

EAST 4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL



Applicant:

Fourth Arts Block, Inc
61 E. 4th Street
New York, NY 10003
212.228.4670

Tamara Greenfield, Executive Director
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Betsy Imershein, Streetscape & Sustainability Consultant
betsy@fabnyc.org

Co-Applicants:

31 property owners along E. 4th Street between Bowery & 2nd Ave

Partners:

Cooper Union Institute of Sustainable Design
Cooper Square Mutual Housing Association
Weidlinger Associates, Inc
Bone/Levine Architects

Community Partners

Cooper Square Committee
FAB members – 23 arts organizations
The Cooper Union for the Advancement of Science & Art
JASA

Project Summary:

Streets and sidewalks contribute to 26.6% of New York City's Combined Sewer Overflow. The East 4th Street Cultural District Green Infrastructure project will incrementally help to lessen storm water overflow events, while providing a highly visible model project for other communities to study and replicate. We are addressing a typical condition, one that repeats itself on countless blocks in countless neighborhoods throughout New York City. The proposed work attempts to address current problems to the stormwater system by efficiently redirecting water flow to the permeable surfaces of sidewalk, tree pit, and street. Total drainage area for our porous paving project is 19,590 sq ft, with total area of permeable pavers equaling 4,463 sq ft. This will demonstrate, by example, that through a simple strategy of well designed and carefully constructed improvements, storm water runoff can be significantly reduced.

While our core project is focused on stormwater management and waterflow reductions, another central component of this project is its community visibility, participation and education. The partnership and collaboration of Fourth Arts Block (FAB), the leadership organization for the E. 4th Street Cultural District, and the Cooper Union Institute for Sustainable Design (CUISD) is central to this proposal. We bring several constituencies and stakeholders to the project, providing technical expertise, coordination, leadership and commitment to sustainability. Students enrolled at The Cooper Union will also participate in this pursuit of innovative practice and methodology, as they will be included in monitoring and testing our installations over a 3 year period to evaluate these stormwater reduction tools.

APPLICATION NARRATIVE

PROJECT OVERVIEW, CONTEXT, EXPERIENCE & EXPERTISE, PARTNERS

FOURTH ARTS BLOCK, INC. (FAB)

FAB is the nonprofit leadership organization for the East 4th Street Cultural District, a historic and vibrant arts corridor in Manhattan between Second Avenue and Bowery. A coalition of arts and civic groups, FAB drives cultural tourism, consumer spending and economic development for the neighborhood, while also preserving its rich heritage and creative energy.

FAB is in a unique position as an applicant for this grant. We are situated in a typical mixed-use East Village block, with 31 property lots (Appendix 2), narrow sidewalks, stoops, low/moderate income and market rate housing, outdoor cafes, small mom and pop shops and in the enviable position of being a cultural district, with 24 member arts and social service organizations. This one of a kind creative community, which also has a world class educational institution around the corner as a partner, makes E. 4th Street a special block, the perfect place to start a movement in support of a local economy and sustainable living.

We have a new vision for the neighborhood, one based on a greater sharing of resources and opportunity, of green infrastructure and local sustainability. This Green Infrastructure Grant Program opportunity would serve as the pilot and demonstration model for a neighborhood environmental initiative.

We envision green infrastructure, initially applied to further streetscape improvement and storm water management improvements and a green roof, to become the seed of further partnership with The Cooper Union Institute of

Sustainable Design (CUIDS), in service of a wider energy, water and neighborhood eco-zone campaign.

Our strategy can become a model for similar neighborhoods throughout NYC, reaching across sectors to create new and stronger partnerships in the quest for sustainability on a local level.

This proposal addresses a typical New York City condition and proposes to demonstrate that through a simple strategy of well designed and carefully constructed sidewalk improvements storm water runoff can be significantly reduced. The close relationship of FAB to CUIDS and its access to the resources of Cooper Union's Architecture and Engineering schools, provides a unique opportunity to deploy, test, observe and ultimately advise the DEP on the effectiveness of those methods of storm water flow reductions and to develop and recommend possible improvements for universal applicability in NYC.

LEAD APPLICANT

Fourth Arts Block (FAB) was created in response to the potential loss of buildings housing dozens of theaters, dance studios, and arts spaces along E. 4th Street in lower Manhattan. In 2005, as a result of FAB's advocacy and with the support of local elected officials, the City sold 8 properties to the block's arts tenants for \$8, stipulating that the buildings continue their nonprofit cultural use in perpetuity. Concurrently, the block was designated an official Cultural District by Mayor Bloomberg, one of only two in New York City. FAB has unified and engaged the block's diverse stakeholders, leading façade and

streetscape improvements, annual festivals, discount ticket programs, shopping events, historic tours, a public art program and a centralized website, heightening exposure and economic opportunity for a growing network of cultural organizations, small businesses, restaurants, and residents.

In just four years, FAB helped raise more than \$18 million in public capital funds to improve rundown cultural facilities, \$675,000 for façade and streetscape improvements, and \$650,000 in private grants for cultural and economic development initiatives. FAB is now leading the renovation of more than 100,000 sq ft of arts space with our cultural and agency partners. Once completed, East 4th Street will include 13 theaters, 4 dance studios, 5 rehearsal spaces, a public archive for Off-Off Broadway theater, and a “green” backstage workshop. In 10 years, nonprofit cultural space on the block will exceed 145,000 sq ft, an increase of nearly 200%.

In 2007-2008, FAB led a participatory design process with Starr Whitehouse that incorporated the needs of arts organizations, merchants, and residents. The plan represents a shared community vision and prioritized three areas of focus: promoting cultural resources and heritage; greening the block; and improving access and safety. The streetscape plan helped FAB leverage capital support from elected officials, as well as project support from the New York State Council on the Arts, New York State Housing Trust Fund, JM Kaplan Fund, and LuEsther T. Mertz Charitable Trust.

FAB is also leading a series of sustainability initiatives for our community, aided by grants from Whole Foods Market and Con Edison. Over the past year, FAB provided lighting audits and upgrades to cultural and community facilities, and organized recycle/re-use programs that diverted more than 4.1 tons from the waste stream. FAB is becoming a leader in sustainable practices for cultural groups.

STAFFING

This project is an expansion of FAB’s district improvement and sustainability efforts, and the first phase of a neighborhood environmental initiative collaboration between FAB and CUISD. There will be a core project team comprised of staff from all Project Partners, with primary leadership from FAB and CIUSD (staffing contact info below).

FAB not only played a central leadership role in establishing the East 4th Street Cultural District, but has continued to secure significant new capital resources, coordinate design and construction for six cultural and community facilities, and build innovative partnerships across sectors. The Green Infrastructure Grant will be a continuation of this core work.

Since the transfer of properties to its members in 2005, FAB has led advocacy efforts to help the district leverage more than \$18 million in capital funding, while continuing to move capital projects forward. The complicated structure of ownership on East 4th Street has often inhibited coordination with City agencies and other partners. Through regular meetings, calls, and tours, FAB’s Executive Director worked closely with agency staff to monitor project progress and problem solve for design and construction work on multiple facilities.

Similarly, a centralized effort by FAB’s leadership has improved advocacy with elected officials. While each group continues to submit applications for their building’s capital needs, FAB compiles and promotes vision and needs for the whole district. Each year, FAB leadership meets with key local and citywide elected officials to ensure continued support and progress.

FAB recently initiated FAB LAB, a new program that establishes our community-based network as a learning laboratory and testing ground for collaborative solutions to challenges faced by artists, small cultural and community groups. With our strong contingency of grassroots organizations, our history of developing successful

collaborative practices and relationships across sectors, our nimble and responsive operations, FAB is uniquely placed to test shared strategies to support diverse communities.

Support from DEP will allow us to shape and expand FAB's current sustainability strategies into a focused effort, with documented outcomes that will benefit other NYC communities. FAB will document and communicate best practices, and use FAB LAB findings to support learning and training opportunities for communities throughout NYC. Replicable models could include a list of core principles, a mini-case study, and support documents. FAB will disseminate information through a variety of strategies, including hosting conversations with other organizations, running mini workshops, and publishing a final workbook.

PROJECT TEAM

(Appendix 10 for Bios)

Betsy Imershein

Sustainability Consultant, Fourth Arts Block, will oversee and manage the project and is the primary point of contact. She can be reached at betsy@fabnyc.org and 917.364.1110.

Tamara Greenfield

Executive Director, Fourth Arts Block, will support project management and reporting, and coordinate with property owners. She can be reached at tamara@fabnyc.org and 212.228.4670.

Kevin Bone

Director, The Cooper Union Institute for Sustainable Design, will provide design and monitoring services. He can be reached at kbone@cooper.edu and 212-353-4253.

Sunnie Joh

Associate, The Cooper Union Institute for Sustainable Design, will be the primary contact for CUISD's involvement in this project. She can be reached at sunnie@cooper.edu and 212-353-4253.

Valerio Orselli

Executive Director, Cooper Square Mutual Housing Association, will participate in design and construction planning. The Cooper Square MHA staff will support maintenance of the sidewalks and green roof.

Greg Kelly

Director of Sustainable Design, Weidlinger Associates, will provide engineering and structural services.

James Quinn

Principal, Weidlinger Associates, will provide engineering and structural services.

COMMUNITY ENGAGEMENT & EDUCATION

FAB was founded as a collaborative, facilitative organization. This proposal has provided us with another opportunity to engage the block in conversation about issues of individual and shared concern. Our members, residents, community groups and building owners are excited at the prospect of participating in this pilot project and eager for stormwater management improvements for the neighborhood. We will continue to engage and include community stakeholders in design, construction scheduling, and future maintenance and stewardship of this project.

To educate the community and the over 250,000 people who visit the cultural district each year, we will create and install a descriptive plaque at the E. 4th St and Bowery entrance to the block. JASA, one of our community partners, has offered space on their brick wall for this purpose.

PARTNERS

The Cooper Union Institute of Sustainable Design (CUISD) - principal advising partner. CUISD was created in 2009 to assist the university in providing cross-disciplinary knowledge and practical skills for their architecture, engineering and fine arts students. Its mission is to serve as a resource to promote research, education and public understanding of green building design and construction. To successfully meet the professional and personal challenges of creating a sustainable society that can only prosper because of its economic, social and engineering systems, the Institute is a conduit for exchange of knowledge and acquired skills, through mutually enlightening dialogue with the larger intellectual and civic communities. The CUISD works closely with Cooper Union's Schools of Engineering and Architecture and the intellectual resources of both faculty and students allow for research and study opportunities related to this application.

Cooper Square MHA (MHA) - lead community partner. MHA is committed to the preservation and development of tenant-controlled and cooperatively owned affordable housing. Founded in 1991 by Cooper Square Committee, MHA serves as a nonprofit affordable housing manager, developer and owner, and works with other groups to protect affordable housing throughout the Lower East Side of Manhattan. MHA currently manages 377 residential apartments and 24 storefronts in 23 buildings, and is in the process of converting 21 rehabilitated buildings into a single co-op. Twelve of those buildings are part of the E. 4th St Cultural District.

Weidlinger Associates, Inc. (WAI) - consulting partner. WAI is a structural, civil and geotechnical engineering firm focused on supporting and advancing the green agendas of architects, built-environment professionals, public agencies, and private developers by optimizing structural systems and materials and synergizing the contributions of the various A/E disciplines. Their sustainability initiative comprises 38 LEED-accredited engineering professionals and a sizeable group of their peers who are actively pursuing

ing accreditation.

WAI's immediate sustainability commitment is to clients and projects. The firm's engineers regularly design sustainable structures, from green and blue roofs to underground water retention systems, and assess available materials based on their life-cycle environmental impact. They integrate site/civil and underground utilities solutions with green building systems and combine green solutions with multi-hazard protection against earthquakes, high winds, and blast. They also seek opportunities to quantify the embodied carbon advantage of retrofit, reuse, and recycling; to increase flexibility of new structures to facilitate renovation; and to collaborate with architects in designing aesthetically pleasing sustainable structures.

Bone/Levine Architects - advising architects. Bone/Levine a Manhattan based, 29-year architectural practice, currently employing 15 technical staff members. Their work focuses on a mix of contemporary architectural design, technical consulting and historic preservation. The firm has consulted to the New York City Department of Environmental Protection, successfully structuring, managing and implementing a two year, \$675,000 contract to improve and operate the archives that houses records describing the design and construction of the New York City water supply system. Bone Levine managed staff and outside consultants for the DEP and improved the archival systems that house these critical records. All tasks were performed on time and on budget.

COMMUNITY PARTNERS

Cooper Square Committee

with over 600 members, works with area residents to preserve and develop affordable, environmentally healthy housing and community spaces so that the Lower East Side remains racially, economically and culturally diverse.

FAB member arts organizations

Alpha Omega Theatrical Dance, Creative Time, Dixon Place, Duo Multicultural Arts Center, East Village Dance

Project, Horse Trade Theater Group, IATI Theater, La MaMa ETC, Lower East Side History Project, Metropolitan Playhouse, Millennium Film Workshop, New York Neo-Futurists, New York Theatre Workshop, Nuyorican Poets Café, Paradise Factory, Performance Space 122, Rod Rodgers Dance School, Rod Rodgers Dance Company, Teatro Circulo, The Living Theater, Works In Progress NYC, WOW Café Theatre.

The Cooper Union for the Advancement of Science and Art

was established in 1859, with a commitment to advancing technology in the cause of social betterment. This promise is embodied in the values of the college's founder, Peter Cooper, himself a mid-nineteenth-century force of transforming technologies, and a leader in advancing the importance of free education, particularly for those with little economic means and newcomers to the nation's shores.

Today, the mission he began in 1859 is represented in the college's policy of providing full tuition scholarships for students throughout the duration of their undergraduate studies. These students are not only academically accomplished and committed to learning, but are equally dedicated to civic involvement and engagement on a working level with the most pressing issues of the time. The CUISD works closely with Cooper Union's Schools of Engineering and Architecture and the intellectual resources of both faculty and students allow for research and study opportunities related to this application.

JASA

JASA's mission is to sustain and enrich the lives of the aging in the New York metropolitan area so that they can remain in the community with dignity and autonomy. One of their senior housing properties backs on the cultural district, and they are a valued and active community partner.

GRANT ELIGIBILITY CONTEXT

The NYC Green Infrastructure Plan recommends a mix of green infrastructure to absorb, retain and minimize peak overflows. It is typified by relatively quick installation and minimal energy for operation. This pilot project mirrors the specifications laid out in that Plan, while it creates partnerships between local stewards, community groups, residents, arts organizations, an educational institution and NYC DEP. Through the professional association and support of CUISD, Engineering faculty and students at The Cooper Union, and the E. 4th Street Cultural District, this project will demonstrate strategies and verify effective stormwater management on a neighborhood scale.

DESCRIPTION, SIZE, PLANS AND DRAWINGS, ANALYSIS

Streets and sidewalks contribute to 26.6% of New York City's Combined Sewer Overflow (CSO). The East 4th Street Cultural District Green Infrastructure project will incrementally help to lessen storm water overflow events, while providing a highly visible model project for other communities to study and replicate. Reconstruction of the entire sidewalk, curb line and 18" of street bed will correct for current local failures which create flooding and severe puddling – much of this caused by the disrepair of sidewalks and curb lines on E. 4th Street. The proposed work will create a complete system to adequately and efficiently redirect water flow to the permeable surfaces of sidewalk, tree pit, and street. Stormwater management systems, such as the pervious pavement and green roof system that we are proposing, are capable of minimizing and controlling surface runoff by retaining and filtering precipitation, maximizing infiltration and subsurface runoff. The proposed green roof will contribute to reducing the 'urban heat island effect' in the neighborhood, increase the thermal performance of the building, and capture and store water and pollutants.

PROJECT A: Sidewalks, Curbs & Street

Project description:

(Appendix 8) This E. 4th Street block has narrow sidewalks, with the project area having some sections that are narrower than others due to staircases extending out onto the sidewalk or the existence of sidewalk vaults. We will maintain an appropriate clearance from the building walls or sidewalk vaults. Because of these constraints, we are proposing to reconstruct the entire sidewalk of similar tint, with a strip of permeable pavers along the length of the block, where feasible.

Our preliminary calculations indicate that by using a 2-ft wide section of 4 inch permeable pavers and keeping a

depth of about 2-ft of crushed stone, we are able to retain the storm water quality volume. The system is sized to retain a rain event of 1.3 inches (water quality volume per the NYS Storm Water Management Design Manual). This is the most typical storm event. For greater rain events the system will overflow into the sewer system. Our system proposes a reduction of the 3150 cu ft per rain event. Based on our experience with the NYCDEP and their preference to have a cleanout manhole structure to prevent solids or debris from entering into the City sewers. It will be included as well as allow for maintenance for the proposed infiltration system. This has been included in our design.

Project site:

Site runs along E. 4th Street from Bowery to 2nd Avenue, with reconstruction taking place on both the north and south sidewalk, curb and street bed sections. The sidewalks are approximately 6,100 sq ft each for a total of 12,200 sq ft

Our design proposes use of permeable pavers for the sidewalks and 18" of street closest to the curb line. These pavers conform to a permeability not less than 5 gallons per minute per sq ft.

This system will include an under layer of at least 12 inches of clean gravel over a layer of geotextile fabric. The under layer serves as an underground detention basin and will include an overflow outlet to prevent water from rising through the pavement. The pavement itself acts as pretreatment to the stone reservoir below.

The total drainage area for the paving project is 19,590 sq ft. The total area of permeable pavers equals 4,463 sq ft.

At this point in the study we are not able to produce what we believe would be a well supported, specific, cost benefit analysis. It is the views of our professionals that this is a modest proposal that will yield significant storm waterflow reductions, the actual results to be determined through deployment. Part of what the proposal seeks to accomplish is to provide a typical, elemental installation that sets up a situation where further study and verification of performance can be realistically done.

ANALYSIS FOR PROJECT A

After visiting the site, it was determined that due to the narrowing of the sidewalks by staircase extensions to residential buildings and the existence of some sidewalk vaults, a full sidewalk replacement with permeable pavers is not feasible. In order to ensure that the new drainage will not affect building foundations and/or sidewalk vaults, the permeable pavers will be used where it is possible (see design). We are recommending complete sidewalk replacement, with the non-permeable material tinted concrete of the same color as the permeable materials so that it appears closely uniform to pedestrians. This provides a more complete incentive and value to property owners for participation.

In addition to the site visit, we reviewed historical records and USGS maps to assess whether groundwater will be a problem in this project, considering that any infiltration system needs to be above 3-feet from the seasonal groundwater elevation. Based on our investigation, we determined it is unlikely that the groundwater will be a problem and we estimate that our proposed system will be able to work. Another factor to consider is the soil's permeability rate and that will be assessed during the preliminary design by conducting field or laboratory tests.

PROJECT B: Green Roof

Our plan proposes installation of a 4" extensive green roof system, consisting of pre-planted vegetative modules, on

the roof of 59 E. 4th St. This 1500 sq ft roof is currently being resurfaced with SBS modified bitumen, with a 20 year warranty, with a projected completion of Fall, 2011. Our system will be vegetated with a variety of Sedums, Alliums, Sempervivus, Euphorbias, Delospermas and similar species.

Not only will this absorb, filter and retain precipitation, but it will delay runoff – helping to reduce that first 1" of precipitation during a rain event. Additionally, we know that by reducing the ultraviolet radiation absorption, this green roof will contribute to a decreased summer cooling load as well as winter heat losses for the building.

While the cost is slightly higher, this modular system provides the instant benefits of a green roof, demanding only minor maintenance in the initial phase after installation and requiring only minimal irrigation over the lifespan of the system. It is a simpler and less intensive, certified installation, is warranted against material defects and photodegradation for 20 years from date of installation, and has predictable total system costs over the first 5 years. Because we are retrofitting on an existing building roof, we need to minimize the structural weight, therefore selecting a lightweight green roof option. This system is rated at 18-22 lbs per sq ft saturated.

System components: modular pre-planted trays, low profile polypropylene drain board overlapped 3-6 inches, and an electronic field vector mapping/leak detection system, which has achieved long success in Europe, is cost-effective with a wide range of waterproofing materials, and can quickly locate even a pinhole-sized leak.

ANALYSIS 1 FOR PROJECT B

Assumptions:

1. 1,500 sq ft of 4" GreenGrid® Modules
2. Average annual precipitation for NYC = 47"

Based on research being conducted by UCONN on the 4" GreenGrid® system, the system retains just about 50% of average precipitation throughout the year. This would mean that 50% of 47" over 1,500 sq ft equals approximately 2,937.5 cu ft of water retained. This works out to be approximately 21,973 gallons of water that is NOT discharged into the storm sewer each year.

ANALYSIS 2 FOR PROJECT B

Assumptions:

1. 1,500 sq ft of 4" GreenGrid® Modules
2. Average annual precipitation for NYC = 47"
3. 2 year design storm = 3" over 24 hours

A second approach would be to look at the 2-year design storm that is often used in site planning. Assuming the base condition of a normal roof, with a 90% runoff coefficient. This means over that same area of 1,500 sq ft, the base condition would generate 90% x 3 inches x 1,500 sq ft, or 337.5 cu ft, or 2,524 gallons. With a 4" GreenGrid® system in place, you'd expect 56.8% runoff in a 3 inch storm (see graphs in "GreenGrid® Stormwater Data", Appedix 9B). So the greened area will generate 56.8% x 1,500 sq ft x 3 inch, or 213 cu ft, equaling 1,593 gallons of runoff - a reduction of 931 gallons or 37% less runoff for that design storm.

ANALYSIS 3 FOR PROJECT B

Assumptions:

1. 90 % of NYC rain events are about 1.3" or less

Using the same calculations presented above for the 2 year design storm, it could be argued that if the system was dry prior to each of these 1.3" or less storms, only approximately 7.2% of the water falling on the green roof

will runoff (assuming a 2 hr duration). For the vast majority of rain events, the green roof will only generate 7.2% x 1,500 sq ft x 1.3", or 11.7 cu ft, or about 87.5 gallons of runoff, versus the anticipated 1,094 gallons from a standard roof (90% x 1.3" x 1,500 sq ft), for a reduction of about 92% for the vast majority of storms. To adjust for the fact that in many cases the system will not have time to fully dry between events, we are reducing estimate capacity by at least 20%, resulting in a reduction of approximately 72% in runoff from the majority of storms.

SITE INFORMATION, LOCATION, BOUNDARIES & OWNERSHIP

While this dense block has 31 owners, two thirds are members of FAB. The block's 10 cultural buildings are home to arts groups with outstanding records for racial and ethnic diversity, artistic ingenuity, free and low cost programs, and training for emerging artists and youth. As part of the Cooper Square Urban Renewal Plan, the block is also a stronghold of low-income housing and affordable space for small businesses, with 12 low income residential buildings, a senior residence, market rate housing and dozens of independently owned and run restaurants and cafes, artisan studios, music stores, and shops. The cultural district annually serves 1,250 artists and attracts an audience of 250,000 people to its cultural offerings.

Owners of all the cultural buildings and low-income residential housing buildings have signed on in support of this project. We have also received approval from the senior residence and most of the market rate properties on the block. Because of the difficulty of acquiring property ownership information we are still awaiting responses from 3 property owners, though are confident that should we be awarded this grant, they will sign on to the project. Deeds

are included for 25 of the 31 properties, with 3 owners having given us support and approval, but not forwarded copies of their deeds yet. All are promised within the next two weeks.

WATERSHED

The Newtown Creek Water Pollution Control plant serves an area of approximately 16,656 acres in the Lower East Side, Lower Manhattan and northeast Brooklyn: the total sewer length, including sanitary, combined, and interceptor sewers that feeds into the Newtown Creek WPCP is 593 miles.

Our sewershed is the largest in terms of capacity, and services parts of three boroughs.

Over 7,000 acres of the sewershed is located in Brooklyn, and the Manhattan and Queens sections add 4,000 acres apiece. The combined wastewater that is collected from the Manhattan section of the sewershed is pumped under the East River by a pump station located at Avenue D and E. 13th Street. Wastewater from the entire sewershed converges in the Newtown Creek WPCP.

Latitude and longitude:

The site area is approximately 33,000 sq ft and is located from E. 4th Street at Bowery to 2nd Avenue (40.72, -73.99 to 40.73, -73.99).

MAINTENANCE

Plan A: Porous Paving

In order to prevent clogging and maintain permeability, we will need to actively monitor and control site erosion and sedimentation of the pavement surface. Frequency for maintenance is determined by the contaminant profile of the area, though most manufacturers recommend several times a year. We propose cleaning and vacuuming monthly for the first year after construction. Information and lessons learned will determine frequency of cleaning for subsequent years, though we anticipate a bimonthly schedule for years 2 and 3 and anticipate purchase of the necessary vacuuming and cleaning equipment.

Individual property owners will continue to be responsible for keeping their property clean, clear and walkable. Cooper Square MHA will provide extra maintenance work for the block, to meet the needs of this new sidewalk surface. Additionally, head of maintenance for MHA will educate all property owners and/or their maintenance staff as to proper daily maintenance for these new materials.

Plan B: Green Roof

Maintenance for our modular tray system will be minimal once the plants have reached maturity. For the first six months, we anticipate bi-weekly weeding, drainage inspection, debris removal and pest control, then monthly thereafter. Watering needs are dependent on the frequency of rain events. This system will require watering at a minimum of every 30 days, if there has been no precipitation. An annual soil test is also recommended.

MONITORING

Plan A: Porous Paving

We are suggesting a monitoring plan that will include cleanouts on the overflow pipe to monitor for infiltration, with samples to be taken at 2 locations - the cleanout manhole and the catch basin. This program will be created and supervised by CUISD, in partnership with faculty and students from The Cooper Union School of Engineering, for three years post construction. We anticipate 6 semesters of student involvement, monitoring at least 5 storm events per year. Findings and best practices will be incorporated into project reporting.

Plan B: Green Roof

We are proposing the same partnership for monitoring the green roof as suggested for Plan A. CUISD, in partnership with The Cooper Union School of Engineering will create an ongoing, 3 year, student project to evaluate roof runoff discharge, temperature variations, humidity, wind speed, soil moisture, rainfall, water quality and solar radiation. Flow monitoring stations will be installed at the roof drains to measure the rate and measurement of run off from storm events.

IMPLEMENTATION WORK PLAN

	Summer				Fall				Winter				Spring			
	JUL WK1	JUL WK2	JUL WK3	JUL WK4	AUG WK1	AUG WK2	AUG WK3	AUG WK4	SEP WK1	SEP WK2	SEP WK3	SEP WK4	OCT WK1	OCT WK2	OCT WK3	OCT WK4
SCHEMATIC DESIGN																
DESIGN DEVELOPMENT																
CONSTRUCTION DOCUMENTS																
CONSULTATION WITH DEP/CITY AGENCIES																
BIDDING, NEGOTIATION AND CONTRACTS																
PERMITTING AND APPROVALS																
GREEN ROOF INSTALLATION																
SIDEWALK CONSTRUCTION																

BUDGETS

4TH STREET CULTURAL DISTRICT STORM WATER MANAGEMENT BUDGET ESTIMATE

APRIL 28 2011

I. Green Infrastructure: Storm Water Management System: Permapave Installation & Curb Reconstruction

A. Construction/Installation & Material Costs	\$ 305,956.50
B. Professional Services, Engineering & Architectural Design	\$ 95,000.00
C. Project Administration & Management	\$ 45,095.65
D. Post Construction	\$ 36,000.00
SUB TOTAL	\$ 482,052.15

II. Green Infrastructure: Storm Water Management System: Green Roof

A. Construction/Installation & Material Costs	\$ 24,025.00
B. Professional Services, Engineering & Architectural Design	\$ 13,300.00
C. Project Administration & Management	\$ 5,232.50
D. Post Construction	\$ 19,600.00
SUB TOTAL	\$ 62,157.50

TOTAL GREEN INFRASTRUCTURE REQUEST	\$ 544,209.65
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MATCHING: IN-KIND CONTRIBUTIONS & SUPPORT	\$ 514,500.00
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I. Green Infrastructure: Storm Water Management System: Permapave Installation & Curb

Location	System Length	System Width	Excavation Depth
North - East 4th Street	605.8'	1.72' W	24"
South - East 4th Street	618.5'	1.72' W	24"
Permeable Strip in Roadway - North	605.8	1.93' W	24"
Permeable Strip in Roadway - South	618.5'	1.93' W	24"
Total Permapave Area (SF)			4,463

#	ITEM/MATERIALS	Q-TY	UNIT	UNIT PRICE	TOTAL
A. PERMAPAVE CONSTRUCTION/INSTALLATION & MATERIAL COSTS					
1	Sidewalk Reconstruction	9,794	SF	\$ 7.25	\$ 71,006.50
2	Excavation	317	CY	\$ 60.00	\$ 19,020.00
3	6" Cast Iron Perforated Underdrain Pipe	2,449	LF	\$ 15.00	\$ 36,735.00
4	Geotextile - Separation	1,496	SY	\$ 6.50	\$ 9,724.00
5	ASTM No. 8 - Setting Base	23	CY	\$ 60.00	\$ 1,380.00
6	ASTM No. 57 - Base Aggregate	151	CY	\$ 47.00	\$ 7,097.00
7	ASTM No. 2 - Subbase	121	CY	\$ 115.00	\$ 13,915.00
8	Permeable Paver	4,897	SF	\$ 7.00	\$ 34,279.00
9	Cleanout for HDPE Pipe	24	-	\$ 200.00	\$ 4,800.00
10	Cleanout Manhole	4	-	\$ 5,500.00	\$ 22,000.00
11	6" Ductile Iron Pipe	24	LF	\$ 80.00	\$ 1,920.00
12	Steel Faced Curb Replacement	1,224	LF	\$ 45.00	\$ 55,080.00
13	Vegetation/Replanting	LS			\$ 5,000.00
14	Tree Well Architectural Treatment	LS			\$ 14,000.00
15	Resetting Muni Meters	LS			\$ 10,000.00
16	General Conditions (5%)	LS			\$ 15,297.83
SUB TOTAL					\$ 305,956.50

NARRATIVE

B. PERMAPAVE PROFESSIONAL SERVICES, ENGINEERING & ARCHITECTURAL DESIGN				
1	Civil Engineering Design			\$ 35,000.00
2	Civil - Allowance for Survey			\$ 10,000.00
3	Civil - Allowance for Test Borings			\$ 5,000.00
4	Structural - Feasibility Study			\$ 10,000.00
5	Structural - Testing and Design			\$ 12,500.00
6	Architectural Services			\$ 15,000.00
7	DOB/DOT Expediting & Filing Costs			\$ 7,500.00
SUB TOTAL				\$ 95,000.00
C. PERMAPAVE PROJECT ADMINISTRATION & MANAGEMENT				
1	Project Administration & Management			\$ 40,095.65
2	Insurance			\$ 5,000.00
SUB TOTAL				\$ 45,095.65
D. PERMAPAVE POST CONSTRUCTION				
1	Maintenance			\$ 6,000.00
2	Engineering & Architectural Services			\$ 12,000.00
3	Project Administration & Reporting			\$ 18,000.00
SUB TOTAL				\$ 36,000.00
PERMAPAVE PROJECT TOTAL				\$ 482,052.15

II. Green Infrastructure Type: Storm Water Management System : Green Roof				
	Location	System Length	System Width	Area
	59 East 4th Street	60'	25.5'	1500 Sq Ft
Total Green Roof Area				1,500
#	ITEM/MATERIALS	Q-TY	UNIT PRICE	TOTAL
A. GREEN ROOF CONSTRUCTION/INSTALLATION & MATERIAL COSTS				
1	Preplanted Extensive Modules	1,500	\$ 20.00	\$ 30,000.00
	<i>including Edging, Polypropylene Drain Board</i>			\$ -
2	Leak Detection System (EFVM)			\$ -
3	Total Installation Labor	1500	\$ 15.00	\$ 22,500.00
4	Monitoring System	2	\$ 200.00	\$ 400.00
5	General Conditions (5%)			\$ 1,125.00
SUB TOTAL				\$ 24,025.00
B. GREEN ROOF PROFESSIONAL SERVICES, ENGINEERING & ARCHITECTURAL DESIGN				
1	Structural Analysis			\$ 5,000.00
2	Architectural Services			\$ 5,000.00
3	DOB/DOT Expediting & Filing Costs			\$ 3,300.00
SUB TOTAL				\$ 13,300.00
C. GREEN ROOF PROJECT ADMINISTRATION & MANAGEMENT				
1	Project Administration & Management			\$ 3,732.50
2	Insurance			\$ 1,500.00
SUB TOTAL				\$ 5,232.50
D. GREEN ROOF POST CONSTRUCTION				
1	Maintenance			\$ 3,600.00
2	Engineering & Architectural Services			\$ 6,000.00
3	Project Administration & Reporting			\$ 10,000.00
SUB TOTAL				\$ 19,600.00
GREEN ROOF PROJECT TOTAL				\$ 62,157.50
III. MATCHING: IN-KIND CONTRIBUTIONS & SUPPORT				
1	59 Roof Construction & Stabilization			\$ 500,000.00
2	Sample and Data Collection			\$ 2,500.00
3	Temporary Irrigation & Maintenance			\$ 12,000.00
4	Public Programs & Workshops			\$ 5,000.00
SUB TOTAL				\$ 514,500.00



SITE LOCATION



FOURTH ARTS BLOCK, COOPER UNION SHOWING AREA FOR EAST 4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL AREA

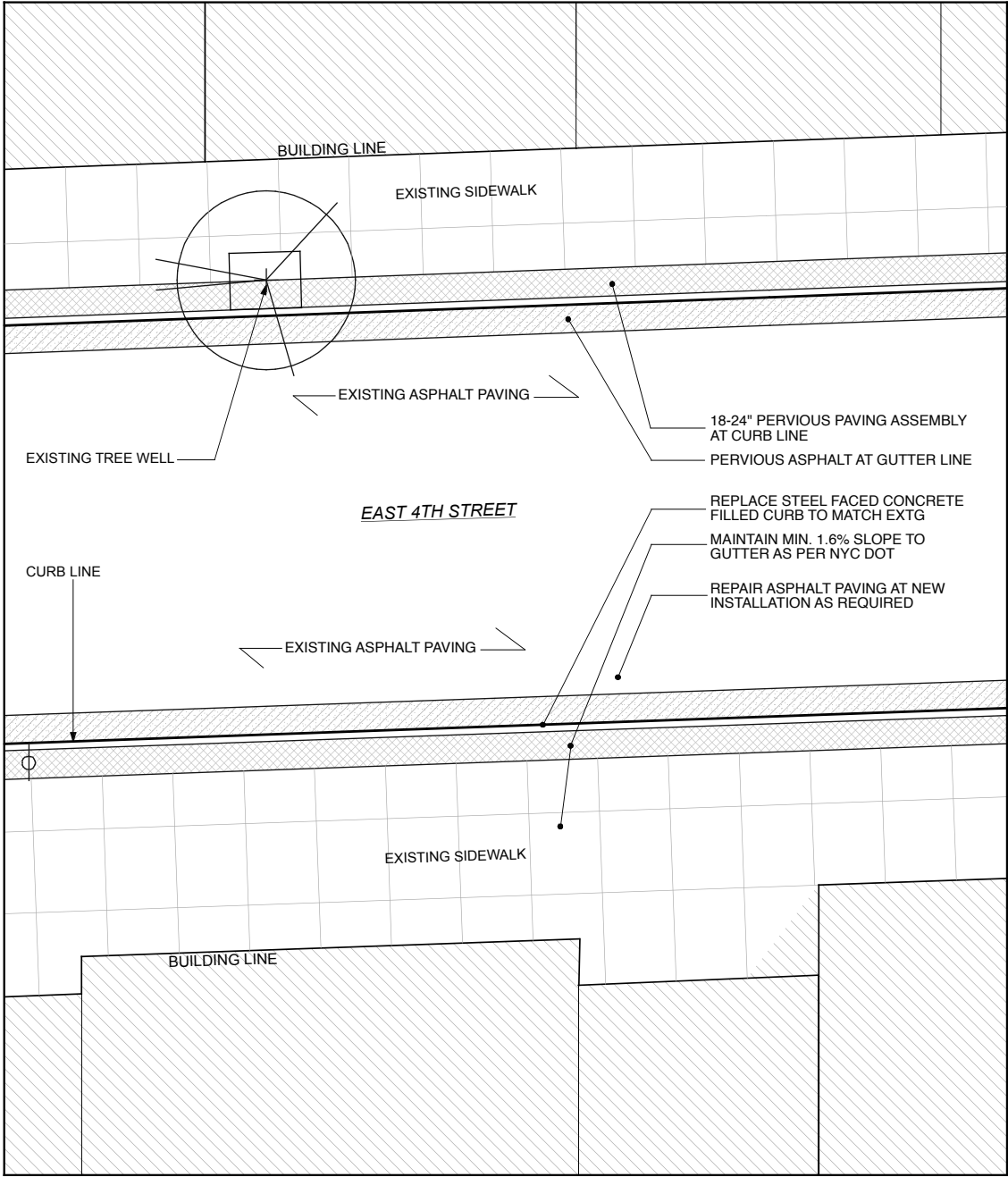


FOURTH ARTS BLOCK, COOPER UNION SHOWING ASSOCIATED COMMUNITY DEVELOPMENT AND IMPROVEMENTS (ASTOR COOPER RECONSTRUCTION)

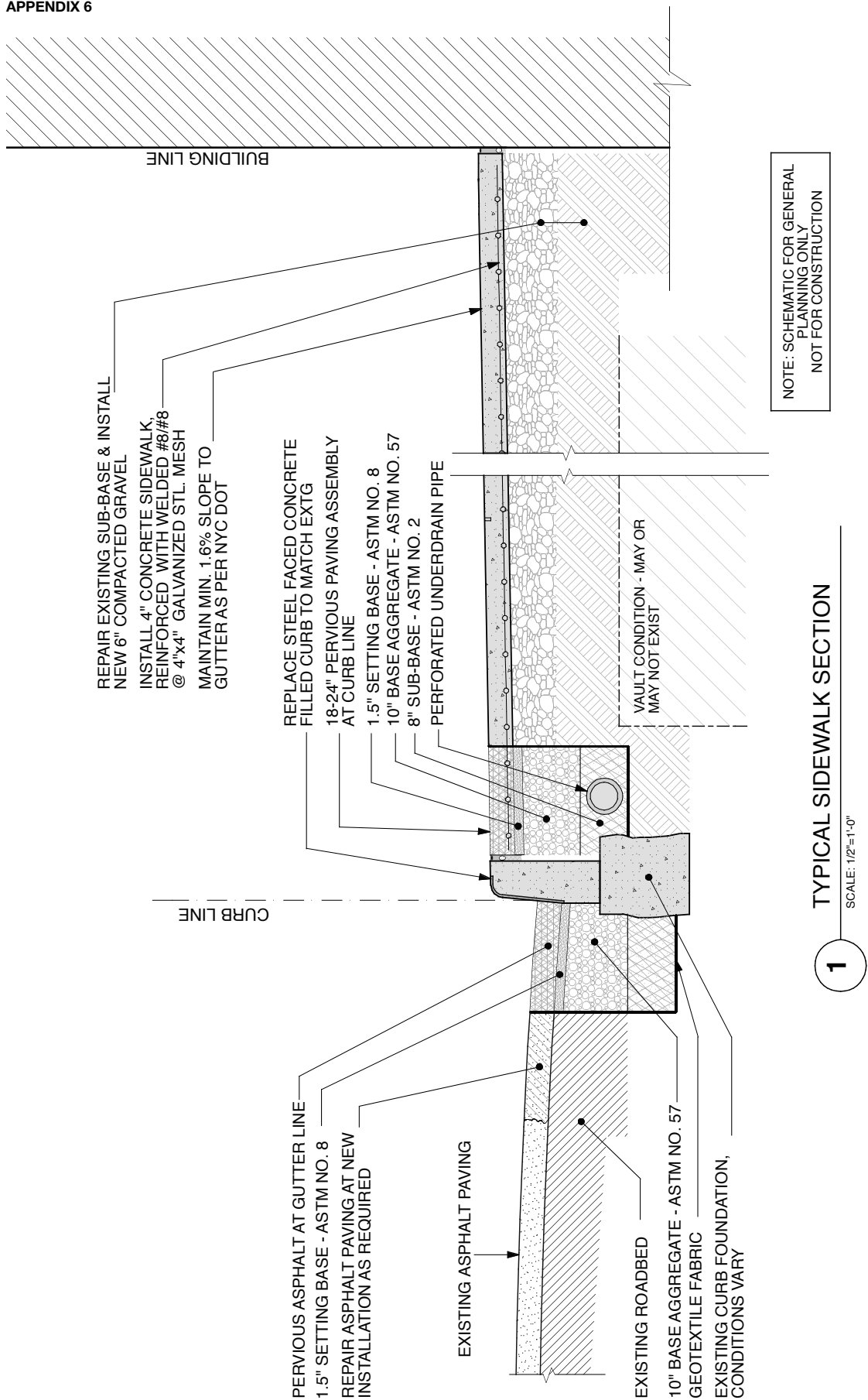
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PAGE 14 CONTAINS CONFIDENTIAL INFORMATION AND HAS BEEN REMOVED FROM THIS DOCUMENT



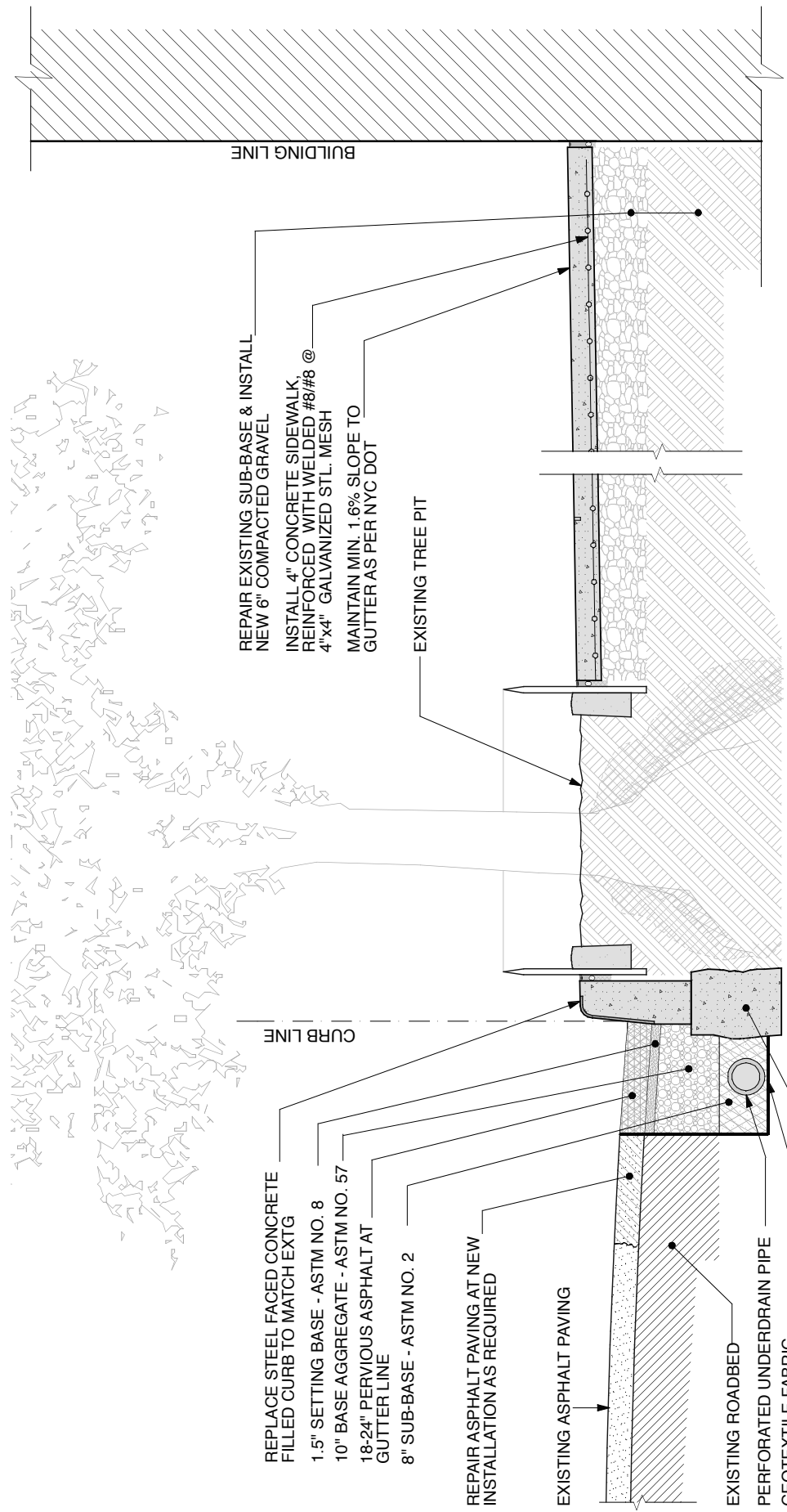




4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL <small>PROJECT NAME</small>	SIDEWALK STORM WATER MANAGEMENT INSTALLATION - PLAN DETAIL <small>DRAWING TITLE</small>	BONE / LEVINE ARCHITECTS WEIDLINGER ASSOCIATES INC	P-5
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PROJECT NAME 4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL	DRAWING TITLE SIDEWALK STORM WATER MANAGEMENT INSTALLATION - SECTION DETAIL	BONE / LEVINE ARCHITECTS	S-1
		WEIDLINGER ASSOCIATES INC	



NOTE: SCHEMATIC FOR GENERAL
PLANNING ONLY
NOT FOR CONSTRUCTION

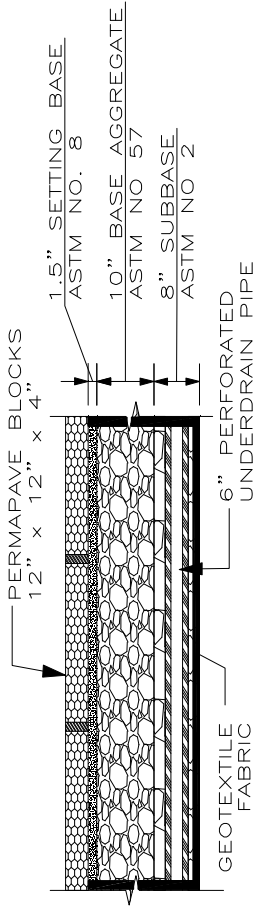
2 SIDEWALK SECTION THRU EXISTING TREE WELL
SCALE: 1/2"=1'-0"

4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL <small>PROJECT NAME</small>	DRAWING TITLE SIDEWALK STORM WATER MANAGEMENT INSTALLATION - SECTION DETAIL	BONE / LEVINE ARCHITECTS	S-2
		WEIDLINGER ASSOCIATES INC	

EAST 4TH STREET
PERMEABLE PAVEMENT - PERMAPAVE
SIZING

Ground Water table: We need to be 3' above seasonal high ground water.	Formulas to Be Used: WQv $WQv = [(P) (Rv) (A)] / 12 \quad (Ac-Ft)$ $P = 1.3 \text{ for Manhattan Locations}$ $Rv = 0.05 + 0.009 * I \quad I = 100\%$ $Rv = 0.95$ $A = \text{Site Area (Ac)}$	Manning Formula & Rational Method: $Q = CIA = 0.663544 \text{ cfs}$ $Q = (1.49/n)(A)(R^{2/3})(S^{1/2}) = 0.812671$ cfs (using 6" dia. Pipe) for: $A = 0.1312 \text{ Ac}$ $I = 5.95$ $C = 0.85$ $n = 0.009$ $S = 0.01$
	Ap Surface Area of Pavers $Ap = Vw / (ndt)$ $Vw = \text{Design Volume (WQv)}$ $n = \text{Porosity, Use 0.4}$ $dt = \text{Depth of Trench (Max 4")}$	(Assume 3' deep for all locations)
	W Width of Trench-Pavers $W = Ap / L$	

PERMAPAVE INSTALLATION DETAIL



LOCATION	Area (Ac)	P	Rv	WQv (Ac-ft)	WQv (ft^3t)	n	dt (ft)	Ap (ft^2)	L (ft)	W (ft)
North - East 4th Street	0.1391	1.3	0.95	0.014	623.47	0.4	1.5	1039.12	605.80	1.72
South - East 4th Street	0.1420	1.3	0.95	0.015	636.54	0.4	1.5	1060.91	618.50	1.72

TOTAL PERMAPAVE AREA (SF) = 2100

LOCATION	Area (Ac)	P	Rv	WQv (Ac-ft)	WQv (ft^3t)	n	dt (ft)	Ap (ft^2)	L (ft)	W (ft)
Permeable Strip in Roadway - North	0.2086	1.3	0.95	0.021	935.21	0.4	2	1169.01	605.80	1.93
Permeable Strip in Roadway - South	0.2130	1.3	0.95	0.022	954.82	0.4	2	1193.52	618.50	1.93

TOTAL PERMAPAVE AREA (SF) = 2363



Permeable Pavers Specification Guide and Installation Details



Permapave Permeable Pavers Guide to Specification

PART ONE – GENERAL

1.1 SCOPE OF WORK

Supply materials, labor, transportation, services and equipment necessary to supply and install Permapave permeable pavers as indicated on drawings and specified herein.

1.2 PERFORMANCE REQUIREMENTS

1. Permeability to be not less than 5 gallons per minute per square foot.
2. Water absorption into paver to be zero in accordance with ASTM C-293
3. Static coefficient of friction ASTM C-1028
 - (a) Wet: 0.50 -0.60
 - (b) Dry: 0.60 - 0.70
4. Bulk density of paver to be the amount specified for the paver type and size selected (bulk density of pavers varies with type and size of stone selected).

1.3 QUALITY ASSURANCE

- A. Manufacturer must be a company licensed to manufacture Permapave permeable pavers, utilizing approved manufacturing equipment and processes.
- B. Installation must be by a contractor with more than 1 years experience in placing permeable pavers on projects of similar nature or dollar cost.
- C. Installation contractor shall conform to all local, state/provincial licensing and bonding requirements.

1.4 SUBMITTALS

- A. Submit installation instructions as recommended by manufacturer.
- B. Submit full size sample sets of Permapave™ units to indicate color, shape, stone type and size selected. Stone type and paver color will be selected by Architect / Engineer / Landscape Architect / Owner from available product range.
- C. Submit test results for compliance to specifications herein.
- D. Indicate layout pattern, and relationship of paving joints to fixtures and project formed details.
- E. Submit two copies of written instructions for recommended maintenance.



1.5 PROJECT CONDITIONS

- A. Do not install pavers in heavy rain or snowfall
- B. Do not install pavers over frozen base materials

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Packaging and Shipping: Permapave Pavers to be stretch wrapped in rows, banded on pallets and delivered in original unopened packaging with legible manufacturer identification, including size, quantity, and manufacturing date.

1.7 WARRANTY

- A. Manufacturer / installer shall warrant the installed system for a period of ten years from the date of substantial completion against failure of workmanship and materials.

1.8 MAINTENANCE

- A. Extra Materials: Deliver supply of maintenance materials to owner. Furnish maintenance materials from the same lot of materials installed, and enclosed in protective packaging with appropriate identifying labels.
 - 1. Supply not less than 1 percent of total product installed as maintenance stock.

PART TWO – PRODUCTS

2.1 PERMEABLE PAVERS

- A. Manufacturers
 - 1. Acceptable Manufacturer
Manufacturer Licensed to manufacture permeable pavers using the Permapave technology.
 - 2. Drawings and installation specifications are based on propriety literature from the owners of the Permapave technology.

2.2 MANUFACTURED UNITS

- A. Pavers
 - Sizes: 12" x 12" (actual)
 - 16" x 16" (actual)
 - 8" x 8" (actual)
 - 8" x 4" (actual)
 - Face: With beveled edges
 - Finish: Natural stone surface
 - Color: Color selected from manufacturers available stone colors. Paver surfaces are sealed.



2.3 FABRICATION

A. Manufactured according to methodology related to the Pemapave™ technology.

2.4 SUBGRADE

A. All sub grade material shall be fines free, and will, wherever practical, be washed to remove dust and foreign material.

PART THREE - EXECUTION

3.1 EXAMINATION

A. Verify that sub grade preparation including compacted density conform with the specifications.

B. Verify that aggregate base materials, thickness, compaction, and elevations conform with specifications.

C. Verify location, type, installation and elevation of edge restraints required for the installation.

D. Verify that base is dry, uniform, even and ready to support pavers and imposed or anticipated vehicular loads.

3.2 INSTALLATION

A. Spread a bedding layer of 25 mm of fines free (no dust or undersize particles) 5-10 mm stone over the sub grade. Once spread, the screened bedding mix should not be disturbed. Do not use bedding mix to fill depressions in base surface.

B. Ensure that pavers are free of foreign materials before installation.

C. Lay pavers from permanent edge restraint in the pattern as shown on the drawings. Use string lines to keep paving joints straight.

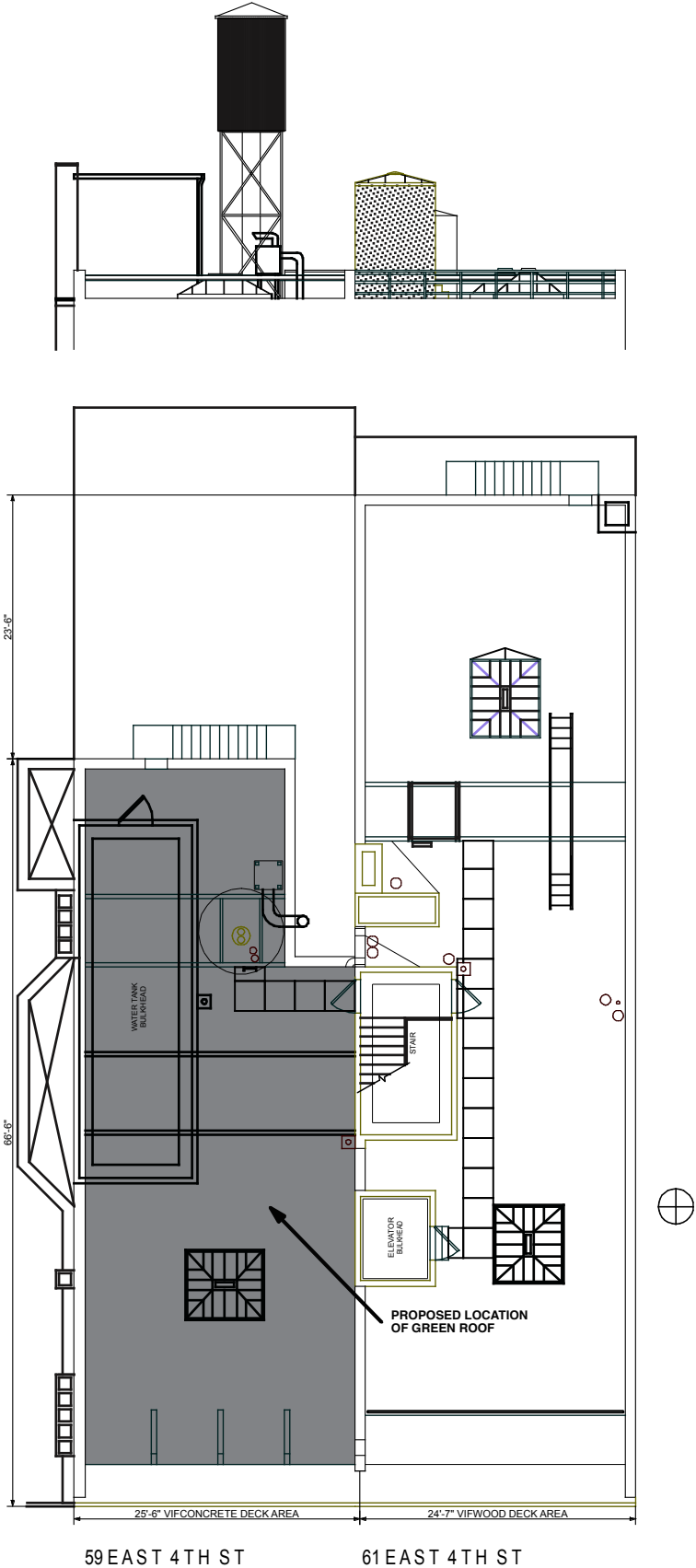
D. Use Brick Saw fitted with a diamond blade fitted with continuous water feed to cut pavers.

E. Lay pavers on prepared surface. Make gaps between pavers (grout strips) uniform by inserting spacers between the pavers.

F. Set pavers hand tight but do not use hammer to adjust pavers. Secure and level pavers using appropriate plate vibrator (cover plate with rubber or like to avoid damage to pavers). Trafficable areas should receive 4 passes with the plate compactor.

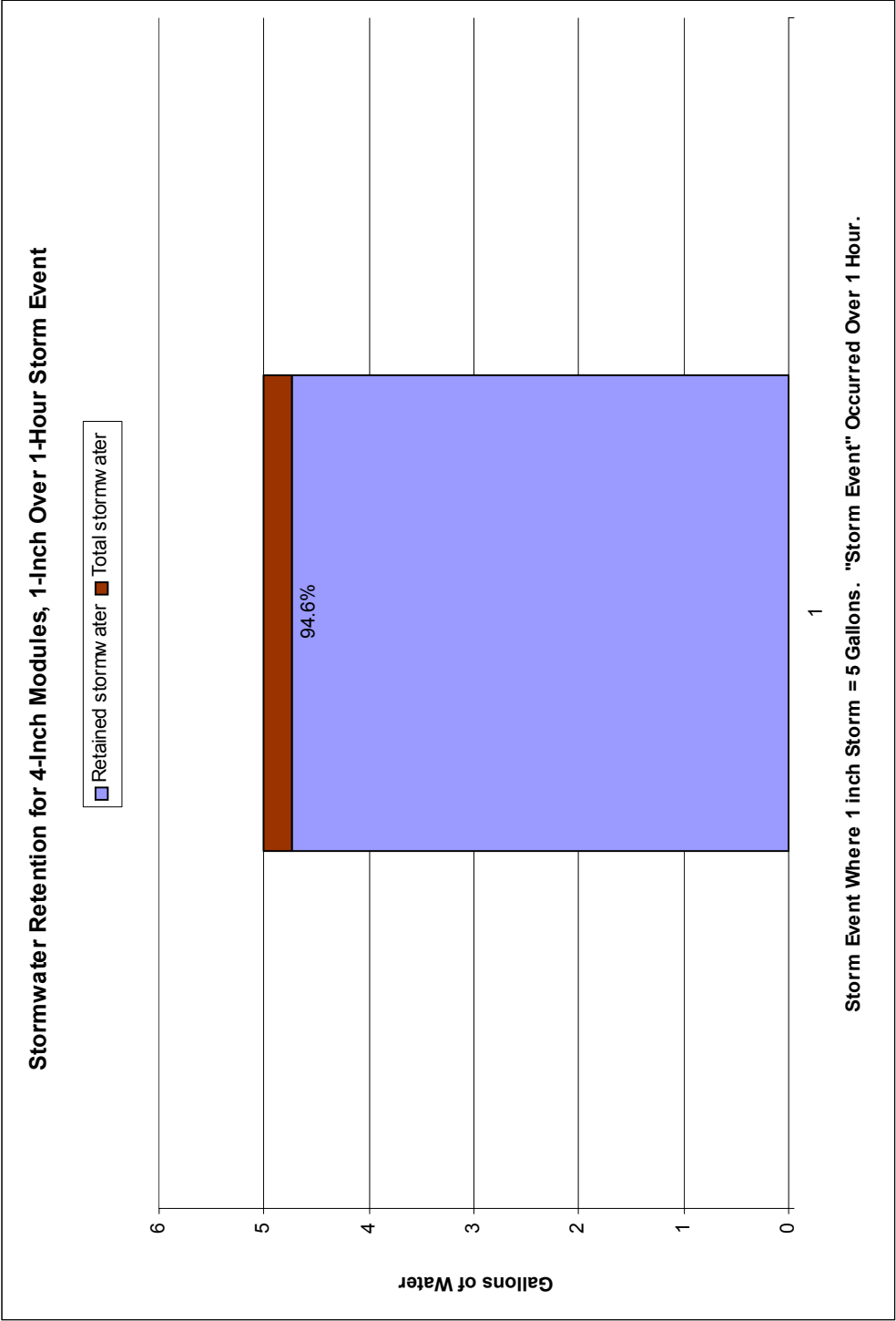
G. Apply specified grouting mixture with trowel, ensuring exposed surfaces are protected from spillage. Overfill joints and iron in mixture with pointing tool.

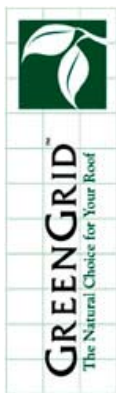






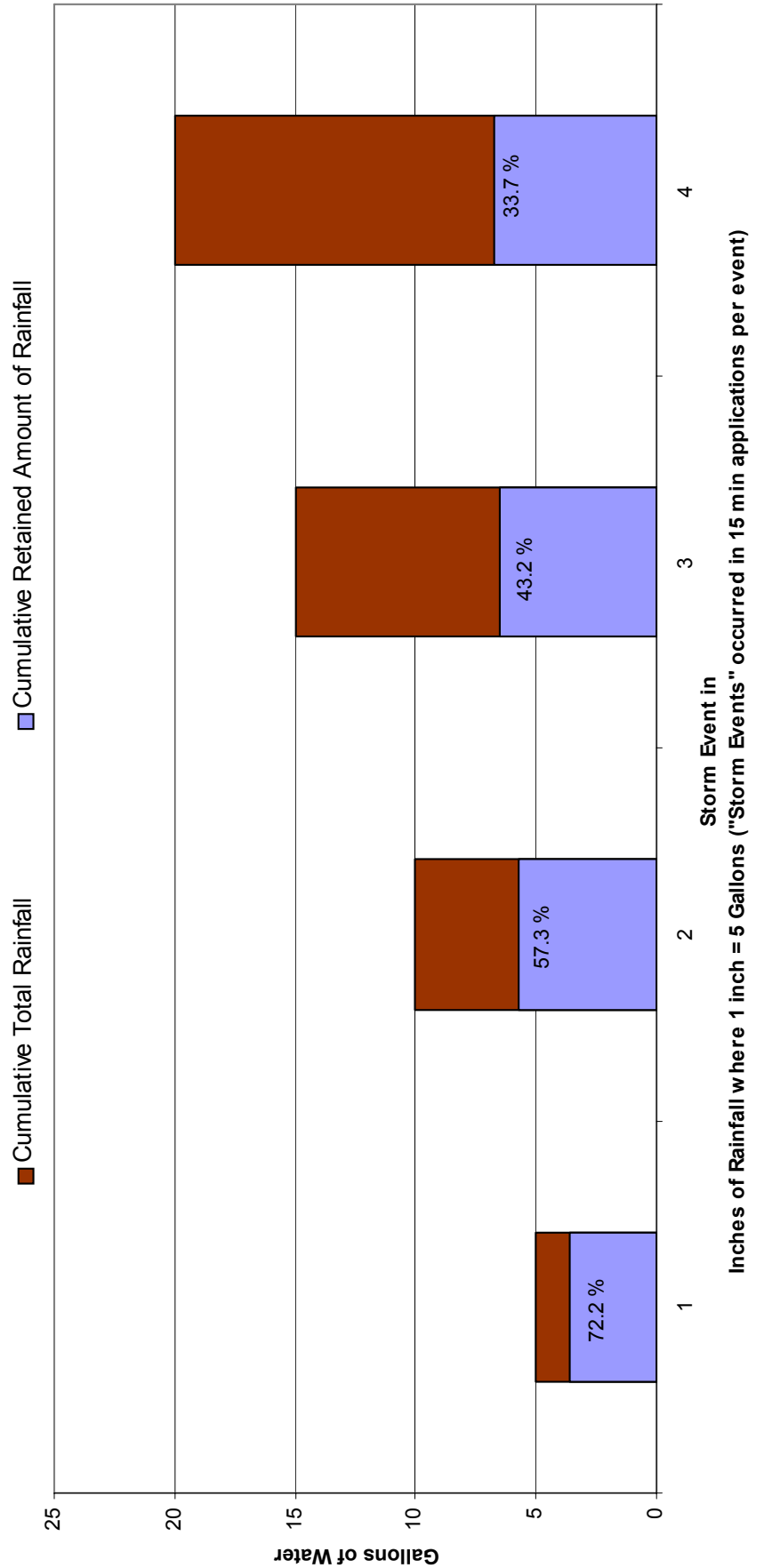
**GREENGRID™ GREEN ROOF SYSTEMS
STORMWATER RETENTION DATA**





GREENGRID™ GREEN ROOF SYSTEMS STORMWATER RETENTION DATA

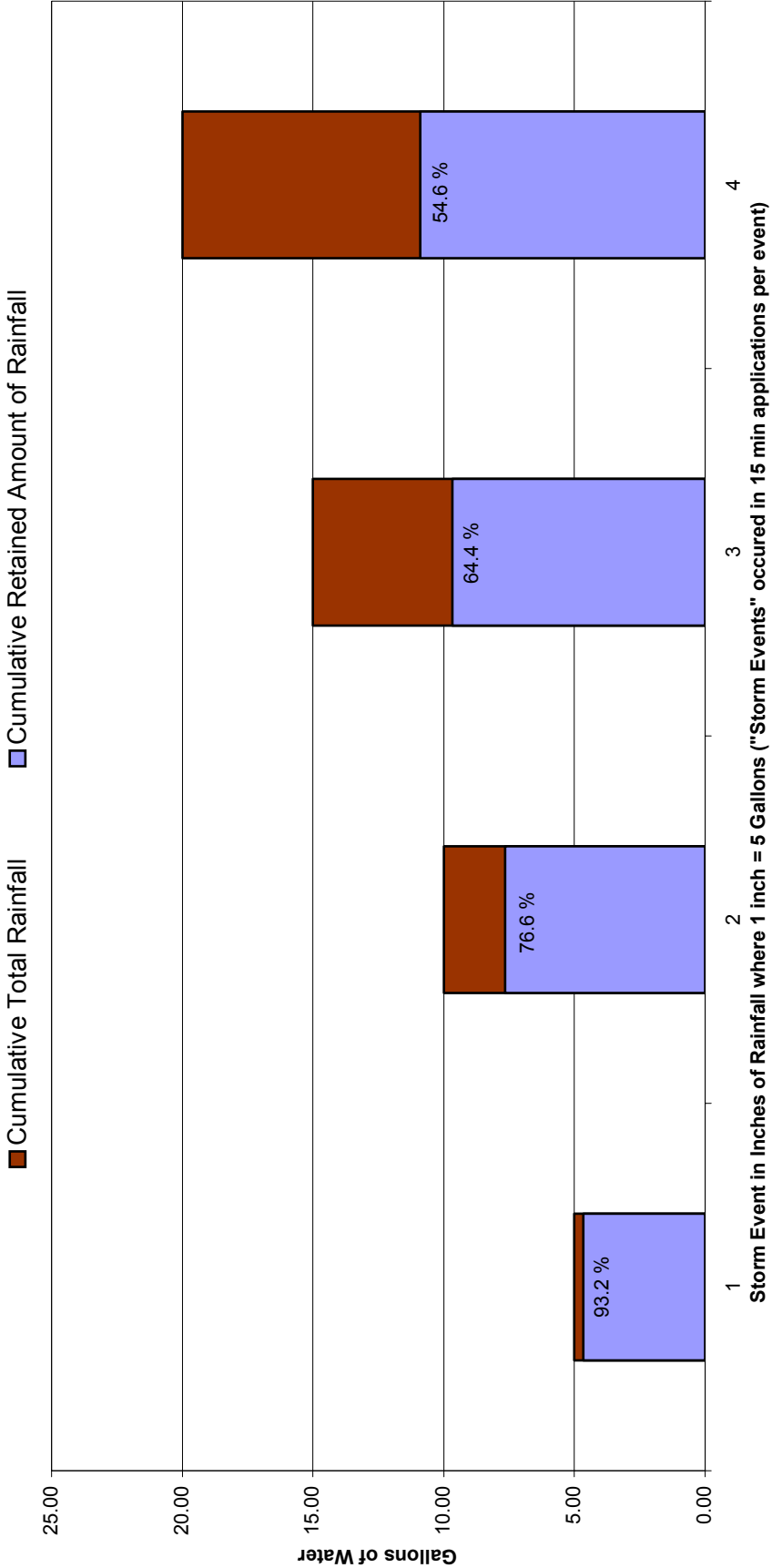
Cumulative Water Retention in a Four Inch GreenGrid Unit During a Simulated 2 Hour Rain Storm





**GREENGRID™ GREEN ROOF SYSTEMS
STORMWATER RETENTION DATA**

Cumulative Water Retention in an Eight Inch GreenGrid Unit During a Simulated 2 Hour Rain Storm



TAMARA GREENFIELD

Tamara Greenfield has more than sixteen years experience in arts and non-profit administration, program planning, and production.

Tamara started as Executive Director of Fourth Arts Block (FAB) in November 2006. Under her leadership, FAB has emerged from a part-time volunteer coalition into a thriving professional organization. In a short time, Tamara has facilitated the generation of more than \$18 million in public capital funds and \$600,000 in private grants for programming and technical assistance, and helped strengthen the fundraising and planning capacity of its members as they've transitioned into property ownership, capital planning, and program expansion.

Prior to her work with FAB, Tamara developed and oversaw all aspects of Partnerships for Parks' *Catalyst for Neighborhood Parks* Program, a public-private initiative that combined intensive outreach and cultural programming with physical improvements to enhance 16 parks in four communities (Astoria/Long Island City, Harlem, Red Hook, Washington Heights). She also built strategic partnerships between the City and local organizations to advance revitalization of Harlem's parks, leveraging significant capital investment and tripling public programming.

At the Interfaith Center of New York, she developed more than 40 performances, exhibits, and lectures to promote inter-religious and multi-cultural understanding. In 1994, Tamara co-founded the grassroots Dancenow/NYC festival, curating and producing the work of more than 125 choreographers annually in multiple sites, from galleries and theaters to gyms, parks, a firehouse, and boxing ring. Since 2004, she has served as an officer on their Board of Directors.

Tamara received her Masters in Urban Planning from Hunter College and B.A. in Art History and International Development from Washington University in St. Louis. She has been invited to present strategies for arts and urban revitalization by numerous organizations, universities and public officials, including the Arts & Business Council, New York University, Deutsche Bank, and Assemblywoman Deborah Glick.

BETSY IMERSHEIN

bimershein@gmail.com
917.364.1110

Resume

Community/economic development, sustainability and policy professional, with extensive experience leading initiatives and organizations. High-energy, mission-driven yet pragmatic leader. Persuasive advocate, writer/researcher and facilitator.

- Strategic and entrepreneurial, with proven ability to set vision, provide creative approaches and drive projects to implementation and completion, delivering significant results.
- Exceptional talent for building productive relationships with a wide variety of constituencies, including elected officials, high-profile stakeholders, and boards of directors.

Community/Economic Development and Sustainability Initiatives**Consultant/Teacher** (partial list)

2008-present

- Fourth Arts Block: managing and implementing streetscape and sustainability projects for this East Village cultural district, including: placemaking, energy efficiencies, storm-water management, green roofs.
- Croton Energy Group: co-founder with a small group, working to create and deploy a new model for community sustainability.
- Policy analysis instructor for two graduate student teams at Milano Graduate School, The New School.
- Fractured Atlas/Placed + Displaced: a community/cultural mapping and civic participation project in neighborhoods experiencing gentrification; Project Manager for Long Island City and analysis for Williamsburg/Greenpoint.
- Shop Small Stores: consultant/co-founder for organization of small, independent shop owners, focusing on marketing and advocacy, with 70 + stores in neighborhoods throughout New York City.
- Bronx Council on the Arts: community building, cultural economy projects that support and sustain the community's cultural assets and history; South Bronx Cultural Corridor strategic/action plan; Creative Bronx! Black Book business plan.
- PDF Development Corp: historic preservation, expansion and retail retention strategies at Fulton Street Mall in downtown Brooklyn.

Director, Maspeth (Queens) Industrial Business Zone

2006-2008

- Launched and directed this start-up initiative, focused on supporting, retaining and attracting industrial firms to this key business zone. Start-up included complete set-up of office and infrastructure with limited budget and resources. Managed staff of consultants and interns.
- Developed strategic partnerships with businesses, city and government agencies, elected officials, community-based organizations, and educational and other nonprofit groups working in the sector to support and grow area businesses.
- Conducted outreach to businesses and community, facilitated business access to government agencies, encouraged creative approaches to problem resolution, and advocated for improved area maintenance and infrastructure.

Consultant

2001-2006

- Conducted marketing, research and analysis, and feasibility projects for progressive industrial real estate development firm PDS Development Corp/J. David Sweeny.
- Spearheaded community outreach in Red Hook, Brooklyn for private real estate developer 160 Imlay Street Real Estate, LLC.
- As research assistant for Alice Rivlin (noted economist, former Presidential cabinet member, and first Director of the Congressional Budget Office), worked to develop white papers for economic redevelopment of Lower Manhattan, in conjunction with Regional Plan Association (RPA)/Civic Alliance to Rebuild Downtown New York.
- Representing Milano Graduate School in 2002, worked on "Listening to the City," a major initiative of RPA/Civic Alliance to Rebuild Downtown New York. Served on program planning committee and project staff for two key events, one of which was a Javits Center event attended by 5000 people. Analyzed data and contributed to final report.
- Served as Milano Graduate School Coordinator for RPA's Sustainability Conference in 2003, which included research, writing and editing of final report.
- Feasibility studies, including: community revitalization in Manhattan's Columbus/Amsterdam Business Improvement District through use of a land trust for affordable homeownership; establishment of a public market in Hunts Point, Bronx; "Handmade in America, A Community Economic Development Model"; and "Using the Arts as a Tool for Social Impact and/or Economic Development."

Arts & Non-Profit Management

Photographer/Author: published 10 photo essay books for children; fine art and freelance photographer, curator, teacher	1984-2005, 2009
Ensemble Studio Theatre, Managing Director, New York City	1980-1981
Jewish Repertory Theatre, Managing Director, New York City	1977-1980

Community Service

Southern Westchester Energy Action Consortium (in formation)	2010-present
Comprehensive Plan Committee, Hastings-on-Hudson, NY	2007-2011
Waterfront Preservation Committee, Hastings-on-Hudson, NY	2006-2009
Rivertowns Art Council, Board Member, Hastings-on-Hudson, NY	1988-1996

EDUCATION

MS, Urban Policy Analysis and Management, Milano The New School for Management & Urban Policy	2005
MSW, Wurzweiler School of Social Work, Yeshiva University	1977
BA, University College of Arts & Science, New York University	1975

Name	Kevin Bone
CURRENT ACADEMIC, PROFESSIONAL AND	Professor of Architecture, Irwin S. Chanin School of Architecture, The Cooper Union, Founding Director, Cooper Union Institute of Sustainable Design Founding Partner, Bone/Levine Architects
PUBLIC SERVICE	Board of Directors, Wright-Ingraham Institute Board of Advisors, Damascus Citizens Board of Advisors NYH2O
COURSES	Design I, II, III, and IV, Building Technology and Various Seminar classes in infrastructure and the first class in sustainability at the Irwin S. Chanin School of Architecture, Teaching at The Cooper Union, since 1984 Studio Director, First and Second International Summer, Workshops for Architecture; The Zenobio Institute, Venice, Italy, 1994 and 1995 Guest Professor of Architecture and Urbanism, Hochschule der Kunste Berlin, Germany, 1988 – 1989 Assist. Prof., School of Architecture, Columbia University, 1988 – 1989
EDUCATION	Pratt Institute, Brooklyn, NY, Bachelor of Architecture Degree, 1978 Studio Assistant to Raimund Abraham, 1978 – 1983 Berlin Summer Academy for Architecture, 1978 Royal Danish Academy of Art and Architecture, 1978, Visiting Student Wright-Ingraham Institute, 1977
PROFESSIONAL REGISTRATION	Registered Architect: New York State, Commonwealth of Massachusetts, Commonwealth of Pennsylvania, State of New Jersey and State of Colorado.
RECENT HONORS AND AWARDS	Chicago Athenaeum Prize for Best New American Architecture, 2006, 2009 Graham Foundation Grant for Water-Works Publication (among other grants) American Institute of Architects, Citation for private Loft and Studio, New York City, 2001 American Institute of Architects, Citation for private Studio, New York City, 2000 Towers of Nagoya, Nagoya, Japan, Judges Special Prize, 1994
RECENT RESEARCH, SCHOLARSHIP, CREATIVE ACTIVITY	Architecture Laboratory, Denver, CO, Gallery Exhibit “Questioning the Domestic, Living in the West” Smith Fork Conservancy, Colorado, Experimental Architectural and Environment Programs Competitions Finalist: Ideas for the East River, Transfiguration Environmental Works, 1999 Author, 1995 Paris Prize for Architecture, The National Institute for Architectural Education Pershing Square, Los Angeles, Competition Finalist, 1985
RECENT PUBLICATIONS	Editor/Contributing Author, <i>Water-Works: The Architecture and Engineering of the New York City Water Supply</i> , 2006, The Monacelli Press Editor/Contributing Author, <i>The New York Waterfront, Evolution and Building Culture of the Port and Harbor</i> , 1997, The Monacelli Press
PROFESSIONAL MEMBERSHIPS	Certified N.C.A.R.B. American Institute of Architects

SUNNIE JOH

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 E SUNNIE.JOH@GMAIL.COM
 T +1 917-375-4757

Experience

10/2010 – Current	The Institute for Sustainable Design, <i>New York</i> The Cooper Union for the Advancement of Science and Art <i>Associate</i>
04/2010 – 8/2010	Situ-Studio, <i>New York</i> “reOrder” at the Brooklyn Museum <i>Fabric System Design / Construction Consultant</i>
10/2009 – 11/2009	REX Architects & Situ-Studio, <i>New York</i> “Dollhouse” for Calvin Klein <i>Fabric System Design / Construction Consultant and Fabrication</i>
2009	Founded Sunnie Joh Design, sole proprietor
2006 - 2009	Slow and Steady Wins the Race Fashion, <i>New York</i> Freelance Production Coordinator, Design / Installation, Retail Mary Ping Fashion Designer, <i>New York / Paris</i> Fall/Winter 07/08 Women’s Collection Paris Freelance Assistant / Production / Sales Wendy & Jim Homme Fashion, <i>Vienna / Paris</i> Freelance Assistant / Production
5/2005 – 7/2005	PS:1_Sur Xefirotarch Hernan Diaz-Alonso Architect, <i>New York</i> PS.1 MOMA Warm UP 2005 Young Architects Program <i>Fabric System Design Consultant, Coordination, Construction</i>
4/2005 – 6/2005	Vito Acconci Studio Architect, <i>New York</i> <i>Freelance Special Projects</i>
1/2005 - 2/2005	Corin Hewitt Artist, <i>New York</i> <i>Artist Assistant</i>
5/2003 – 7/2003	Peter Eisenman Architects, <i>New York</i> TSA/Cardinals Stadium Project <i>Architecture Internship</i>
8/2002 – 10/2002	<i>La Chute</i> by Lebbeus Woods and Alexis Rochas, <i>New York / Paris</i> The Unknown Quantity Exhibition, The Foundation Cartier <i>Installation Fabrication</i>
6/2001 – 8/2001	Office of Metropolitan Architecture, <i>New York</i> Seattle Public Library Project <i>Architecture Internship</i>
5/2001 – 6/2001	Mies in America 2001 Exhibition, The Whitney Museum of American Art, <i>New York</i> <i>Exhibition Models Fabrication in collaboration with S. Devabhaktuni and A. Shahrokhi</i>

Education

2010 – Current	Yestermorrow Design/Build School, <i>Warren, Vermont</i> Certificate Program in Sustainable Building and Design
2005 - 2006	The University of Applied Arts, <i>Vienna, Austria</i> Fashion Department at the Institute for Design <i>M. Professor Veronique Branquinho</i>
1999 – 2004	The Cooper Union School of Architecture, <i>New York</i> Degree earned Bachelor of Architecture 2004 <i>Recipient of the George Ledlie Fund Award</i>

Gregory L. Kelly, SE, PE, LEED® AP

Director of Sustainable Design

Education

BSCE, University of Illinois, Urbana, IL, 1993, Structures

Registration

Professional Engineer: NC (#030629) 2005

Structural Engineer: IL (#081-006338) 2006

LEED® AP, 2002

Years of Experience

Weidlinger: 4; Other Firms: 14

Summary of Expertise

The Weidlinger Sustainability Initiative researches sustainable structural design strategies and technologies and brings this knowledge to the firm and its clients through a comprehensive education program, which features classes, seminars, and reference materials. Buildings Mr. Kelly has designed include government facilities, as well as commercial and industrial facilities. He has designed museums, visitor centers, housing facilities, office buildings, educational buildings, central heating and cooling plants, manufacturing facilities, warehouse and distribution facilities, hospitals, hotels, and retail spaces. Mr. Kelly works with the Mayor's Green Codes Task force to develop public policy and affect change. He is a founding member of the Columbia Business School Alumni Sustainable Business Committee and collaborates with both Columbia University and The Cooper Union Institute for Sustainable Design on various green technology research projects. Other community activities include teaching a Green Building Retrofit class through Cooper's Continuing Education Program and work with charitable organizations and local high school students. Other areas of specialization include Historic Preservation, Blast Resistant Design, and the design of Coastal Structures. Through the Weidlinger Sustainability Initiative Mr. Kelly also directs the LEED Consulting Services that Weidlinger offers as a complement to our core Structural, Geotechnical, and Civil services.

Representative Project Experience

Building Integrated Solar Design Research Grant with Columbia University & Dept. of Energy
Pier A, Battery Park City – Projected LEED Gold

Liberty Island Retail Pavilion – Projected LEED Platinum (LEED Consultant)

United Nations Headquarters Major Renovation - Projected LEED Gold

MTA West Side Yards Air-rights Development - Mandated LEED Silver

National Museum of the Marine Corps Phase 2 – Sustainable Design

Harrisburg Federal Courthouse Replacement – Projected LEED Silver



WEIDLINGER ASSOCIATES®

CONSULTING ENGINEERS PC

James P. Quinn, PE, LEED® AP

Principal

Education

BSCE, Manhattan College, 1980

Registration

Professional Engineer: NY (68614) 1991; MA (41126) 1999

LEED® Accredited Professional, 2009

Years of Experience

Weidlinger: 13; Other Firms: 18

Affiliations

Institute of Transportation Engineers (ITE)

American Society of Highway Engineers (ASHE)

Publications

“Building Livable Communities through Transportation: Redesigning New York City’s Frederick Douglass Circle,” ITE Journal, August 1999

Summary of Experience

Mr. Quinn has more than 30 years of experience, which includes the overall management and technical direction of all transportation, traffic, highway and utility projects within Weidlinger Associates. In addition to his professional licensing, Mr. Quinn is a LEED® AP, and leads the Civil Department’s initiative of providing sustainable solutions on all of our planning and design projects.

Representative Project Experience

Buildings/Facilities (LEED Ratings)

Queens Botanical Garden Reception/Administration Building, Flushing, NY (LEED Platinum)

Liberty Island Retail Pavilion, Liberty Island, NY (goal of LEED Platinum)

121st Street Police Precinct Station House, Staten Island, NY (goal of LEED Silver)

Brooklyn Botanic Garden Visitor Center, Brooklyn, NY (goal of LEED Gold)

Roadway/Urban Design/Parks Projects (Sustainable Design Components)

Times Square, New York, NY

Hudson River Park, Segment 3, New York, NY

Stapleton Waterfront, Staten Island, NY

Grand Concourse, Bronx, NY

Roberto Clemente Plaza, Bronx, NY

Fordham Road, Bronx, NY

Mosholu Parkway, Bronx, NY

Sponge Park Bioretention Basins, Gowanus Canal, Brooklyn, NY

Sponge Park Bioretention Basins, Flushing Meadows Corona Park, Flushing, NY



WEIDLINGER ASSOCIATES®

CONSULTING ENGINEERS PC



THE CITY OF NEW YORK
OFFICE OF THE PRESIDENT
BOROUGH OF MANHATTAN

SCOTT M. STRINGER
BOROUGH PRESIDENT

April 28, 2011

Commissioner Cass Holloway
NYC Department of Environmental Protection
59-17 Junction Blvd., 11th Floor
Flushing, NY 11373

Dear Commissioner Holloway,

I am pleased to support Fourth Arts Block's (FAB) application to your Green Infrastructure Grant Program. In partnership with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design, FAB seeks funding to address issues created by excessive storm water runoff by constructing porous pavement sidewalks along East 4th Street from Second Avenue to Bowery and installing a green roof on 59-61 East 4th Street.

FAB has been an invaluable partner of my Go Green Lower East Side initiative. This past year, they launched 'FAB Goes Green' – a sustainability program for their cultural district. This funding will support efforts that FAB has already undertaken to develop a model of sustainability that could be replicated in other mixed-use neighborhoods across the City.

My office has also partnered with FAB by providing funding for capital improvements developed in a collaborative planning process with community stakeholders. This streetscape improvement plan is currently being implemented for the East 4th Street Cultural District. I look forward to a continued partnership with FAB and will provide support to them in their efforts to create a more sustainable neighborhood.

Thank you for your consideration. I hope you will extend favorable consideration to FAB's Green Infrastructure Grant application.

Sincerely,

Scott M. Stringer

MUNICIPAL BUILDING ♦ 1 CENTRE STREET ♦ NEW YORK, NY 10007
PHONE (212) 669-8300 FAX (212) 669-4305
www.mbpo.org bp@manhattanbp.org



DEBORAH J. GLICK
Assemblymember 66TH District
New York County

THE ASSEMBLY
STATE OF NEW YORK
ALBANY

CHAIR
Higher Education Committee

COMMITTEES
Environmental Conservation
Rules
Ways & Means

April 26, 2011

Commissioner Cass Holloway
NYC Department of Environmental Protection
59-17 Junction Blvd., 11th Floor
Flushing, NY 11373

Dear Commissioner Holloway,

I am writing in strong support of Fourth Arts Block's (FAB) application to your Green Infrastructure Grant Program. FAB is a fantastic organization and I am extremely impressed at the work they have done in the community.

FAB, partnering with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design, is applying for a grant to 1) construct porous pavement sidewalks along the entire block from 2nd Ave to Bowery and 2) install a green roof on 59-61 E. 4th St.

Your pilot grant program, focusing on citywide storm water management projects that can be constructed within the year and are easily replicable, would be in good hands with FAB. FAB, an arts service organization with dozens of theatre, dance and social service organization members, is leading the development of the East 4th Street Cultural District as a center for creative diversity and innovation. In the past several years, FAB has facilitated capital planning and expansion for the district, along with the generation of more than \$18 million in public capital funds and private grants for the 10 cultural buildings in the block.

Following a collaborative planning process with community stakeholders several years ago, FAB produced a plan, which it is currently implementing, for the East 4th Street Cultural District streetscape.

This past year, FAB launched 'FAB Goes Green,' a sustainability program for the district. Your Green Infrastructure Project aligns perfectly with efforts that they've already begun, to develop a model of sustainability for themselves, other cultural districts and mixed-use neighborhoods throughout the City.

This proposal also represents an engagement with the wider community of stakeholders in the East Village, as FAB is working with The Cooper Union and Cooper Square Mutual Housing Association.

For these reasons, I urge you to grant high consideration to FAB's Green Infrastructure Grant application.

Sincerely,

Deborah J. Glick
Assemblymember

□ DISTRICT OFFICE – 853 Broadway, Suite 2120, New York, New York 10003-4703 • (212) 674-5153, FAX (212) 674-5530
□ ALBANY OFFICE – Room 717, Legislative Office Building, Albany, New York 12248 • (518) 455-4841, FAX (518) 455-4649
glickd@assembly.state.ny.us

ROSIE MENDEZ
COUNCIL MEMBER, 2ND DISTRICT

DISTRICT OFFICE
237 FIRST AVENUE, #504
NEW YORK, NY 10003
TEL: (212) 677-1077
FAX: (212) 677-1990

CITY HALL OFFICE
250 BROADWAY, ROOM 1734
NEW YORK, NY 10007
TEL: (212) 788-7366
FAX: (212) 788-2738
rmendez@council.nyc.gov



THE COUNCIL
OF
THE CITY OF NEW YORK

CHAIR
PUBLIC HOUSING

COMMITTEES
FIRE & CRIMINAL JUSTICE SERVICES
HEALTH
HOUSING & BUILDINGS
LAND USE
LOWER MANHATTAN REDEVELOPMENT

SUBCOMMITTEE
LANDMARKS, PUBLIC SITING & MARITIME ISSUES

April 18, 2011

Commissioner Cass Holloway
NYC Department of Environmental Protection
59-17 Junction Blvd., 11th Floor
Flushing, NY 11373

Dear Commissioner Holloway,

I am writing in support of Fourth Arts Block's (FAB) application to your Green Infrastructure Grant Program. FAB, partnering with community partners, Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design, is applying for a grant to 1) construct porous pavement sidewalks along the entire block from 2nd Ave to Bowery and 2) install a green roof on 59-61 E. 4th St.

FAB, an arts service organization with dozens of theatre, dance and social service organization members, is leading the development of the East 4th Street Cultural District as a center for creative diversity and innovation in my district. In the past several years, FAB has facilitated a capital plan and generated more than \$18 million in public and private grants for the 10 cultural buildings in the block.

FAB is currently implementing the East 4th Street Cultural District streetscape plan which my office also helped to fund. This past year FAB launched 'FAB Goes Green,' a sustainability program for the district, and a grant from the Green Infrastructure Program would be a tremendous boost to FAB's efforts in this area.

For these reasons, I urge you to give favorable consideration to FAB's Green Infrastructure Grant application.

Sincerely,

Rosie Mendez
Councilwoman



**THE CITY OF NEW YORK
MANHATTAN COMMUNITY BOARD NO. 3**

**59 East 4th Street - New York, NY 10003
Phone (212) 533-5300 - Fax (212) 533-3659
www.cb3manhattan.org - info@cb3manhattan.org**

Dominic Pisciotta, Board Chair

Susan Stetzer, District Manager

April 29, 2011

Commissioner Cass Holloway
NYC Department of Environmental Protection
59-17 Junction Blvd., 11th Floor
Flushing, NY 11373

Dear Commissioner Holloway,

I am writing in support of Fourth Arts Block's (FAB) application to your Green Infrastructure Grant Program.

FAB, partnering with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design, is applying for a grant to 1) construct porous pavement sidewalks along the entire block from 2nd Ave to Bowery and 2) install a green roof on 59-61 E. 4th St.

Your pilot grant program, focusing on citywide storm water management projects that can be constructed within the year and are easily replicable, would be in good hands with FAB. FAB, an arts service organization with dozens of theatre, dance and social service organization members, is leading the development of the East 4th Street Cultural District as a center for creative diversity and innovation. In the past several years, FAB has facilitated capital planning and expansion for the district, along with the generation of more than \$18 million in public capital funds and private grants for the 10 cultural buildings in the block.

Following a collaborative planning process with community stakeholders several years ago, FAB produced a plan, which it is currently implementing, for the East 4th Street Cultural District streetscape.

This past year, FAB launched 'FAB Goes Green,' a sustainability program for the district. Your Green Infrastructure Project aligns perfectly with efforts that they've already begun, to develop a model of sustainability for themselves, other cultural districts and mixed-use neighborhoods throughout the City.

This proposal also represents an engagement with the wider community of stakeholders in the East Village, as FAB is working with The Cooper Union and Cooper Square Mutual Housing Association.

For these reasons, I urge you to give favorable consideration to FAB's Green Infrastructure Grant application.

Sincerely,

A handwritten signature in black ink that reads "Dominic Pisciotta".

Dominic Pisciotta
Board Chair

COOPER SQUARE MUTUAL HOUSING ASSOCIATION

59-61 East 4th Street, 3rd Floor New York, NY 10003

Phone: 212-477-5340 Fax: 212-477-9328

April 28, 2011

Commissioner Cas Holloway
NYC Dept of Environmental Protection
59-17 Junction Blvd, 11th floor
Flushing, NY 11373

Dear Commissioner Holloway,

I am writing in support of Fourth Arts Block's (FAB) application to your Green Infrastructure Grant Program.

FAB, partnering with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design, is applying for a grant to 1) construct porous pavement sidewalks along the entire block from 2nd Ave to Bowery and 2) install a green roof on 59-61 E. 4th St.

Your pilot grant program, focusing on citywide storm water management projects that can be constructed within the year and are easily replicable, would be further enhanced by its implementation within the East 4th Street Cultural District and the proposed East Village Historic District. And it would promote closer collaboration between the residential tenants on the block that we represent and the cultural organizations.

FAB, an arts service organization with dozens of theatre, dance and social service organization members, is leading the development of the East 4th Street Cultural District as a center for creative diversity and innovation. In the past several years, FAB has facilitated capital planning and expansion, along with the generation of more than \$18 million in public capital funds and private grants for the 10 cultural buildings in the cultural district.

Following a collaborative planning process with community stakeholders several years ago, FAB produced a plan, which it is currently implementing, for the East 4th Street Cultural District streetscape.

This past year, FAB launched 'FAB Goes Green,' a sustainability program for the district. Your Green Infrastructure Project aligns perfectly with efforts that they've already begun, to develop a model of sustainability for themselves, other cultural districts and mixed-use neighborhoods throughout the City.



Cooper Square Committee

61 East 4th Street, New York, N.Y. 10003 • (212) 228-8210

April 29, 2011

Commissioner Cas Holloway
NYC Dept of Environmental Protection
59-17 Junction Blvd, 11th floor
Flushing, NY 11373

Dear Commissioner Holloway:

I am writing in support of Fourth Arts Block's (FAB) application to your Green Infrastructure Grant Program.

FAB, partnering with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design, is applying for a grant to 1) construct porous pavement sidewalks along the entire block from 2nd Ave to Bowery and 2) install a green roof on 59-61 E. 4th St.

Your pilot grant program, focusing on citywide storm water management projects that can be constructed within the year and are easily replicable, would be in good hands with FAB. FAB, an arts service organization with dozens of theatre, dance and social service organization members, is leading the development of the East 4th Street Cultural District as a center for creative diversity and innovation. In the past several years, FAB has facilitated capital planning and expansion, along with the generation of more than \$18 million in public capital funds and private grants for the 10 cultural buildings in the cultural district.

FAB and the Cooper Square Committee began a collaborative planning process with community stakeholders several years ago, and jointly produced a plan for the East 4th Street Cultural District streetscape, for which FAB is spearheading the implementation. FAB has brought about a number of physical improvements to the block, including new signage, banners, and installation of cobblestone tree pits, and they have demonstrated a commitment to excellence in their implementation of the project.

This past year, FAB launched 'FAB Goes Green,' a sustainability program for the district. Your Green Infrastructure Project aligns perfectly with efforts that they've already begun, to develop a model of sustainability for themselves, other cultural districts and mixed-use neighborhoods throughout the City.

Cooper Square Community Development Committee and Businessmen's Association

"Here Today... Here to Stay!"

As tenant of property located at 77 E 4th ^{store # 2}, block ____ lot ____ in the E. 4th St. Cultural District in the borough of Manhattan, I support and give permission to replace the sidewalk abutting said property with porous cement pavement as part of a unified project that Fourth Arts Block is undertaking, in partnership with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design. This project is being administered and paid for by the NYC Dept. of Environmental Protection pilot Green Infrastructure Grant program.

As tenant of said property, I understand that I will bear no cost and no responsibility for construction or extraordinary maintenance of this project. Additionally, I understand that:

- Three years after completion, the City of NY will take over extraordinary maintenance and sidewalk replacement as part of their Green Infrastructure Plan.
- Confirmation of these terms will be verified if this grant and project moves forward, and that such verification will be available to me, as tenant, should I request it.
- As tenant, I will continue to be responsible for keeping said property sidewalks clean, clear and accessible.

LYNN FREIDUS , RANDOM ACCESSORIES
Print name /corporate name

L. Freidus
Signature of tenant

4/27/11
Date

As tenant of property located at 87 E 4th St, block ____ lot ____ in the E. 4th St. Cultural District in the borough of Manhattan, I support and give permission to replace the sidewalk abutting said property with porous cement pavement as part of a unified project that Fourth Arts Block is undertaking, in partnership with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design. This project is being administered and paid for by the NYC Dept. of Environmental Protection pilot Green Infrastructure Grant program.

As tenant of said property, I understand that I will bear no cost and no responsibility for construction or extraordinary maintenance of this project. Additionally, I understand that:

- Three years after completion, the City of NY will take over extraordinary maintenance and sidewalk replacement as part of their Green Infrastructure Plan.
- Confirmation of these terms will be verified if this grant and project moves forward, and that such verification will be available to me, as ~~property~~ ^{tenant} owner, should I request it.
- As tenant, I will continue to be responsible for keeping said ~~property~~ sidewalks clean, clear and accessible.

Nura Alija Tenant

Print name & tenant ownership/corporate name

Nura Alija

Signature of owner

4/27/11

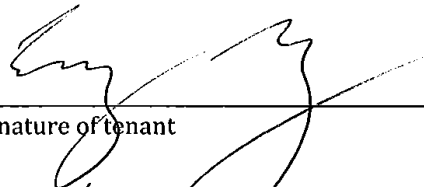
Date

As tenant of property located at 85 E 4th St., block ____ lot ____ in the E. 4th St. Cultural District in the borough of Manhattan, I support Fourth Arts Block's (FAB) project to replace the sidewalk abutting said property with porous cement pavement as part of a unified project that FAB is undertaking, in partnership with Cooper Square Mutual Housing Association and The Cooper Union Institute for Sustainable Design. This project is being administered and paid for by the NYC Dept. of Environmental Protection pilot Green Infrastructure Grant program.

As tenant of said property, I understand that I will bear no cost and no responsibility for construction or extraordinary maintenance of this project.

Green 7iv, Horse Trade

Print name & Business name



Signature of tenant

4/21

Date

.....
**PAGES 45 - 61 CONTAIN CONFIDENTIAL
INFORMATION AND HAVE BEEN REMOVED
FROM THIS DOCUMENT**

**EAST 4TH STREET CULTURAL DISTRICT
GREEN INFRASTRUCTURE PROPOSAL**

RESUBMISSION



BUDGET

4TH STREET CULTURAL DISTRICT STORM WATER MANAGEMENT BUDGET ESTIMATE

APRIL 28 2011

I. Green Infrastructure: Storm Water Management System: Permapave Installation & Curb Reconstruction

A. Construction/Installation & Material Costs	\$ 305,956.50
B. Professional Services, Engineering & Architectural Design	\$ 95,000.00
C. Project Administration & Management	\$ 45,095.65
D. Post Construction	\$ 36,000.00
SUB TOTAL	\$ 482,052.15

II. Green Infrastructure: Storm Water Management System: Green Roof

A. Construction/Installation & Material Costs	\$ 24,025.00
B. Professional Services, Engineering & Architectural Design	\$ 13,300.00
C. Project Administration & Management	\$ 5,232.50
D. Post Construction	\$ 19,600.00
SUB TOTAL	\$ 62,157.50

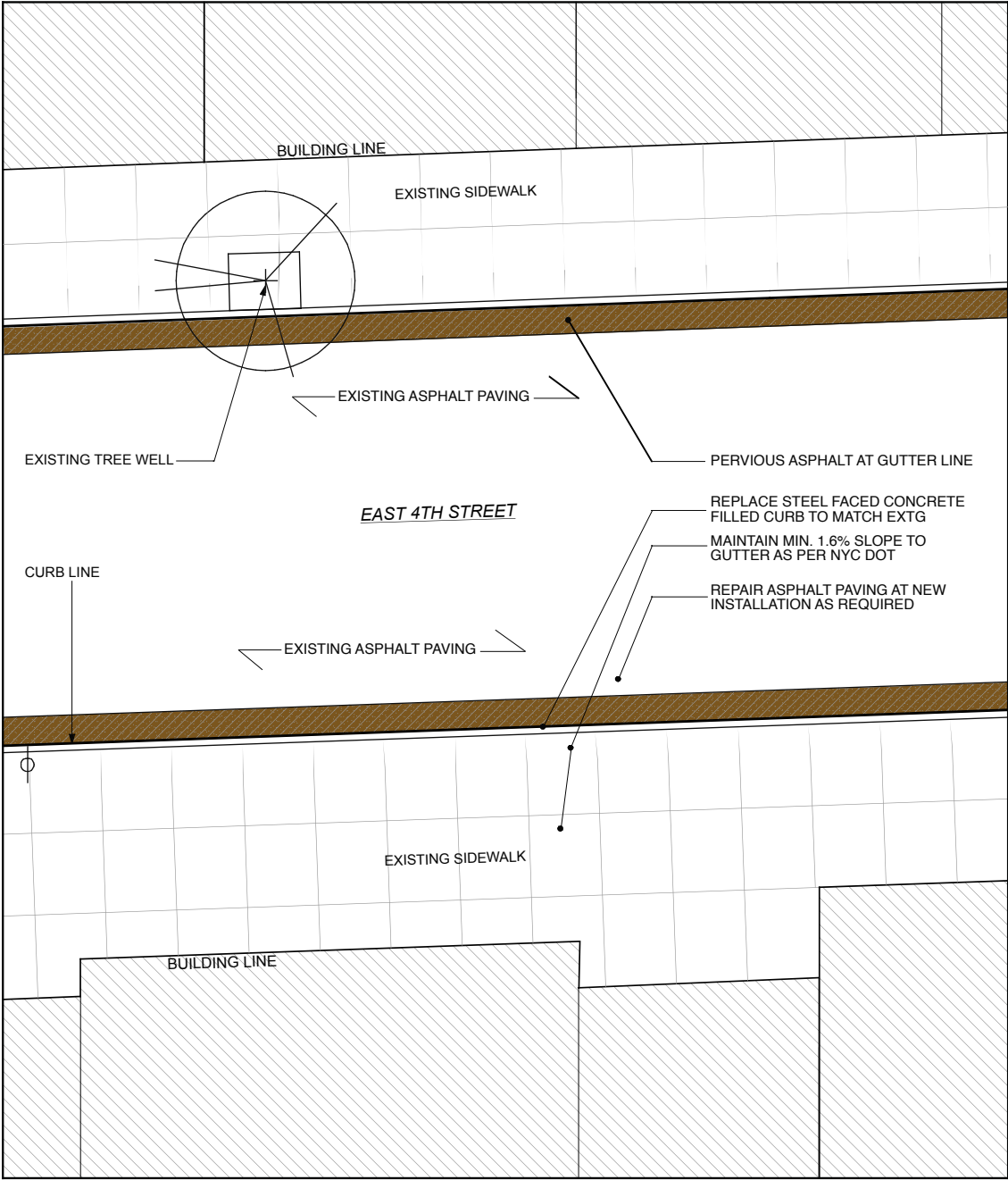
TOTAL GREEN INFRASTRUCTURE REQUEST	\$ 544,209.65
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MATCHING: IN-KIND CONTRIBUTIONS & SUPPORT	\$ 514,500.00
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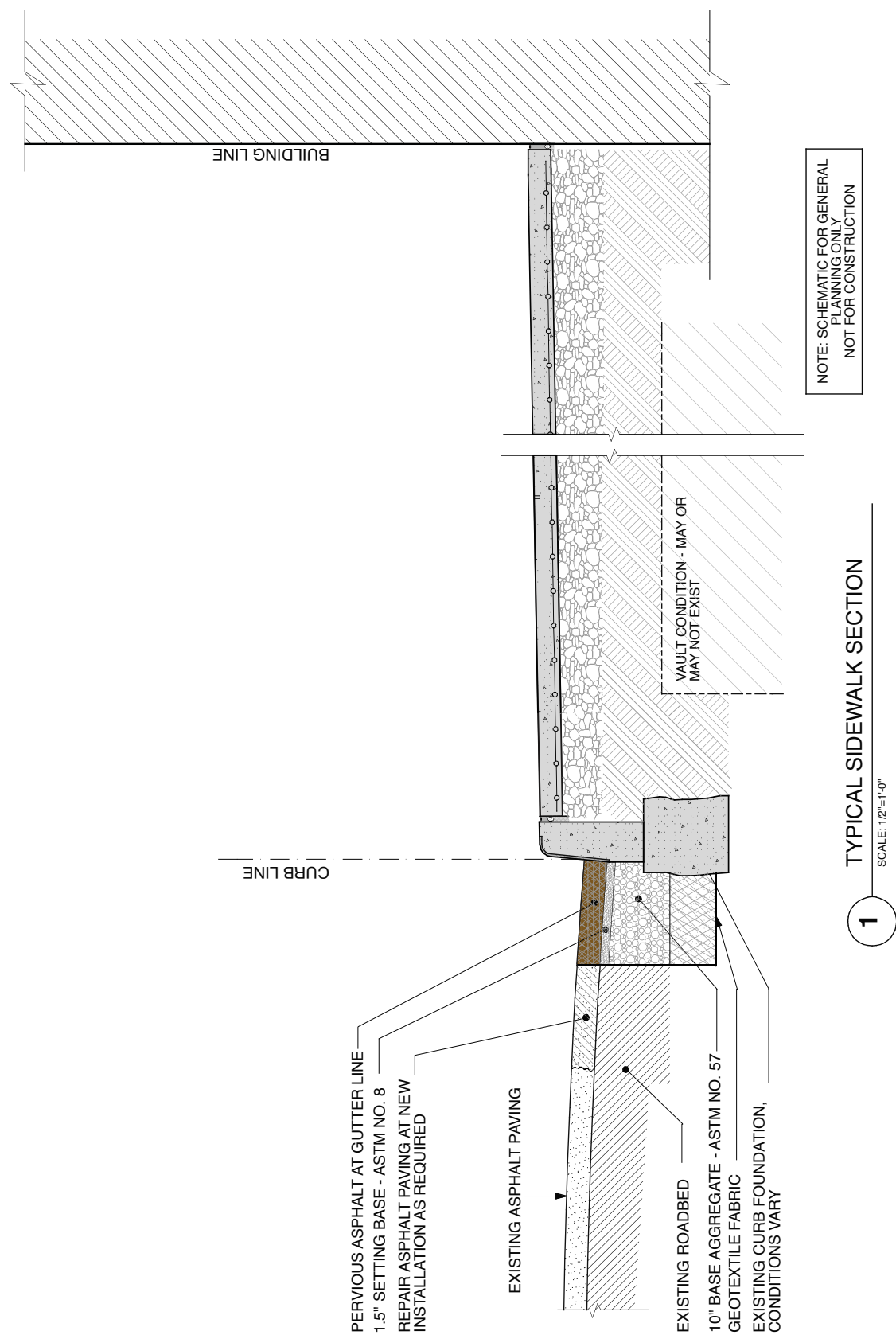
I. Green Infrastructure: Storm Water Management System: Permapave Installation & Curb

Location	System Length	System Width	Excavation Depth
North - East 4th Street	605.8'	1.72' W	24"
South - East 4th Street	618.5'	1.72' W	24"
Permeable Strip in Roadway - North	605.8	1.93' W	24"
Permeable Strip in Roadway - South	618.5'	1.93' W	24"
Total Permapave Area (SF)			4,463

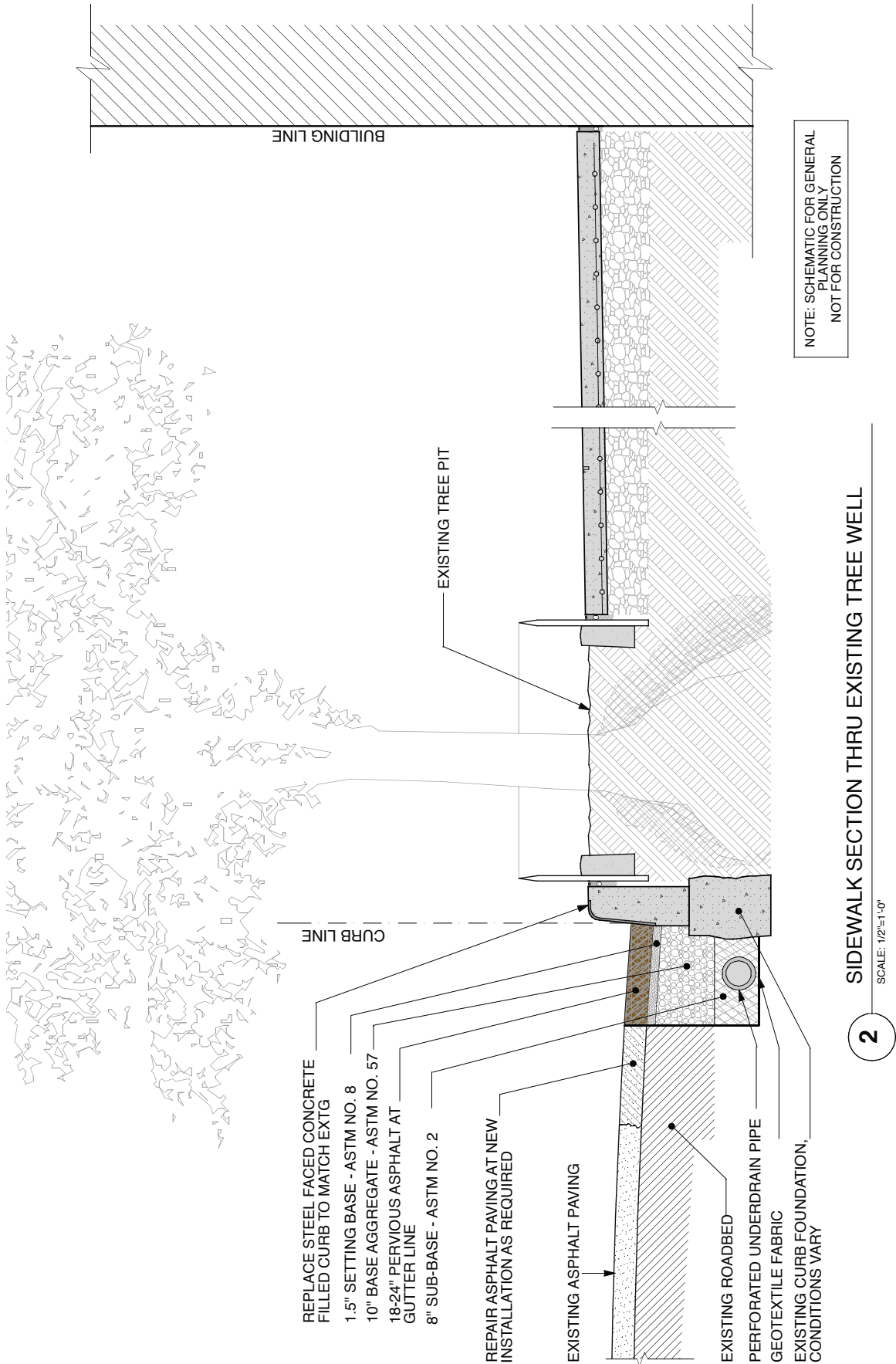
#	ITEM/MATERIALS	Q-TY	UNIT	UNIT PRICE	TOTAL
A. PERMAPAVE CONSTRUCTION/INSTALLATION & MATERIAL COSTS					
1	Sidewalk Reconstruction	9,794	SF	\$ 7.25	\$ 71,006.50
2	Excavation	317	CY	\$ 60.00	\$ 19,020.00
3	6" Cast Iron Perforated Underdrain Pipe	2,449	LF	\$ 15.00	\$ 36,735.00
4	Geotextile - Separation	1,496	SY	\$ 6.50	\$ 9,724.00
5	ASTM No. 8 - Setting Base	23	CY	\$ 60.00	\$ 1,380.00
6	ASTM No. 57 - Base Aggregate	151	CY	\$ 47.00	\$ 7,097.00
7	ASTM No. 2 - Subbase	121	CY	\$ 115.00	\$ 13,915.00
8	Permeable Paver	4,897	SF	\$ 7.00	\$ 34,279.00
9	Cleanout for HDPE Pipe	24	-	\$ 200.00	\$ 4,800.00
10	Cleanout Manhole	4	-	\$ 5,500.00	\$ 22,000.00
11	6" Ductile Iron Pipe	24	LF	\$ 80.00	\$ 1,920.00
12	Steel Faced Curb Replacement	1,224	LF	\$ 45.00	\$ 55,080.00
13	Vegetation/Replanting	LS			\$ 5,000.00
14	Tree Well Architectural Treatment	LS			\$ 14,000.00
15	Resetting Muni Meters	LS			\$ 10,000.00
16	General Conditions (5%)	LS			\$ 15,297.83
SUB TOTAL					\$ 305,956.50



4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL <small>PROJECT NAME</small>	SIDEWALK STORM WATER MANAGEMENT INSTALLATION - PLAN DETAIL <small>DRAWING TITLE</small>	BONE / LEVINE ARCHITECTS	P-5
		WEILDINGER ASSOCIATES INC	



PROJECT NAME 4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL	DRAWING TITLE SIDEWALK STORM WATER MANAGEMENT INSTALLATION - SECTION DETAIL	ARCHITECTS BONE / LEVINE ARCHITECTS WEIDLINGER ASSOCIATES INC	S-1



PROJECT NAME 4TH STREET CULTURAL DISTRICT GREEN INFRASTRUCTURE PROPOSAL	DRAWING TITLE SIDEWALK STORM WATER MANAGEMENT INSTALLATION - SECTION DETAIL	BONE / LEVINE ARCHITECTS	S-2
		WEIDLINGER ASSOCIATES INC	