An Analysis of Localized Drainage Implements for NYC and Other Urban Areas with Combined Sewer Systems

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ABSTRACT

The Combined Sewer Systems (CSOs) of New York City, NY are polluting local waterways including the East River, Hudson River, and the Long Island Sound with billions of gallons of sewage annually. Climate change, aging infrastructure and population growth worsen this pollution problem without a plan to remedy the problem. Large-scale and small-scale construction technology exists that eliminate most CSO pollution. Small scale solutions are constructed by retrofitting roofs and hardscapes on individual properties. This study will create physical models of small- scale hardscape and roof retrofits designed to remove or hold rainwater on the property rather than it immediately entering the combined sewer system. The models will be tested with a system that will simulate heavy rainfalls equivalent to a 5-year storm. Additionally, price estimates will be generated to produce generalized costs for the retrofits and costs per gallon to remove or hold the stormwater. If proven to be functional, logistical, and cost effective; legislation could be considered to require all properties to control stormwater locally then release it into the sewer system when commanded by local water authorities. Proposed funding includes an additional charge on water bills, grants, and private public partnerships.

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DEDICATION

I am dedicating this dissertation to my mother Ellen St John who raised me as a single mother after the death of my father when I was 2 years old. Her hard work and frugalness made it possible for me to have a good life as a kid and to achieve successes as an adult including the completion of this dissertation. Though it has been 15 years since her passing, her influence is still a part of my life.

Chapter I

INTRODUCTION

New York City Sewer Systems

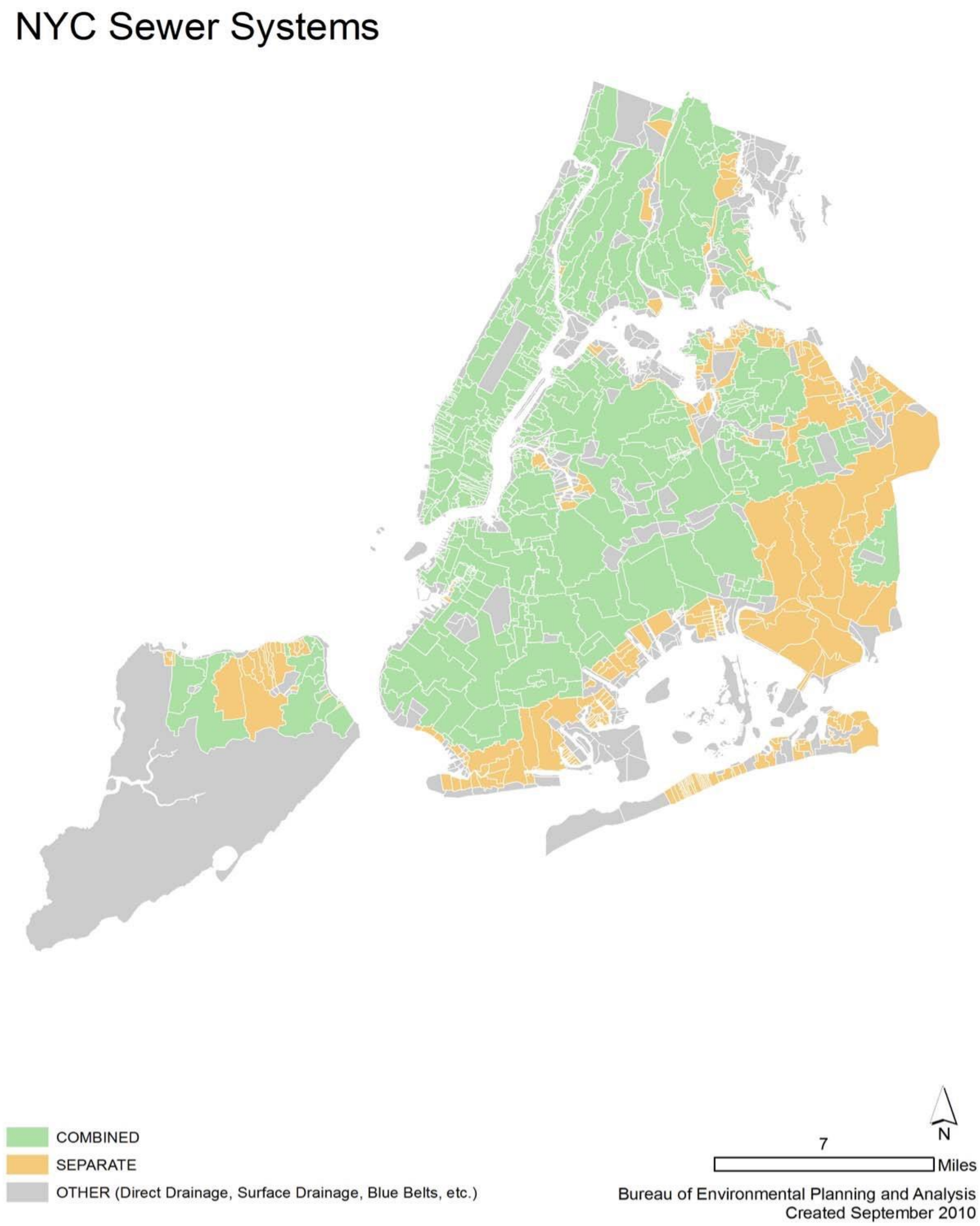
The rapid industrialization and population growth since the 18th century created severe pollution problems worldwide. Water pollution is arguably one of the most perilous environmental threats as the earth is covered two-thirds by seas and oceans. Sewer and drainage systems are responsible for much of the manmade pollution that enters the world's waterways. Presently, many aging sewer and drainage systems are inadequate to serve growing populations and are difficult and expensive to upgrade. Water quality issues are further complicated by climate change and increasing sea levels that impact water quality infrastructure of coastal cities worldwide. National, regional, and local governments are searching for manageable water pollution solutions and new ways to increase water quality.

Local government administration has many challenges both technically and politically, managing dynamic systems such as transportation and water management. Among the most problematic utilities are drainage and sewer infrastructure systems. Sewer and drainage systems can be complex and challenging to manage, especially in large diverse urban areas such as New York City, New York (NYC Environmental Protection, 2010). Well-engineered and properly constructed drainage and sewage infrastructure is vital in urban areas; thus, it is of great societal importance to predict, manage, and understand the performance and maintenance of such systems (Mounce, Shepherd, Sailor, Shucksmith, & Saul, 2014). The sewer and drainage systems of New York City are fundamentally complex due to the size of the city, multiple types of infrastructure, and the age of the existing systems. Most of the sewer and drainage infrastructure are combined systems, while some of the New York City's sewers are separated. Like many cities with combined sewage systems, New York City's sanitary sewer systems are problematic and often release pollution that exceeds federal standards.

The two fundamental types of urban sewer systems that process domestic sewage and storm water runoff include separated sewer systems and combined sewer systems. Separated systems are considered newer technology and are much better for the environment than combined systems (NYC Environmental Protection, 2010). Separated systems transport raw sewage to sewage treatment plants and expel storm water into waterways through independent systems (NYC Environmental Protection, 2010).

Though some pollution such as petroleum enters the local waterways through separated systems, storm water expelled by separated systems is far less polluted than that which enters waterways during wet weather events (rain) through combined sewer overflows (CSOs). A combined sewer system collects both raw sewage and storm drainage in the same system and transports the combined sewage to a wastewater treatment system. During wet weather events, sewage combined with storm water often discharges into local waterways without treatment by means of CSOs (NYC Environmental Protection, 2010). Within Figure 1 is an illustration of the drainage and swage infrastructure of New York City.

Figure 1: *Illustration of Combined Sewer System*



Note. Green areas on the map are of greatest concern for sewage pollution (NYC Environmental Protection, 2010).

Combined Sewer Overflows or Combined Sewer Outfalls (CSOs)

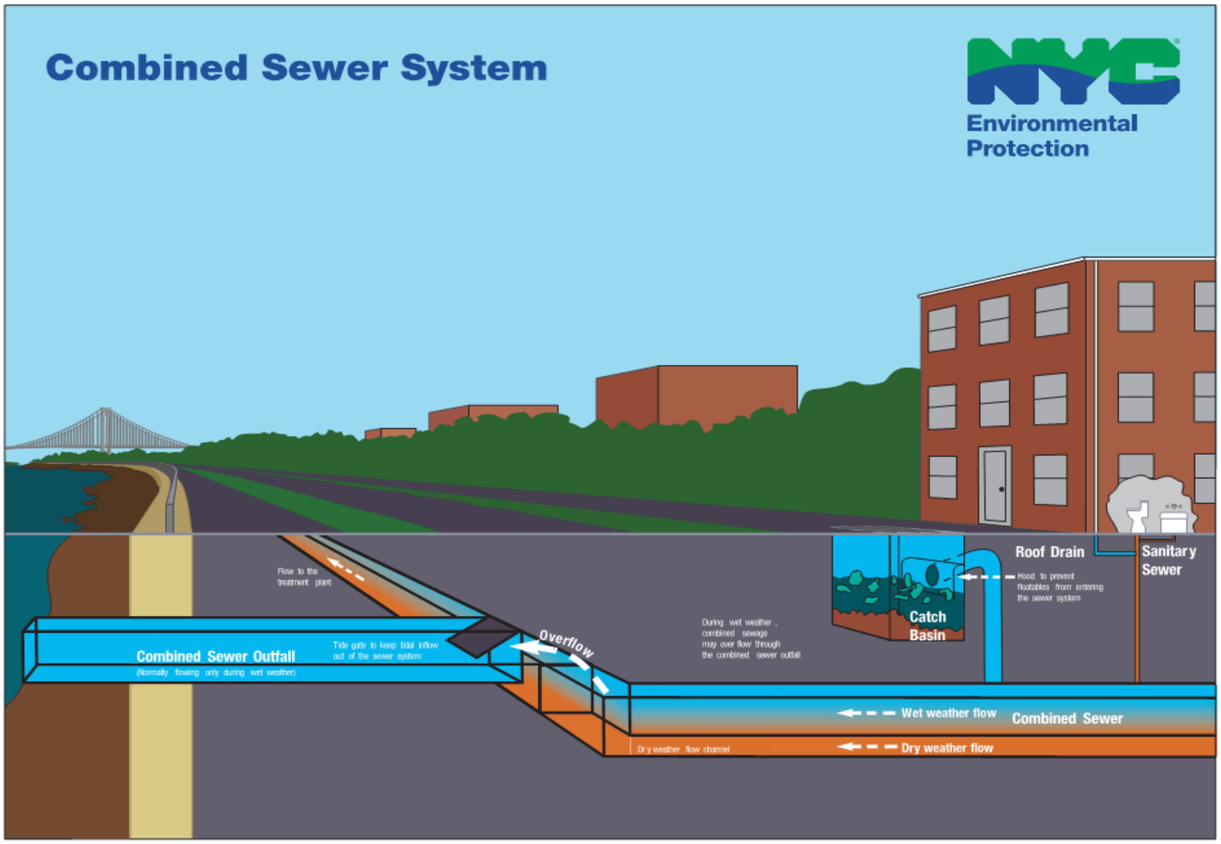
Modern sewage and drainage systems are designed and built as separate systems. However, some older cities in the United States and internationally have combined sewer systems that transport storm water runoff, raw sewage, and industrial waste in one underground system to wastewater treatment facilities (NYC Environmental Protection, 2010). The major problem with the combined system is during rain events the volume of sewage and storm water can become greater than the wastewater treatment facility can handle and the sewage-storm water mixture is discharged directly into water ways, ditches, and wetlands in what is called a combined sewer overflow (CSO) (Jagai, Li, Wang, Messier, Wade & Hilborn., 2015; Wendong, Bays, Meyer, Smardon, and Levy, 2014). CSOs are the vehicle by which most of the raw sewage enters the environment.

During dry weather, a properly functioning system captures all the raw sewage and transport the sewage to the wastewater treatment facility by means of underground piping for processing while discharging the affluent water back into the environment (NYC Environmental Protection, 2010). By design, during dry weather conditions, properly maintained combined sewer systems transport the raw sewage to wastewater treatment facilities where the sewage is processed.

A light rain event is 0.10” or less rainfall in 24 hours while a heavy rain event is 0.25” or more rainfall within 24 hours for the purpose of this paper. A moderate rain event will fall between 0.10” and 0.25” rainfall in 24 hours. Commonly with combined sewer systems, anything more than a light rain event produces more sewage volume than the wastewater treatment facilities can handle, causing the direction of extra raw sewage and storm water mixture to steer away from the waste treatment facility into a holding area or in emergencies directly into the environment through a CSO. During CSO events, local waterways not only receive pollutants found in storm water runoff, but also more dangerous pollutants from domestic sewage such as nitrogen-based substances, carbon-based nutrients, and pathogens (Wendong et al., 2014). These pollutants directly damage the environment and can be dangerous and even deadly to humans.

The most common method of dealing with the excess sewage and storm water is to discharge it directly into the environment by means of CSOs. Essentially, a CSO is pipe that discharges sewage and storm water directly from the combined sewer system into a waterway or wetland. The most common engineering model that controls overflows is simply a dam or weir inside the pipe that will allow the storm water and sewage to flow over the dam during rain events. The primary job of the CSO is to prevent hydraulic overloads at wastewater treatment plants during wet weather. (Mounce et al., 2014). Hydraulic overloads can result in damage to the treatment facility and centralized overflow of the system.

Figure 2: *Combined Sewer System Illustration*



Note. Illustration depicts dry and wet weather flow in a combined sewer system as flow overwhelms the system, ejected is a mixture of sewage and rainwater into the CSO (NYC Environmental Protection, 2010).

Combined Sewer Systems History

Combined sewer systems can be traced back to the Bronze Age; when, for example, the Indus Valley Civilization controlled storm water and sewage through surface combined sewer systems in urbanized areas (Mays, 2001). The systems were crude, but carried human waste away from the city, which improved health and sanitary conditions. The Romans used a similar surface combined sewage system and created a subsurface system to control sewage and runoff as early as 800 BCE (Yazdanfar & Sharma, 2015). Underground systems were a great improvement over surface systems aesthetically and using these systems created better sanitary conditions. For most of human history, pollution simply diluted into large bodies of water or buried in the land. Many combined sewer systems empty into large bodies of water where the sewage would dissipate into the water.

Though rivers were being polluted with human waste, larger bodies of water were not as greatly impacted. Before the industrial age, most sewers transported human waste and storm water. Industrial waste, including hazardous chemicals and heavy metals began to be dumped into sewers in the mid-19th century, causing much more environmental damage to receiving waters. Environmental damage caused by industrial waste and growing populations led to a search for better methodologies for sewage disposal.

Sewage treatment was first managed by England and France in the mid-1800s and the first sophisticated chemical treatment of sewage did not come until the end of the 19th century (Ashton & Ubido, 1991). By the early 1900s, the building of extensive combined sewer systems in urban Europe as well as in many cities in the United States occurred. As sewage treatment technology progressed through the 1900s, engineers became concerned with finding ways to reduce runoff and sewage pollution.

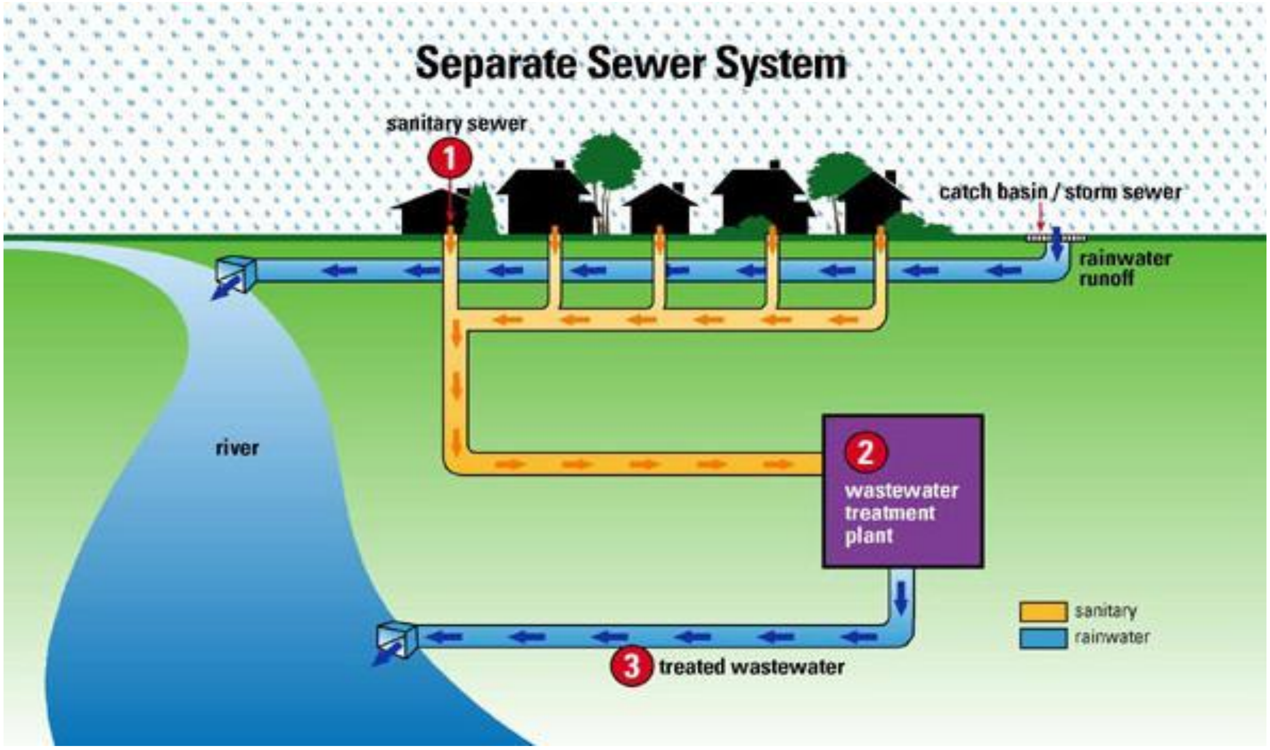
Today combined sewer systems are still polluting the environment even after decades of engineering and legislation. In the United States there are more than 700 cities that utilize combined sewer systems to dispose of both storm water and domestic sewage with most these cities lying in the Northeast, Pacific Northwest, and the Great Lakes Region (US Environmental Protection Agency, 2014; Wendong et al., 2014). The three cited regions were early industrialized areas with large urban populations and available waterways to dispose of combined sewage.

During the 20th century, environmental awareness along with technological advancement led to the implementation of separated sewer systems. Separated systems have many advantages over combined sewer systems including no need for overflow of raw sewage during wet weather events, less energy required to process sewage only and smaller facilities needed for domestic sewage treatment without storm water (Ashton & Ubido, 1991). In the United States, newer cities and neighborhoods are designed and built with separate systems. New York City, being an older US city, has an 80/20 ratio of combined vs separated sewers in the city. The construction of underground sewage systems began in Brooklyn in the late 1850s, long before the construction mandate of separate drainage and sewage systems

Ideally, combined sewer systems can be divided into separate sewer and drainage systems. The Metropolitan District Commission in Connecticut has been actively separating many combined sewer systems in the Greater Hartford area since 2006. In addition, the MDC has been implementing other controls to help address CSOs (MDC, 2016). Physical sewer separation is difficult because of the buried combined system beneath roads, structures, and other utilities, which makes access difficult and expensive. Additional costs and logistical issues stem from the age of the 150-year combined sewer system. The lack of as-built drawings from the original construction and controlling sewage and storm run-off during construction has greatly increased costs (MDC, 2016). Costs and logistical issues are not exclusive to the MDC in Hartford but are typical of combined systems throughout the US. If it were easy and cost effective to separate the sewer systems, then the separation of sewer and drainage systems would be a more attractive solution to the CSO problem.

Figure 3

Separated Sewer System Illustration



Note. Illustration depicts dry and wet weather flow in a separated sewer system. Sewage goes directly to the sewage treatment center while storm drainage goes into river (The Water Treatments, 2009).

Combined Sewer Systems Problems

Expelling raw sewage into public waterways creates both health and environmental problems that American and world governments are currently trying to manage. CSOs are a major contributing factor of the urban hydrological deterioration (Liao, Zhang, Wu, He, & Chen, 2015). The problems range from visible trash and solids in the waterways to dead areas in rivers and large bodies of water caused by excessive nitrogen content. Often urban beaches are closed after rain events in areas with combined sewer systems due to excessive bacteria populations in the water. Later sections of this paper contain an outline of some major health and environmental issues that can be better controlled or mitigated through better CSO management.

Storm Water Solutions

As an advanced society with great engineering technology available, it is technically possible for New York City and other cities to solve the problem of CSO events through engineering. However, financial commitments and a lack of the population's understanding of or concern for the problem are great obstacles to a viable solution. Rather than focusing on grand scale solutions, the purpose of this study was to explore smaller, property specific storm water control options that can be easily managed and financed but still effective.

Retrofit Existing Drainage Systems

CSO overflow pollution is not unique to NYC as cities throughout the United States and worldwide struggle with issues related to outdated drainage infrastructure, population growth, and climate change that is overwhelming combined sewer systems. Stress on these systems is increasing so much that there are explorations on imperative solutions to find feasible and effective alternatives that can reduce stress and CSO discharges. One option is to retrofit or modify the existing systems in order to reduce and manage rainwater flows into the combined sewer system.

Centralized Tunnel System

Another feasible option to control CSOs is with underground storage systems. Many cities design and implement such systems as a solution or part thereof. The Metropolitan District Commission is constructing large sewage holding tanks underneath the city of Hartford as part of a plan to mitigate sewage from entering the Connecticut River and tributaries. The tunnel will be able to store up to 40 million gallons of sewage until the treatment plants are able to process waste. The overall clean water project also includes sewer separation, interceptor pipes, and treatment plant improvements.

London, England's Thames Tideway Tunnel being built under the Thames River in order to intercept sewage that otherwise would be delivered into the Thames River by means of CSOs. The tunnel is approximately 16 miles long designed to prevent millions of tons of pollution from entering the river every year (Bazalgette Tunnel Limited, 2020). Though the project should remove up to 94% of the current raw sewage levels, the project receives criticism. Overall costs, environmental damage, and capacity are only a few of the objections that have been raised concerning this project. The addition of blue and green infrastructure in London is being considered in order to relieve the stress on the new system while providing other environmental benefits.

As part of a complex plan to mitigate CSO events, NYC DEP, along with other agencies, is providing grant funding for green infrastructure within the city that will help with CSO overflows plus provide many other desired benefits of green infrastructure (NYC Environmental Protection, 2019). The city of New York is redesigning and retrofitting many public areas, sidewalks, and streets within the city to improve the environment. A team of engineers completes feasibility studies to determine what areas of the city would benefit most from green infrastructure and then distribution of funds for projects occurred by engineering recommendations.

For the grant program to make a measurable difference, the program should be expanded as current city funded grant programs only contribute a few million dollars a year to green infrastructure within the city. With private sector involvement, such as Private Public Partnerships, the advancement of localized storm water projects could grow dramatically and quickly, advancing a solution to CSO events while providing other green benefits to the city. To solicit investments, governments, NGOs, and corporations need a system that can quickly, and cost effectively evaluate storm water solutions. Such a system would be the first step in maximizing each property's storm water control while providing the solution at the lowest costs.

Research to Help Solve CSO Problems

Research is needed to find feasible and cost-effective solutions to reduce or eliminate CSO events. This research will be based on retrofitting existing elements in the city and will not explore centralized tunnel systems. Specifically, this study will use physical models to measure the hourly storm capacity of typical urban runoff containment devices to assess functionality. A cost estimate and analysis of each device was performed to provide a cost per gallon for stormwater that is held or removed from the system. Additionally, an interactive tool may be developed to help identify the best and most cost-effective implements at individual locations. The goal of this project is to explore the logistical and financial feasibility of retrofitting the city's hardscapes and roofs to reduce or eliminate CSO events. This study's results were based on conditions found in New York City but the costs and estimating tool can be easily adapted to most urban areas in the US.

Chapter II

LITERATURE REVIEW

Overview

Much of the literature concerning CSO events demonstrate the negative impacts of combined sewer systems and the concerns associated with raw sewage flowing into local waterways. Studies have demonstrated high viral and bacterial levels, which impact human health concerns, shellfish and fish contamination, dead zones in waters due to high nitrogen levels, and high nutrient levels that promote excessive algae growth (Chhetri, Thornberg, Berner, Gramstadd, Öjstedt, Sharma, & Andersena, 2014). Other literature focuses on CSO prevention and management of stormwater including stormwater implements. Most experts agreed the CSO overflows are a serious health concern, but managing the overflows occur through various forms of engineering and education.

Impacts

CSO pollution causes difficulties for governments as the pollution causes adverse effects in human health, environmental health, aesthetics, and economics. Ultimately governments are responsible to create laws and regulations that make allow its citizens to live in a clean and healthy environment while protecting their economic and future interests. The literature demonstrates that CSO pollution causes disease and environmental destruction which ultimately impacts economics and aesthetics.

Health Impacts

The risk of acute and chronic health problems associated with CSOs is one of the most compelling reasons to resolve the CSOs as soon as possible. The risk of disease from CSOs changes the behavior of a city's residents and government agencies to minimize exposure to pathogens and pollutants. Pathogens and pollutants from CSOs can impact people through immediate direct exposure, long term exposure, drinking water contamination, and food contamination. These aquatic diseases can cause both acute and chronic health problems for the population.

CSOs are linked to immediate, long term, localized, and broad scope health concerns. Immediately after a CSO event, localized waters such as beaches, drinking water intakes, fish, shellfish, aquatic plants, and other animals can be impacted by the pollutants contained in the sewage. Floatables, microbial pathogens, and suspended solids often lead to localized beach closures, shellfish bed closures, and contaminate local water supplies (US Environmental Protection Agency, 2014). Areas with higher populations and wetter weather can be especially prone to human health risks from CSOs. The United States, The Northeast, Pacific Northwest, and the Great Lakes regions are particularly susceptible to CSO Health Risks.

New York City is one of the most populated cities in the world and has wetter than average weather in the United States. To maintain public health, New York should take measures to protect its population from the immediate dangers of CSO events. The city residents can access information concerning beach closures from CSO events in New York City by dialing 311 or visiting the city's beach website (NYC Environmental Protection, 2019). To warn residents of water quality dangers, New York City has created a texting program to alert residents about beach closings in the city (NYC Department of Health and Mental Hygiene, 2016). There is a need for social warning systems because engineering solutions are not increasing at a high rate.

Beach and recreational water closures are often a result of elevated microbial levels because of raw sewage entering public waters. As microbial contamination is responsible for many health problems, the closure of recreational waters is specifically associated with high E. coli counts in order to protect human health (Chhetri et al., 2014). Human health problems are greatest immediately after a CSO event; however, there are still dangers for humans long after the CSO event. Viral and bacterial microbials are not only immediate dangers but also dangerous chronic long-term infectious pollutants held in receiving waters due to CSOs (Olds, Corsi, Dila, Halmo, Bootsma, & McLellan, 2018). Though there are studies confirming the long term presents of infectious microbes in receiving waters, there is greater evidence of human disease outbreaks immediately after CSO events.

A monumental aquatic disease outbreak estimated at 403,000 cases of cryptosporidiosis, occurred in Milwaukee, WI after a heavy rainfall event where cryptosporidium oocysts entered the water system through CSOs (Hoxie, Davis, Vergeront, Nashold, & Blair, 1997; MacKenzie, , Schell, Blair, Addiss, & Peterson, 1995). Cryptosporidium parvum is a protozoan transmitted to people by tainted food or water, contaminated surfaces, or by direct human or animal fecal contact (Corso, Kramer, Blair, Addiss, Davis, & Haddix, 2003). As a result, more than 100 people died because of the outbreak while thousands became ill (Naumova, Egorov, Morris, & Griffiths, 2003). The estimated economic cost of this outbreak is $96.2 million accounting for medical costs and lost productivity (Naumova et al., 2003). This event was primarily attributed to a filtration malfunction at Howard Avenue Water Treatment Plant rather than a CSO event. Although not a CSO event, the outbreak demonstrates the hazards of raw sewage being introduced into the environment (Naumova et al., 2003). Raw sewage that enters the environment through CSOs and other sources can be blamed for many other aquatic disease occurrences throughout the United States and worldwide. The Milwaukee incident demonstrates the severity and gravity of the problem raw sewage entering the environment.

Raw sewage being released into local waters by CSOs is the primary concern of pathogenic contamination within areas that have combined sewer systems. The scientific community has established the dangers of pathogens and pollutants transmitted to local waters by CSOs (Kafi, Gasperi, Moilleron, Gromaire, & Chebbo, 2008; Liao et al., 2015). Studies demonstrate that the bacteria associated with fecal contamination like E. coli, increased in recreational waters following CSO events (Jagai et al., 2015; Marsalek & Rochfort, 2004; McLellan & Salmore, 2003). Water quality data often shows high fecal contamination after wet weather events in areas with CSOs when compared to background levels of E. coli (Shibata, Kojima, Lee, & Furumai., 2014). Like findings of other studies, fecal contamination is a great concern with combined sewer systems and wet weather events. In Europe, E. coli concentrations often exceed the European limit by about 50% in areas near CSOs and can increase to over 70% during rainy seasons (De Marchis, Freni, & Napoli, 2013).

Fecal contamination of E. coli is of extra concern because it causes sickness and even death. E. coli also readily adapts to the environment and transfers antibiotic resistance to other bacteria (Edge & Hill 2005; Vidovic & Korber 2016). Some strains of E. coli have increased resistance to antibiotics, temperatures, acidity, and oxidative materials allowing better survival and a path into the human food chain (Vidovic & Korber 2016). The most resilient strains of E. coli are within the receiving waters of CSOs (Edge & Hill, 2005). Not only are CSO receiving waters dangerous for humans, they provide an environment that allows for antibiotic resistant bacteria to transfer resistance and become stronger.

E. coli and cryptosporidiosis are only two of many pathogens found in CSOs that are dangerous to humans. Water quality tests indicate many illnesses found in local waters can be attributed to CSOs including Streptococcus, Enterococcus, Salmonella, fecal coliforms, and viruses (Jagai et al., 2015; Donovan, Urice, Roberts, Harris, & Finley, 2008; Mascher, Mascher, Pichler-Semmelrock, Reinthaler, & Zarfel, 2017). Many studies based on physical field experiments prove that CSO events are the primary cause for water quality issues for areas with combined sewer systems (Jagai et al., 2015). Furthermore, it has been demonstrated that CSOs are the primary means of water borne pathogens entering the environment (Olds et al., 2018). Many dangerous pathogens are entering the environment and sometimes growing stronger because of CSO events. Health concerns for people are one of greatest concern for combined sewer systems and a profound reason for finding solutions to mitigate CSO events.

As microbial contamination is responsible for many health problems and the closure of recreational waters is specifically associated with high E. coli counts, which also results in economic loss due to reduced tourism (Chhetri et al., 2014). Though economics should not be a primary concern when it comes to human health issues, controlling CSO contamination has been demonstrated to increase economic activity, including tourism (Gibson, Farnood, & Seto, 2016). In the case of New York City, even governmental costs of regulating beaches during wet weather could be reduced with reduced CSO events

The total economic costs of CSO pollution in NYC is difficult to calculate and merits additional research in order to accurately calculate direct costs, lost productivity and lost revenues. Economic costs can include lost tourism revenue, emergency repairs, lost productivity, medical costs, and remediation costs (US EPA Region 2, 2010). In bodies of water used for drinking water the costs of treatment raise substantially with no guarantee of required results (Office of the New York State Comptroller 2018). Each city has varying landscapes, water and sewer infrastructure, treatment facilities, tourism income, recreational demands, commercial fishing potential, cleanup costs, maintenance and repair costs, wage rates, and so on, which would require in-depth studies to quantify the costs and lost revenues caused by CSOs.

The Pioneer Valley is about 150 miles Northeast of New York City containing the Massachusetts cities of Springfield, Chicopee, Ludlow, and Holyoke along the Connecticut River. The Pioneer Valley Planning Commission specifically outlined how cleaner water could positively impact tourism and economic growth. Some of the economic benefits included increased tourism, increased recreational use, increased property values, and increased economic potential for riverfront projects (Pioneer Valley Planning Commission, 2005). The report specifically noted increased revenues for the Basketball Hall of Fame, canoeing along the Connecticut River Water Trail, increased visitation of historic sites and the development of urban areas along the waterfront that results in more jobs and a higher tax base (Pioneer Valley Planning Commission, 2005). A detailed economic report based on these and other factors is needed in order to understand the total economic losses regarding dirty water and CSOs.

A study conducted involving the environmental and socio-economic relationship regarding tourism in Varna Bay, Bulgaria demonstrates the complexities of quantifying tourism and water quality. This study revealed that 72% of tourists visit Varna Bay for beach related activities while the other 28% visited for spas, gambling, or other reasons (Moncheva, Racheva, Kamburska, & D’Hernoncourt, 2012). Varna Bay has been under ecological distress for many years with a major part of the distress coming from Wastewater Treatment and CSOs. Many factors were considered including the additional stress placed on the environment by the tourists Varna Bay is trying to attract. The conclusion of this study was that through storm-water management and infrastructure improvements, runoff could be eliminated by 80% (Moncheva et al., 2012). This improvement would likely increase tourism to Varna Bay and expand the tourism market creating more than enough revenue to cover the costs (Moncheva et al., 2012). Even with a detailed socio-economic study involving water quality, the researchers did not put a dollar value or return rate on the infrastructure investment.

Though a scientific economic cost of the current system with CSOs is unknown, the Office New York State Comptroller reported that the cost of inaction is so extensive that ongoing sewage releases over the long run are ecologically and fiscally unsustainable (Office of the New York State Comptroller, 2018). If an accurately estimated figure were available, the financial evidence may increase motivation of solving CSO issues more quickly.

Aesthetics

Pollution is not always obvious as some water may look crystal clear but could be deadly if consumed because of bacteria or other contaminants. Other pollution is much more visually obvious as oils and trash impact local waters. CSOs can cause an increase of floatables including trash, needles, and oil slicks that cause closures and significantly reduce the aesthetic quality of receiving waters (US EPA Region 2, 2010). Solid pollution expelled by CSOs is dangerous to people and wildlife alike. Fish and other animals can become sick and die by ingesting trash and pollution that ends up in the environment from CSO events.

Dead fish can become unsightly and malodorous lying on the banks of a polluted watercourse effected by a CSO. Furthermore, certain species of aquatic life are more susceptible to pollutants discharged by CSO causing a reduction or extinction of the species from the effected waterway (Jeng-Chung Chen, Ni-Bin, Chiee-Young, & Chiu-Shia, 2004). The loss of variety greatly impacts the health and aesthetic of an ecosystem. The aesthetic of an ecosystem is affected by both contaminations added and the life taken away from it.

Though many efforts have been made to restrain visible solids through screens and traps the results have been poor. CSOs are responsible for a great amount of solid contamination in wet weather even with engineered controls (Spence, Digman, Balmforth, Houldsworth, & Saul, 2016). No amount of controls or cleanup efforts can compete with the elimination of CSO events all together. Stopping CSO events all together would eliminate much solid pollution that impacts New York Cities beaches, rivers, and other water systems.

Impact on Rivers and Local Waters

The most obvious indicator of a waterway's health is simply how the waterway looks to the eye. Immediately after a CSO event, localized waters such as beaches, recreational waterways, rivers, and estuaries can have visible pollutants such as floatables (papers, plastics, medical waste, etc.) and suspended solids (sludge, biological waste, grease, etc.) that are aesthetically unpleasant. Generally, waters that appear dirty contain pollution though there are many instances of pollution where the body of water appears clean and healthy. There are many ways of determining pollution's impact on a body of water.

European sewage models assume that the volume of sewage discharged is a good indication of the pollution impact receiving waters. Lower overflow volumes and reduced frequency will mean that receiving waters will suffer less adverse effects. Aesthetically, lower volumes of overflow also mean a lower impact on receiving waters and wetlands (Pijáková & Derco, 2015). Therefore, a good way to reduce pollution's impact on the environment is to lower or eliminate CSO events.

As aging combined sewer systems transport pathogens, suspended sewage, floatables, and toxic substances to public waterways in New York City, these systems cause problems such as beach closures, shell fishing closures, water supply contamination among other environmental and public health concerns (US Environmental Protection Agency, 2014). These problems will only get worse as the combined sewer system continues to age and deteriorate.

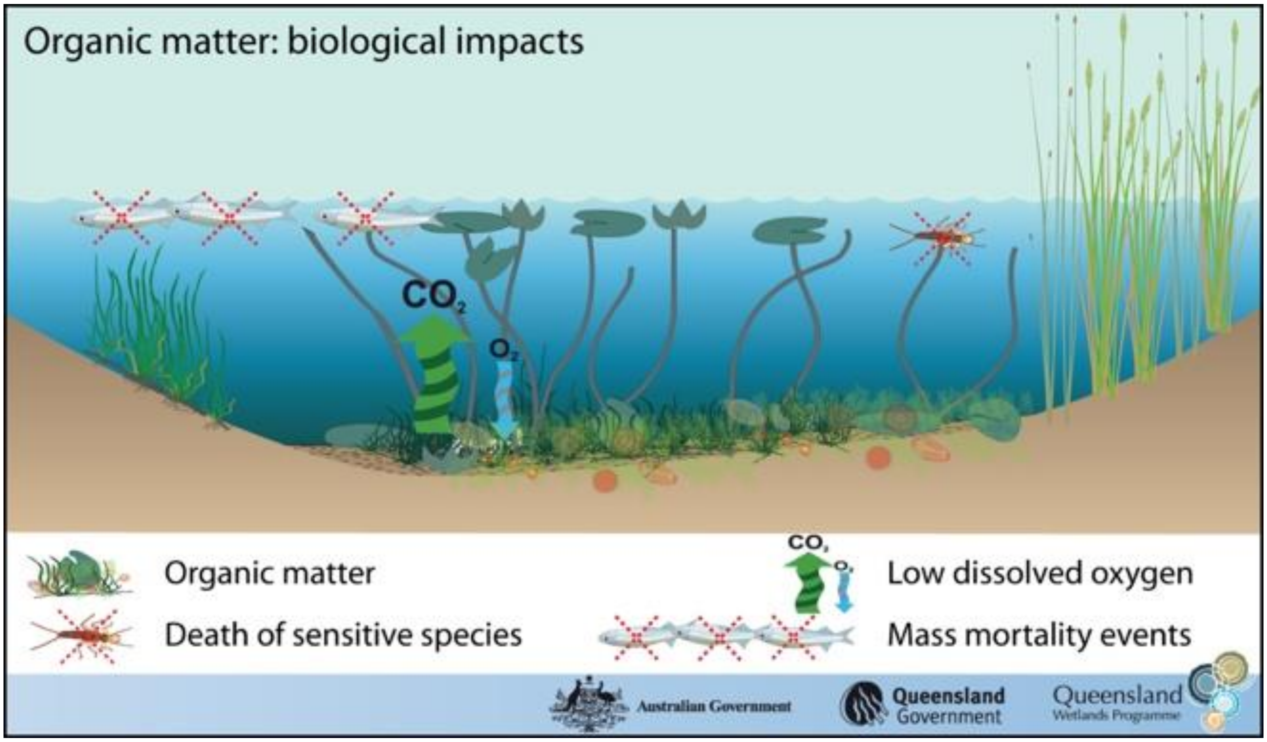
Though elevated pathogen levels are dangerous, other pollutants introduced by CSO events can be more dangerous to the environment, especially considering the long-term damage of other pollutants. Pollutants like oxygen-demanding pollutants, excessive organic nutrients, and nitrogen can cause excessive algae growth and dead zones in impacted waters (Wendong et al., 2014). The Long Island Sound suffers both dead zones and eutrophication that causes excessive algae growth. These conditions are largely due to CSO events of New York City along with CSO events from Long Island and Connecticut.

Diffusion pollution can greatly impact CSO receiving waters differing periods acutely and chronically. In the short-term oxygen levels can be depleted, fish toxins such as NH3-N harm fish populations and solid waste and silt suspends in waters. In the long-term nitrogen levels are increased, sludge accumulates, and eutrophication increases algae growth (Meyer Molle, Esser, Troesch, & Masi, 2013). A major source of excess nitrogen in the Long Island Sound links to human urine and feces released into the waterway through CSO events from New York City, Long Island & Connecticut.

In CSO receiving waters, oxygen depletion stems from chemical demand for oxygen by the substances released by combined sewers. Additional suspended and re-suspended solids contribute to long term oxygen depletion (Le, Petrovic, & Verbanck, 2014). Oxygen depletion or hypoxia is one great concern for the Long Island Sound. Hypoxia in western Long Island Sound is primarily due to sewage sources from New York and Connecticut (Committee on Environment and Natural Resources, 2010). Aquatic creatures such as fish and shellfish cannot survive without oxygen thus hypoxia is a great concern for the environment and the economy.

Figure 4

Organic Matter Impacts



Note. Organics from CSO events cause aquatic environmental devastation (Department of Environment and Heritage Protection, Queensland, 2013).

The environmental damage caused by combined sewer systems such as hypoxia is widely accepted as fact for governments worldwide. In the US, scientific studies name several sources of water pollution and many causes of hypoxia. Scientific field tests have proven that a reduction in the CSOs directly results in a reduction in water pollution. With the knowledge of the reduction in water pollution, it is important to find ways to reduce or better yet eliminate CSO events.

CSO Management

Industrial accidents, illegal dumping, and environmental spills can greatly impact CSO receiving waters especially during wet weather. Sewer management authorities must have strategic plans and cover the costs of environmental cleanups involving CSOs (Mounce et al., 2014). As stewards of the public's water supply, water and sewer authorities have a great responsibility to keep drinking water safe; however, combined sewer systems make achieving that task much more difficult.

For many cities with combined sewer systems, the greatest challenge in meeting water quality standards is managing CSO events (US Environmental Protection Agency, 2014). New York City, along with many other cities with combined sewers fail to meet the requirements of the 1972 Clean Water Act and therefore must work with the EPA with discharge permits and agreements. Many times, municipalities with CSOs fail to meet agreed upon standards and face fines from the EPA and other regulating authorities. Understanding the challenges of older cities with combined sewer systems, the EPA works with local and national environmental organizations and governing bodies to create solutions for clean water.

Solutions for clean water must be cost-effective in order to receive the support needed for implementation by public administrators and elected officials. Therefore, a primary objective of a clean water plans is a detailed analysis of the costs and impacts of each control device or control method (Muschalla, 2008). The implements and plans with the best effectiveness to cost ratios are most likely to be supported and endorsed for use in studies and practical applications.

The management of CSO pollution is an unresolved issue discussed in governmental, environmental, and scientific literature (Chhetri et al., 2014). Exploration of the issue stems from the vantage point of many disciplines yet, the incorporation of all relevant areas of study is necessary to encompass the issue. CSO pollution studies have been increasing in number and scope providing a greater base of information for future studies to build on (Philadelphia Water, 2016).

Many engineered systems help mitigate CSO events as well as the damage caused to the environment. In fact, most if not all remedies are in New York City and most of the control measures so success during application. The size and diversity of the city does not allow for a single “magic pill” solution to the CSO problem. The following paragraphs will describe some of the accepted engineering remedies for CSO pollution.

CSO Overflow Prevention

As mentioned, the separation of sewer and drainage systems is one of the best ways to prevent sewage from entering public waters. Separating sewer systems typically occurs when it is logistically and economically feasible. For example, the sewer separation project at the Metropolitan Commission District in Hartford, CT. The separation project is overly complex and expensive for a small city; such a project would be exponentially more expensive and complex for a city like New York. Although some areas of New York could separate and have been, for most of the city separation is not feasible from engineering or a financial point of view.

Though separated sewers are ideal; scientists, hydrologist, and environmentalists are exploring green infrastructure to keep or delay storm water from entering the combined sewer systems by means of implements that catch the storm water before getting into the drainage system (Philadelphia Water, 2016). Besides mitigating storm water runoff, green infrastructure can provide many additional benefits including improved air quality, reduced ambient heating, food production, and aesthetic improvements. Problems with green infrastructure include costs, planning, engineering concerns, available space, proven results, maintenance, and implementation barriers.

Grey or blue infrastructure is essentially engineered storm water storage implements that hold storm water until the treatment facility can handle the stored storm water. Holding storm water for hours to days can give the sewage treatment plants time to catch up and handle the storm water and sewage without dumping directly into receiving waters without treatment. Blue and grey infrastructure does not have the added environmental benefits of green infrastructure, but the performance of blue and grey infrastructure is much more predictable and controllable. Blue and grey infrastructure vary from large and expensive underground holding tanks localized controls such as building cisterns. The issues with blue and grey infrastructure are costs, most storm water still enters the combined system though delayed, maintenance, and coordination of releases. As with most solutions in life, there is no magic pill and a combination of controls to mitigate CSO events and the best answer for a city such as New York will include a combination of controls.

Constructed Wetlands

One alternative method of managing sewage is through constructed wetlands (CWs), which prove adequate for the treatment of sewage. CWs are more environmentally friendly compared to modern wastewater treatment processes (Amaral, Ferreira, Galvão, & Matos., 2013; Machado, Urbano, Brito, Janknecht, Salas, 2007). CWs is a viable alternative for domestic, industrial, and agricultural wastewater, along with storm water sewage (Amaral et al., 2013; Vymazal, 2005). CWs has promise but requires a substantial amount of land available to work. Additionally, the engineering of CWS is specifically for the climate, soil conditions, and pollutant profile.

Combined sewers release highly polluted waters containing nitrogen, carbon, and phosphorus, which are much less prominent in storm water alone and CW design must account for differences in combined and separated systems (Meyer et al., 2013). Though many cities have found great success with CWs, the lack of acreage in New York City along with the diversity in outflow pollutants and the sheer volume sewage makes it impossible for the city to rely on CWS as a solution.

CWs are showing promise as an alternative method of handling sewage in combination with or instead of or combined with traditional sewage treatment facilities. Due to the many variables associated with CWs, more research could prove CWs effective over time. Most of the research completed on CWs involves physically building a CW and sampling the results. The results can be used to create better models and solve problems.

Underground Storage Tanks

Solutions used to mitigate CSO events include storage tanks and CSO structures that help control sewage from entering receiving waters. The outlet structures usually have sensors that help minimize combined sewage during and after wet weather events (Leonhardt, D'Oria, Kleidorfer, & Rauch., 2014). In terms of needs for the city, engineers are actively working on designs to handle the sewage and storm water while considering large underground storage systems needed to hold combined sewage waste.

The problem with this idea is twofold. First, finding and accessing enough underground area for tanks in America's largest city is an extreme challenge. Second, and almost more importantly the cost of a system large enough to handle the city's storm water and sewage is not manageable for the city. Smaller cities like Hartford, CT are moving forward with the Metropolitan District Commission's (MDC) underground storage system as part of the, plan to eliminate CSOs. In 2016 the MDC will be building one of two storage tunnels to hold storm water and sewage from the combined systems that were not separated. The MDC will spend two to three billion dollars on the elimination of CSOs by completion.

Technically speaking, an underground holding tank is the easiest scientifically to defend. Simple hydrological calculations can be made using the watershed area, maximum storm downfall, maximum hourly sewer flow and the processing plant's hourly capacity to calculate an ideal holding capacity for storage. In some areas like Las Vegas where land outside the city is plentiful, storage tanks have been proven successful. In the northeast, areas for holding tanks are hard to find and the costs to build them are expensive.

Sustainable Drainage Systems

Around the globe, the usage of sustainable drainage systems aids with solving drainage and sewage problems in urban areas. The Environment Agency for England along with Wales and the Scottish Environment Protection Agency support and promote the use of Sustainable Drainage Systems for the management of surface water run-off (Fletcher, Shuster, Hunt, Ashley, Butler, 2015). Some sustainable drainage systems examples are green roofs, permeable pavements, rain gardens, vegetative swales, infiltration basins, and retention ponds. Natural and biological drainage, filtration, and retention systems are a sustainable method of storm water management. More information about some of these mentioned drainage systems will be detailed later in this paper.

The United States also is embracing sustainable drainage methods, best management practices, low impact development, and green infrastructure to manage storm water runoff in urban areas with combined sewer systems (Ashley, Nowell, Gersonius, & Walker, 2011; Stovin, Moore, Wall, & Ashley, 2013; US Environmental Protection Agency 2007; Wong, 2006). The engineering for green systems is largely specific in scope as climates, environmental factors, and urban characteristics including age vary from city to city.

In many urban areas constructed before the mid-twentieth century, a retrofit of existing drainage systems is necessary to incorporate sustainable drainage systems. Retrofitted sustainable systems keep storm water from entering the combined system or at least control the entry of storm water into the system. There are many benefits of keeping storm water out of the storm system besides controlling CSO events including increased sewer capacity, reducing treatment costs, reducing pumping, and reducing system energy requirements.

The greatest impact of sustainable drainage systems is improved urban water quality, cleaner habitats for aquatic plants and animals, and aesthetic improvements of receiving waters (Stovin et al., 2013). Several results from studies encouraged information regarding the benefits and cost effectiveness of retrofitted sustainable drainage systems in the urban setting (Smullen, Myers, Reynolds, & Maimone, 2008; Stovin et al., 2013; Stovin & Swan, 2007; Stratus Consulting, 2009; USEPA, 2010). Drainage retrofits are much more economically feasible and less challenging to engineer than separation of the combined systems.

Some retrofitted systems contain CSO holding structures and fine aggregate filtration systems designed to hold and filter a specified drainage area's projected storm water runoff; for example, the water associated with a one-inch rain event (Geiger, 1998; Meyer et al., 2013). CSO systems with storage and filtration systems have proven effective in improving water quality in CSO receiving bodies of water (Dittmer & Schmitt, 2011; Meyer et al., 2013).
The engineering of the dimensions and designs retrofitted alternative CSO abatement systems by hydrologist ensure the systems meet governmental guidelines, perform properly, and are cost effective, which can be a very challenging task with older urban areas (Meyer et al., 2013).

Nonetheless, green infrastructure is meeting the challenge of being environmentally friendly and economically affordable.

Scientific studies mainly focused on receiving waters of CSO systems rather than on the potential biological and engineering controls that can prevent much of the studied environmental damage (Campisano, Creaco, & Modica, 2012; Candela, Freni, Mannina, & Viviani., 2009; De Marchis et al., 2013; Olawoyin, Nieto, Grayson, Hardisty, & Oyewole., 2006). More research in the prevention of CSO pollution could be beneficial, but there is some encouraging research demonstrating green infrastructure works economically and environmentally (De Marchis et al., 2013).

As green infrastructure is becoming an increasing popular alternative to controlling stormwater runoff, Low Impact Development uses a combination of techniques to control and retain stormwater before entering combined sewer systems (Cohen, Field, Tafuri, & Ports, 2012). One of the challenges concerning green infrastructure is the lack of data to support the claim that green infrastructure is a good choice environmentally and economically.

Recognizing the need for green infrastructure studies, many researchers have begun to study CSO related pollution, green infrastructure, and other controls. One study from Columbia University estimated that the economic costs suffered from eutrophication in the U.S. are $2.2 billion per year (Cho, 2013). The purpose of this study was to demonstrate that doing nothing to solve the problem costs more than working to fix the problem of CSOs.

Another case study indicated that integrating green infrastructure with large holding tanks in the Turkey Creek CSO Basin in Kansas City, MO could save the city up to $35 million over the life cycle of the system (Cohen et al., 2012). Research integrates the economic impacts of green infrastructure as important and economics is of great concern in America as many do not understand or do not care about environmental concerns unless it affects their pocketbook.

Understanding the importance of green infrastructure, governments, and NPOs are awarding substantial grants for the study of alternative stormwater management programs such as green infrastructure. For example, Columbia University with the help of Patricia Culligan, professor of Civil Engineering and Engineering Mechanics was awarded a 3-million-dollar grant to study the effects of green infrastructure in New York City by the National Science Foundation's Coastal SEES (Science, Engineering and Education for Sustainability) program (Cho, 2013). As governments and NPOs see greater value in green infrastructure, the more likely green infrastructure will be used to help solve CSO pollution. Tax incentives and grant programs to are tools used to facilitate the usage, especially in North America (Rayner, 2015).

Green Roofs

Green roofs have many benefits such as reduction of building heating and cooling energy requirements, reduce heat in urban areas, improved air quality, improved sound insulation, potential food sources, aesthetics, additional green areas in cities, and provides a habitat for bees, butterflies, and additional species. In addition, green roofs can produce potable water cost effectively in Taiwan (Liaw, Huang, & Chiu, 2015). Safe, potable water is a commodity that will only increase in value as populations grow and infrastructure deteriorates. Increasingly cities have been experiencing drinking water contamination due to polluted waters and aging water infrastructure.

Green roofs are roofs that are capable of growing plants and consist of pervious and organic materials on top of membrane waterproofed building roof (Rayner, 2015). The layers work together to preserve the integrity of the building while allowing plants to grow and water to drain. On an existing roof, the first layer constructed in an additional waterproofing membrane and next protective fabric is placed on top. A pervious or drainage layer is placed on top of the fabric and then a geotextile fabric on top of the drainage layer. Finally, a layer or multiple layers of organic material is added to facilitate plant growth (Rayner, 2015). Materials may vary depending on the area climate, desired hydrological results, and plant botany.

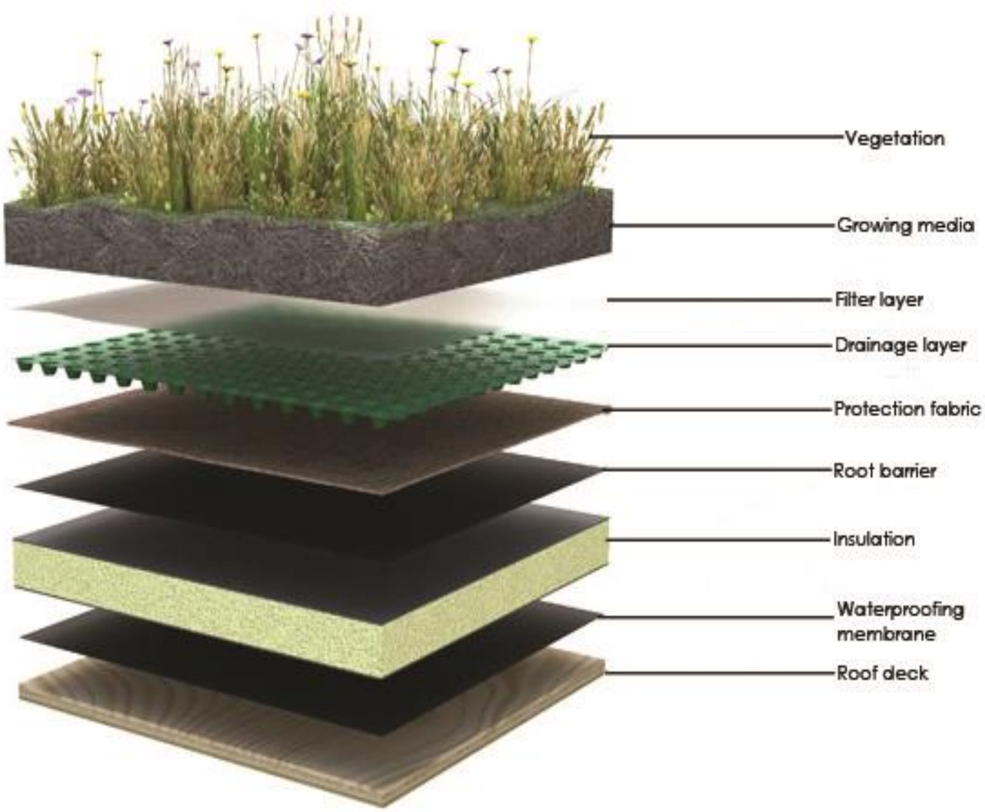
Though green roofs have many benefits, hydrological effects are of interest in cities as a method of reducing stormwater runoff. The benefits of green roofs spread over many locations and climates worldwide (Rayner, 2015). It is widely accepted that, green roofs are able to retain 100% of rain events that are .1” or less in precipitation (Stovin et al., 2013). Green roofs are essentially a vegetated roof sponge that stores rainfall allowing for plant use and reducing runoff. Though it can be difficult to quantitate the effectiveness of green roofs, study results demonstrate that up to an 83% annual reduction of runoff achievement depends on many variables (Rayner, 2015).

Green roofs are usually designed for flat and low sloping roofs, but they can be installed on other types of roofs including low slanting commercial residential roofs (Philadelphia Water, 2016). Two basic types of green roofs developed are extensive and intensive. Extensive green roofs are lighter with only about 6” of soil and substrate while intensive green roofs are thicker and heavier which allows for higher performance and more complex botany (Philadelphia Water, 2016). For rain events greater than .1” a green roof can delay stormwater runoff and allow the drainage system catch up. Besides the benefit of temporarily holding stormwater and delaying runoff from entering the system, some of the excess water can also evaporate back into the atmosphere (Philadelphia Water, 2016). A controlled delay can mean the difference in a CSO event or all the stormwater and sewage reaching the treatment facility.

A study conducted at Portland State University concluded that if half of the buildings in Portland, OR used green roofs, it would eliminate about 17 million gallons of sewage overflow on average each year (Mendenhall, 2013). Green roofs are one of the most studied urbanized green implements, but every city's climate is unique and green roofs must be engineered for each climate. Below are examples of traditional and modular green roof systems.

Figure 5

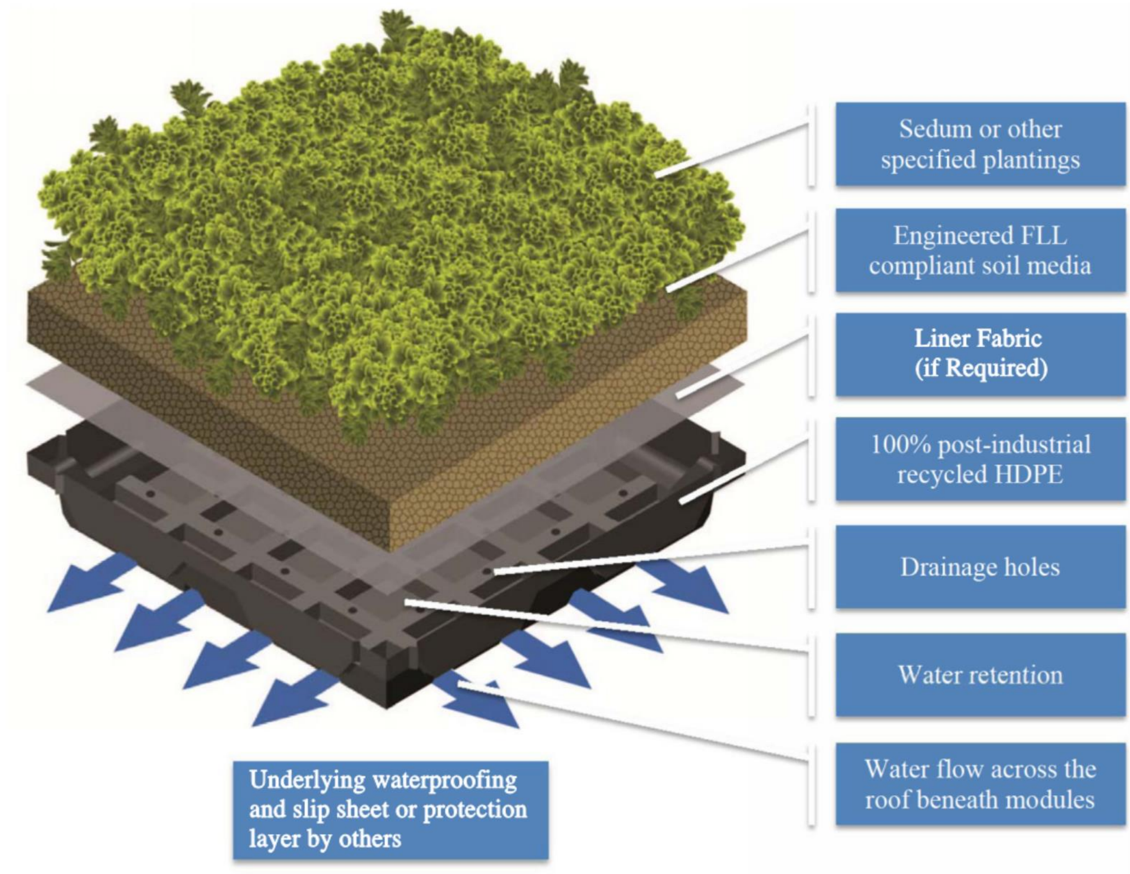
Typical Green Roof Layers



Note. Typical material layers that can be found on a green roof (DC Greenworks, 2016).

Figure 6

Green Grid G4 Layers



Note. Example of layers from modular pre grown green roof units (Weston Solutions, 2019).

Rain Garden and Bioretention Cells

Rain gardens and Bioretention cells manage storm runoff from roads, sidewalks, roofs, and other impervious surfaces. These and similar implements are at lower elevation points on grade so stormwater runoff will enter the garden or Bioretention cell. These hold water like a flowerpot with pervious materials a few feet deep under geotextile fabric with growing medium and plant on the top layer. The water that sheds from the impervious surface to the implemented area is used by plants and eliminated through evapotranspiration and penetrates the pervious storage area below the plants.

Bioretention cells are generally much larger than rain gardens and manage a larger runoff area like a business center. Rain gardens are much smaller and manage localized areas like sidewalks, roofs, streets, and pedestrian areas. Both are usually designed to manage the runoff from a one-inch storm within three days. Rain gardens come in many sizes, shapes, and with a variety of plants as well as are very versatile to incorporate into the landscape design.

Besides reducing and eliminating stormwater from entering the sewer systems, rain gardens and Bioretention cells are highly effective in removing pollutants (Philadelphia Water, 2016). Essentially these implements are natural water filters that remove many physical, chemical, and biological pollutants. The result is that when stormwater reaches the receiving waters after going through a Bioretention cell, it is cleaner than it would have been if it were released through a storm drain.

Researchers indicate the reduction of pollutants due to Bioretention cells through scientific studies (Philadelphia Water, 2016). Many laboratory experiments and field trials conducted by the University of Maryland, Prince George's County Department of Environmental Resources, and the National Science Foundation have proven effectiveness of Bioretention cells in the Chesapeake Bay watershed area (Low Impact Development Center, Inc., 2016). The use of Bioretention cells and rain gardens improve the water quality not only in systems with CSOs but also in separated systems.

Figure 7

Rain Garden Illustration

Note. Rain gardens look like flower gardens but are designed to filter and dissipate runoff water (The Nature Conservancy, 2016).

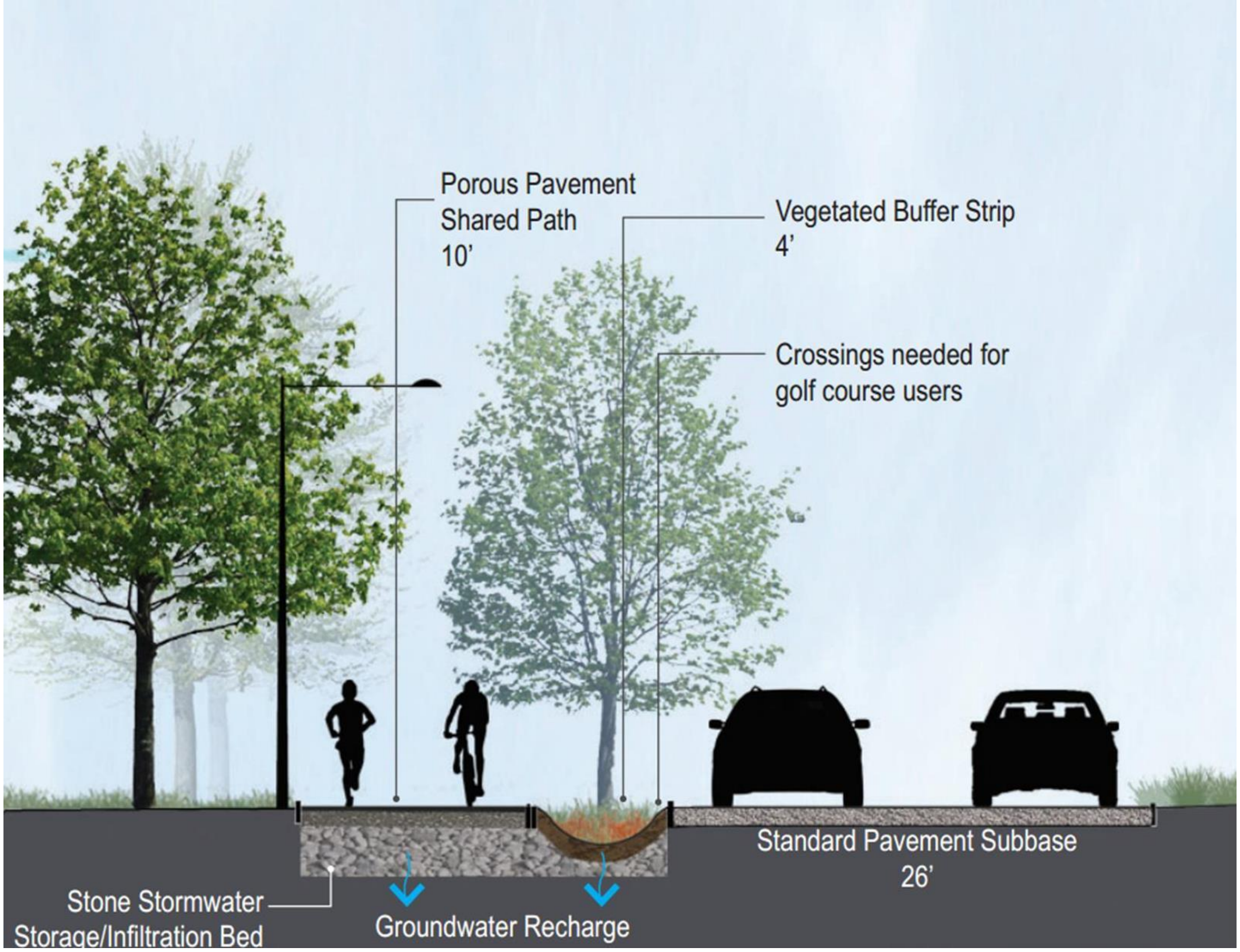
Stormwater Tree Trench

A stormwater tree trench in some ways like rain gardens and Bioretention cells in that the stormwater coming from sidewalks, streets, and roofs is gathered during implementation. The stormwater tree trench is different in that it uses an under the sidewalk storage system to help manage and store stormwater runoff. The tree trench is about three to six feet wide on the surface with a pervious stone bed and geotextile fabric under the sidewalk and the trench. On the surface, the sidewalk is made of pervious pavement and the tree trench has soil, vegetation, and trees.

The trench provides a physical buffer between pedestrians and traffic and absorbs the storm water runoff from the street. The tree trench collects the stormwater from the street through gutter inlets and curb openings. If the tree trench collects too much water for it to handle, there is a surface outlet that drains back into the storm system (Philadelphia Water, 2016). Tree trenches beautify the street, provide a traffic buffer, and clean the air as additional benefits.

Figure 8

Storm Water Tree Trench



Note. Stormwater tree trenches use permeable pavement sections to help provide water to trees and other barrier vegetation (Pittsburg Parks Conservancy, 2014).

Stormwater Bump-outs and Planters

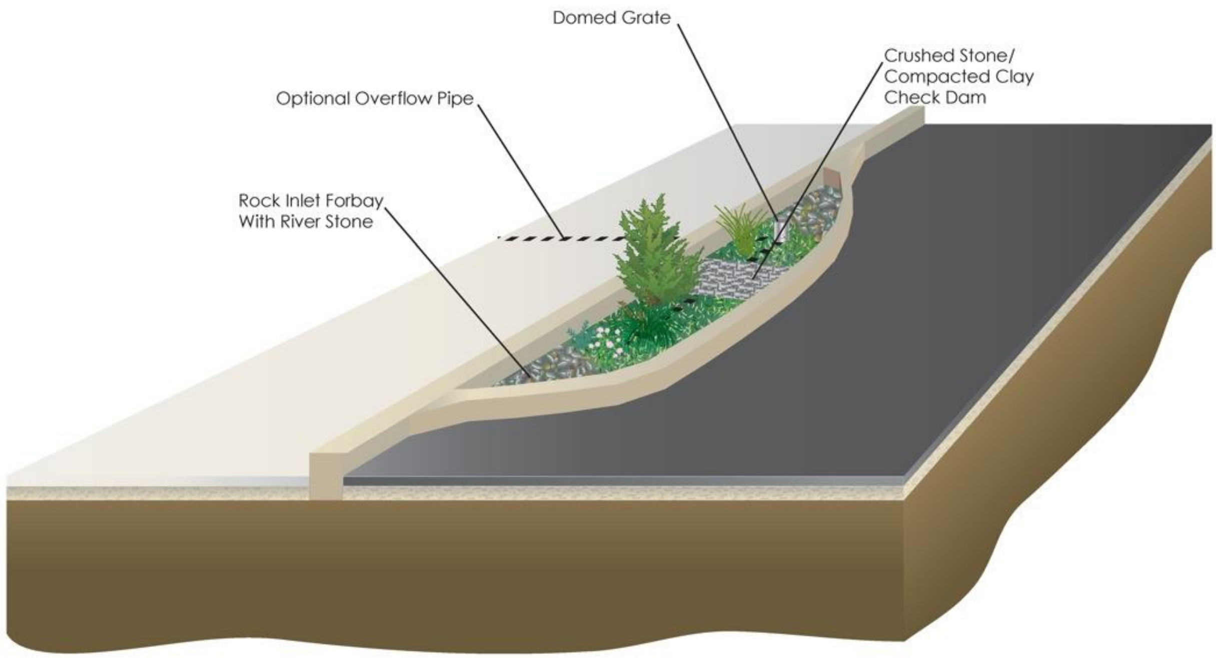
A stormwater planter is a vegetated area planted in or adjacent to the sidewalk in an area next to the street to manage stormwater runoff from the street. The borders stem from the same granite, steel, or concrete curbs that are on the street with a throat for the stormwater to enter.

The bottom of the planter contains geotextile fabric filled with stone one or pervious gravel. Another layer of geotextile fabric tops the pervious material and growing medium and topsoil are on the upper layer. Finally, climate and performance determine the selection and installation of plant and vegetation. The soil level is below the road level allowing water to enter through enter the implement. Often the installation of a small overflow outlet structure occurs so that excess stormwater can enter the combined sewer system.

A stormwater bump-out is like a sidewalk planter except that it is placed on the road rather than in the sidewalk. Stormwater planters and bump-outs help control stormwater by dispersing stormwater, holding stormwater and evapotranspiration. Other benefits of stormwater bump-outs and planters include beautification, traffic-calming, pedestrian safety, and air quality improvements (Philadelphia Water, 2016). Stormwater bump-outs and planters are cost effective implements that are becoming popular in many areas.

Figure 9

Storm Water Bump Out System



Note. Storm water bump out systems collect water from streets while calming traffic and increasing aesthetics (Meloria Design, 2016).

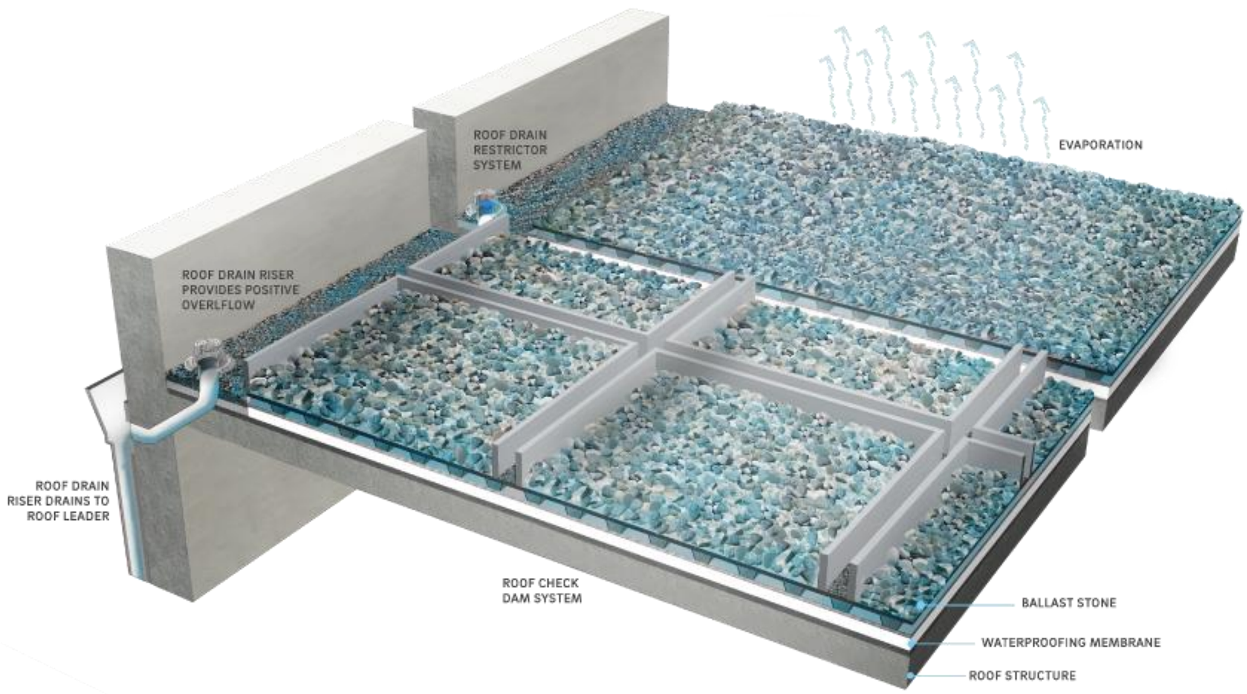
Blue Roofs

Using blue roofs creates temporary retention of rain and storm water using crushed stone or ballast rather than permeable soils and vegetation as in a green roof (Stovin et al., 2013). Blue roofs can be pond-like with exposed water or the water can be trapped underneath manmade or natural large aggregates. Some blue roofs connect to a filtration system for grey water reuse and some simply delay the release of rainwater.

Blue roofs temporarily hold rainwater on a rooftop and slow or delay the release of the water into the drainage system. Blue roofs control rainwater on structures with a flat roof style construction. Blue roofs can use check dams and roof drain restrictors or valves to retain or slow the release of the rainwater (Philadelphia Water Department, 2019). After the rain event, water releases into the existing drainage system leaving the roof. Common sense designs, simple hydraulic calculations, low costs, compatibility with other green infrastructure, and predictable function are benefits of blue roofs (Stein, McLaughlin, & Bendernagle., 2012).

Figure 10

Blue Roof System



Note. Blue roof systems can slow the release rate of storm water and use evaporation to eliminate water (Philadelphia Water Department, 2019).

Porous and Pervious Pavement

Pervious or porous pavements permit water to flow through hardscape surfaces such as roads and sidewalks rather than run off into drainage systems. Porous pavements provide a product that nearly indistinguishable from conventional pavements, but its porous surface and a pervious base allow water to penetrate the pavement (Philadelphia Water, 2016). The pervious reservoir temporarily stores stormwater before it drains into the subsoil. Porous and pervious pavements are available in three basic types of surfaces: asphalt or bituminous concrete, cement based concrete, and interlocking pavers (Philadelphia Water, 2016). Each type is designed to replicate popular non-porous surfaces in all ways except permeability.

There are numerous benefits associated with pervious pavements. The primary benefit of pervious pavements is the reduction of stormwater reaching the drainage system and reducing CSO events in combined systems (Philadelphia Water, 2016; USDOT Federal Highway Administration, 2016). Besides providing a cleaner environment porous pavement benefits include reduction of a need for retention ponds, replenished groundwater levels, reduced island hearing effect, elimination of surface water ponding (USDOT Federal Highway Administration, 2016). Porous pavements have the potential to replace many of the traditional hardscape surfaces in the future.

There are some limitations and disadvantages of porous pavements other than higher costs for new and retrofitted areas. Maintenance costs and performance can be an issue in colder climates where salt, sand and other chemicals are used for ice treatments. Frost heaves can also be an issue in colder climates. Specialized sweeping may be necessary to keep the porous pavement from being clogged by fines. High groundwater tables may affect the performance of porous pavement systems (USDOT Federal Highway Administration, 2016). Porous pavement also suffers from costs that are more than double of traditional pavements because of smaller demands, fewer suppliers, and materials that are more expensive.

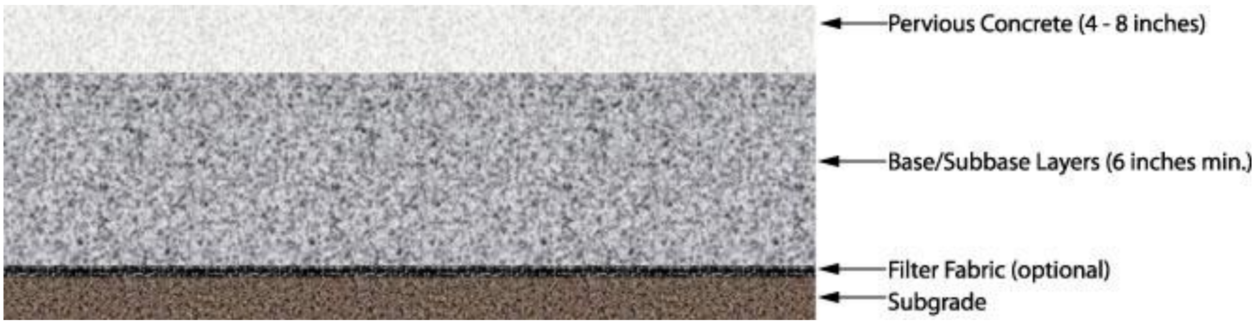
Figure 11

Pervious Concrete

Note. Permeable concrete allows water to drain through it rather than run off to drainage systems (Inhabitat, 2016).

Figure 12

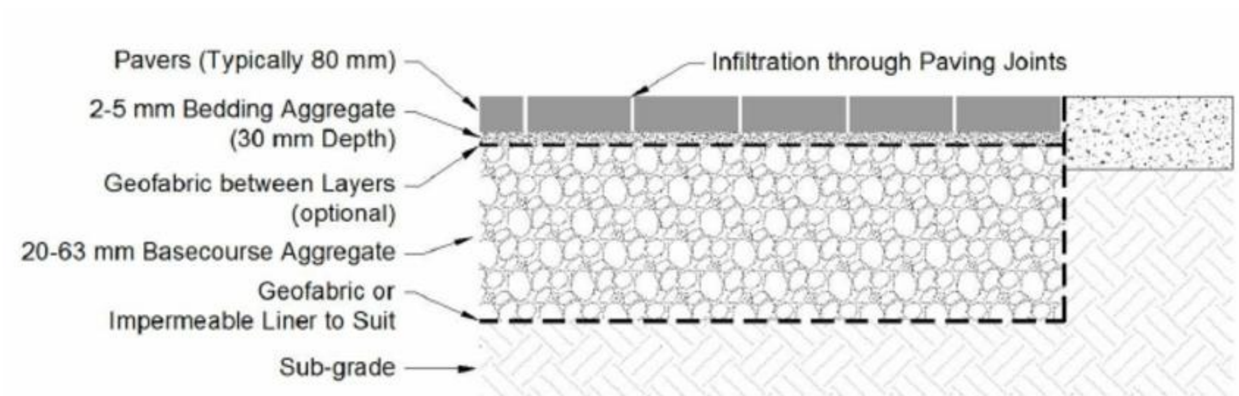
Pervious Concrete Cross Section



Note. Pervious concrete allows water to flow into a granular stone base that holds water until it can dissipate into the earth below (USDOT Federal Highway Administration, 2016).

Figure 13

Permeable Paver Cross Section



Note. Permeable pavers drain water through the paving joints into a stone drainage base (Lucke & Dierkes, 2015).

Storm Sidewalks

Storm sidewalks are grey infrastructure implements used in place of traditional sidewalks as a holding mechanism for rainwater that falls on the sidewalks and streets. Sidewalks in NYC are usually five to eight inches of concrete on top of eight to twelve inches of processed aggregate gravel. With traditional sidewalks in NYC almost all of rainwater sheets off the concrete directly into the combined sewer system. Most areas in the city contain retrofitting with permeable pavements, which allow stormwater to penetrate the hardscapes and dissipate through pervious base materials that the porous pavements rest on.

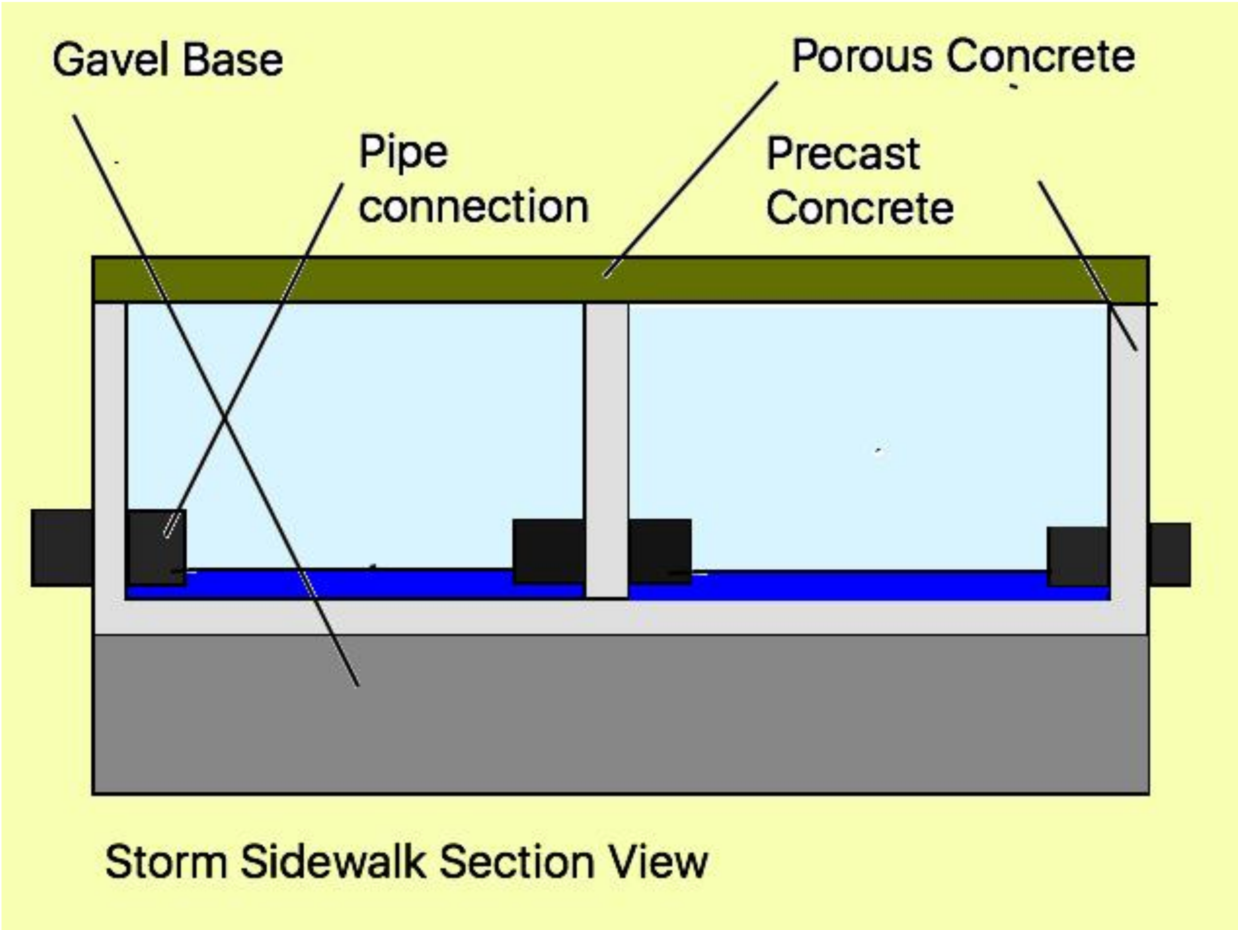
Some of the city's sidewalks contain structures and utilities within that do not allow for much excavation beneath the existing sidewalk. In those instances, other options could be used in order to catch the stormwater runoff without interrupting and rebuilding the buried utility services.

Storm sidewalks are constructed of a galvanized grating system with fiberglass catchment bins approximately one-foot deep (like a trench drain) that will replace the concrete and some of the base materials. The units contain interconnected water outlets dumping into other units or drainage basins. Similar to blue roofs and cisterns, computer-controlled gates could release stormwater into the drainage system when treatment facilities process all sewage and stormwater combination reducing the amount of sewage entering the environment through CSOs.

This system can be designed with easy to install components replacing some of almost all existing sidewalks depending on logistics and need. For winter conditions, engineers install radiant glycol heating systems along the arteries of the system to prevent freezing and ice blockages during winter systems. The surface will be skid resistant and micro porous to prevent debris from entering the system. Removable access panels will be able to easily be removed for cleaning and maintenance.

Figure 14

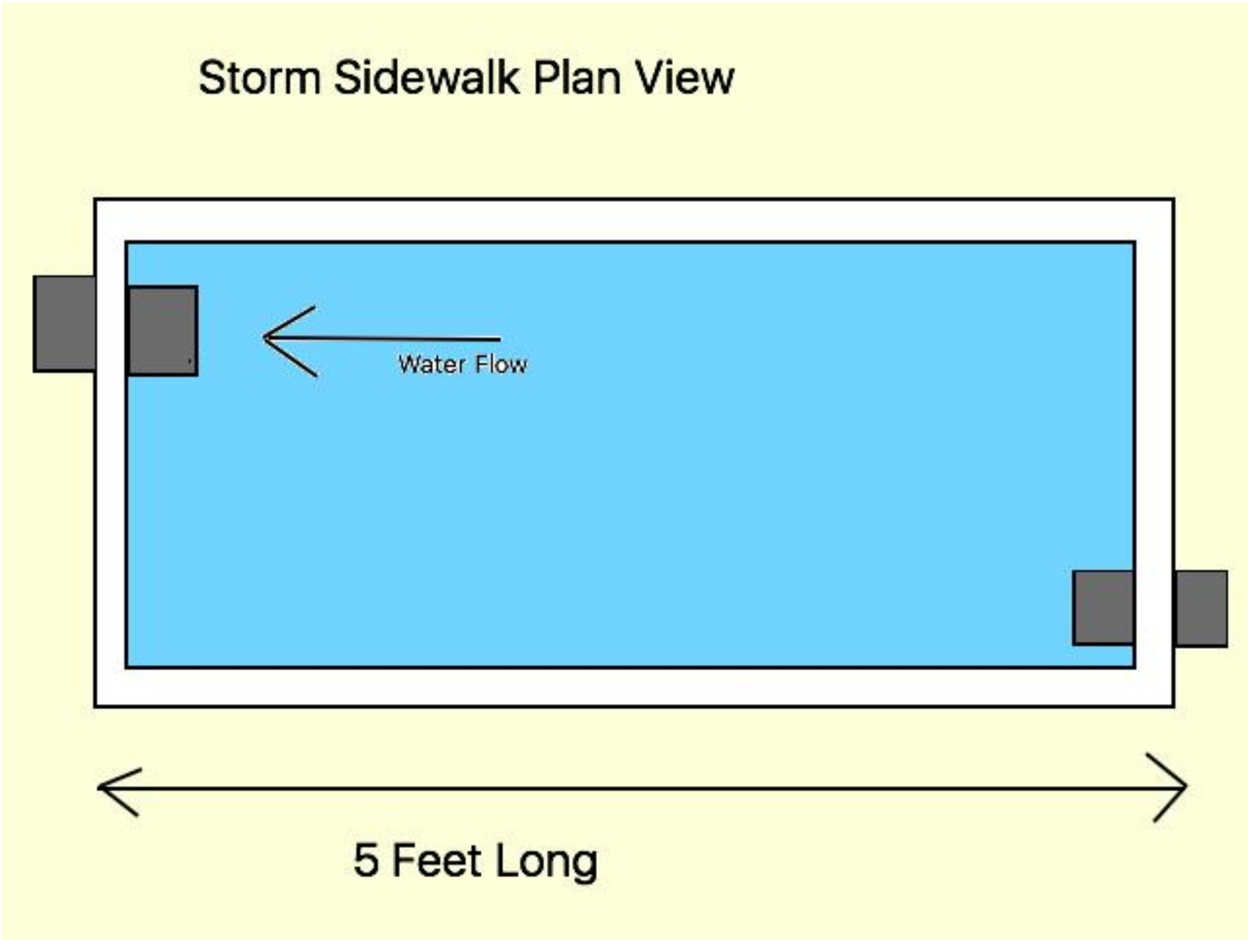
Storm Sidewalk Cross Section



Note. Conceptual drawing to address certain areas where insufficient subsurface conditions may exist or where it is desirable to retain stormwater for greywater use.

Figure 15

Storm Sidewalk Plan View



Note. Conceptual drawing plan view without porous concrete depicted to illustrate water flow. The storm sidewalk would look similar to any other sidewalk from the surface.

Rain Barrel/Cistern

Rain Barrels cisterns are structures that collect and store water from rooftop drainage systems. The rainwater storage systems can be as simple as barrels or complex water tanks with numerous pumps and valves to effectively store the collected stormwater. The use of stormwater can be for irrigation of green roofs, gardens, lawns planters, and other botanies (Philadelphia

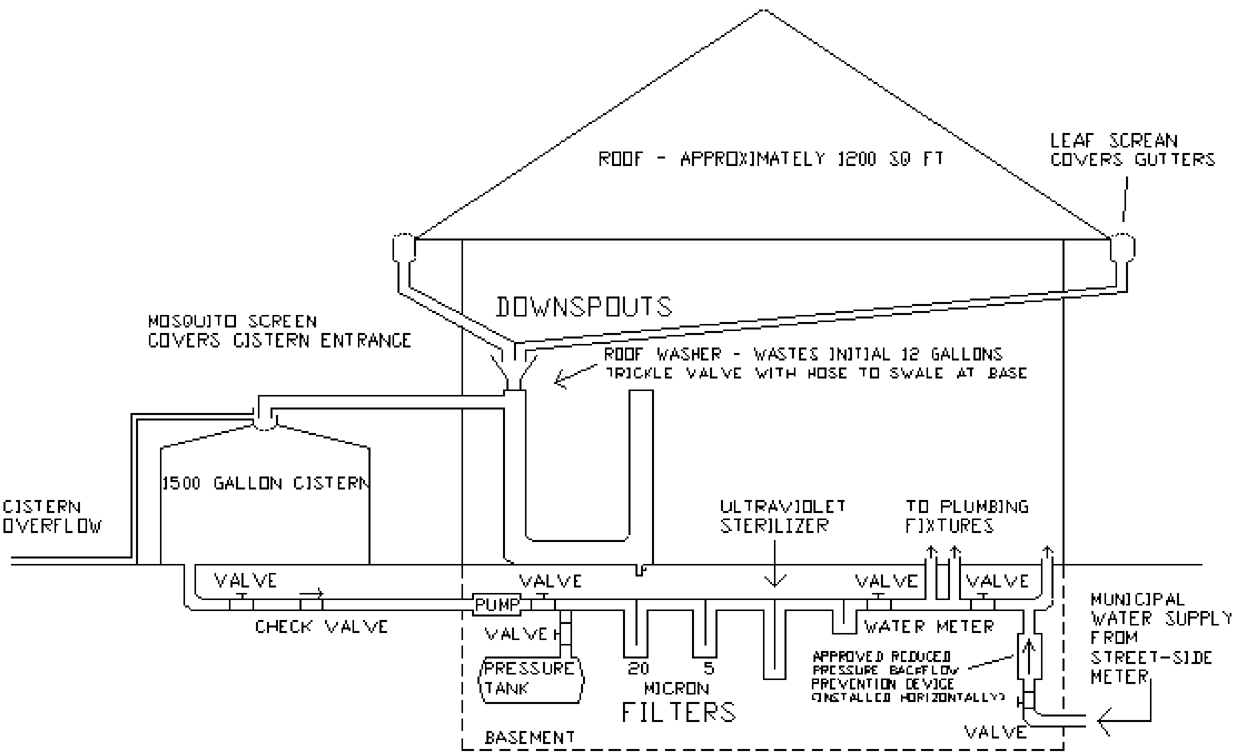
Water, 2016). Cisterns temporarily hold stormwater during a rain event then the water releases into the sewer system after the rain event if the stormwater is not used for irrigation or other uses. In most cases water levels are kept at a minimum in a cistern to preserve room for rainwater from upcoming storms.

Some cistern systems have filtration, chlorine, and ultraviolet treatment systems so the stormwater can be used for some plumbing applications like providing water to urinals and toilets. Just as a CSO is a safety mechanism for an overstressed combined sewer system, cisterns have a bypass mechanism that releases excess water through the downspout during heavy rain events if the cistern becomes full. Although each cistern individually holds a small volume of stormwater collectively as a system cistern can prevent CSO events (Philadelphia Water, 2016).

Commercial Style Rain Barrel or Cistern

Figure 16

Cistern System Diagram



Note. Example of a cistern system with filtration and pumps for grey water use (Low Impact Development Center, Inc., 2016).

Actions with Sustainable Solutions

Even with the great technological advances, America and the world has made over the past century, the problem of dumping raw sewage in local waterways is a major engineering concern. Modern engineers often design underground stormwater holding structures to add capacity to combined sewer systems (Brombach, 2002). Replacing impervious surfaces with pervious pavements and pervious hardscapes also reduces strain on combined sewer systems (Clary, Urbonas, Jones, Strecker, Quigley, 2002). Sensors and computers control the release of stormwater in holding tanks to maximize the efficiency of existing systems (Schu¨tze, Campisano, Colas, Schilling, & Vanrolleghem., 2004). These control systems can help municipalities meet permits, laws and regulations regarding discharge levels (Schroeder, Riechel, Matzinger, Rouault, & Sonnenberg, 2011). Simpler and smaller solutions are often more attractive to government agencies because of being easier to manage, fund, and understand.

Some non-profits and grass roots organizations understand how small solutions can collectively make big changes. One example of such an organization is a grass roots green infrastructure called Depave from Portland, OR. Depave works to remove unnecessary and unused pavement in urban areas replacing these areas with green areas that mitigate stormwater runoff, and "overcome the social and environmental impacts of pavement" (Leonard, 2015, p. 18).

Besides physically and financially supporting the mission, Depave also promotes environmental education, a sense of community, and advocacy to forward the mission of improving the urban environment (Leonard, 2015). Organizations like Depave demonstrate that small scale improvements sometimes called "DIY urbanism" is a cost-effective method for improving the urban water quality and the environment. Activist organizations like Depave support the notion that collective smaller environmental projects collectively can make great contributions to the urban environment including water quality.

Rather than depending on city wide sewage engineering solutions, much of the CSO problems can likely be solved collectively by local stormwater controls on individual properties. With the right combinations of stormwater implements installed on individual properties stormwater can be controlled thus reducing CSO events in the city. Smaller projects can be successful, easy to manage and cost efficient. The purpose of this study was to evaluate the hydrological effectiveness of many stormwater implements, estimate the costs of the implements, and create a flow chart that can help in the decision-making process regarding stormwater implement installation.

It is important for governments and NPOs that provide grant funding to know what implements work best in varying situations along with a cost component to get the most result from grant funding. Additionally, property owners, governments, and contractors need to know what implements will provide the best results at the lowest cost depending on the variables.

Chapter III

METHODOLOGY

Study Description

The purpose of this study was to test and estimate costs of some common individual property rainwater runoff controls. Governments, NGOs, and corporations need to know if common CSO reduction implements are effective and affordable. Experimental research and property-based cost estimation was used to collect data for the project. First, a hydraulic study was conducted to verify if certain common implements work effectively. Next, a cost analysis was performed to ensure the method cost effective or cost prohibitive. Finally, other considerations such physical implementation limits, logistics, additional environmental benefits, aesthetics, and usability were acknowledged. The research does not involve human participants so a Institutional Review Board exemption has been obtained for this project which is presented in Appendix A.

Quantitative methodology was used to measure and evaluate the effectiveness and costs of the implements. One tool to be created in the study is an implement selection tool which will incorporate the quantitative results of the study but also include options for aesthetics, other green infrastructure benefits and accessibility which can be more qualitative in nature.

Questions for Research

It is widely recognized that controlling where, when, and how much storm water enters urban combined system has a direct effect on the sewer system and thus CSO events. Property specific storm water control plans, along with centralized control centers, have the potential to reduce CSO events by reducing and delaying storm water runoff into the drainage system. There are some important questions that need to be answered to determine how effective localized storm water catchment devices are concerning the reduction of CSO events. Though many specific questions can be answered, the following questions can help determine if such a project is achievable for New York City.

1. Can stormwater be significantly delayed and reduced through property specific engineering controls that will reduce CSO pollution?
2. Can stormwater control devices cost effectively control stormwater?
3. Is it logistically feasible to install the tested implements?

Hypotheses

Overall, it is expected that the questions for research will demonstrate retrofitted stormwater implements are a viable solution for stormwater runoff that produces CSO events in New York City.

1. Even with basic and simplistic water control devices, rainwater runoff can be controlled on each individual property by a variety of measures including permeable pavements, blue roofs, modified green roofs and water storage tanks.
2. The devices will be cost effective and reasonable without overburdening New York City financially.
3. In most instances, storm water control devices can be installed with no or minor logistical issues.

Weather Parameters

For this study, a 2” per hour storm for two hours was chosen as storm that would need to be addressed. According to weather underground data from 2015 to 2019 there were no storms greater than 4” in a 24-hour period for New York City and there were no storms that produced greater than a 2” per hour in any one hour (Weather Underground, 2020). Combining these two parameters would demonstrate that every storm from 2015 to 2019 could have been addressed with the systems to be tested. Some storms like 2011 Hurricane Sandy produced less rain however the storm surge along with the rain flooded most underground systems along with tremendous above ground damage. No amount of drainage infrastructure could have kept the flooding from happening and certainly could not have prevented CSO overflows.

During the past 150 years precipitation at Central Park has been above 4” in a 24-hour period 23 times assuming no day/month combination had multiple 4” plus days (National Weather Service, 2019). Only six of those days were greater than 5” during a 24-hour period in Central Park. Historically a storm once every five years would break the parameter of 4” in a 24-hour period and a 5” storm once every 25 years. Where the final line is drawn for real world implementation is up for discussion, however the 4” total storm over 2 hours is a reasonable starting point.

Table 1

Central Park Highest Daily Precipitation

Central Park, NY
Highest Daily Precipitation (Inches)
1869-2016

Last Updated: 7/28/19

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.05	2.12	2.95	1.89	2.48	2.60	2.17	2.85	3.84	4.98	1.69	1.72
2	1.92	2.98	2.41	1.93	1.10	2.79	1.79	2.49	2.12	2.16	1.70	2.16
3	2.42	1.55	2.25	1.90	1.66	3.01	2.80	2.71	3.32	1.55	2.60	1.63
4	2.73	2.10	1.65	1.99	2.02	2.75	1.76	3.25	3.48	4.05	1.44	1.84
5	1.50	1.43	1.81	2.76	3.02	2.80	3.07	1.44	2.45	1.99	1.94	1.28
6	1.65	2.74	2.63	2.52	1.46	2.62	1.97	3.31	3.26	2.39	1.47	1.60
7	2.67	2.96	1.87	1.35	3.82	4.16	3.13	2.18	2.07	4.09	2.96	1.98
8	1.25	1.15	1.78	1.93	3.02	1.47	1.80	2.60	4.86	4.30	7.40	1.54
9	1.42	1.74	1.82	3.42	1.42	2.55	1.09	4.10	0.86	7.33	3.65	2.54
10	1.80	2.63	1.62	4.31	2.10	2.07	1.79	4.64	1.38	2.16	1.70	1.62
11	1.46	2.74	2.94	1.10	1.67	1.14	1.94	2.39	2.90	3.06	1.41	2.41
12	2.35	1.66	2.33	2.12	1.84	2.18	2.68	3.62	2.35	4.26	2.39	1.60
13	1.44	2.42	3.86	1.26	1.66	1.71	3.16	2.70	3.94	2.75	2.06	3.03
14	2.06	1.59	1.97	2.72	3.38	2.54	1.60	5.81	3.82	1.76	2.23	2.22
15	1.27	1.73	1.81	7.57	1.16	1.13	2.33	1.52	4.16	1.70	2.43	1.34
16	1.44	1.40	2.03	3.29	2.66	1.31	1.38	4.80	5.02	2.15	2.39	2.25
17	1.36	1.49	1.42	1.29	1.05	1.82	3.13	2.86	3.37	2.28	1.54	2.28
18	2.10	1.50	3.10	2.19	2.18	2.30	1.76	3.95	3.92	2.45	1.24	1.30
19	2.39	2.15	2.19	1.96	2.02	2.16	1.82	2.53	4.30	4.35	1.95	1.19
20	1.41	3.07	1.93	1.96	2.03	1.39	1.97	3.63	2.32	2.78	3.37	1.82
21	3.45	1.86	2.37	2.28	1.94	1.70	2.26	4.19	5.54	2.17	1.33	2.49
22	1.70	2.39	3.44	2.45	1.25	1.96	1.86	1.85	2.34	1.45	2.03	2.18
23	2.55	1.38	1.60	2.34	2.70	1.75	2.41	3.03	8.28	2.97	1.84	1.61
24	2.18	1.69	2.05	2.17	2.07	1.46	3.75	3.61	2.26	2.51	1.95	1.42
25	1.80	2.11	4.25	1.68	0.86	1.28	1.64	1.86	2.36	3.30	1.36	1.30
26	2.19	1.87	1.42	1.88	1.28	4.29	3.80	3.24	2.34	3.40	1.91	1.66
27	1.94	1.56	1.79	2.04	2.62	2.11	2.65	4.16	3.13	1.88	2.15	2.14
28	1.87	1.21	2.98	2.74	1.16	1.69	3.11	3.99	3.84	2.49	2.14	1.35
29	1.03	2.26	2.03	0.91	3.99	2.57	3.47	2.68	2.18	3.67	2.20	2.52
30	1.19	-	2.45	4.97	2.19	3.07	3.56	2.30	2.64	1.64	1.11	1.69
31	1.51	-	2.20	-	3.13	-	2.29	3.76	-	2.41	-	2.31

Red shading represents highest daily precipitation for the specific month.

Note. Highest daily rainfall totals from Central Park in NYC since 1869 (National Weather Service, 2019).

Testing Instruments

Water Delivery System

The water delivery system is designed to simulate rain with the use of four multiple pattern heavy duty handheld sprayers on each 100-sf test area. The sprayers can be positioned on the ground, on a holder or held by hand depending on flow, spray selection and wind. Four 25-foot marine hoses are attached to the sprayers and to a brass four-way splitter with individual shut off valves to allow positioning along all sides of the test model. Before the splitter is the automatic adjustable flow meter which allows for a more precise adjustment than a ball or gate valve. Ahead of the flow meter is an optional water pressure regulator, which becomes necessary if the water pressure high.

Attached to the pressure regulator or the flow meter is the water meter. The water meter is a cumulative meter that uses ultrasonic measurement. The flow meter is used in many household applications with an accuracy of +/- 1.5% in normal flow and +/- 3% in extended low flow range. The flow range is .1 GPM to 25 GPM, which is acceptable for the projected flow rate of about 2 GPM. The meter is designed for water temperatures of 33’ to 140’ with an ambient temperature of 35’ to 140’ therefore testing will commence with 35’ and rising with a projection of 35’ or more for a minimum of three hours.

The water meter is connected to a 50’ garden hose coming from a ¾ HP submersible electric water pump in a 275-gallon water tank. The water tank fills between 250 gallons and 275 gallons. The water tank is a second measure to confirm the water meter’s accuracy and act as a visual account of the water used. When testing on the roof, the water tank rises to within 6’ of roof grade as a means of keeping the head pressure high enough to get the desired results. A generator or 110v power source is used to power the submersible pump. Using a video camera and an iPhone aids with documenting results.

Water Delivery Apparatus Parts

(1) 275-gallon water tank–IBC water tote

(1) ¾ hp submersible water pump–AC 110

(1) 50’ garden hose 1/2” ID

(4) 25’ boat and camper hose 1/2” ID

(1) 4-way brass hose splitter with shut off

(4) Heavy duty garden hose nozzle 10 pattern variable spray

(1) Brass water pressure regulator

(1) Automatic flow meter water flow restrictor

(1) FlowIQ 2100 Water with garden hose adaptors

(1) 5-gallon bucket

(1) Portable generator or 110v power source

(2) Extension cord

(1) Hyster 6000 LB forklift

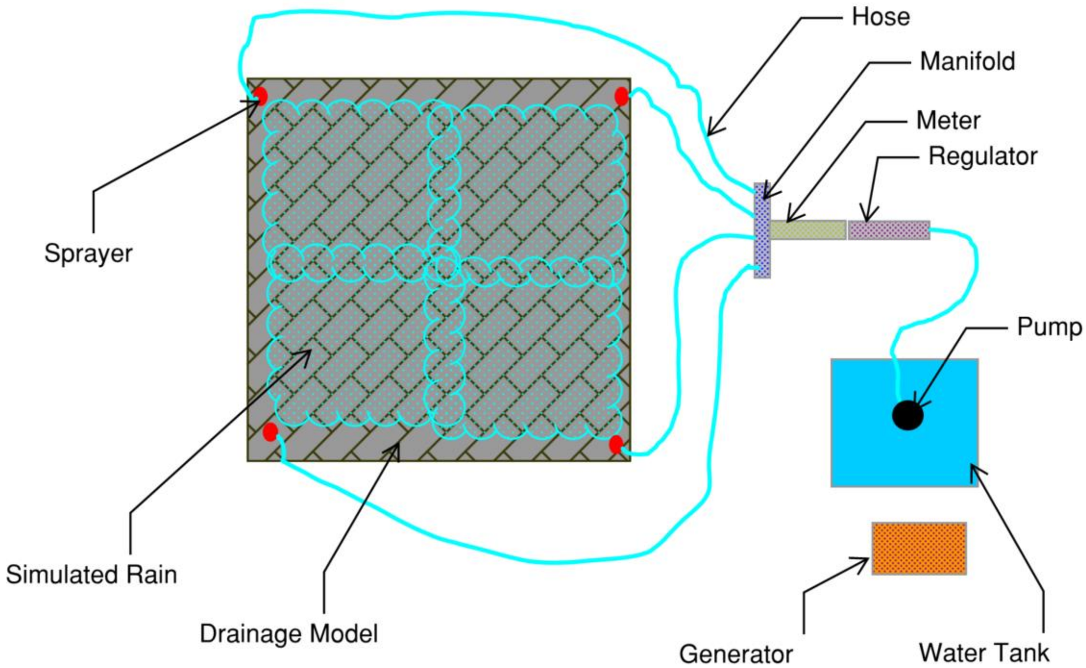
(1) Electric scissor lift or truck mounted hydraulic lift

(1) Video camera

(1) iPhone

Figure 17

Rain Simulation Setup



Note. Illustration of the system designed to simulate rain on 10' x 10' model with 250 gallons of water to simulate a 2" per hour storm for a 2-hour duration.

Blue Roof Model

The blue roof model was constructed an asphalt pavement in a 2'x8' lumber box measuring 150" x 96" lined with 10 mil plastic. The box was carefully filled with ¾" crushed stone coarse aggregate. Crushed stone has approximately 40% to 55% void space according to test data (Contech – product data). The ASTM 6 ¾" stone for this test was sourced from Tilcon Connecticut at the New Britain, CT Quarry. Blue roof construction with crushed stone is the simplest construction and most predictable of all the models in this project.

Parts-Blue Roof

2"x8" Lumber walls–150" x 96" x 7.5" wood box

10 Mil plastic sheeting-1 partial roll

ASTM 6 ¾" Stone-4 Tons

Asphalt surface for box and plastic

Permeable Pavers Free Draining and Clay Simulation

Both permeable paver models were excavated at an industrial site in New Britain, CT at a depth of approximately 30" deep and 10' x 10' square. The clay simulation model was first lined with 2 layers of 10 mil plastic and then both models lined with geotextile fabric to keep the stone and soil separated. Both models were filled with 1' of ¾" crushed stone. A 4" perforated ads monitoring pipe was installed at this level with 8' horizontal and 2' vertical for monitoring from above. Another 1' of ¾" crushed stone is placed on top. An additional 1" of stone dust is placed on the stone as bedding for the pavers. A 2"x4" frame is constructed around the model as support for the pavers. The 4" x 8" permeable designed pavers are installed with more stone dust brushed in the voids of the pavers. The clay simulated model was constructed with a pump sump installed in order to pump out excess water if necessary.

Parts – Permeable pavers – each model

100 SF pavers 4"x 8" x 2.5"

ASTM 6 ¾" Stone-12 Tons

Coarse screenings-1 Ton

2" x 4" Wooden Frame

4" x 10' perforated HDPE Pipe for monitoring

Geotextile fabric–1 partial roll

10 Mil plastic sheeting-1 partial roll (Clay Simulation Only)

12" x 1' perforated HDPE Pipe for pump (Clay Simulation Only)

Modified Green Roof

This study incorporated a product called Green Grid G4 pre grown green roof units. The units are 2’ x 2’ x 4” plastic containers filled with high drainage growing medium and a variety of suitable plants. These units had some untended chive growth at the nursery and sold at a discount. The G4 units can be placed directly on the roof or other surfaces including crushed stone. The Green Grid units have easy installation, flexibility, costs, and predictability. As it is obvious that 4” of water will not fit into the units because the units contain dirt, requiring testing for assessing permeability. With maximum saturation of 100%, additional rainwater will need to be controlled by a drainage layer under the Green Grid units. This model was placed on a crushed stone base like the blue roof. For cost estimation Green Grid units will be placed in addition to the full capacity blue roof. For this model all materials were transported in a platform lift truck with a capacity of 1000 LBS to a flat roof 20’ tall.

Parts – Modified Green Roof

4”x4” Lumber walls–150” x 96” x 3.5” wood box

Green Roof Plastic reservoir roll.

ASTM 6 ¾” Stone-4 Tons

25 Green Grid G4 pre-grown units

Mathematical Storage Tank Formula

For storage tanks or cisterns, a mathematical formula estimates the size of the storage tank(s) needed to store water. Additional costs for piping must be calculated in the final calculation. Tanks can be used for roofs and runoff collection.

The following formula is for calculating water volumes:

X= rainfall in inches

Y = SF of roof or another surface area

Given 7.48 gallons per CU FT

Y * (X /12) * 7.48 = gallons of accumulated water

SF roof * rainfall inches / 12 * 7.48 = gallons per SF

To figure how much water is produced per 1” of rainfall on a 100 sf roof the following calculation can be performed:

100 SQ FT roof * 1-inch rain = 100 SQ FT * .0833 FT = 8.3 CU FT Water

1 CU FT water = 7.48 gallons

8.33 CU FT * 7.48 = 62.3 gallons

Thus, each SQ FT of roof with 1” of rain accumulates .623 gallons of water.

With a 100 SF roof there would be a minimum of 62.3-gallon storage capacity to hold a 1” storm.

Answering the Research Questions

The following localized storm water implementations will be studied for their costs and effectiveness: blue roofs, green roofs, cisterns, and porous pavements. Though many other implements exist, these popular implements can be modeled and tested to simulate actual conditions in New York City.

For the hydraulic analysis will be performed on each of the following implements: modified green roof, pervious pavement (pavers), and blue roof. A simulated 2-inch per hour storm over a 2-hour duration used to test the performance of each system. The simulated storm system consists of a sprinkler, water source, and a calibrated flow meter as described above. A mathematical analysis will be used for storage tank volume.

Adjustments or redesign of the test model occurs in the event the implement fails to handle the indicated storm water by either permeability or storage. Volume increases through a larger aggregate layer while a permeability failure may require a material replacement or design change. Each test device will contain an overflow indicator that signals when the implement is at capacity and can measure excess water; the implement is unable to process over the test period.

To achieve the optimal tank volume design other studies used marginal benefit theory to enhance the efficiency of the storm water holding tank's volume. However, for this study, a simple hydraulic calculation will be used knowing that during implementation hydraulic designs and theory will be handled by a qualified engineering firm. The focus on this study is on the conceptualization of solutions. For cisterns, hydraulic volume analysis that uses surface area and storm data can be used to determine tank size.

Effectiveness will be measured as a true or false statement. Effectiveness is true if the implement can handle the two-inch per hour storm for at least two hours with the square footage the designed implement can handle. According to a Cornell University study, a one-inch storm in one hour and a two-inch storm in six hours is a once per year event for New York City (Extreme Precipitation in New York & New England, n.d.). For this study, the drainage implement is considered effective if it is permeable enough to accept the 2" per hour rate for two hours and hold the volume of water applied throughout the entire test.

Finally, an analysis of NYC urban development will determine the maximum percentage of the city that stormwater implements can hold or divert water compared to the area of city streets with no room for drainage swales or other infrastructure. The overall effectiveness could be limited by how much stormwater enters the drainage system through city streets if road drainage is not addressed. Since streets are government owned, the responsibility of runoff control falls under public works and the Department of Transportation under this proposal.

Cost Calculations

For each type of implement, a cost estimation will be calculated. The calculations for an average cost per square foot for each implement will come by using 2020 Bluebook equipment rates, 2020 materials, and 2020 New York City Union rates. Consideration on insurance costs, overhead, and profit is within the cost analysis. Additionally, the price per square foot of the entire property will be calculated. Property types, access, and locations are in the cost analysis. Equipment and labor data for other cities can easily be substituted to create an estimate for urban areas other than NYC.

The Connecticut Con-9 form estimates the costs of the project in multiple segments. The Connecticut Con-9 form is used by the Connecticut DOT for project scope estimate changes and for tracking costs by time and material. When being used for estimation the forms are accurate and aid with justifying price changes or costs for new work. The form is simple, easy to read, and quick to fill out.

Data will be entered in the labor section that includes class and pay rate according to 2020 local New York, NY union classifications and pay rates. The insurance and taxes will be estimated at a factor of .5 which is about average for the area. The insurance rate can he higher or lower for each individual contractor depending on work type and safety record. The form calculates a 20% markup for overhead and profit on labor.

Next, the Con-9 form has an area for recording and calculating materials to include the material description, unit, unit price, and total price. Using a form, to calculate 15% and add to the total for overhead and profit is also a part of the process. Lower cost incidental materials usually are not included on this form. Delivery costs are often but not always calculated into the material price and often during a scope estimate, the form includes average or general prices. Most prices for materials prices will include recent quotes on the material.

The equipment is listed by size and class or by an example piece. The recorded data included idle or active, number of pieces, total hours, rate, and total amount. The equipment costs derive from a data source called Equipmentwatch. When gathering data on Federal Highway jobs and many other organizations, the standard when calculating equipment costs is using Equipmentwatch. In the estimates a larger than necessary piece of equipment may be used for cost estimation to ensure the estimated equipment costs are not too low because of equipment size. Equipment is not marked up in this section because the rates include because of hourly billing instead of daily, weekly, or monthly. Rarely for estimation purposes is idle time considered, all rates are estimated as active.

There will be up to six Connecticut Con 9 estimates for each property broken down in the following stages: hardscape demolition, excavation for permeable pavers, earthwork for permeable pavers, permeable paver installation, blue roof installation, and green roof installation. Unless a small area, the estimates will be either to the day or half day rather than using an exact unit per hour to calculate. The per day or half day is more real-world accurate accounting for set up, tear down, and human nature. Overtime is not accounted for in the estimates as overtime should be only used for emergencies and instances where the production savings will be greater than the overtime costs.

Figure 18

Con-9 Estimate Worksheet

CHECKED BY: DATE:	**CON-9** Rev 4/27/09 (302-06-0169) **STATE OF CONNECTICUT** **DEPARTMENT OF TRANSPORTATION** **BUREAU OF ENGINEERING AND CONSTRUCTION** **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.
DESCRIPTION OF WORI		Select only one payment type: ☐ Scope Estimate ☐ Progress (progress payment = 90% ☐ Final SELECT ONLY ONE PAYMENT TYPE	CONSTRUCTION ORDER ITEM NO.

LABOR					MATERIAL				EQUIPMENT					
Class	No.	Total Hours	Rate	Amount	Description	Quantity	Unit Price	Amount	Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
				0.00				0.00						0.00
1 Total Labor				0.00				0.00						0.00
2 Health				0.00				0.00						0.00
Welfare				0.00				0.00						0.00
and				0.00				0.00						0.00
Pension				0.00	Total			0.00						0.00
				0.00	Less Discounts			0.00						0.00
3 Ins. and Taxes on Item 1				0.00	Total			0.00						0.00
4 20% of (Items 1 + 2 + 3)				0.00	Additional % = 15 %			0.00						0.00
5 Total (Items 1 thru 4)				0.00	Total			0.00	Total					0.00

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $0.00 Total to Date

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

Note. The Con-9 form is used by the Connecticut DOT for cost plus tracking and for contractor and engineer estimates of cost (Connecticut Department of Transportation., 2020)

Estimate Case Studies

Since there are 5 boroughs in New York City, each borough divides into three section then a random property will be selected in each section for a total of 15 properties. There is a GIS report generated for each property containing information such as the address, location in the city, property type, property map, lot dimensions, and number of floors. Also, in the process is completing a takeoff using Bluebeam Revu software along with Google Earth imagery, to estimate roof type, roof square footage, hardscape area, green area, and overall lot area.

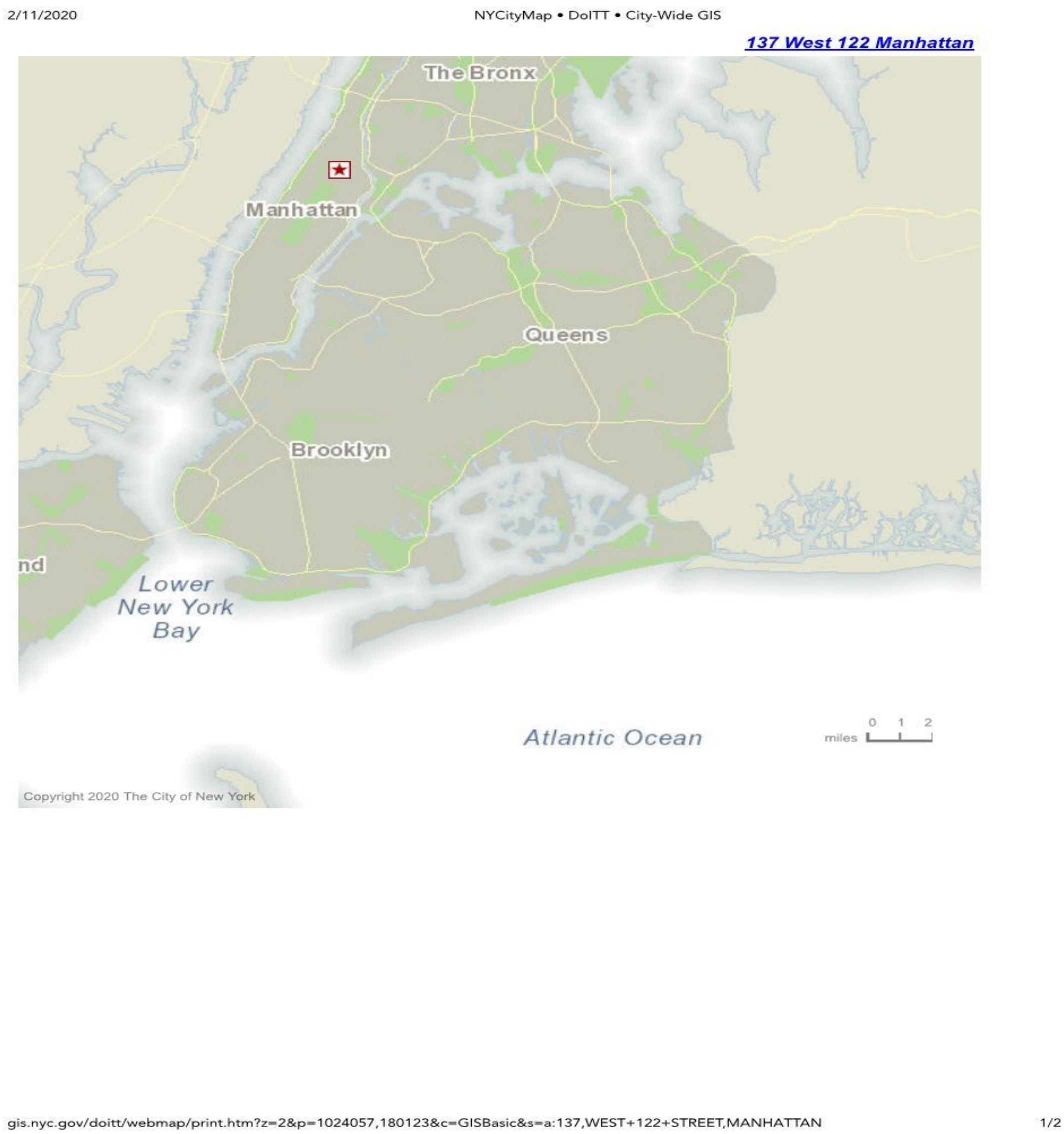
The data allows for a decision to be made on the roof type and construction plan, especially when using 3D views on Google Earth. Using the GIS data along with Google Earth, an accurate assessment of the individual property can be made in order to estimate the appropriate areas and create costs for the construction on the Con-9 form. For each property, a combined PDF will be compiled containing GIS information, Google Earth images, and the estimated costs for each construction stage with a cumulative cost also calculated.

Some properties pitched roofs so Blue Roofs and Green Roofs will not apply. A small cost allowance in the Blue Roof includes an estimate to cover the cost of imbedded roof leaders under the new permeable hardscape. The excavation and aggregate under the hardscape could increase to accept the runoff from the pitched roof. Generally, the pitched roof buildings are found in residential areas.

Below is an example of the raw data used to compile the quantities and cost estimate of a property. Each of the fifteen properties will have a data file that contains GIS information, photos, takeoffs, and the estimates in one PDF file about 9 to 11 pages long. The detailed estimates of all case studies are within Appendix B.

Figure 19

Example of Property Location in NYC



Note. Illustration of where the example property in located in the city.

Figure 20

GIS Map of Property with Markup

2/4/2020 NYCityMap • DoITT • City-Wide GIS

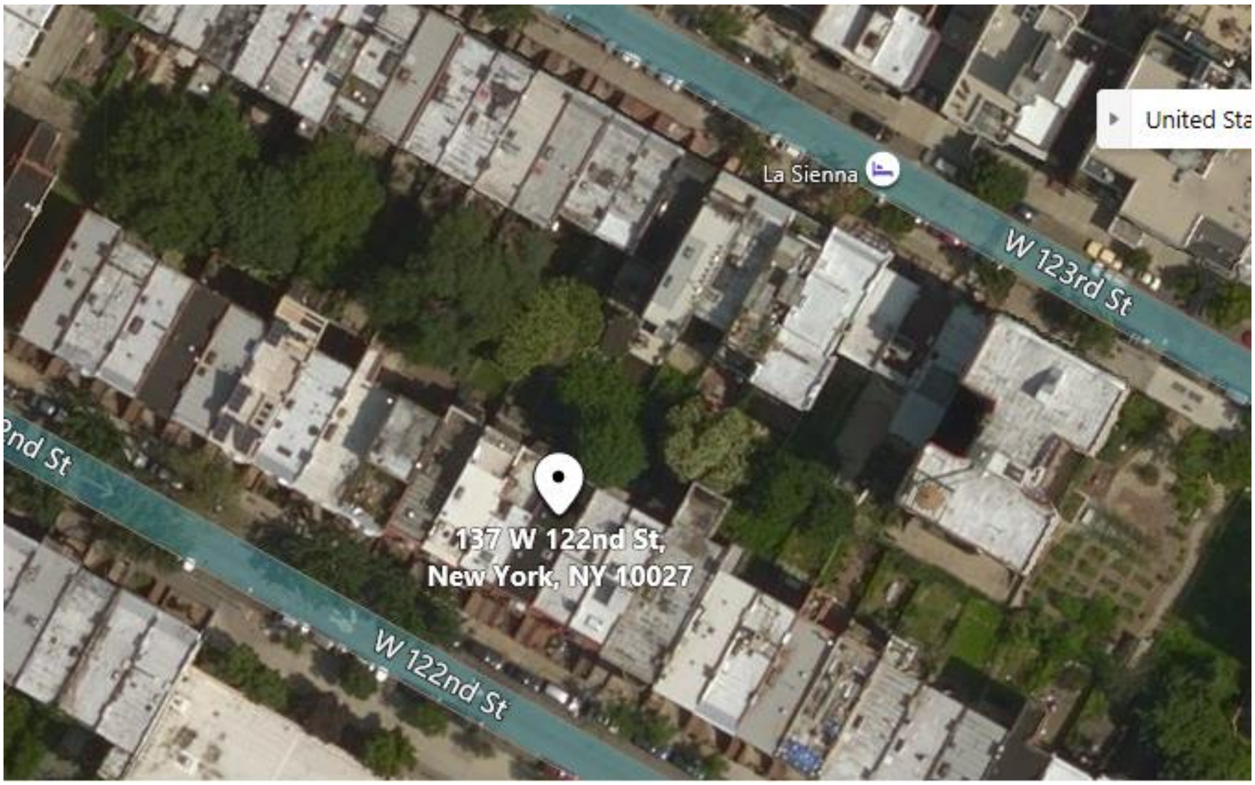
137 West 122 Street

gis.nyc.gov/doitt/webmap/print.htm?z=10&p=998750,233173&c=GISBasic&s=a:137,WEST+122+STREET,MANHATTAN 1/2

Note. Highlighted property with boundary, roof and hardscape takeoffs marked on GIS map.

Figure 21

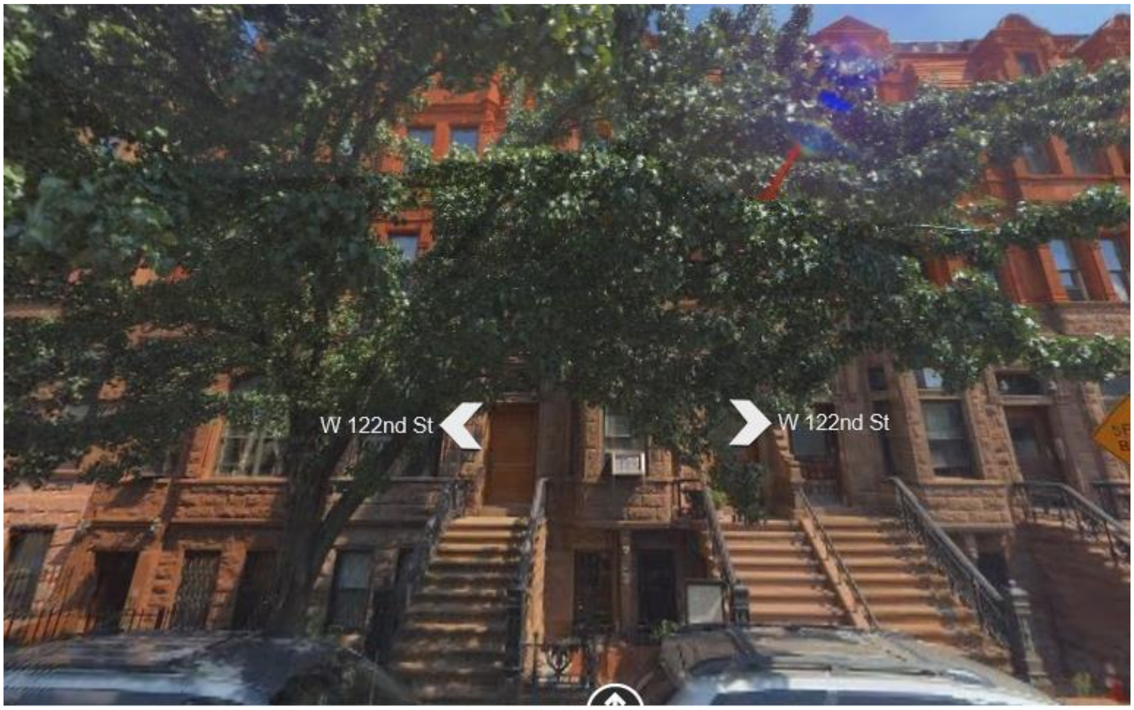
Overhead Picture of Property



Note. Overhead images of property were used from Bing or Google to identify hardscapes and roof types with features for estimation purposes. 3d views were sometimes also used (Google.com, 2020).

Figure 22

Street View Picture of Property



Note. Street view images of property were used from Bing or Google to identify hardscapes and construction obstructions for estimation purposes (Google.com, 2020).

One cost estimate for a cistern system stems from each of the fifteen properties. Cisterns are more difficult to estimate accurately because of the need for in-depth knowledge of the roof drainage system, water systems, and availability of interior storage area. However, at times there is a need for a generalized estimate. Because of many unknown factors only one estimate was generated for cisterns rather than 15 separate estimates with each property.

Final calculations derived from the data provides a high, low, and average cost per square foot of permeable pavers, blue roofs, and green roofs. In addition, there is a calculation of the high, low, and average cost per square foot retrofit cost for each property. Furthermore, there is an analysis for the property area, type, and size for costs and feasibility.

Implementation of the Feasibility Tool and Cost Calculation

It is physically not possible to place implements in some areas of New York City and other urban areas due to lack of available outdoor and indoor space, building engineering, weather, outdoor space use, underground utilities, soil conditions, etc. If necessary, a feasibility tool will be developed using economic and performance data to find feasible solutions. Considerations will be roof load ratings, access, outdoor free area, existing utilities, land use, and topography.

Each implement contains details such as physical dimensions as well as cross sections, geometry, and mass. Gathering a huge amount of data can help identify the best performing implements to consider at the best cost. Using property data, information and cost calculations from the study, a cost estimate for the implements can be derived. In instances where all data is available, the following determinations are on each property: gallons of storm water held or eliminated, cost of the project, and cost per gallon of storm water mitigated on the property.

Study Limitations

Construction and design are virtually unlimited, but this project only modeled and tested a few types of solutions with basic construction methods. No two properties in New York are exactly the same. Differences in owners, properties, construction materials, and methods may mean actual higher or lower costs than estimated. This concept was demonstrated with costs differences on different properties for the same construction materials and methods. Some properties may considerably cost more to retrofit while others could cost much less.

The retrofit of streets and roads should be completed in conjunction with building drainage retrofits. If the roads are kept impervious with street drainage entering the combined sewer system, then the performance of the overall system would be jeopardized. In an area with triggered at .1” of rain and 25% street coverage, the new trigger would be at .4” rain even though the other 75% of the area could take minimally 2” of rain. 25% of the area could negate most of the benefit gained by the other 75% of retrofitted properties.

At this time computer applications and remote-control valves are not designed or manufactured. Though costs are for electronic valves, much work has to be done to create a viable product. Designing release schedules could be problematic if the city does not know where each buildings’ drains lead to. There could be inconsistencies with programming and coordination that could affect performance and costs of the system.

There is a structural analysis considered when adding weight or wind load to buildings. Most buildings in New York can handle heavy snow and wind loads as the coastal city can be in the path of hurricanes and heavy snow produced by Nor’easters. In the event that a structural analysis was returned on a building that deemed it in sufficient to carry the additional roof loads there are possible solutions. The structural integrity of the insufficient building members could be strengthened, or a cistern system installed on the lowest level, in the ground or on grade. Another solution would be for the drainage to be released into the base of retrofitted hardscapes. Nonetheless structural analysis will need to be completed on structures before the addition of any drainage implements.

Chapter IV

RESULTS

Overview

The results of these experiments and estimates are presented by category function and costs. The functionality of each model was based on the ability of the model to withstand a 4" rainstorm in a 2-hour period. Each model was evaluated on its ability to freely drain the storm without runoff along with hold the entire 4" of water without overflowing. During each experiment, the flow rates varied some and water flow rates were adjusted from time to time with the result close to the desired volume and time.

For cost estimates and feasibility, three properties were randomly chosen from each of the five boroughs (Bronx, Brooklyn, Manhattan, Queens, and Staten Island). Each property was located on New York Cities GIS and a property card was created in scale with a map. Google earth and Bing maps were also downloaded for each property. The data provided information that allowed for an estimate of the property's overall area, sidewalks, other hardscapes, roof area, roof types, building heights, and construction logistics. A detailed construction estimate was created for each property using construction techniques represented by the tested models.

Logistics and construction feasibility were explored with the estimate of each property. A logistical study concluded that existing roofs should be flat in order to consider blue and green roof operations. Higher traffic areas may need to be constructed during night hours. Taller buildings could be better served with grey water holding tanks due to the ability to reuse the grey water and the difficult logistics of using larger cranes to transport and install construction materials. Not all logistical issues were anticipated or addressed however the examples fairly depict anticipated projects costs based on NYC union wages, Equipment Watch FHWA (Federal Highway Administration) hourly rates, anticipated insurance costs, payroll taxes, materials, transportation, overhead, and profit. Copies of the equipment rates are located in Appendix C along with actual material quotes in Appendix D.

The samples from each borough were compiled providing both simple and weighted averages cost average for blue roofs and permeable pavers for each project. Basic green roof costs were also tabulated. Green roofs provide many other economic benefits, however blue roofs are the most economical.

Permeable Pavers Models

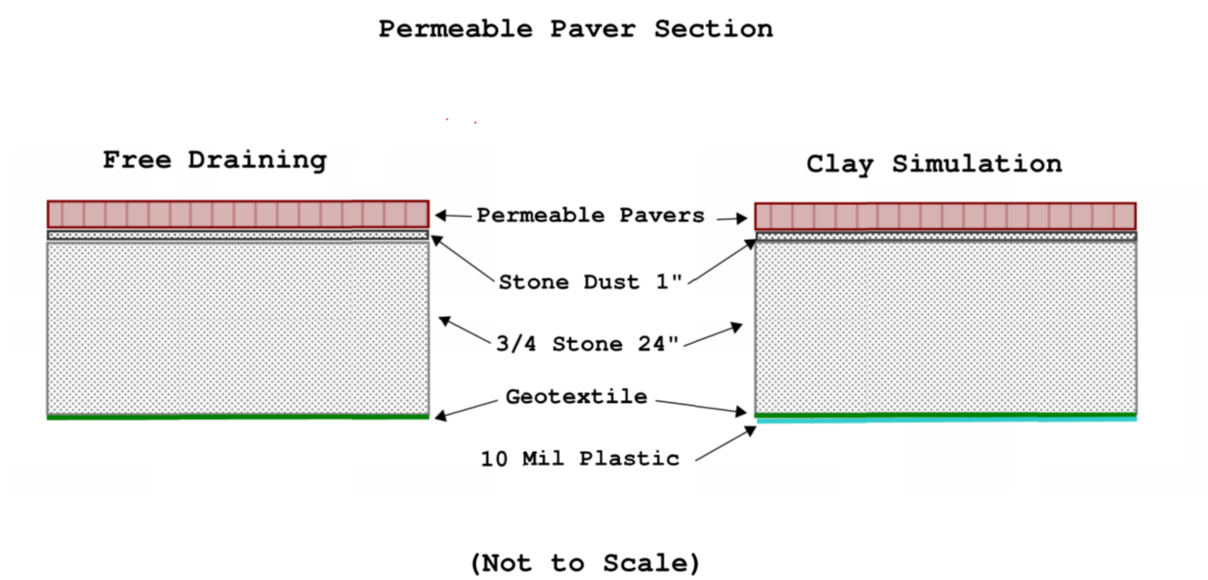
Construction

The permeable paver models were constructed in New Britain, CT at an industrial building with free draining materials in March of 2019. An excavator was used to remove the soils and place the ¾" aggregate. Geotextile fabric was placed on the subgrade before the stone was installed. On the clay simulation model 10 mil plastic sheeting was installed on the subgrade below the geotextile fabric. Marafi 140N was used as the geotextile fabric on this model as the Marafi 140N is commonly used as geotextile fabric on road and highway projects. The stone dust and ¾" stone was sourced locally in New Britain, CT at the Tilcon Quarry. The stone dust layer is used to create a flatbed for the pavers to be installed. The pavers were also sourced locally and are compliant with the Americans with Disabilities ACT (ADA) with joints of ½" or less. The ADA compliant permeable pavers were placed on the stone dust bed then the joints were filled with the same stone dust. A 250-pound plate compactor was used to compact the subgrade, stone, stone dust and finally used on top of the pavers to seal the job. Both models were constructed with monitoring wells and the clay simulated model was built with a sump for a pump to remove water between tests if needed.

These 100 square foot models sat for 9 months exposed to rain, sun, runoff, dust, and other environmental factors. After 9 months the models were still in excellent condition without deformations. Though the models were not intended to sit for a long period of time before testing it is important to note the models are durable over time and can be tested repeatedly. Additionally, the models demonstrated the ability to process normal weather events as there was no indication of standing water in either model. Below is a section of the models as tested with exception of the installed monitoring wells and pump basin.

Figure 23

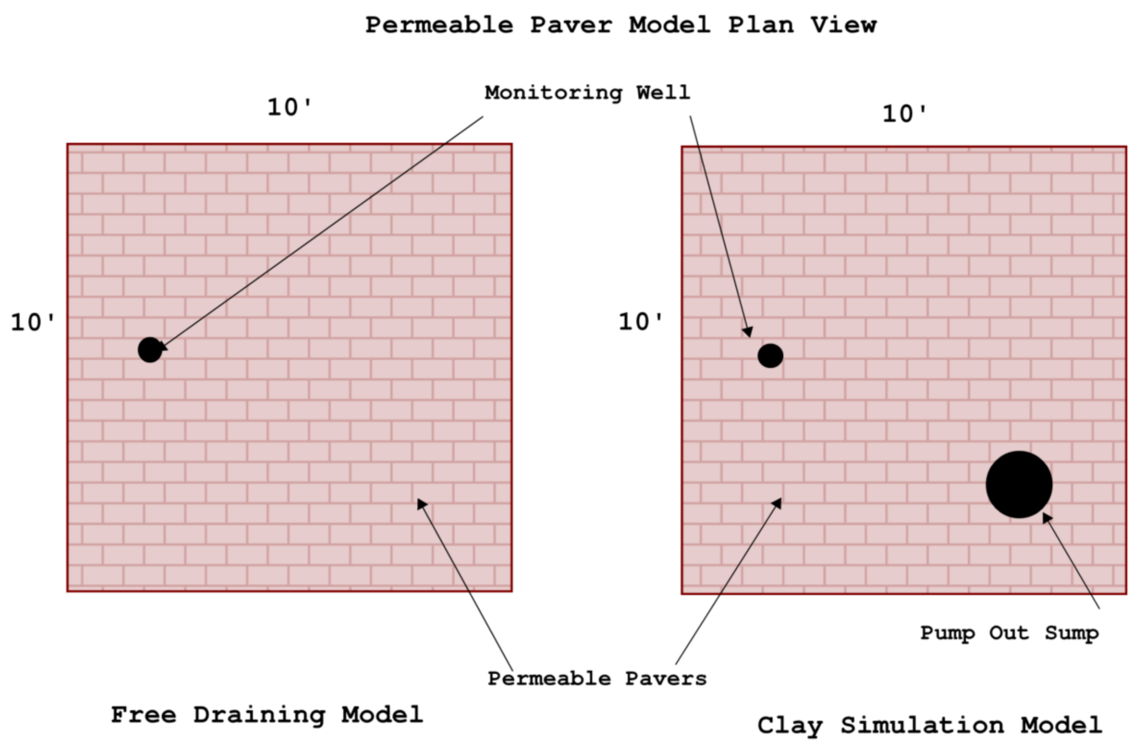
Permeable Paver Model Section View



Note. Section view illustration of how each model was constructed in New Britain, CT for Testing.

Figure 24

Permeable Paver Model Plan View



Note. Plan view illustration of how each model was constructed in New Britain, CT for Testing.

Permeable Pavers Free Draining Function

This test began at 2:23 pm and lasted until 4:08 pm for a duration of 105 minutes and approximately 253 gallons of water applied. The permeable pavers free draining model was the third model tested. The flow rate was increased on this model as the permeable paver model over simulated clay performed very well. On average this model was tested at 144 gph rather than the 125 gph benchmark which produced the same 4” storm but in less time. This model was able to process all the water without pooling or run-off. At the end of the testing there was no visible water in the monitoring indicating that there was much more capacity of the model to capture a greater volume of water. The model demonstrated that it could process a storm stronger than 2” per hour over a 2-hour period.

Table 2

Permeable Paver over Free Draining Soil

Model Name:	**Permeable Paver Over Free Draining Soil**

Surface Dimensions		Length FT		Width FT		Square FT
		10		10		100
Water Meter		Start		End		Total Used
Units =Cubic Feet		64.067		97.566		33.499
Gallons used						250.57252
Pre meter leak add						2
Total Gallons Used						252.57252
Duration		Start		Finish		Duration
Hours: Min		14:23		16:08		1:45
Min						105
Gallons Per hour Goal		125				
Overall GPH		**144.3272**				
Total Gallons		**252.5725**				

100 Square Foot Model at 4" Rain requires 250 Gallons. Water 2 hours = 125 GPH

Note. Results from testing on January 15, 2020

Permeable Pavers Over Simulated Clay

This test began at 12:15 pm and lasted until 2:18 pm for a duration of 123 minutes and approximately 254 gallons of water applied. The permeable pavers free draining model was the second model tested. The flow rate varied from 112 GPH to 150 GPH throughout the testing. On average this model was tested at 124 GPH which was close to the 125 GPH benchmark and processed 254 gallons of water. This model was able to process all the water without pooling or run-off. At the end of the testing there was no visible water in the monitoring indicating that there was much more capacity of the model to capture a greater volume of water. The model demonstrated that it could process a 2” per hour storm over a 2-hour period.

Table 3

Permeable Paver over Simulated Clay

Permeable Pavers Simulating Clay Function

Model Name: **Permeable Paver Over Simulated Clay Soil**

Surface Dimensions		Length FT		Width FT		Square FT
		10		10		100
Water Meter		Start		End		Total Used
Units =Cubic Feet		31.306		63.962		32.656
Gallons used						244.26688
Pre meter leak add						10
Total Gallons Used						254.26688
Duration		Start		Finish		Duration
Hours: Min		12:15		14:18		2:03
Min						123
Gallons Per hour Goal		125				
Overall GPH		**124.0326**				
Total Gallons		**254.2669**				

100 Square Foot Model at 4" Rain requires 250 Gallons. Water 2 hours = 125 GPH

Note. Results from testing on January 15, 2020

Permeable Paver Logistics

Permeable pavers can be used in place of most hardscapes including concrete sidewalks, asphalt roads, cobblestone, and other nonpermeable surfaces. The pavers are ADA compliant meaning for use as sidewalks and roadways. The construction of permeable pavers differs from regular sidewalks in that the installation of pavers is one by one, which requires more labor. The pavers require a different base material with additional depth compared to other sidewalks and patios. Generally, sidewalks require 8” of a dense graded processed base, whereas the median base section of permeable pavers is 24” of crushed stone. The extra 16” of depth requires more excavation, more stone product, and more disposals of existing soils.

There are some areas of the city that contain sidewalks that appear on the ground; however, these sidewalks suspend from a bridge or mezzanine type of structure that does not allow for the construction of permeable pavers. Buried utilities can also create difficulty when excavating and placing base. Utilities should be at least 30” below grade; however, there are many instances where they are much closer to the surface. All excavations require #811 or Call Before You Dig tickets for mark out of existing utilities. Excavating near gas lines requires hand excavation, which is more labor intensive. The utility profile for each building is impossible to know without CBYD mark out and surprise utilities appear with this technique.

Being that New York City is a very populated and busy place some construction must take place during the night so businesses can stay open and traffic can flow. Sometimes the installation of pavers is in an area where police aid with closing sidewalks and traffic lanes in order to complete the construction. Construction is usually staged in order to create minimal impact on pedestrian and vehicular traffic.

Though there are logistical challenges to overcome with proper planning and construction knowledge, the created estimates contain the possibility of logistical challenges and priced accordingly. For example, light towers were carried as a cost on every estimate even if the work can be done during the day. Productions were reduced in areas where there were visual clues of possible utility conflicts. Permeable pavers are a good option for NYC because of easy adjustments in the base or surface to account for the many utilities in the city.

Permeable Paver Cost

To help calculate costs over the wide profile of New York City, three properties were chosen randomly from each of the city's five boroughs. For each property, a takeoff was completed using the city's GIS data along with Google Earth pictures. Estimates were created for each of the individual properties based on the takeoffs and logistics of the property. Because some roofs were pitched and could not utilize blue roofs, extra stone excavation and stone was accounted for under the hardscape sections and the roof was drained into the hardscape base. The properties with pitched roofs were primarily residential with a much lower risk of utility interference.

Seven of the fifteen properties included draining the roofing under the pavers or into an open grass area. This is a practical and cost-effective solution in areas where there is enough hardscape and grassy areas to accommodate the extra water. One property had a house on a small lot with a swimming pool and a pitched roof. The difficulty of using permeable pavers increases as there are the effects of splashing pool water, buried water, and electric lines and the pitch of the existing grade around the pool. Even the most difficult properties with pitched roofs can be cost effectively retrofitted with permeable pavers to control rainwater runoff. The remaining eight properties were commercial or apartment buildings with flat roofs that can use roof-based controls.

The permeable paver installation cost estimates included four estimates for each property: removal of existing hardscape, base excavation, backfilling with stone, and installing the pavers. The estimates include union labor, equipment, materials, payroll taxes, insurance, and markup to include overhead and profit. A Connecticut DOT Daily Cost-Plus sheet was used for each estimate. This is the format that the CT DOT bases new work and price changes when submitted by the contractor. The form is clear to read and provides a basis for accurate construction cost estimates.

Each individual estimate was compiled for the total cost and price per square foot cost for the installation. The estimates ranged from \$25.52 per square foot to \$64.63 per square foot with a normal average of \$42.84 per square foot. The weighted average of the properties is \$34.21 yet, the normal average should be more representative of the costs due to the number of smaller properties in the city versus larger ones. Many of the smaller installations also were constructed deeper in order to hold the water generated from the pitched roof on the property. Generally, the smaller installations cost more than the larger installations as is demonstrated in the spreadsheet below.

Table 4

Hardscape Estimate Results

Property Name	Location	SF Hardscape	Hardscape Cost	Hardscape $/SF	Description
248 Revere ST	Bronx	578	$24,277.00	$42.00	Residence 2 Floors
1965 Gleason	Bronx	1492	$55,894.00	$37.46	Residence 2 Floors
2395 Tiebout	Bronx	3468	$95,885.00	$27.65	Apartment 6 Floors
329 9 Street	Brooklyn	9939	$253,610.00	$25.52	Commercial 4 Floors
1408 57 Street	Brooklyn	988	$46,220.00	$46.78	Residence 3 Floors
8218 18 Ave	Brooklyn	1656	$63,153.00	$38.14	Commercial 1 Floor
137 W 122	Manhattan	128	$8,273.00	$64.63	Residence 4 Floors
330 W35th	Manhattan	6396	$185,998.00	$29.08	Commercial 12 Floors
549 Broadway	Manhattan	2708	$127,251.00	$46.99	Commercial 12 Floors
6202 Myrtle Ave	Queens	2359	$86,105.00	$36.50	Commercial 2 Floors
86-20 164 Ave	Queens	1700	$75,843.00	$44.61	Residence 1 Floor
15-40 Dunkirk St	Queens	6937	$248,840.00	$35.87	Commercial 1 Floors
11 Hastings St	Staten	500	$28,743.00	$57.49	Residence 2 Floors
52 Markham Pl	Staten	1050	$54,094.00	$51.52	Residence 2 Floors
251 Manhattan St	Staten	800	$38,128.00	$47.66	Residence 2 Floors

Note. Results from case study estimates on 15 randomized properties in NYC

The average cost per borough ranged from $33.16 to $49.85 per square foot. There was no preferential treatment for the estimates based on borough. The variations are due to logistics, property sizes, and roof drainage rather than locations in the city. One online cost estimator shows a cost of $9.15 per sf to $11.16 per SF (permeable paver) and an actual road built in New Albany, OH has a cost of $32.65 per square foot including everything. The average of $42.84 in New York City is a reasonable cost based on the New Albany, OH data. Though road construction with permeable pavers may require some minor improvements over sidewalk and driveway construction, the overall lower cost is reasonable due to higher wages in New York City.

Table 5

Average Cost for Hardscape Retrofit per Borough

Borough Average				**Cost Per SF**
Average	Bronx			$33.16
Average	Brooklyn			$49.85
Average	Manhattan			$37.52
Average	Queens			$45.99
Average	Staten			$49.59

Note. Average square foot cost of hardscape in each borough based on sample properties.

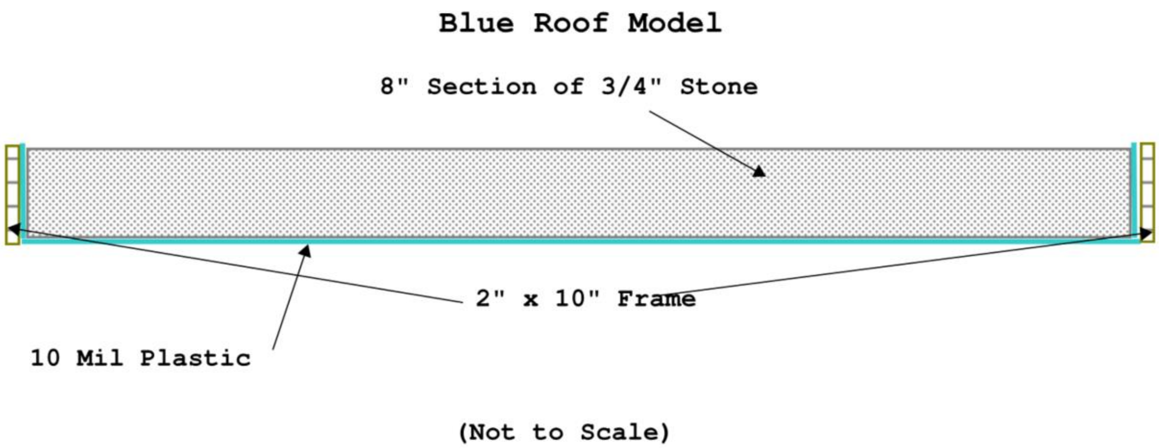
Blue Roof Model

Construction

The Blue Roof Model construction occurred just days before the testing with a 2” x 10” lumber frame measuring 10’ x 10’ square. The frame was lined with 10 mil plastic sheeting and filled with 8” of ¾” stone. This model was built on an asphalt surface in the parking lot of an industrial building in New Britain, CT. Originally the blue roof model was constructed on the roof of the building in New Britain, CT but the parameters were increased on the storm rate and volume, so the model was reconstructed in the parking lot. The crushed stone was sourced locally from New Britain, CT at the Tilcon Quarry.

Figure 25

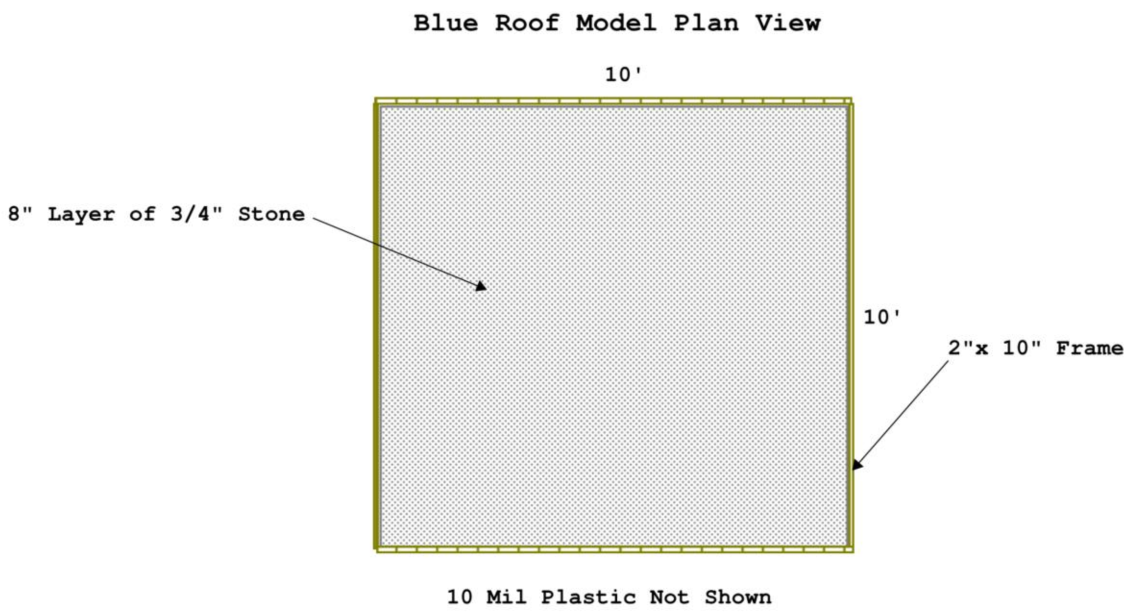
Blue Roof Model Section View



Note. Section view illustration of how each model was constructed in New Britain, CT for testing.

Figure 26

Blue Roof Model Plan View



Note. Plan view illustration of how each model was constructed in New Britain, CT for testing.

Blue Roof Function

This test began at 10:17 AM and ended at 12:07 pm for a duration of 110 minutes and approximately 241 gallons of water applied. The Blue Roof Model was the first model tested. The flow rate varied from 120 GPH to 148 GPH throughout the testing. On average, this model was tested at 132 GPH, which was a litter greater 125 GPH benchmark and processed 241 gallons of water. The model could have held the 250 gallons but the pump in the tank was struggling to expel the last few gallons out of the tank. This model can handle a rate much greater than the 125 GPH because the stone is about 50% stone and 50% air by installed volume. The limitation on this model is the depth of the model. An 8" model in theory should take the water associated with a 4" storm. At the end of the testing, water appeared within the top ½ inch of the placed stone. The model demonstrated the ability to process a 2” per hour storm over a 2-hour period.

Table 6

Blue Roof

Model Name: **Blue Roof**

Surface Dimensions		Length FT		Width FT		Square FT
		10		10		100
Water Meter		Start		End		Total Used
Units =Cubic Feet		0.396		31.306		30.91
Gallons used						231.2068
Pre meter leak add						10
Total Gallons Used						241.2068
Duration		Start		Finish		Duration
Hours: Min		10:17		12:07		1:50
Min						110
Gallons Per hour Goal		125				
Overall GPH		**131.5673**				
Total Gallons		**241.2068**				

100 Square Foot Model at 4” Rain requires 250 Gallons. Water 2 hours = 125GPH

Note. Results from testing on January 15, 2020

Blue Roof Logistics

Blue roofs are much simpler to construct than permeable pavers. Two layers of geotextile fabric, some optional berms, and aggregate create a roof that can hold rainwater with foot access without getting wet. For many years gravel has been placed on flat roofs to protect the roofing waterproof membrane from ultraviolet rays and falling objects from the sky. Before blue roofs installation, the existing roof must be in good functional condition and assessed for the load of the aggregate and water. Within this study, there were no consideration for assessment or repairs as the assumptions determined the roofs in good condition with adequate load bearing capacity.

The top considerations for blue roof construction are the height of the roof and crane access. Blue roofs in this study were considered for buildings 25 stories and below with the reasoning given later in this paper.

Some buildings have various structures on the roofs including solar panels, green houses, air conditioners, wind generators, cisterns, and other structures. Blue roof construction can use varying depths of aggregate to compensate for lost square footage. The construction costs per square foot of the entire roof do not vary much because the same volume of aggregate used.

Blue Roof Costs

The cost of installing a blue roof is surprisingly substantially less than the cost of permeable pavers. Though crane costs with an operator and oiler can be over $800 an hour not counting set up and tear down.

Table 7

Blue Roof Estimate Results

Property Name	**Location**	**SF Roof**	**Roof Cost**	**Roof $/sf**	**Description**	**Blue Roof**
248 Revere ST	Bronx	630	$600.00	$0.95	Residence 2 Floors	No
1965 Gleason	Bronx	1571	$2,800.00	$1.78	Residence 2 Floors	No
2395 Tiebout	Bronx	8190	$103,994.00	$12.70	Apartment 6 Floors	Yes
329 9 Street	Brooklyn	18295	$210,691.00	$11.52	Commercial 4 Floors	Yes
1408 57 Street	Brooklyn	1276	$1,500.00	$1.18	Residence 3 Floors	No
8218 18 Ave	Brooklyn	14895	$115,213.00	$7.74	Commercial 1 Floor	Yes
137 W 122	Manhattan	909	$17,220.00	$18.94	Residence 4 Floors	Yes
330 W35th	Manhattan	8053	$117,969.00	$14.65	Commercial 12 Floors	Yes
549 Broadway	Manhattan	20180	$261,320.00	$12.95	Commercial 12 Floors	Yes
6202 Myrtle Ave	Queens	5188	$39,220.00	$7.56	Commercial 2 Floors	Yes
86-20 164 Ave	Queens	2231	$1,800.00	$0.81	Residence 1 Floor	No
15-40 Dunkirk St	Queens	57003	$468,787.00	$8.22	Commercial 1 Floors	Yes
11 Hastings St	Staten	1208	$1,200.00	$0.99	Residence 2 Floors	No
52 Markham Pl	Staten	1920	$1,200.00	$0.63	Residence 2 Floors	No
251 Manhattan St	Staten	1820	$1,200.00	$0.66	Residence 2 Floors	No

Note. Results from case study estimates on 15 randomized properties in NYC

Of the sample properties, eight had flat roofs estimated for blue roof installation. The additional roofs had costs associated with downspout modifications needed to drain into the hardscapes. The blue roof estimated costs ranged from \$7.56 per square foot to \$18.94 per square foot with an average of \$11.78 per square foot. Included in the costs of the blue roof installation was an estimate for electric cellular roof drain valves. An estimated number of valves was assigned to each roof based on square footage and design. Though such valves are not in production, the technology is available with design ability to receive signals to open or close based on the command of the treatment plant. The cost of applications and software was not considered in the estimate but would be negligible based on city wide implementation.

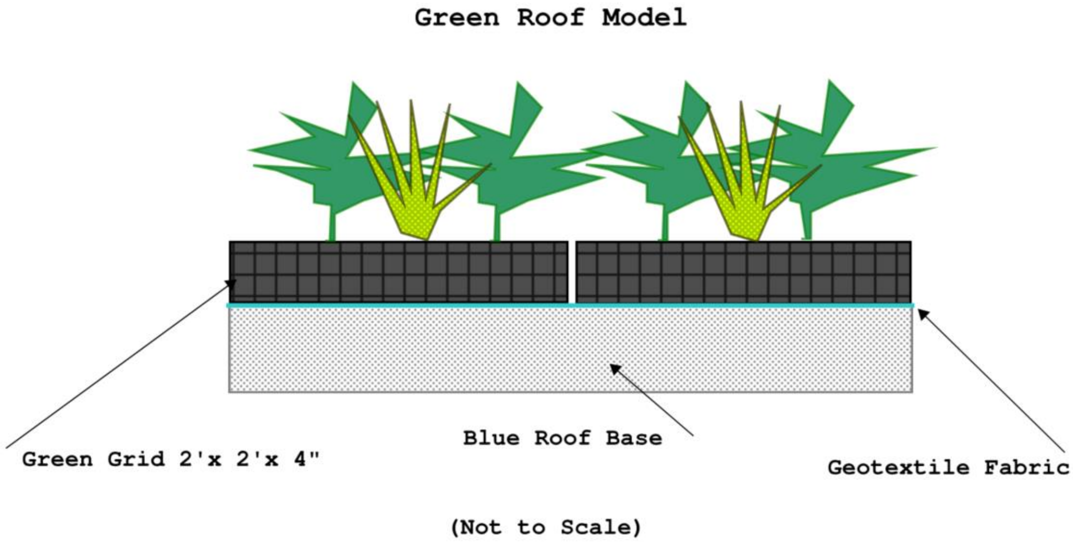
Green Roof Function

Green Roof Construction

The green roof installed is different than sectional depictions of many green roof applications. This model incorporated the use of Green Grid 2’x2’x4” green roof modules placed on a blue roof model. The green roof is not the most effective or efficient means to control water on a roof; however, there are added environmental benefits that may be desirable for building owners and governments alike. The Green Grid green roof was installed on a roof in New Britain, CT. The modules were transported to the roof with a truck lift and placed by hand. Since the capacity of the blue roof was previously tested, the green roof measured primarily for permeability.

Figure 27

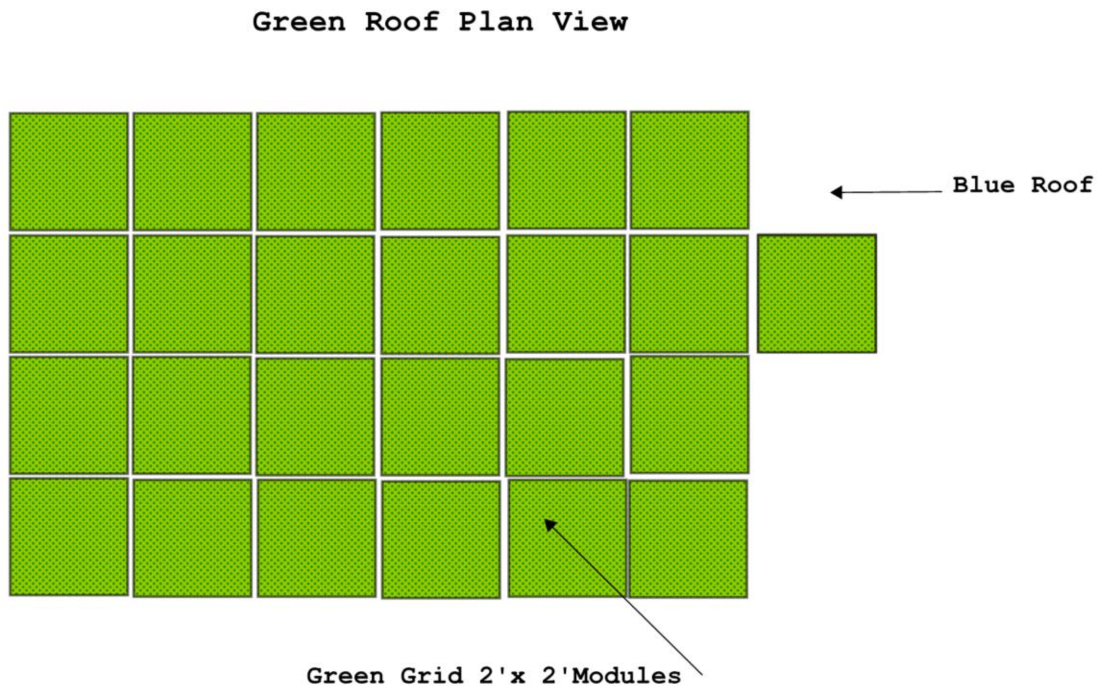
Modular Green Roof Model Section View



Note. Section view illustration of how each model was constructed in New Britain, CT for testing.

Figure 28

Modular Green Roof Model Plan View



Note. Plan view illustration of how each model was constructed in New Britain, CT for testing.

Green Roof Function

This test began at 10:17 AM and ended at 12:16 pm for a duration of 119 minutes and approximately 251 gallons of water applied. A forklift was used to raise the water tank in order to allow the pump to push an adequate volume of water. Because at maximum height the maximum flow was 108 GPH a different spray stream was used in order to increase flow. The Green Roof Model was the last model tested with the test location on an actual roof. The flow rate varied from 108 GPH to 150 GPH throughout the testing. On average this model was tested at 127 GPH which was a litter greater 125 GPH benchmark and processed 251 gallons of water. The model easily drained the simulated rainwater even when the application rates were at 150 GPH. The limitation on this model included the drainage layer or blue roof. The green roof has added environmental benefits which do not interfere with the goal of holding water as long as there is a sufficient drainage layer and constraints.

Table 8

Green Roof

Model Name: **Green Roof**

Surface Dimensions		Length FT		Width FT	Additional SF	Square FT
		12		8	4	100
Water Meter		Start		End		Total Used
Units =Cubic Feet		97.566		131.116		33.55
Gallons used						250.954
Pre meter leak add						0
Total Gallons Used						250.954
Duration		Start		Finish		Duration
Hours: Min		10:17		12:16		1:59
Min						119
Gallons Per hour Goal		125				
Overall GPH		**126.5314**				
Total Gallons		**250.954**				

100 Square Foot Model at 4” Rain requires 250 Gallons. Water 2 hours = 125GPH

Note. Results from testing on January 16, 2020

Green Roof Logistics

Green roofs include designs and installation in countless variations and combinations. Green roofs have many benefits besides reducing or eliminating rainwater runoff. For this study, a modular green grid roofing system was used because the consistent water controlling ability based on the underlying blue roofing system. The Green Grid roofing system can be installed with the same labor and similar equipment and restrictions as a blue roof with predictable water controlling results and minimal roofing modifications.

Green Roof Costs

Though not realized at the beginning of this study, green roofs are not cost effective if rainwater control is the only consideration. The Green Grid system is one of the most economical roofing systems to install (Weston Solutions, 2019) but still costs many times more than a blue roof installation.

Table 9

Green Roof Estimate Results

Property Name	Location	SF Roof	Description	Green roof Cost	Cost per SF
248 Revere ST	Bronx	630	Residence 2 Floors		
1965 Gleason	Bronx	1571	Residence 2 Floors		
2395 Tiebout	Bronx	8190	Apartment 6 Floors	$240,109.00	$29.32
329 9 Street	Brooklyn	18295	Commercial 4 Floors	$522,185.00	$28.54
1408 57 Street	Brooklyn	1276	Residence 3 Floors		
8218 18 Ave	Brooklyn	14895	Commercial 1 Floor	$372,028.00	$24.98
137 W 122	Manhattan	909	Residence 4 Floors	$32,392.00	$35.63
330 W35th	Manhattan	8053	Commercial 12 Floors	$264,984.00	$32.91
549 Broadway	Manhattan	20180	Commercial 12 Floors	$334,629.00	$33.46
6202 Myrtle Ave	Queens	5188	Commercial 2 Floors	$169,032.00	$32.58
86-20 164 Ave	Queens	2231	Residence 1 Floor		
15-40 Dunkirk St	Queens	57003	Commercial 1 Floors	$1,467,795.00	$25.75
11 Hastings St	Staten	1208	Residence 2 Floors		
52 Markham Pl	Staten	1920	Residence 2 Floors		
251 Manhattan St	Staten	1820	Residence 2 Floors		

Note. Results from case study estimates on 15 randomized properties in NYC

On top of the blue roof cost, the simplest discounted green roof averages $30.40 per square foot with a range of $24.98 to $35.63 per square foot with the possibility to average more than three times as much. Because the focus of this study is on feasibility, effectiveness, and costs, green roofs are an optional installation with optional benefits rather than in an overall cost to construct per square foot in New York.

Cisterns and Grey Water Holding.

The installation cost estimates of greywater reuse systems are more difficult to estimate accurately without in-depth knowledge of the plumbing systems, uses, and functions in a building. However, a rough estimate can still be produced for a hold and release on command system. An estimate was prepared for 549 Broadway in Manhattan for a cistern system. Using 64 rectangular 3000 liter holding tanks throughout the building or in one area it would be possible to hold a 4" storm captured from the existing roof drainage system. At a height of 78" the tanks would only occupy 1200 square feet of the estimated 243,442 estimates square foot floor space in the building. As a holding device only, the costs would be around $15.19 per square foot of roof area. Converting the building to use the stored water would likely be a good investment by saving delivered water costs.

Overall Cost

An important cost consideration is the overall cost per square foot of property to control runoff. The example properties ranged from $3.93 to $21.04 per square foot for rainwater runoff control with an average of $13.72 per square foot.

Table 10

Overall Costs per Square Foot

Property Name	Location	Lot SF	Hardscape Cost	Roof Cost	Lot Cost/ SF	Description
248 Revere ST	Bronx	2260	$24,277.00	$600.00	$11.01	Residence 2 Floors
1965 Gleason	Bronx	3263	$55,894.00	$2,800.00	$17.99	Residence 2 Floors
2395 Tiebout	Bronx	13735	$95,885.00	$103,994.00	$14.55	Apartment 6 Floors
329 9 Street	Brooklyn	28233	$253,610.00	$210,691.00	$16.45	Commercial 4 Floors
1408 57 Street	Brooklyn	2704	$46,220.00	$1,500.00	$17.65	Residence 3 Floors
8218 18 Ave	Brooklyn	16551	$63,153.00	$115,213.00	$10.78	Commercial 1 Floor
137 W 122	Manhattan	1810	$8,273.00	$17,220.00	$14.08	Residence 4 Floors
330 W35th	Manhattan	14449	$185,998.00	$117,969.00	$21.04	Commercial 12 Floors
549 Broadway	Manhattan	22888	$127,251.00	$261,320.00	$16.98	Commercial 12 Floors
6202 Myrtle Ave	Queens	7547	$86,105.00	$39,220.00	$16.61	Commercial 2 Floors
86-20 164 Ave	Queens	5000	$75,843.00	$1,800.00	$15.53	Residence 1 Floor
15-40 Dunkirk St	Queens	67960	$248,840.00	$468,787.00	$10.56	Commercial 1 Floors

11 Hastings St	Staten	3675	$28,743.00	$1,200.00	$8.15	Residence 2 Floors
52 Markham Pl	Staten	5225	$54,094.00	$1,200.00	$10.58	Residence 2 Floors
251 Manhattan St	Staten	10000	$38,128.00	$1,200.00	$3.93	Residence 2 Floors
Average					$13.72	

Note. Overall results from case study estimates on 15 randomized properties in NYC.

Property Studies in Detail

The postcard pictures of New York City include skyscrapers and Times Square. This is an accurate depiction of much of Manhattan south of Central Park, however, apartments and individual residences are the majority property types across most of New York's five boroughs. As logistics are considered when estimating taller buildings in New York City it is evident that the taller the building, the more difficult it is to construct blue and green roofs. Crane access is the number one reason taller buildings are difficult to access. Because of the short-term construction on the roofs only mobile cranes were considered for the roofing projects. Tower cranes require a constructed footprint and are expensive to build. Crawler cranes and truck cranes are mobile options for short term projects. Though each reaches higher elevations than crawler cranes, we eliminated the crawlers because each is less mobile than truck cranes and require more assembly for use. This project considered the use of a Linkbelt 3250 that has a boom capacity of 234 feet with an optional lattice fly that can reach 358 feet. According to the crane charts with maximum counterweight, the Linkbelt 3250 is a 250 Ton crane class. With a minimum radius of 50' to 100' and 11,000 pounds of the concrete bucket and 5 CY of Norlite aggregate, the 43.3' fly, and the 223.1' boom would give a maximum height of 268.6' with a real working capacity of 250’ or 25 stories. Some buildings in New York have permanent cranes on the roofs, which could hoist materials to construct blue roofs

In practical application, buildings from 10 to 25 stories in height may benefit more from a cistern/grey water system to recuperate water costs could. Taller buildings have more people in them which increases water demand. With buildings greater than 25 stories, the best option would to be use a cistern system unless the building was equipped with a permanent crane. Many of the taller buildings in NYC already use a water recovery system like the Bank of America Building in Manhattan. Furthermore, it has been demonstrated that grey water systems grey water systems recover installation, maintenance, and treatment costs more effectively the taller the building. A cost recovery study in Melbourne, Australia found the payback period was 4.1 years for a 20-story building and up to 40% less on taller structures (Imteaz & Shanableh, 2012)

As the results were compiled it became evident that a cost feasibility tool is not needed. The results demonstrate that Blue Roofs are usually most efficient for buildings under 10 stories. As the building height increases to 25 stories it becomes more likely that a grey water cistern system becomes more efficient. For buildings taller than 25 stories, a cistern based grey water system is most often the best choice. Crane costs for buildings taller than 25 stories become too expensive while the volume of water use per building footprint increases. Hardscape surfaces were simply estimated with permeable pavers though there may be instances where cisterns may need to be used on sidewalks on structures on bridged walkways.

Costs per Gallon

With an annual rainfall of 24.35” per year, a cost per gallon for holding or dispersing per implement or property can be estimated. The cistern cost was estimated at $15.19 per square foot of roof space. If the lifespan of the cistern is 30 years X 24.35” (2.03’) of rain X 1 SF x 7.48

gallons per cubic foot = 456 gallons over 30 years. The construction costs per gallon would be about 3.3 cents per gallon. Blue roofs would cost 2.6 cents per gallon, permeable pavements would cost 9.4 cents per gallon and overall, for the property costs would average 3.0 cents per gallon without maintenance costs. The current sewer rate is .85 cents per gallon of fresh water used and 1.4 cents per gallon combined water and sewer. Using the past thirty years rate increases, the projected combined cost per gallon sewer and water combination will be 8.9 cents per gallon in 2050; making a strong economic case to consider cisterns and grey water reuse (City of New York, 2020).

Research Questions Review

Can stormwater be significantly delayed and reduced through property specific engineering controls that will reduce CSO pollution? All testing models demonstrated that it is possible and practical to control rainwater by either dispersing rainwater into the ground or by storing water in a blue roof/or water tank. Green roofs in conjunction with proper substrate can at a minimum store a large rain event with potential of entirely dissipating small rain events. Other than using technology for controlled releases, the technology to reduce most CSO pollution is readily available.

What percentage of the city is available to control stormwater through controls (roofs, hardscapes, green areas)? Fourteen of fifteen random properties chosen were viewed as capable of catching 100% of rain logistically. The property in question was a small residential property that contained a pool. The ability to use permeable pavers around the pool was unknown because the utility structure of the pool was unknown. The residence structure has a pitched roof which would need to be drained under permeable pavements. Most of the roof drainage was drained under the front permeable pavements leaving the property. Using the overall square footage of the random properties less than 1% of the area would not be able to be addressed by the proposed measures.

What percentage of the city are city streets that will not be addressed by the study's implements? A takeoff performed using New York City GIS data and maps suggested that about 25% of the improved areas are city streets. Five random areas of New York City were chosen with the take offs performed ranging from 21% to 28% street area with an average of 25% street area. Addressing the street area is not part of this project but the streets could see considerable drainage improvements using permeable pavements. Further study is needed concerning street reconstruction in New York City to address street runoff issues. Funding and compliance should be addressed through public works and the Department of Transportation.

Is it logistically feasible to install the tested implements? After analysis of the construction methods needed for the fifteen random properties it is feasible to reconstruct the hardscapes and roofs of these projects. Hardscapes are easily feasible though more expensive than blue roof estimates. Construction of blue roofs could occur in the city but are easier to construct on shorter buildings. Crane logistics becomes much more difficult on taller buildings and becomes not feasible as buildings approach 25 stories. Buildings greater than 25 stories would be better suited for a cistern type system. Green and blue roofs can be on taller buildings but would require other methods besides a mobile crane to transport materials to the roof. Many buildings have elevators that co to the roof or even roof cranes but are not assumed to have elevators for this project.

Can flow chart and cost estimator predict the best methods for each individual property? The results produced can be expressed without the need of a flow chart and are as follows for required performance and lowest cost. All hardscapes should be replaced by permeable pavements or drain into permeable pavement construction. Pitched roofs should drain under the permeable pavements, grassy areas, or into a cistern for reuse. Flat roofs under 10 stories should use blue roof construction for lowest initial cost though a cistern with a grey water system may provide long term benefits. Roofs from 10 to 25 stories should be constructed with either a cistern or blue roof system and buildings greater than 25 stories should use a cistern storage system.

Can the implements control a two inch per hour storm for two hours? The models demonstrated that a 2” per hour storm for 2 hours could be resolved. A cistern system would be designed to hold a desired volume based on the drainage area of the roof or building.
What are the costs per square foot for each implement and for the entire property to control the given storm? In summary from the results stated above the square foot cost of permeable pavers would range \$25.52 per square foot to \$64.63 per square foot with a normal average of \$42.84 per square foot. The blue roof estimates had costs ranging from \$7.56 per square foot to \$18.94 per square foot with an average of \$11.78 per square foot. In addition to the blue roof cost, the simplest discounted green roof averages \$30.40 per square foot with a range of \$24.98 to \$35.63 per square foot. The cistern average cost per square foot of roof space was \$15.19 per square foot.

In conclusion, the hypothesis was confirmed that rainwater runoff can be controlled on each individual property by a variety of measures including permeable pavements, blue roofs, modified green roofs, and water storage tanks. Though the cost per gallon for construction is significantly more than the current water and sewer combination charge, costs are reasonable especially when the cost of the construction versus the projected sewer and water increases over the next 30 years.

Chapter V

DISCUSSION

Effectiveness

The results demonstrate that rainwater runoff can be controlled with simple and inexpensive solutions that are logistically feasible even in New York City. Even so, when the entire landscape of New York City is considered, solving the CSO pollution problem is a grand task. The methods and models used in this project were chosen to show that CSO pollution could be effectively eliminated in New York City. Even though the solutions can be improved or customized in ways to increase efficiency while lowering costs, the simplistic models and estimates were proven effective at a reasonable cost. When placed in a competitive market, the private sector should be able to develop more effective solutions at lower costs.

Governments can motivate the private sector to solve environmental problems through mandates with deadlines such as vehicular emissions standards. A simple standard that rainwater must be controlled on each property at storm level of two inches per hour for two hours by year 2035 would eliminate most CSO events. Ultimately, it is the government’s responsibility to provide a clean environment for the citizens and this project shows huge reduction in the CSO pollution over the next twenty years if the city government takes initiative as prescribed by the EPA.

For a proposal to be successful it must have a balance of effectiveness, feasibility, and cost to create positive change in government, no matter how grand the cause. The physical separation of storm and sewer systems in New York City is better environmental plan, however, completing this task without shutting down and bankrupting New York City would not be feasible. Additionally, the time and the costs to complete such a project is incomprehensible. However, the current plan of allowing billions of gallons of sewage to enter local water ways each year is responsible and reprehensible especially is there are solutions available to greatly lessen the problem.

Cisterns, blue roofs, and Permeable Pavements are not the only solution to mitigate CSO pollution as some cities such as London, England are creating centralized holding structures deep in the earth. Centralized projects can be a good and successful plan for CSO mitigation; however, these projects take many years to plan and construct with many unknown costs and problems. Both centralized and property based CSO mitigation projects provide solutions to CSO pollution. Smaller property-based solutions can lessen CSO pollution, beautify the city, provide union jobs, and award contracts to small businesses unlike the larger counterparts.

Logistics and Feasibility of Construction

Through the available technology including what could be created within a minimal period of time, most rainwater can be controlled locally on each property rather than the current practice of rainwater indiscriminately entering the combined sewer system. The constructability of blue roofs, permeable hardscapes, and cisterns is absolute feasible unlike the separation of combined sewer and water systems throughout all of New York City. The diversity of New York properties and landscapes will require engineering and planning in order to maximize the efficiency and costs of creating a city-wide plan to essentially stop rainwater from entering combined sewer systems unplanned.

With any construction project there are concerns to consider. The first concern for a project of this size would be the time, manpower, equipment, and materials needed to complete.

When projects run into the billions of dollars, often only a few construction companies are large enough to manage the project. This project would differ in that property owners would hire one of many approved contractors to complete the work. Even so, resources may become scarce if too much construction is occurring at one time. Though there would be dozens if not hundreds of contractors working on citywide projects, one management company would be needed to coordinate efforts, disperse funds, inspect construction, and prioritize construction areas.

Scheduling would include traffic, noise levels, material availability, manpower availability, equipment, and budgets. With prioritized construction staged in a way to minimize congestion and inconvenience a decade or more could pass before all of the construction is completed. Project management and inspection would be critical to ensure schedules and budgets are met with safety and quality.

Unknown conditions, utility strikes, and change orders can destroy both schedules and budgets quickly. A diversely constructed older city often has things buried and buildings constructed without adequate engineering to handle additional loading. Both conditions likely do exist in New York but knowing the extent of these issues is difficult to assess at this point. In the planning stages inadequate load ratings would likely be discovered but surprises underground is much more difficult to anticipate.

CSO Trigger Data

More information is needed to thoroughly plan and construct such a system cost effectively and timely. CSO trigger information currently is incomplete on the addressed outfalls and nonexistent in most instances. Research needs to be conducted that can identify the CSO trigger rain levels along with corresponding maps so areas can be prioritized for construction. The current research shows that some CSOs are triggered with .1” of rain while others may get up to 2” of rain without overflowing. The obvious choice would be to prioritize construction in the areas with the most sensitive triggers.

Table 11

CSO Triggers

Waterbody	Rainfall* Triggers (inches) with Associated Durations For Waterbody CSO Advisories			
	12 Hrs	**24 Hrs**	**36 Hrs**	**48 Hrs**
Bergen Basin	0.10	0.25	2.50	N/A
Bronx River	0.60	N/A	N/A	N/A
East River	N/A	N/A	N/A	N/A
Flushing Bay	0.80	1.30	N/A	N/A
Flushing Creek	0.40	1.00	1.25	1.50
Fresh Creek	0.75	1.25	2.50	N/A
Gowanus Canal**	1.20	2.30	3.00	N/A
Harlem River	N/A	N/A	N/A	N/A
Head of Bay	1.00	1.40	2.50	N/A
Hendrix Creek	N/A	N/A	N/A	N/A
Hudson River	N/A	N/A	N/A	N/A
Hutchinson River	0.70	N/A	N/A	N/A
Jamaica Bay	N/A	N/A	N/A	N/A
Kills	N/A	N/A	N/A	N/A
Little Neck Bay	N/A	N/A	N/A	N/A
Lower Bay	N/A	N/A	N/A	N/A
Mill Basin	2.50	N/A	N/A	N/A
Newtown Creek**	0.20	0.40	0.60	0.90
North Jamaica Bay	2.00	2.50	N/A	N/A
Paerdegat Basin**	1.20	1.90	2.40	2.90
Sheepshead Bay	1.00	N/A	N/A	N/A
Shellbank Basin	1.40	2.50	N/A	N/A
Shellbank Creek	N/A	N/A	N/A	N/A
Spring Creek	1.40	2.50	N/A	N/A
Thurston Basin	0.10	0.30	1.00	N/A
Upper Bay	N/A	N/A	N/A	N/A
Westchester Creek	0.25	0.60	N/A	N/A
Western Long Island Sound	N/A	N/A	N/A	N/A

* Values shown correspond to storm sizes required to cause a Waterbody Advisory for secondary-contact recreation as a result of CSO discharges. Storms are defined as periods with fewer than 12 consecutive rainless hours. “N/A” means that no analyzed storm condition caused an advisory. Insufficient information is available for storms in excess of 3.5 inches.
** Values for these waterbodies have been updated as of July 2018, based on revised Long Term Control Plan modeling.

Note. Rainfall in inches that triggers a CSO event for the region (New York City Department of Environmental Protection, 2020).

CSO trigger data is also needed in order to design construction and reduce costs. Areas that can handle more rainfall without triggering CSO events may only need minimal retrofits in order to achieve a permissible standard. Use of CSO trigger data would help reduce the overall cost to the city and allow for a variety of solutions than can enhance the performance and aesthetic of the systems. CSO trigger data would also be needed for wastewater treatment plants for timing and volume of released stormwater.

Finally, CSO trigger data is needed to estimate the total cost of the project city wide. There are many excluded areas from New York City including parks, areas with separated sewers, unimproved wetlands, and properties that already control rainwater through grey water systems and green infrastructure. Besides these areas not all areas of the city will need retrofitted systems because some rainwater will need to be the first to enter the system and can do so without restriction when engineered properly.

Without accurate CSO trigger data the entire cost of the project cannot accurately be estimated. Costs can be estimated by the square foot of the prescribed retrofit and by the overall cost per square foot of the property. Parks, unimproved areas, and the neighborhoods with separated sewer systems can be counted as not needing retrofits. The areas of the city that can handle a 4” storm in two hours are unknown and without taking the deduction an overall estimate is only speculation.

Storm Volume and Rate

The significance of a 2” per hour storm for 2 hours was conceived through weather data over the last 4 years where the 24-hour rainfall total did not exceed 4 inches and the rate was at 2” per hour or less for all storms during this period. Combining those two criteria would demonstrate that neither the rate nor the volume would overwhelm the system based on weather over the last four years. Rate and volume standards are debatable and should be researched in greater depth with anticipation of climate change and rising seas.

The purpose of the research was not to delineate rates and volumes that should be addressed but rather to demonstrate a feasibility of a concept both logistically and financially. Better storm criteria should be researched that can maximize system efficiency with minimal costs with much emphasis on the future. The primary reason for the CSO problem in New York and worldwide was the inability or refusal to plan systems for the future. It would be irresponsible to spend billions of dollars on a system that would be obsolete in a few decades rather than spend a little more and plan.

Technological Coordination

In order for the cisterns and blue roofs to work properly, the local water treatment facility would need to control when the excess stormwater can be released. To facilitate the release of water, a computer software system with a Wi-Fi or cellular connected release valves would need to be created and implemented. Cellular controls are used with message boards and other mechanical devices so creating valves or roof drains with cellular or Wi-Fi controls is feasible within the next few years. Computer programs could also be created to automatically manage the release valves and drains. The system would also need to communicate back to the command center the amount of water each property is holding.

The treatment center could release the water on a schedule based on volumes held by each property and CSO trigger data to optimize water releases and treatments. In the event of emergencies, the water could still be released, and the worst case would be a CSO event.

Requiring Property Owners to Manage Runoff

Property owners are responsible for maintenance, upkeep, safety, and snow removal so it is not unfair to ask them to also control runoff. A city amendment to mandate property control runoff would greatly impact CSO events and provide a cleaner and safer environment for all residents.

Paying for the Project

It is proposed that New York City should require property owners to manage the property's stormwater runoff until the wastewater treatment plant is ready for the property to release the excess held water. Though costs are reasonable, costs still are significant and placing the direct immediate burden on the property owners would be too great and highly unpopular. Federal grants, state grants, and bonded funds paid for with increased sewer charges could be placed in a construction fund to finance projects. Though federal and state grants may help with the costs, most of the funding would ultimately be sourced from New York City sewer fees.

The Clean Water Project is funded by a Clean Water Project Charge (CWPC) formerly known as the Special Sewer Service Charge. This charge, established by the District Board in 2007, is a dedicated fund created for the repayment of debt associated with the Clean Water Project. The CWPC is based on metered water consumption and is charged to MDC customers who have both water and sewer services. It is a dedicated fund with the sole purpose of funding the more than $2 billion needed for the Clean Water Project.

For 2018, the charge is $3.80 per CCF (a CCF is 100 cubic feet of water or 748 gallons). A typical household uses about 8.3 CCFs per month which costs approximately $31.54 per month. The CWPC is projected to fluctuate annually, depending on the level of our repayment obligations of the bonds and loans financing the Clean Water Project. When the bond indebtedness is paid in full, the CWPC will be eliminated.

The MDC actively pursues funding through available state and federal grants as well as low-interest loans from the state, which are currently available to help fund the Clean Water Project. The balance of the funding originates from the issuance and sale of bonds by the MDC.

For Phase I of the Clean Water Project, the MDC was able to fund 23% of the $800 million authorized by referendum through federal stimulus and state grants, and 35% through low-interest state loans, with the remaining 42% funded through bonds issued by the MDC (Metropolitan District Commission, 2020). Maximizing state grants for funding the project lessens the financial impact on customers. (Metropolitan District Commission, 2020). The governmental agencies responsible for water quality have been able to find ways to pay for clean water projects without unreasonable financial burdens on the public.

Public-private partnerships (PPPs) have successfully been used for water and transportation infrastructure projects. A PPP could successfully engineer, fund, and manage a large-scale CSO mitigation project. The PPP would fund the initial engineering and construction while generating revenues from added charges on sewer bills. The Thames Tideway Catchment Project is an example of a Private Public Partnership that is responsible for design, construction and maintenance of the massive Six Billion Dollar project in London.

Though the Thames Tideway project handles CSO pollution through a centralized project, the PPP model could be used for engineering, project management, and funding of many smaller projects in New York City. Investors in the Thames Tideway Catchment face low risks with their utility investment as funds are raised through a special charge on sewage bills. Construction could be hired by the property owner paid for by funds from the project giving property owners choices in materials and design that would be best for their property and an opportunity to invest in other green infrastructure at a reduced cost while the construction team is there.

Additional Considerations

Though thorough estimates and quality models were created for this project, the actual design and costs of the design were not included in this project. City wide and local engineering will be needed to optimize construction and minimize costs. The generalization of the estimates leaves room for cost savings and increased performance through better engineering. Not all costs were detailed in the estimates due to unknown factors. These factors include maintenance costs differences and the potential for excessive contaminated soils. Finally, roads and streets were not estimated in this project as the costs and design would be better covered in public works and transportation budgets.

Engineering

Engineering and design costs will be significant due to the diversity of properties and overall area of New York City. Much if not all the cost should be offset with increased construction efficiency and lower material costs due to the engineering efforts. For example, this project replaced 100% of the hardscape on the property whereas possibly only 25% of the hardscape would need to be replaced to get the desired effects. Concrete sidewalks are pitched to possibly only lower elevated portions of the sidewalk could be replaced.

Engineering of grey water reuse systems could potentially save the costs of water supply while at the same time reduce the total amount of water going into the combined sewer system, which saves treatment costs. Engineering would also identify areas that would need less retrofitting in order to meet goals. For example, some areas are triggered at 1.0” rainfall instead of 0.1” rainfall. The areas triggered at 1” rainfall may need 50% less surface area control than others.

Excessive Contaminated Soils

Soils can be contaminated with pesticides, petroleum, PCBs, and many other dangerous chemicals. The health and environmental risks of polluted and contaminated soils vary depending on the pollutants and concentrations. While pollution entering the drainage and sewer systems is of concern in this project, it is unknown where and what concentration pollutants will be found during excavations. When polluted or contaminated are excavated they must be disposed of properly.

The costs involved could range from the normal disposal cost to many times greater. A disposal cost of $20.00 per ton was estimated in order to account for some contaminated soils, but it is possible that very little would be encountered meaning there are extra costs in the estimate or much more at greater concentration levels could be encountered meaning there is not enough money in the estimate.

City, State, and Interstate Roads

Not included in this project are vehicular travel ways which make up approximately 25% of the city. Constructed roads can sheet drain, use the drainage system, or drain into the combined sewer system. Ideally the roads that drain into the combined sewer system should be reconstructed with permeable pavements when time comes to repave the streets.

One estimate in Albany, Ohio demonstrated that asphalt pavement with traditional drainage cost the same as permeable pavers on a city street and over time permeable pavements are cheaper as asphalt only lasts 5 to 10 years and permeable pavers last twice as long. Since New York City already has a drainage system in place permeable pavement road reconstruction would be more expensive and, in some areas, getting full pavement sections may be difficult due to underground utilities.

As infrastructure spending is being increased throughout the nation, city streets should be designed to shed minimal if any excess rainwater enters into combined sewer systems. The costs and schedules of reconstruction should be incorporated in public works and transportation budgets as roads are owned by public agencies and they do not produce raw sewage.

Variances in Systems

Permeable Pavers

Permeable pavers and the installation have many differences including brand, application, excavation depth, geotextile fabric, liners, edge restraints, base aggregate, fine aggregate, supplemental supports, and more. This project used a simple but proven and effective method for the models and estimates. Permeable pavers are manufactured in many colors and shapes and they can be installed in a variety of patterns. The pavers add an aesthetic value to the property which can be customized by individual property owners or fit a neighborhood theme. Price adjustments would need to be accounted for when systems are varied but the differences are not too great.

Permeable pavers are versatile as the base can be adjusted in depth to avoid underground utilities while still perform as designed. The pavers are small and even can be cut to form around signs, poles, boxes, and other obstructions in the walkway. When underground repairs are needed and can be easily removed and replaced unlike concrete or asphalt. Each perform well in all weather and can even be constructed in temperatures below 40” F without heating and curing unlike concrete. Permeable pavers offer aesthetics and constructability advantages that provide extra value to the properties and the neighborhoods.

Blue Roof

Blue roofs also can vary greatly in materials, construction, and design. Blue roof construction can use a variety of aggregates, check dams, and modular units to hold rainwater. Some construction simply uses the top or the roof as a shallow pool with restrictors on drains and others may drain higher elevation roofs into a lower roof that is deeper and can hold a larger volume of water. Crushed stone, lightweight aggregates, and other materials can be used as ballast that can be walked on. Captured water from blue roofs can be used as a grey water source with proper filtration.

Cisterns

Cisterns can be installed on the rooftop, in the building itself, outside at ground level or buried below grade. Cisterns are ideal when complemented with a filtration system that allows for non-potable use. Rectangular storage tanks are available that can take up less room in buildings and smaller units can be connected together to fit through existing entryways for retrofits.

Green Roof

Green roofs may have the most variance in construction methods varying greatly with price. Green roofs can be constructed with new components all the way to the roof deck including insulation, membrane barrier, fabric, drainage layers, filter layers, aggregates, growing soil, and a variety of vegetation. Alternatively, pre-grown modular green roofs can be laid on an existing roof. Materials can vary in the amount used, what is used, and even in the order of layers. Green roofs can grow herbs, fruits, vegetables, ornamental plants, grasses ant, etc. With enough drainage material, almost any green roof can be used to prevent CSO overflows. Green roofs can add cooling and other environmental benefits and are excellent environmental options due to versatility even though the costs can be substantially higher than blue roofs.

Maintenance

Permeable pavers require annual or semiannual maintenance including inspections, vacuuming, and replenishing the joint aggregates. Though permeable pavements require special maintenance, the overall maintenance is comparable or even less than concrete and asphalt pavements over 20 to 30 years (water management). Asphalt pavements require crack sealing, surface replacement, and patching while concrete pavements require surface replacements, leveling, and crack repairs. When considering maintenance costs overall, permeable pavers can have a price advantage over the lifespan of the hardscape.

Blue roof maintenance includes checking drains for clogs and looking out for algae growth or insect populations that may like to reside in standing water. If roof repairs are needed the blue roof materials would need to be removed or set aside for the repairs to be made, then replaced. Green roof maintenance would include all blue roof maintenance along with plant maintenance. Invasive or unwanted plants would need removed while some plants may need trimmed or harvested.

Weather Conditions

Weather conditions at the time of testing were mild for January with high temperatures in the mid-40s. When above freezing, the effects of the weather on the performance will be minimal. Higher temperatures and higher winds can aid in evaporation. Green roofs especially can perform better in warmer conditions as plants will use the water to grow and have greater surface area for evaporation. Blue roofs also have good evaporation performance when the water is exposed to the sun and wind.

The question of snow and ice performance in the winter needs to be addressed. In the Northeastern United States most roofs are built to withstand at least a 3' snow load which can happen from time to time. Snowfall can actually benefit the drainage systems as the snow melts off roofs slowly allowing water to enter the drainage system moderately. Even if unusually fast melting occurred, blue and green roofs should perform as normal, holding the water until the time of release. Rain events with quick freezes behind them could potentially freeze excess water on the roof however it would eventually melt like snow does and slowly enter the drainage system.

Permeable pavements will usually be shoveled or plowed sometimes with piles of snow on the pavements. If snow piles were large enough it is possible that rapid melting could send some water from the melting snow to the drainage system. What went into the drainage system would be minimal and should be at a slower rate because snow melts quickly. The worst-case scenario for permeable pavers would be for significant freezing rain followed by significant rain where the joints would be filled with ice and the rain was not melting the ice. In such a case the system might fail. One method to combat slippery surfaces is to pretreat walkways with calcium chloride, salt, or a brine liquid. Pretreatment in such a case could significantly increase the performance of permeable pavers in icy conditions.

The effects of melting chemicals rot concrete pavements and bridges throughout the North East. Because of the joints between permeable pavers they perform better in freeze thaw cycles than concrete. In northern climates, most pavers have a design needed to withstand salt and other melting chemicals better than concrete. The one material used for traction that should be kept off permeable pavers is sand. Sand does not have melting properties but often it is mixed with salt and used as a melting and traction combination. The sand would find a way into the paver joint requiring increased maintenance and reduced performance.

Innovation

As demands for green and blue infrastructure increase, technology and innovation will make it possible for improved performance and decreased costs. Catchment implements, grey water systems, control systems, filtration systems, and installation machinery are just some of the innovations that have great potential for performance improvements and cost reductions. Belguard has created a paver installation machine that uses a machine po place the pavers and aggregate rather than labor for faster installation with lower costs. Some filtration systems can remove nearly all contamination from rainwater making it suitable for toilets, showers, sinks, and most non-potable uses. As demand rises new catchment implements may be designed and computerized citywide mobile control systems can be created to optimize the processing of held stormwater. Better and more available technologies can reduce the costs of capturing stormwater and speed construction.

Costs per Gallon and the Future

The overall property cost of 3.0 cents per gallon and a cistern cost of 3.3 cents per gallon combined with the overall cost of 1.4 cents per gallon for water delivery and sewer show that there is potential savings with a grey water reuse system. Moreover, the water sewer overall rate was only .2 cents per gallon in 1990. If the same rate of increase happens over the next 30 years, the effective rate will be 8.9 cents combined per gallon in 2050. That is an average increase in rate of 6.2% per year. In 13 years, the water sewer combined rate would be at 3.0 cents per gallon and at 15 years it would be at the initial cost of 3.3 cents per gallon for the cistern system.

This calculation does not consider the extra plumbing and filtration costs of the grey water system, which could cost more than the holding tanks. Additionally, this calculation would only be accurate if all the rainwater captured was being used. For properties with high non potable water use combined with a lower cost plumbing and filtration modification, a rainwater reuse system could save enough in water charges to pay for the entire system over the next 30 years or at least prove to be substantially cheaper than other methods of water retention.

The cost of installing a blue roof would be 2.6 cents per gallon over the next 30 years: .7 cents less than the cistern. The funding agencies would want to contribute the lower construction cost of the blue roof but if the blue roof money was used in conjunction with some of the property owners money the overall environmental result would be the same but there would be a tremendous cost savings potential for the property owner. So much so that the end savings benefit could be greater than the additional conservation fees and owner costs combined.

Further Study

Grey Water System Technology and Payback

Some research has been done regarding grey water systems that use rainwater. More research is needed in this area especially in New York City. More cost and cost recovery models could be used in order to calculate the benefit of reusing rainwater as grey water. Filtration systems should be studied to find the feasibility and effectiveness of treating the water on site. Local codes and laws regarding water use would also need to be researched. As water and sewer costs continue to rise, reuse of rainwater could be one of the most cost-effective options of controlling runoff.

Costs and Method for Retrofitting City, State, and Interstate Highways

Since roads and highways are owned by government agencies new standards need to be developed to retrofit roads and their drainage systems. Federal highways are constantly updated to new federal standards by construction retrofits. Common safety retrofits include improved guardrail systems, taller bridge parapets, improved bridge joints, larger jersey barriers, and improved sight lines. As safety improvement projects are designed for highways, and drainage that ends up in combined sewers should be redirected or reworked to make sure the highway drainage is responsibly handled. Most city streets would need to be retrofitted or redirected when the street is due for repaving. Studies need to be conducted in order to find the best and least expensive methods for handling city street runoff.

Costs of Doing Nothing

New York City is sitting on top of old sewers and drainage systems that are deteriorating. Unchecked rainwater entering the system causes stress on the existing system which sooner or later will inevitably fail. When sewer systems fail sewage can back up into buildings and houses causing substantial damage. Broken underground pipes can cause sinkholes, road damage and even break the foundation of buildings. The more water that can be kept out of the combined sewer system will extend the life of the sewer system. Additionally, lower consistent flows are much easier on the sewer system than large amounts.

More research is needed in order to find what the actual cost of doing nothing is. Questions need to be answered include the following questions. When and what rate will the current sewage and drainage infrastructure catastrophically fail? What will be the repair costs? What are the health costs to the people of New York City? How do the health problems correlate with lost productivity? What are the lost tourism costs? What are the reduced recreation costs? What are the current mitigation and cleanup costs? What are the lost fishing and shell fishing costs? What are the costs to New York's neighbors like Connecticut and New Jersey? The costs of doing nothing are obviously great and more research is needed to quantify the actual costs.

NYC Green New Deal

In April of 2019 New York City's Green New Deal was announced which is aimed to combat global warming. It has $14 billion in investment funding and enacted legislation geared to reduce by 30% emissions no later than 2030. New York City's Green New Deal will create tens of thousands of construction jobs and spark economic growth in the city (NYC Office of the Mayor, 2019). This Green New Deal demonstrated NYC's commitment to the environment and the willingness to invest in clean infrastructure.

Ten of New York City's Green New Deal Highlights

1. A goal to be carbon neutrality by 2050, and 100% clean electricity.
2. New York City will require buildings of 25,000 square feet or more to make lower emissions through efficiency upgrades or pay hefty fines
3. NYC will not permit all-glass facades in new construction unless they meet strict guidelines.
4. NYC has a goal of powering city governmental organizations with renewable electricity within five years and the rest of the city by 2030.
5. NYC will mandate the recycling of organics citywide and commit to a carbon neutral city fleet by 2040
6. With One NYC, the city commits to following the UN's Sustainable Development Goals and modify city planning as needed to comply.
7. NYC has developed a $20 billion plan to address threats of coastal storms, elevating seas levels, excessive heat, and increased rain, and snow with many projects and programs.

8. NYC will improve the subway system and expand the bussing system with faster transit times and dedicated travel ways.
9. New York will create People Priority Zones that will increase safety, reduce congestion, and improve air quality starting in Lower Manhattan.
10. The City will guarantee health care for every New Yorker, regardless of immigration status or the ability to pay (NYC Office of the Mayor, 2019).

New York City's New Green Deal complete with funding and legislation is pushing New York City to take on environmental and social problems with a plan that addresses both. Retrofitting buildings in New York City to reduce or eliminate CSO events fits within the Green New Deal conceptually requiring buildings to comply and provide funding. CSO preventing infrastructure would likely also begin within certain regions of the city and spreading to the rest of the city after similar to People Priority Zones. CSO retrofits would help meet the city's goal of providing good jobs and healthcare for New Yorkers. Most importantly, elimination CSO events would help save the environment and make New York City a safer and healthier city.

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APPENDIX A:

APPENDIX B:

APPENDIX C:

APPENDIX D:

APPENDIX A:

IRB EXEMPTION

Institutional Review Board (IRB)
For the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

Protocol Number: 03982-2020 **Responsible Researcher:** Erich Carlton

Supervising Faculty: Dr. Gerald Merwin

Project Title: *An Analysis of Localized Drainage Implements for NYC and other Urban Areas with Combined Sewer Systems.*

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **Exempt** from Institutional Review Board (IRB) oversight under Exemption **Category 4**. Your research study may begin immediately. If the nature of the research project changes such that exemption criteria may no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research.

ADDITIONAL COMMENTS:

- *Upon completion of this research study all data (email correspondence, survey data, participant lists, etc.) must be securely maintained (locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a minimum of 3 years.*

☒ ***If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.***

Elizabeth Ann Olphie *01.10.2020*
Elizabeth Ann Olphie, IRB Administrator

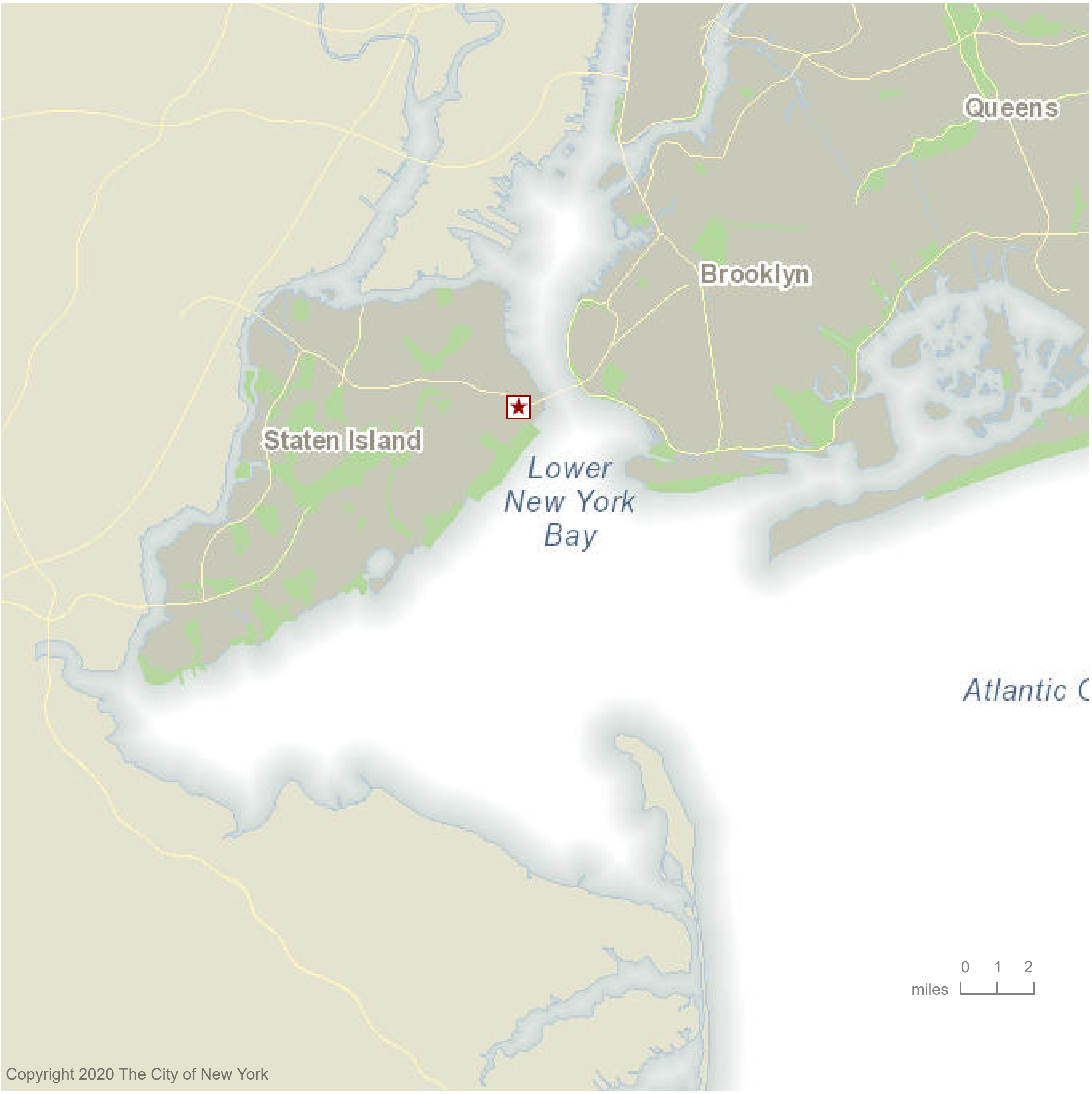
Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-253-2947.

Revised: 06.02.16

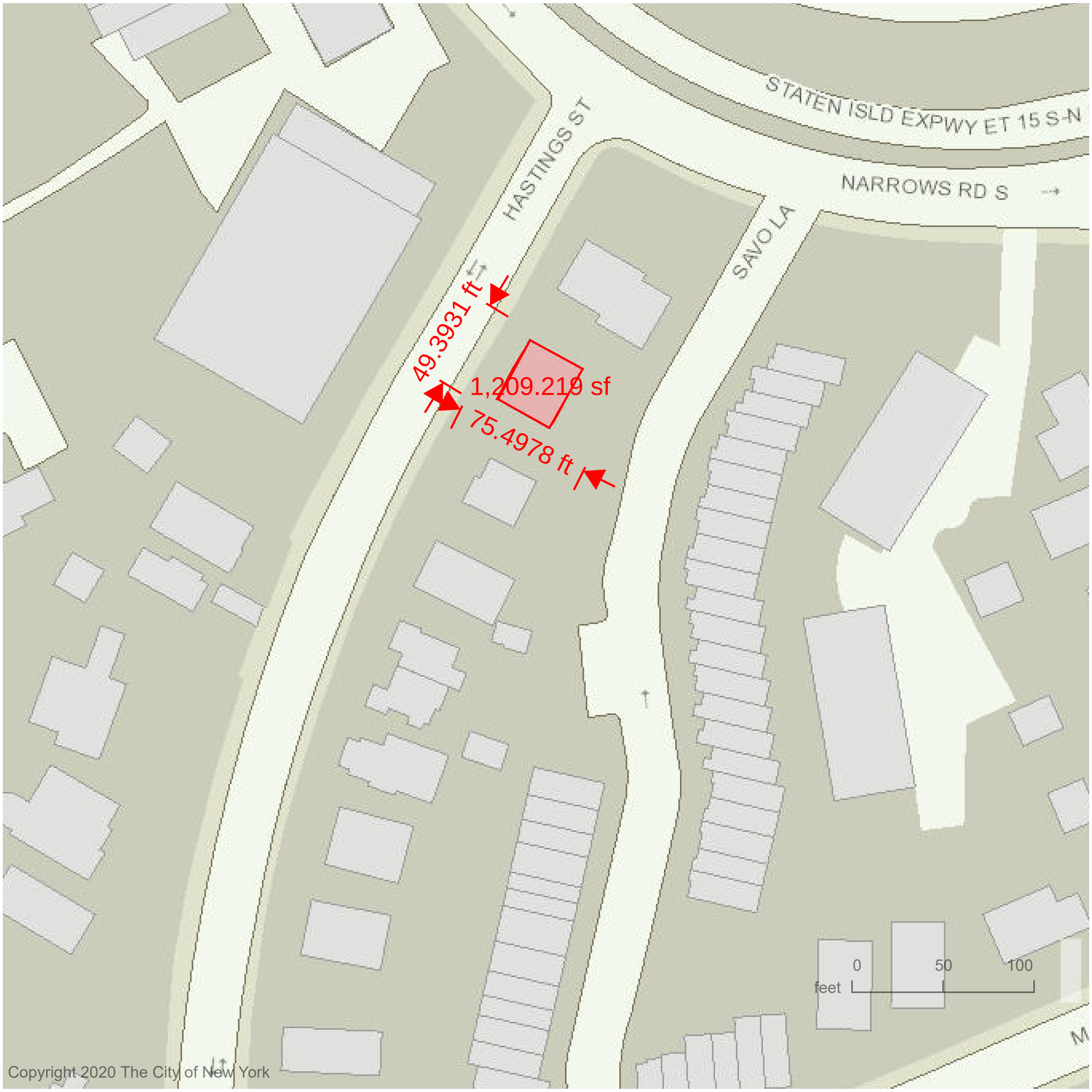
APPENDIX B:

Estimates of Case Studies and Street Percentages

11 Hastings st Staten Island



11 Hastings Street Staten



11 HASTINGS STREET, STATEN ISLAND 10305

- Building & Property Information

Borough: Staten Island **Block:** 3102 **Lot:** 26
Police Precinct: 122
Owner: ROBERT W DAVIS JR

Address: 11 HASTINGS STREET, STATEN ISLAND 10305
Lot Area: 3675 sf
Lot Frontage: 49' **Lot Depth:** 75
Year Built: 1930
Number of Buildings: 1
Number of Floors: 1.5
Gross Floor Area: 1,710 sf (estimated)
Residential Units: 1 **Total # of Units:** 1
Land Use: One and Two Family Buildings
Zoning: R1-2
Commercial Overlay:
Zoning Map #: 27C

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 27C

DOF Digital Tax Map

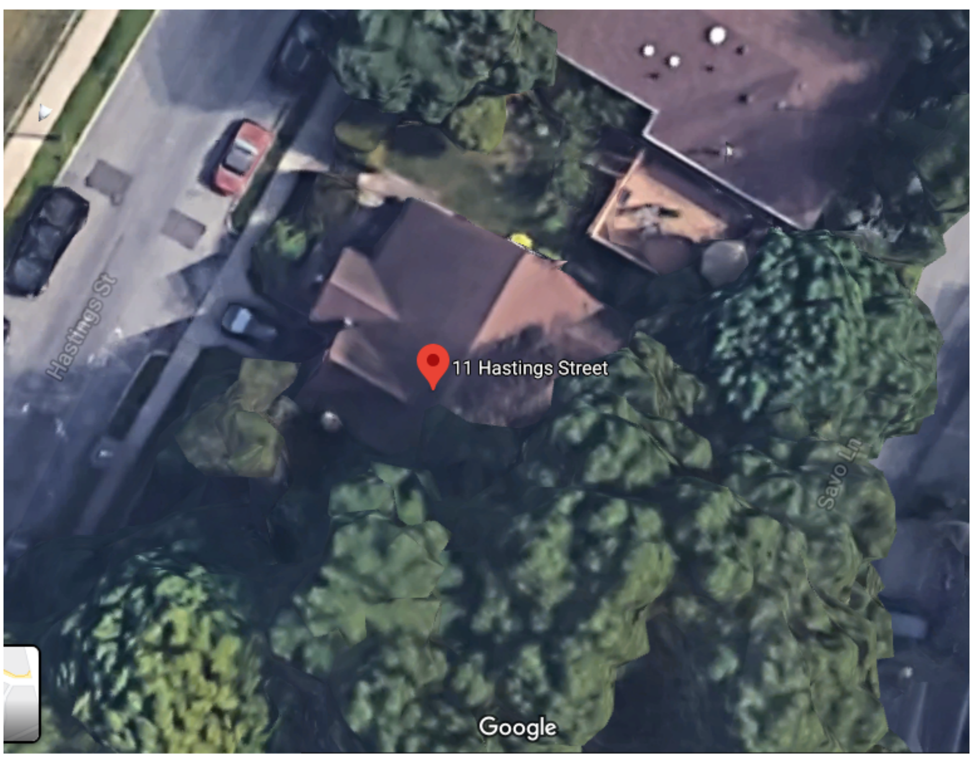
DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


Google
Image capture:


Hastings St
11 Hastings Street
Savo Ln
Google

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 11 Hastings Street Staten Island
2 Floors .1209 SF Roof Main Building. 500 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -500 SF

Total Footprint area 3675 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	4.00	46.53	186.12
	Labor Foreman	1	4.00	48.53	194.12
	Operator	1	4.00	90.69	362.76
	Teamster	1	4.00	41.19	164.76
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				907.76
2	Health		8.00	26.45	211.60
	Welfare		4.00	28.50	114.00
	and		4.00	46.72	186.88
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	453.88
4	20% of (Items 1 + 2 + 3)				374.82
5	Total (Items 1 thru 4)				2248.94

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	20.00	20.00	400.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			400.00
Less Discounts			0.00
Total			400.00
Additional % = 15 %			60.00
Total			460.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	4.00	123.10	492.40
Pick Up		1	4.00	20.54	82.16
Tri Axle Dump		1	4.00	80.88	323.52
Light Tower		1	4.00	10.13	40.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					938.60

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $3,647.54
ConnDOT		Total to Date $3,647.54

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 11 Hastings Street Staten Island

2 Floors .1209 SF Roof Main Building. 500 SF Sidewalk and hardscape
1' deeper for roof

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	2	8.00	41.19	329.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1815.52
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		32.00	46.72	1495.04
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	907.76
4	20% of (Items 1 + 2 + 3)				1104.14
5	Total (Items 1 thru 4)				6624.86

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	85.00	20.00	1700.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			1700.00
Less Discounts			0.00
Total			1700.00
Additional % = 15 %			255.00
Total			1955.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		2	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1877.20

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$10,457.06
ConnDOT				Total to Date	$14,104.60

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 11 Hastings Street Staten Island
2 Floors .1209 SF Roof Main Building. 500 SF Sidewalk and hardscape

Install geotextile fabric and 85 Tons stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	4.00	46.53	186.12
	Labor Foreman	1	4.00	48.53	194.12
	Operator	1	4.00	90.69	362.76
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				743.00
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	371.50
4	20% of (Items 1 + 2 + 3)				353.14
5	Total (Items 1 thru 4)				2118.84

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	85.00	50.00	4250.00
Stone Dust Tons (d)	4.00	50.00	200.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			4800.00
Less Discounts			0.00
Total			4800.00
Additional % = 15 %			720.00
Total			5520.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	4.00	123.10	492.40
Pick Up		1	4.00	20.54	82.16
Light Tower		1	4.00	10.13	40.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					615.08

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $8,253.92
ConnDOT				Total to Date $22,358.52

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

PROPERTY: 11 Hastings Street Staten Island
2 Floors .1209 SF Roof Main Building. 500 SF Sidewalk and hardscape

Install 500 SF permeable pavers

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	8.00	51.97	415.76
	Mason Foreman	1	8.00	53.97	431.76
	Laborer	1	8.00	46.53	372.24
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1219.76
2	Health		8.00	26.45	211.60
	Welfare		16.00	33.71	539.36
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	609.88
4	20% of (Items 1 + 2 + 3)				516.12
5	Total (Items 1 thru 4)				3096.72

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	520.00	5.00	2600.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			2600.00
Less Discounts			0.00
Total			2600.00
Additional % = 15 %			390.00
Total			2990.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	8.00	6.50	52.00
Pick Up		1	8.00	20.54	164.32
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					297.36

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $6,384.08
ConnDOT		Total to Date $28,742.60

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

Property 11 Hastings Street Staten Island
2 Floors .1209 SF Roof Main Building. 500 SF Sidewalk and hardscape
no roof work

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				0.00
2 Health				0.00
Welfare				0.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	0.00
4 20% of (Items 1 + 2 + 3)				0.00
5 Total (Items 1 thru 4)				0.00

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF		4.00	0.00
LWT Aggregate CY		70.00	0.00
geotextile		350.00	0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			0.00
Less Discounts			0.00
Total			0.00
Additional % = 15 %			0.00
Total			0.00

EQUIPMENT

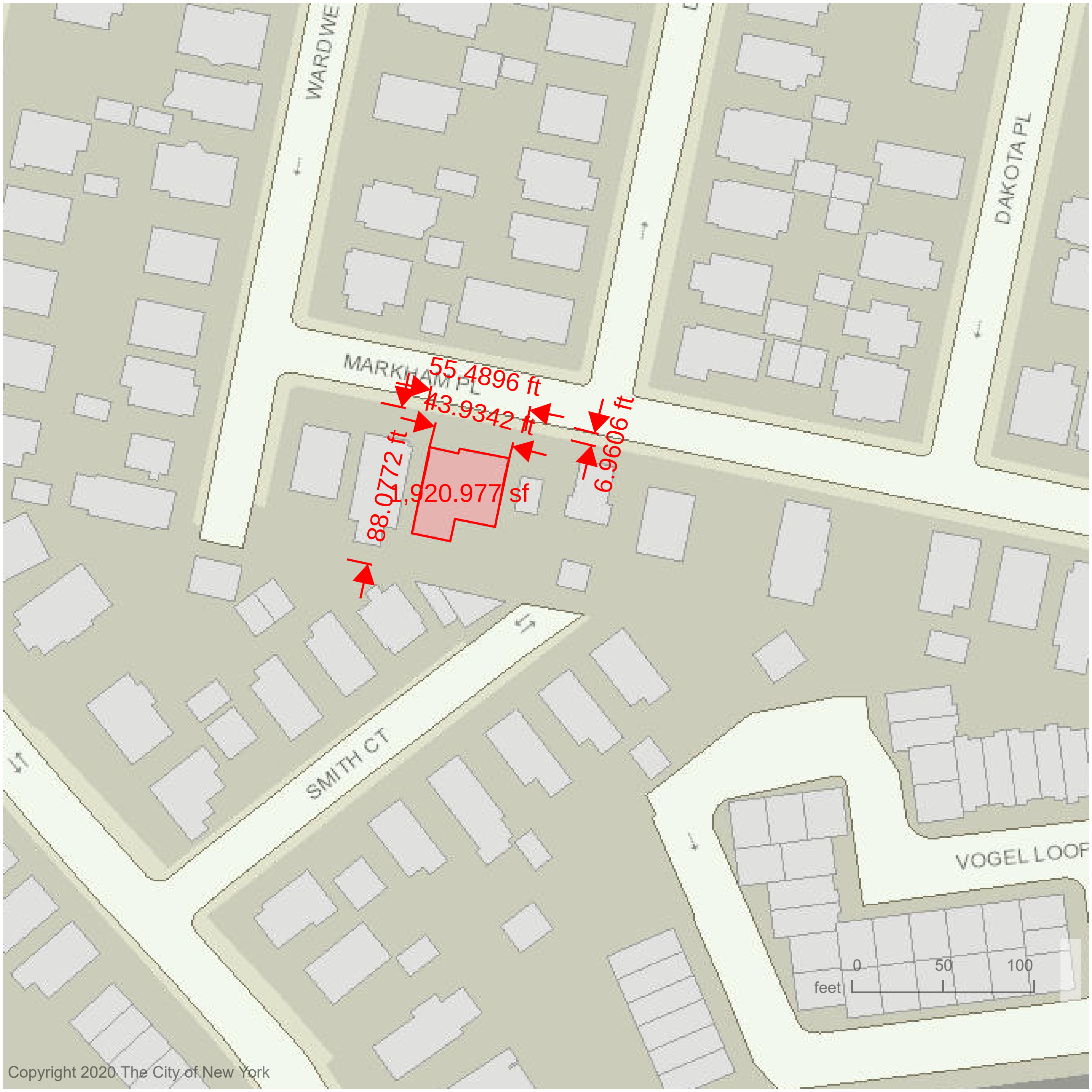
Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1		574.38	0.00
Cat 322 RT excavator		1		123.10	0.00
Pick Up		1		20.54	0.00
5 CY concrete bucket		1		4.57	0.00
Light Tower		2		10.13	0.00
					0.00
					0.00
gutter sub		1	1.00	#######	1200.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1200.00

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $1,200.00 Total to Date $29,942.60
ConnDOT				

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

52 Markham Place Staten Island

52 Markham Place Staten Island



52 MARKHAM PLACE, STATEN ISLAND 10314

- Building & Property Information

Borough: Staten Island **Block:** 457 **Lot:** 84
Police Precinct: 121
Owner: MIRSAD GOGA, TRUSTEE

Address: 52 MARKHAM PLACE, STATEN ISLAND 10314
Lot Area: 4840 sf
Lot Frontage: 55' **Lot Depth:** 88
Year Built: 1955
Number of Buildings: 1
Number of Floors: 2
Gross Floor Area: 2,706 sf (estimated)
Residential Units: 2 **Total # of Units:** 2
Land Use: One and Two Family Buildings
Zoning: R3X
Commercial Overlay:
Zoning Map #: 21B

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 21B

DOF Digital Tax Map

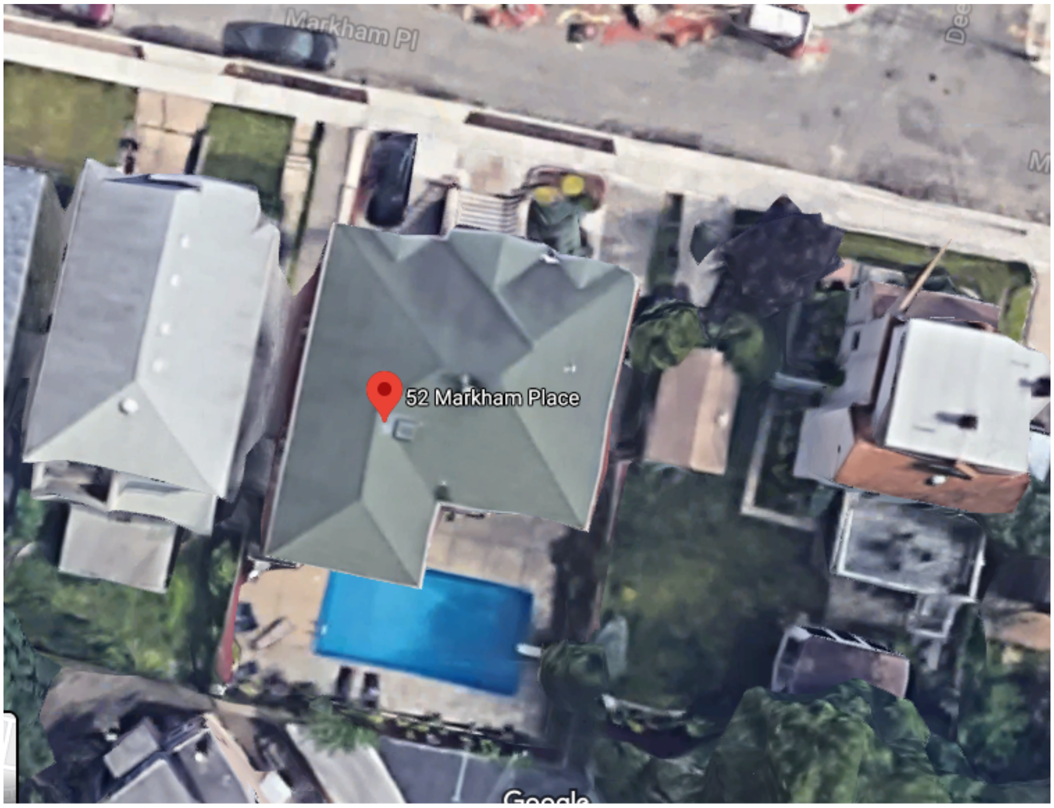
DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


Google
Image capture: Aug 2018 © 2020 Google


Markham Pl
52 Markham Place

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 52 Markham Ave

2 Floors .1920 SF Roof Main Building. 1050 SF Sidewalk and hardscape 450 sf pool 1150 sf around pool

Demo and dispose existing concrete sidewalk or similar ground surfaces 1050 SF

Total Footprint area 5225 sf

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	1	8.00	41.19	329.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1815.52
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and		8.00	46.72	373.76
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	907.76
4	20% of (Items 1 + 2 + 3)				749.65
5	Total (Items 1 thru 4)				4497.89

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	40.00	20.00	800.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			800.00
Less Discounts			0.00
Total			800.00
Additional % = 15 %			120.00
Total			920.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1877.20

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $7,295.09
ConnDOT				Total to Date $7,295.09

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 52 Markham Ave
Demo and dispose existing earth 1050 SF
2 Floors .1920 SF Roof Main Building. 1050 SF Sidewalk and hardscape 450 sf pool 1150 sf around pool
1' deeper for roof

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
	Teamster	2	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3631.04
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		32.00	46.72	1495.04
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1815.52
4	20% of (Items 1 + 2 + 3)				1648.80
5	Total (Items 1 thru 4)				9892.80

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	180.00	20.00	3600.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			3600.00
Less Discounts			0.00
Total			3600.00
Additional % = 15 %			540.00
Total			4140.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Tri Axle Dump		1	16.00	80.88	1294.08
Light Tower		2	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3754.40

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total:	$17,787.20
ConnDOT				Total to Date	$25,082.29

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		(302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 52 Markham Ave

2 Floors .1920 SF Roof Main Building. 1050 SF Sidewalk and hardscape 450 sf pool 1150 sf around pool

Install geotextile fabric and 180 Tons stone

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	8.00	46.53	372.24
Labor Foreman	1	8.00	48.53	388.24
Operator	1	8.00	90.69	725.52
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				1486.00
2 Health		16.00	26.45	423.20
Welfare		8.00	28.50	228.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	743.00
4 20% of (Items 1 + 2 + 3)				576.04
5 Total (Items 1 thru 4)				3456.24

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	180.00	50.00	9000.00
Stone Dust Tons (d)	8.00	50.00	400.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			9750.00
Less Discounts			0.00
Total			9750.00
Additional % = 15 %			1462.50
Total			11212.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1230.16

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total:	$15,898.90
ConnDOT				Total to Date	$40,981.19

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 52 Markham Ave

2 Floors .1920 SF Roof Main Building. 1050 SF Sidewalk and hardscape 450 sf pool 1150 sf around pool

Install 1050 SF permeable pavers

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	16.00	51.97	831.52
	Mason Foreman	1	16.00	53.97	863.52
	Laborer	1	16.00	46.53	744.48
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2439.52
2	Health		16.00	26.45	423.20
	Welfare		32.00	33.71	1078.72
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1219.76
4	20% of (Items 1 + 2 + 3)				1032.24
5	Total (Items 1 thru 4)				6193.44

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	1100.00	5.00	5500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			5500.00
Less Discounts			0.00
Total			5500.00
Additional % = 15 %			825.00
Total			6325.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	16.00	6.50	104.00
Pick Up		1	16.00	20.54	328.64
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					594.72

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$13,113.16
ConnDOT				Total to Date	$54,094.35

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 52 Markham Ave
2 Floors .1920 SF Roof Main Building. 1050 SF Sidewalk and hardscape 450 sf pool 1150 sf around pool
no roof work

6.20 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				0.00
2 Health				0.00
Welfare				0.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	0.00
4 20% of (Items 1 + 2 + 3)				0.00
5 Total (Items 1 thru 4)				0.00

MATERIAL

Description	Quantity	Unit Price	Amount
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			0.00
Less Discounts			0.00
Total			0.00
Additional % = 15 %			0.00
Total			0.00

EQUIPMENT

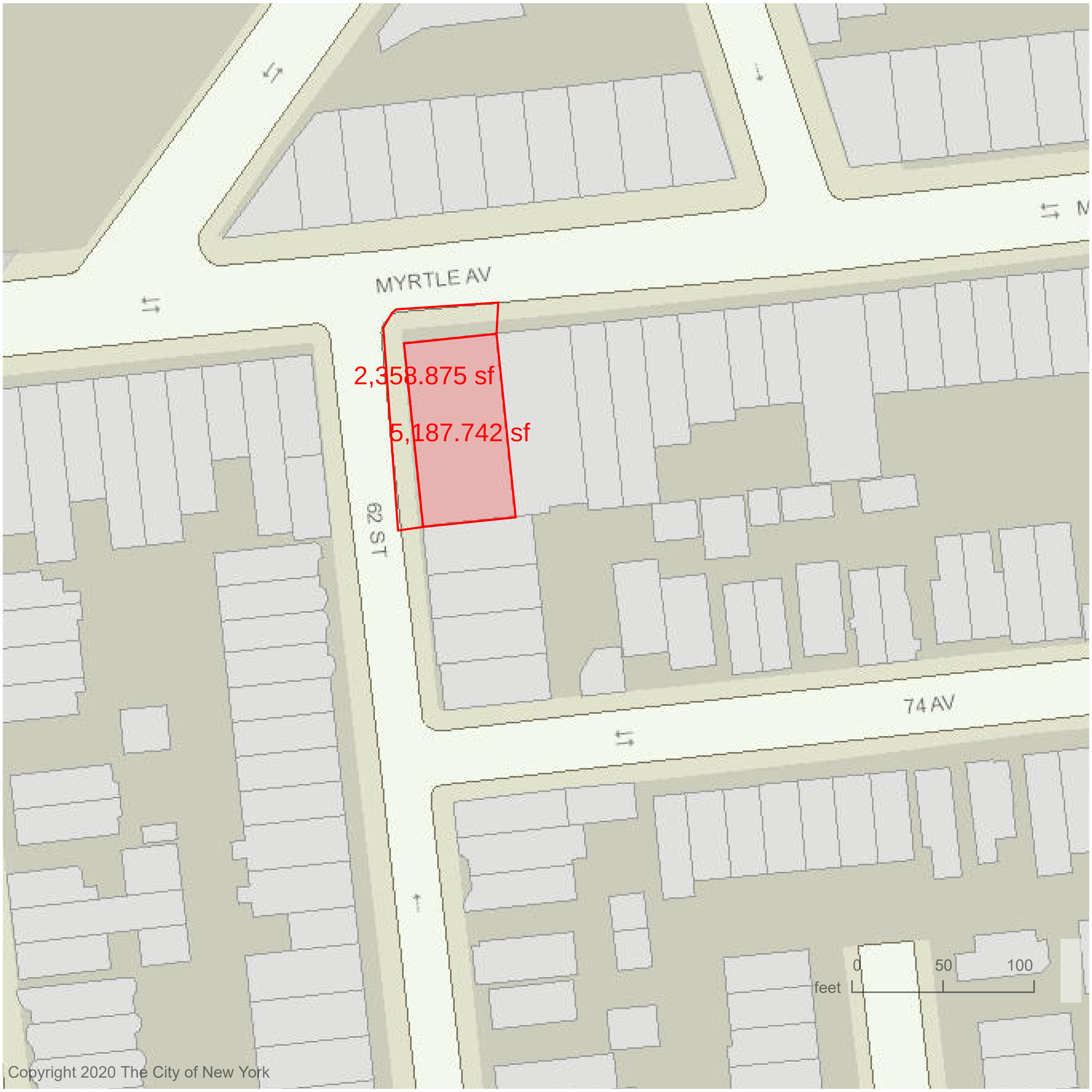
Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
gutter sub		1	1.00	#######	1200.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1200.00

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $1,200.00 Total to Date $55,294.35

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

62-02 Myrtle Ave Queens

62-02 Myrtle Avenue Queens



62-02 MYRTLE AVENUE, Ridgewood 11385

- Building & Property Information

Borough: Queens **Block:** 3593 **Lot:** 1
Police Precinct: 104
Owner: 62-02 MYRTLE AVENUE LLC

Address: 62-02 MYRTLE AVENUE, Ridgewood 11385
Lot Area: 9030 sf
Lot Frontage: 90' **Lot Depth:** 100
Year Built: 1931
Number of Buildings: 2
Number of Floors: 2
Gross Floor Area: 11,400 sf (estimated)
Residential Units: 6 **Total # of Units:** 7
Land Use: Mixed Residential and Commercial Buildings
Zoning: R5D
Commercial Overlay: C1-3
Zoning Map #: 13D

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 13D

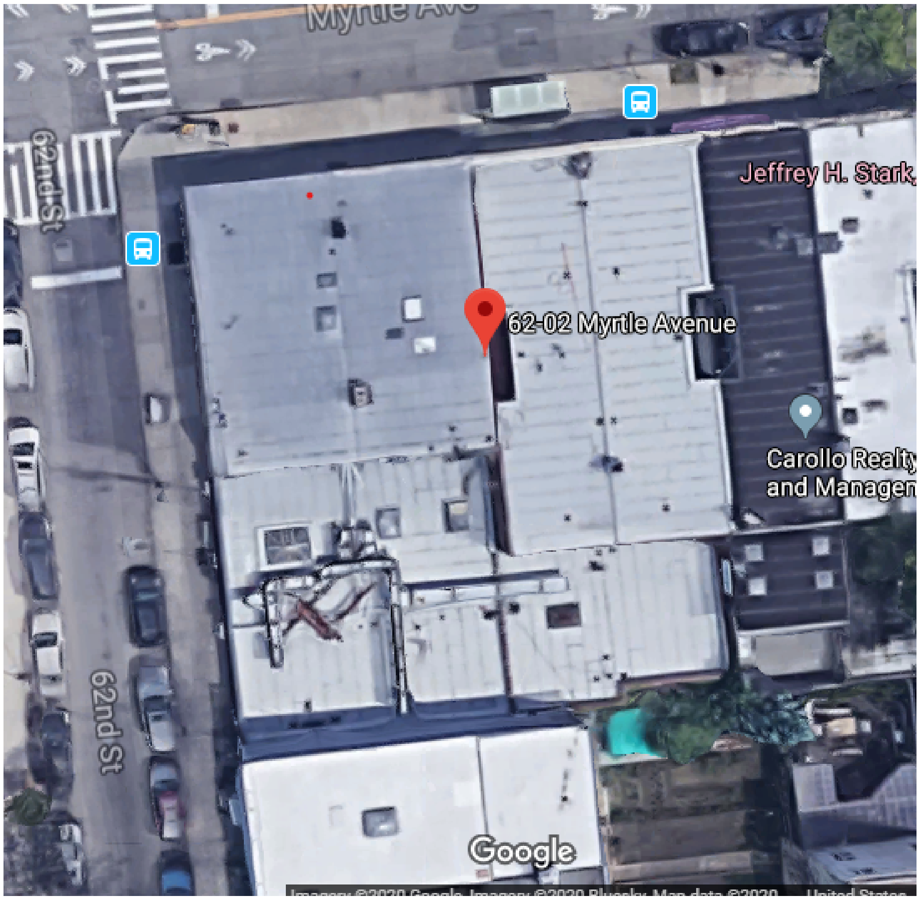
DOF Digital Tax Map

DOHMH Rat Information Portal

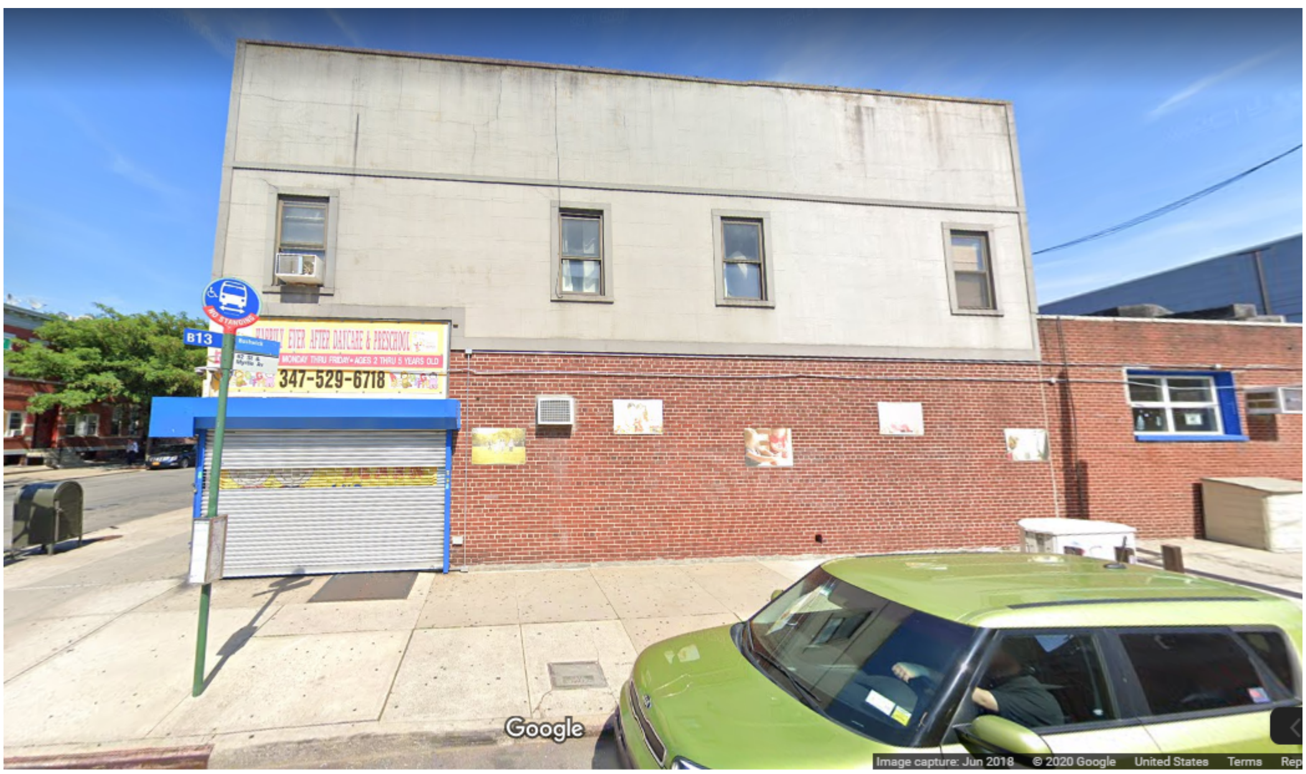
Poll Site Locator

School & Zone Finder

Tax and Property Records


62-02 Myrtle Avenue
Jeffrey H. Stark
Carollo Realty
62nd St
62nd St
Google


HAPPILY EVER AFTER DAYCARE & PRESCHOOL
OPEN 7AM TO 7PM MONDAY THRU FRIDAY • AGES 2 THRU 5 YEARS OLD
347-529-6718
DAYCARE & PRESCHOOL
AGES 2-5 347-529-6718
MYRTLE AV
62 ST
Google
Image capture: Jul 2018 © 2020 Google


HAPPILY EVER AFTER DAYCARE & PRESCHOOL
MONDAY THRU FRIDAY • AGES 2 THRU 5 YEARS OLD
347-529-6718
B13
Google
Image capture: Jun 2018 © 2020 Google United States Terms

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

PROPERTY: 62-02 Myrtle st Brooklyn
2 Floors.5188 SF Roof Main Building. 2359 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -2359 SF

Total Footprint area 7547 sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
	Teamster	1	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3631.04
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		16.00	46.72	747.52
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1815.52
4	20% of (Items 1 + 2 + 3)				1499.30
5	Total (Items 1 thru 4)				8995.78

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	87.00	20.00	1740.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			1740.00
Less Discounts			0.00
Total			1740.00
Additional % = 15 %			261.00
Total			2001.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Tri Axle Dump		1	16.00	80.88	1294.08
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3754.40

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total:	$14,751.18
		Total to Date	$14,751.18

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 62-02 Myrtle st Brooklyn

2 Floors.5188 SF Roof Main Building. 2359 SF Sidewalk and hardscape

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
	Teamster	2	32.00	41.19	1318.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				4290.08
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		32.00	46.72	1495.04
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	2145.04
4	20% of (Items 1 + 2 + 3)				1846.51
5	Total (Items 1 thru 4)				11079.07

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	175.00	20.00	3500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			3500.00
Less Discounts			0.00
Total			3500.00
Additional % = 15 %			525.00
Total			4025.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Tri Axle Dump		1	16.00	80.88	1294.08
Light Tower		2	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3916.48

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$19,020.55
ConnDOT				Total to Date	$33,771.73

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 62-02 Myrtle st Brooklyn
2 Floors.5188 SF Roof Main Building. 2359 SF Sidewalk and hardscape

Install geotextile fabric and 164 Tons stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2972.00
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1486.00
4	20% of (Items 1 + 2 + 3)				1152.08
5	Total (Items 1 thru 4)				6912.48

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	175.00	50.00	8750.00
Stone Dust Tons (d)	20.00	50.00	1000.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			10100.00
Less Discounts			0.00
Total			10100.00
Additional % = 15 %			1515.00
Total			11615.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2460.32

Inspector: Date:	Contractor's Representative: Date:	Daily Total	
		Progress Total:	$20,987.80
ConnDOT		Total to Date	$54,759.53

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

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CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 62-02 Myrtle st Brooklyn
2 Floors.5188 SF Roof Main Building. 2359 SF Sidewalk and hardscape

Install 2359 SF permeable pavers

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

$9.45

LABOR

Class	No.	Total Hours	Rate	Amount
Mason	1	40.00	51.97	2078.80
Mason Foreman	1	40.00	53.97	2158.80
Laborer	1	40.00	46.53	1861.20
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				6098.80
2 Health		40.00	26.45	1058.00
Welfare		80.00	33.71	2696.80
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	3049.40
4 20% of (Items 1 + 2 + 3)				2580.60
5 Total (Items 1 thru 4)				15483.60

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	2500.00	5.00	12500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			12500.00
Less Discounts			0.00
Total			12500.00
Additional % = 15 %			1875.00
Total			14375.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	40.00	6.50	260.00
Pick Up		1	40.00	20.54	821.60
Light Tower		1	40.00	10.13	405.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1486.80

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $31,345.40 Total to Date $86,104.93

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

Property 62-02 Myrtle st Brooklyn
2 Floors.5188 SF Roof Main Building. 2359 SF Sidewalk and hardscape
2 layers geotextile fabric
Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY
130 cy 26 loads 1 load every 15 min

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	16.00	94.37	1509.92
	Labor Foreman	1	16.00	48.53	776.48
	Excavator operator	1	16.00	90.69	1451.04
	Laborer	3	16.00	46.53	744.48
	Oiler	1	16.00	70.29	1124.64
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				5606.56
2	Health		32.00	28.50	912.00
	Welfare		16.00	31.95	511.20
	and		96.00	26.45	2539.20
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	2803.28
4	20% of (Items 1 + 2 + 3)				2474.45
5	Total (Items 1 thru 4)				14846.69

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	300.00	4.00	1200.00
LWT Aggregate CY	130.00	70.00	9100.00
geotextile	2.00	350.00	700.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			11000.00
Less Discounts			0.00
Total			11000.00
Additional % = 15 %			1650.00
Total			12650.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	16.00	574.38	9190.08
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
5 CY concrete bucket		1	16.00	4.57	73.12
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					11723.52

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $39,220.21
ConnDOT				Total to Date $125,325.14

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 62-02 Myrtle st Brooklyn
2 Floors.5188 SF Roof Main Building. 2359 SF Sidewalk and hardscape

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Crane Operator	1	16.00	94.37	1509.92
Labor Foreman	1	16.00	48.53	776.48
Forklift Operator	1	16.00	90.69	1451.04
Laborer	3	16.00	46.53	744.48
Oiler	1	16.00	70.29	1124.64
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				5606.56
2 Health		32.00	28.50	912.00
Welfare		16.00	31.95	511.20
and		96.00	26.45	2539.20
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	2803.28
4 20% of (Items 1 + 2 + 3)				2474.45
5 Total (Items 1 thru 4)				14846.69

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	5200.00	24.00	124800.00
geotextile	2.00	350.00	700.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			125500.00
Less Discounts			0.00
Total			125500.00
Additional % = 15 %			18825.00
Total			144325.00

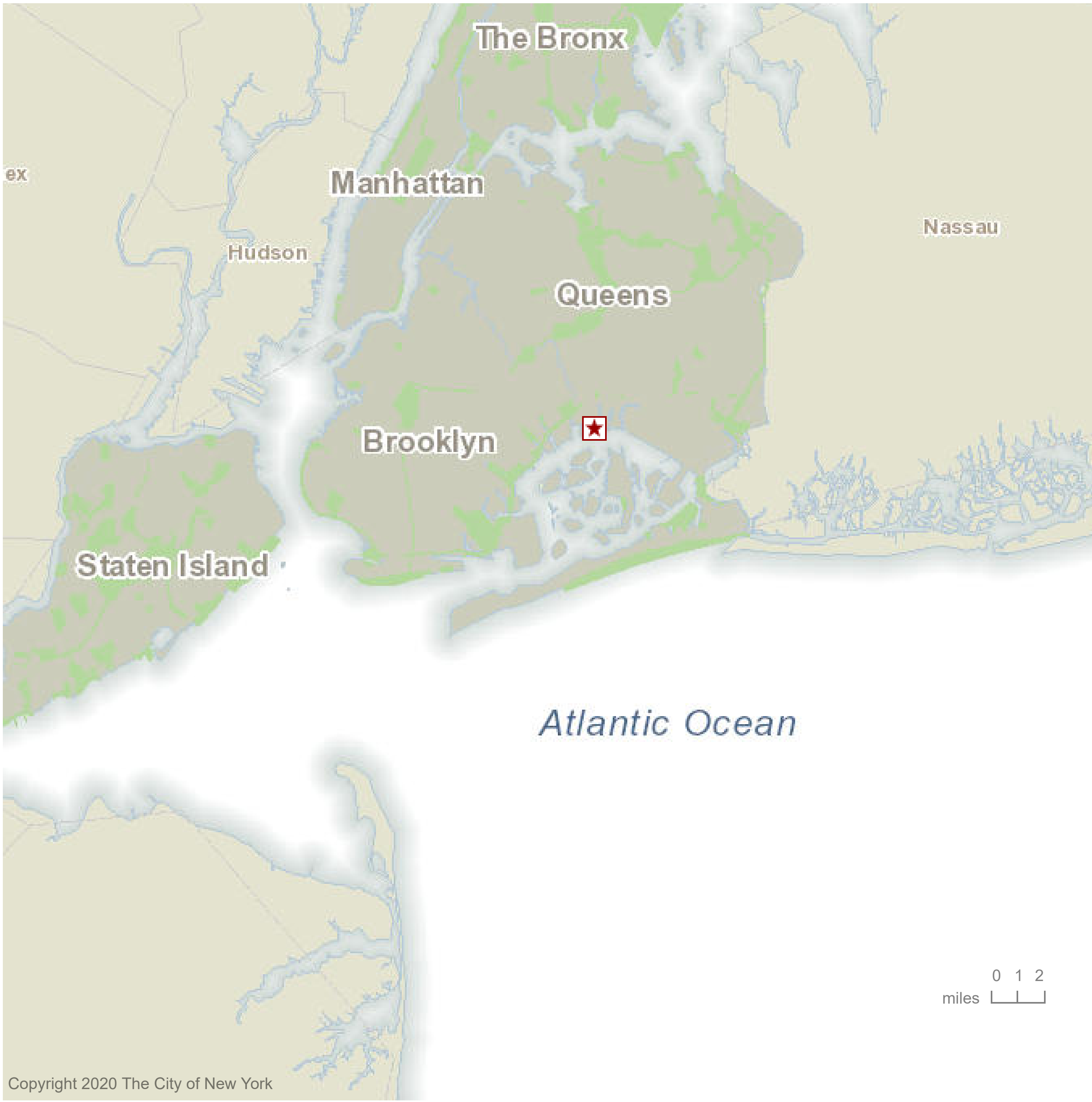
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	16.00	574.38	9190.08
Forklift		1	16.00	8.10	129.60
Pick Up		1	16.00	20.54	328.64
Palet Lift		1	16.00	3.12	49.92
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					9860.32

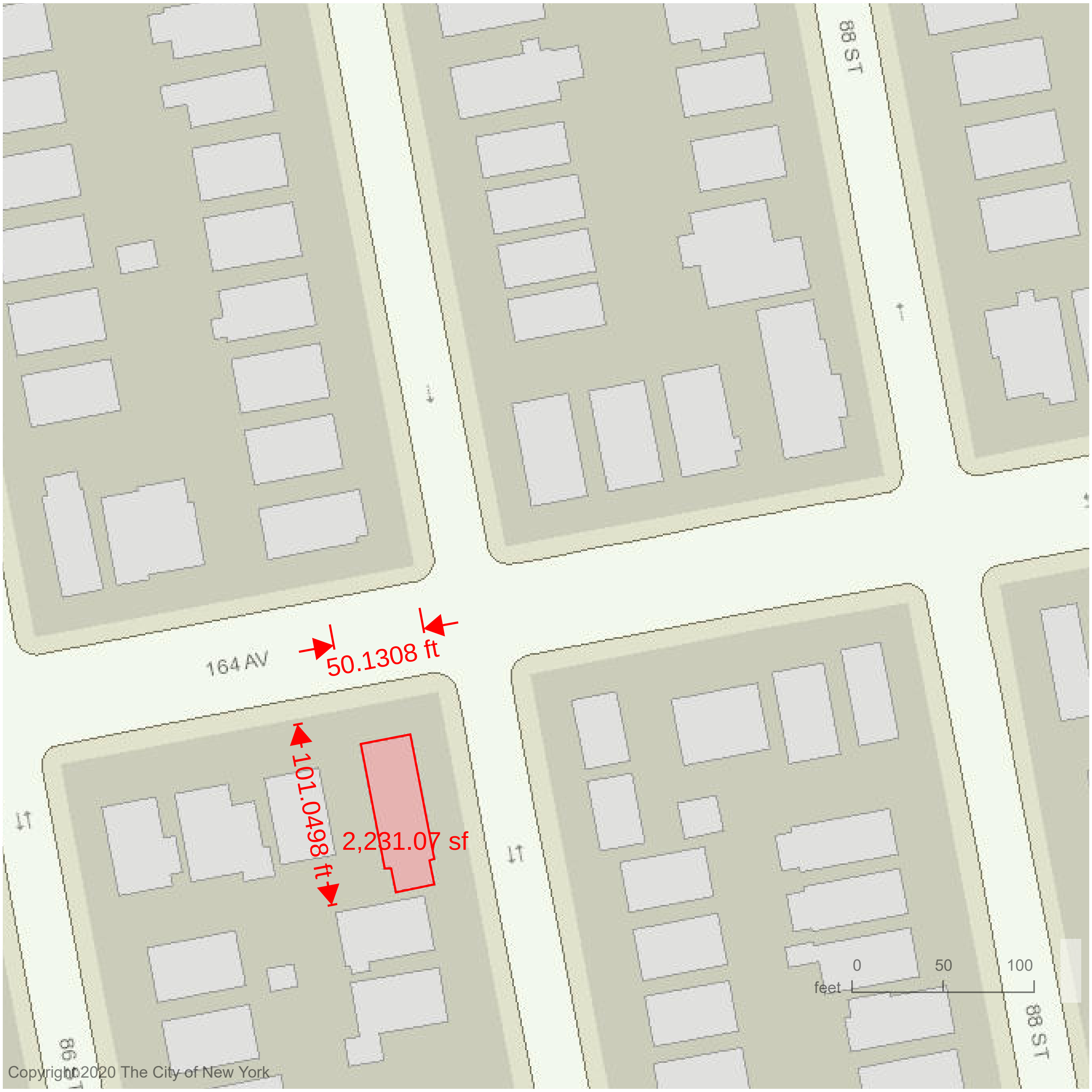
Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $169,032.01 Total to Date $294,357.15

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

86-20 164 ave Queens



86-20 164 ave queens



Sidewalks and hard scape estimated from Google earth

86-20 164 AVENUE, Howard Beach 11414

- Building & Property Information

Borough: Queens **Block:** 14080 **Lot:** 7
Police Precinct: 106
Owner: BLACKSTONE CHRISTINE

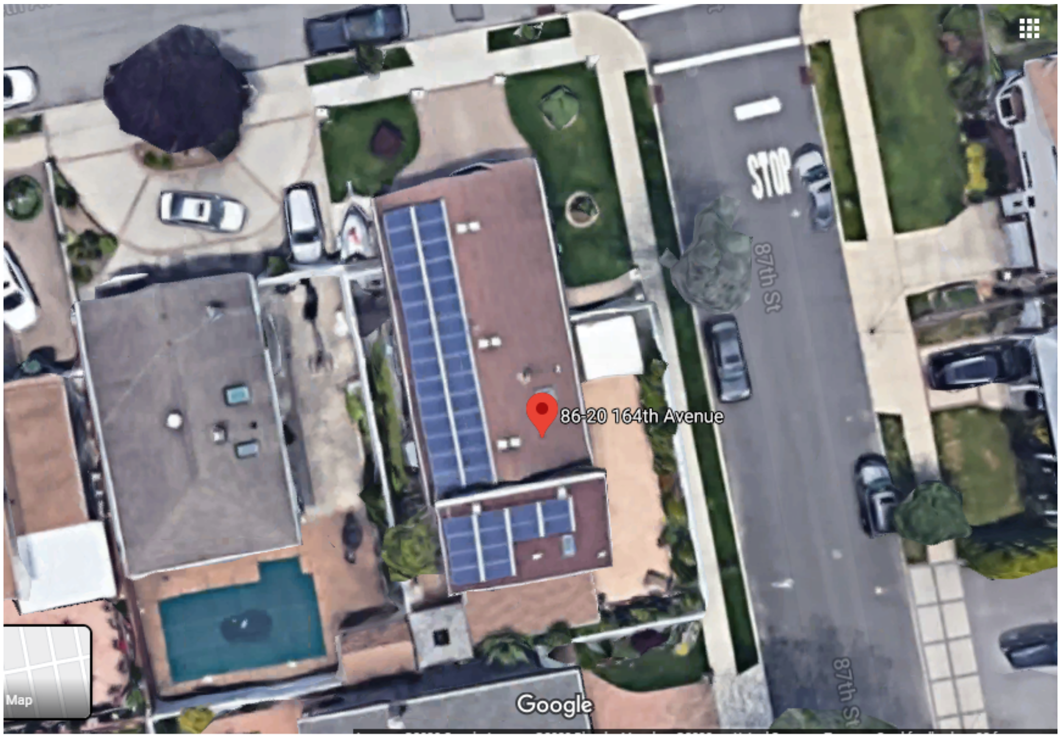
Address: 86-20 164 AVENUE, Howard Beach 11414
Lot Area: 5000 sf
Lot Frontage: 50' **Lot Depth:** 100
Year Built: 1970
Number of Buildings: 1
Number of Floors: 2
Gross Floor Area: 3,522 sf (estimated)
Residential Units: 1 **Total # of Units:** 1
Land Use: One and Two Family Buildings
Zoning: R2
Commercial Overlay:
Zoning Map #: 18B

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator
Building ECB Violations
Building Elevator Information
Building Profile
Building Registration/Violation
DCP Zoning Map 18B
DOF Digital Tax Map
DOHMH Rat Information Portal
Poll Site Locator
School & Zone Finder
Tax and Property Records


Google
86-20 16
88th St
87th St


86-20 164th Avenue
STOP
87th St
87th St
Map
Google

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 86-20 164 Ave Queens
1 Floor .2231 SF Roof Main Building. 1700 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -1700 SF

Total Footprint area 5000 sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	8.00	46.53	372.24
Labor Foreman	1	8.00	48.53	388.24
Operator	1	8.00	90.69	725.52
Teamster	1	8.00	41.19	329.52
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				1815.52
2 Health		16.00	26.45	423.20
Welfare		8.00	28.50	228.00
and		8.00	46.72	373.76
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	907.76
4 20% of (Items 1 + 2 + 3)				749.65
5 Total (Items 1 thru 4)				4497.89

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	64.00	20.00	1280.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			1280.00
Less Discounts			0.00
Total			1280.00
Additional % = 15 %			192.00
Total			1472.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1877.20

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $7,847.09
ConnDOT		Total to Date $7,847.09

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 86-20 164 Ave Queens

1 Floor .2231 SF Roof Main Building. 1700 SF Sidewalk and hardscape
1' deeper for roof

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
	Teamster	2	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3631.04
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		32.00	46.72	1495.04
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1815.52
4	20% of (Items 1 + 2 + 3)				1648.80
5	Total (Items 1 thru 4)				9892.80

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	283.00	20.00	5660.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			5660.00
Less Discounts			0.00
Total			5660.00
Additional % = 15 %			849.00
Total			6509.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Tri Axle Dump		1	16.00	80.88	1294.08
Light Tower		2	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3754.40

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $20,156.20 Total to Date $28,003.29

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

PROPERTY: 86-20 164 Ave Queens

1 Floor .2231 SF Roof Main Building. 1700 SF Sidewalk and hardscape

Install geotextile fabric and 190 Tons stone

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2972.00
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1486.00
4	20% of (Items 1 + 2 + 3)				1152.08
5	Total (Items 1 thru 4)				6912.48

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	283.00	50.00	14150.00
Stone Dust Tons (d)	10.00	50.00	500.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			15000.00
Less Discounts			0.00
Total			15000.00
Additional % = 15 %			2250.00
Total			17250.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2460.32

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$26,622.80
ConnDOT				Total to Date	$54,626.09

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

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CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 86-20 164 Ave Queens

1 Floor .2231 SF Roof Main Building. 1700 SF Sidewalk and hardscape

Install 1700 SF permeable pavers

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	24.00	51.97	1247.28
	Mason Foreman	1	24.00	53.97	1295.28
	Laborer	1	24.00	46.53	1116.72
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3659.28
2	Health		24.00	26.45	634.80
	Welfare		48.00	33.71	1618.08
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1829.64
4	20% of (Items 1 + 2 + 3)				1548.36
5	Total (Items 1 thru 4)				9290.16

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	1750.00	5.00	8750.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			8750.00
Less Discounts			0.00
Total			8750.00
Additional % = 15 %			1312.50
Total			10062.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	24.00	6.50	156.00
Pick Up		1	24.00	20.54	492.96
Light Tower		1	120.00	10.13	1215.60
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1864.56

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $21,217.22
ConnDOT		Total to Date $75,843.31

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

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CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

Property 86-20 164 Ave Queens
1 Floor .2231 SF Roof Main Building. 1700 SF Sidewalk and hardscape
no roof work

6.20 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				0.00
2 Health				0.00
Welfare				0.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	0.00
4 20% of (Items 1 + 2 + 3)				0.00
5 Total (Items 1 thru 4)				0.00

MATERIAL

Description	Quantity	Unit Price	Amount
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			0.00
Less Discounts			0.00
Total			0.00
Additional % = 15 %			0.00
Total			0.00

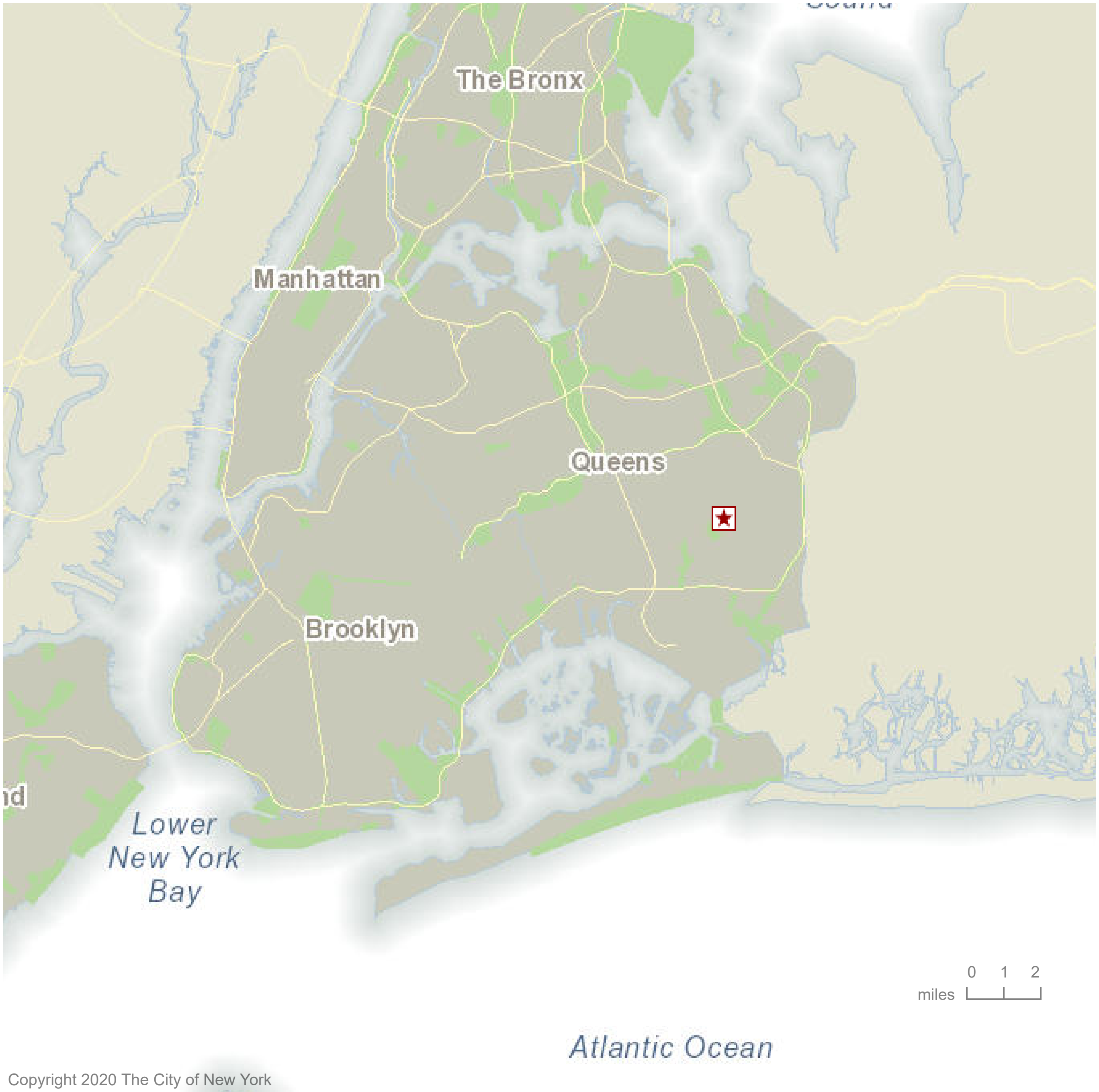
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Gutter sub		1	1.00	#######	1800.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1800.00

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $1,800.00
ConnDOT				Total to Date $77,643.31

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

dunkirk queens location



115-40 Dunkirk Queens

6937 sf Sidewalk
57003 sf roof
4020 sf back lot

115-40 DUNKIRK STREET, Saint Albans 11412

- Building & Property Information

Borough: Queens **Block:** 10315 **Lot:** 135
Police Precinct: 113
Owner: BK HOLDING CORP

Address: 115-40 DUNKIRK STREET, Saint Albans 11412
Lot Area: 60550 sf
Lot Frontage: 100' **Lot Depth:** 130
Year Built: 1930
Number of Buildings: 3
Number of Floors: 1
Gross Floor Area: 57,201 sf (estimated)
Residential Units: 0 **Total # of Units:** 2
Land Use: Industrial and Manufacturing
Zoning: R3-2
Commercial Overlay:
Zoning Map #: 15B

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 15B

DOF Digital Tax Map

DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


115-40 Dunkirk Street
Dunkirk St
2D
Map
Google


NEMO Tile.
PICK UP & DELIVERY...
MON.-FRI. 7AM-3PM.
Google
Image capture: Oct 2018
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United States
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115-40 Dunkirk Street
Dunkirk St
Dunkirk St

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 115-40 Dunkirk st
1 Floor .57003 SF Roof Main Building. 6937 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -6937 SF

Total Footprint area 67960 sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	40.00	46.53	1861.20
Labor Foreman	1	40.00	48.53	1941.20
Operator	1	40.00	90.69	3627.60
Teamster	1	40.00	41.19	1647.60
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				9077.60
2 Health		80.00	26.45	2116.00
Welfare		40.00	28.50	1140.00
and		40.00	46.72	1868.80
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	4538.80
4 20% of (Items 1 + 2 + 3)				3748.24
5 Total (Items 1 thru 4)				22489.44

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	256.00	20.00	5120.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			5120.00
Less Discounts			0.00
Total			5120.00
Additional % = 15 %			768.00
Total			5888.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	40.00	123.10	4924.00
Pick Up		1	40.00	20.54	821.60
Tri Axle Dump		1	40.00	80.88	3235.20
Light Tower		1	40.00	10.13	405.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					9386.00

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $37,763.44
		Total to Date $37,763.44

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.
PROPERTY: 115-40 Dunkirk st 1 Floor .57003 SF Roof Main Building. 6937 SF Sidewalk and hardscape			Select only one payment type: ☐ Scope Estimate ☐ Progress (progress payment = 90% of Total) ☐ Final SELECT ONLY ONE PAYMENT TYPE	CONSTRUCTION ORDER ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	40.00	46.53	1861.20
	Labor Foreman	1	40.00	48.53	1941.20
	Operator	1	40.00	90.69	3627.60
	Teamster	2	80.00	41.19	3295.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				10725.20
2	Health		80.00	26.45	2116.00
	Welfare		40.00	28.50	1140.00
	and		80.00	46.72	3737.60
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	5362.60
4	20% of (Items 1 + 2 + 3)				4616.28
5	Total (Items 1 thru 4)				27697.68

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	770.00	20.00	15400.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			15400.00
Less Discounts			0.00
Total			15400.00
Additional % = 15 %			2310.00
Total			17710.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	40.00	123.10	4924.00
Pick Up		1	40.00	20.54	821.60
Tri Axle Dump		1	40.00	80.88	3235.20
Light Tower		2	80.00	10.13	810.40
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					9791.20

Inspector: ConnDOT	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $55,198.88 Total to Date $92,962.32

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 115-40 Dunkirk st
1 Floor .57003 SF Roof Main Building. 6937 SF Sidewalk and hardscape

Install geotextile fabric and 770 Tons stone

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	24.00	46.53	1116.72
Labor Foreman	1	24.00	48.53	1164.72
Operator	1	24.00	90.69	2176.56
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				4458.00
2 Health		48.00	26.45	1269.60
Welfare		24.00	28.50	684.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	2229.00
4 20% of (Items 1 + 2 + 3)				1728.12
5 Total (Items 1 thru 4)				10368.72

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	770.00	50.00	38500.00
Stone Dust Tons (d)	80.00	50.00	4000.00
Geotextile	3.00	350.00	1050.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			43550.00
Less Discounts			0.00
Total			43550.00
Additional % = 15 %			6532.50
Total			50082.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	24.00	123.10	2954.40
Pick Up		1	24.00	20.54	492.96
Light Tower		1	24.00	10.13	243.12
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3690.48

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$64,141.70
ConnDOT				Total to Date	$157,104.02

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 115-40 Dunkirk st

1 Floor .57003 SF Roof Main Building. 6937 SF Sidewalk and hardscape

Install 2359 SF permeable pavers

$9.45

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	120.00	51.97	6236.40
	Mason Foreman	1	120.00	53.97	6476.40
	Laborer	1	120.00	46.53	5583.60
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				18296.40
2	Health		120.00	26.45	3174.00
	Welfare		240.00	33.71	8090.40
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	9148.20
4	20% of (Items 1 + 2 + 3)				7741.80
5	Total (Items 1 thru 4)				46450.80

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	7100.00	5.00	35500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			35500.00
Less Discounts			0.00
Total			35500.00
Additional % = 15 %			5325.00
Total			40825.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	120.00	6.50	780.00
Pick Up		1	120.00	20.54	2464.80
Light Tower		1	120.00	10.13	1215.60
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					4460.40

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $91,736.20
		Total to Date $248,840.22

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

Property 115-40 Dunkirk st
1 Floor .57003 SF Roof Main Building. 6937 SF Sidewalk and hardscape
2 layers geotextile fabric
Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY
130 cy 26 loads 1 load every 15 min

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	120.00	94.37	11324.40
	Labor Foreman	1	120.00	48.53	5823.60
	Excavator operator	1	120.00	90.69	10882.80
	Laborer	7	840.00	46.53	39085.20
	Oiler	1	120.00	70.29	8434.80
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				75550.80
2	Health		240.00	28.50	6840.00
	Welfare		120.00	31.95	3834.00
	and		960.00	26.45	25392.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	37775.40
4	20% of (Items 1 + 2 + 3)				29878.44
5	Total (Items 1 thru 4)				179270.64

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	1200.00	4.00	4800.00
LWT Aggregate CY	1420.00	70.00	99400.00
geotextile	20.00	350.00	7000.00
Elecric Roof Valves	30.00	2000.00	60000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			171200.00
Less Discounts			0.00
Total			171200.00
Additional % = 15 %			25680.00
Total			196880.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	120.00	574.38	68925.60
Cat 322 RT excavator		1	120.00	123.10	14772.00
Pick Up		1	120.00	20.54	2464.80
5 CY concrete bucket		1	120.00	4.57	548.40
Light Tower		2	240.00	10.13	2431.20
Power buggy		2	240.00	14.56	3494.40
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					92636.40

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$468,787.04
ConnDOT				Total to Date	$717,627.26

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 115-40 Dunkirk st
2 Floors.5188 SF Roof Main Building. 2359 SF Sidewalk and hardscape

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Crane Operator	1	160.00	94.37	15099.20
Labor Foreman	1	160.00	48.53	7764.80
Forklift Operator	1	160.00	90.69	14510.40
Laborer	7	160.00	46.53	7444.80
Oiler	1	160.00	70.29	11246.40
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				56065.60
2 Health		320.00	28.50	9120.00
Welfare		160.00	31.95	5112.00
and		960.00	26.45	25392.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	28032.80
4 20% of (Items 1 + 2 + 3)				24744.48
5 Total (Items 1 thru 4)				148466.88

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	57000.00	18.50	1054500.00
geotextile	20.00	350.00	7000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			1061500.00
Less Discounts			0.00
Total			1061500.00
Additional % = 15 %			159225.00
Total			1220725.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	160.00	574.38	91900.80
Forklift		1	160.00	8.10	1296.00
Pick Up		1	160.00	20.54	3286.40
Palet Lift		1	160.00	3.12	499.20
Light Tower		1	160.00	10.13	1620.80
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					98603.20

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $1,467,795.08 Total to Date $2,185,422.34

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

137 West 122 Manhattan

137 West 122 Street

137 WEST 122 STREET, NEW YORK 10027

- Building & Property Information

Borough: Manhattan **Block:** 1907 **Lot:** 15
Police Precinct: 28
Owner: TROPPER, GISELLE

Address: 137 WEST 122 STREET, NEW YORK 10027
Lot Area: 1682 sf
Lot Frontage: 16.67' **Lot Depth:** 100.92
Year Built: 1910
Number of Buildings: 1
Number of Floors: 4
Gross Floor Area: 3,830 sf (estimated)
Residential Units: 1 **Total # of Units:** 1
Land Use: One and Two Family Buildings
Zoning: R7-2
Commercial Overlay:
Zoning Map #: 6A

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 6A

DOF Digital Tax Map

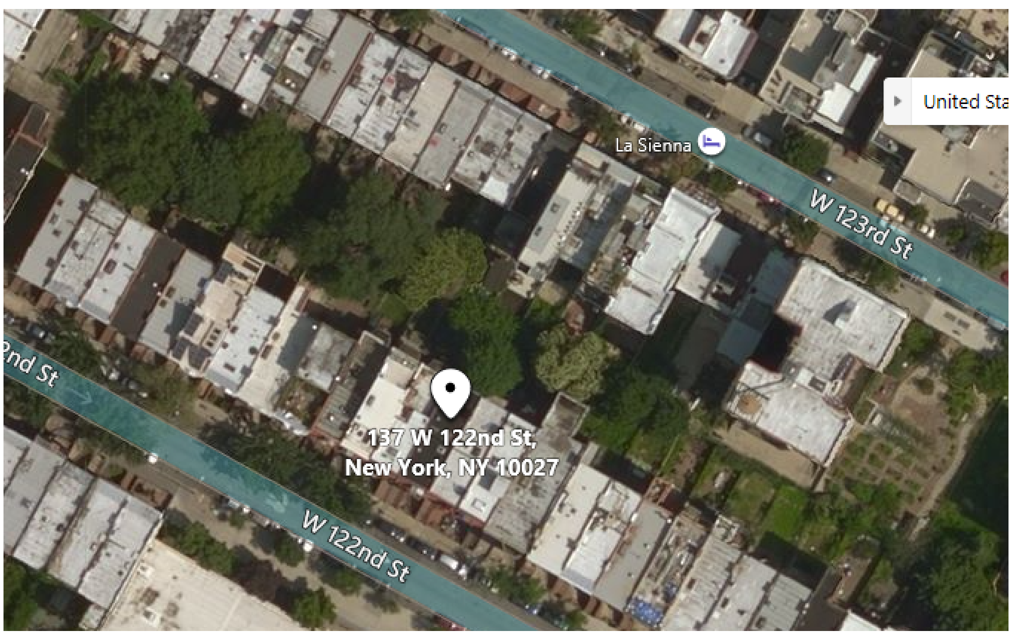
DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


W 122nd St
W 122nd St


United Sta
La Sienna
W 123rd St
2nd St
137 W 122nd St,
New York, NY 10027
W 122nd St

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 137 W 122 Street Manhattan
4 Floors. 909 SF Roof Main Building. 128 SF Sidewalk.
Demo and dispose existing concrete sidewalk or similar ground surfaces -128 SF

Total Footprint area 1810 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	2.00	46.53	93.06
	Labor Foreman	1	2.00	48.53	97.06
	Operator	1	2.00	90.69	181.38
	Teamster	1	2.00	41.19	82.38
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				453.88
2	Health		4.00	26.45	105.80
	Welfare		2.00	28.50	57.00
	and		2.00	46.72	93.44
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	226.94
4	20% of (Items 1 + 2 + 3)				187.41
5	Total (Items 1 thru 4)				1124.47

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	5.00	20.00	100.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			100.00
Less Discounts			0.00
Total			100.00
Additional % = 15 %			15.00
Total			115.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	2.00	123.10	246.20
Pick Up		1	2.00	20.54	41.08
Tri Axle Dump		1	2.00	80.88	161.76
Light Tower		1	2.00	10.13	20.26
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					469.30

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total Progress Total:	$1,708.77
Total to Date	$1,708.77

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 137 W 122 Street Manhattan
4 Floors. 909 SF Roof Main Building. 128 SF Sidewalk. Grass/tree back yard.
128 SF @ 2' excavation = 10 CY Excavation

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	2.00	46.53	93.06
	Labor Foreman	1	2.00	48.53	97.06
	Operator	1	2.00	90.69	181.38
	Teamster	1	2.00	41.19	82.38
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				453.88
2	Health		4.00	26.45	105.80
	Welfare		2.00	28.50	57.00
	and		2.00	46.72	93.44
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	226.94
4	20% of (Items 1 + 2 + 3)				187.41
5	Total (Items 1 thru 4)				1124.47

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	15.00	20.00	300.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			300.00
Less Discounts			0.00
Total			300.00
Additional % = 15 %			45.00
Total			345.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	2.00	123.10	246.20
Pick Up		1	2.00	20.54	41.08
Tri Axle Dump		1	2.00	80.88	161.76
Light Tower		1	2.00	10.13	20.26
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					469.30

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $1,938.77 Total to Date $3,647.54

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 137 W 122 Street Manhattan
4 Floors. 909 SF Roof Main Building. 128 SF Sidewalk.

Install geotextile fabric and 15 Tons stone
$11.99 sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	2.00	46.53	93.06
	Labor Foreman	1	2.00	48.53	97.06
	Operator	1	2.00	90.69	181.38
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				371.50
2	Health		4.00	26.45	105.80
	Welfare		2.00	28.50	57.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	185.75
4	20% of (Items 1 + 2 + 3)				144.01
5	Total (Items 1 thru 4)				864.06

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	15.00	50.00	750.00
Stone Dust Tons (d)	1.00	50.00	50.00
Geotextile	0.25	350.00	87.50
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			887.50
Less Discounts			0.00
Total			887.50
Additional % = 15 %			133.13
Total			1020.63

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	2.00	123.10	246.20
Pick Up		1	2.00	20.54	41.08
Light Tower		1	2.00	10.13	20.26
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					307.54

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $2,192.23
ConnDOT				Total to Date $5,839.77

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		(302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 137 W 122 Street Manhattan
4 Floors. 909 SF Roof Main Building. 128 SF Sidewalk.

Install 128 SF permeable pavers
$17.17/sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

$9.45

LABOR

Class	No.	Total Hours	Rate	Amount
Mason	1	4.00	51.97	207.88
Mason Foreman	1	4.00	53.97	215.88
Laborer	1	4.00	46.53	186.12
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				609.88
2 Health		4.00	26.45	105.80
Welfare		8.00	33.71	269.68
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	304.94
4 20% of (Items 1 + 2 + 3)				258.06
5 Total (Items 1 thru 4)				1548.36

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	128.00	5.00	640.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			640.00
Less Discounts			0.00
Total			640.00
Additional % = 15 %			96.00
Total			736.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	4.00	6.50	26.00
Pick Up		1	4.00	20.54	82.16
Light Tower		1	4.00	10.13	40.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					148.68

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total:	$2,433.04
ConnDOT				Total to Date	$8,272.81

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

DESCRIPTION OF WOR
909 SF roof area
2 layers geotextile fabric
Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY
23 cy 5 loads 1 load every 20 min

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	8.00	94.37	754.96
	Labor Foreman	1	8.00	48.53	388.24
	Excavator operator	1	8.00	90.69	725.52
	Laborer	3	24.00	46.53	1116.72
	Oiler	1	8.00	70.29	562.32
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3547.76
2	Health		16.00	28.50	456.00
	Welfare		8.00	31.95	255.60
	and		32.00	26.45	846.40
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1773.88
4	20% of (Items 1 + 2 + 3)				1375.93
5	Total (Items 1 thru 4)				8255.57

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	250.00	4.00	1000.00
LWT Aggregate CY	23.00	70.00	1610.00
geotextile	0.25	350.00	87.50
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			2697.50
Less Discounts			0.00
Total			2697.50
Additional % = 15 %			404.63
Total			3102.13

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	8.00	574.38	4595.04
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
5 CY concrete bucket		1	8.00	4.57	36.56
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					5861.76

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$17,219.46
ConnDOT				Total to Date	$25,492.26

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

DESCRIPTION OF WOR
909 SF roof area
2 layers geotextile fabric
Green Grid g4 placed on top of Norlite stone
137 W 122 Street Manhattan

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Crane Operator	1	8.00	94.37	754.96
Labor Foreman	1	8.00	48.53	388.24
Forklift Operator	1	8.00	90.69	725.52
Laborer	3	24.00	46.53	1116.72
Oiler	1	8.00	70.29	562.32
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				3547.76
2 Health		16.00	28.50	456.00
Welfare		8.00	31.95	255.60
and		24.00	26.45	634.80
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	1773.88
4 20% of (Items 1 + 2 + 3)				1333.61
5 Total (Items 1 thru 4)				8001.65

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	910.00	18.50	16835.00
geotextile	0.25	350.00	87.50
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			16922.50
Less Discounts			0.00
Total			16922.50
Additional % = 15 %			2538.38
Total			19460.88

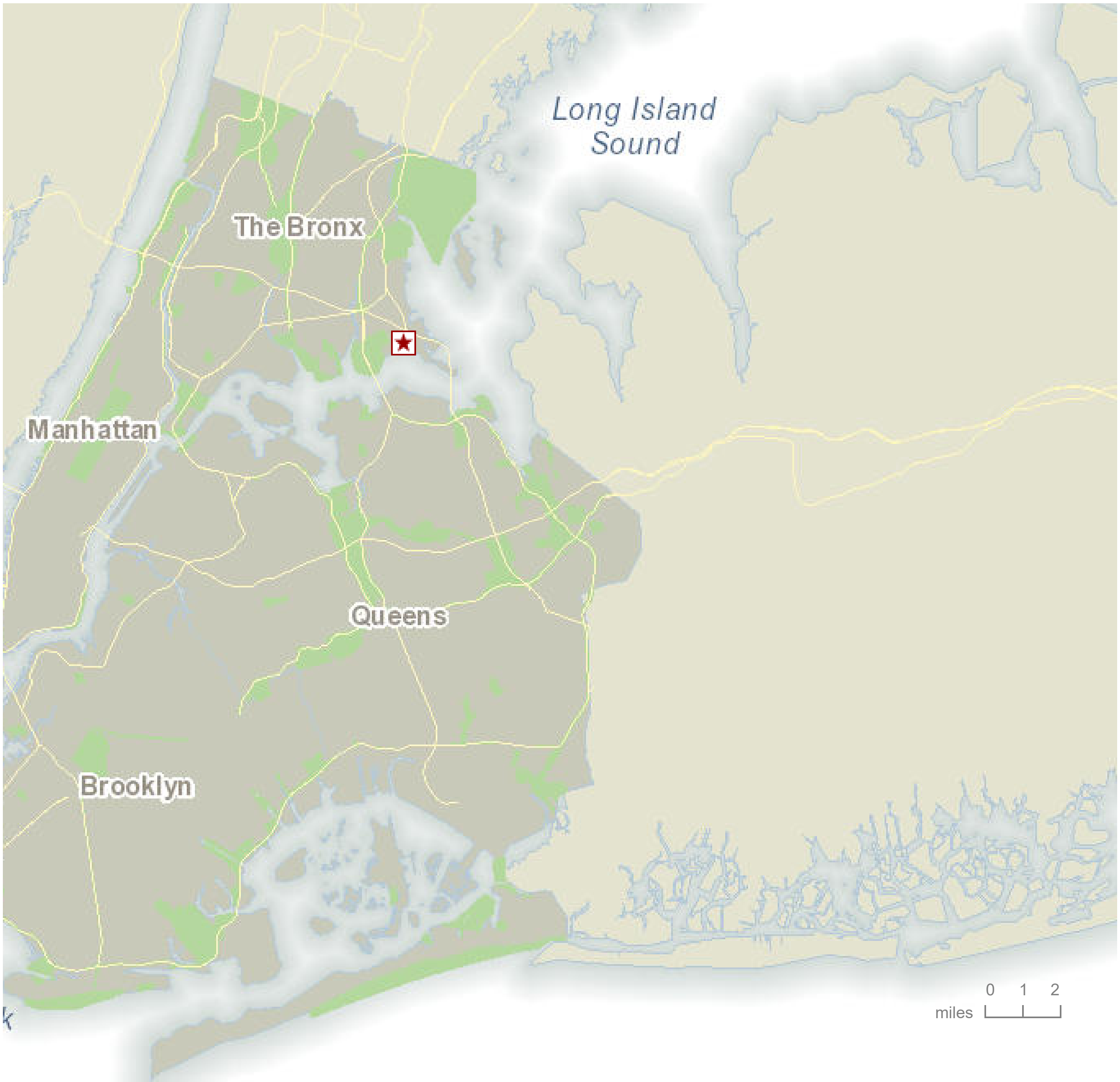
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	8.00	574.38	4595.04
Forklift		1	8.00	8.10	64.80
Pick Up		1	8.00	20.54	164.32
Palet Lift		1	8.00	3.12	24.96
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					4930.16

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $32,392.69 Total to Date $57,884.95

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

248 Revere Bronx



248 revere ave bronx

248 REVERE AVENUE, BRONX 10465

- Building & Property Information

Borough: Bronx **Block:** 5589 **Lot:** 105
Police Precinct: 45
Owner: ELLIOTT MARY E

Address: 248 REVERE AVENUE, BRONX 10465
Lot Area: 2069 sf
Lot Frontage: 17.75' **Lot Depth:** 116.58
Year Built: 1955
Number of Buildings: 1
Number of Floors: 2
Gross Floor Area: 1,589 sf (estimated)
Residential Units: 1 **Total # of Units:** 1
Land Use: One and Two Family Buildings
Zoning: R4
Commercial Overlay:
Zoning Map #: 7C

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 7C

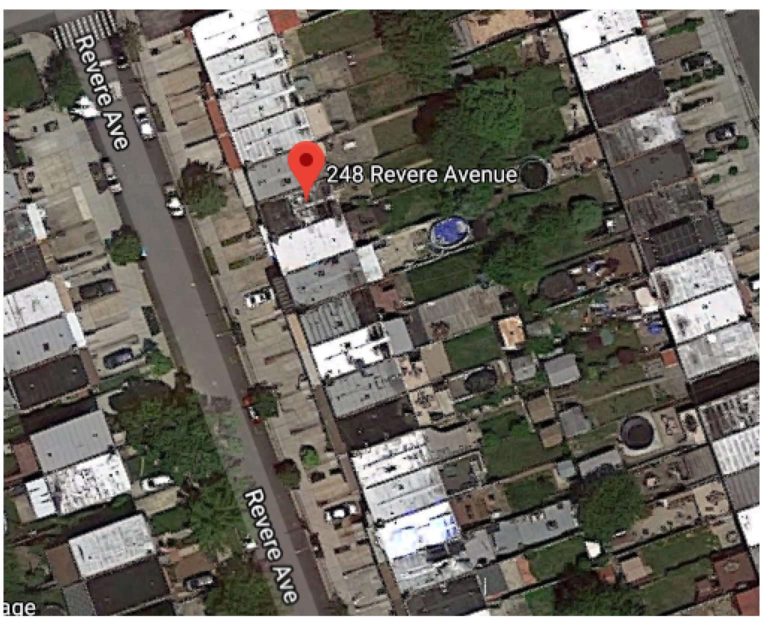
DOF Digital Tax Map

DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


Revere Ave
248 Revere Avenue
Revere Ave

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169)	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 248 Revere Ave Bronx
2 Floors. 630 SF Roof Main Building. 578 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -578 SF

Total Footprint area 2260 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	4.00	46.53	186.12
	Labor Foreman	1	4.00	48.53	194.12
	Operator	1	4.00	90.69	362.76
	Teamster	1	4.00	41.19	164.76
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				907.76
2	Health		8.00	26.45	211.60
	Welfare		4.00	28.50	114.00
	and		4.00	46.72	186.88
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	453.88
4	20% of (Items 1 + 2 + 3)				374.82
5	Total (Items 1 thru 4)				2248.94

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	22.00	20.00	440.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			440.00
Less Discounts			0.00
Total			440.00
Additional % = 15 %			66.00
Total			506.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	4.00	123.10	492.40
Pick Up		1	4.00	20.54	82.16
Tri Axle Dump		1	4.00	80.88	323.52
Light Tower		1	4.00	10.13	40.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					938.60

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $3,693.54
ConnDOT				Total to Date $3,693.54

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 248 Revere Ave Bronx
2 Floors. 630 SF Roof Main Building. 578 SF Sidewalk and hardscape
578 SF @ 2' excavation = 58 CY Excavation

Excavation 8" deeper to allow for roof drainage

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	4.00	46.53	186.12
	Labor Foreman	1	4.00	48.53	194.12
	Operator	1	4.00	90.69	362.76
	Teamster	2	8.00	41.19	329.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1072.52
2	Health		8.00	26.45	211.60
	Welfare		4.00	28.50	114.00
	and		8.00	46.72	373.76
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	536.26
4	20% of (Items 1 + 2 + 3)				461.63
5	Total (Items 1 thru 4)				2769.77

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	85.00	20.00	1700.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			1700.00
Less Discounts			0.00
Total			1700.00
Additional % = 15 %			255.00
Total			1955.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	4.00	123.10	492.40
Pick Up		1	4.00	20.54	82.16
Tri Axle Dump		1	4.00	80.88	323.52
Light Tower		2	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					979.12

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $5,703.89 Total to Date $9,397.43

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 248 Revere Ave Bronx
2 Floors. 630 SF Roof Main Building. 578 SF Sidewalk and hardscape
Extra 8" stone to accommodate roof drainage
Install geotextile fabric and 85 Tons stone

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	4.00	46.53	186.12
	Labor Foreman	1	4.00	48.53	194.12
	Operator	1	4.00	90.69	362.76
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				743.00
2	Health		8.00	26.45	211.60
	Welfare		4.00	28.50	114.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	371.50
4	20% of (Items 1 + 2 + 3)				288.02
5	Total (Items 1 thru 4)				1728.12

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	85.00	50.00	4250.00
Stone Dust Tons (d)	5.00	50.00	250.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			4850.00
Less Discounts			0.00
Total			4850.00
Additional % = 15 %			727.50
Total			5577.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	4.00	123.10	492.40
Pick Up		1	4.00	20.54	82.16
Light Tower		1	4.00	10.13	40.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					615.08

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $7,920.70 Total to Date $17,318.13

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 248 Revere Ave Bronx
2 Floors. 630 SF Roof Main Building. 578 SF Sidewalk and hardscape

Install 578 SF permeable pavers

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Mason	1	8.00	51.97	415.76
Mason Foreman	1	8.00	53.97	431.76
Laborer	1	8.00	46.53	372.24
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				1219.76
2 Health		8.00	26.45	211.60
Welfare		16.00	33.71	539.36
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	609.88
4 20% of (Items 1 + 2 + 3)				516.12
5 Total (Items 1 thru 4)				3096.72

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	620.00	5.00	3100.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			3100.00
Less Discounts			0.00
Total			3100.00
Additional % = 15 %			465.00
Total			3565.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	8.00	6.50	52.00
Pick Up		1	8.00	20.54	164.32
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					297.36

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total
Progress Total: $6,959.08
Total to Date $24,277.21

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 248 Revere Ave Bronx

roof drains connected to stone under pavers

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				0.00
2 Health Welfare and Pension				0.00
				0.00
				0.00
				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	0.00
4 20% of (Items 1 + 2 + 3)				0.00
5 Total (Items 1 thru 4)				0.00

MATERIAL

Description	Quantity	Unit Price	Amount
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			0.00
Less Discounts			0.00
Total			0.00
Additional % = 15 %			0.00
Total			0.00

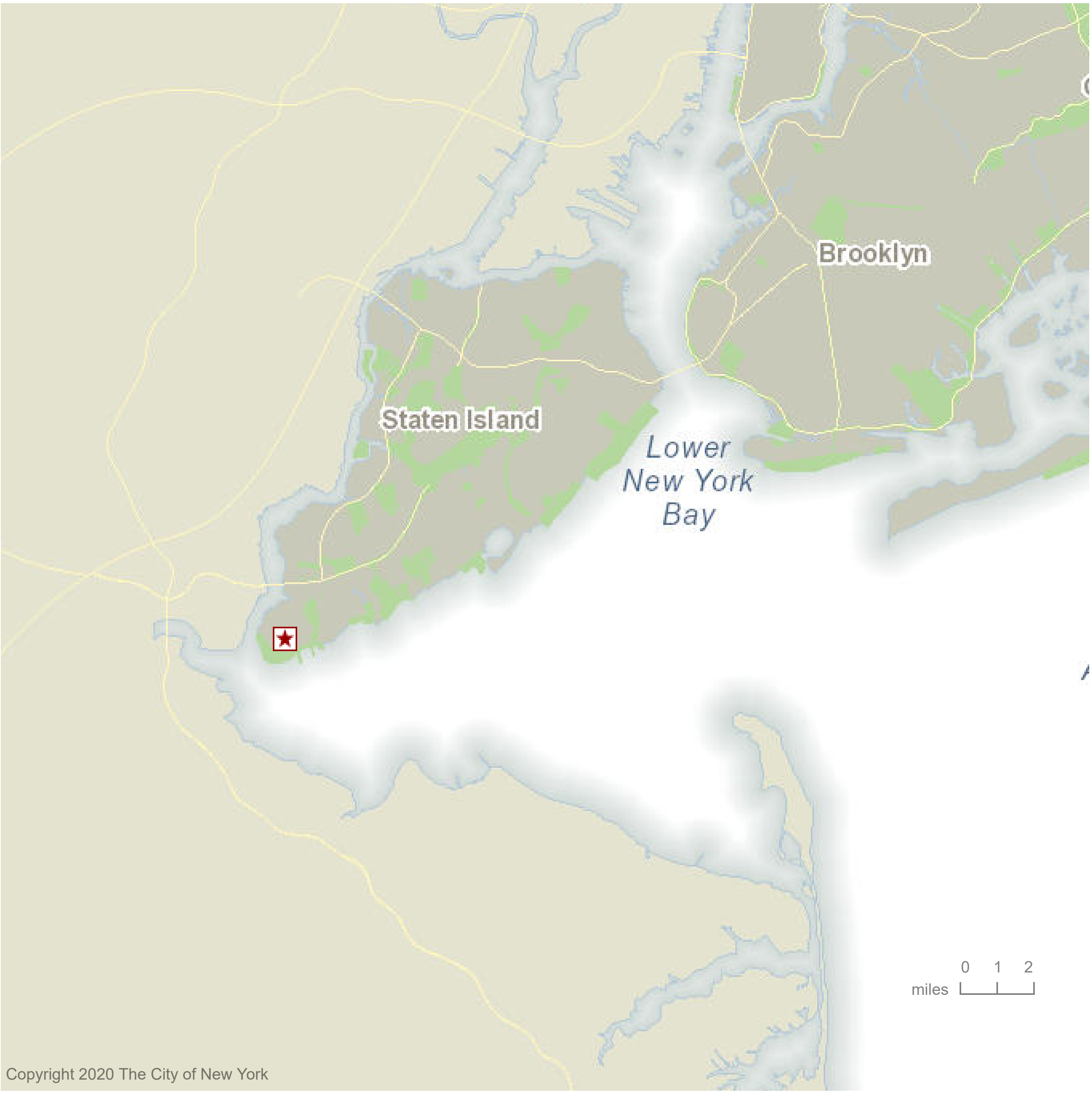
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
		1	1.00	600.00	600.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					600.00

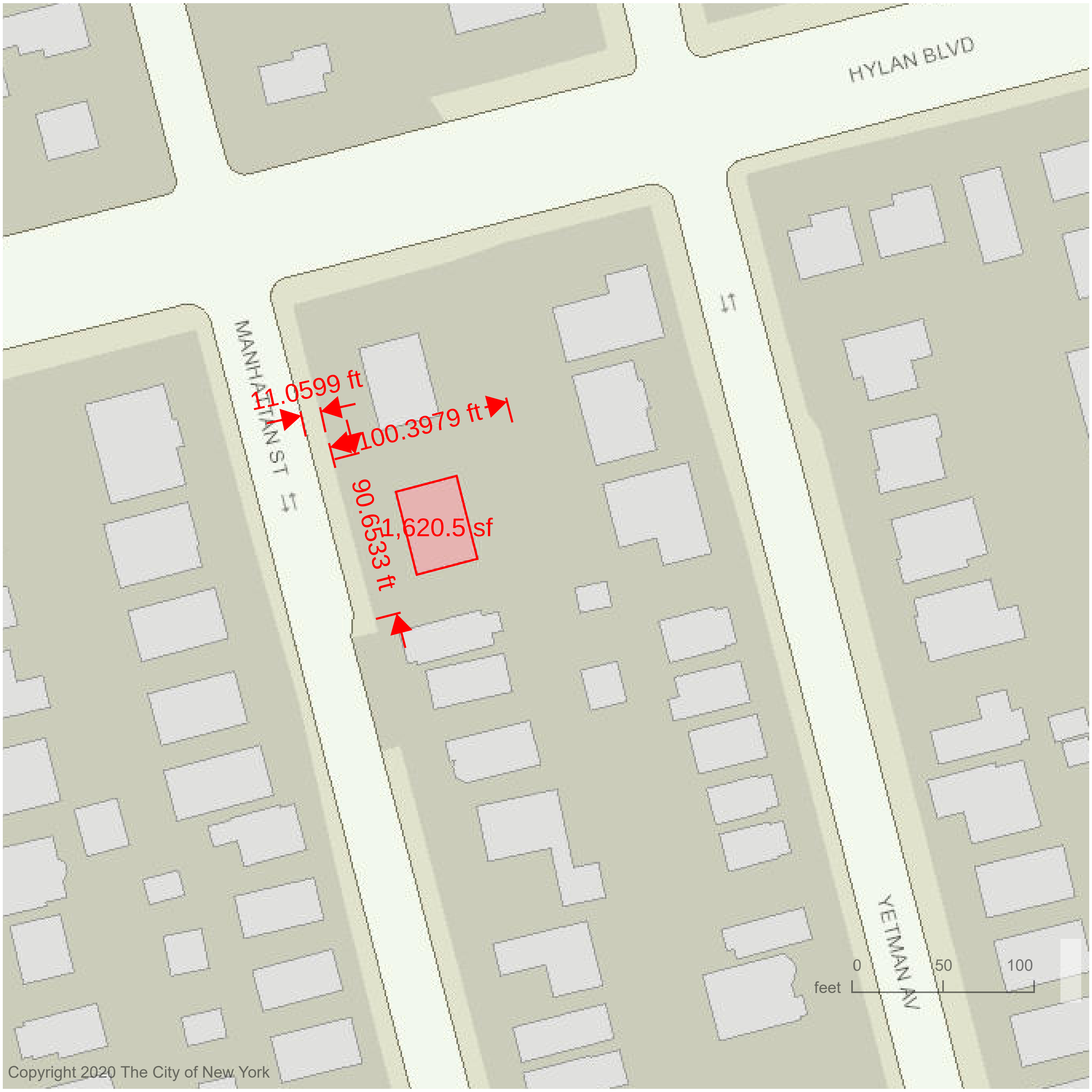
Inspector:	Date:	Contractor's Representative:	Date:	Daily Total
				Progress Total: $600.00
ConnDOT				Total to Date $24,877.21

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

251 Manhattan St Staten Island



251 Manhattan ST



251 MANHATTAN STREET, STATEN ISLAND 10307

- Building & Property Information

Borough: Staten Island **Block:** 7886 **Lot:** 93
Police Precinct: 123
Owner: ITRI JERRY

Address: 251 MANHATTAN STREET, STATEN ISLAND 10307
Lot Area: 9021 sf
Lot Frontage: 90' **Lot Depth:** 100
Year Built: 1988
Number of Buildings: 1
Number of Floors: 2
Gross Floor Area: 2,700 sf (estimated)
Residential Units: 2 **Total # of Units:** 2
Land Use: One and Two Family Buildings
Zoning: R3A
Commercial Overlay:
Zoning Map #: 35A

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 35A

DOF Digital Tax Map

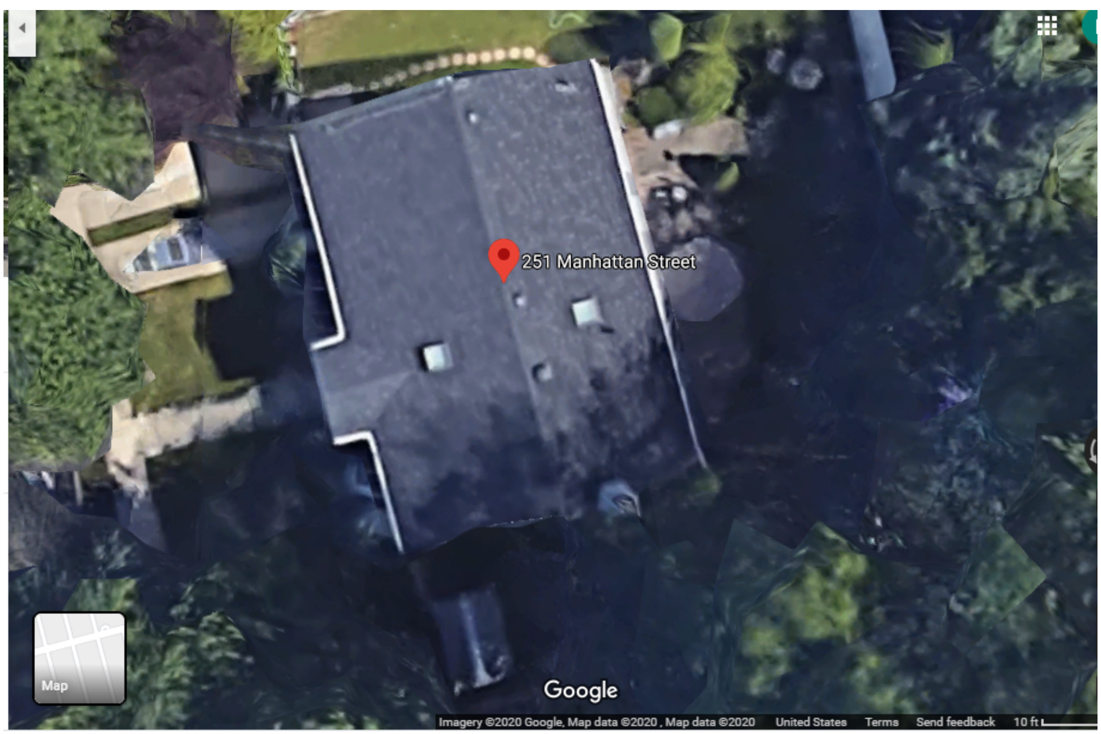
DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


Google
Image capture


251 Manhattan Street
Map
Google
Imagery ©2020 Google, Map data ©2020 , Map data ©2020
United States
Terms
Send feedback
10 ft

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 251 Manhattan st Staten Island
2 Floors .1620 SF Roof Main Building. 800 SF Sidewalk / driveway - enough grass to drain roof
Demo and dispose existing concrete sidewalk or similar ground surfaces 800 SF
May not capture all roof water
Total Footprint area 10,000 sf
overall footprint

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	1	8.00	41.19	329.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1815.52
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and		8.00	46.72	373.76
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	907.76
4	20% of (Items 1 + 2 + 3)				749.65
5	Total (Items 1 thru 4)				4497.89

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	30.00	20.00	600.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			600.00
Less Discounts			0.00
Total			600.00
Additional % = 15 %			90.00
Total			690.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		1	8.00	10.13	81.04
Gutter sub		1	1.00	600.00	600.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2477.20

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $7,665.09
ConnDOT				Total to Date $7,665.09

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 251 Manhattan st Staten Island
Demo and dispose existing earth 1050 SF
2 Floors .1620 SF Roof Main Building. 800 SF Sidewalk / driveway - enough grass to drain roof

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	8.00	46.53	372.24
Labor Foreman	1	8.00	48.53	388.24
Operator	1	8.00	90.69	725.52
Teamster	2	8.00	41.19	329.52
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				1815.52
2 Health		16.00	26.45	423.20
Welfare		8.00	28.50	228.00
and		16.00	46.72	747.52
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	907.76
4 20% of (Items 1 + 2 + 3)				824.40
5 Total (Items 1 thru 4)				4946.40

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	90.00	20.00	1800.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			1800.00
Less Discounts			0.00
Total			1800.00
Additional % = 15 %			270.00
Total			2070.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		2	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1877.20

Inspector: ConnDOT	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $8,893.60 Total to Date $16,558.69

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

PROPERTY: 251 Manhattan st Staten Island
2 Floors .1620 SF Roof Main Building. 800 SF Sidewalk / driveway - enough grass to drain roof

Install geotextile fabric and 90 Tons stone

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	8.00	46.53	372.24
Labor Foreman	1	8.00	48.53	388.24
Operator	1	8.00	90.69	725.52
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				1486.00
2 Health		16.00	26.45	423.20
Welfare		8.00	28.50	228.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	743.00
4 20% of (Items 1 + 2 + 3)				576.04
5 Total (Items 1 thru 4)				3456.24

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	90.00	50.00	4500.00
Stone Dust Tons (d)	4.00	50.00	200.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			5050.00
Less Discounts			0.00
Total			5050.00
Additional % = 15 %			757.50
Total			5807.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1230.16

Inspector: Date:	Contractor's Representative: Date:	Daily Total
		Progress Total: $10,493.90
ConnDOT		Total to Date $27,052.59

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 251 Manhattan st Staten Island
2 Floors .1620 SF Roof Main Building. 800 SF Sidewalk / driveway - enough grass to drain roof

Install 800 SF permeable pavers

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Mason	1	16.00	51.97	831.52
Mason Foreman	1	16.00	53.97	863.52
Laborer	1	16.00	46.53	744.48
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				2439.52
2 Health		16.00	26.45	423.20
Welfare		32.00	33.71	1078.72
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	1219.76
4 20% of (Items 1 + 2 + 3)				1032.24
5 Total (Items 1 thru 4)				6193.44

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	850.00	5.00	4250.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			4250.00
Less Discounts			0.00
Total			4250.00
Additional % = 15 %			637.50
Total			4887.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	16.00	6.50	104.00
Pick Up		1	16.00	20.54	328.64
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					594.72

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total
Progress Total: $11,675.66
Total to Date $38,728.25

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

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CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 251 Manhattan st Staten Island

2 Floors .1620 SF Roof Main Building. 800 SF Sidewalk / driveway - enough grass to drain roof

no roof work

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				0.00
2	Health				0.00
	Welfare				0.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	0.00
4	20% of (Items 1 + 2 + 3)				0.00
5	Total (Items 1 thru 4)				0.00

MATERIAL

Description	Quantity	Unit Price	Amount
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			0.00
Less Discounts			0.00
Total			0.00
Additional % = 15 %			0.00
Total			0.00

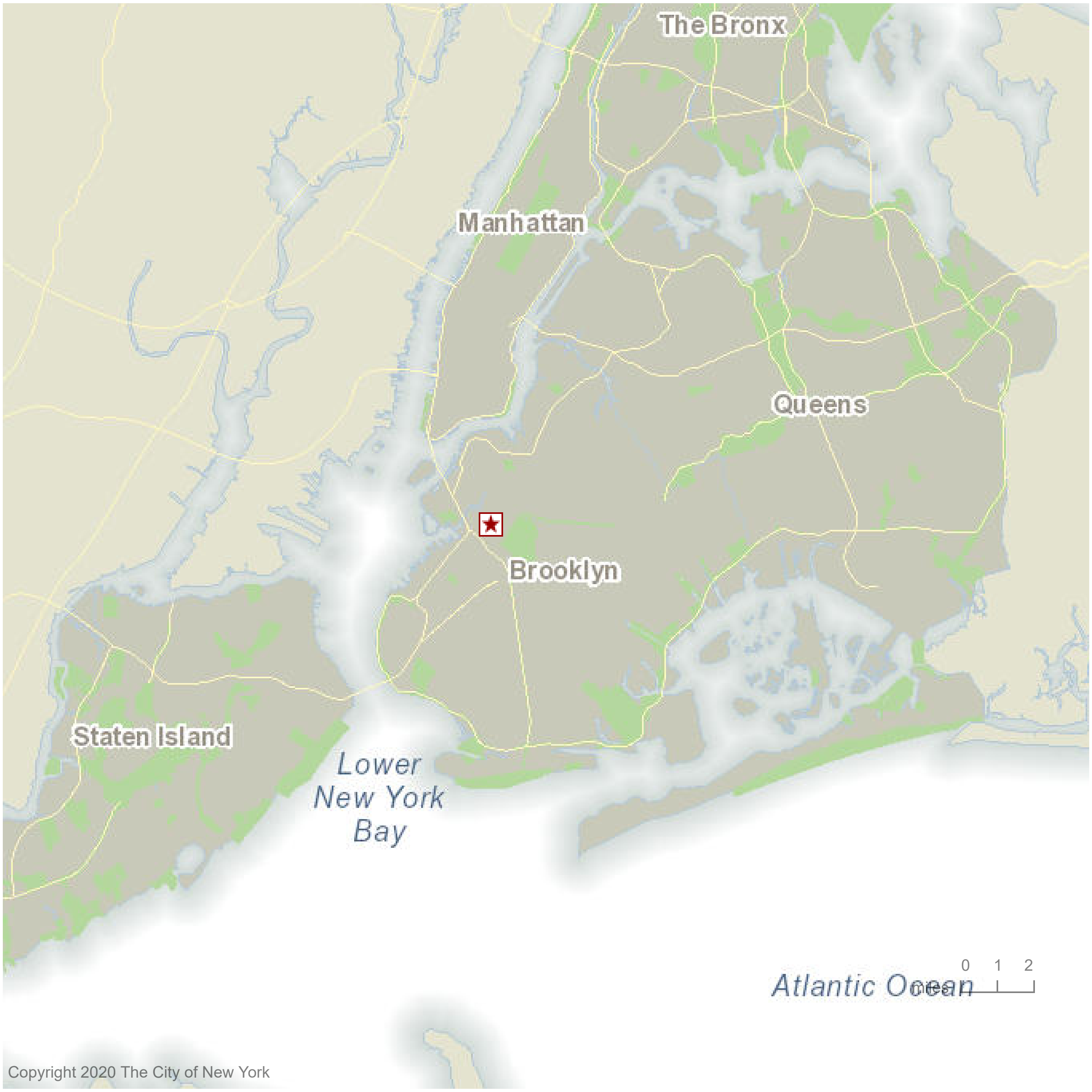
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Gutter Sub		1	1.00	#######	1200.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1200.00

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $1,200.00
ConnDOT		Total to Date $39,928.25

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

329 9 street Brooklyn



329 9 street Brooklyn

329 9 STREET, BROOKLYN 11215

- Building & Property Information

Borough: Brooklyn **Block:** 1005 **Lot:** 7501
Police Precinct: 78
Owner: NAME NOT ON FILE

Address: 329 9 STREET, BROOKLYN 11215
Lot Area: 23031 sf
Lot Frontage: 125' **Lot Depth:** 180
Year Built: 1914
Number of Buildings: 1
Number of Floors: 4
Gross Floor Area: 32,767 sf (estimated)
Residential Units: 19 **Total # of Units:** 20
Land Use: Mixed Residential and Commercial Buildings
Zoning: R6B R6A
Commercial Overlay: C2-4
Zoning Map #: 16D

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 16D

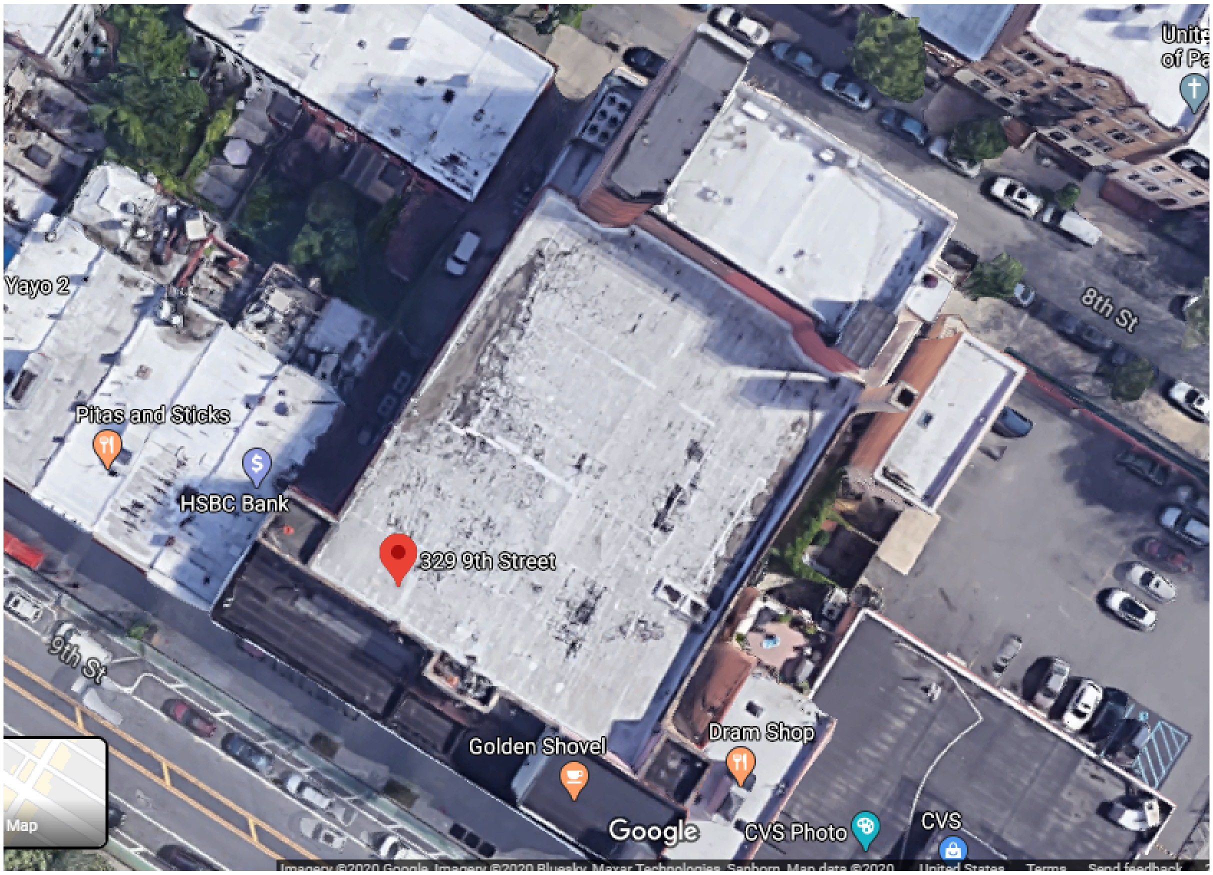
DOF Digital Tax Map

DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


Yayo 2
Pitas and Sticks
HSBC Bank
329 9th Street
8th St
9th St
Golden Shovel
Dram Shop
Google
CVS Photo
CVS
Map
Imagery ©2020 Google, Imagery ©2020 Bluesky, Maxar Technologies, Sanborn, Map data ©2020
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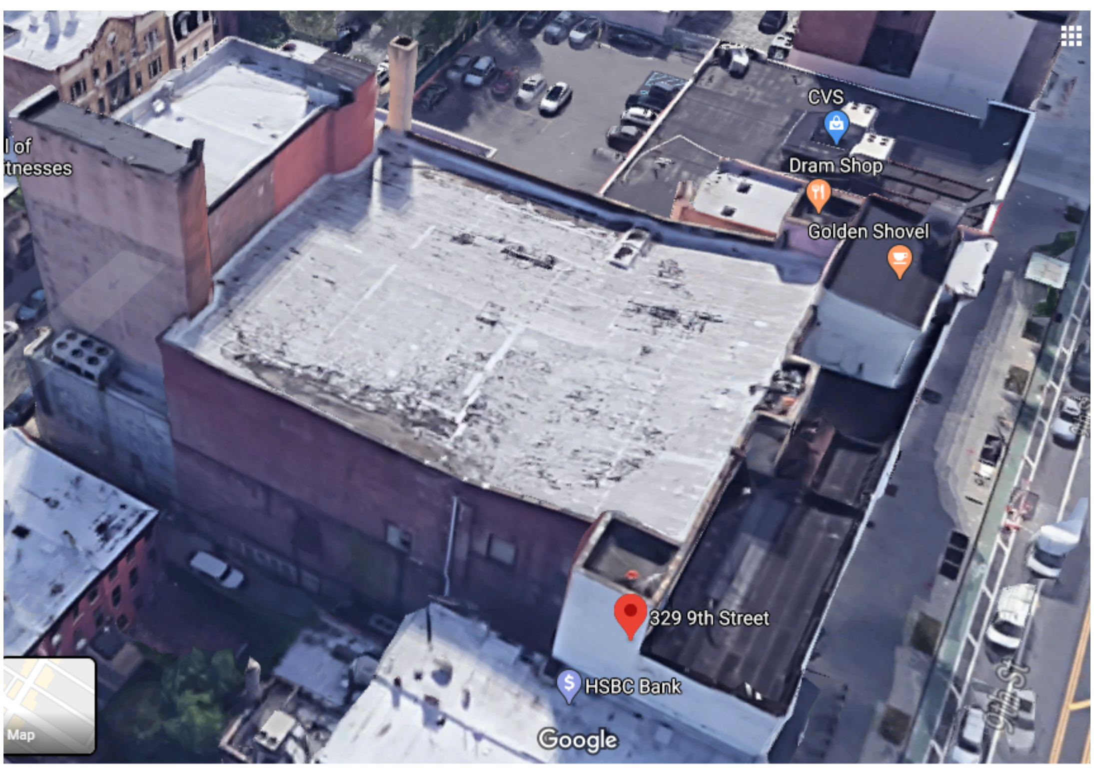
CVS
Dram Shop
Golden Shovel
329 9th Street
HSBC Bank
9th St
Google
Map


HSBC
STEVE'S 9th MARKET
DRAM SHOP


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CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 329 9 Steet Brooklyn
4 Floors. 18295 SF Roof Main Building. 9939 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -9939 SF

Total Area 28233 SF

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	40.00	46.53	1861.20
	Labor Foreman	1	40.00	48.53	1941.20
	Operator	1	40.00	90.69	3627.60
	Teamster	1	40.00	41.19	1647.60
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				9077.60
2	Health		80.00	26.45	2116.00
	Welfare		40.00	28.50	1140.00
	and		40.00	46.72	1868.80
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	4538.80
4	20% of (Items 1 + 2 + 3)				3748.24
5	Total (Items 1 thru 4)				22489.44

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	368.00	20.00	7360.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			7360.00
Less Discounts			0.00
Total			7360.00
Additional % = 15 %			1104.00
Total			8464.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	40.00	123.10	4924.00
Pick Up		1	40.00	20.54	821.60
Tri Axle Dump		1	40.00	80.88	3235.20
Light Tower		2	80.00	10.13	810.40
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					9791.20

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $40,744.64 Total to Date $40,744.64

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 329 9 Steet Brooklyn
4 Floors. 18295 SF Roof Main Building. 9939 SF Sidewalk and hardscape
6396 SF @ 2' excavation = 473 CY Excavation
$6.02 /sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	48.00	46.53	2233.44
	Labor Foreman	1	48.00	48.53	2329.44
	Operator	1	48.00	90.69	4353.12
	Teamster	2	96.00	41.19	3954.24
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				12870.24
2	Health		96.00	26.45	2539.20
	Welfare		48.00	28.50	1368.00
	and		96.00	46.72	4485.12
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	6435.12
4	20% of (Items 1 + 2 + 3)				5539.54
5	Total (Items 1 thru 4)				33237.22

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	1104.00	20.00	22080.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			22080.00
Less Discounts			0.00
Total			22080.00
Additional % = 15 %			3312.00
Total			25392.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	48.00	123.10	5908.80
Pick Up		1	48.00	20.54	985.92
Tri Axle Dump		2	96.00	80.88	7764.48
Light Tower		2	96.00	10.13	972.48
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					15631.68

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total
ConnDOT				Progress Total: $74,260.90
				Total to Date $115,005.54

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 329 9 Steet Brooklyn
4 Floors. 18295 SF Roof Main Building. 9939 SF Sidewalk and hardscape

Install geotextile fabric and 700 Tons stone
$8.75 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	32.00	46.53	1488.96
Labor Foreman	1	32.00	48.53	1552.96
Operator	1	32.00	90.69	2902.08
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				5944.00
2 Health		64.00	26.45	1692.80
Welfare		32.00	28.50	912.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	2972.00
4 20% of (Items 1 + 2 + 3)				2304.16
5 Total (Items 1 thru 4)				13824.96

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	1200.00	50.00	60000.00
Stone Dust Tons (d)	60.00	50.00	3000.00
Geotextile	3.00	350.00	1050.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			64050.00
Less Discounts			0.00
Total			64050.00
Additional % = 15 %			9607.50
Total			73657.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	32.00	123.10	3939.20
Pick Up		1	32.00	20.54	657.28
Light Tower		2	64.00	10.13	648.32
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					5244.80

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $92,727.26
ConnDOT				Total to Date $207,732.80

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 329 9 Steet Brooklyn
4 Floors. 18295 SF Roof Main Building. 9939 SF Sidewalk and hardscape

Install 9939 SF permeable pavers
$9.45/sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Mason	1	88.00	51.97	4573.36
Mason Foreman	1	88.00	53.97	4749.36
Laborer	2	88.00	46.53	4094.64
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				13417.36
2 Health		172.00	26.45	4549.40
Welfare		172.00	33.71	5798.12
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	6708.68
4 20% of (Items 1 + 2 + 3)				6094.71
5 Total (Items 1 thru 4)				36568.27

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	1050.00	5.00	5250.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			5250.00
Less Discounts			0.00
Total			5250.00
Additional % = 15 %			787.50
Total			6037.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	88.00	6.50	572.00
Pick Up		1	88.00	20.54	1807.52
Light Tower		1	88.00	10.13	891.44
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3270.96

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $45,876.73 Total to Date $253,609.53

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

DESCRIPTION OF WOR
329 9 Steet Brooklyn
4 Floors. 18295 SF Roof Main Building. 9939 SF Sidewalk and hardscape
Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY
460 cy 92 loads 1 load every 30 min
$10.25/sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	80.00	94.37	7549.60
	Labor Foreman	1	80.00	48.53	3882.40
	Excavator operator	1	80.00	90.69	7255.20
	Laborer	3	240.00	46.53	11167.20
	Oiler	1	80.00	70.29	5623.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				35477.60
2	Health		160.00	28.50	4560.00
	Welfare		80.00	31.95	2556.00
	and		320.00	26.45	8464.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	17738.80
4	20% of (Items 1 + 2 + 3)				13759.28
5	Total (Items 1 thru 4)				82555.68

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	800.00	4.00	3200.00
LWT Aggregate CY	460.00	70.00	32200.00
geotextile	3.00	350.00	1050.00
Electric Drain Valve	12.00	2000.00	24000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			60450.00
Less Discounts			0.00
Total			60450.00
Additional % = 15 %			9067.50
Total			69517.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	80.00	574.38	45950.40
Cat 322 RT excavator		1	80.00	123.10	9848.00
Pick Up		1	80.00	20.54	1643.20
5 CY concrete bucket		1	80.00	4.57	365.60
Light Tower		1	80.00	10.13	810.40
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					58617.60

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total	
		Progress Total:	$210,690.78
		Total to Date	$464,300.31

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

DESCRIPTION OF WOR
4 Floors. 18295 SF Roof Main Building. 9939 SF Sidewalk and hardscape
2 layers geotextile fabric
Green Grid g4 placed on top of Norlite stone
329 9 Steet Brooklyn
$33.90/sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	80.00	94.37	7549.60
	Labor Foreman	1	80.00	48.53	3882.40
	Forklift Operator	1	80.00	90.69	7255.20
	Laborer	3	240.00	46.53	11167.20
	Oiler	1	80.00	70.29	5623.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				35477.60
2	Health		160.00	28.50	4560.00
	Welfare		80.00	31.95	2556.00
	and		320.00	26.45	8464.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	17738.80
4	20% of (Items 1 + 2 + 3)				13759.28
5	Total (Items 1 thru 4)				82555.68

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	18290.00	18.50	338365.00
geotextile	3.00	350.00	1050.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			339415.00
Less Discounts			0.00
Total			339415.00
Additional % = 15 %			50912.25
Total			390327.25

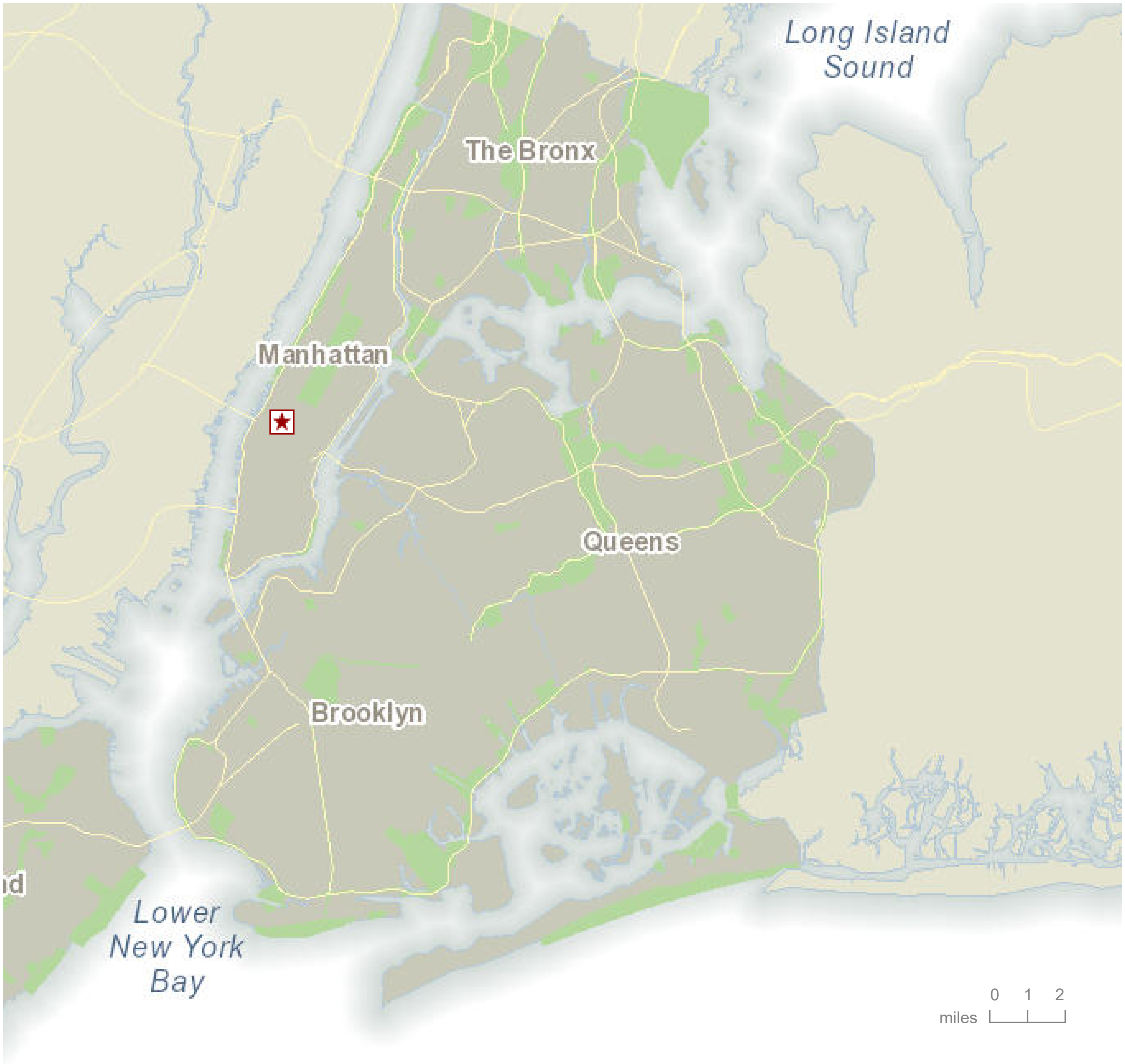
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	80.00	574.38	45950.40
Forklift		1	80.00	8.10	648.00
Pick Up		1	80.00	20.54	1643.20
Palet Lift		1	80.00	3.12	249.60
Light Tower		1	80.00	10.13	810.40
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					49301.60

Inspector: ConnDOT	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $522,184.53 Total to Date $986,484.84

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

330 W 45th Manhattan



330 West 45 street

330 WEST 45 STREET, NEW YORK 10036

- Building & Property Information

Borough: Manhattan **Block:** 1035 **Lot:** 47
Police Precinct: 14
Owner: TOWN HOUSE MANAGEMENT LLC

Address: 330 WEST 45 STREET, NEW YORK 10036
Lot Area: 12301 sf
Lot Frontage: 122.5' **Lot Depth:** 100.42
Year Built: 1964
Number of Buildings: 1
Number of Floors: 12
Gross Floor Area: 121,156 sf (estimated)
Residential Units: 130 **Total # of Units:** 133
Land Use: Mixed Residential and Commercial Buildings
Zoning: C6-2
Commercial Overlay:
Zoning Map #: 8D

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 8D

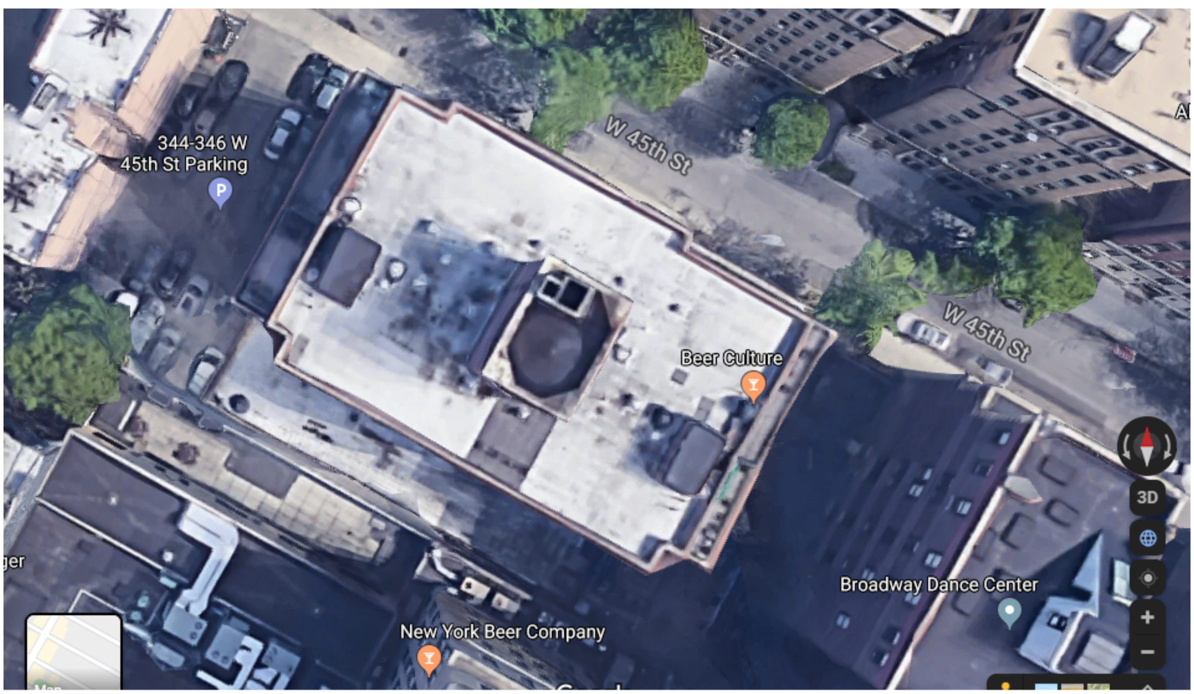
DOF Digital Tax Map

DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


344-346 W
45th St Parking
W 45th St
W 45th St
Beer Culture
Broadway Dance Center
New York Beer Company
3D

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 330 W 45th Street Manhattan
12 Floors. 8053 SF Roof Main Building. 2785 SF Sidewalk. 3611 SF concrete or similar material.
Demo and dispose existing concrete sidewalk or similar ground surfaces - 6396 SF

Total Area 14449 SF = 18.90 SF

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	24.00	46.53	1116.72
	Labor Foreman	1	24.00	48.53	1164.72
	Operator	1	24.00	90.69	2176.56
	Teamster	1	24.00	41.19	988.56
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				5446.56
2	Health		48.00	26.45	1269.60
	Welfare		24.00	28.50	684.00
	and		24.00	46.72	1121.28
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	2723.28
4	20% of (Items 1 + 2 + 3)				2248.94
5	Total (Items 1 thru 4)				13493.66

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	130.00	20.00	2600.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			2600.00
Less Discounts			0.00
Total			2600.00
Additional % = 15 %			390.00
Total			2990.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	24.00	123.10	2954.40
Pick Up		1	24.00	20.54	492.96
Tri Axle Dump		1	24.00	80.88	1941.12
Light Tower		2	48.00	10.13	486.24
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					5874.72

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total Progress Total:	$22,358.38
Total to Date	$22,358.38

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09

(302-06-0169)

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 330 W 45th Street Manhattan

12 Floors. 8053 SF Roof Main Building. 2785 SF Sidewalk. 3611 SF concrete or similar material.

6396 SF @ 2' excavation = 473 CY Excavation

$6.02 /sf

Select only one payment type:

☐ Scope Estimate

☐ Progress (progress payment = 90% of Total)

☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	32.00	46.53	1488.96
	Labor Foreman	1	32.00	48.53	1552.96
	Operator	1	32.00	90.69	2902.08
	Teamster	2	64.00	41.19	2636.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				8580.16
2	Health		64.00	26.45	1692.80
	Welfare		32.00	28.50	912.00
	and		64.00	46.72	2990.08
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	4290.08
4	20% of (Items 1 + 2 + 3)				3693.02
5	Total (Items 1 thru 4)				22158.14

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	400.00	20.00	8000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			8000.00
Less Discounts			0.00
Total			8000.00
Additional % = 15 %			1200.00
Total			9200.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	32.00	123.10	3939.20
Pick Up		1	32.00	20.54	657.28
Tri Axle Dump		2	64.00	80.88	5176.32
Light Tower		2	64.00	10.13	648.32
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					10421.12

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total Progress Total:	$41,779.26
Total to Date	$64,137.64

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 330 W 45th Street Manhattan
12 Floors. 8053 SF Roof Main Building. 2785 SF Sidewalk. 3611 SF concrete or similar material.

Install geotextile fabric and 700 Tons stone
$8.75 sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	24.00	46.53	1116.72
	Labor Foreman	1	24.00	48.53	1164.72
	Operator	1	24.00	90.69	2176.56
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				4458.00
2	Health		48.00	26.45	1269.60
	Welfare		24.00	28.50	684.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	2229.00
4	20% of (Items 1 + 2 + 3)				1728.12
5	Total (Items 1 thru 4)				10368.72

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	700.00	50.00	35000.00
Stone Dust Tons (d)	40.00	50.00	2000.00
Geotextile	2.00	350.00	700.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			37700.00
Less Discounts			0.00
Total			37700.00
Additional % = 15 %			5655.00
Total			43355.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	24.00	123.10	2954.40
Pick Up		1	24.00	20.54	492.96
Light Tower		2	48.00	10.13	486.24
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3933.60

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total Progress Total:	$57,657.32
Total to Date	$121,794.96

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

PROPERTY: 330 W 45th Street Manhattan
12 Floors. 8053 SF Roof Main Building. 2785 SF Sidewalk. 3611 SF concrete or similar material.

Install 6396 SF permeable pavers
$9.45/sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	64.00	51.97	3326.08
	Mason Foreman	1	64.00	53.97	3454.08
	Laborer	1	64.00	46.53	2977.92
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				9758.08
2	Health		64.00	26.45	1692.80
	Welfare		128.00	33.71	4314.88
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	4879.04
4	20% of (Items 1 + 2 + 3)				4128.96
5	Total (Items 1 thru 4)				24773.76

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	6500.00	5.00	32500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			32500.00
Less Discounts			0.00
Total			32500.00
Additional % = 15 %			4875.00
Total			37375.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	64.00	6.50	416.00
Pick Up		1	64.00	20.54	1314.56
Light Tower		2	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2054.72

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $64,203.48
ConnDOT				Total to Date $185,998.44

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

DESCRIPTION OF WOR
8053 SF roof area
2 layers geotextile fabric
Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY
200 cy 40 loads 1 load every 30 min
$10.25/sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	56.00	94.37	5284.72
	Labor Foreman	1	56.00	48.53	2717.68
	Excavator operator	1	56.00	90.69	5078.64
	Laborer	3	168.00	46.53	7817.04
	Oiler	1	56.00	70.29	3936.24
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				24834.32
2	Health		112.00	28.50	3192.00
	Welfare		56.00	31.95	1789.20
	and		224.00	26.45	5924.80
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	12417.16
4	20% of (Items 1 + 2 + 3)				9631.50
5	Total (Items 1 thru 4)				57788.98

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	400.00	4.00	1600.00
LWT Aggregate CY	200.00	70.00	14000.00
geotextile	3.00	350.00	1050.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			16650.00
Less Discounts			0.00
Total			16650.00
Additional % = 15 %			2497.50
Total			19147.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	56.00	574.38	32165.28
Cat 322 RT excavator		1	56.00	123.10	6893.60
Pick Up		1	56.00	20.54	1150.24
5 CY concrete bucket		1	56.00	4.57	255.92
Light Tower		1	56.00	10.13	567.28
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					41032.32

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $117,968.80 Total to Date $303,967.24

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

DESCRIPTION OF WOR
8053 SF roof area
2 layers geotextile fabric
Green Grid g4 placed on top of Norlite stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	56.00	94.37	5284.72
	Labor Foreman	1	56.00	48.53	2717.68
	Forklift Operator	1	56.00	90.69	5078.64
	Laborer	3	168.00	46.53	7817.04
	Oiler	1	56.00	70.29	3936.24
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				24834.32
2	Health		112.00	28.50	3192.00
	Welfare		56.00	31.95	1789.20
	and		224.00	26.45	5924.80
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	12417.16
4	20% of (Items 1 + 2 + 3)				9631.50
5	Total (Items 1 thru 4)				57788.98

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	8060.00	18.50	149110.00
geotextile	3.00	350.00	1050.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			150160.00
Less Discounts			0.00
Total			150160.00
Additional % = 15 %			22524.00
Total			172684.00

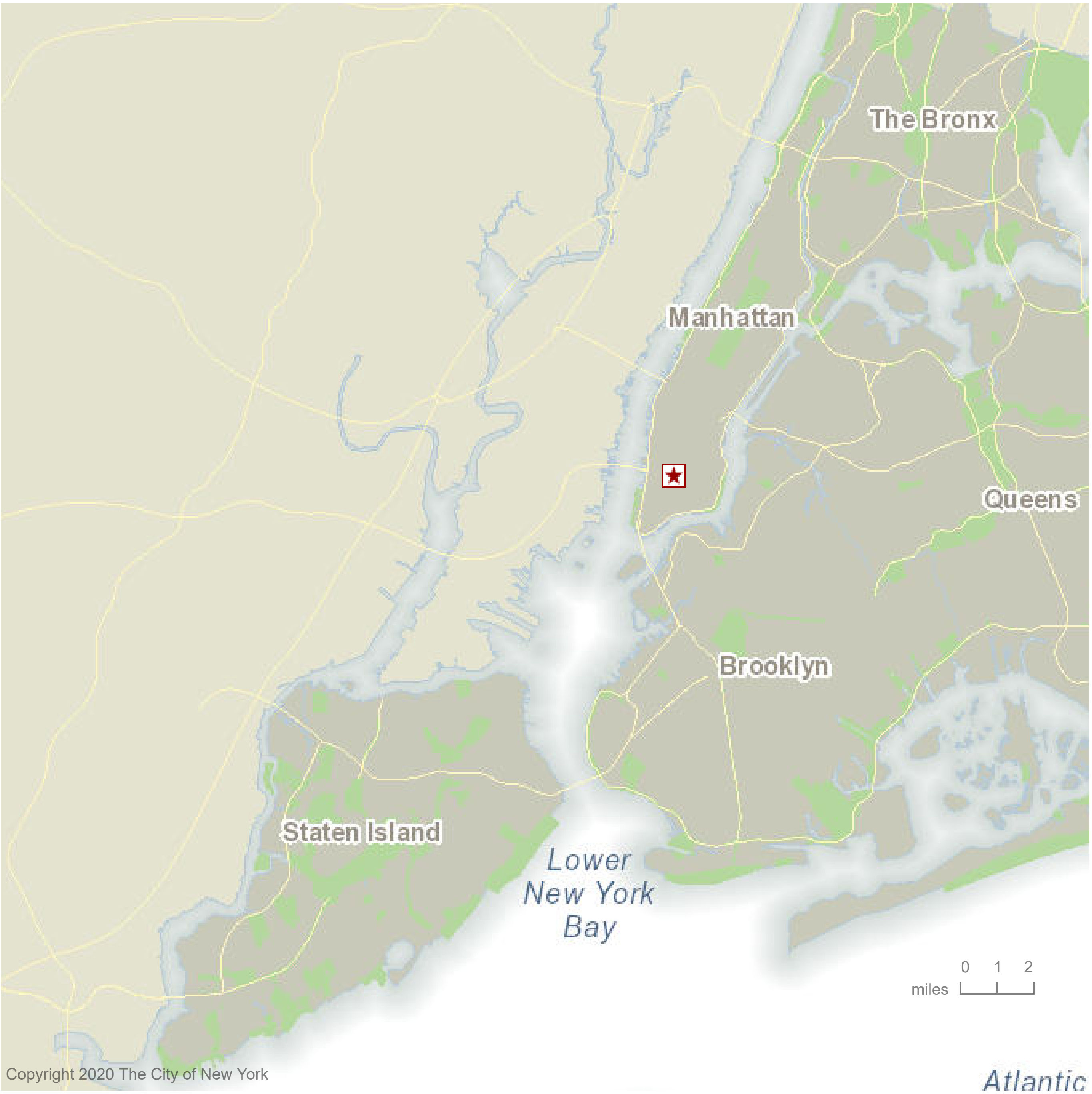
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	56.00	574.38	32165.28
Forklift		1	56.00	8.10	453.60
Pick Up		1	56.00	20.54	1150.24
Palet Lift		1	56.00	3.12	174.72
Light Tower		1	56.00	10.13	567.28
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					34511.12

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$264,984.10
ConnDOT				Total to Date	$568,951.34

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

549 Broadway Manhattan



549 Broadway

549 BROADWAY, NEW YORK 10012

- Building & Property Information

Borough: Manhattan **Block:** 498 **Lot:** 11
Police Precinct: 1
Owner: SCHOLASTIC 557 BROADWAY, LLC

Address: 549 BROADWAY, NEW YORK 10012
Lot Area: 19841 sf
Lot Frontage: 99.08' **Lot Depth:** 200.25
Year Built: 1900
Number of Buildings: 1
Number of Floors: 12
Gross Floor Area: 243,442 sf (estimated)
Residential Units: 0 **Total # of Units:** 6
Land Use: Commercial and Office Buildings
Zoning: M1-5B
Commercial Overlay:
Zoning Map #: 12C

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 12C

DOF Digital Tax Map

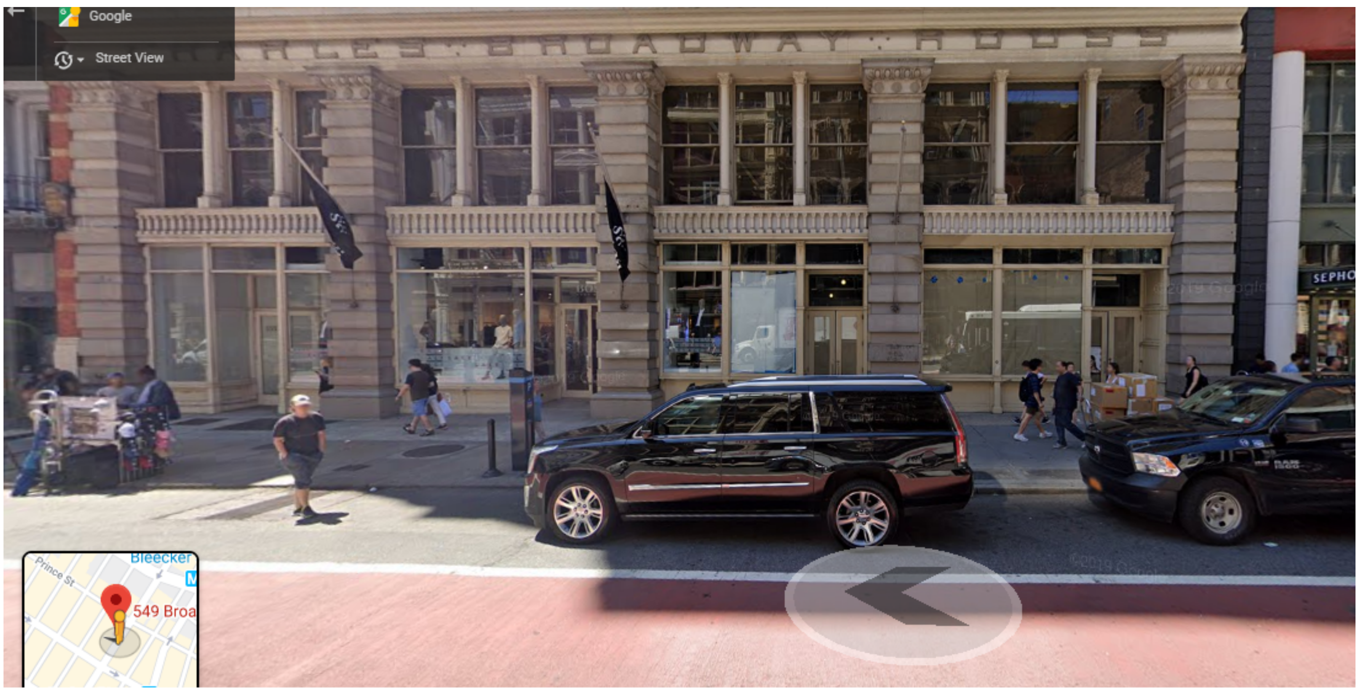
DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


SEPHORA
Prince St Station
Map
Google
549 Broadway
Imagery ©2020 Google, Imagery ©2020 Bluesky, Sanborn, Map data ©2020 United States Terms Send feedback 50 ft


Google
Street View
Bleecker
Prince St
549 Broa


119 Mercer St
New York
Google
Street View
120
BOSS
BOSS
BOSS


MANGO
SEPHORA
Clarks
549 Broadway
SLT Soho

CHECKED BY:	DATE:	CON-9 Rev 4/27/09	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		(302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 549 Broadway Manhattan
12 Floors. 20180 SF Roof Main Building. 2708 SF Sidewalk.
Demo and dispose existing concrete sidewalk or similar ground surfaces -2708 SF

Total Footprint area 22,888 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	32.00	46.53	1488.96
	Labor Foreman	1	32.00	48.53	1552.96
	Operator	1	32.00	90.69	2902.08
	Teamster	1	32.00	41.19	1318.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				7262.08
2	Health		64.00	26.45	1692.80
	Welfare		32.00	28.50	912.00
	and		32.00	46.72	1495.04
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.18	1307.17
4	20% of (Items 1 + 2 + 3)				2533.82
5	Total (Items 1 thru 4)				15202.91

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	100.00	20.00	2000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			2000.00
Less Discounts			0.00
Total			2000.00
Additional % = 15 %			300.00
Total			2300.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	32.00	123.10	3939.20
Pick Up		1	32.00	20.54	657.28
Tri Axle Dump		1	32.00	80.88	2588.16
Light Tower		2	64.00	10.13	648.32
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					7832.96

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $25,335.87
ConnDOT				Total to Date $25,335.87

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 549 Broadway Manhattan
12 Floors. 20180 SF Roof Main Building. 2708 SF Sidewalk.
2708 SF @ 2' excavation = 201 CY Excavation
$13.34/sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	32.00	46.53	1488.96
	Labor Foreman	1	32.00	48.53	1552.96
	Operator	1	32.00	90.69	2902.08
	Teamster	2	64.00	41.19	2636.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				8580.16
2	Health		64.00	26.45	1692.80
	Welfare		32.00	28.50	912.00
	and		64.00	46.72	2990.08
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	4290.08
4	20% of (Items 1 + 2 + 3)				3693.02
5	Total (Items 1 thru 4)				22158.14

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	302.00	20.00	6040.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			6040.00
Less Discounts			0.00
Total			6040.00
Additional % = 15 %			906.00
Total			6946.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	32.00	123.10	3939.20
Pick Up		1	32.00	20.54	657.28
Tri Axle Dump		2	64.00	80.88	5176.32
Light Tower		2	64.00	10.13	648.32
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					10421.12

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $39,525.26
ConnDOT				Total to Date $64,861.13

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09

(302-06-0169)

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 549 Broadway Manhattan

12 Floors. 20180 SF Roof Main Building. 2708 SF Sidewalk.

Stone Delivered

Install geotextile fabric and 302 Tons stone

$10.04 sf

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Laborer	1	16.00	46.53	744.48
Labor Foreman	1	16.00	48.53	776.48
Operator	1	16.00	90.69	1451.04
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				2972.00
2 Health		32.00	26.45	846.40
Welfare		16.00	28.50	456.00
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	1486.00
4 20% of (Items 1 + 2 + 3)				1152.08
5 Total (Items 1 thru 4)				6912.48

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	300.00	50.00	15000.00
Stone Dust Tons (d)	20.00	50.00	1000.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			16350.00
Less Discounts			0.00
Total			16350.00
Additional % = 15 %			2452.50
Total			18802.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Light Tower		2	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2622.40

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total Progress Total:	$28,337.38
Total to Date	$93,198.51

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

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CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

PROPERTY: 549 Broadway Manhattan
12 Floors. 20180 SF Roof Main Building. 2708 SF Sidewalk.

Install 2708 SF permeable pavers
$11.70/sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	40.00	51.97	2078.80
	Mason Foreman	1	40.00	53.97	2158.80
	Laborer	2	40.00	46.53	1861.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				6098.80
2	Health		80.00	26.45	2116.00
	Welfare		80.00	33.71	2696.80
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	3049.40
4	20% of (Items 1 + 2 + 3)				2792.20
5	Total (Items 1 thru 4)				16753.20

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	2750.00	5.00	13750.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			13750.00
Less Discounts			0.00
Total			13750.00
Additional % = 15 %			2062.50
Total			15812.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	40.00	6.50	260.00
Pick Up		1	40.00	20.54	821.60
Light Tower		1	40.00	10.13	405.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1486.80

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $34,052.50
ConnDOT		Total to Date $127,251.01

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09

(302-06-0169)

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

549 Broadway

20180 SF foor area by photo 50% useable. - use 16" in available areas. Water storage tanks in pic

2 layers geotextile fabric possible grey water use already

Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY

23 cy 5 loads 1 load every 40 min 9 loads a day

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	96.00	94.37	9059.52
	Labor Foreman	1	96.00	48.53	4658.88
	Excavator operator	1	96.00	90.69	8706.24
	Laborer	5	480.00	46.53	22334.40
	Oiler	1	96.00	70.29	6747.84
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				51506.88
2	Health		188.00	28.50	5358.00
	Welfare		96.00	31.95	3067.20
	and		576.00	26.45	15235.20
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	25753.44
4	20% of (Items 1 + 2 + 3)				20184.14
5	Total (Items 1 thru 4)				121104.86

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	800.00	4.00	3200.00
LWT Aggregate CY	500.00	70.00	35000.00
geotextile	5.00	350.00	1750.00
Electronic Roof Valves	10.00	2000.00	20000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			59950.00
Less Discounts			0.00
Total			59950.00
Additional % = 15 %			8992.50
Total			68942.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	96.00	574.38	55140.48
Cat 322 RT excavator		1	96.00	123.10	11817.60
Pick Up		1	96.00	20.54	1971.84
5 CY concrete bucket		1	96.00	4.57	438.72
Light Tower		2	188.00	10.13	1904.44
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					71273.08

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total Progress Total:	$261,320.44
Total to Date	$388,571.45

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169)	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

549 Broadway
20180 SF foor area by photo 50% useable. - use 16" in available areas. Water storage tanks in pic
2 layers geotextile fabric
Green Grid g4 placed on top of Norlite stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	64.00	94.37	6039.68
	Labor Foreman	1	64.00	48.53	3105.92
	Forklift Operator	1	64.00	90.69	5804.16
	Laborer	5	320.00	46.53	14889.60
	Oiler	1	64.00	70.29	4498.56
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				34337.92
2	Health		128.00	28.50	3648.00
	Welfare		64.00	31.95	2044.80
	and		384.00	26.45	10156.80
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	17168.96
4	20% of (Items 1 + 2 + 3)				13471.30
5	Total (Items 1 thru 4)				80827.78

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	10000.00	18.50	185000.00
geotextile	4.00	350.00	1400.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			186400.00
Less Discounts			0.00
Total			186400.00
Additional % = 15 %			27960.00
Total			214360.00

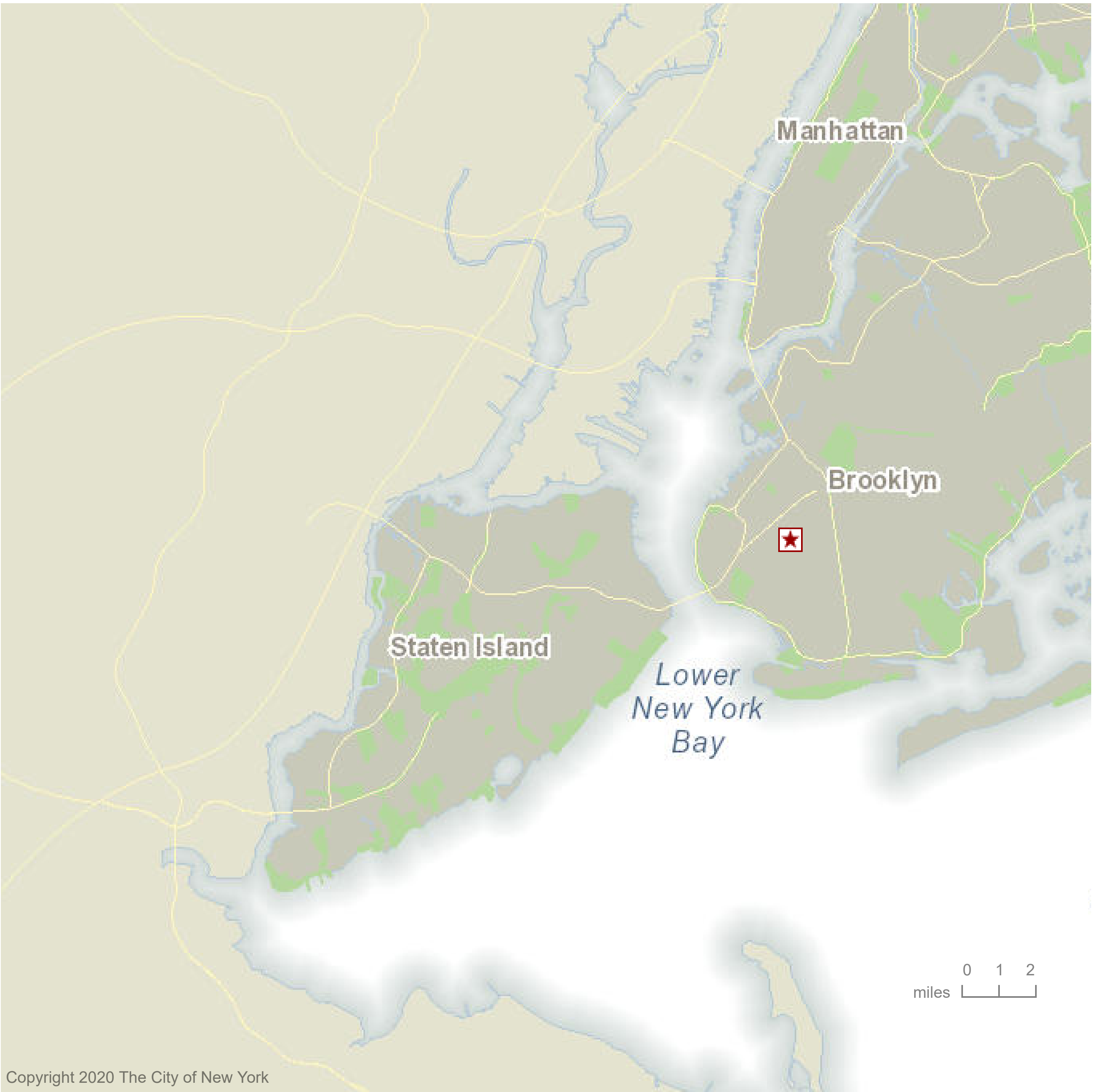
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	64.00	574.38	36760.32
Forklift		1	64.00	8.10	518.40
Pick Up		1	64.00	20.54	1314.56
Palet Lift		1	64.00	3.12	199.68
Light Tower		1	64.00	10.13	648.32
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					39441.28

Inspector: Date:	Contractor's Representative: Date:	Daily Total	
ConnDOT		Progress Total:	$334,629.06
		Total to Date	$723,200.51

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

[1408 57 street Brooklyn]



[1408 57 Street]

Sidewalk side 63' x 4', Back 21' x 4' front 26' x 25' = 986 sf
Extra 1' stone handles roof

1408 57 STREET, BROOKLYN 11219

- Building & Property Information

Borough: Brooklyn **Block:** 5699 **Lot:** 12
Police Precinct: 66
Owner: 1408 57 LLC

Address: 1408 57 STREET, BROOKLYN 11219
Lot Area: 2504 sf
Lot Frontage: 25' **Lot Depth:** 100.17
Year Built: 1899
Number of Buildings: 1
Number of Floors: 2.75
Gross Floor Area: 2,206 sf (estimated)
Residential Units: 3 **Total # of Units:** 3
Land Use: Multi-Family Walk-up Buildings
Zoning: R5
Commercial Overlay:
Zoning Map #: 22C

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 22C

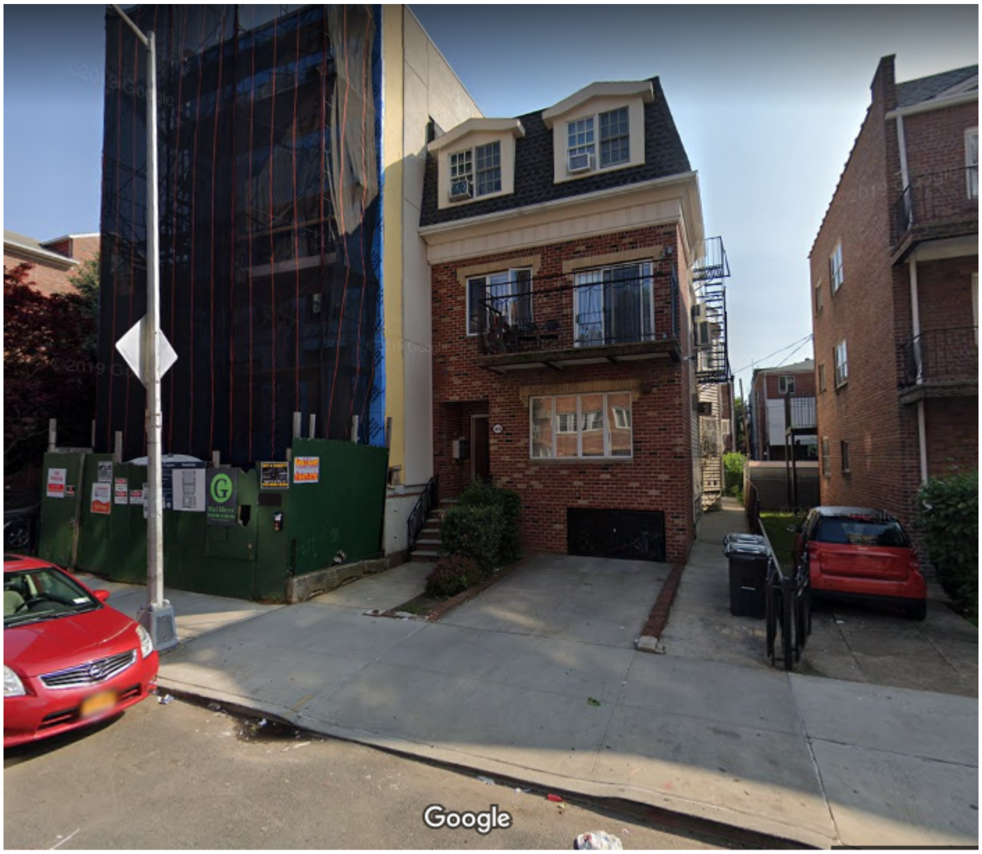
DOF Digital Tax Map

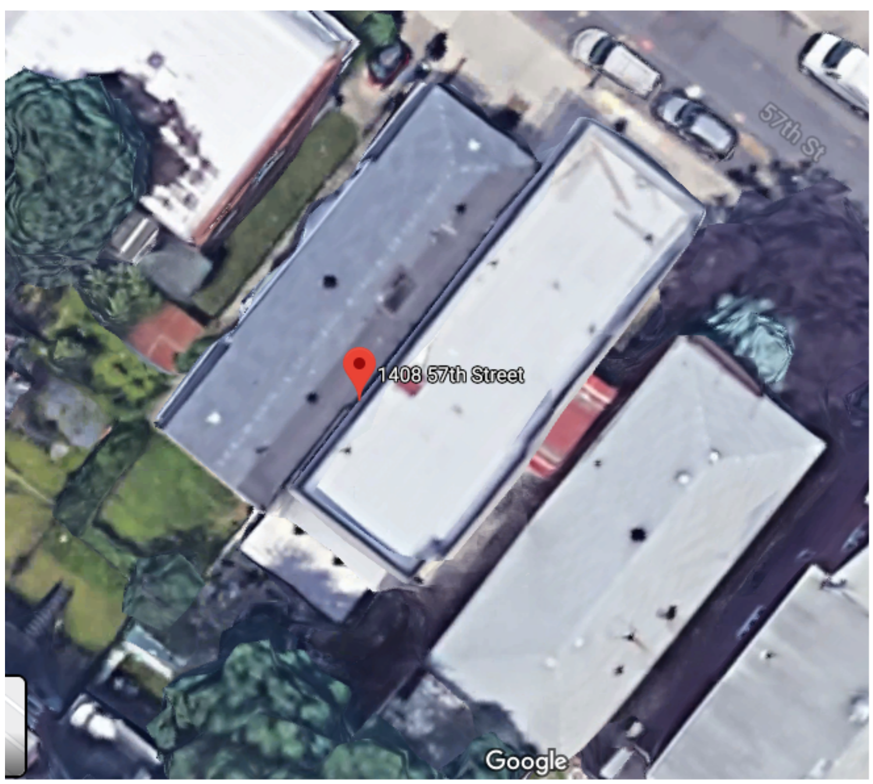
DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


Google


57th St
1408 57th Street
Google

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

PROPERTY: 1408 57 street Brooklyn
3 Floors.1276 SF Roof Main Building. 986 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -986 SF

Total Footprint area 2704 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	1	8.00	41.19	329.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1815.52
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and		8.00	46.72	373.76
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	907.76
4	20% of (Items 1 + 2 + 3)				749.65
5	Total (Items 1 thru 4)				4497.89

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	36.00	20.00	720.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			720.00
Less Discounts			0.00
Total			720.00
Additional % = 15 %			108.00
Total			828.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1877.20

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $7,203.09
ConnDOT		Total to Date $7,203.09

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 1408 57 street Brooklyn
3 Floors.1276 SF Roof Main Building. 986 SF Sidewalk and hardscape
986 SF @ 3' excavation = 110 CY Excavation

Excavation 1' deeper to allow for roof drainage

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	2	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2145.04
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and		16.00	46.72	747.52
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1072.52
4	20% of (Items 1 + 2 + 3)				923.26
5	Total (Items 1 thru 4)				5539.54

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	164.00	20.00	3280.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			3280.00
Less Discounts			0.00
Total			3280.00
Additional % = 15 %			492.00
Total			3772.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		2	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1958.24

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total Progress Total:	$11,269.78
Total to Date	$18,472.87

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 1408 57 street Brooklyn
3 Floors.1276 SF Roof Main Building. 986 SF Sidewalk and hardscape
Extra 1' stone to accommodate roof drainage
Install geotextile fabric and 164 Tons stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1486.00
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	743.00
4	20% of (Items 1 + 2 + 3)				576.04
5	Total (Items 1 thru 4)				3456.24

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	164.00	50.00	8200.00
Stone Dust Tons (d)	10.00	50.00	500.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			9050.00
Less Discounts			0.00
Total			9050.00
Additional % = 15 %			1357.50
Total			10407.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1230.16

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $15,093.90
ConnDOT		Total to Date $33,566.77

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 1408 57 street Brooklyn

3 Floors.1276 SF Roof Main Building. 986 SF Sidewalk and hardscape

Install 986 SF permeable pavers

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	16.00	51.97	831.52
	Mason Foreman	1	16.00	53.97	863.52
	Laborer	1	16.00	46.53	744.48
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2439.52
2	Health		16.00	26.45	423.20
	Welfare		32.00	33.71	1078.72
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1219.76
4	20% of (Items 1 + 2 + 3)				1032.24
5	Total (Items 1 thru 4)				6193.44

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	1020.00	5.00	5100.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			5100.00
Less Discounts			0.00
Total			5100.00
Additional % = 15 %			765.00
Total			5865.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	16.00	6.50	104.00
Pick Up		1	16.00	20.54	328.64
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					594.72

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$12,653.16
ConnDOT				Total to Date	$46,219.93

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.
Property 1408 57 street Brooklyn 1276 SF roof area roofdrains into paver ground		Select only one payment type: ☐ Scope Estimate ☐ Progress (progress payment = 90% of Total) ☐ Final SELECT ONLY ONE PAYMENT TYPE	CONSTRUCTION ORDER ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				0.00
2	Health				0.00
	Welfare				0.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	0.00
4	20% of (Items 1 + 2 + 3)				0.00
5	Total (Items 1 thru 4)				0.00

MATERIAL

Description	Quantity	Unit Price	Amount
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			0.00
Less Discounts			0.00
Total			0.00
Additional % = 15 %			0.00
Total			0.00

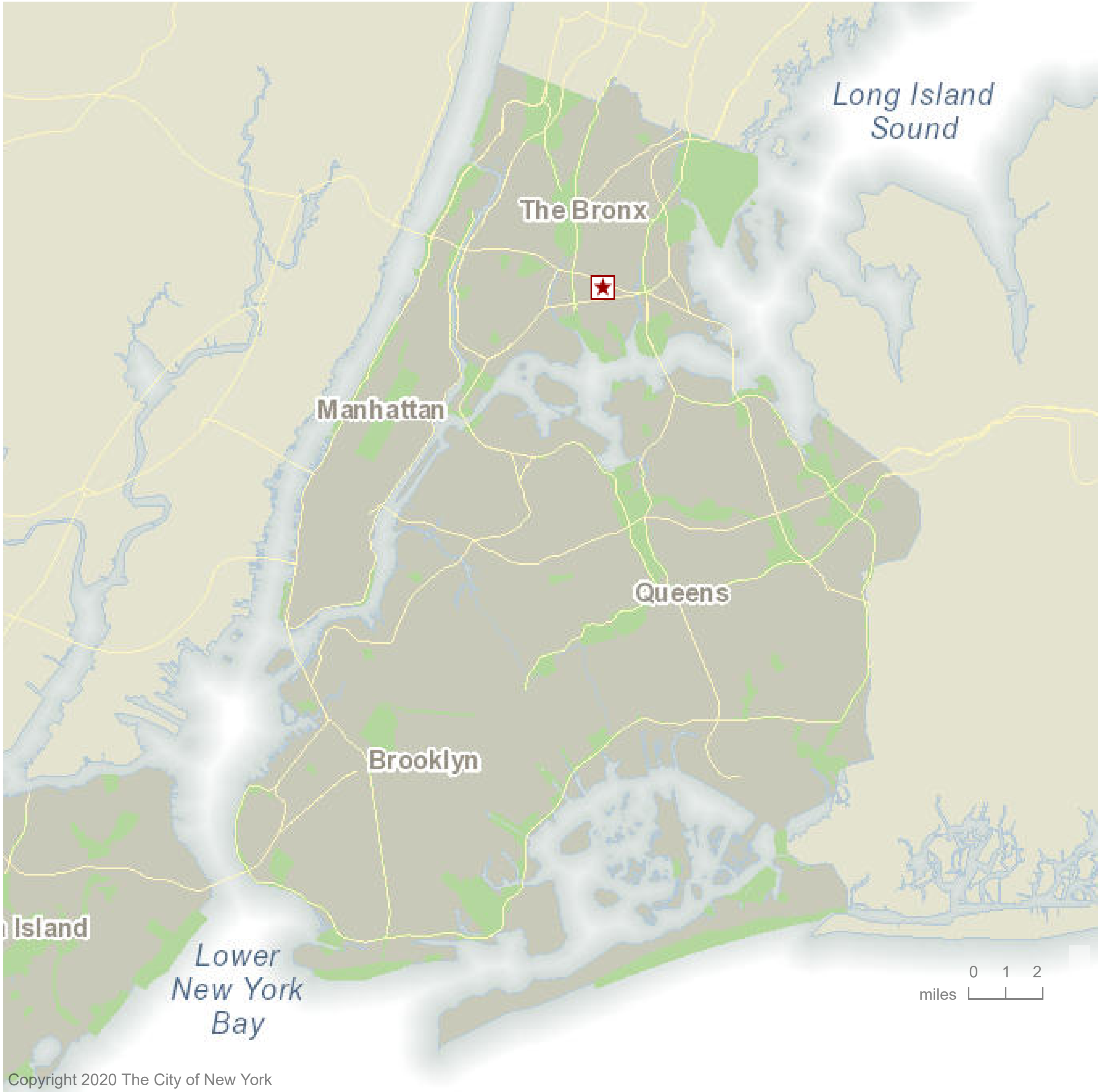
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Gutter Sub		1	1.00	#######	1500.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1500.00

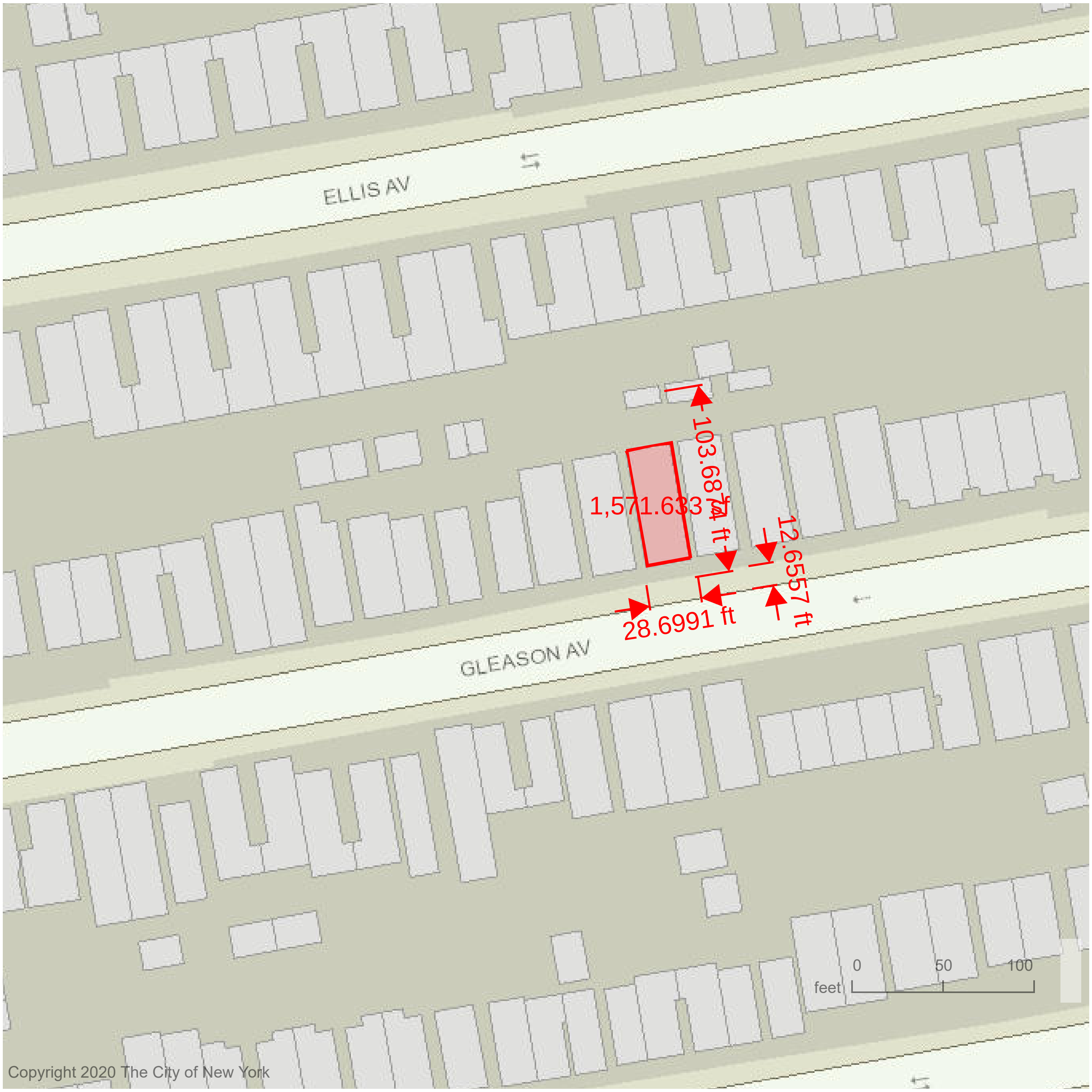
Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $1,500.00 Total to Date $47,719.93

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

1965 Gleason Bronx



1965 Gleason Ave Bronx



2927 - 1571 + 336 - 200 = 1492 sf paved area

1965 GLEASON AVENUE, BRONX 10472

- Building & Property Information

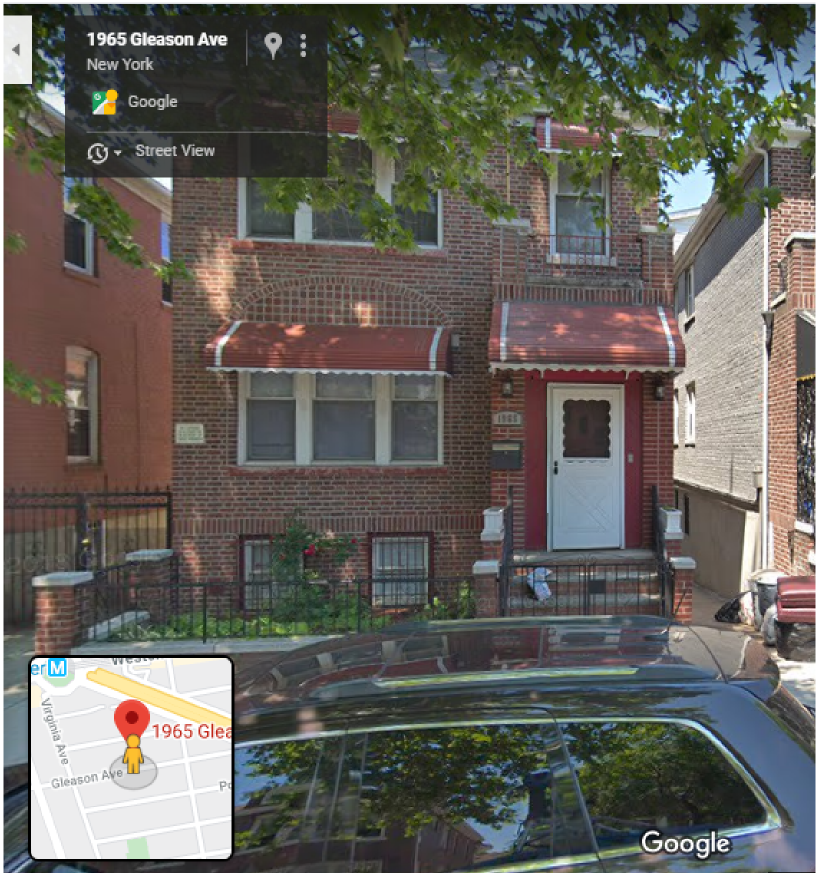
Borough: Bronx **Block:** 3793 **Lot:** 68
Police Precinct: 43
Owner: ROSADO, MILDRED

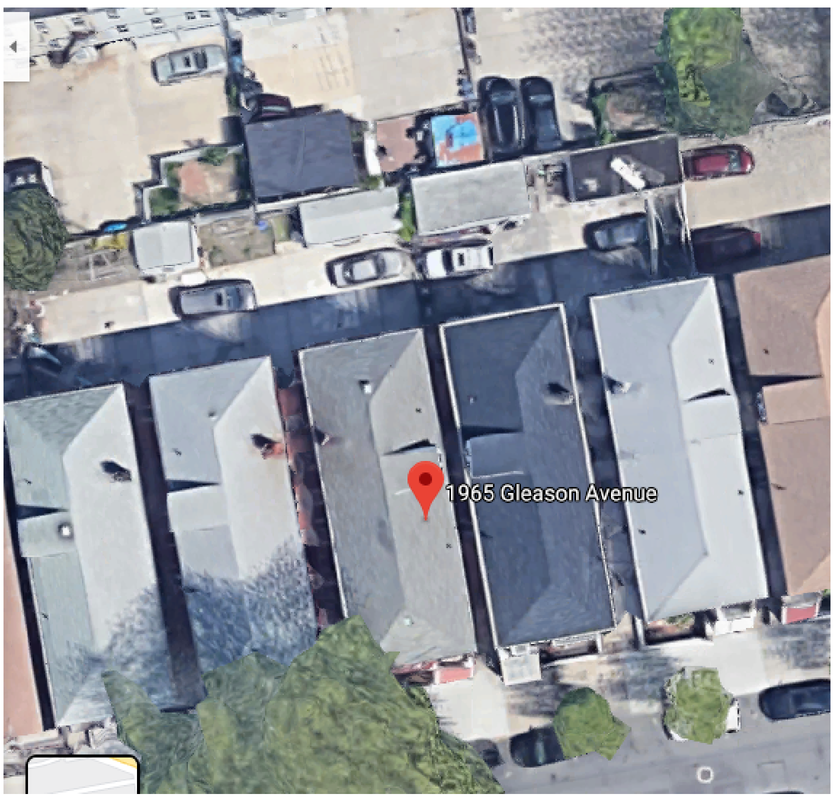
Address: 1965 GLEASON AVENUE, BRONX 10472
Lot Area: 2927 sf
Lot Frontage: 28.42' **Lot Depth:** 103
Year Built: 1935
Number of Buildings: 2
Number of Floors: 2
Gross Floor Area: 3,190 sf (estimated)
Residential Units: 2 **Total # of Units:** 2
Land Use: One and Two Family Buildings
Zoning: R5
Commercial Overlay:
Zoning Map #: 4B

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator
Building ECB Violations
Building Elevator Information
Building Profile
Building Registration/Violation
DCP Zoning Map 4B
DOF Digital Tax Map
DOHMH Rat Information Portal
Poll Site Locator
School & Zone Finder
Tax and Property Records


1965 Gleason Ave
New York
Google
Street View
Virginia Ave
Gleason Ave
1965 Glea
Google


1965 Gleason Avenue

CHECKED BY:	DATE:	CON-9 Rev 4/27/09	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		(302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 1965 Gleason Ave Bronx
2 Floors. 1571 SF Roof Main Building. 1492 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -1492 SF

Total Footprint area 3263 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	1	8.00	41.19	329.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1815.52
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and		8.00	46.72	373.76
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	907.76
4	20% of (Items 1 + 2 + 3)				749.65
5	Total (Items 1 thru 4)				4497.89

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	40.00	20.00	800.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			800.00
Less Discounts			0.00
Total			800.00
Additional % = 15 %			120.00
Total			920.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1877.20

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $7,295.09
ConnDOT				Total to Date $7,295.09

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 2395 Tiebout Ave Bronx
2 Floors. 1571 SF Roof Main Building. 1492 SF Sidewalk and hardscape
1492 SF @ 2' excavation = 148 CY Excavation

Excavation 8" deeper to allow for roof drainage

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	2	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2145.04
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and		16.00	46.72	747.52
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1072.52
4	20% of (Items 1 + 2 + 3)				923.26
5	Total (Items 1 thru 4)				5539.54

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	225.00	20.00	4500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			4500.00
Less Discounts			0.00
Total			4500.00
Additional % = 15 %			675.00
Total			5175.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		2	16.00	80.88	1294.08
Light Tower		2	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2605.28

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $13,319.82 Total to Date $20,614.91

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 2395 Tiebout Ave Bronx
2 Floors. 1571 SF Roof Main Building. 1492 SF Sidewalk and hardscape
Extra 8" stone to accommodate roof drainage
Install geotextile fabric and 225 Tons stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1486.00
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	743.00
4	20% of (Items 1 + 2 + 3)				576.04
5	Total (Items 1 thru 4)				3456.24

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	225.00	50.00	11250.00
Stone Dust Tons (d)	20.00	50.00	1000.00
Geotextile	2.00	350.00	700.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			12950.00
Less Discounts			0.00
Total			12950.00
Additional % = 15 %			1942.50
Total			14892.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1230.16

Inspector: ConnDOT	Date:	Contractor's Representative:	Date:	Daily Total Progress Total: $19,578.90 Total to Date $40,193.81

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 2395 Tiebout Ave Bronx
2 Floors. 1571 SF Roof Main Building. 1492 SF Sidewalk and hardscape

Install 1492 SF permeable pavers

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

$9.45

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	16.00	51.97	831.52
	Mason Foreman	1	16.00	53.97	863.52
	Laborer	1	16.00	46.53	744.48
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2439.52
2	Health		16.00	26.45	423.20
	Welfare		32.00	33.71	1078.72
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1219.76
4	20% of (Items 1 + 2 + 3)				1032.24
5	Total (Items 1 thru 4)				6193.44

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	1550.00	5.00	7750.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			7750.00
Less Discounts			0.00
Total			7750.00
Additional % = 15 %			1162.50
Total			8912.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	16.00	6.50	104.00
Pick Up		1	16.00	20.54	328.64
Light Tower		1	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					594.72

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $15,700.66
ConnDOT		Total to Date $55,894.47

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 1965 Gleason Ave Bronx
1571 SF roof area
roofdrains into paver ground

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				0.00
2	Health			28.50	0.00
	Welfare			31.95	0.00
	and			26.45	0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	0.00
4	20% of (Items 1 + 2 + 3)				0.00
5	Total (Items 1 thru 4)				0.00

MATERIAL

Description	Quantity	Unit Price	Amount
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			0.00
Less Discounts			0.00
Total			0.00
Additional % = 15 %			0.00
Total			0.00

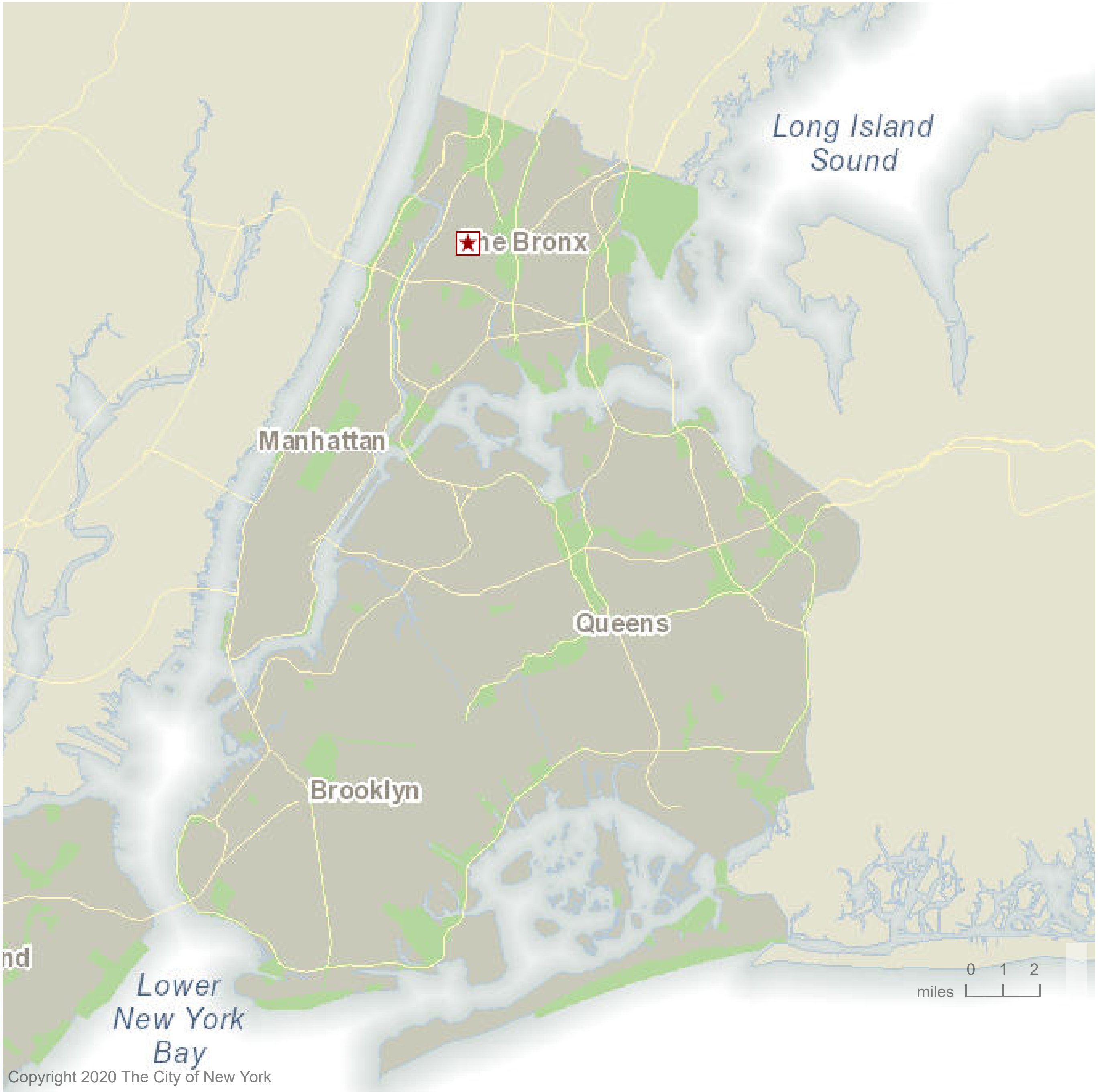
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Gutter Sub		1	1.00	#######	2800.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2800.00

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $2,800.00
ConnDOT		Total to Date $58,694.47

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

2395 Tiebout Bronx



2395 Tiebout Ave Bronx

2395 TIEBOUT AVENUE, BRONX 10458

- Building & Property Information

Borough: Bronx **Block:** 3147 **Lot:** 26
Police Precinct: 46
Owner: BEVING ASSOCIATES, L

Address: 2395 TIEBOUT AVENUE, BRONX 10458
Lot Area: 12010 sf
Lot Frontage: 100' **Lot Depth:** 120
Year Built: 1936
Number of Buildings: 1
Number of Floors: 6
Gross Floor Area: 51,240 sf (estimated)
Residential Units: 54 **Total # of Units:** 54
Land Use: Multi-Family Elevator Buildings
Zoning: R7-1
Commercial Overlay:
Zoning Map #: 3C

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 3C

DOF Digital Tax Map

DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


2395 Tiebout Ave
New York
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CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 2395 Tiebout Ave Bronx
6 Floors. 8190 SF Roof Main Building. 1724 SF Sidewalk. 1744 SF hardscape entrances
Demo and dispose existing concrete sidewalk or similar ground surfaces -3468 SF

Total Footprint area 13735 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
	Teamster	1	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3631.04
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		16.00	46.72	747.52
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1815.52
4	20% of (Items 1 + 2 + 3)				1499.30
5	Total (Items 1 thru 4)				8995.78

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	145.00	20.00	2900.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			2900.00
Less Discounts			0.00
Total			2900.00
Additional % = 15 %			435.00
Total			3335.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Tri Axle Dump		1	16.00	80.88	1294.08
Light Tower		2	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3916.48

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $16,247.26 Total to Date $16,247.26

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION **DAILY REPORT OF COST PLUS**	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		FEDERAL AID NO:	PROJECT NO.

PROPERTY: 2395 Tiebout Ave Bronx
6 Floors. 8190 SF Roof Main Building. 1724 SF Sidewalk. 1744 SF hardscape entrances
3468 SF @ 2' excavation = 257 CY Excavation

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
	Teamster	2	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3631.04
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		16.00	46.72	747.52
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1815.52
4	20% of (Items 1 + 2 + 3)				1499.30
5	Total (Items 1 thru 4)				8995.78

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	380.00	20.00	7600.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			7600.00
Less Discounts			0.00
Total			7600.00
Additional % = 15 %			1140.00
Total			8740.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Tri Axle Dump		1	32.00	80.88	2588.16
Light Tower		1	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					5210.56

Inspector: Date:	Contractor's Representative: Date:	Daily Total	
		Progress Total:	$22,946.34
ConnDOT		Total to Date	$39,193.60

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:			FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 2395 Tiebout Ave Bronx
6 Floors. 8190 SF Roof Main Building. 1724 SF Sidewalk. 1744 SF hardscape entrances

Install geotextile fabric and 200 Tons stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				2972.00
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1486.00
4	20% of (Items 1 + 2 + 3)				1152.08
5	Total (Items 1 thru 4)				6912.48

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	200.00	50.00	10000.00
Stone Dust Tons (d)	20.00	50.00	1000.00
Geotextile	2.00	350.00	700.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			11700.00
Less Discounts			0.00
Total			11700.00
Additional % = 15 %			1755.00
Total			13455.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Light Tower		2	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					2622.40

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total	
				Progress Total:	$22,989.88
ConnDOT				Total to Date	$62,183.48

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 2395 Tiebout Ave Bronx
6 Floors. 8190 SF Roof Main Building. 1724 SF Sidewalk. 1744 SF hardscape entrances

Install 3468 SF permeable pavers

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

$9.45

LABOR

	Class	No.	Total Hours	Rate	Amount
	Mason	1	32.00	51.97	1663.04
	Mason Foreman	1	32.00	53.97	1727.04
	Laborer	1	32.00	46.53	1488.96
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				4879.04
2	Health		32.00	26.45	846.40
	Welfare		64.00	33.71	2157.44
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	2439.52
4	20% of (Items 1 + 2 + 3)				2064.48
5	Total (Items 1 thru 4)				12386.88

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	3500.00	5.00	17500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			17500.00
Less Discounts			0.00
Total			17500.00
Additional % = 15 %			2625.00
Total			20125.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	32.00	6.50	208.00
Pick Up		1	32.00	20.54	657.28
Light Tower		1	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1189.44

Inspector: Date:	Contractor's Representative: Date:	Daily Total Progress Total: $33,701.32
ConnDOT		Total to Date $95,884.80

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09

(302-06-0169)

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

Property 2395 Tiebout Ave Bronx
8190 SF roof area
2 layers geotextile fabric
Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY
205 cy 5 loads 1 load every 30 min

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	40.00	94.37	3774.80
	Labor Foreman	1	40.00	48.53	1941.20
	Excavator operator	1	40.00	90.69	3627.60
	Laborer	3	120.00	46.53	5583.60
	Oiler	1	40.00	70.29	2811.60
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				17738.80
2	Health		80.00	28.50	2280.00
	Welfare		40.00	31.95	1278.00
	and		160.00	26.45	4232.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	8869.40
4	20% of (Items 1 + 2 + 3)				6879.64
5	Total (Items 1 thru 4)				41277.84

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	500.00	4.00	2000.00
LWT Aggregate CY	205.00	70.00	14350.00
geotextile	2.00	350.00	700.00
Electric Drain Valve	6.00	2000.00	12000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			29050.00
Less Discounts			0.00
Total			29050.00
Additional % = 15 %			4357.50
Total			33407.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	40.00	574.38	22975.20
Cat 322 RT excavator		1	40.00	123.10	4924.00
Pick Up		1	40.00	20.54	821.60
5 CY concrete bucket		1	40.00	4.57	182.80
Light Tower		1	40.00	10.13	405.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					29308.80

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total

Progress Total: $103,994.14

Total to Date $199,878.94

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

Property 2395 Tiebout Ave Bronx
8190 SF roof area
2 layers geotextile fabric
Green Grid g4 placed on top of Norlite stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Crane Operator	1	40.00	94.37	3774.80
Labor Foreman	1	40.00	48.53	1941.20
Forklift Operator	1	40.00	90.69	3627.60
Laborer	3	120.00	46.53	5583.60
Oiler	1	40.00	70.29	2811.60
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				17738.80
2 Health		80.00	28.50	2280.00
Welfare		40.00	31.95	1278.00
and		120.00	26.45	3174.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	8869.40
4 20% of (Items 1 + 2 + 3)				6668.04
5 Total (Items 1 thru 4)				40008.24

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	8190.00	18.50	151515.00
geotextile	3.00	350.00	1050.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			152565.00
Less Discounts			0.00
Total			152565.00
Additional % = 15 %			22884.75
Total			175449.75

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	40.00	574.38	22975.20
Forklift		1	40.00	8.10	324.00
Pick Up		1	40.00	20.54	821.60
Palet Lift		1	40.00	3.12	124.80
Light Tower		1	40.00	10.13	405.20
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					24650.80

Inspector: Date:

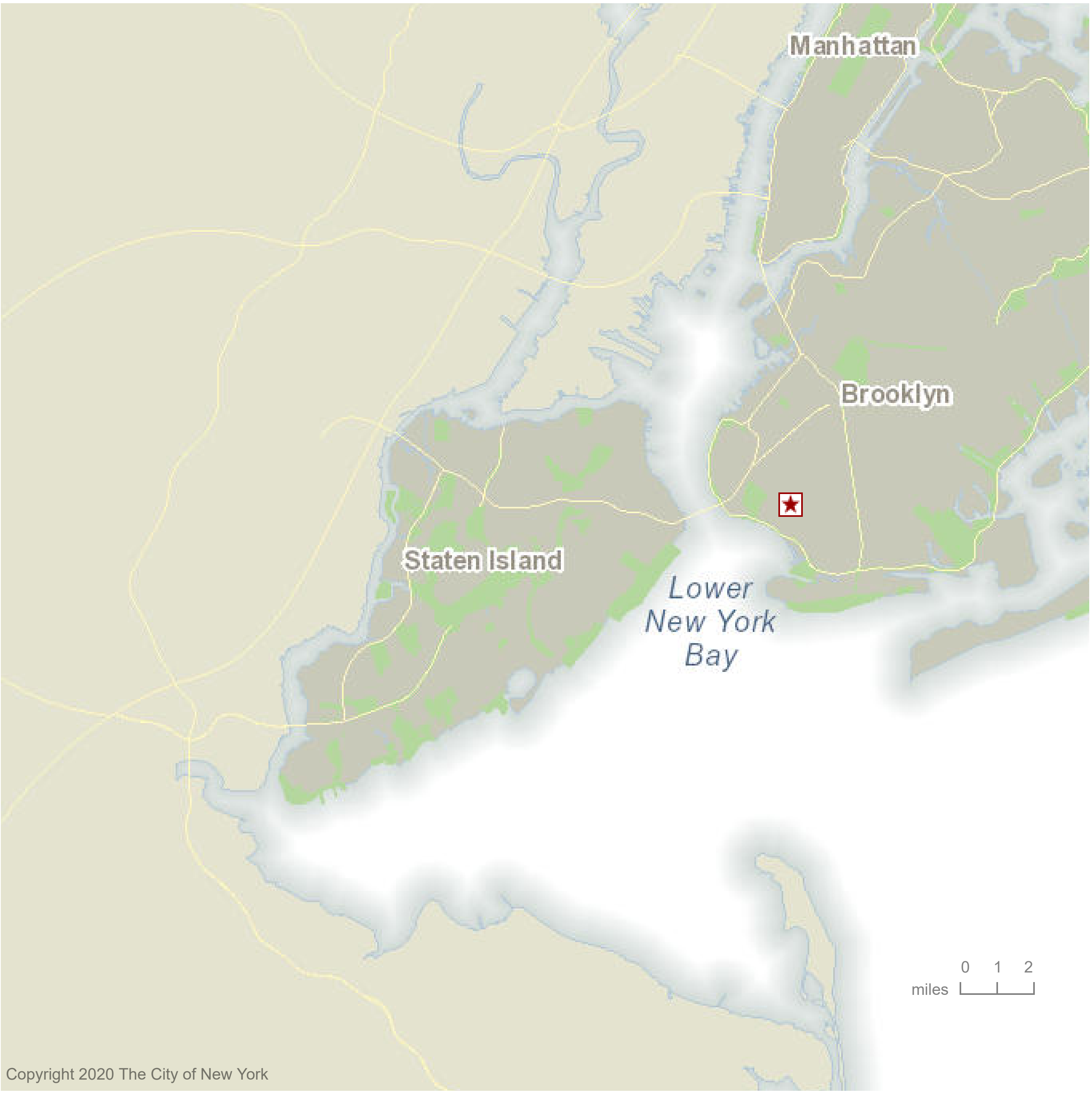
ConnDOT

Contractor's Representative: Date:

Daily Total
Progress Total: $240,108.79
Total to Date $439,987.73

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

8218 18 Ave Brooklyn



8218 18 Ave Brooklyn

8218 18 AVENUE, BROOKLYN 11214

- Building & Property Information

Borough: Brooklyn **Block:** 6314 **Lot:** 72
Police Precinct: 62
Owner: RUCO RLTY CO

Address: 8218 18 AVENUE, BROOKLYN 11214
Lot Area: 15084 sf
Lot Frontage: 90' **Lot Depth:** 231.92
Year Built: 1918
Number of Buildings: 1
Number of Floors: 1
Gross Floor Area: 14,560 sf (estimated)
Residential Units: 0 **Total # of Units:** 1
Land Use: Commercial and Office Buildings
Zoning: M1-1
Commercial Overlay:
Zoning Map #: 22D

Dept. of City Planning, PLUTO 19v1 © 2019 and other city agency sources

Links to More Information

Address Translator

Building ECB Violations

Building Elevator Information

Building Profile

Building Registration/Violation

DCP Zoning Map 22D

DOF Digital Tax Map

DOHMH Rat Information Portal

Poll Site Locator

School & Zone Finder

Tax and Property Records


99 18th Ave
w York
Google
Street View
Store Now
Hours
CONTACT STORE FO
Y HOURS
D.I.Y. Supplies
Color Center Inc.
PHOTO
RITE AID
ARMACY
Google
Image capture: Jun 2018
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United States
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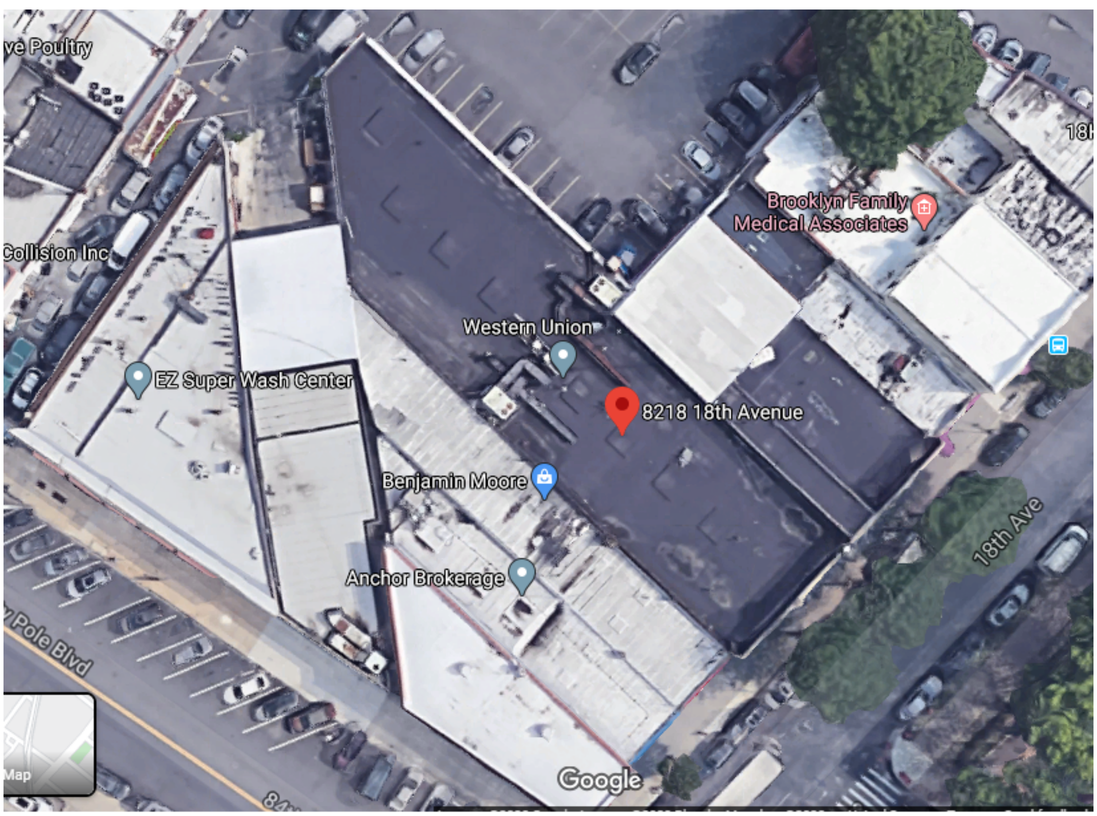

ve Poultry
Collision Inc
Brooklyn Family
Medical Associates
Western Union
EZ Super Wash Center
8218 18th Avenue
Benjamin Moore
Anchor Brokerage
18th Ave
y Pole Blvd
Map
Google

CHECKED BY: DATE:

CONTRACTOR PERFORMING WORK:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 8218 18 Ave Brooklyn
1 Floor .14895 SF Roof Main Building. 1656 SF Sidewalk and hardscape
Demo and dispose existing concrete sidewalk or similar ground surfaces -1656 SF

Total Footprint area 16551 sf

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
	Teamster	1	8.00	41.19	329.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1815.52
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and		8.00	46.72	373.76
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	907.76
4	20% of (Items 1 + 2 + 3)				749.65
5	Total (Items 1 thru 4)				4497.89

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	61.00	20.00	1220.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			1220.00
Less Discounts			0.00
Total			1220.00
Additional % = 15 %			183.00
Total			1403.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Tri Axle Dump		1	8.00	80.88	647.04
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1877.20

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total
Progress Total: $7,778.09

Total to Date $7,778.09

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY:	DATE:	CON-9 Rev 4/27/09 (302-06-0169)	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:		STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	FEDERAL AID NO:	PROJECT NO.

DAILY REPORT OF COST PLUS

PROPERTY: 8218 18 Ave Brooklyn

1 Floor .14895 SF Roof Main Building. 1656 SF Sidewalk and hardscape

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	16.00	46.53	744.48
	Labor Foreman	1	16.00	48.53	776.48
	Operator	1	16.00	90.69	1451.04
	Teamster	2	16.00	41.19	659.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				3631.04
2	Health		32.00	26.45	846.40
	Welfare		16.00	28.50	456.00
	and		32.00	46.72	1495.04
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	1815.52
4	20% of (Items 1 + 2 + 3)				1648.80
5	Total (Items 1 thru 4)				9892.80

MATERIAL

Description	Quantity	Unit Price	Amount
Disposal Ton	183.00	20.00	3660.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			3660.00
Less Discounts			0.00
Total			3660.00
Additional % = 15 %			549.00
Total			4209.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	16.00	123.10	1969.60
Pick Up		1	16.00	20.54	328.64
Tri Axle Dump		1	16.00	80.88	1294.08
Light Tower		2	16.00	10.13	162.08
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					3754.40

Inspector:	Date:	Contractor's Representative:	Date:	Daily Total
				Progress Total: $17,856.20
ConnDOT				Total to Date $25,634.29

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

PROPERTY: 8218 18 Ave Brooklyn
1 Floor .14895 SF Roof Main Building. 1656 SF Sidewalk and hardscape

Install geotextile fabric and 190 Tons stone

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Laborer	1	8.00	46.53	372.24
	Labor Foreman	1	8.00	48.53	388.24
	Operator	1	8.00	90.69	725.52
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				1486.00
2	Health		16.00	26.45	423.20
	Welfare		8.00	28.50	228.00
	and				0.00
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	743.00
4	20% of (Items 1 + 2 + 3)				576.04
5	Total (Items 1 thru 4)				3456.24

MATERIAL

Description	Quantity	Unit Price	Amount
Stone Tons (d)	190.00	50.00	9500.00
Stone Dust Tons (d)	10.00	50.00	500.00
Geotextile	1.00	350.00	350.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			10350.00
Less Discounts			0.00
Total			10350.00
Additional % = 15 %			1552.50
Total			11902.50

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Cat 322 RT excavator		1	8.00	123.10	984.80
Pick Up		1	8.00	20.54	164.32
Light Tower		1	8.00	10.13	81.04
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1230.16

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $16,588.90 Total to Date $42,223.19

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:

CON-9 Rev 4/27/09
(302-06-0169)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION

DAILY REPORT OF COST PLUS

DATE OF WORK:

REPORT NO.

CONTRACTOR PERFORMING WORK:

FEDERAL AID NO:

PROJECT NO.

PROPERTY: 8218 18 Ave Brooklyn
1 Floor .14895 SF Roof Main Building. 1656 SF Sidewalk and hardscape

Install 1656 SF permeable pavers

Select only one payment type:
☐ Scope Estimate
☐ Progress (progress payment = 90% of Total)
☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

$9.45

LABOR

Class	No.	Total Hours	Rate	Amount
Mason	1	24.00	51.97	1247.28
Mason Foreman	1	24.00	53.97	1295.28
Laborer	1	24.00	46.53	1116.72
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				3659.28
2 Health		24.00	26.45	634.80
Welfare		48.00	33.71	1618.08
and				0.00
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	1829.64
4 20% of (Items 1 + 2 + 3)				1548.36
5 Total (Items 1 thru 4)				9290.16

MATERIAL

Description	Quantity	Unit Price	Amount
Pavers SF	1700.00	5.00	8500.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			8500.00
Less Discounts			0.00
Total			8500.00
Additional % = 15 %			1275.00
Total			9775.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Plate Compactor		1	24.00	6.50	156.00
Pick Up		1	24.00	20.54	492.96
Light Tower		1	120.00	10.13	1215.60
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					1864.56

Inspector: Date:

ConnDOT

Contractor's Representative: Date:

Daily Total
Progress Total: $20,929.72
Total to Date $63,152.91

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 8218 18 Ave Brooklyn
1 Floor .14895 SF Roof Main Building. 1656 SF Sidewalk and hardscape
2 layers geotextile fabric
Nolite 52.50 CY 75 Ton = .7 Ton per CY delivery $15-20 per CY
370 cy 74 loads 1 load every 20 min
6.20 sf

Select only one payment type:
- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

	Class	No.	Total Hours	Rate	Amount
	Crane Operator	1	32.00	94.37	3019.84
	Labor Foreman	1	32.00	48.53	1552.96
	Excavator operator	1	32.00	90.69	2902.08
	Laborer	3	96.00	46.53	4466.88
	Oiler	1	32.00	70.29	2249.28
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
1	Total Labor				14191.04
2	Health		64.00	28.50	1824.00
	Welfare		32.00	31.95	1022.40
	and		128.00	26.45	3385.60
	Pension				0.00
					0.00
3	Ins. and Taxes on Item 1			0.5	7095.52
4	20% of (Items 1 + 2 + 3)				5503.71
5	Total (Items 1 thru 4)				33022.27

MATERIAL

Description	Quantity	Unit Price	Amount
Styrofoam Berm LF	700.00	4.00	2800.00
LWT Aggregate CY	370.00	70.00	25900.00
geotextile	6.00	350.00	2100.00
Electronic Roof valve	10.00	2000.00	20000.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			50800.00
Less Discounts			0.00
Total			50800.00
Additional % = 15 %			7620.00
Total			58420.00

EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	32.00	574.38	18380.16
Cat 322 RT excavator		1	32.00	123.10	3939.20
Pick Up		1	32.00	20.54	657.28
5 CY concrete bucket		1	32.00	4.57	146.24
Light Tower		2	64.00	10.13	648.32
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					23771.20

Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $115,213.47 Total to Date $178,366.38

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

CHECKED BY: DATE:	CON-9 Rev 4/27/09 (302-06-0169) STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING AND CONSTRUCTION	DATE OF WORK:	REPORT NO.
CONTRACTOR PERFORMING WORK:	**DAILY REPORT OF COST PLUS**	FEDERAL AID NO:	PROJECT NO.

Property 8218 18 Ave Brooklyn

1 Floor .14895 SF Roof Main Building. 1656 SF Sidewalk and hardscape

Select only one payment type:

- ☐ Scope Estimate
- ☐ Progress (progress payment = 90% of Total)
- ☐ Final

SELECT ONLY ONE PAYMENT TYPE

CONSTRUCTION ORDER

ITEM NO.

LABOR

Class	No.	Total Hours	Rate	Amount
Crane Operator	1	32.00	94.37	3019.84
Labor Foreman	1	32.00	48.53	1552.96
Forklift Operator	1	32.00	90.69	2902.08
Laborer	3	96.00	46.53	4466.88
Oiler	1	32.00	70.29	2249.28
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
1 Total Labor				14191.04
2 Health		64.00	28.50	1824.00
Welfare		32.00	31.95	1022.40
and		128.00	26.45	3385.60
Pension				0.00
				0.00
3 Ins. and Taxes on Item 1			0.5	7095.52
4 20% of (Items 1 + 2 + 3)				5503.71
5 Total (Items 1 thru 4)				33022.27

MATERIAL

Description	Quantity	Unit Price	Amount
2x2 greengrid SF	14894.00	18.50	275539.00
geotextile	6.00	350.00	2100.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Total			277639.00
Less Discounts			0.00
Total			277639.00
Additional % = 15 %			41645.85
Total			319284.85

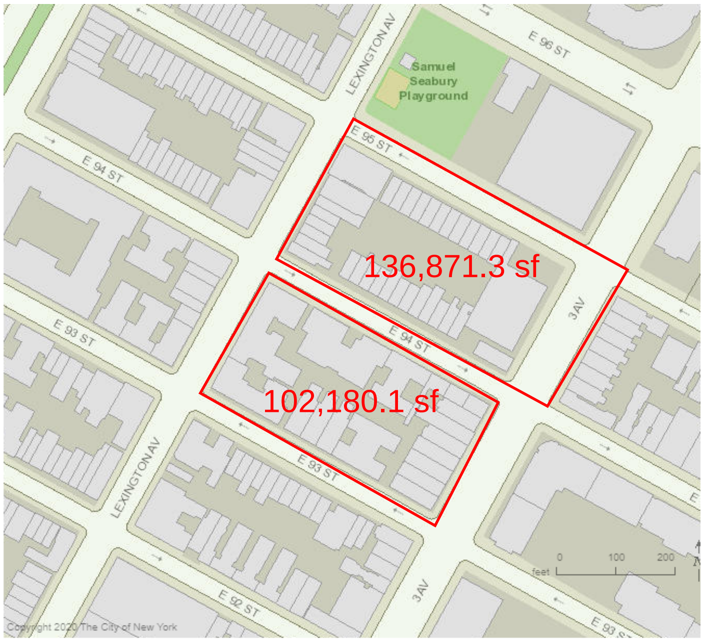
EQUIPMENT

Size and Class	Idle (I) or Active (A)	No.	Total Hours	Rate	Amount
Crane		1	32.00	574.38	18380.16
Forklift		1	32.00	8.10	259.20
Pick Up		1	32.00	20.54	657.28
Palet Lift		1	32.00	3.12	99.84
Light Tower		1	32.00	10.13	324.16
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total					19720.64

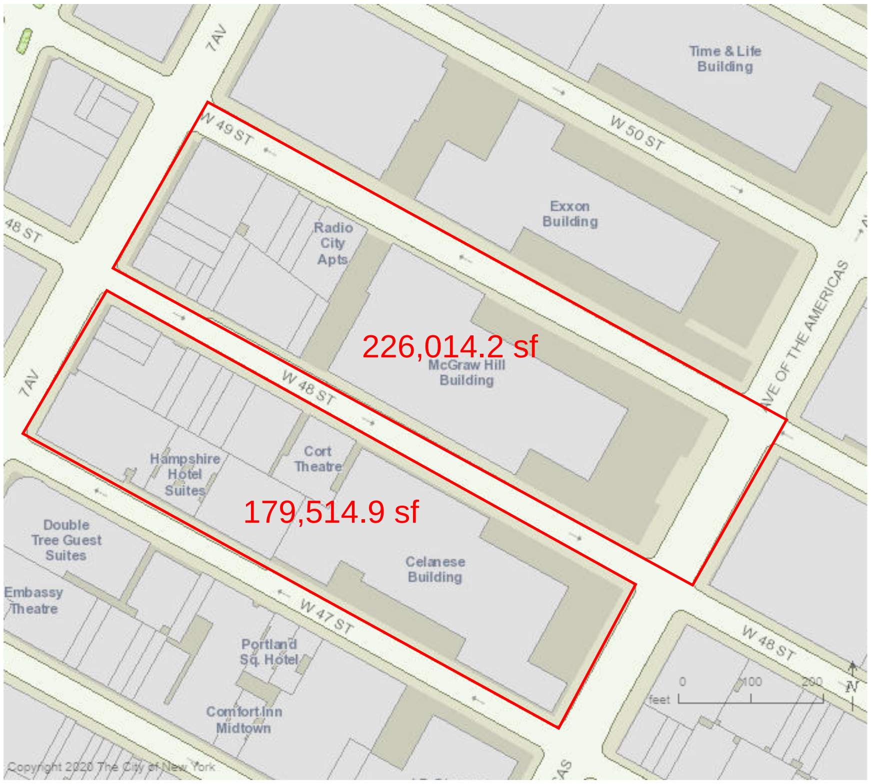
Inspector: Date: ConnDOT	Contractor's Representative: Date:	Daily Total Progress Total: $372,027.76 Total to Date $550,394.14

ORIGINAL TO PROJECT RECORDS. COPIES TO CONTRACTOR AND DISTRICT FILE.

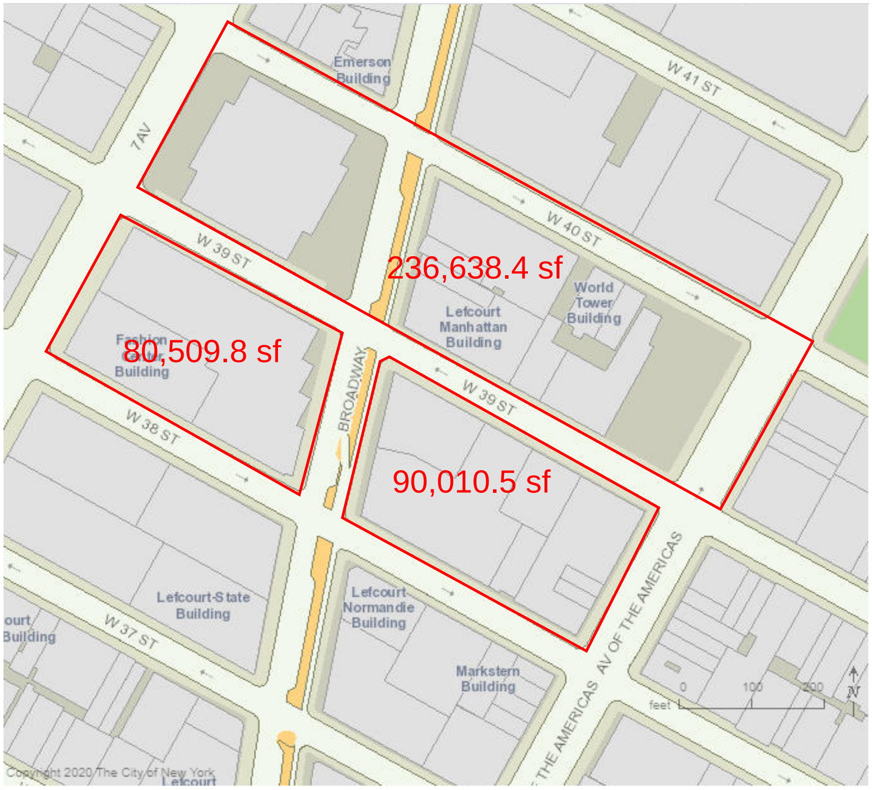
25% Street



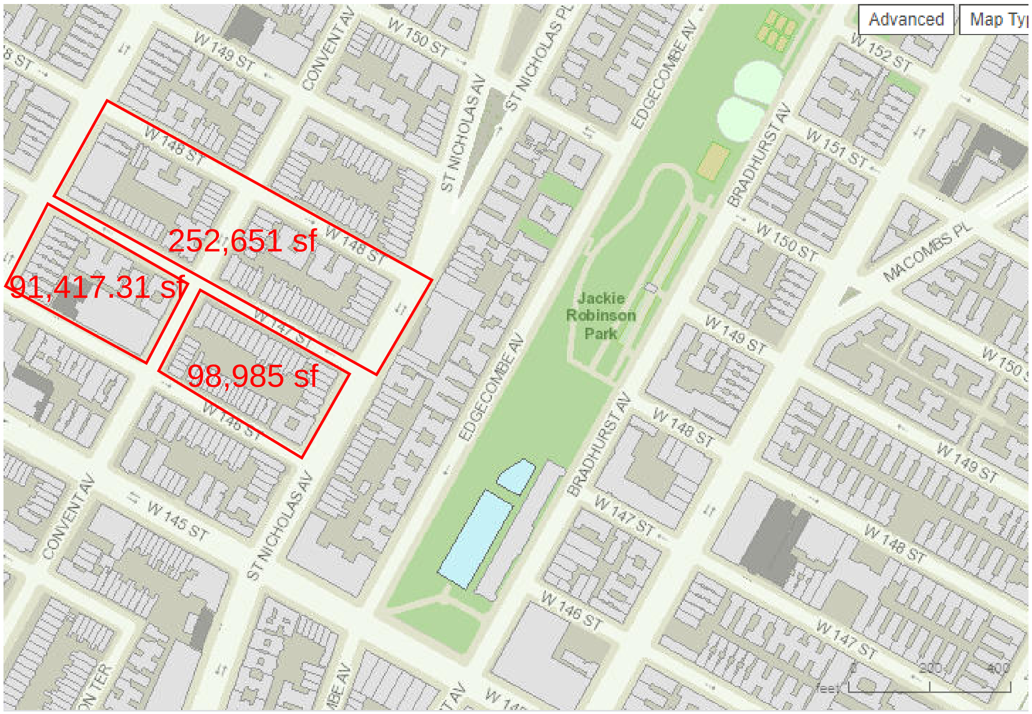
Samuel Seabury Playground
E 96 ST
E 95 ST
E 94 ST
E 93 ST
E 92 ST
LEXINGTON AV
3 AV
136,871.3 sf
102,180.1 sf
feet
0
100
200
Copyright 2020 The City of New York


Time & Life Building
W 50 ST
W 49 ST
Exxon Building
Radio City Apts
48 ST
7AV
226,014.2 sf
McGraw Hill Building
W 48 ST
Cort Theatre
Hampshire Hotel Suites
179,514.9 sf
Celanese Building
Double Tree Guest Suites
Embassy Theatre
W 47 ST
Portland Sq. Hotel
Comfort Inn Midtown
AVE OF THE AMERICAS
W 48 ST
0
100
200
feet
N
Copyright 2020 The City of New York

21% Street


236,638.4 sf
80,509.8 sf
90,010.5 sf
W 41 ST
W 40 ST
W 39 ST
W 38 ST
W 37 ST
7AV
BROADWAY
AV OF THE AMERICAS
Emerson Building
World Tower Building
Lefcourt Manhattan Building
Fashion Center Building
Lefcourt-State Building
Lefcourt Normandie Building
Markstern Building
feet 0 100 200
N
Copyright 2020 The City of New York

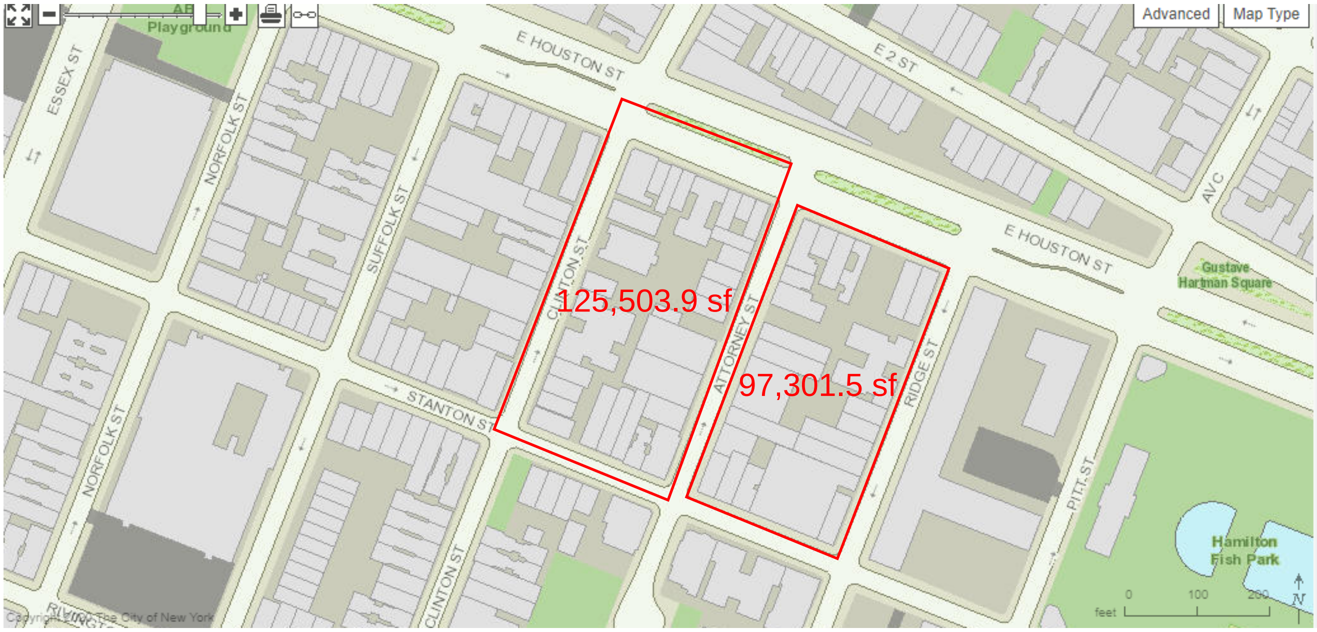
28% Street



Advanced
Map Typ
252,651 sf
91,417.31 sf
98,985 sf
Jackie
Robinson
Park
W 149 ST
W 150 ST
W 148 ST
W 147 ST
W 146 ST
W 145 ST
CONVENT AV
ST NICHOLAS AV
ST NICHOLAS PL
EDGECOMBE AV
BRADHURST AV
W 152 ST
W 151 ST
MACOMBS PL

25% Street

23% Streets


E HOUSTON ST
E 2 ST
ESSEX ST
NORFOLK ST
SUFFOLK ST
CLINTON ST
ATTORNEY ST
RIDGE ST
PITT ST
AV C
STANTON ST
125,503.9 sf
97,301.5 sf
Gustave Hartman Square
Hamilton Fish Park
Advanced
Map Type
feet
0
100
200
N
Copyright 2009 The City of New York

APPENDIX C:

Equipment Rates

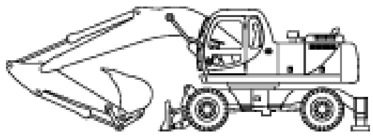
www.equipmentwatch.com

All prices shown in US dollars ($)

Rental Rate Blue Book®

February 3, 2020

Caterpillar M322D2
Wheel Mounted Hydraulic Excavators



Size Class:
20.1 MTons & Over
Weight:
MT

Configuration for M322D2

Bucket Capacity - Heaped	**2.1 cu yd**	Net Horsepower	**173 hp**
Operating Weight	**49604 lbs**	Power Mode	**Diesel**

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $12,385.00	USD $3,470.00	USD $870.00	USD $130.00	USD $52.73	USD $123.10
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2020: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $12,385.00**	**USD $3,470.00**	**USD $870.00**	**USD $130.00**	**USD $52.73**	**USD $123.10**

Non-Active Use Rates

	Hourly
Standby Rate	USD $42.22
Idling Rate	USD $90.49

Rate Element Allocation

Element	Percentage	Value
Depreciation (ownership)	43%	USD $5,325.55/mo
Overhaul (ownership)	41%	USD $5,077.85/mo
CFC (ownership)	9%	USD $1,114.65/mo
Indirect (ownership)	8%	USD $990.80/mo
Fuel (operating) @ USD 3.07	38%	USD $20.12/hr

Revised Date: 1st half 2020

These are the most accurate rates for the selected Revision Date(s). However, due to more frequent online updates, these rates may not match Rental Rate Blue Book Print. Visit the Cost Recovery Product Guide on our Help page for more information.

The equipment represented in this report has been exclusively prepared for ERICH CARLTON (ecarlton@afcct.com)

www.equipmentwatch.com

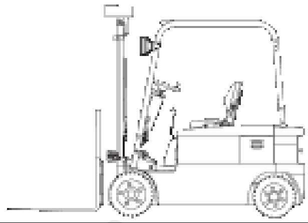
All prices shown in US dollars ($)

Rental Rate Blue Book®

February 3, 2020

Clark ECG30 (disc. 2005)
Cushion Tire Sit-Down Rider Electric Lift Trucks

Size Class:
6,000 - 6,999 lbs
Weight:
11070 lbs



Configuration for ECG30 (disc. 2005)

Capacity	**6000.0 lbs**	Power Mode	**Electric**

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $830.00	USD $235.00	USD $59.00	USD $9.00	USD $3.38	USD $8.10
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2005: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $830.00**	**USD $235.00**	**USD $59.00**	**USD $9.00**	**USD $3.38**	**USD $8.10**

Non-Active Use Rates	**Hourly**
Standby Rate	USD $3.87
Idling Rate	USD $4.72

Rate Element Allocation

Element	**Percentage**	**Value**
Depreciation (ownership)	55%	USD $456.50/mo
Overhaul (ownership)	19%	USD $157.70/mo
CFC (ownership)	14%	USD $116.20/mo
Indirect (ownership)	13%	USD $107.90/mo

Fuel cost data is not available for these rates.

Revised Date: 1st half 2020

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EquipmentWatch

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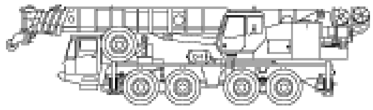
All prices shown in US dollars ($)

Rental Rate Blue Book®

February 2, 2020

Link-Belt ATC-3200
All Terrain Hydraulic Cranes---Dual Engine



Size Class:
140.0 - 199.9 MTons
Weight:
127088 MT

Configuration for ATC-3200

Axle Configuration	**10 X 8 X 8**	Maximum Boom Length	**196.9 ft**
Maximum Lift Capacity	**181.45 mt**	Net Horsepower	**N/A**
Power Mode	**Diesel**		

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $70,545.00	USD $19,755.00	USD $4,940.00	USD $740.00	USD $173.56	USD $574.38
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2020: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $70,545.00**	**USD $19,755.00**	**USD $4,940.00**	**USD $740.00**	**USD $173.56**	**USD $574.38**

Non-Active Use Rates	**Hourly**
Standby Rate	USD $264.54
Idling Rate	USD $400.82

Rate Element Allocation

Element	**Percentage**	**Value**
Depreciation (ownership)	44%	USD $31,039.80/mo
Overhaul (ownership)	33%	USD $23,279.85/mo
CFC (ownership)	11%	USD $7,759.95/mo
Indirect (ownership)	11%	USD $7,759.95/mo

Fuel cost data is not available for these rates.

Revised Date: 1st half 2020

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www.equipmentwatch.com

All prices shown in US dollars ($)

Rental Rate Blue Book®

February 3, 2020

Miscellaneous 4X4 1 234 CONV GAS
On-Highway Light Duty Trucks

Size Class:
200 - 299 HP
Weight:
HP

Configuration for 4X4 1 234 CONV GAS

Axle Configuration	**4X4**	Cab Type	**Conventional**
Horsepower	**234.0**	Power Mode	**Gasoline**
Ton Rating	**1.0**		

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $905.00	USD $255.00	USD $64.00	USD $10.00	USD $15.40	USD $20.54
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2020: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $905.00**	**USD $255.00**	**USD $64.00**	**USD $10.00**	**USD $15.40**	**USD $20.54**

Non-Active Use Rates

	Hourly
Standby Rate	USD $3.75
Idling Rate	USD $16.88

Rate Element Allocation

Element	**Percentage**	**Value**
Depreciation (ownership)	54%	USD $488.70/mo
Overhaul (ownership)	27%	USD $244.35/mo
CFC (ownership)	7%	USD $63.35/mo
Indirect (ownership)	12%	USD $108.60/mo
Fuel (operating) @ USD 2.51	76%	USD $11.74/hr

Revised Date: 1st half 2020

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www.equipmentwatch.com

All prices shown in US dollars ($)

Rental Rate Blue Book®

February 3, 2020

Miscellaneous 6X4 18YD 70KGVW
On-Highway Rear Dumps

Size Class:
60,001 GVW & Over
Weight:
19702 lbs

Configuration for 6X4 18YD 70KGVW

Axle Configuration	**6X4**	Horsepower	**400.0**
Maximum Gross Vehicle Weight	**70000.0 lbs**	Power Mode	**Diesel**
Struck Capacity	**12.0 - 18.0 cu yd**		

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $4,780.00	USD $1,340.00	USD $335.00	USD $50.00	USD $53.72	USD $80.88
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2020: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $4,780.00**	**USD $1,340.00**	**USD $335.00**	**USD $50.00**	**USD $53.72**	**USD $80.88**

Non-Active Use Rates	Hourly
Standby Rate	USD $18.74
Idling Rate	USD $61.43

Rate Element Allocation

Element	Percentage	Value
Depreciation (ownership)	50%	USD $2,390.00/mo
Overhaul (ownership)	32%	USD $1,529.60/mo
CFC (ownership)	8%	USD $382.40/mo
Indirect (ownership)	11%	USD $525.80/mo
Fuel (operating) @ USD 3.07	64%	USD $34.27/hr

Revised Date: 1st half 2020

These are the most accurate rates for the selected Revision Date(s). However, due to more frequent online updates, these rates may not match Rental Rate Blue Book Print. Visit the Cost Recovery Product Guide on our Help page for more information.

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EquipmentWatch

www.equipmentwatch.com

All prices shown in US dollars ($)

Rental Rate Blue Book®

February 3, 2020

Miscellaneous FCD
Double Gate Concrete Hoppers

Size Class:
All
Weight:
1420 UNKNOWN

Configuration for FCD

Discharge Configuration	**Center**	Rated Capacity	**5.4 cu yd**
Type	**Floor**		

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $570.00	USD $160.00	USD $40.00	USD $6.00	USD $1.33	USD $4.57
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2020: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $570.00**	**USD $160.00**	**USD $40.00**	**USD $6.00**	**USD $1.33**	**USD $4.57**

Non-Active Use Rates	**Hourly**
Standby Rate	USD $2.33
Idling Rate	USD $3.24

Rate Element Allocation

Element	**Percentage**	**Value**
Depreciation (ownership)	54%	USD $307.80/mo
Overhaul (ownership)	28%	USD $159.60/mo
CFC (ownership)	7%	USD $39.90/mo
Indirect (ownership)	11%	USD $62.70/mo

Fuel cost data is not available for these rates.

Revised Date: 1st half 2020

These are the most accurate rates for the selected Revision Date(s). However, due to more frequent online updates, these rates may not match Rental Rate Blue Book Print. Visit the Cost Recovery Product Guide on our Help page for more information.

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EquipmentWatch

www.equipmentwatch.com

All prices shown in US dollars ($)

Rental Rate Blue Book®

February 3, 2020

Miscellaneous GASOLINE 96 - 250 KG
Hand Held Vibratory Plate Compactors

Size Class:
96 - 250 Kg
Weight:
Kg

Configuration for GASOLINE 96 - 250 KG

Horsepower	**6 hp**	Plate Width	**20.3 in**
Pounds Per Blow	**4000**	Power Mode	**Gasoline**

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $580.00	USD $165.00	USD $41.00	USD $6.00	USD $3.20	USD $6.50
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2020: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $580.00**	**USD $165.00**	**USD $41.00**	**USD $6.00**	**USD $3.20**	**USD $6.50**

Non-Active Use Rates	**Hourly**
Standby Rate	USD $2.44
Idling Rate	USD $4.73

Rate Element Allocation

Element	**Percentage**	**Value**
Depreciation (ownership)	59%	USD $342.20/mo
Overhaul (ownership)	26%	USD $150.80/mo
CFC (ownership)	6%	USD $34.80/mo
Indirect (ownership)	9%	USD $52.20/mo
Fuel (operating) @ USD 2.51	45%	USD $1.43/hr

Revised Date: 1st half 2020

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The equipment represented in this report has been exclusively prepared for ERICH CARLTON (ecarlton@afcct.com)

EquipmentWatch

www.equipmentwatch.com

All prices shown in US dollars ($)

Rental Rate Blue Book®

February 3, 2020

Wacker Neuson LTN6C
Portable Light Towers

Size Class:
Thru 7 KW
Weight:
KW

Configuration for LTN6C

Horsepower	**15.3 hp**	Number Of Lights	**4**
Power Mode	**Diesel**	Tower Height	**30 ft**

Blue Book Rates

** FHWA Rate is equal to the monthly ownership cost divided by 176 plus the hourly estimated operating cost.

	Ownership Costs				Estimated Operating Costs	FHWA Rate**
	Monthly	**Weekly**	**Daily**	**Hourly**	**Hourly**	**Hourly**
Published Rates	USD $940.00	USD $265.00	USD $66.00	USD $10.00	USD $4.79	USD $10.13
Adjustments						
Region (100%)	-	-	-	-		
Model Year (2020: 100%)	-	-	-	-		
Adjusted Hourly Ownership Cost (100%)	-	-	-	-		
Hourly Operating Cost (100%)					-	
Total:	**USD $940.00**	**USD $265.00**	**USD $66.00**	**USD $10.00**	**USD $4.79**	**USD $10.13**

Non-Active Use Rates	**Hourly**
Standby Rate	USD $2.35
Idling Rate	USD $6.56

Rate Element Allocation

Element	**Percentage**	**Value**
Depreciation (ownership)	34%	USD $319.60/mo
Overhaul (ownership)	56%	USD $526.40/mo
CFC (ownership)	5%	USD $47.00/mo
Indirect (ownership)	5%	USD $47.00/mo
Fuel (operating) @ USD 3.07	25%	USD $1.22/hr

Revised Date: 1st half 2020

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APPENDIX D:

Material Quotes

NORLITE, LLC

www.norliteagg.com

628 So. Saratoga St.
P.O. Box 694
Cohoes, NY 10247

Office Tel: 518-235-0401
Office Fax: 518-235-0233

Date: Feb 3, 2020

To: **Erich Carlton**
AFC Construction
321 Ellis Street
New Britain, CT 06051
860.839.0217

Re: Blue Roof NYC 140 ± tons (200 yds³)

Lightweight Aggregate 3/4 - #4 delivered to NY
Note: will meet ASTM 330 gradation

($75.00 USD per ton) (short) good thru 2020
Freight to NY (**$00.00 per ton)** thru 2020 via Trucking in tractor trailers
Delivered in Non-union trucks – full truckload quantities

(If prevailing wage mandated - add $5.00 per ton or $3.50 per yd³)

Yield is .7 tons per cubic yard including compaction and moisture which equates to a cost of approximately:

($52.50 USD per yd³) good thru 2020
Freight to NY (**$00.00 per yd3)** thru 2020 via **Trucking** in tractor trailers
Delivered in Non-union trucks – full truckload quantities

Terms:

- Shipments are subject to a mutually agreed upon delivery schedule.
- The above quoted price does not include freight.
- Credit card payments will be subject to a surcharge of 3%.
- All services are COD until credit has been approved. Once credit has been established, unless otherwise stated on the purchase order, payment on all invoices is due within 30 days from date of invoice. Interest will be charged at the rate of 1.5 % per month or the highest rate allowed by law (whichever is the lesser), on all amounts not paid when due.
- In the event customer's account is placed for collection, customer agrees to pay all costs of collection, including reasonable attorney's fees.
- If Norlite determines that security for payment is required, based on customer's credit and size of job, or if customer fails to make a payment within 30 days of the date of invoice, Norlite may require the Customer to provide a payment bond for the full value of the Quote unless a lesser amount is agreed to by the parties in writing. All bonds must be from a surety with an AM Best Rating of A or better.
- Norlite may refuse to make any further deliveries of material if there are any unpaid invoices more than 30 days or if the outstanding balance exceeds the approved credit limits.
- The price quoted herein is valid through 2020. To be effective, Quotes must be accepted within 90 days.
- Price is subject to modification in the event that the prevailing wage law applies. (If prevailing wage mandated – add $5.00 per ton or $3.50 per cubic yard)

Delays:
In no event will Norlite be liable for any delay in performance directly or indirectly caused by events beyond the control of Norlite including, but not limited to: acts of Customer, its agents, employees or sub-contractors, acts of God, acts of the public enemy, acts of the United States, a state or other political subdivision or governmental entity; fire, floods, or other natural disasters; accidents; wars; labor disputes or shortages; inability to obtain material, power, equipment, or other transportation; or any other similar or different contingency beyond the control of Norlite.

Electronic Signature
The parties to this Quote expressly agree that, to the extent allowed by law, any document contemplated pursuant to this Quote may be executed and become effective by affixing an electronic signature in the appropriate location and transmitting such electronically signed document to the other party. Such electronic signature shall be deemed to be an original signature and any document bearing an electronic signature shall be deemed a valid document bearing a signature affixed by hand.

No Changes
This Quote supercedes all previous communication, oral and written. No changes to this Quote shall be effective unless in a writing signed by both parties. To the extent that the terms and conditions of any customer purchase order are inconsistent with the terms specified herein, such inconsistent terms are hereby rejected.

Norlite, LLC

By: *Edward Whalen*

Customer: AFC Construction

By: ____________________________

____
(Print Name)

Date: __________________________

TILCON
A CRH COMPANY
P.O. Box 330890
West Hartford, CT 06133-0890

Customer No: 10437
Invoice No: 1633284
Inv Date: 01/23/20
Page: Page 1 of 1

AFC Construction LLC
PO Box 486
New Britain CT 06051

ecarlton@afcct.com

Date	Ticket#	Product#	Description	QTY	UM	Unit Price	Matl Total	Tax	Total
Plant: 00110 Plainville (West)									
MATERIAL:	ASTM 6 (3/4" Stone)								
01/14/20	110692997	03	ASTM 6 (3/4" Stone)	1.96	TON	22.15	43.41	2.76	46.17
01/14/20	110693041	03	ASTM 6 (3/4" Stone)	2.04	TON	22.15	45.19	2.87	48.06
Total :	**Material**		ASTM 6 (3/4" Stone)	**4.00**			**88.60**	**5.63**	**94.23**
			Total Invoice:	**4.00**			**88.60**	**5.63**	**94.23**

For ticket requests please email: TilconCTinvoice@tilcon-inc.com or call: (860) 224-6010 Option 3

Service Charges of 1 1/2% per month (APR of 18%) imposed on accounts 30 days past due.

Invoice Amount: **94.23**

Amount Paid: ____________

Customer Name: AFC Construction LLC
Customer No: 10437
Invoice #: 1633284
Date: 01/23/20

Due Date: 02/22/20

If you have any questions about your invoice please call 860-952-1813

Remit Payment To:
Tilcon Connecticut Inc.
P.O. Box 416789
Boston, MA 02241-6789

Please provide your email address below if you would like to start receiving your invoices via email

GreenGrid® Materials Estimate

GreenGrid ROOFS

Weston Solutions, Inc.
124 Hebron Ave, Suite 3B
Glastonbury, CT 06033
Ph.: (860) 368-3204 (Jared), or 3211 (Todd)
Toll free 888-404-4743
Email: jared.markham@westonsolutions.com
Email: todd.walles@westonsolutions.com

Estimate Date 8/16/2018 **Exp Date: 9/30/17**
Project Name AFC CT
Purchaser Name Erich Carlton
Site Address PICKUP
NA
Email or Fax ecarlton@afcct.com
Weston Bid # AFCCT_081618

Base Quote: Standard Extensive G4 GreenGrid System Pre-Grown

Square Feet (sf)	Module Count	Module Type	Planting Method	Unit Cost (/ sf)	Extended Cost
Extensive Modules: 4.25-inch depth G4 System @ 26-30 lbs/sf					
200	50	GreenGrid G4 Extensive (2' x 2' x 4.25-inch depth) Modules Pre-grown with Standard Sedums. Standard warranty.	Standard Sedum	$17.50	$3,500.00
The Purchaser should validate all quantities prior to Order placement. Quantities as requested. The GreenGrid G4 system is proposed in its standard configuration and warranties.				**Base Quote Subtotal**	$3,500.00
This estimate is for pickup of **pre-grown GreenGrid system not in saleable condition (ie "Clearance" - not at full coverage, weed or chive contaminated, etc.)**.				**Packaging (stack and wrap)**	$200.00
Please note, the quantity listed above is ESTIMATED, and the purchaser is responsible to confirm and/or modify prior to order placement. Weston is not responsible for over or under ordering. Pickup is during normal business hours, modules will be stacked and shrink wrapped.				**Quote Total w/o Tax**	$3,700.00
				CT Sales Tax (6.35%)	$234.95

It is the purchaser's responsibility to confirm roof dimensions and quantities. Please requote for >5% change in area. ALL ACCESSORIES PLUS ADDITIONAL APPLICABLE SALES TAX

Planting Details

Planting Density: Standard
Plant Specification: Standard sedum mix (inventory)

Should project specifications indicate a non standard plant mix or multiple plant mixes, this estimate may need to be revised.

Storage during the winter months is not included. Storage and maintenance fees may apply beginning November 1st.

(*) Assembly warranty by waterproofing company or installer.
(*) Plant coverage may be affected by time of year and climatic conditions. Extended plant warranty is for plants only (with documented proof of maintenance by others). Plants provided to maintenance contractor who will then be responsible for planting.
(*) 95% coverage on delivery requires a minimum order lead time of 5-6 months during active growing season
(*) Planting method assumes a combination of plugs and cuttings or Weston's current practice at the time of order placement.
(*) Determination of suitability for "high wind locations" is at the discretion of the design engineers and Weston makes no guarantees as to the suitability for installation on this building. We assume no liability (direct or indirect) for failure of the green roof due to high wind conditions, nor does Weston make any representations as to the long term performance of plants, media or modules where excessive winds exist. We recommend that all green roofs at a minimum follow SPRI and FM Global design guidance.
(*) All installation, leak detection, protection fabric, waterproofing related items and warranties and other related specifications are the responsibility of others.

Additional Clarifications

This estimate is subject the attached GreenGrid Terms & Conditions. Specifically for New York State: The Purchaser shall defend, indemnify, and hold harmless WESTON and its directors, officers, and employees against claims, demands, causes of action, liabilities, losses, costs, and expenses, including without limitation attorneys' fees and consultants' fees (collectively, "Losses") arising from death or personal injury occurring in connection with the Work, but only to the extent that WESTON has incurred or become liable for the Losses solely by operation of the New York Scaffold Law, N.Y. Labor Law § 241(6), and not based on any finding that the Losses were caused by the deliberately wrongful, reckless, grossly negligent, or negligent act or omission of the WESTON or its subcontractors.

(*) Furnishing and installing any required slip sheets or protection boards, unloading of the modules (i.e., fork lift or similar) from the delivery trucks, the installation of the slip sheet and modules, and securing of modules (if applicable) is to be completed by others.

(*) Truck access (53-foot trailer truck) is available at the site and any street use or other permits, flagmen, traffic control or police services are provided by others. Two hours are allotted for unloading the delivery truck(s). Demurrage fees are $125 per hour or partial hour, per truck.

(*) Adequate, level work space for off-loading materials is present at the base of the building and equipment to unload the delivery truck will be provided by others. Intensive and semi-intensive modules ship on nursery racks that must be unloaded and returned daily. Standard extensive modules will be shipped shrink wrapped and on pallets. We may request that pallets and spacers be temporarily stored for later pickup and reuse.

(*) Roof load (lbs./sf) limits have been documented by others, and a determination has been made by others that the GreenGrid® Green Roof System will not overload the structure. **Currently, GreenGrid system weights are as follows: Standard G4 Extensive (4.25-inch depth) ~26-30 lbs/sf saturated [add 5 lbs/sf for sedum mat, if applicable], semi-intensive (6-inch depth) ~44-50lbs/sf saturated, intensive (8-inch depth) ~50-60 lbs/sf saturated**

(*) A minimum of 2 weeks lead time is required to schedule delivery. Any requests to change the scheduled delivery date must be made at least 5 business days in advance of the existing date, or additional charges will apply.

Weston will coordinate delivery dates with the installer based on the state of the plant material 2-4 weeks prior to the anticipated date of delivery.

Planting season begins 15 April (weather pending) and concludes on or about 15 September.

Initial ec

WESTON SOLUTIONS, INC.

GreenGrid® Materials Estimate

Weston Solutions, Inc.
124 Hebron Ave, Suite 3B
Glastonbury, CT 06033
Ph.: (860) 368-3204 (Jared), or 3211 (Todd)
Toll free 888-404-4743
Email: jared.markham@westonsolutions.com
Email: todd.walles@westonsolutions.com

Estimate Date 8/16/2018 **Exp Date: 9/30/17**
Project Name AFC CT
Purchaser Name Erich Carlton
Site Address PICKUP
NA
Email or Fax ecarlton@afcct.com
Weston Bid # AFCCT_081618

Completed operations insurance or bonding will not be required.

Sales tax is not included in the unit cost. The sales tax presented above is *estimated.* **Sales tax will be charged unless a copy of the exemption certificate is provided at the time of order placement and will be shown on the final invoice as a separate line.**

Delivery will occur Tuesday through Friday, during normal business hours. Weekend and off-hour deliveries can be accommodated but may incur delivery surcharges.

This proposal is considered proprietary information and is not to be released without signed consent from Weston Solutions, Inc.

Pricing presented herein includes delivery based on oil at or below $80/bbl. Please note that at the time of project delivery a fuel surcharge may be assessed.

Estimate Acceptance / Authorization to Proceed

This quotation is for material and delivery only, unless otherwise indicated. This Cost Summary has been created for the purpose of assisting you in providing your client with as accurate a quotation as possible. We must emphasize however, that our function is that of assisting. The final responsibility of determining the exact material requirements, rests with you, the purchaser. Therefore, please check all measurements, calculations and prices for accuracy and to assure they align with your clients understanding of the project. As this is a living product, returned materials or materials ordered and planted but not delivered will be assessed a restocking fee equivalent to 75% of total order cost. If customer cancels order or postpones delivery within five (5) business days of scheduled delivery, a fee of 2.5% of total order cost will be assessed for demobilization/remobilization. ***NO RETURNS ON CUSTOM ORDERS. CUSTOMER IS RESPONSIBLE FOR RETURN SHIPPING.***	***Agreed to this*** 16th ***day of*** August ***, 2018*** ***Client Signature:*** ***Title:*** Managing Member ***Weston Signature:*** ***Title:*** Client Service Manager

Payment Terms

Pay 100% prior to pickup.

GENERAL TERMS AND CONDITIONS
FOR
PURCHASE OF GREENGRID® GREEN ROOF SYSTEM

1. Parties - References herein to WESTON mean the entity, division, affiliate or subsidiary corporation of WESTON Solutions, Inc. (WESTON) with whom PURCHASER has entered into an Agreement to which these Terms and Conditions are incorporated. References herein to GreenGrid Green Roof System mean the GreenGrid Materials, defined as of any combination of GreenGrid modules, growing media, liner fabric, and plants, as well as any coordinating accessory products such as edge treatment, pavers, pedestals, planking, and planters, sold by WESTON.

2. **Contract Documents/Order of Precedence** - The Contract Documents consist of the General Terms and Conditions, Signed Proposal, Change Orders to the Agreement, Specifications, and Drawings. In the event of any ambiguity and/or inconsistency between or among the various Contract Documents, the following descending order of precedence shall apply:

Change Orders to this Agreement
Estimate/Proposal
Terms and Conditions
Drawings
Specifications (limited to explicit PURCHASER supplied specifications)

3. PURCHASER'S Responsibility
3.1 PURCHASER shall grant or cause to be granted to WESTON, access to all sites as necessary for the delivery of materials and performance of services under this agreement, and shall be responsible for all costs and expenses attendant thereto.

3.2 PURCHASER shall be responsible for evaluating all documents and information that relate to the area where the GreenGrid Roof System is to be installed, including all drawings, analyses, testing, inspection, and information that relate to the structural integrity or water tightness of the roof system or other locations where the system is being installed. WESTON assumes no responsibility for failure of the roof due to the installation of the GreenGrid Roof System. PURCHASER agrees to indemnify and hold WESTON harmless for any claims resulting from actions or inactions taken by PURCHASER, and waives any and all claims arising out of inaccurate or incomplete information related to the structural integrity or water tightness of the roof or other locations where the system is being installed. PURCHASER waives any and all claims arising out of inaccurate or incomplete information regarding the anticipated weights of any GreenGrid Roof System, all of which are subject to change and subject to natural and regional variability. PURCHASER acknowledges that unless specifically ordered and paid for on a project specific basis at the time of purchase, any test data, product specifications, and similar product data furnished by WESTON is representative in nature, but is not to be relied upon for any particular use.

3.3 PURCHASER will take possession and assume ownership of all purchased GreenGrid Roof System at the agreed upon time of delivery. It is expressly agreed that WESTON is not responsible or liable for (and the PURCHASER will indemnify, defend and hold WESTON harmless from and against any and all claims, losses, costs and liabilities arising out of or in connection with) the acts, errors, omissions or misinterpretations of any other entity or person performing work in or around GreenGrid Roof System once delivered and taken possession of by PURCHASER.

4. WESTON'S Responsibility – WESTON will advise PURCHASER of the status of the GreenGrid Roof System order and delivery, and will make reasonable efforts to coordinate its activities with activities of PURCHASER and others at the project site.

5. Prices - All Articles shipped pursuant to this Order are purchased at prices in U.S. dollars (USD) specified in WESTON's Proposal. If price is not stated in the Proposal, it is agreed that WESTON's billing shall be at the price last quoted.

6. Delivery - Unless otherwise agreed, shipping and delivery of the GreenGrid Roof System from point of manufacture to U.S. locations is the responsibility of WESTON. It is agreed that time is the essence of this Order, and PURCHASER shall pay all excess shipping charges made necessary by expedited requests or delays within PURCHASER's reasonable control. PURCHASER shall be responsible for any and all costs associated with delays attributable to causes under the control of PURCHASER. PURCHASER shall be solely liable for all demurrage, detention, or other charges as a result of its failure to load or unload trucks, freight cars, containers, vessels, or barges within the free time allowed under applicable rules or in contract. WESTON will utilize commercially reasonable practices and carriers for material delivery and PURCHASER will indemnify, defend and hold WESTON harmless from and against any and all claims, losses, costs and liabilities arising out of or in connection with material delivery delays.

The PURCHASER shall set forth a requested delivery date, subject to planting season and material availability. Delivery dates that do not provide adequate lead time to grow modules to maturity will be rescheduled at no penalty to WESTON, and/or PURCHASER will authorize WESTON to bill for upgraded planting approaches, such as sedum mats, higher than standard density planting, plant substitutions, and larger plant stock, etc, for the project to meet a requested delivery date as closely as possible. As this is a living product, variability in lead time can and will occur, and adjustments to the maturity of the product and/or the delivery date may be necessary

7. **Warranty for Goods, Materials and Equipment -** WESTON warrants that all GreenGrid® Roof System delivered pursuant to this Order will have been, to the best of WESTON's knowledge, produced, sold, and delivered in general compliance with all applicable United States Federal, State and Local and/or Municipal laws. WESTON further warrants that all materials furnished hereunder shall be of general merchantable quality, free from significant defects in material and workmanship and will generally conform to the applicable change orders, estimate/proposal, drawings, specifications, samples or descriptions that make up the contract documents, in accordance with the order of precedence in Section 2. The warranties of WESTON, together with service guarantees, shall survive inspection, tests and acceptance, and shall extend to PURCHASER solely for the duration of the material warranty as detailed in Section 8. This warranty shall only extend to the GreenGrid Materials as defined in Section 1 and further detailed in Section 8. As a reseller for convenience of PURCHASER only, accessory products are not warranted by WESTON and any remedies for warranty claims by PURCHASER shall be direct to the manufacturer of such products.

THIS ARTICLE 7 AND ARTICLE 8 SETS FORTH THE ONLY WARRANTY APPLICABLE TO THE GREENGRID MATERIALS AND SERVICES. NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, CONCERNING THE GREENGRID OR ACCESSORTY MATERIALS AND SERVICES IS MADE BY WESTON, OR IS TO BE EXTENDED BY PURCHASER TO THIRD PARTIES, EXCEPT WITH THE PRIOR WRITTEN AUTHORIZATION OF WESTON. CONTRARY WARRANTIES IN ANY PURCHASE ORDER(S), ORDER(S) CONFIRMATION OR OTHER TERMS AND CONDITIONS OF PURCHASE FROM CUSTOMER, INCLUDING BUT NOT LIMITED TO SPECIFICATIONS, PLANS, ETC. ARE VOID.

7.A IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGES, ANTICIPATED OR LOST PROFITS, OR INTERRUPTION OR DELAY OF BUSINESS, REGARDLESS OF THE NATURE OF THE CLAIM, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THIS ARTICLE 7.A. SHALL NOT APPLY TO THE PARTIES' OBLIGATIONS OF INDEMNIFICATION UNDER THIS AGREEMENT.

8. GreenGrid Material Warranty

8.1. Modules - Shall be warranted by the manufacturer for a period of 20 years to be of merchantable quality, fit for the particular purpose intended, which is limited to containing green roof media and allowing water flow beneath the modules only, subject to disruption by physical disturbance, weather events, underlying waterproofing system, any substrate beneath the modules, and other forces beyond WESTON's control. , Modules will generally conform to the applicable samples or descriptions provided by WESTON, or the then current standard product(s).

MODULES SOLD EMPTY CARRY NO WARRANTY EXPRESS OR IMPLIED. THE MODULE WARRANTY DOES NOT APPLY TO ANY MODULES CUT OR OTHERWISE MODIFIED AFTER DELIVERY.

8.2. Plants – If not otherwise specified in the proposal, plants included in the GreenGrid system shall be warranted by WESTON for a period of 90 days from the date of delivery, subject to the limitations and requirements of the GreenGrid Plant Warranty that is incorporated by reference hereto. Additional, extended warranty options are available and must be purchased at the time of order placement.

8.3. Green Roof Media and Liner Fabric – NO WARRANTY EXPRESS OR IMPLIED

9. Changes, Delays, Cancellations and Returns - PURCHASER may request changes in the materials and quantities ordered, subject to any limitations, restocking fees, postponement fees, or cancellation fees specified in the project proposal or as outlined below. All changes must be in writing and signed by the Parties. WESTON shall have no obligation to proceed with changed work until all required Change Orders have been signed by the Parties, and shall not be in default hereunder for any such refusal to proceed with changed work. All disputes between the Parties arising under this Article shall be resolved in accordance with the Disputes clause of this contract.

Requests by PURCHASER to delay delivery must be made in writing to, and confirmed by, WESTON no less than 10 business days prior to the agreed upon delivery date to avoid delivery surcharges. Requests made with less than 10 business days' notice are subject to truck cancellation charges, supplier charges for unpacking/repacking and/or storing materials, and remobilization fees. A new, mutually acceptable delivery date will be agreed upon, and delivery charges will be revised as needed.

In the event of a project delay of more than 30 days beyond the initial agreed upon delivery date, weekly storage and maintenance charges of up to $0.10/sf per week may apply.

In the event of a project delay that extends beyond the normal growing season for the region where modules are being established, weather conditions may preclude delivery until the following spring. Should this occur, overwintering charges of up to $0.55/sf may apply. Additional delay 30 days or more beyond the typical beginning of the growing season for the region where modules are established, may be subject to the ongoing storage and maintenance charges listed above.

Cancellations of acknowledged orders are subject to the following cancellation fees, based on the total value (not including freight) of the GreenGrid materials and accessories:

Requests made within 3 business days of acknowledgement – no charge
Requests made between 4 and 10 business days after acknowledgement – 25%
Requests made more than 10 business days after acknowledgement, prior to planting taking place – 50%
Requests made more than 10 business days after acknowledgement, after modules are planted– 75%

Requests to return materials delivered to the project site – 75% PLUS return freight charges, ONLY with advanced return authorization by WESTON. Returns must be packaged in the same manner in which they were delivered, secured for shipping, and loaded onto the delivery vehicle by others. No returns are accepted more than 5 business days after delivery. Any modules that are deformed, damaged, or have less than 50% healthy plants upon inspection after return will have no return value.

10. **<u>Force Majeure/Excusable Delays</u> -** WESTON shall not be liable for delays in or failure to perform its services caused directly or indirectly by circumstances beyond WESTON's reasonable control, including but not limited to, acts of God, fire, flood, severe weather, war, sabotage, terrorist activity, accident, labor dispute, shortage, material availability, transportation, government action including regulatory requirements, changed conditions or delays resulting from actions or inactions of PURCHASER or third parties, site inaccessibility, or inability of WESTON or others to obtain material, labor, equipment transportation, changes in applicable laws or regulations after the date of commencement of performance hereunder and any other acts or omissions or events which are beyond the reasonable control of WESTON. PURCHASER recognizes that delays relating to the processing of permit applications and the approval of permits are beyond the control of WESTON

11. <u>Payment</u> - PURCHASER hereby agrees to make payment to WESTON in accordance with WESTON's written proposal which shall include an **initial payment due of 50% of the contract price upon signing of the Agreement, the next 25% payment will be due after planting is completed. .** A minimum subtotal of 75% payment must be received prior to shipment of the pre-grown GreenGrid system **unless alternative payment is approved by the parties in writing.** The remainder of payments are due net 30 days from the final invoice date. At WESTON's discretion, accounts in default or with poor or no payment history will require full payment prior to delivery.

Should PURCHASER dispute all or any portion of WESTON's invoice, PURCHASER shall notify WESTON of the disputed amount and reasons for the dispute within fifteen (15) days of receipt of the invoice. In any event, PURCHASER shall pay WESTON all undisputed portions of WESTON's invoice within thirty (30) days of the date of the invoice. Unpaid balances shall be subject to an additional charge at the rate of one and one-half percent (1-1/2%) per month from the date of invoice. In addition, WESTON may, after giving 24 hours written notice to PURCHASER, suspend services without liability until PURCHASER has paid in full all amounts due WESTON on account of services rendered and expenses incurred, including interest on past-due invoices. As security for PURCHASER's payment obligations under this Agreement, PURCHASER hereby grants to WESTON a purchase money security interest in the equipment and materials subject to this Agreement, together with all replacements, substitutions and proceeds thereof.

12. **Insurance -** WESTON agrees to maintain at its own expense, Worker's Compensation, Automobile Liability, and Commercial General Liability insurances as follows:

Types of Insurance	Limits of Liability
• Statutory Worker's Compensation	
Employers Liability	$1,000,000
• Commercial General Liability	$500,000 general aggregate.
• Automobile Liability	$500,000 each accident or loss (All vehicles including owned, hired and non-owned)

13. Transportation/Risk of Loss - Transportation of Articles purchased hereunder will be F.O.B. - Destination unless otherwise agreed.

14. **Indemnification**

14.1 Subject to the Limitation of Liability set out in Article 15 below, WESTON shall indemnify PURCHASER against all claims and suits by third parties for loss of or damage to property, or for personal injury to persons, including death, and from all judgments recovered therefore, to the extent arising out of the negligent acts or negligent omissions of WESTON in connection with WESTON's performance of this Agreement.

14.2 State of NY Indemnification: The Purchaser shall defend, indemnify, and hold harmless WESTON and its directors, officers, and employees against claims, demands, causes of action, liabilities, losses, costs, and expenses, including without limitation attorneys' fees and consultants' fees (collectively, "Losses") arising from death or personal injury occurring in connection with the Work, but only to the extent that the WESTON has incurred or become liable for the Losses solely by operation of the New York Scaffold Law, N.Y. Labor Law § 241(6), and not based on any finding that the Losses were caused by the deliberately wrongful, reckless, grossly negligent, or negligent act or omission of WESTON or its subcontractors.

15. **Limitation of Liability -** Notwithstanding any other provision of these General Terms and Conditions, and unless a higher limit of liability is expressly provided elsewhere in this Agreement in a provision making specific reference to this Article 15, WESTON's, **its subsidiaries, affiliates, parent corporations, directors, officers, employees, representatives, agents** and **subcontractors,** total liability to PURCHASER for any loss or damages from claims arising out of or in connection with this Agreement from any cause including WESTON's strict liability, breach of contract or professional negligence, errors and omissions shall not exceed the lesser of the total contract value of the Agreement or the proceeds available from WESTON's insurance limits as stated in Article 12. PURCHASER hereby releases WESTON from any liability exceeding such amount. It is agreed that the foregoing amount shall operate as a total maximum aggregate limitation of liability for all claims whatsoever. In no event shall either Party be liable to the other for special, indirect, punitive, incidental or consequential damages regardless of whether or not such damages were foreseeable at the time of the commencement of the Work.

16. **Confidentiality -** PURCHASER agrees that WESTON may use and publish PURCHASER's name, visual images of the project and written descriptions of WESTON's services with respect to the Work in describing WESTON's experience and qualifications to other PURCHASERs or potential PURCHASERs. WESTON's technical, design and pricing information contained in the Agreement is Confidential and Proprietary and is not to be disclosed or otherwise made available to third parties without the prior written consent of WESTON.

17. Disputes - All disputes between the Parties arising out of this Agreement shall be resolved as described herein. The parties shall attempt in good faith to mediate such dispute and use their best efforts to reach agreement on the matters in dispute. If within twenty (20) days from the date of delivery the dispute is not resolved either party shall have the right to file suit.

18. Sales and Use Tax - WESTON is required to pay all Sales and Use Taxes to the extent such taxes are applicable to purchases made hereunder, and further agrees to hold PURCHASER harmless from any and all claims related to Sales and Use Tax as applicable to Articles provided hereunder. WESTON may be requested to provide certification that all Sales and Use Taxes due have been or will be remitted to the appropriate taxing authority.

19. Severability/Savings - The provisions of this Agreement shall be deemed severable and the invalidity or unenforceability of any provisions shall not affect the validity and enforceability of the other provisions hereof. If any provision of this Agreement is unenforceable, for any reason whatsoever, such provision shall be appropriately limited and given effect to the extent that it may be enforceable.

20. Assignment - Neither Party shall assign, subcontract or otherwise transfer this Agreement or any rights or obligations hereunder to a subsidiary, successor, affiliate or any third party without the prior written consent of the other party. Any attempted assignment shall be null and void and without force and effect. Nothing hereunder shall prevent

WESTON from employing such professional associates, contractors, vendors, laborers and consultants as WESTON deems appropriate to assist WESTON in the performance of services hereunder.

21. Governing Law - The interpretation and enforcement of this Agreement is to be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania.

22. Waiver - The duly authorized waiver of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of a subsequent breach of the same or any other term, covenant or condition herein contained.

23. Entire Agreement - This Agreement represents the entire and integrated Agreement between the Parties and supersedes all other prior negotiations, representations or agreements, either written or oral. This Agreement shall not be amended or modified, nor shall any waiver of any right hereunder be effective unless set forth in a document executed by the duly authorized representatives of both Parties.
WESTON's acknowledgement of receipt of any purchase order, requisition, notice or authorization or WESTON's performance of work subsequent to receipt does not constitute acceptance of any terms or conditions other than those set forth herein.
Agreed to this 16th day of August, 20 18

WESTON SOLUTIONS, INC.

(Name)

Client Service Manager
(Title)

AFC Construction
(Company)

Erich Carlton
(Name)

Managing Member
(Title)

JPM

Weston accepts this printed name to represent authorized signature of buyer. Buyer to provide statement confirming same.

ON ACCOUNT

HDSUPPLY
CONSTRUCTION & INDUSTRIAL
WHITE CAP

511 - Newington CT (AHH) (PZ10)
91 Holmes Rd
Newington, CT, 06111
(860) 665-9400

QUOTE

558229

Sold To: 10000224562
AFC CONSTRUCTION
PO BOX 486
NEW BRITAIN, CT, 06050

Ship To : VONCARLTON,10001967555
321 ELLIS STREET
NEW BRITAIN, CT, 06051
Job Site Contact: ERIC CARLTON
Job Site Phone: 860-839-0217
Map #:

08:29 AM **Ordered By:** ERIC CARLTON **Contact Phone:** 860-8390217

Quote Number	Quote Date	Valid Until	Sales Person
558229	02/12/2020	02/11/2021	Pettinelli, E

Terms	Shipping Method	Created By
	0. Will Call	Pettinelli, E

LN	Part# / H/M	Description	Ord Quantity	U/M / Unit WT	Price / COO	Amount
10	157140N	12-1/2'X360' 4500SQFT 140N ROLL	1	RL 162 LBS	$288.50	$288.50

shipped weight **162.00 LBS**

Sub Total		**$288.50**
Tax amount		**$18.32**
Lumber Tax rate/amount	**1.00%**	**$0.00**
Total		**$306.82**

Customer acceptance signature:______________________________Date : ________________________________

ALL ITEMS AND QUANTITIES REQUIRE CUSTOMER REVIEW AND APPROVAL
AVAILABILITY AND LEAD TIMES ARE SUBJECT TO CHANGE
SPECIAL ORDERED ITEMS ARE SUBJECT TO MANUFACTURER APPROVAL PRIOR TO RETURN.
QUOTE IS SUBJECT TO EXPIRATION AS INDICATED IN THE ABOVE 02/11/2021 DATE.