding
<b>Task 12: Security Measure Research</b> 0 2 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	

### FINAL DESIGN

<b>Task 15: Street Design Including Grades, Street Drainage, and Stre</b> 0 11 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> RA1.5 Balance Earthwork on Site
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	<input type="checkbox"/> RA3.1 Preserve Water Resources
<input type="checkbox"/> QL2.3 Improve Access and Wayfinding	<input type="checkbox"/> NW2.4 Protect Surface & Groundwater Quality
<input type="checkbox"/> QL3.2 Preserve Historic and Cultural Resources	<input type="checkbox"/> NW3.5 Protect Soil Health
<input type="checkbox"/> QL3.3 Enhance Views and Local Character	<input type="checkbox"/> CR2.1 Avoid Unsuitable Development
<input type="checkbox"/> QL3.4 Enhance Public Space and Amenities	
<b>Task 16: Street Design Including Grades, Street Drainage, and Stre</b> 0 3 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> NW3.5 Protect Soil Health
<input type="checkbox"/> NW2.3 Reduce Pesticide & Fertilizer Impacts	
<b>Task 18: Final Landscape/Urban Design</b> 0 16 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> QL3.4 Enhance Public Space and Amenities
<input type="checkbox"/> QL1.4 Minimize Noise and Vibration	<input type="checkbox"/> LD2.1 Establish a Sustainability Work Plan
<input type="checkbox"/> QI1.5 Minimize Light Pollution	<input type="checkbox"/> LD2.4 Plan for End-Of-Life
<input type="checkbox"/> QL2.1 Improve Community Mobility and Access	<input type="checkbox"/> NW1.4 Preserve Undeveloped Land
<input type="checkbox"/> QL2.2 Encourage Suitable Transportation	<input type="checkbox"/> NW2.3 Reduce Pesticide & Fertilizer Impacts
<input type="checkbox"/> QL2.3 Improve Access and Wayfinding	<input type="checkbox"/> NW3.5 Protect Soil Health
<input type="checkbox"/> QL3.2 Preserve Historic and Cultural Resources	<input type="checkbox"/> CR1.1 Reduce Net Embodied Carbon
<input type="checkbox"/> QL3.3 Enhance Views and Local Character	<input type="checkbox"/> CR2.1 Avoid Unsuitable Development
<b>Task 19: Street Lighting System Design</b> 0 6 0.0%	
<input type="checkbox"/> QL1.1 Improve Community Quality of Life	<input type="checkbox"/> QL3.2 Preserve Historic and Cultural Resources
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	<input type="checkbox"/> QL3.3 Enhance Views and Local Character
<input type="checkbox"/> QI1.5 Minimize Light Pollution	<input type="checkbox"/> QL3.4 Enhance Public Space and Amenities
<b>Task 20: Traffic Signals System Design</b> 0 4 0.0%	
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<input type="checkbox"/> QL3.2 Preserve Historic and Cultural Resources	<input type="checkbox"/> QL3.4 Enhance Public Space and Amenities
<b>Task 21: Construction Staging and Maintenance and Protection of</b> 0 5 0.0%	
<input type="checkbox"/> QL1.2 Enhance Public Health and Safety	<input type="checkbox"/> QL2.1 Improve Community Mobility and Access
<input type="checkbox"/> QL1.3 Improve Construction Safety	<input type="checkbox"/> QL2.2 Encourage Sustainable Transportation
<input type="checkbox"/> QL1.6 Minimize Construction Impacts	

# NYC DOT projects with the Envision Task

## TYOLOGY IV

- Pershing Square East
- Osborn Plaza

## TYOLOGY VI

- Henwood Place Step Street
- Davidson Step Street

## TYOLOGY IX

- 111th Street Improvements
- South Bronx Crosstown Select Bus Service

# EXAMPLE PROJECT



**Pershing Square, New York, NY**

## Project Description

- Initially NYCDOT closed the street segment to vehicular traffic with only paint, epoxied gravel, flexible bollards and large planters.
- Now, this repurposed area will be a permanent Plaza for general pedestrian and bicycle use.

# Pershing Square – Envision Workflow diagram



Appoints Consultant for ENVISION task



Consultant Assigns a Project ENV SP

**ENV SP**

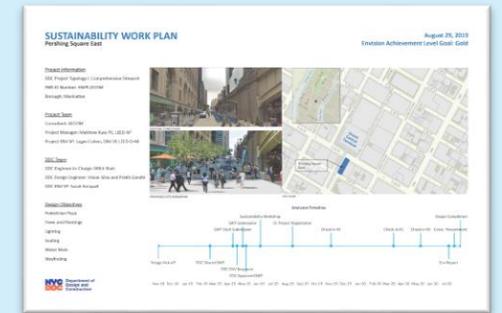
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NYC DDC Reviews the SWP

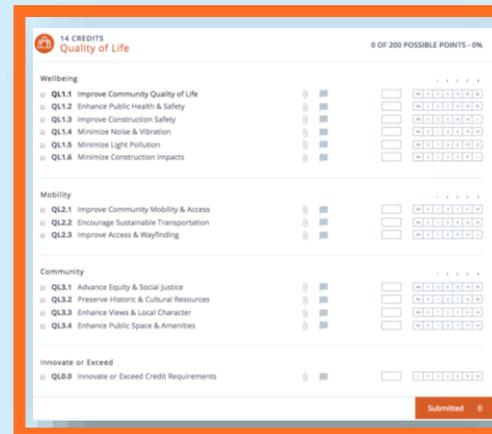


**Sustainability Workshop**

Consultants and DDC's team conduct a meeting to finalize the SWP.



Project is at this stage



Project Registration &

Uploading Documentation on the ISI Online portal



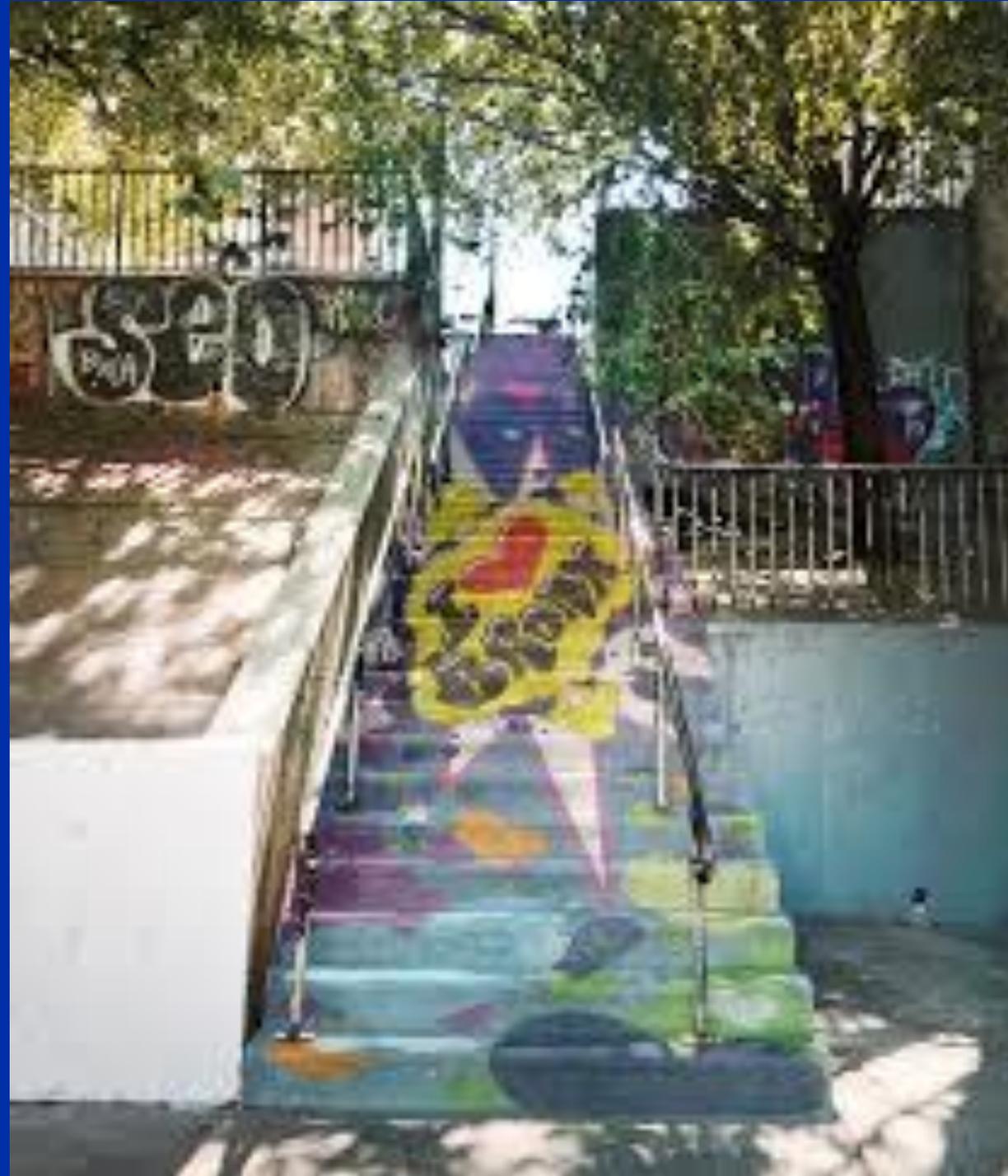
ISI (Third Party Verification)



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# EXAMPLE PROJECT

Henwood Place Step Street  
Bronx, New York



## Project Description

- This NYC DOT capital project will reconstruct the vertical street to create safer travel conditions and reduce long-term maintenance burdens
- Will reconfigure the staircases and landings, increasing its visibility as a step street and improving the user experience
- The conceptual reconfiguration of the project also includes new design elements such as ramps and adding Street Trees

# Henwood Place Step Street – Envision Workflow diagram



Appoints Consultant for ENVISION task



Consultant Assigns a Project ENV SP

**ENV SP**

The Project ENV SP will fill the Envision Sustainability Work Plan (SWP)

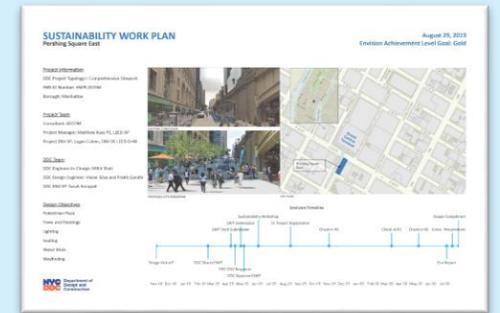
Project is at this stage

NYC DDC Reviews the SWP



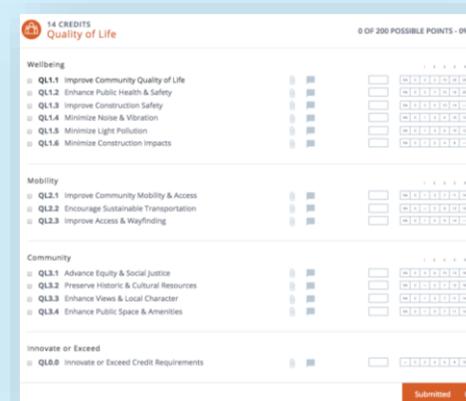
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ISI (Third Party Verification)



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Thank You!