INNOVATIVE DEVELOPMENT OF PUBLIC RIGHTS OF WAYS FOR A SUSTAINABLE FUTURE

FEBRUARY 2, 2017

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AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS
DESIGNWORKSHOP

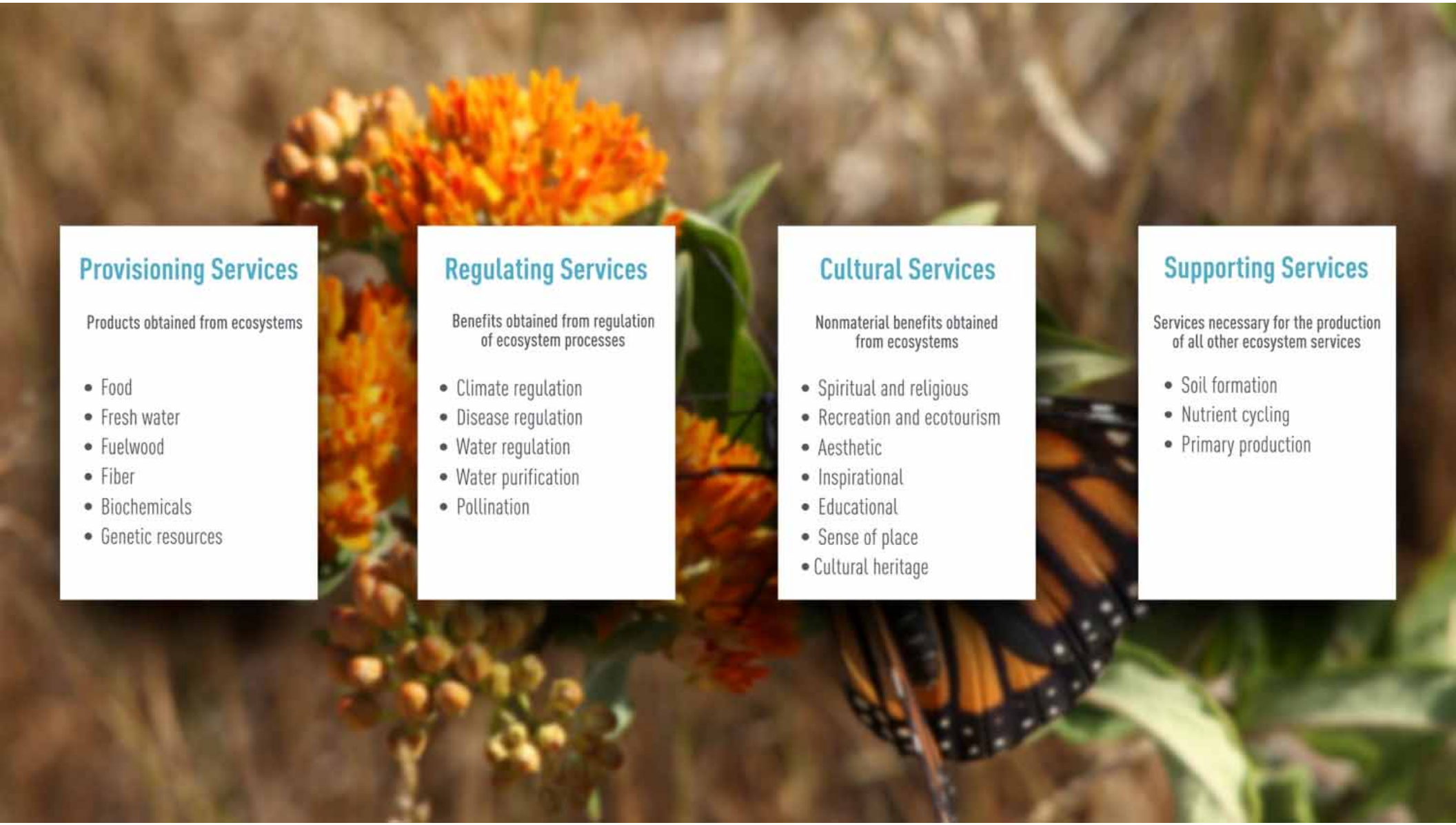

THE Sustainable
SITES
Initiative®

Sustainable
SITES
Initiative™

The SITES Rating System is administered by Green Business Certification Inc (GBCI), the premiere organization independently recognizing excellence in green business industry performance and practice globally. The material on which the SITES Rating System is based was developed through a collaborative, interdisciplinary effort of the American Society of Landscape Architects Fund, The Lady Bird Johnson Wildflower Center at The University of Texas at Austin, and the United States Botanic Garden.

Areas of Focus

ECOSYSTEM SERVICES



Provisioning Services

Products obtained from ecosystems

- Food
- Fresh water
- Fuelwood
- Fiber
- Biochemicals
- Genetic resources

Regulating Services

Benefits obtained from regulation of ecosystem processes

- Climate regulation
- Disease regulation
- Water regulation
- Water purification
- Pollination

Cultural Services

Nonmaterial benefits obtained from ecosystems

- Spiritual and religious
- Recreation and ecotourism
- Aesthetic
- Inspirational
- Educational
- Sense of place
- Cultural heritage

Supporting Services

Services necessary for the production of all other ecosystem services

- Soil formation
- Nutrient cycling
- Primary production

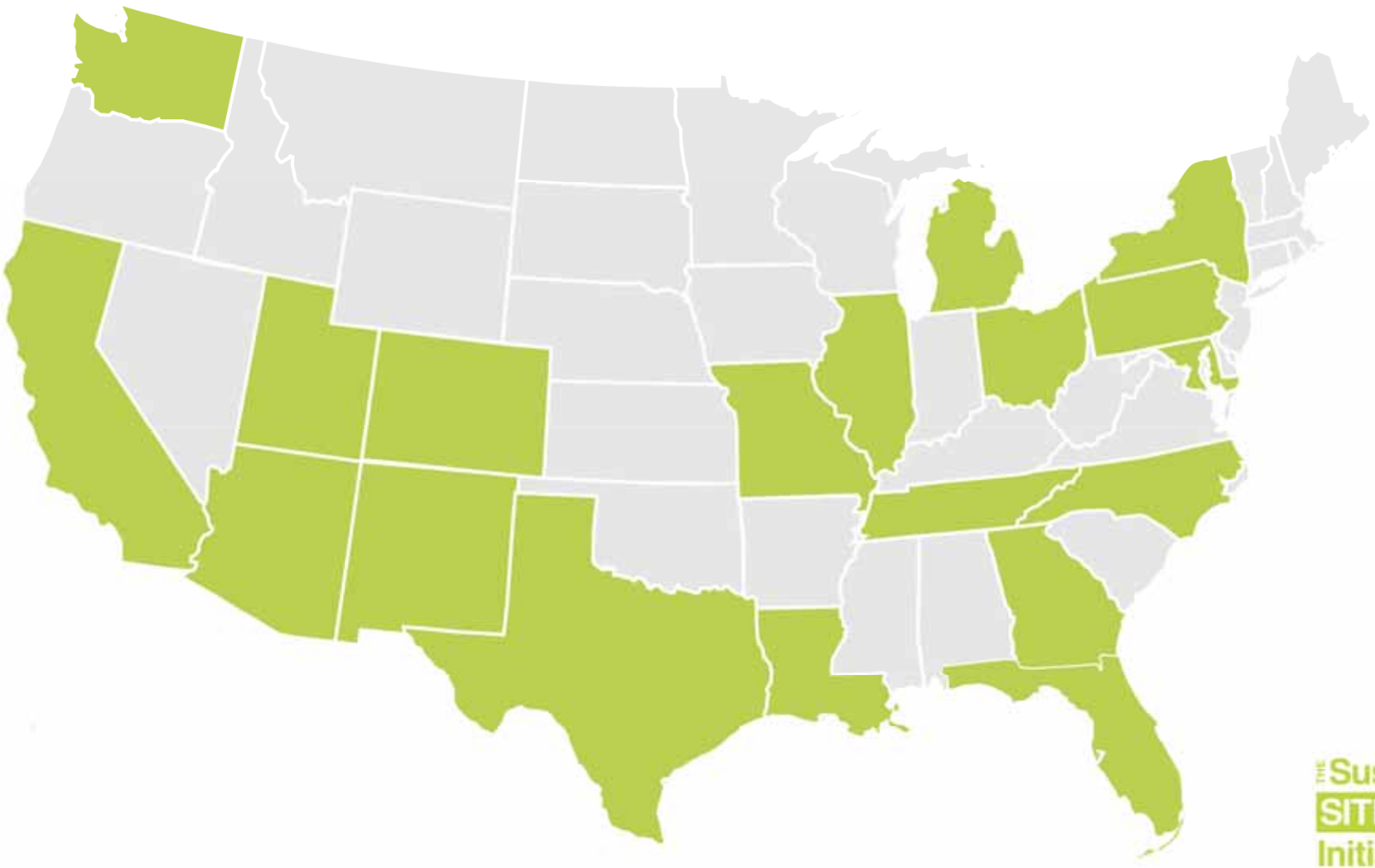
White House Memorandum: Incorporating Ecosystem Services into Federal Planning & Decision Making










The Sustainable
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SITES v2
Rating System
For Sustainable Land Design and Development

Sustainable
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Initiative™

SITES v2
Reference Guide
For Sustainable Land Design and Development

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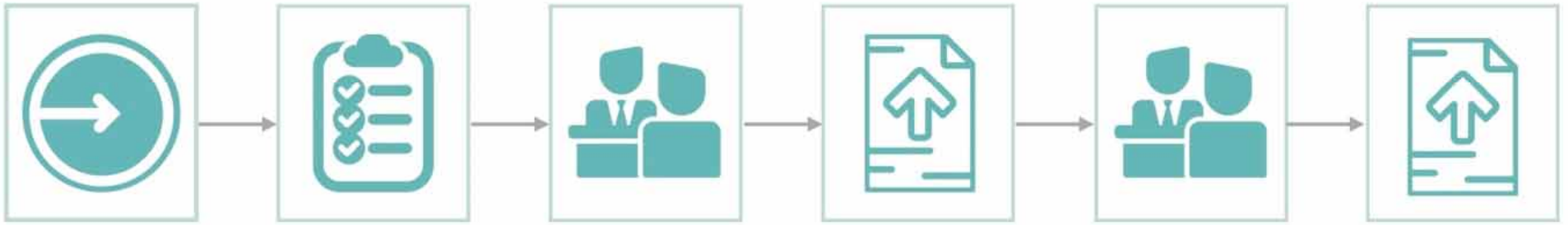
SUITABILITY

- New construction or major renovations
- No maximum size
- Minimum of 2,000 square feet
- Anywhere in the world
- **Early engagement**

SITES CERTIFICATION | 200 TOTAL POINTS

CERTIFIED	70
SILVER	85
GOLD	100
PLATINUM	135

CERTIFICATION PROCESS



www.sustainablesites.org/certification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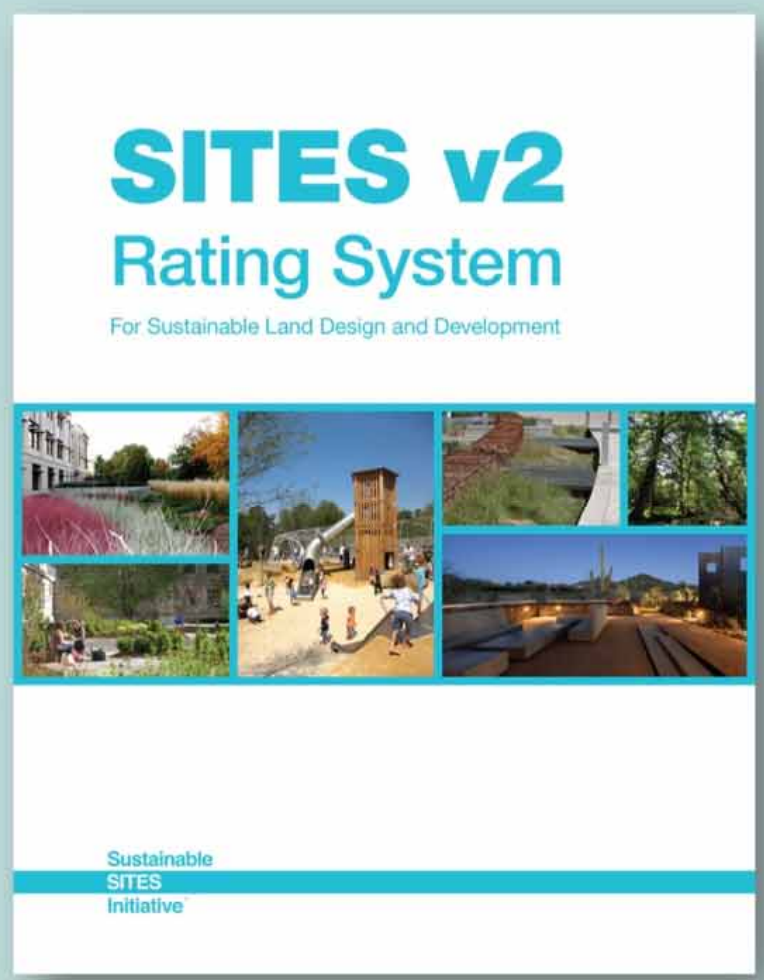
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LEED



SECTION 1: SITE CONTEXT

SECTION 2: PRE-DESIGN ASSESSMENT & PLANNING

SECTION 3: SITE DESIGN — WATER

SECTION 4: SITE DESIGN — SOIL + VEGETATION

SECTION 5: SITE DESIGN — MATERIALS

SECTION 6: SITE DESIGN — HUMAN HEALTH + WELLBEING

SECTION 7: CONSTRUCTION

SECTION 8: OPERATIONS + MAINTENANCE

SECTION 9: EDUCATION + PERFORMANCE MONITORING

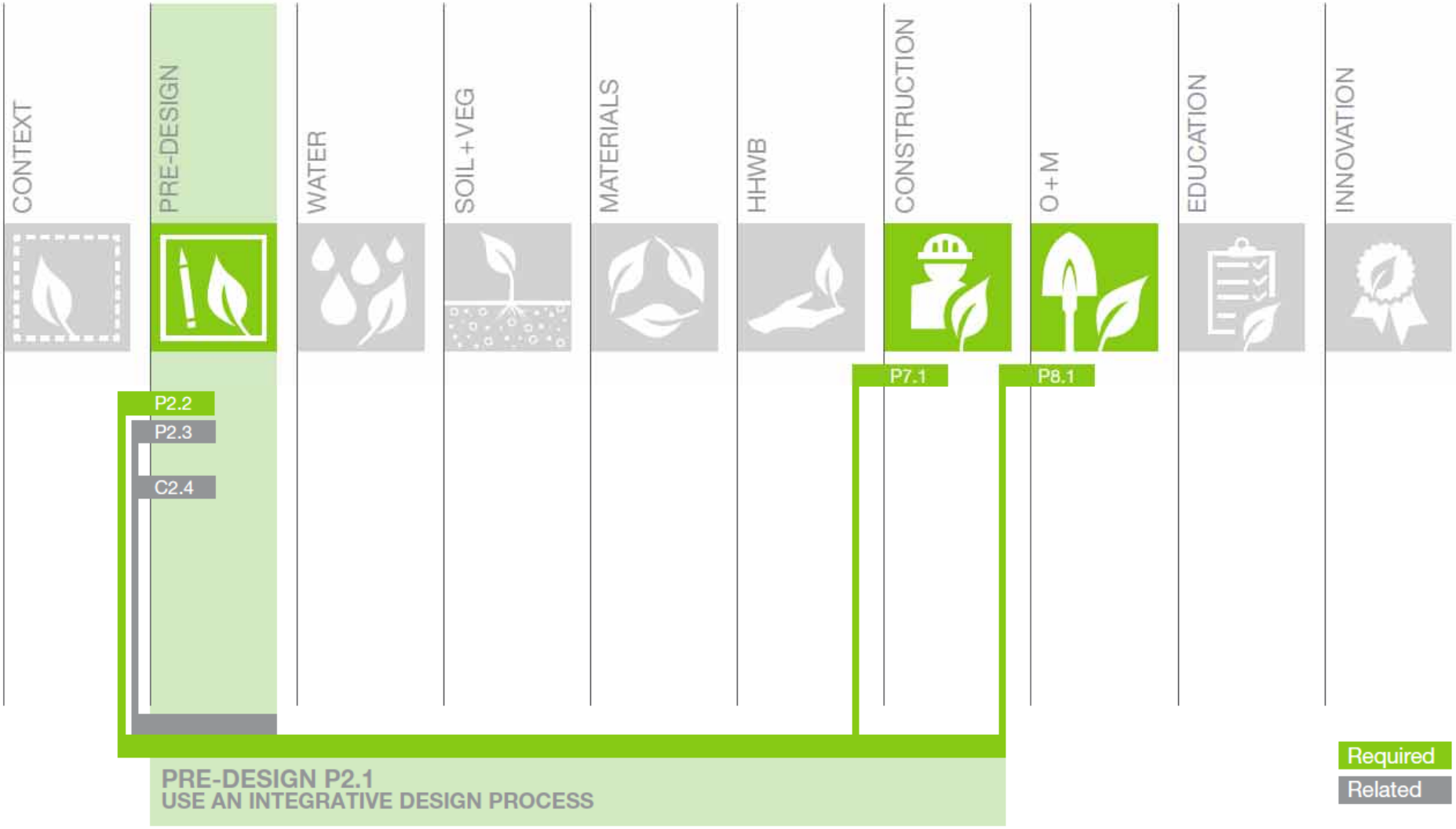
SECTION 10: INNOVATION + EXEMPLARY PERFORMANCE


SITE SELECTION
PRE-DESIGN ASSESSMENT
DESIGN DEVELOPMENT & CONSTRUCTION DOCUMENTS
CONSTRUCTION
OPERATIONS & MAINTENANCE
MONITORING & EDUCATION

SITES GOALS

- Transform the Market through Design, Development, & Maintenance practices
- Create Regenerative Systems & Foster Resiliency
- Ensure Future Resource Supply & Mitigate Climate Change
- Enhance Human Well-Being & Strengthen Community

LINKS TO OTHER SITES PREREQUISITES AND CREDITS



SITES PROFESSIONAL CREDENTIAL

SITES AP

What is a SITES AP?

A SITES AP is an individual who possesses the knowledge and skills necessary to support the SITES certification process, including participating in the design and development process, supporting and encouraging integrated design, managing the application and certification process, and providing advocacy and education for the adopting of SITES.

RESOURCES

- SITES website: sustainablesites.org
- SITES v2 Rating System & Reference Guide
- Case studies of certified projects
- Educational webinars & workshops
- Quarterly calls
- Subscribe to newsletter

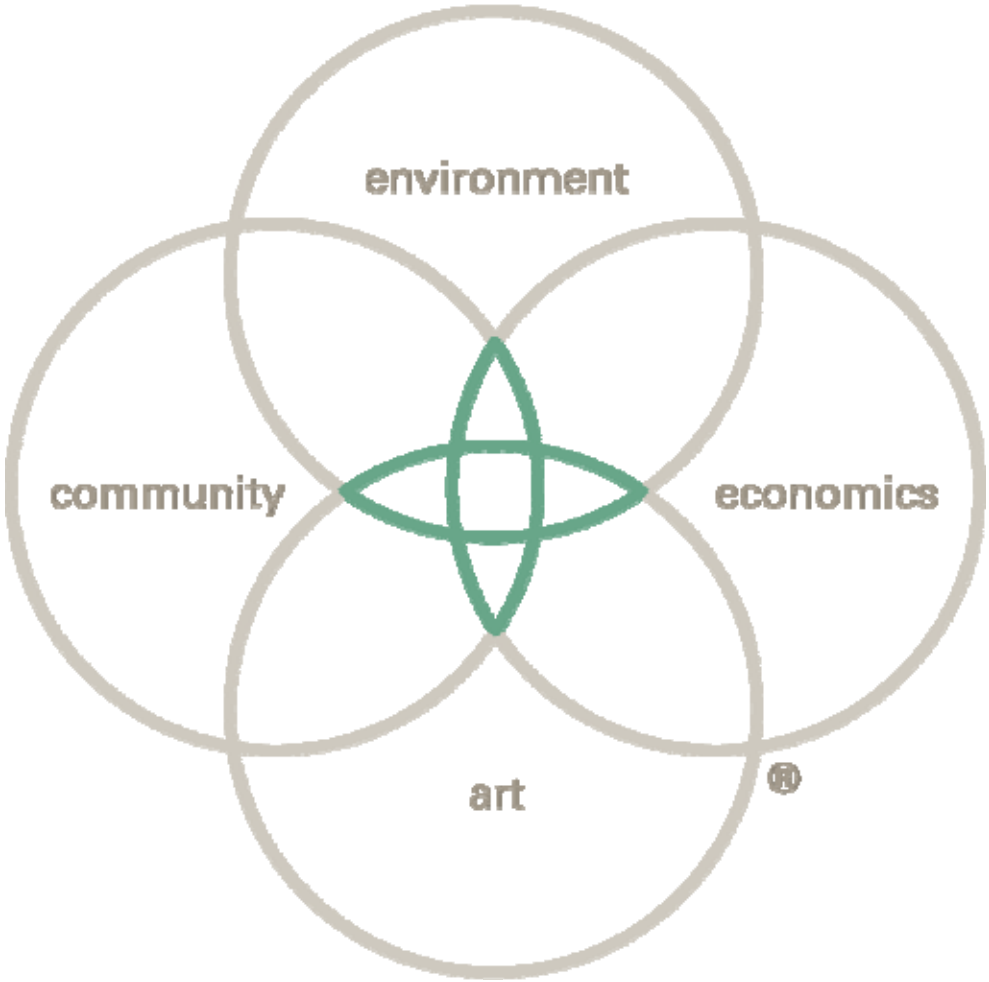
REGENERATIVE LANDSCAPES

Chinatown Green Street Demonstration Project

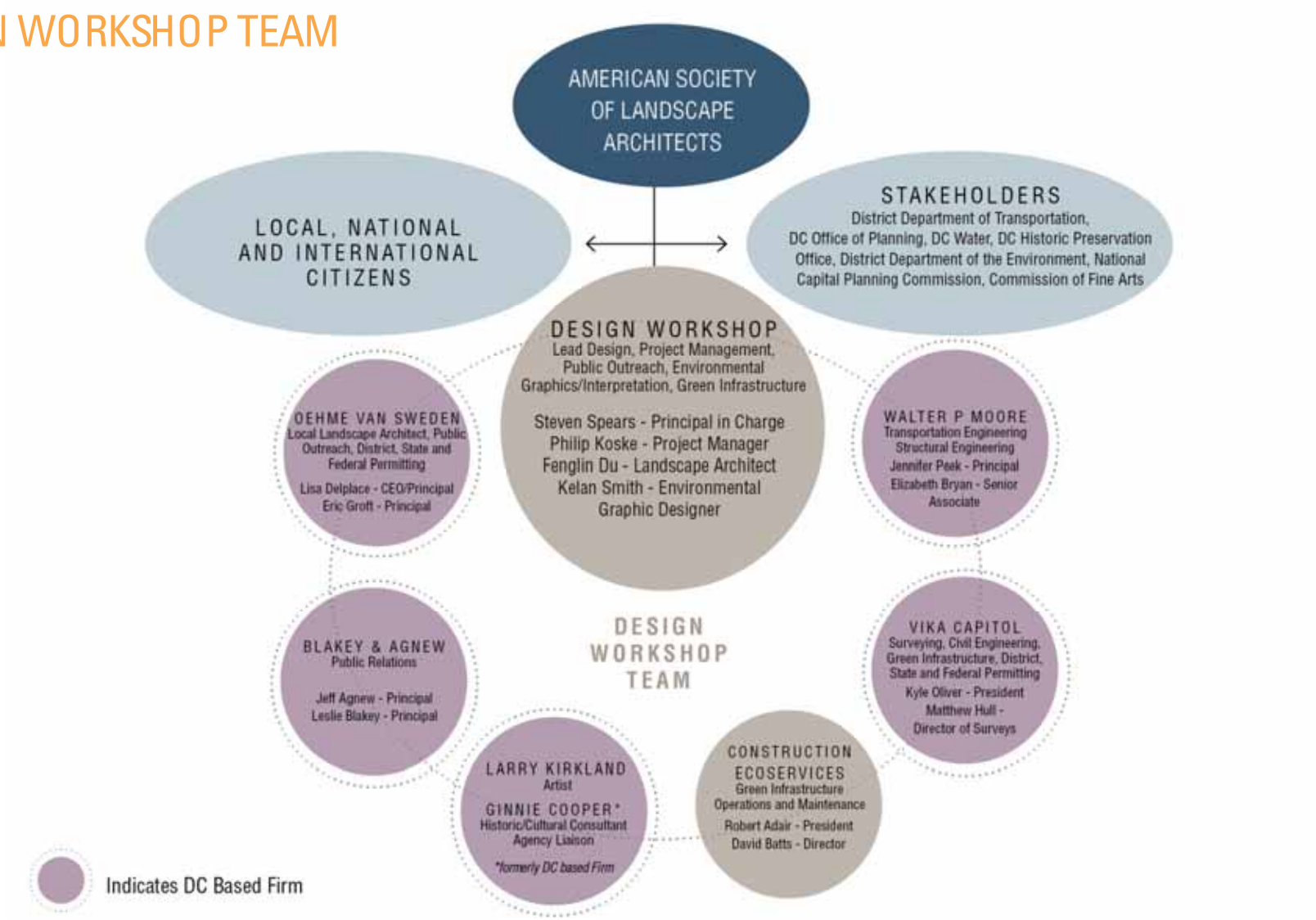
Project Background

DESIGN WORKSHOP

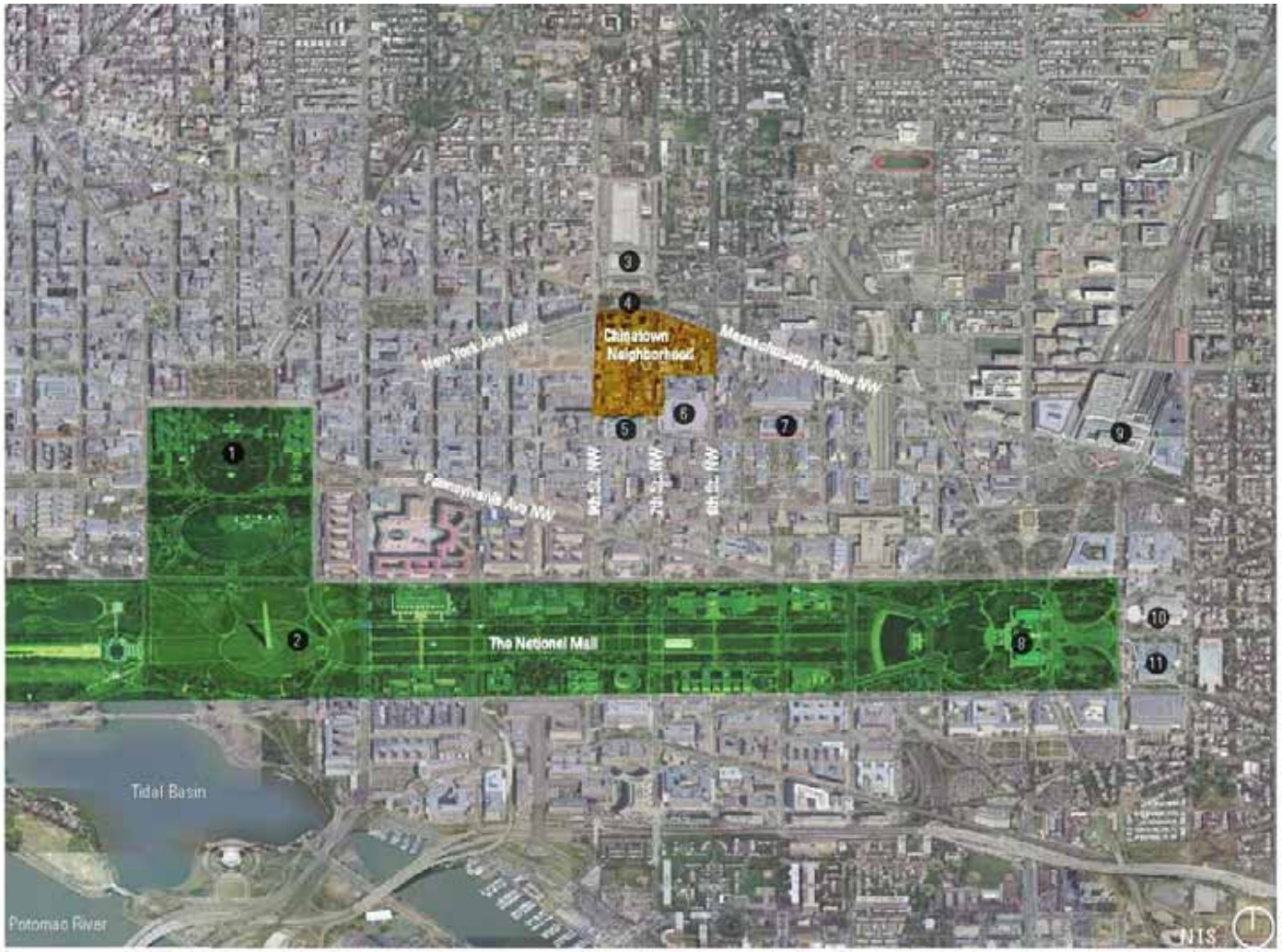
- 45-year old company
- Landscape architecture, urban design and planning, environmental graphics and development services
- 10 offices (8 in US, 2 overseas)
- National leader in performance based design



DESIGN WORKSHOP TEAM



REGIONAL CONTEXT



LEGEND

1. THE WHITE HOUSE
2. WASHINGTON MONUMENT
3. CONVENTION CENTER
4. CARNEGIE LIBRARY
5. NATIONAL PORTRAIT GALLERY
6. VERIZON CENTER
7. NATIONAL BUILDING MUSEUM
8. U.S. CAPITOL
9. UNION STATION
10. SUPREME COURT OF THE UNITED STATES
11. LIBRARY OF CONGRESS

VISION

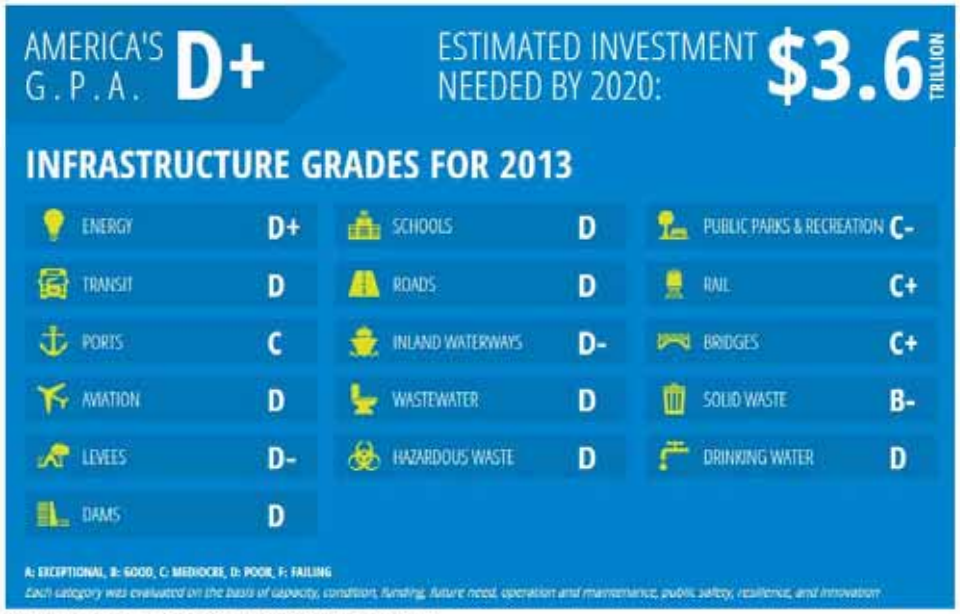
GREEN
A term used to refer to goods and services, laws, guidelines and policies claimed to inflict reduced, minimal, or no harm at all, upon ecosystems or the environment.

STREET
Paved public thoroughfare in a built environment; a public parcel of land adjoining buildings in an urban context, on which people may freely assemble, interact, and move about.

DEMONSTRATION
Showing by reason or proof, explaining or making clear by use of examples or experiments; to clearly show.

A NATIONAL DILLEMMA

As a society, we now understand the unintended negative consequences of the current model of street infrastructure investment, and are also experiencing an infrastructure that has reached the end of its lifecycle. **Simply put, the majority of our infrastructure in the U.S. is coming upon exhaustion and a new model must be created and implemented.**



SOURCE: 2015 AMERICAN SOCIETY OF CIVIL ENGINEERS

SOURCE: ANACOSTIA WATERSHED SOCIETY

A NATIONAL DILLEMMA : EXHAUSTED INFRASTRUCTURE

Interstate 10 in California collapsed after heavy rain. Photograph: Nick Ut/AP

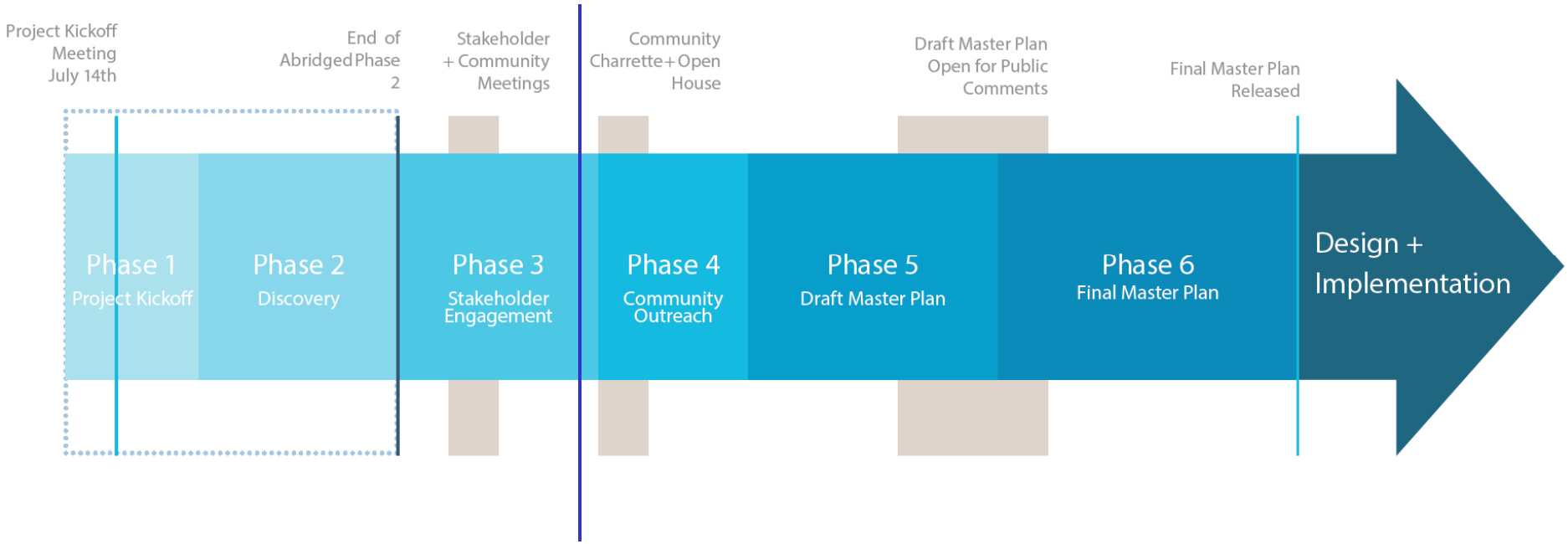
THESIS

On average, street rights of way are the largest collection of public domain in any given city in the U.S. Road reconstruction offers a great opportunity to integrate green infrastructure into new, vibrant streetscapes. Since they are more than a transportation network, **streets should take full opportunity to ensure the most appropriate stormwater management, energy use, and long lifecycle, thus making the corridors green, complete, and smart streets.**

Washington D.C. **43% area public right of way**

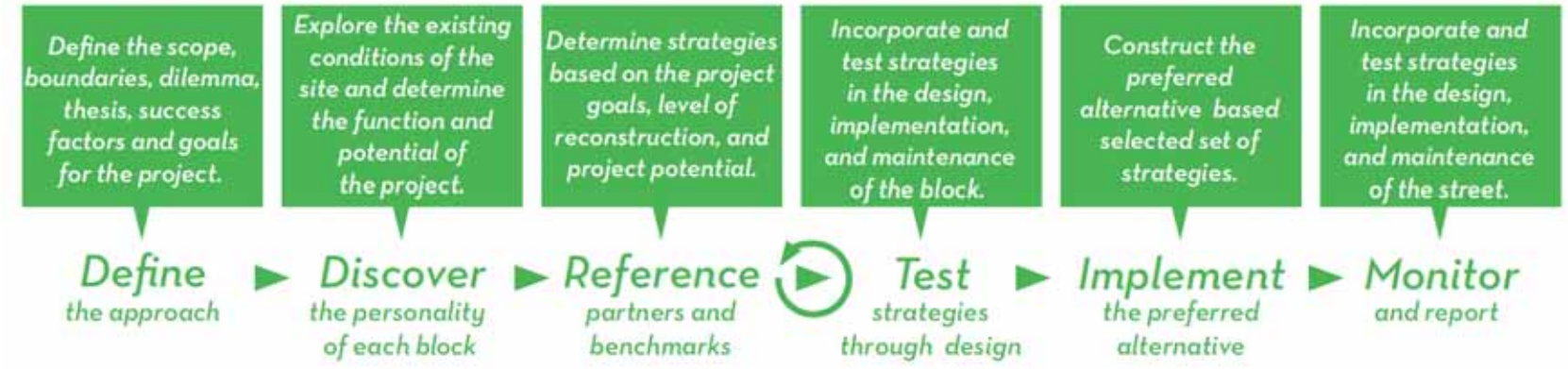
NEW YORK CITY **28% area public right of way**

SCOPE



- **PHASE I:** Project Kickoff
- **PHASE II:** Discovery
- **PHASE III:** Initial Stakeholder Engagement Meetings and Public Relations
- **PHASE IV:** Preliminary Alternatives and Community Outreach
- **PHASE V:** Draft Master Plan and Preliminary Cost Estimate
- **PHASE VI:** Final Master Plan and Opinion of Probable Costs

ASLA METHOD



1. **Define the approach:** Clearly articulate the scope, measures of success, and goals of the project from the start.

2. **Discover the personality of the block:** Rather than using a typical cross section across an entire street, each block should be examined individually to determine its unique use and potential.

3. **Reference:** Identify goals and strategies that can be quantified. Reference national models and benchmark projects in other communities to see what methods have proven to be successful. This will make it possible to measure success and adjust approaches if desired metrics are not met.

4. **Test:** Identify potential pilot sites to test ideas on a small-scale. Doing so will ensure success when implemented across the site.

5. **Implement:** Draw from lessons learned in the test phase and employ those strategies that showed greatest success.

6. **Monitor and report:** By returning to the site after implementation, maintenance regimes can be adjusted as needed, and one can validate whether the goals and strategies were relevant and measure the economics, environment, community, and artistic benefits. This data can then inform future decisions.

PROJECT GOALS

Environment

	GOAL	PRELIMINARY SYSTEM OF MEASUREMENT
1.	Maximize landscape to absorb and retain stormwater.	Total gallons captured and percent of 0.5" rain event.
2.	Return stormwater to system as a clean resource.	Percent of total public space treated to (X) water quality standards.
3.	Reduce ambient air temperatures and heat island effect.	Percent reduction in measured air temperature.
4.	Minimize energy budget needed to power infrastructure.	Reduction in energy use by cost in dollars.
5.	Utilize recycled content and minimize waste in high-impact ways.	Percent by material cost of regionally-sourced materials.
6.	Use regional resources.	Percent by material cost of regionally-sourced materials.
7.	Improve local air quality.	Tons of CO2 eliminated.
8.	Maximize appropriate bird and insect habitat.	N/A
9.	Minimize potable water budget.	Gallons of potable water deferred from project (or city?).
10.	Evaluate how the project can improve resiliency to climate change.	
11.	Reduce light pollution.	
12.	Deliver a project that improves existing tree and vegetation health.	
13.	Reduce flood event frequency.	Reduction of pipe back-ups in the area/system.

Community

	GOAL	PRELIMINARY SYSTEM OF MEASUREMENT
1.	Create and preserve unique social nodes.	Number of distinct places created.
2.	Increase pedestrian safety.	Reduced crime rate and reduced pedestrian accidents.
3.	Expand public/private engagement for the project.	Number of agencies and groups engaged.
4.	Educate the public about the proposed improvements and how sustainability impacts their daily life.	Number of people reached.
5.	Achieve buy-in and support from local developers, non-profits, residents and ASLA community.	Number of agencies and groups that endorse the project.
6.	Improve accessibility along the corridor.	Percent of site ADA compliant.
7.	Increase the opportunities for healthy living within the corridor.	Number of opportunities for active living and wellness.
8.	Understand how the project impacts trends related to gentrification and shifts in local population.	Percentage of new residents/businesses to existing residents/businesses.
9.	Understand how the project may impact homeless communities and related issues.	How can the corridor provide appropriate services for the homeless?

PROJECT GOALS

Economic

	GOAL	PRELIMINARY SYSTEM OF MEASUREMENT
1.	Allow for a design that lasts.	Projected lifespan of the project/OM cost.
2.	Provide a series of projects that contribute to local commerce and economy.	Dollar value added to local businesses.
3.	Increase entrepreneurial investment in the area.	Dollar value of private investment.
4.	Capture additional funding for construction and implementation of the project.	Funds raised for Project.
5.	Create new job opportunities in the community.	Number of jobs added to the area.
6.	Increase 24 hour vitality of project site.	Number of pedestrians at indicator times.
7.	Increase Return on Investment for developers and property owners.	Number of pedestrians at indicator times.
8.	Increase connectivity of Convention Center, Carnegie Library, Verizon Center, Portrait Gallery and other large-scale operators.	Walk Score, bike share travel data, pedestrian travel counts and data
9.	Minimize construction phase disruption to local businesses and services.	Number of business days affected by construction.
10.	Minimize overall operating costs.	Dollars reduced in baseline operating costs.

Art

	GOAL	PRELIMINARY SYSTEM OF MEASUREMENT
1.	Harbor identity, vitality and personality within the district by improving overall access to art.	
2.	Ensure that art program resonates with the local community and spirit of place.	
3.	Create a diverse network of art.	
4.	Employ local artists to participate and contribute to the design.	Number of artists engaged in the process.
5.	Utilize art to demonstrate project systems and ideas.	
6.	Improve the overall beauty and aesthetics of the area.	

Leadership

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

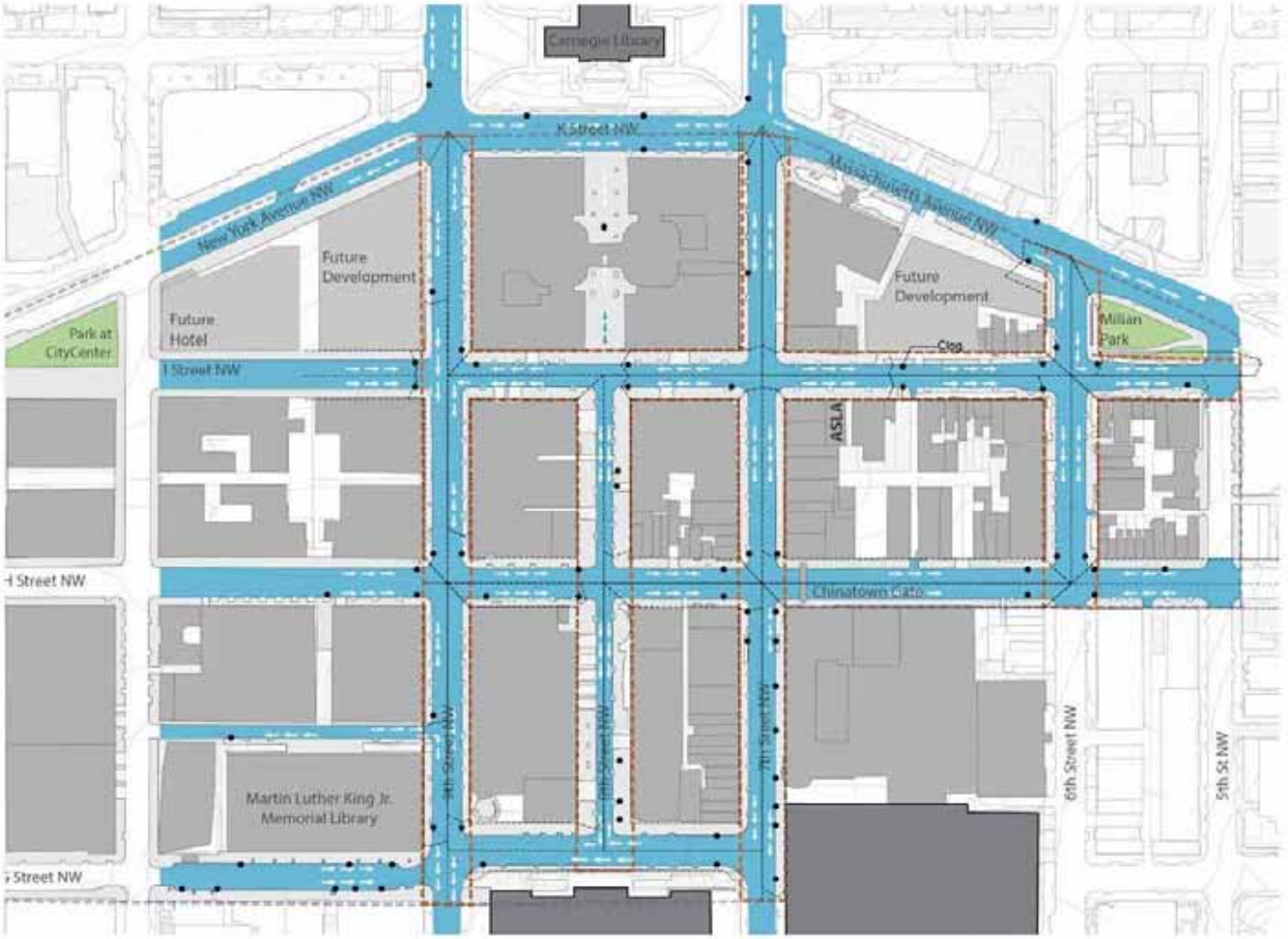
	GOAL	PRELIMINARY SYSTEM OF MEASUREMENT
1.	Embody the mission of ASLA "...lead the design and stewardship of land and communities".	
2.	Support and empower the community.	
3.	Leverage the expertise and resources of ASLA and its members to support community, economic, and environmental sustainability.	Number of ASLA members who participated throughout the project
4.	Increase the visibility of the landscape architecture profession.	Number of media events
5.	Promote the value of Landscape Architecture.	Total contributions to ASLA for project

SYSTEMS ANALYSIS FOR A COMPREHENSIVE STREET DESIGN

- Overall Site
- Geotechnical/subsurface
- Traffic and transit analysis
- Pavement conditions
- Franchise and public utilities
- Overlays and guidelines (CFA, Historic, L'Enfant, Ownership, etc.)
- Historic time line of development significance
- Tree health
- Existing land use and use intensity
- Views and viewsheds
- Walking distance
- Sun/shade analysis
- Surface temperature
- Lumen/footcandle
- Existing irrigation
- Existing on street parking
- Pedestrian circulation
- Existing wayfinding, signage and interpretive aspects
- Stormwater Drainage
- Energy Use

EXISTING CONDITIONS ANALYSIS : STORMWATER

- The study area is approximately 90% impervious.
- Water in the study area predominantly flows south at a rapid pace.
- The site is at the intersection of three combined sewer system watersheds.
- Areas where drain inlets are failing are consistent with where pavement is failing.



LEGEND

- BUILDING FOOTPRINTS
- SIDEWALK
- TOPOGRAPHY
- DIRECTION OF STORMWATER ON THE ROADWAY
- MICRO WATERSHED BOUNDARY
- DRAIN INLET LOCATIONS
- STUDY AREA BOUNDARY
- AREA OF INTEREST

SOURCE: DC GIS

EXISTING CONDITIONS ANALYSIS : URBAN SHADE

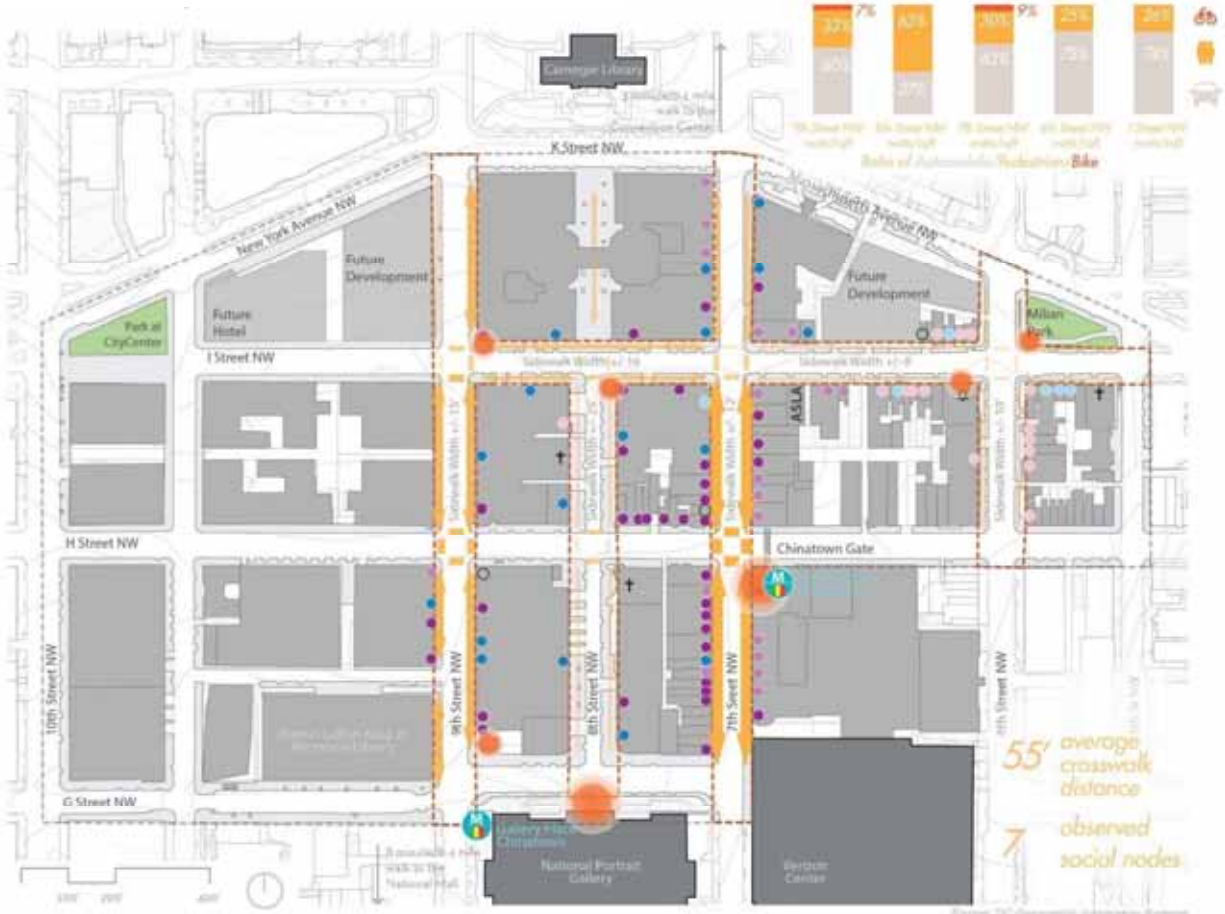
- Only 2% building shade in the study area mid-day in June.
- Through all seasons, north-south running streets receive full sun at the heat of the day.
- The project team measured a +20° average surface temperature difference between shade and sun in July.
- In the winter, east/west streets are at least 75% in the shade all day

Legend

- building shade
- area of interest
- study area boundary

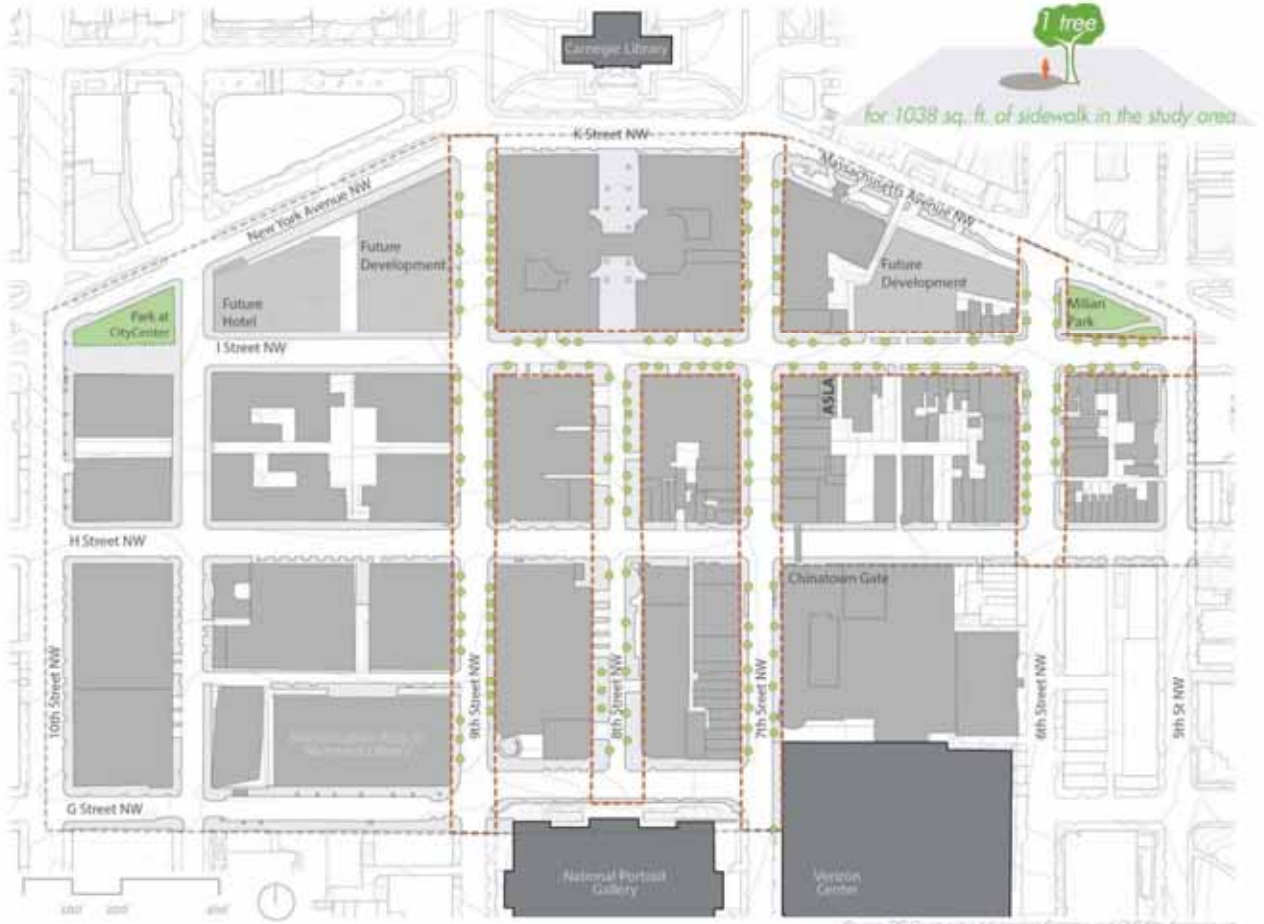
EXISTING CONDITIONS ANALYSIS : PEDESTRIAN MOBILITY AND ACTIVITY

- 7th Street NW currently functions as the predominant north-south pedestrian route through the area.
- The sidewalks along 7th Street NW are among the narrowest yet busiest in the neighborhood.
- 8th Street NW has the widest sidewalks (25 feet) and very low pedestrian traffic.



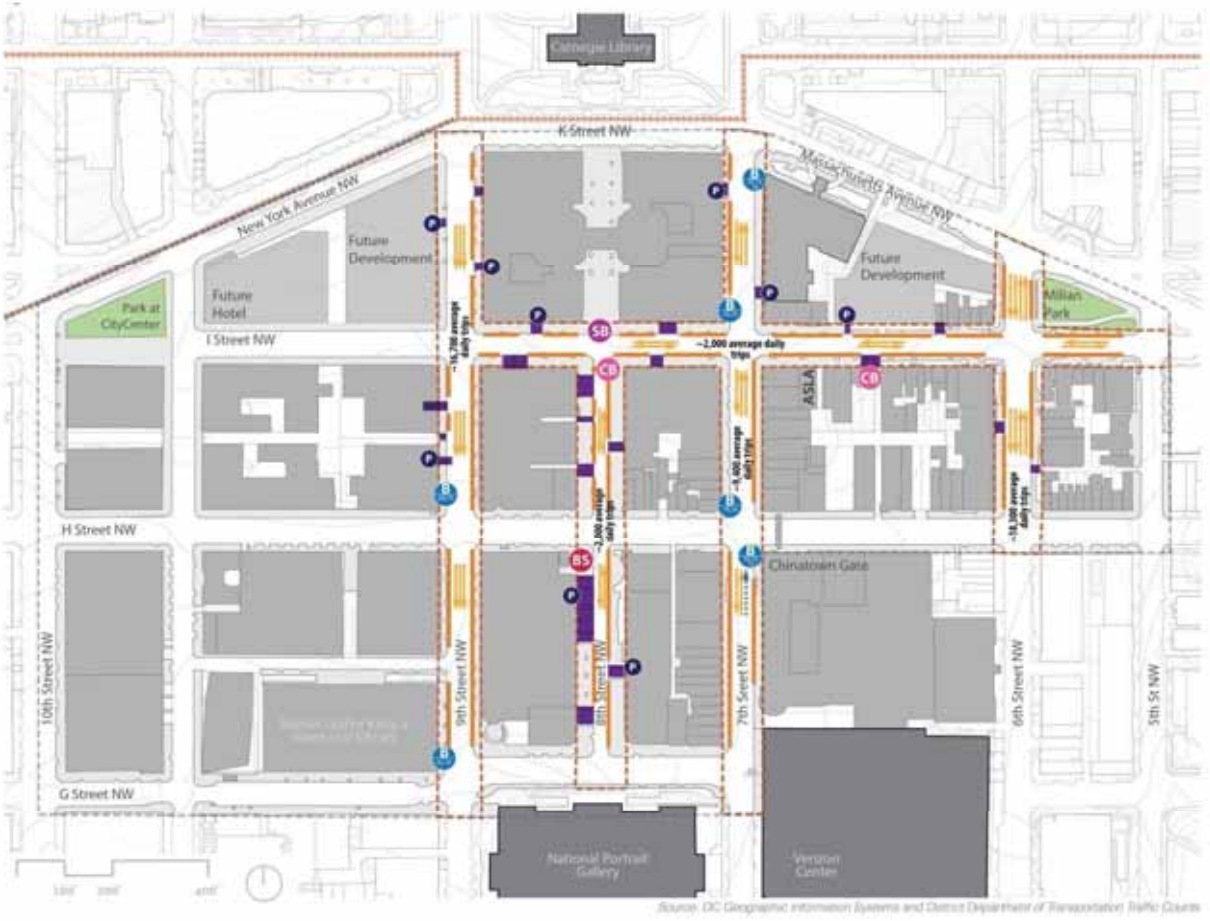
EXISTING CONDITIONS ANALYSIS : TREE COVERAGE AND HEALTH

- 57% of the trees in the study area are in fair or poor health.
- The majority of trees in poor health are located on south-facing blocks.
- 50% of all tree boxes in the study area contain an electrical box.
- 120 average cubic feet of visible soil area for trees within the study area.



EXISTING CONDITIONS ANALYSIS: AUTO CIRCULATION AND INTENSITY

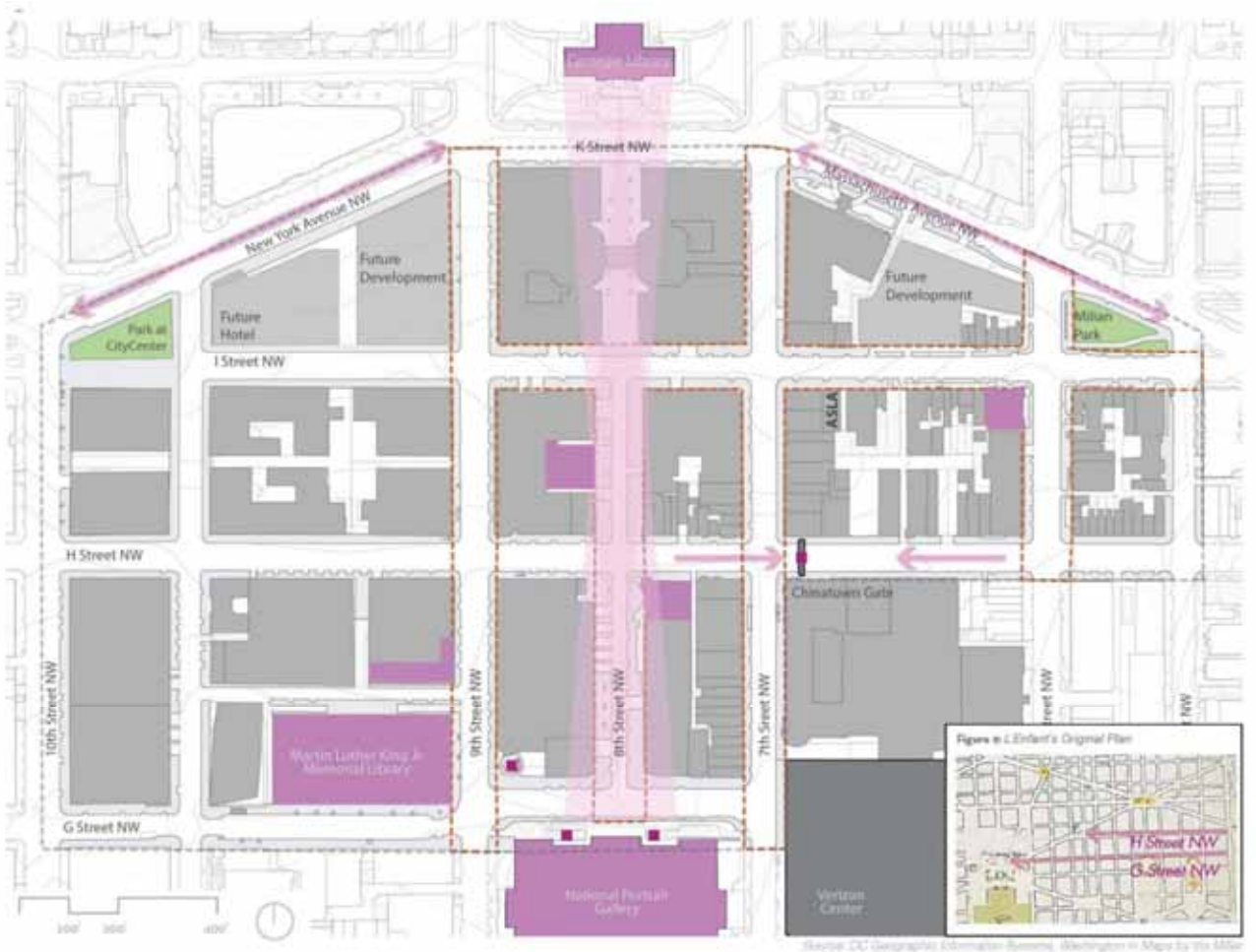
- 6th and 9th Streets NW carry the most automobile traffic in the study area.
- 6th Street NW is designed for the heaviest vehicular capacity, with four lanes of traffic.
- 7th Street NW provides the most mobility options with multiple bus lines and a shared bus/bike lane.
- Loading and garage entry curb cuts are located on 8th Street NW.



Source: DC Geographic Information Systems and District Department of Transportation Traffic Counts

EXISTING CONDITIONS ANALYSIS : CULTURAL AND HISTORIC SYSTEMS

- The L'Enfant Plan for Washington, D.C. positioned a strong vertical axis along 8th Street NW between the Carnegie Library and the National Portrait Gallery.
- The Chinatown Gate on H and 7th Street NW also serves as a wayfinding and sculptural element.



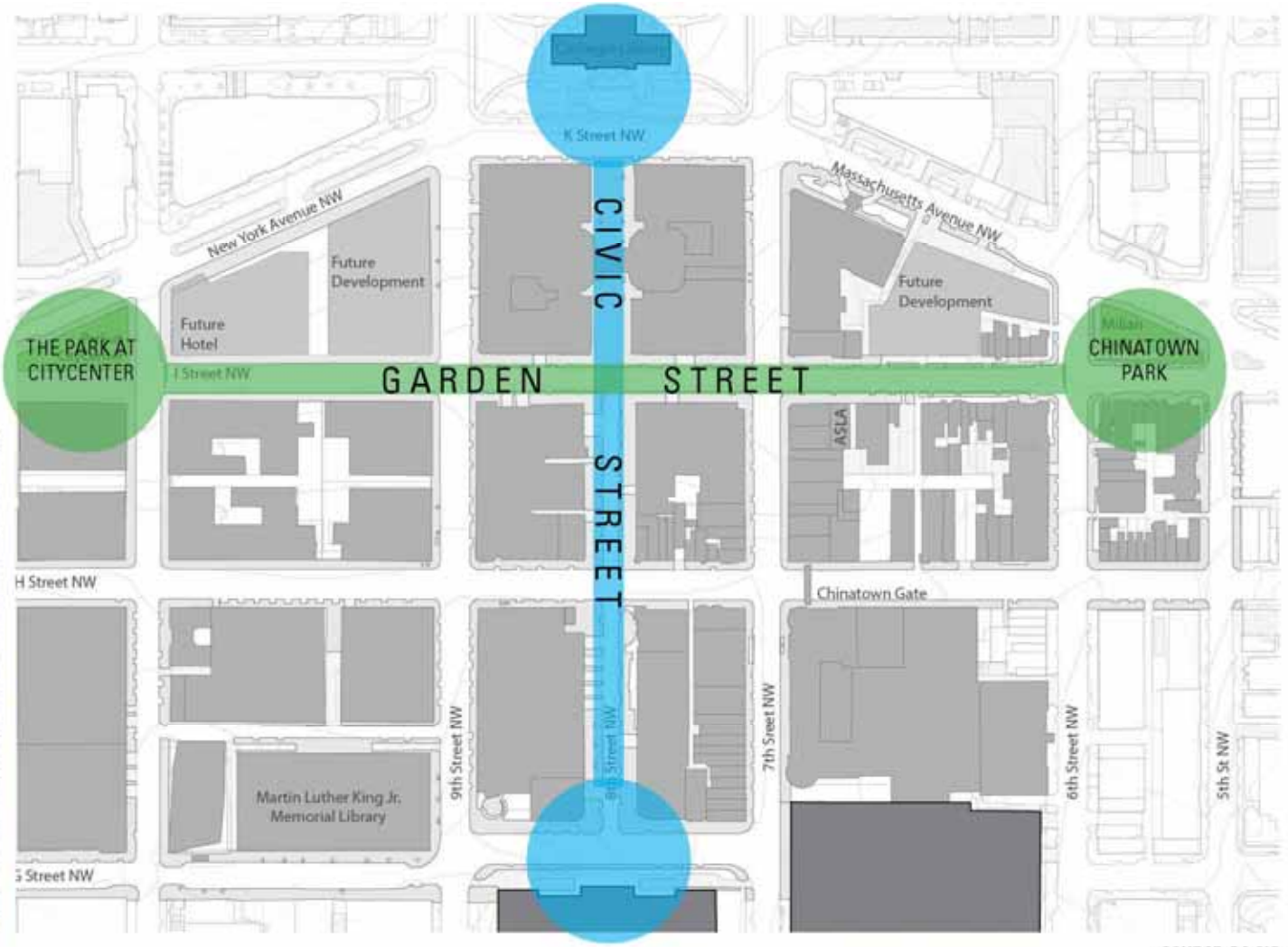
Legend

CODE DIAGNOSTICS

Environment	Sustainable DC Plan	DDOT Green Infrastructure Standards	Washington, D.C. Downtown Streetscape Regulations	Greenroads Reference	SITES Reference
E1. Maximize landscape to absorb and retain stormwater.					
E1a. Divert stormwater volumes to pervious surfaces.	Water 2.2- Increase the use of green infrastructure along public rights of way.			EW.2-Runoff Flow Control 1.3: Reduce runoff quantity; PT-2: Permeable Pavement as a LID technique.	Credit 3.1- Manage precipitation on site (retain the 60th percentile rain event for impervious areas), Credit 3.3- Manage precipitation beyond baseline (80th, 90th or 95th percentile).
E1b. Use vegetation to absorb stormwater.					
E1c. Create holding capacity of subsurface conditions.		Soil volume sizing benchmark: Small tree-600cf, Medium tree-1,000cf, Large tree-1,500.	Downtown Streetscape Regulations-1106.8: Requires a 4 foot by 10 foot planter per tree; appears to be the only pervious zone allowed.		
E1d. Use retained stormwater for irrigation purposes.	Water 3.3- Expand use of neighborhood-scale water collection networks.		Downtown Streetscape Regulations- 1107: Requires watering by adjacent property owners.	EW.2-Runoff Flow Control 1.3:Reduce runoff quantity.	Credit 3.2- Reduce (potable) water use for landscape irrigation, Credit 3.4- Reduce outdoor water use.
E1e. Develop and implement a pervious system cleaning plan.		Provides a basic outline for paving maintenance.			
E1f. Develop and implement a soil maintenance plan.			Downtown Streetscape Regulations-1107: Requires maintenance by adjacent property owners.		
E2. Return stormwater to system as a clean resource.					
E2a. Reduce total TSS from raw stormwater.				EW.3-Runoff Quality 1.3: Treat stormwater to a higher level of quality.	
E2b. Reduce total bacterial content of raw stormwater.				EW.3-Runoff Quality 1.3: Treat stormwater to a higher level of quality.	
E2c. Reduce levels of heavy metals from raw stormwater.				EW.3-Runoff Quality 1.3: Treat stormwater to a higher level of quality.	
E2d. Reduce levels of minerals and chemicals from raw stormwater.				EW.3-Runoff Quality 1.3:Treat stormwater to a higher level of quality.	

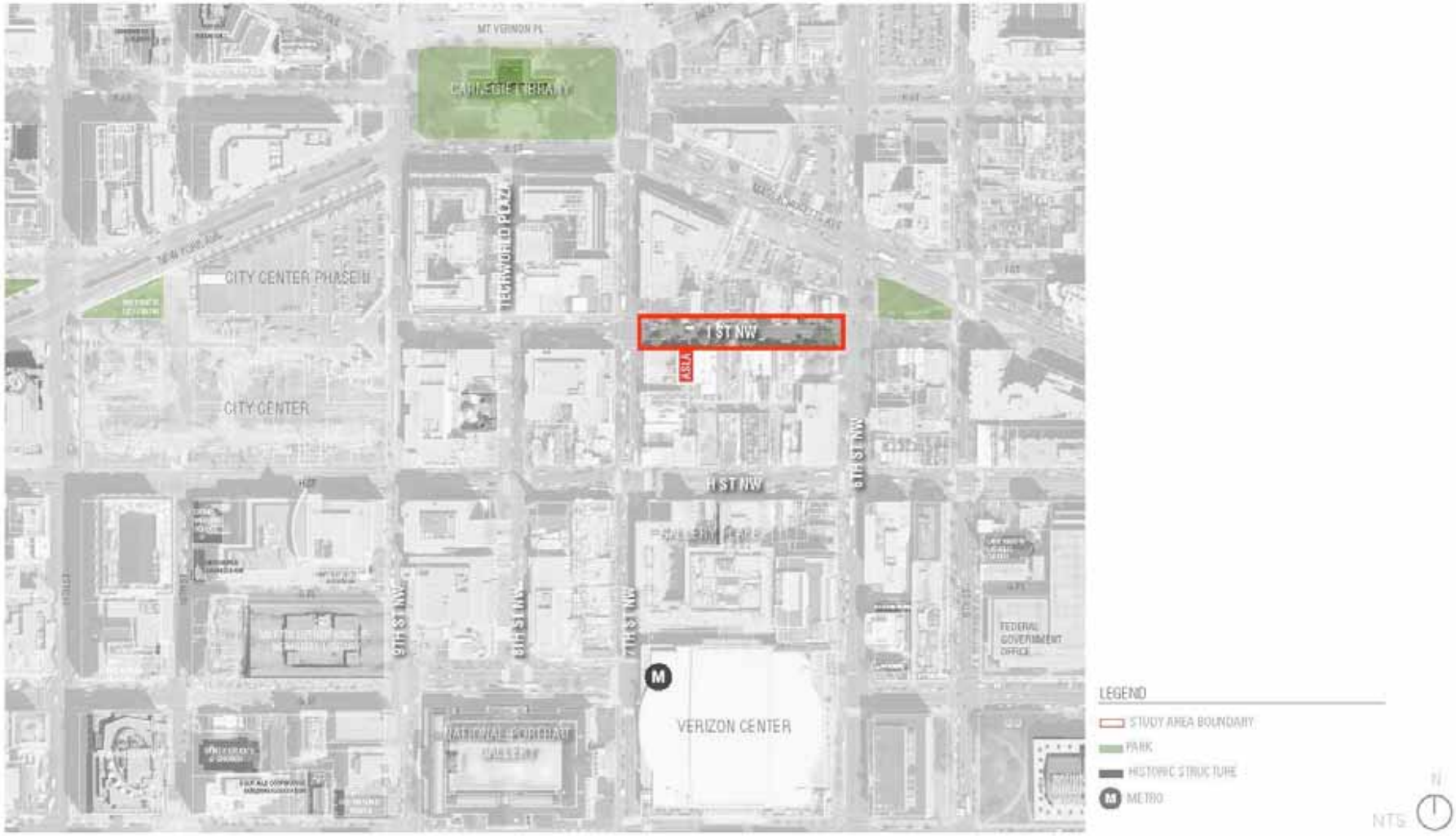
PARTI DIAGRAM

CHERRY CREEK NORTH - DENVER, CO



SOURCE: DC GIS

I STREET PILOT PROGRAM



ANALYSIS AND STRATEGIES

STRATEGIES FOR COMPREHENSIVE STREET DESIGN

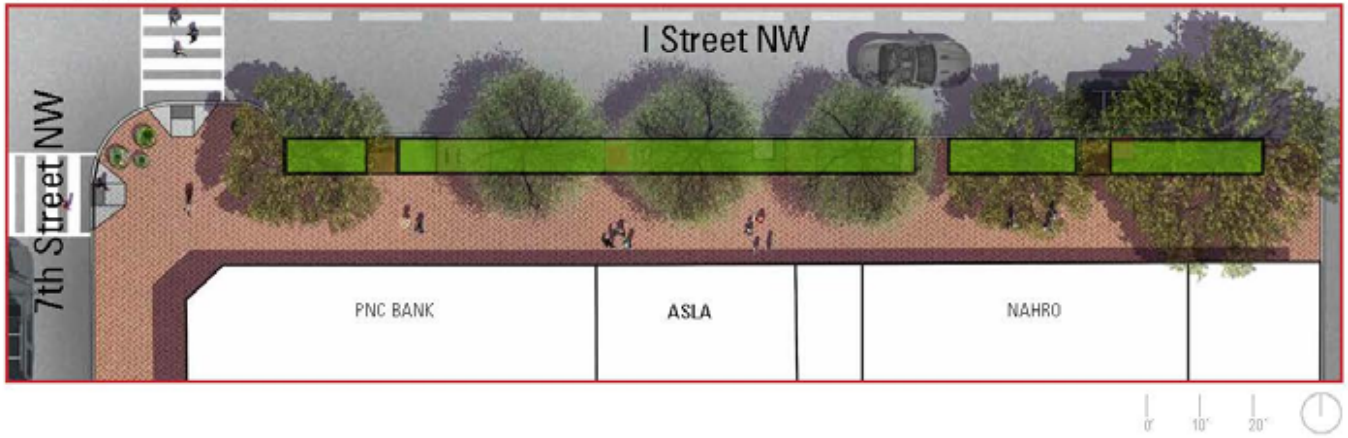
UTILITY CONSTRAINTS

SOURCE: DC GIS

STRATEGY 1: INCREASE PERVIOUS AREA THROUGH INCREASED PLANTING AREA

600 - 700 I STREET NW

IMPLEMENTATION AREA



3%
EXISTING PERVIOUS SURFACE

24%
PROPOSED PERVIOUS SURFACE

STRATEGY 1: INCREASE PERVIOUS AREA THROUGH INCREASED PLANTING AREA

CHERRY CREEK NORTH - DENVER, CO

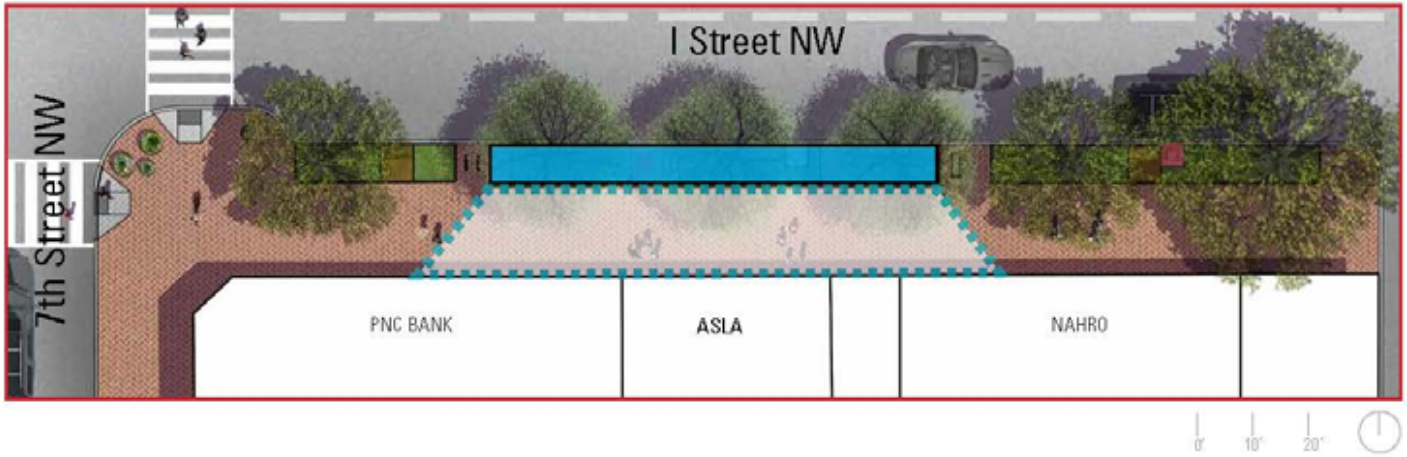
STRATEGY 1: INCREASE PERVIOUS AREA THROUGH INCREASED PLANTING AREA

BAGBY STREET - HOUSTON, TX

STRATEGY 2: RETAIN STORMWATER - PROPOSED RAIN GARDEN

600 - 700 I STREET NW

IMPLEMENTATION AREA



2775 CF
RAIN GARDEN RETENTION

100% +
1.2" STORM EVENT
WITHIN CAPTURE AREA

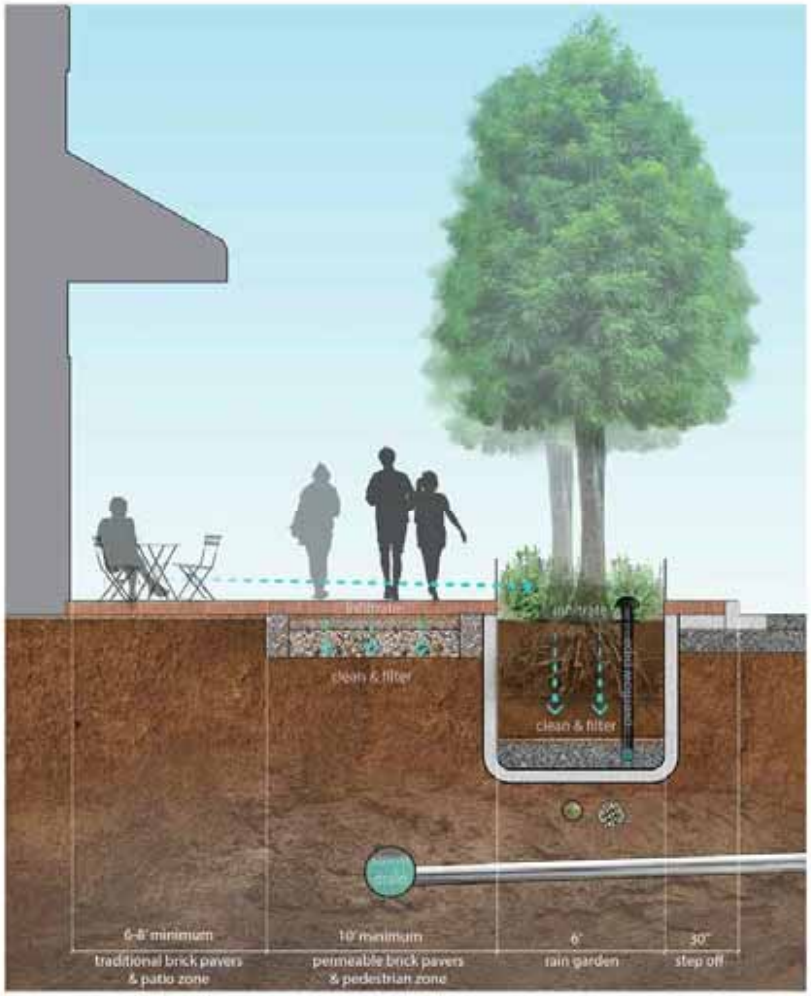
STRATEGY 2: RETAIN STORMWATER - PROPOSED RAIN GARDEN

ELMHURST QUEENS, NY

STRATEGY 2: RETAIN STORMWATER - PROPOSED RAIN GARDEN

CULTURAL TRAIL - INDIANAPOLIS, IN

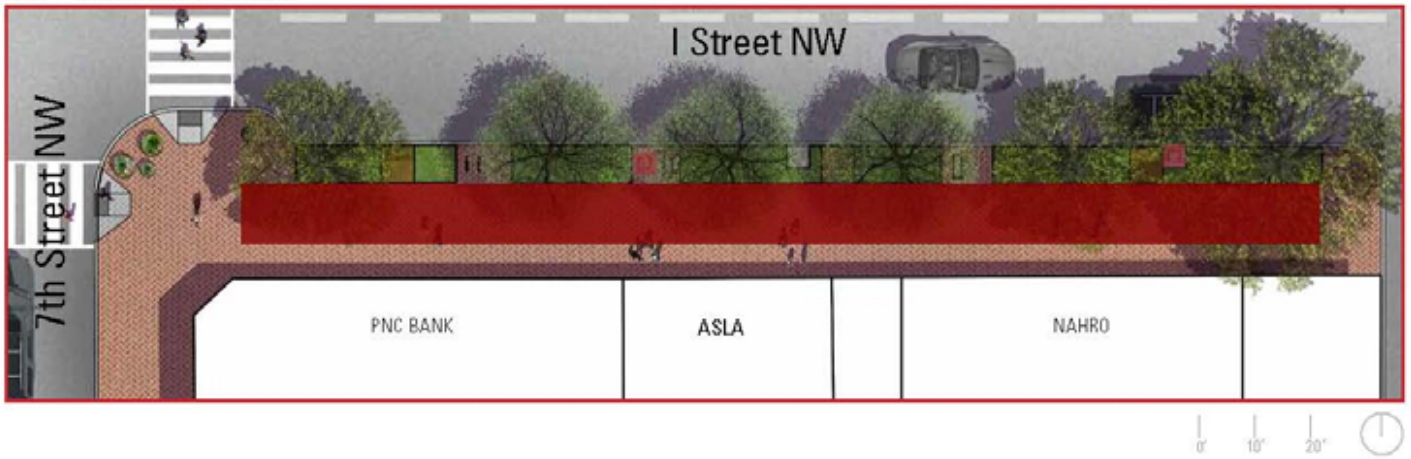
STRATEGY 2: RETAIN STORMWATER - PROPOSED RAIN GARDEN



STRATEGY 2: RETAIN STORMWATER - PERMEABLE PAVERS

600 - 700 I STREET NW

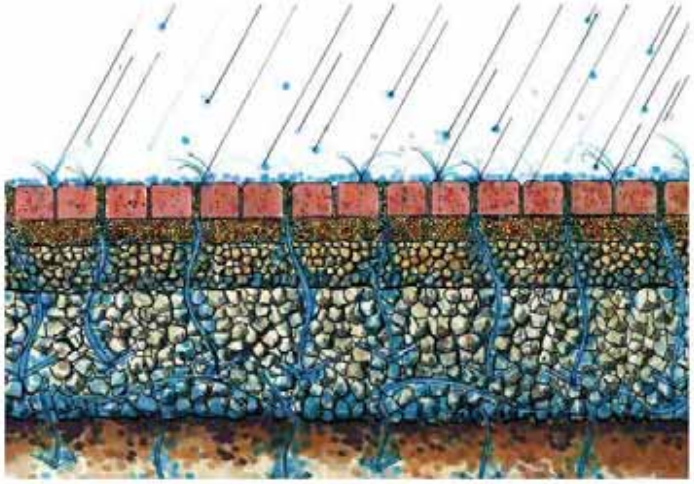
IMPLEMENTATION AREA



17243 CF
PERMEABLE PAVER RETENTION

100% +
1.2" STORM EVENT WITHIN CAPTURE AREA

STRATEGY 2: RETAIN STORMWATER - PERMEABLE PAVERS



- I Street NW currently uses Pine Hall Red (PH-1) 4x8x2-1/4 pavers in basketweave pattern. Pine Hall Brick also makes a matching permeable brick paver called StormPave that is used on several municipal, institutional and commercial projects in the district.

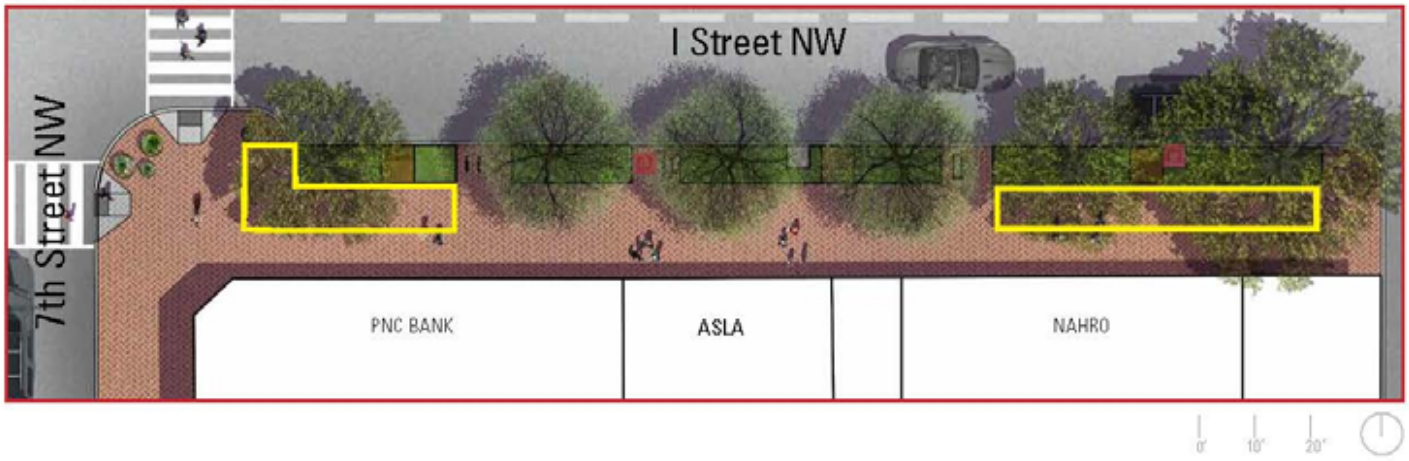
STRATEGY 2: RETAIN STORMWATER - PERMEABLE PAVERS

BAGBY STREET - HOUSTON, TX

STRATEGY 3: INCREASE SOIL VOLUME

600 - 700 I STREET NW

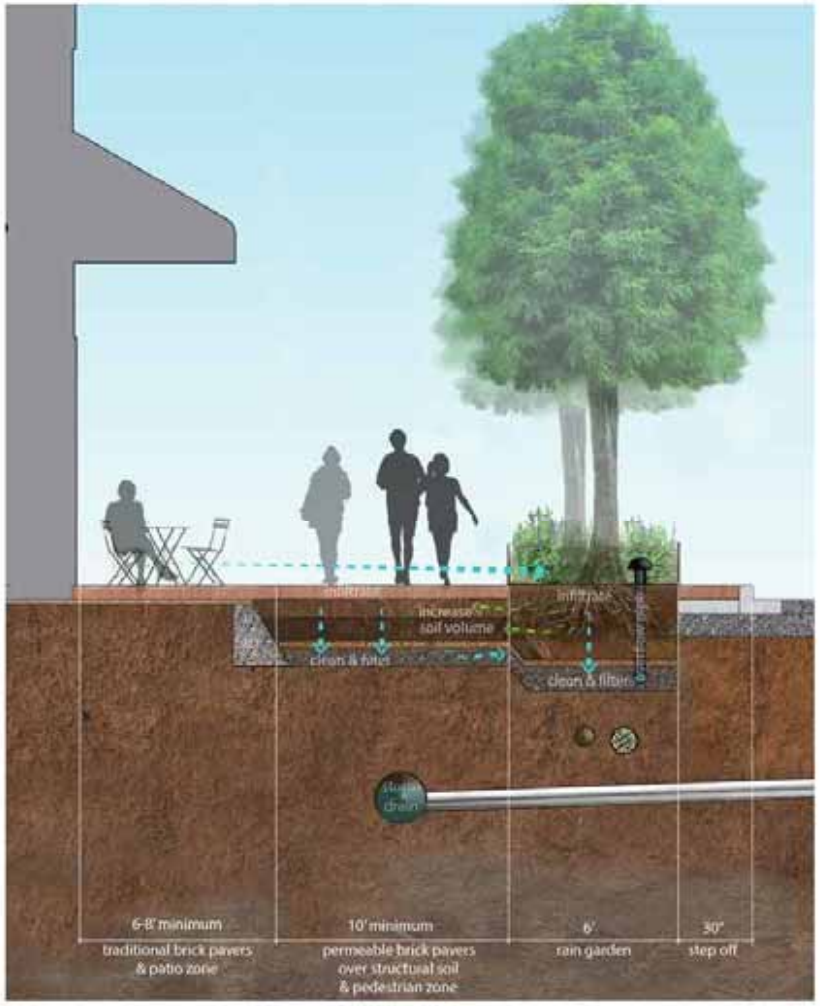
IMPLEMENTATION AREA



130 CF
AVG SOIL VOLUME EXISTING PER TREE

800 CF
AVG SOIL VOLUME PROPOSED PER TREE

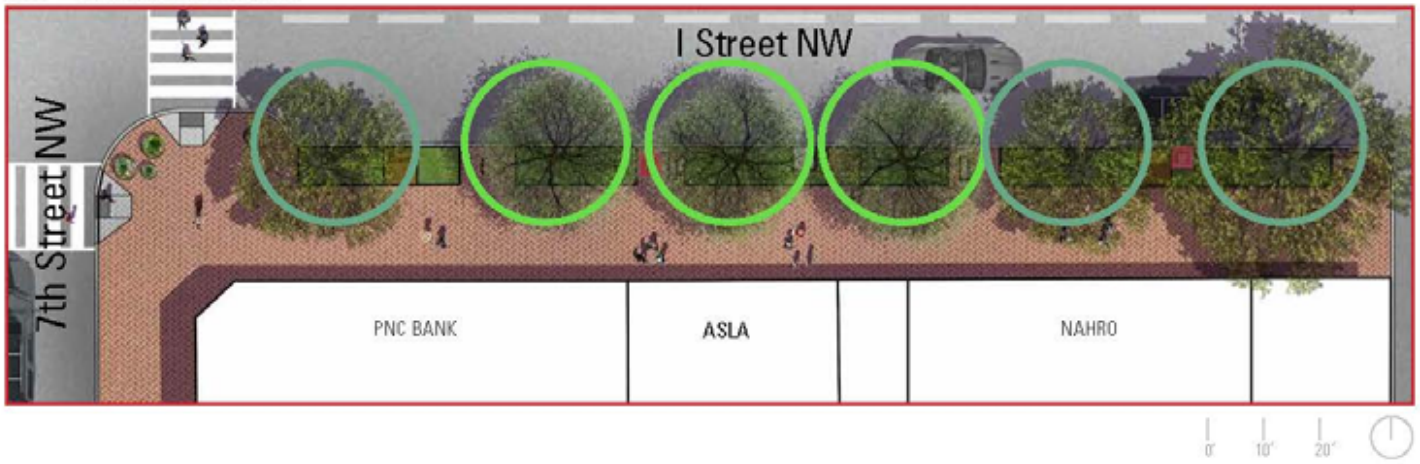
STRATEGY 3: INCREASE SOIL VOLUME



STRATEGY 4: PLANT MORE TREES

600 - 700 I STREET NW

IMPLEMENTATION AREA



12
EXISTING TREES

24
PROPOSED TREES

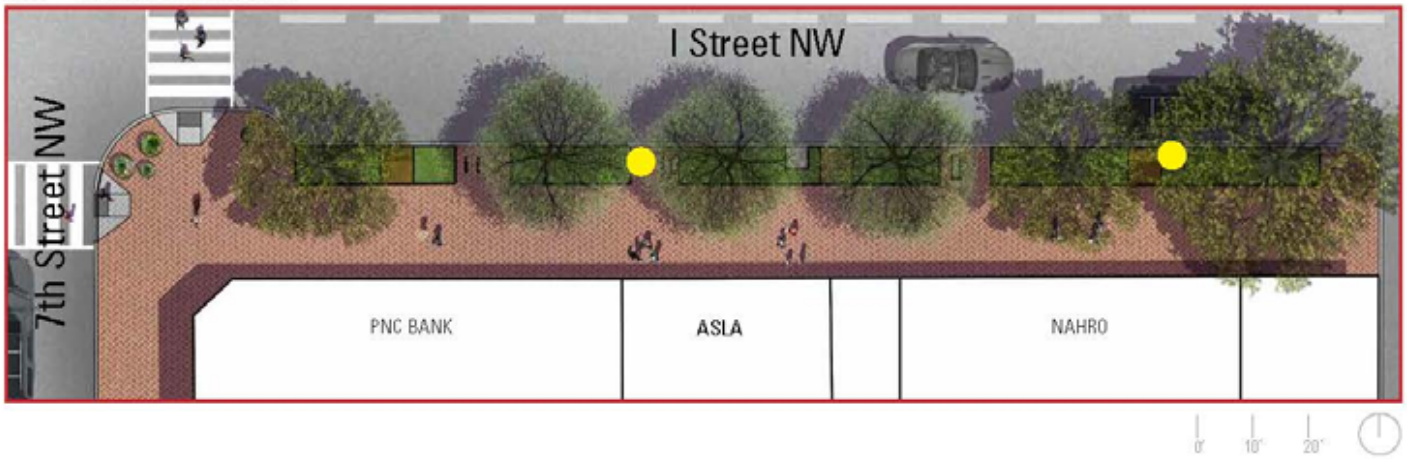
STRATEGY 4: PLANT MORE TREES

THE DOMAIN - AUSTIN, TX

STRATEGY 5: REDUCE ENERGY CONSUMPTION BY SWITCHING TO LED

600 - 700 I STREET NW

IMPLEMENTATION AREA



293 kWh
WATTAGE PER HOUR OF EXISTING LIGHT

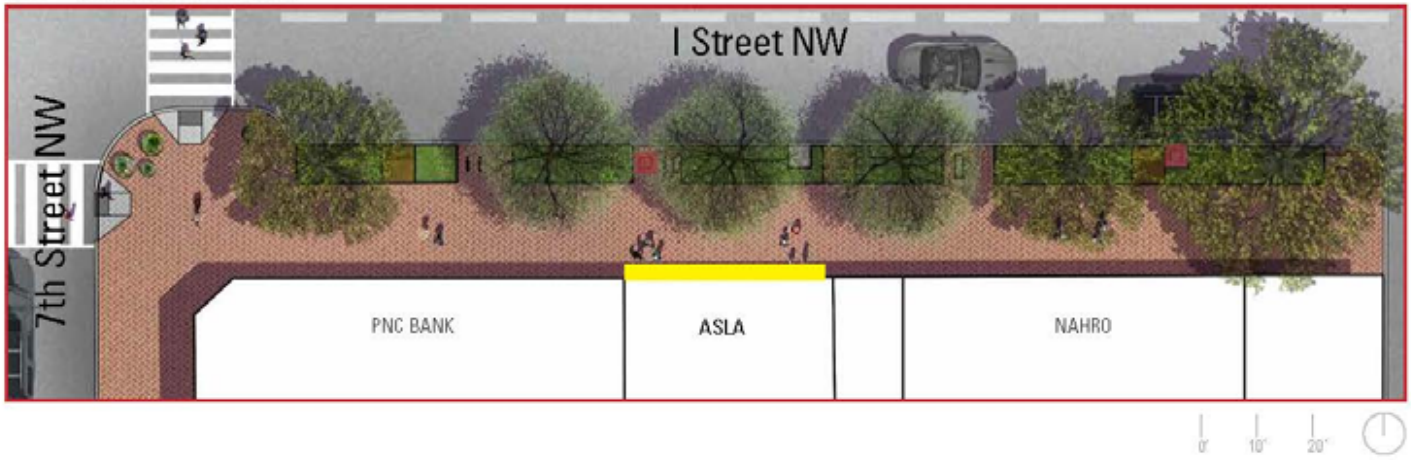
141 kWh
WATTAGE PER HOUR OF PROPOSED LIGHT:

52% ENERGY REDUCTION

STRATEGY 6: USE TECHNOLOGY TO MONITOR AND DISPLAY DATA

600 - 700 I STREET NW

IMPLEMENTATION AREA



STRATEGY 6: USE TECHNOLOGY TO MONITOR AND DISPLAY DATA

BAGBY STREET - HOUSTON, TX

GREEN, COMPLETE, AND SMART STREETS

EYE STREET CORRIDOR CONCEPT DESIGN

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS | WASHINGTON, D. C.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

DESIGNWORKSHOP

EYE STREET CORRIDOR CONCEPT DESIGN

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DESIGNWORKSHOP

THANK YOU!

BAGBY STREET - HOUSTON, TEXAS