HISTORICAL PERSPECTIVES INC.

Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

NYC DDC HWQ7241B1/SEQ200519
SHPO PR# 14PR01812

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Prepared For:

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And

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February 2023

MANAGEMENT SUMMARY

SHPO Project Review Number (if available): **14PR01812**

Involved State and Federal Agencies: **NYSDEC, NYSDOS, NYSDOT, USACE**

Phase of Survey: **Phase IA Archaeological Documentary Study**

Location Information
- Location: **Multiple roadways and portions of Brookville Park and Hook Creek Park**
- Minor Civil Division: **08101**
- County: **Queens**

Survey Area
- Length: **Total length of project site roadways is 17,922 feet**
- Width: **Roadways range from 28-38 feet in width**
- Number of Acres Surveyed: **Total BMP and WEA areas are ca. 5.5 acres and 2.5 acres, respectively**

USGS 7.5 Minute Quadrangle Map: **Jamaica and Lynbrook**

Archaeological Survey Overview
- Number & Interval of Shovel Tests: **N/A**
- Number & Size of Units: **N/A**
- Width of Plowed Strips: **N/A**
- Surface Survey Transect Interval: **N/A**

Results of Archaeological Survey
- Number & name of precontact sites identified: **None**
- Number & name of historic sites identified: **None**
- Number & name of sites recommended for Phase II/Avoidance: **None**

Report Authors(s): **Julie Abell Horn, M.A., R.P.A., Historical Perspectives, Inc.**

Date of Report: **February 2023**

EXECUTIVE SUMMARY

The New York City Department of Design and Construction (DDC), on behalf of the New York City Departments of Environmental Protection (DEP) and Transportation (DOT), is proposing Capital Project HWQ7241B1/SEQ200529.[1] The proposed project includes street reconstruction with drainage and other infrastructure improvements for portions of the Brookville and Rosedale neighborhoods of Queens, New York. The proposed project area is generally bounded by 228th Street to the west, Huxley and 241st Streets to the east, Idlewild Park to the south, and 145th Avenue to the north and includes improvements to the intersection of Brookville and Rockaway Boulevards (Figures 1 and 2a-2b and Appendices A and B).

The proposed project includes the full reconstruction of approximately 17,922 linear feet of city streets, which includes replacing all curbs, sidewalks, and paved surfaces throughout the proposed project area. Also proposed within the project is replacing approximately 18,100 linear feet of water mains and 5,400 linear feet of sanitary sewers.

The proposed drainage improvements include installing new stormwater collection sewers (about 12,200 linear feet) that would drain to six outfalls. Two of these outfalls would discharge directly to Conselyea's Creek[2] (which is a tributary to Jamaica Bay) at the existing culvert where 147th Avenue passes over the creek. The other four outfalls would discharge to two proposed Best Management Practices (BMPs). Also proposed is a graded and vegetated swale to handle drainage that collects at the end of 148th Avenue. Together, these drainage management systems are referred to as BMPs #1, #2, and #3, which have been proposed for the purposes of providing stormwater detention and/or flow rate attenuation for the project area runoff that drains to them prior to release of the runoff to Conselyea's Creek. Each of the proposed BMPs is located in Brookville Park, which is land under the jurisdiction of the City's Department of Parks and Recreation (NYC Parks).

To carry out the proposed improvements, the City must acquire 626,731 square feet (sf) of private lot area in several of the project area streets. In addition to being located partially in Brookville Park, BMP #2 is also located in the unbuilt ROW of 235th Street between 148th Drive on the south and Bentley Road on the north. The in-street portion of the BMP therefore requires a demapping of the affected street segment. The proposed BMP #2 design includes three vacant City-owned tax lots and two vacant privately owned lots, the latter of which will require acquisition by the City. Both the street demapping and acquisition of the two tax lots are actions subject to Uniform Land Use Review Procedure (ULURP) approval.

Based on the permanent impacts and the NYSDEC wetland restoration requirements, the proposed project is required to restore 2.89 acres of tidal wetlands. It is proposed that restoration for these permanent impacts be provided both at the BMP sites and at a wetland restoration site in Hook Creek Park. The temporary impacts at BMP #3 would be addressed as part of the BMP design. These three tidal restoration locations are referred to in this report as "Wetland Expansion Areas" or WEAs. WEA #1 is proposed to be located between BMP #1 and Conselyea's Creek in Brookville Park, WEA #2 is proposed to be located north of BMP #3 and southeast of 232nd Street in Brookville Park, and WEA #3 is proposed to be located immediately south of 149th Avenue and 241st Street in Hook Creek Park.

Finally, the proposed project includes improvements at the intersection of Brookville Boulevard and Rockaway Boulevard with the addition of right-turn lanes, new paved surfaces, and striping that would enhance traffic circulation and vehicle and pedestrian safety at this intersection.

The proposed project requires permits and approvals from various local, state, and federal agencies, including DOT; DEP; NYC Parks; the New York City Planning Commission (CPC); the Department of City Planning (DCP); DEC (including a State Pollutant Discharge Elimination System [SPDES] General Permit); the New York State Department of State (NYSDOS); the New York State Department of Transportation (NYSDOT); and the U.S. Army Corps of Engineers (USACE). As such, the proposed project is subject to New York City Environmental Quality

[1] Project specific information in this and subsequent sections is excerpted and adapted from the project's 2023 Draft Environmental Assessment Statement (EAS), prepared by AKRF, Inc. and Hazen & Sawyer, P.C.

[2] Conselyea's Creek historically had several different names, including Simonson's/Simmons' Creek and Old Mill Creek.

Review (CEQR); New York State Environmental Quality Review Act (SEQRA); Section 14.09 of the New York State Historic Preservation Act; and Section 106 of the National Historic Preservation Act. Pursuant to the requirements of CEQR and SEQRA, DEP will be the Lead Agency in the environmental review process and in that role, will perform a coordinated review with the involved agencies that would also be issuing discretionary approvals for the project (e.g., DOT, NYC Parks, DCP, DEC, etc.). The lead agency under Section 106 of the National Historic Preservation Act will be the USACE.

The proposed project requires discretionary actions; as such an Environmental Assessment Statement (EAS) is being prepared to meet the requirements of the City Environmental Quality Review Act (CEQR) and the State Environmental Quality Review Act (SEQRA).

As part of the CEQR review, project initiation materials were submitted to the New York City Landmarks Preservation Commission (LPC) in August 2022. The LPC responded that "the project site does not appear to possess archaeological significance" (Santucci 8/9/2022).

As part of the SEQRA and Section 106 of the National Historic Preservation Act review, project initiation materials were submitted to the New York State Historic Preservation Office (SHPO) in August 2022. The SHPO responded:

> The project is in an archaeologically sensitive area. Therefore, the State Historic Preservation Office/Office of Parks, Recreation and Historic Preservation (SHPO/OPRHP) recommends that a Phase IA Literature Search and Sensitivity Assessment survey is warranted. A Phase IA archaeological survey is designed to identify previously recorded archaeological sites and other cultural resources within or near the project area, to assess the archaeological sensitivity of the project area, to document previous ground disturbance and to make recommendations regarding the potential need for Phase IB subsurface archaeological testing (Lloyd 9/12/2022).

On behalf of the DDC and retained by AKRF, Inc., Historical Perspectives, Inc. (HPI) has undertaken this required Phase IA Archaeological Documentary Study to satisfy the requirements of SEQRA/CEQR and Section 106 of the National Historic Preservation Act, and to comply with the standards of the SHPO and the LPC (New York Archaeological Council 1994; OPRHP 2005; LPC 2018; CEQR 2021).

The Area of Potential Effect (APE) for this project includes all areas that will be subjected to ground disturbance. This includes the project's existing and proposed roadways and their associated subsurface utilities, the BMP locations, and the WEA locations.

The purpose of this Phase IA Archaeological Documentary Study was to determine whether archaeological resources from Native American and historical period occupations could have been deposited in the project site, if they could have remained intact, surviving later historical development and disturbance, and if any potential resources could be impacted by proposed project plans. The following sections outline the conclusions for these resources.

From what is known of precontact period settlement patterns on Long Island, most habitation and processing sites are found in sheltered, elevated sites close to wetland features, major waterways, and with nearby sources of fresh water. The project site once contained a combination of firm ground and natural marshlands surrounding tidal creeks. Native Americans would have been drawn to these creeks and marshlands for their aquatic life, wild game, and vegetation. As well, wetlands provided peat that could be used for fuel and a number of plants that served as materials for clothing, basketry and weaving. As importantly, the use of certain aquatic plants for medicinal purposes is ethnographically documented (Herrick 1995).

Precontact period sites, primarily from the Woodland Period, have been documented along the Jamaica Bay shoreline in proximity to marshlands. In some cases, extensive shell middens extended into the marshlands, the equivalent of precontact garbage dumps. Defined as deposits of shells, gravel, sand and silt and in some cases other cultural remains, they occur either as distinct cultural events or in association with habitation sites (Wells 2001). Along some areas of Jamaica Bay, these shell middens have been found under layers of modern fill, but on top of marshland soils (Pickman 1987:4). Additionally, prior to the creation of Jamaica Bay and its marshlands after the last Ice Age, the entire project site would have been dry land. It is possible that precontact period archaeological

sites from this period, dating from the Paleo Indian period through parts of the Archaic period, could remain capped by later marshland soils that accrued after the sea level rise, ca. 2000-4000 B.P.

Despite the generalized potential precontact period archaeological sensitivity for the Jamaica Bay vicinity, a number of factors argue against this sensitivity for the project site itself. The majority of the roadways within the project site were once on firm ground, in proximity to marshlands. However, there has been significant disturbance to these roadway locations from the grading and filling activities necessary to create the roads, as well as the installation of multiple subsurface utilities beneath the roads. Over 100 soil borings from the roadways across the project site (taken outside of the utility footprints which would have been completely disturbed) indicated that there were no obvious soil strata that could have suggested precontact period occupation, such as lenses of dark soil suggesting a Buried A horizon, or concentrations of shell and organic materials that might have been markers of shell middens. The BMP and WEA locations were all once within marshlands that formed after the last Ice Age, and so would have been less likely to contain precontact resources. Today these marshlands have been covered with fill and debris, which were deposited using heavy machinery, causing disturbance to the natural landform. Soil borings within the BMPs did not record any concentrations of shell and organic material, which might have indicated shell middens, nor did they record any layers of peat, which may have capped an earlier landform from a time when these areas were dry land. Finally, there have not been any previous precontact period archaeological sites recorded within the project site or in close proximity. Most of the precontact sites that were previously noted in the Jamaica Bay area were recorded over a century ago, in a period prior to the widespread development that has characterized the area since that time.

For these reasons, HPI concludes that the project site has a low precontact period archaeological sensitivity.

The project site and vicinity were minimally developed prior to the second half of the twentieth century. Among the earliest uses of the project site vicinity was for a saw mill and grist mill, located at the southern end of the artificially dammed Conselyea's Pond, but well outside the project site boundaries. Prior to the creation of the current city street grid, the project site was mostly used for farmland and woodland. There were only a scattering of buildings along the two main roads of Brookville Boulevard and 147th Avenue. Historic maps suggest that none of these buildings were within the footprints of the current project site streets, nor were their immediate yards where any archaeological deposits would be anticipated. The buildings generally were set back from the main roadways, often on multiple-acre tracts. Furthermore, the BMP and WEA locations were once within marshlands and were not developed or otherwise occupied.

Given these factors, HPI concludes that the project site has a low historic period archaeological sensitivity.

Based on the conclusions outlined above, HPI recommends that no additional archaeological investigations are warranted for the project site.

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BMPs and WEAs:

I. INTRODUCTION

The New York City Department of Design and Construction (DDC), on behalf of the New York City Departments of Environmental Protection (DEP) and Transportation (DOT), is proposing Capital Project HWQ7241B1/SEQ200529.[3] The proposed project includes street reconstruction with drainage and other infrastructure improvements for portions of the Brookville and Rosedale neighborhoods of Queens, New York. The proposed project area is generally bounded by 228th Street to the west, Huxley and 241st Streets to the east, Idlewild Park to the south, and 145th Avenue to the north and includes improvements to the intersection of Brookville and Rockaway Boulevards (Figures 1 and 2a-2b and Appendices A and B).

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The proposed drainage improvements include installing new stormwater collection sewers (about 12,200 linear feet) that would drain to six outfalls. Two of these outfalls would discharge directly to Conselyea's Creek[4] (which is a tributary to Jamaica Bay) at the existing culvert where 147th Avenue passes over the creek. The other four outfalls would discharge to two proposed Best Management Practices (BMPs). Also proposed is a graded and vegetated swale to handle drainage that collects at the end of 148th Avenue. Together, these drainage management systems are referred to as BMPs #1, #2, and #3, which have been proposed for the purposes of providing stormwater detention and/or flow rate attenuation for the project area runoff that drains to them prior to release of the runoff to Conselyea's Creek. Each of the proposed BMPs is located in Brookville Park, which is land under the jurisdiction of the City's Department of Parks and Recreation (NYC Parks).

To carry out the proposed improvements, the City must acquire 626,731 square feet (sf) of private lot area in several of the project area streets. In addition to being located partially in Brookville Park, BMP #2 is also located in the unbuilt ROW of 235th Street between 148th Drive on the south and Bentley Road on the north. The in-street portion of the BMP therefore requires a demapping of the affected street segment. The proposed BMP #2 design includes three vacant City-owned tax lots and two vacant privately owned lots, the latter of which will require acquisition by the City. Both the street demapping and acquisition of the two tax lots are actions subject to Uniform Land Use Review Procedure (ULURP) approval.

Based on the permanent impacts and the NYSDEC wetland restoration requirements, the proposed project is required to restore 2.89 acres of tidal wetlands. It is proposed that restoration for these permanent impacts be provided both at the BMP sites and at a wetland restoration site in Hook Creek Park. The temporary impacts at BMP #3 would be addressed as part of the BMP design. These three tidal restoration locations are referred to in this report as "Wetland Expansion Areas" or WEAs. WEA #1 is proposed to be located between BMP #1 and Conselyea's Creek in Brookville Park, WEA #2 is proposed to be located north of BMP #3 and southeast of 232nd Street in Brookville Park, and WEA #3 is proposed to be located immediately south of 149th Avenue and 241st Street in Hook Creek Park.

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A. Regulatory review

The proposed project requires permits and approvals from various local, state, and federal agencies, including DOT; DEP; NYC Parks; the New York City Planning Commission (CPC); the Department of City Planning (DCP); DEC (including a State Pollutant Discharge Elimination System [SPDES] General Permit); the New York State Department of State (NYSDOS); the New York State Department of Transportation (NYSDOT); and the U.S. Army Corps of Engineers (USACE). As such, the proposed project is subject to New York City Environmental Quality Review (CEQR); New York State Environmental Quality Review Act (SEQRA); Section 14.09 of the New York State Historic Preservation Act; and Section 106 of the National Historic Preservation Act. Pursuant to the requirements of CEQR and SEQRA, DEP will be the Lead Agency in the environmental review process and in that role, will perform a coordinated review with the involved agencies that would also be issuing discretionary approvals for the project (e.g., DOT, NYC Parks, DCP, DEC, etc.). The lead agency under Section 106 of the National Historic Preservation Act will be the USACE.

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B. Project site elements

The Area of Potential Effect (APE) for this project includes all areas that will be subjected to ground disturbance. This includes the project's existing and proposed roadways and their associated subsurface utilities, the BMP locations, and the WEA locations. Each of the specific project elements is described in further detail, below.

PROPOSED STREET RECONSTRUCTION IMPROVEMENTS

The proposed street reconstruction is comprehensive and includes:

- Modifying street widths to DOT design standards by relocating curbs and improving travel lanes (see Table 1);
- Reconstructing all curbs and completing missing or deteriorated curb segments;

- Reconstructing the street grades and profiles with new pavement to provide even and consistent paved surfaces which in addition to enhancing vehicle operation safety would support the flow of runoff from the street to the catch basins and the proposed storm sewer collection system;
- Installing new catch basins to capture the street drainage and collection sewers to convey that drainage;
- Providing proper street ends and turnarounds for vehicle circulation;
- Installing traffic calming measures along Brookville Boulevard with neck-downs at high pedestrian locations, such as bus stops;
- Reconstructing and completing missing sidewalk sections to provide consistent sidewalk widths of 10 to 15 feet with 3-to-11-foot-wide planting strips between the sidewalk and curb, where feasible; and
- Final paving, striping, and landscaping of the street corridors.

Table 1: Existing and Proposed Street Dimensions

Street	Between	And	Proposed Curb-to-Curb Width
146th Avenue	Brookville Boulevard	Edgewood Street	30’
147th Avenue	230th Place	231st Street	38’
	231st Street	232nd Street	38’
	232nd Street	Brookville Boulevard	38’
	Brookville Boulevard	Edgewood Street	38’
147th Road	235th Street	Brookville Boulevard	30’
	Brookville Boulevard	241st Street	30’
147th Drive	235th Street	Brookville Boulevard	30’
	Brookville Boulevard	241st Street	30’
148th Avenue	West of 231st Street	231st Street	30’
	231st Street	232nd Street (unbuilt)	30’
	235th Street	Brookville Boulevard	30’
	Brookville Boulevard	241st Street	30’
148th Road	235th Street	Brookville Boulevard	30’
	Brookville Boulevard	241st Street	30’
Bentley Road	235th Street	Brookville Boulevard	30’
148th Drive	235th Street	Brookville Boulevard	28’
	Brookville Boulevard	241st Street	30’
149th Avenue	Brookville Boulevard	241st Street	38’
	147th Avenue	148th Avenue	30
	148th Avenue	Dead end	30’
232nd Street	North of 147th Avenue	Dead end approximately 500 feet south of 147th Ave	30’
235th Street	147th Avenue	147th Road	30’
	147th Road	148th Road	30’
236th Street	Bentley Road	148th Drive	30’
Brookville Boulevard	Newhall Avenue	Edgewood Street	30’
	Edgewood Street	146th Avenue	30’
	146th Avenue	147th Avenue	30’
	147th Avenue	147th Road	30’
	147th Road	148th Road	30’
	148th Road	148th Drive	30’
	148th Drive	149th Avenue	30’
240th Street	147th Avenue	147th Road	30’
Edgewood Street	Brookville Boulevard	147th Avenue	30’

Source: New York City Department of Design and Construction, Mass Mailing #2 Designs, September 30, 2021.

PROPOSED INFRASTRUCTURE IMPROVEMENTS

Water Supply

The proposed capital project includes replacing old, unlined cast iron watermains to improve water supply reliability. Under the proposed project, watermains along Brookville Boulevard and 147th Avenue are proposed to be replaced with 12-inch and 20-inch pipes, respectively, while 8-inch watermains would be installed throughout the balance of the project area. In total, it is proposed to replace approximately 18,100 linear feet of watermain.

Sanitary Sewer Replacement

The proposed project includes replacing approximately 5,400 linear feet of sanitary sewer in the project area. This would provide for the needed replacement of sanitary sewers as well as the relocation of sanitary sewers, as needed to install the proposed stormwater collections sewers.

STORMWATER MANAGEMENT AND BMPS

Proposed Stormwater Collection System

The proposed project includes installing new stormwater collection sewers throughout the project area with four new outfalls and activating two other outfalls at the 147th Avenue culvert over Conselyea's Creek that were recently completed under a separate capital project. The four new outfalls would direct stormwater to the two proposed BMPs. A third proposed BMP would manage overland flow coming from 148th Avenue. A description of the each of the proposed BMPs is provided below.

Proposed Best Management Practices

The stormwater management system improvements include three BMPs at the following proposed locations (see Figures 1 and 2a, Appendix B, and Table 2):

- East side of Brookville Park, west of and parallel to 235th Street (BMP #1);
- East side of Brookville Park including the bed of 235th Street and four tax lots between Bentley Road and 148th Drive (BMP #2); and
- On the west side of Brookville Park, at the end of 148th Avenue (BMP #3).

Table 2. Proposed Best Management Practices (BMPs)

BMP/Location	Size	Function
BMP #1: Brookville Park at 235th Street between 147th Road and 148th Road	±3.88 acres	Stormwater outlets (2) and detention basin
BMP #2: Brookville Park at 235th Street between Bentley Road and 148th Drive	±1.51 acres	Stormwater outlets (2) and detention basin
BMP #3: Brookville Park at 148th Avenue	± 0.14 acres	Overland flow and drainage swale
Source: HWQ724B BMP #2 Grading Study, dated February 2022 and the HWQ724B BMP #1, BMP #2, and BMP #3 Site Plans, August 2022.		

WETLAND EXPANSION AREAS

As noted in the Introduction, the proposed project also includes three "Wetland Expansion Areas" or WEAs, which are locations where wetlands will be restored and/or expanded to mitigate or offset tidal parkland acreage necessary to be taken for the construction of the BMPs. WEA #1 (0.98 acre) is proposed to be located between BMP #1 and Conselyea's Creek in Brookville Park, WEA #2 (0.52 acre) is proposed to be located north of BMP #3 and southeast of 232nd Street in Brookville Park, and WEA #3 (1.01 acre) is proposed to be located immediately south of 149th Avenue and 241st Street in Hook Creek Park.

II. METHODOLOGY

The present study entailed a review of various resources.

- Primary and secondary sources concerning the general precontact period and history of southeast Queens and specific events associated with the project site and vicinity were reviewed using materials from the Queens Public Library, the New York Public Library, the library of HPI, and using online resources.
- Historic maps and photographs were reviewed using materials from NYC Parks, the Queens Public Library, the New York Public Library, the New York City Municipal Archives, the library of HPI, and using various online websites. These maps and photographs provided an overview of the topography and a chronology of land usage for the project site. A selection of these maps and photographs has been reproduced for this report. Of note, although the NYC Parks provided a number of maps for Brookville and Idlewild Parks, none of these maps specifically overlapped with the current project site.
- Information about previously recorded archaeological sites and surveys in the area was compiled from data available at the OPRHP, the LPC, and the library of HPI.
- Several environmental studies were reviewed for the project, including a Corridor Assessment Report (LBA 2006a), a Limited Subsurface Corridor Investigation (LBA 2006b), and a Phase I Corridor Assessment and Phase II Subsurface Corridor Investigation Report (LBA 2019).
- Soil borings completed in conjunction with the environmental 2006 and 2019 studies, as well as a geotechnical report (CDM Smith 2015) were reviewed. The geotechnical soil boring data is included as Appendix C.
- HPI completed a site visit on January 10, 2023. At that time, every project site street and intersection was photographed from all directions. Given that the project site contains approximately 45 block lengths with similar and/or redundant existing conditions, this report includes a selection of representative views of these streets (Photographs 1-36, Figures 2a-b). Additionally, all proposed BMPs and WEAs were photographed; selected photographs are included for each of these locations (Photographs 37-52, Figure 2).

III. CURRENT CONDITIONS AND ENVIRONMENTAL SETTING

A. Current Conditions

PROJECT AREA STREET CORRIDORS

The street corridors that comprise the project area are listed in Table 3 and shown on Figures 1, 2a-b, and Appendix A. Photographs 1-36 provide representative views of these street corridors

Table 3. Project Street Corridors

Street	Start	End	Length (Feet)
146th Avenue	Brookville Boulevard	Edgewood Street	310
147th Avenue	229th Street	50 feet east of Edgewood Street	2,580
147th Road	235th Street	50 feet east of 241st Street	790
147th Drive	235th Street	50 feet east of 241st Street	945
148th Avenue	235th Street	50 feet east of 241st Street	1,095
148th Road	235th Street	50 feet east of 241st Street	1,230
Bentley Road	235th Street	Brookville Boulevard	445
148th Drive	236th Street	50 feet east of 241st Street	1,025
149th Avenue	Brookville Boulevard	50 feet east of 241st Street	890
231st Street	147th Avenue	145th Avenue	870
231st Street	50 feet north of 148th Avenue	Dead End, south of 148th Avenue (mapped/unbuilt 149th Avenue)	590
232nd Street	50 feet north of 147th Avenue	543 feet south of 147th Avenue (mapped/unbuilt 232nd Street)	680
235th Street	147th Avenue	150 feet south of 148th Avenue (mapped/unbuilt 235th Street)	870

Street	Start	End	Length (Feet)
236th Street	Bentley Road	148th Drive	310
240th Street	147th Avenue	147th Road	510
Brookville Boulevard	50 feet north of Mayda Avenue	149th Avenue	3,160
Edgewood Street	Brookville Boulevard	147th Avenue	770
Brookville/Rockaway Boulevard Intersection	Brookville Boulevard	Rockaway Boulevard	850
Total Length			**17,922**
Source: New York City Department of Design and Construction, Mass Mailing #2 Designs, September 30, 2021.			

Of these project street corridors, two are arterial collector roads:

- Brookville Boulevard, a two-way northbound-southbound street that connects Sunrise Highway on the north with Rockaway Boulevard on the south; and
- 147th Avenue, a two-way eastbound-westbound street that parallels the Belt Parkway and Sunrise Highway—connecting with Francis Lewis Boulevard on the east and Springfield Boulevard on the west.

The other streets in the project area are local streets that generally intersect with either Brookville Boulevard or 147th Avenue, and provide access primarily to residences.

All of the street corridors in the project area are paved with asphalt and contain subsurface utilities. Depending on location, these utilities include water lines, sanitary and storm sewer lines, and gas lines. Manholes and catch basins are evident throughout the project's street corridors. Electric and telecommunications service generally is provided by overhead wires on utility poles. The condition of the street corridors varies by location, but many streets exhibit evidence of poor and patched pavement, and exhibit standing water where drainage is insufficient or compromised.

BMPS AND WEAS

BMP #1 and adjacent WEA #1 are located west of 235th Street and east of the channel of Conselyea's Creek, between the approximate lines of 147th Road and 148th Road within Brookville Park (Photographs 37-42). These areas were once natural marshlands, but were covered with fill during the second half of the twentieth century. Currently, these areas are covered with trees and invasive vegetation species, which have grown in the last few decades. There is evidence of considerable dumping and earthmoving throughout BMP #1 and WEA #1.

BMP #2 includes a combination of parkland in Brookville Park, a portion of the mapped but unbuilt section of 235th Street at the western terminus of Bentley Road, and five vacant lots (Photographs 43-47). BMP #2 extends from Bentley Road south to below 148th Drive. This BMP was once entirely marshland, but has been altered through construction, grading, and filling. There was once an aviation beacon facility atop a raised and landfilled platform that currently is used for vehicle and construction equipment storage. The roadway to this former facility is accessed from 148th Drive, where a gate has been constructed. There is also marshland with invasive species and a portion of Conselyea's Creek within this area.

BMP #3 and adjacent WEA #2 are located at the eastern end of 148th Avenue, within and adjacent to Brookville Park (Photographs 48-50). WEA #2 is proposed to be located within a mapped but unbuilt portion of 232nd Street. Both of these areas were once natural marshlands, but have been landfilled. The areas exhibit uneven topography from prior earthmoving and dumping. Currently, these areas are covered with trees and invasive vegetation species, which have grown in the last few decades.

WEA #3 is located south of 149th Avenue within Hook Creek Park. It is accessed by a short, angled extension of 241st Street, although fencing precluded direct access at the time of the field visit (Photographs 51-52). This area was formerly natural marshland, which was capped with fill and now supports invasive wetland species.

B. Topography and Hydrology

In its predevelopment condition, the project site consisted of low-lying, level land and natural marshlands. The project site is bisected roughly by Conselyea's Creek. The section northeast of 147th Avenue has been dammed to form Conselyea's Pond. Southwest of 147th Avenue, Conselyea's Creek flows northeast-southwest through Brookville Park and Idlewild Park, and then turns southeast and runs through Hook Creek Park, merging with Hook Creek at the Queens/Nassau County border. The original alignment of Hook Creek flowed northeast-southwest and drained into Jamaica Bay. Today, modifications to the surrounding landform have altered that natural alignment.

As noted above, the BMPs and WEAs originally were all within natural marshlands, according to historic maps, although the different maps were not consistent as to the extent of the marshland (Conner 1852, Figure 4; Wolverton 1891, Figure 6; U.S.G.S. 1897, Figure 7; U.S.G.S. 1947, Figure 10). However, each of the BMPs and WEAs was shown to be within marshland on at least one historic map. Today, the majority of the BMP and WEA areas have been capped with several feet of fill soils mixed with dumped debris. While the predevelopment elevations of the BMPs and WEAs would have been at or just above sea level, today they range from elevations 0-10 feet (Borough of Queens Sewer Datum[5]) (see Appendix B).

Prior to development, most of the areas now containing roadways within the project site were located above the marshlands on firm ground, but generally only several feet above sea level. The locations of several modern roadways bordering Idlewild Park and Hook Creek Park within the project site were once within marshlands and have been filled in. All of the locations now supporting roadways were less than 20 feet above sea level on historic maps (e.g. U.S.G.S. 1897, Figure 7), and most of these areas likely were less than 10 or 15 feet above sea level. The areas of the project site containing the roadways have been artificially graded and filled to create the streets and abutting city blocks and lots, and to install the subsurface utilities that serve these locations.

C. Geology

Long Island is the top of a Coastal Plain ridge formation that is covered with glacial drift, in reality an elevated sea bottom demonstrating low topographic relief and extensive marshy tracts. In the last million years, as glaciers advanced and receded three times, the surficial geology of the island, including the project site, was profoundly altered. "The glacier was an effective agent of erosion, altering the landscape wherever it passed. Tons of soil and stone were carried forward, carving and planing the land surface. At the margins of the ice sheet massive accumulations of glacial debris were deposited, forming a series of low hills or terminal moraines" (Eisenberg 1978). Circa 18,000 years ago, the last ice sheet reached its southern limit, creating the Harbor Hill moraine that traverses the length of Long Island. The moraine lies several miles north of the project site. South of the moraine, the complex rising and subsidence of the coastal plain, relieved of its glacial burden, and the rising sea level, caused by the volume of melting ice, created the coastline of embayed rivers and estuaries, with extensive marsh tracts, which stabilized approximately 3,000 years ago (Schuberth 1968).

D. Soils

According to the *New York City Reconnaissance Soil Survey* (Figure 3), the project site falls within four different soil mapping units.

The majority of the roadways within the project site are within soil mapping unit 211, Pavement & buildings-Flatbush-Riverhead complex, 0 to 8 percent slopes, described as:

[5] All project plans utilize the Borough of Queens Sewer/Highway Datum, which is 2.725 feet above mean sea level as established by the U.S. Coast and Geodetic Survey at Sandy Hook, New Jersey (also known as the NGVD29 Datum). For reference, the Borough of Queens Sewer/Highway Datum is 1.625 feet above the NAVD88 Datum, which is the preferred Datum for New York City according to the 2018 LPC *Guidelines for Archaeological Work in New York City*.

> Nearly level to gently sloping urbanized areas of outwash plains that have been substantially cut and filled, mostly for residential use; a mixture of anthropogenic and gneissic outwash soils, with up to 80 percent impervious pavement and buildings covering the surface (U.S.D.A. 2005:14).

The Brookville Park portion of the project site, including BMP #1 and WEA #1, is within soil mapping unit 225, Plymouth-Flatbush-Pavement & buildings complex, 0 to 8 percent slopes, described as:

> Nearly level to gently sloping areas of outwash plains that have been partially disturbed, mostly for parks and cemeteries; a mixture of sandy outwash soils and anthropogenic soils, with more than 15 percent impervious pavement and buildings covering the surface; located south of the terminal moraine in Queens (U.S.D.A. 2005:14).

BMPs #2 and #3, and WEAs #2 and #3 are within soil mapping unit 6, Ipswich-Pawcatuck-Matunuck mucky peats, described as:

> Low lying areas of tidal marsh that are inundated by salt water twice each day at high tide, with a mixture of very poorly drained soils which vary in the thickness of organic materials over sand (U.S.D.A. 2005:11).

Last the southernmost portion of the project site, at the intersection of Brookville Boulevard and Rockaway Boulevard, is at the junction of mapping unit 6, above, and mapping unit 100, Inwood-Laguardia-Ebbets complex, 0 to 8 percent slopes, described as:

> Nearly level to gently sloping areas that have been filled with a mixture of natural soil materials and construction debris; a mixture of anthropogenic soils which vary in coarse fragment content (U.S.D.A. 2005:12).

There have been several programs of soil borings completed at various locations across the project site. The most comprehensive program of geotechnical soil borings included 118 individual borings undertaken in 2013 and 2014 and documented in a geotechnical report by CDM Smith in 2015. These borings were completed within the project site roadways and portions of BMP #1 and BMP #2. The map, coordinates, and boring logs for these 118 soil borings are included as Appendix C. All elevations in this soil boring program referred to the Borough of Queens Highway Datum, which is 2.725 feet above mean sea level at Sandy Hook as established by the U.S. Coast & Geodetic Survey (NGVD29 Datum), or 1.625 feet above the NAVD88 Datum.

Results of the 118 soil borings were largely consistent. Nearly every boring within roadways recorded a thick upper stratum of fill beneath the pavement, several feet in extent, followed by strata of naturally occurring sandy soils with traces of silt and gravel. Outside of roadways, many borings also recorded a thick fill overmantle, although in some cases the drillers did not record the soil characteristics of the first 6 feet of soil, as per DDC guidelines. The lower reaches of the soil borings recorded natural sandy soil strata, with traces of silt and gravel. None of the soil borings recorded bedrock. The soil borings mostly ranged in depth from 42-102 feet below grade, with the ground surface elevations varying across the project site. Where measured, the groundwater depth generally was within 1 foot of zero elevation. Of note, within those soil borings located in or near current marshlands, there was no mention of a noticeable peat stratum (some borings noted only traces of organics), nor were there mentions of noticeable concentrations of shells or other organic materials that could indicate a precontact period archaeological midden deposit or a capped precontact surface.

Two additional sets of soil borings were completed in conjunction with environmental studies. In 2006, Louis Berger & Associates completed a Corridor Assessment Report and a Limited Subsurface Corridor Investigation for portions of the project's street corridors (LBA 2006a, 2006b). Four soil borings were completed within selected roadways at that time. A second set of 45 soil borings was completed within and adjacent to project roadways in conjunction with a Phase II subsurface corridor investigation in 2019, also by Louis Berger & Associates. Both of these sets of soil borings were completed in order to assess

hazardous materials in the soils rather than for geotechnical conditions, and so were not as deeply excavated. The data from the 2006 and 2019 soil borings were largely similar to those of the upper reaches of the geotechnical borings. As well, none of these borings recorded any strata that could correspond to a Buried A horizon, had levels of peat, or recorded or any concentrations of shells that could suggest a midden deposit.

IV. BACKGROUND RESEARCH/HISTORICAL OVERVIEW

A. Precontact Period Summary

For this report, the word precontact is used to describe the period prior to the use of formal written records. In the western hemisphere, the precontact period also refers to the time before European exploration and settlement of the New World. Archaeologists and historians gain their knowledge and understanding of precontact Indigenous Peoples (Native Americans) in the greater metropolitan New York area from three sources: ethnographic reports, Native American artifact collections, and archaeological investigations.

Based on data from these sources, a precontact cultural chronology has been devised for the New York City area. Scholars generally divide the precontact era into three main periods, the Paleo-Indian (c. 14,000-9,500 years ago), the Archaic (c. 9,500-3,000 years ago), and the Woodland (c. 3,000-500 years ago). The Archaic and Woodland periods are further divided into Early, Middle, and Late substages. The Woodland was followed by the Contact Period (c. 500-300 years ago). Artifacts, settlement, subsistence, and cultural systems changed through time with each of these stages. Characteristics of these temporal periods have been well documented elsewhere, and in keeping with guidelines issued by the OPRHP (2005), will not be fully reiterated here.

Scholars often characterize precontact sites by their close proximity to a water source, fresh game, and exploitable natural resources (i.e., plants, raw materials for stone tools, clay veins, etc.). These sites are often separated into three categories: primary (campsites or villages), secondary (tool manufacturing, food processing), and isolated finds (a single or very few artifacts either lost or discarded). Primary sites are often situated in locales that are easily defended against both nature (weather) and enemies. Secondary sites are often found in the location of exploitable resources (e.g., shell fish, lithic raw materials).

B. Previously Recorded Archaeological Sites and Surveys

There have not been any archaeological sites specifically recorded within the project site boundaries. Within one mile of the project site, four New York State Museum (NYSM) sites have been recorded, but there is minimal information available about them and they are broadly drawn on the SHPO's Cultural Resource Information System (CRIS). NYSM Site 4547 was recorded by Arthur C. Parker in 1922 as "traces of occupation" along Hook Creek near the Nassau County border with Queens. The broad mapping of this site on CRIS overlaps with the southern extent of Brookville Avenue within the project site, but should not be considered a precise determination. In his archaeological study for Queens, Boesch (1997) documented one additional archaeological site, reported by Ralph Solecki in 1941, when the Belt Parkway was being constructed. Table 4, below, lists the sites within a one-mile radius of the APE.

Table 4: Archaeological sites within a one-mile radius of the APE

Site # and name	Distance from APE	Time Period	Site Name/Type
NYSM 4033	Ca. 0.8 mile southeast	Unknown precontact	Burial site
NYSM 4534	Ca. 0.3 mile northeast (location appears to be incorrect per NYSM database)	Unknown precontact	Village site
NYSM 4538 Boesch 63	Ca. 0.6 mile southwest	Unknown precontact	Habitation site

Site # and name	Distance from APE	Time Period	Site Name/Type
NYSM 4547 Boesch 21	Overlaps southern section of Brookville Road within the APE	Unknown precontact	Traces of occupation
Boesch 44 Hassock Creek - Springfield (QN-9)	Ca. 0.5 mile west	Unknown precontact and historic period	Assorted artifacts

Based on the distance of the project site to the broadly drawn boundaries of the NYSM sites, CRIS indicates that the majority of the project site is within a buffer zone surrounding these sites that could be archaeologically sensitive. However, Boesch's sensitivity study for Queens indicates that the entire project site is within an area of high archaeological sensitivity (Boesch 1997).

CRIS indicates that there have been four archaeological studies completed within a one-mile radius of the project site.

In 2009, the Institute for Long Island Archaeology completed a Cultural Resources Survey of the New York State Route 878 Operational Improvements, Rockaway Turnpike to Burnside Avenue, Inwood, Town of Hempstead, Nassau County, located approximately 0.7 mile southeast of the project site (Merwin 2009). No archaeological sites were found.

In 2017, HDR completed a Phase I Archaeological Investigation of the Queens Safety City Site on North Conduit Avenue at the intersection of 246th Street and 138th Avenue, approximately 0.6 mile northeast of the project site. Phase IB shovel testing revealed disturbance from dumping and no archaeological resources (HDR 2017).

In 2019, HPI conducted a Phase IA Archaeological Resources Assessment of the GOSR Green Infrastructure Assessment and Implementation Project at multiple locations in Kings and Queens Counties, New York. One of the loci, in the Idlewild neighborhood, is located ca. 0.4 mile northeast of the project site. No further investigations were recommended for the Idlewild project locus (HPI 2019).

Last, in 2020, HPI completed an Archaeological Documentary Study for the 225th Street Infrastructure Improvements, Queens County, New York, located approximately 0.3 mile southwest of the project site. The study recommended additional review of upcoming soil borings (HPI 2020).

C. Historic Period Summary

What is now the project site neighborhood was historically part of the area designated by the Dutch as Rustdorp ("rest-town"), which encompassed all of southern Queens. In 1655, it was settled by English colonists from Massachusetts and Heemstede (Hempstead in present Nassau County), who requested permission from Director General Peter Stuyvesant to establish a town halfway between Hemstede and Amersfoort (Flatlands in Kings County). The settlers referred to the village as "jemeco" which was Delaware for beaver, due to its proximity to a beaver pond, and was later corrupted to Jamaica (Munsell 1882:192). Jamaica's proprietors purchased surrounding lands from Native Americans in order to strengthen the town's title to lands granted by the Dutch colonial government. The hamlet of Springfield, at the crossroads of what are now Merrick and Springfield Boulevards, was settled equally early (Munsell 1882:198).

After the British established rule in 1664, New Amsterdam became "New York" and Long Island became "Yorkshire," with Yorkshire being divided into "ridings" or thirds. Jamaica became part of the "North Riding" (Seyfried and Asadorian 1991:vi). In 1683, the system of ridings was abolished under Governor Thomas Dongan, and ten counties were created; three on Long Island. It was at that time that Kings, Queens, and Suffolk Counties came into existence, and Rustdorp was renamed Jamaica.

During the colonial era, many of the streams in lower Queens were dammed and mills were built on them. Conselyea's Creek and Pond were named for the Conselyea family, who dammed the waterway flowing through the project site and erected a saw mill and a grist mill during the eighteenth century, both outside the project site limits, north of what is now 147th Avenue. There were two roadways leading to and from the mills. The nearest hamlet to the project site was the settlement of Springfield, approximately one-half mile to the northwest, situated along Thurston's Creek. A roadway led from Springfield southeast to the project site area, on an alignment north of present 147th Avenue. The other roadway within the project site during this period was a section of what is now known as Brookville Boulevard, but which was originally called Fosters Meadow Road. The road was named after the community of Fosters Meadow, which included land to the northeast of the project site in both what are now Queens and Nassau Counties, with northern Fosters Meadow lying in Nassau. When first settled in ca. 1650 by Thomas and Christopher Foster, the family used the western tip of the Hempstead Plains as a sheep pasture (Munsell 1882:201). The 1781 Taylor and Skinner map illustrated the communities of Springfield, Fosters Meadow, the mill pond along Conselyea's Creek, and the only two roadways that existed in the project site vicinity at that time. Fosters Meadow Road terminated south of the project site at the edge of the marshland.

The project site and vicinity remained very sparsely developed during the first half of the nineteenth century. The land surrounding the marshlands was used for farming and woodland, with only scattered buildings along the few local roads. By the 1830s, a roadway had been constructed through the marshlands, connecting Jamaica on the northwest with Far Rockaway on the southeast. Known initially as the Rockaway Road and later the Rockaway and Jamaica Turnpike, it ran south of the project site, largely within the area now covered by JFK International Airport (Bellot 1917:85). Several 1837 U.S.C.S. maps, as well as the 1845 U.S.C.S. map, showed the route of this roadway. By the early 1850s, Fosters Meadow Road may have been been extended through the marshlands to reach the Rockaway Road, connecting the project site with communities to the south and east. The 1852 Conner map (Figure 4) showed the extent of development by this period. The saw and grist mills were depicted at the southern end of Conselyea's Pond, and a scattering of structures were shown along and in proximity to the local roadways, although the scale of the map is such that the precise placement of the buildings in relation to the modern roads is unclear. Curiously, this map, as well as the subsequent 1859 and 1863 Walling maps, showed that Fosters Meadow Road ran in a straight line through the marshland in what is now Hook Creek Park to connect with Rockaway Road. Other historic maps (e.g. Beers 1873, Figure 5; Beers 1886; Wolverton 1891, Figure 6) did not show this roadway in place, suggesting that the earlier maps may have been in error, the later maps were incomplete, or that the roadway was short lived.

The 1873 Beers map (Figure 5) illustrated several changes to the project site area. By this time, the earlier road from Springfield to the saw and grist mills at the southern side of Conselyea's Pond was no longer shown, but a new alignment, roughly following the modern route of 147th Avenue, had been constructed, and several buildings had been erected on either side of the new roadway. Neither the mills nor the mill pond were shown, although a building was still attributed to the Conselyea family. The creek was called Simonsons Creek at this time. The other change shown on the 1873 Beers map was the presence of a railroad line crossing diagonally through the northeastern end of the project site. This was a short-lived branch of the Long Island Railroad that ran from Jamaica to Far Rockaway during the 1870s (Ross 1903). The modern roadways of Edgewood Street and Huxley Street, which are oriented at an angle to the rest of the street grid, border the former railroad alignment. In 1918 and again in 1928, the Long Island Railroad rebuilt the tracks as the Cedarhurst Cutoff, but the project was soon abandoned again and the tracks removed (Walsh 2014).

Another change to Conselyea's Creek had occurred in the 1850s, when the Nassau Water Works Company, which supplied the city of Brooklyn with water, began to purchase the water rights to many of the fresh water streams and extant mills in eastern Queens, including the supply along Conselyea's or Simonson's Creek (Munsell 1882:202). An east-west arched brick conduit was constructed running from the Hempstead Reservoir to Ridgewood Reservoir along present-day Sunrise Highway, and collected water from the dammed streams that crossed it, including Simonson's Creek. The 1891 Wolverton map (Figure 6) indicated that the area north of 147th Avenue was now attributed to the City of Brooklyn, and a pumping station was located along the creek. The map also continued to show that the overall project area was still mostly undeveloped and likely used for farmland and woodland, with only a scattering of buildings along

what is now Brookville Boulevard and 147th Avenue. Similar conditions were shown on the 1897 U.S.G.S. map (Figure 7), the 1901 Hyde map, and the 1909 Bromley map (Figure 8).

After Queens became a borough New York City in 1898, a street grid was projected across the project area, but it was many years before the new streets were realized and new development began. A 1924 aerial photograph (Figure 9) showed that other than Brookville Boulevard and 147th Avenue, there were still no other roadways within the project site. Only a few scattered buildings were located along these two roads. The majority of the upland portions of the project site were shown as farmland. Most of the area now within Brookville Park, Idlewild Park, and Hook Creek Park was shown to be marshland. The few locations within the project site that were developed enough to merit inclusion on the 1926 Sanborn Fire Insurance maps indicated similar conditions as the 1924 aerial photograph. Although some additional streets and blocks were shown in 1926, many of these existed only on paper.

Additional project site streets began to be constructed during the 1930s and 1940s, and gradually buildings were erected along them. Tax photographs made in 1939-1941 captured some of the modest residences along these streets. Most of the buildings were frame constructed, and a number appeared to be set on raised piers, perhaps to address a high water table or flooding in these low-lying areas. The 1947 U.S.G.S. map (Figure 10) and 1951 Sanborn Insurance map sheets showed the pace of development in the area, and suggested that many of the streets had not yet been paved. The southeast quadrant of the project site, along both sides of Brookville Boulevard, still was shown primarily as open space without many cross streets.

Also during the mid-1940s, construction began on what was originally known as Idlewild Airport, the precursor to today's JFK International Airport. Work started in 1943 and the airport opened in 1948. The 1947 U.S.G.S. map (Figure 10) labeled this as "Jamaica Airport." In 1947, the Port of New York Authority (today known as the Port Authority of New York and New Jersey) leased the airport from the city. One of the first projects the Port of New York Authority undertook was to create two new runways oriented northeast-southwest at the southeastern end of the airport property. The approach to these runways was over what is now Idlewild Park. In order to preserve open space and prevent future residential development in these areas, the Port of New York Authority began purchasing land in what is now Idlewild Park in the 1940s, including portions in the project site vicinity. The tidal marshlands, which in the thinking of that period were considered to be worthless in their natural condition, were slated for land reclamation through filling with refuse and construction waste (Vollmer Associates 1981: VI-32-33).

As part of the buildout of the airport, Rockaway Boulevard, which had previously crossed through the center of the airport property, was reconstructed on a new alignment north of its original location, in an area previously covered by marshland. The portion of the project site where Brookville Boulevard intersects Rockaway Boulevard was constructed by the early 1950s, although Rockaway Boulevard was subsequently widened. In 1958, the assignment of Idlewild Park was transferred from the Port of New York Authority to the New York City Parks Department. The portion of Brookville Park north of 147th Avenue, which was already city property after being acquired for the municipal waterworks, was acquired by the Parks Department at about the same time. The portion south of 147th Avenue was added by the 1980s.

The remainder of the project site streets, including those located east of Brookville Boulevard, were constructed by the 1960s, and new housing stock was erected along these roadways. During the 1960s and 1970s, Idlewild Park and Brookville Park continued to be used for landfilling purposes, both at the municipal level and informally by local residents. The city used the southern portion of the marshlands in Idlewild Park, to the southwest of the project site, for a construction debris landfill, while many residents and businesses wishing to dispose of household and commercial trash often used the northern area of the park, which was accessible from local roads, as private, illicit dumping grounds (Hendrick 2002). A series of photographs taken in 1966 of the area, and on file with the New York City Parks Department, showed the extent of the illegal dumping activities in Brookville Park (Appendix D). The city's landfill site in Idlewild Park was closed after 1974 (Vollmer Associates 1981: VI-35). Aerial photographs show that in addition, by the mid-1960s an aviation beacon facility atop a landfilled platform had been constructed in Brookville Park at the western terminus of 148th Drive, where BMP #2 is proposed.

In addition to the airport construction and landfilling activities in the post-World War II period, the project site vicinity was affected by proposed plans for the Nassau Expressway. This highway was envisioned to run from the Brooklyn-Queens border through Queens and into Nassau County. Initial plans for the Nassau Expressway route in the 1940s and 1950s were just south of the present Rockaway Boulevard, within the JFK International Airport property. As the airport expanded and safety issues concerning flight patterns became more prevalent, the proposed alignment of the Nassau Expressway was shifted north, into Idlewild Park. Construction of the eastbound portion of the highway from Cross Bay Boulevard to the Van Wyck Expressway began in 1965, opening in 1967. However, the remaining segment of the highway, including the area in Idlewild Park, was not built at that time due to a number of reasons, including community opposition. During the late 1970s additional alternatives were studied in an Environmental Impact Statement (EIS) and Section 4f study, culminating in a Final EIS in 1981 by Vollmer Associates. The alternative chosen for the Nassau Expressway was mapped as running through Idlewild Park, north of the city landfill extent, as shown on an aerial photograph from 1981 (Figure 11). The Nassau Expressway project ultimately did not move forward after 1981. The 1981 aerial photograph also showed the addition to Brookville Park south of 147th Avenue, and the future Hook Creek Park, here labeled a "Public Place." The photograph also showed that the former marshland areas proposed for BMP #1, WEA #1, and WEA #3 clearly had been landfilled.

There have been some new facilities constructed in Brookville Park since the 1980s, including several athletic fields outside the project site. There has been maintenance work completed at and around Conselyea's Pond and Creek, and at 147th Avenue where a new culvert and outfalls have been constructed at the road crossing. Many of the roadbeds have had utility work completed, as evidenced by asphalt replacement at those locations. At the time of the site visit, reconstruction of portions of the western end of 147th Avenue was underway. However, there has not been significant change to the project site roadways and proposed BMP and WEA locations during the last few decades.

V. CONCLUSIONS

The purpose of this Phase IA Archaeological Documentary Study was to determine whether archaeological resources from Native American and historical period occupations could have been deposited in the project site, if they could have remained intact, surviving later historical development and disturbance, and if any potential resources could be impacted by proposed project plans. The following sections outline the conclusions for these resources.

A. Precontact Archaeological Sensitivity

From what is known of precontact period settlement patterns on Long Island, most habitation and processing sites are found in sheltered, elevated sites close to wetland features, major waterways, and with nearby sources of fresh water. The project site once contained a combination of firm ground and natural marshlands surrounding tidal creeks. Native Americans would have been drawn to these creeks and marshlands for their aquatic life, wild game, and vegetation. As well, wetlands provided peat that could be used for fuel and a number of plants that served as materials for clothing, basketry and weaving. As importantly, the use of certain aquatic plants for medicinal purposes is ethnographically documented (Herrick 1995).

Precontact period sites, primarily from the Woodland Period, have been documented along the Jamaica Bay shoreline in proximity to marshlands. In some cases, extensive shell middens extended into the marshlands, the equivalent of precontact garbage dumps. Defined as deposits of shells, gravel, sand and silt and in some cases other cultural remains, they occur either as distinct cultural events or in association with habitation sites (Wells 2001). Along some areas of Jamaica Bay, these shell middens have been found under layers of modern fill, but on top of marshland soils (Pickman 1987:4). Additionally, prior to the creation of Jamaica Bay and its marshlands after the last Ice Age, the entire project site would have been dry land. It is possible that precontact period archaeological sites from this period, dating from the Paleo Indian period through parts of the Archaic period, could remain capped by later marshland soils that accrued after the sea level rise, ca. 2000-4000 B.P.

Despite the generalized potential precontact period archaeological sensitivity for the Jamaica Bay vicinity, a number of factors argue against this sensitivity for the project site itself. The majority of the roadways within the project site were once on firm ground, in proximity to marshlands. However, there has been significant disturbance to these roadway locations from the grading and filling activities necessary to create the roads, as well as the installation of multiple subsurface utilities beneath the roads. Over 100 soil borings from the roadways across the project site (taken outside of the utility footprints which would have been completely disturbed) indicated that there were no obvious soil strata that could have suggested precontact period occupation, such as lenses of dark soil suggesting a Buried A horizon, or concentrations of shell and organic materials that might have been markers of shell middens. The BMP and WEA locations were all once within marshlands that formed after the last Ice Age, and so would have been less likely to contain precontact resources. Today these marshlands have been covered with fill and debris, which were deposited using heavy machinery, causing disturbance to the natural landform. Soil borings within the BMPs did not record any concentrations of shell and organic material, which might have indicated shell middens, nor did they record any layers of peat, which may have capped an earlier landform from a time when these areas were dry land. Finally, there have not been any previous precontact period archaeological sites recorded within the project site or in close proximity. Most of the precontact sites that were previously noted in the Jamaica Bay area were recorded over a century ago, in a period prior to the widespread development that has characterized the area since that time.

For these reasons, HPI concludes that the project site has a low precontact period archaeological sensitivity.

B. Historic Period Archaeological Sensitivity

The project site and vicinity were minimally developed prior to the second half of the twentieth century. Among the earliest uses of the project site vicinity was for a saw mill and grist mill, located at the southern end of the artificially dammed Conselyea's Pond, but well outside the project site boundaries. Prior to the creation of the current city street grid, the project site was mostly used for farmland and woodland. There were only a scattering of buildings along the two main roads of Brookville Boulevard and 147th Avenue. Historic maps suggest that none of these buildings were within the footprints of the current project site streets, nor were their immediate yards where any archaeological deposits would be anticipated. The buildings generally were set back from the main roadways, often on multiple-acre tracts. Furthermore, the BMP and WEA locations were once within marshlands and were not developed or otherwise occupied.

Given these factors, HPI concludes that the project site has a low historic period archaeological sensitivity.

VI. RECOMMENDATIONS

Based on the conclusions outlined above, HPI recommends that no additional archaeological investigations are warranted for the project site.

VII. REFERENCES

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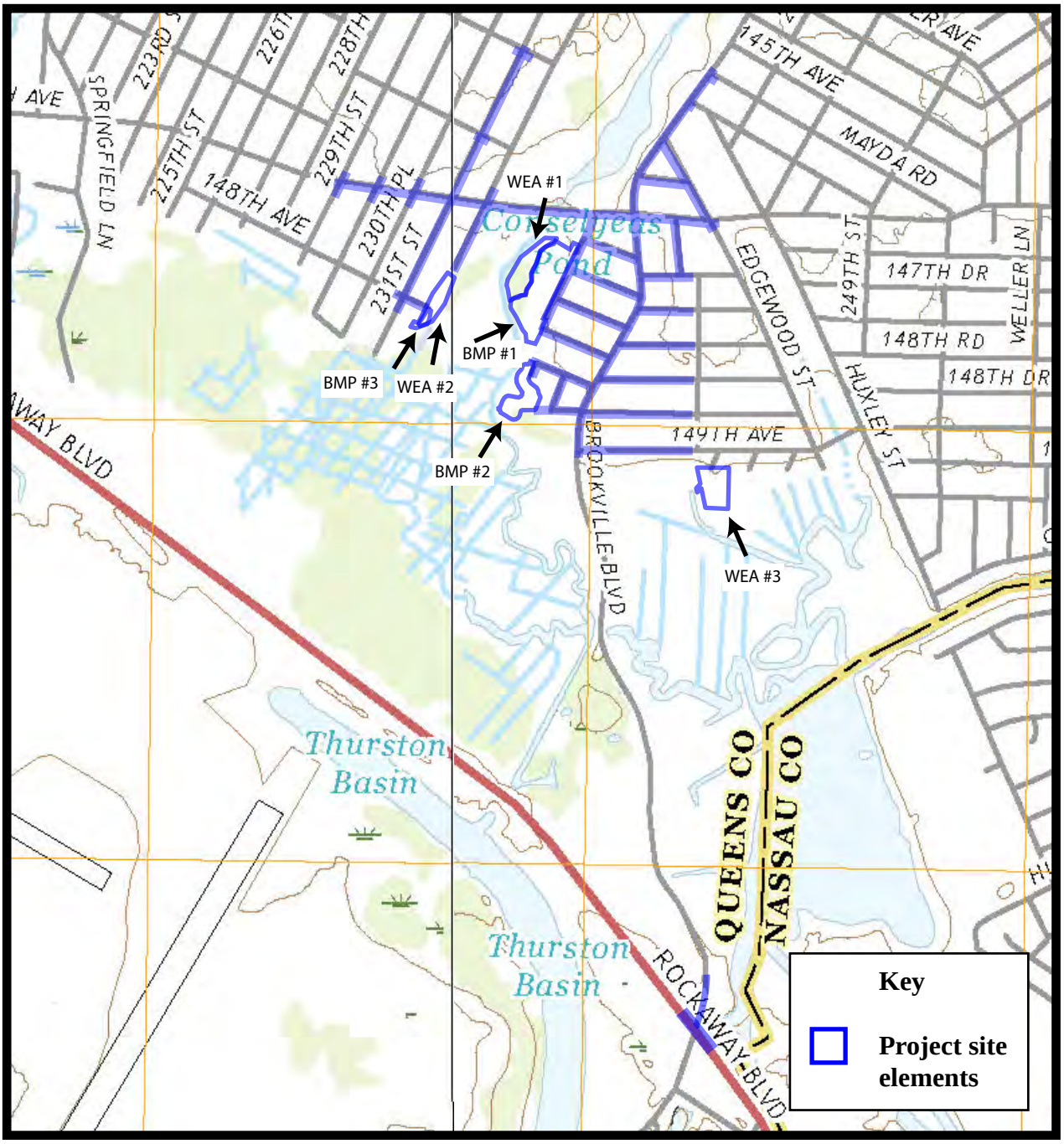
FIGURES



Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 1: Project site elements on *Jamaica, N.Y.* and *Lynbrook, N.Y.* 7.5 minute topographic quadrangles (U.S.G.S. 2019).

Figure 2a. Project site elements and photograph locations (HPI 2023 and AKRF 2023).

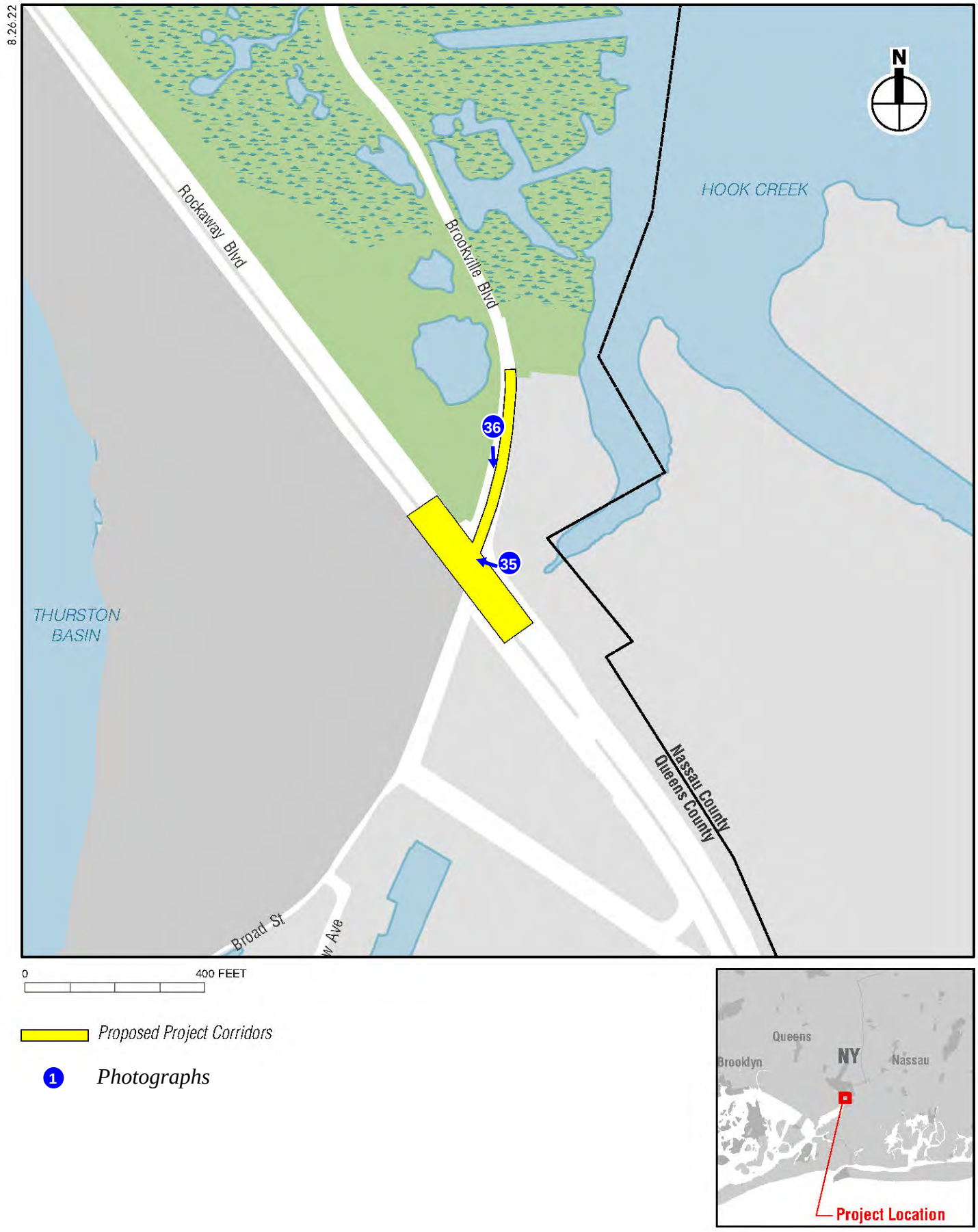
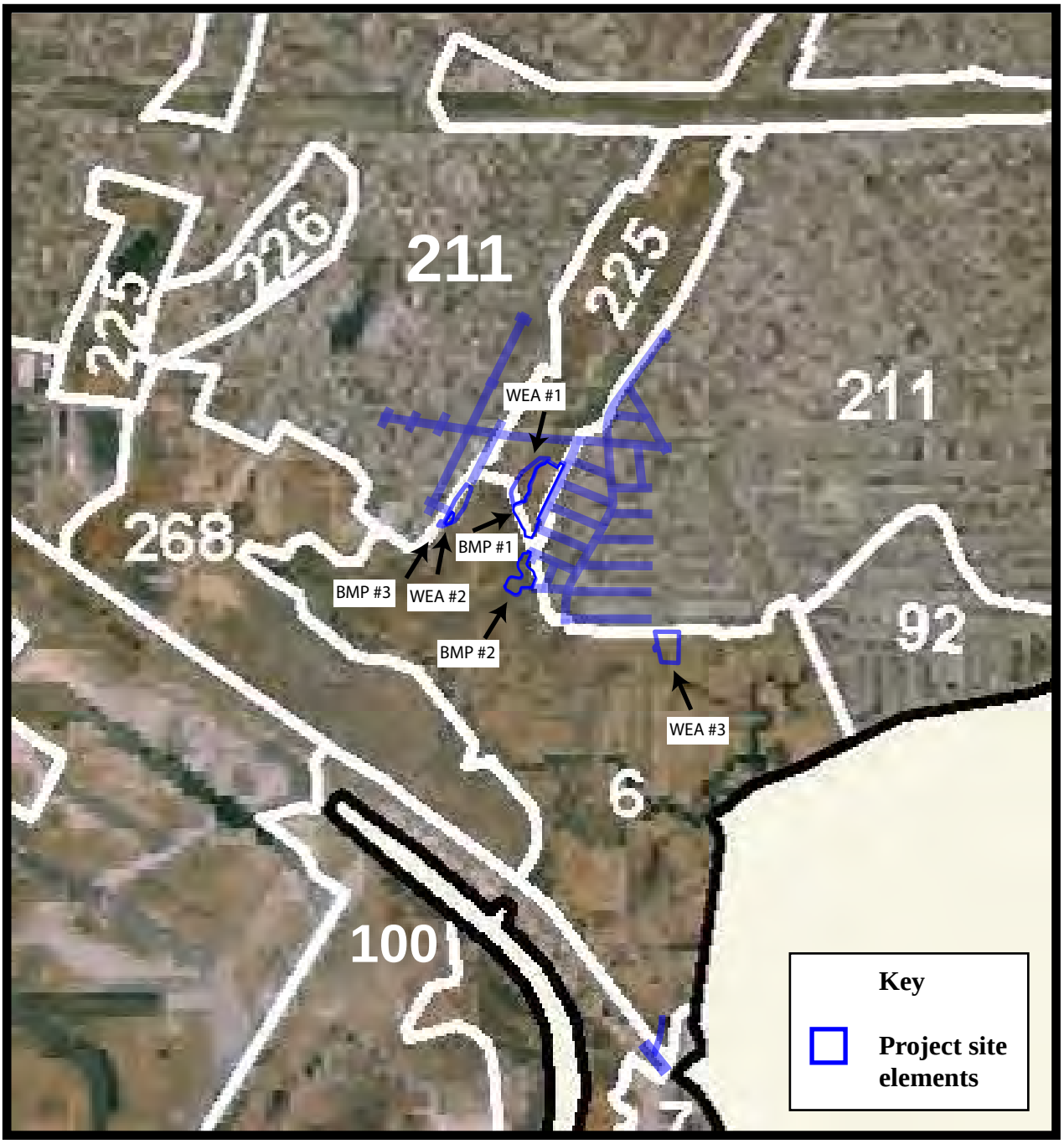


Figure 2b. Project site elements and photograph locations (HPI 2023 and AKRF 2023).



Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 3: Project site elements on *New York City Reconnaissance Soil Survey* (U.S.D.A. 2006).

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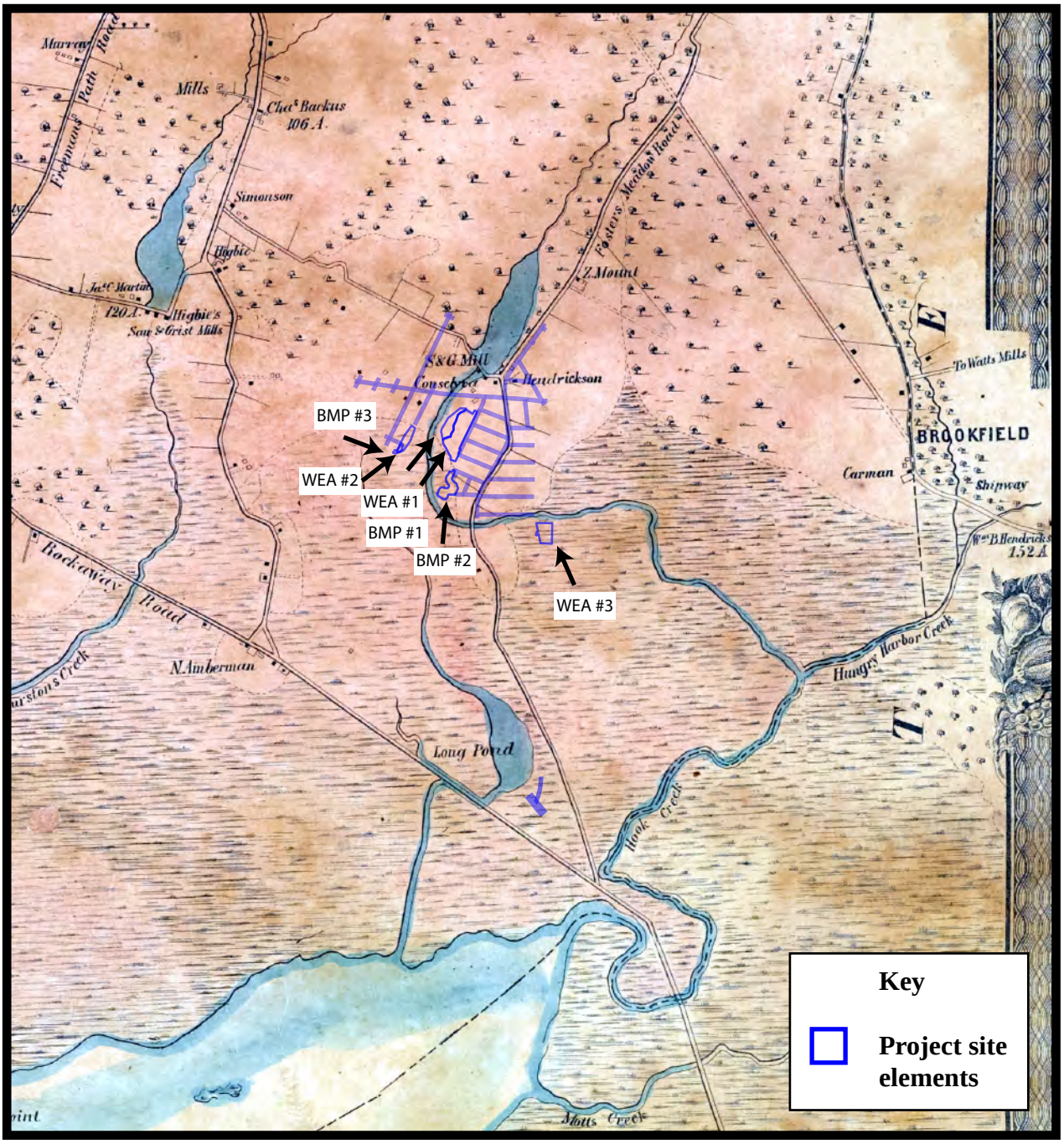

Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 4: Project site elements on *Map of Kings and part of Queens Counties, Long Island, N.Y.* (Conner 1852).

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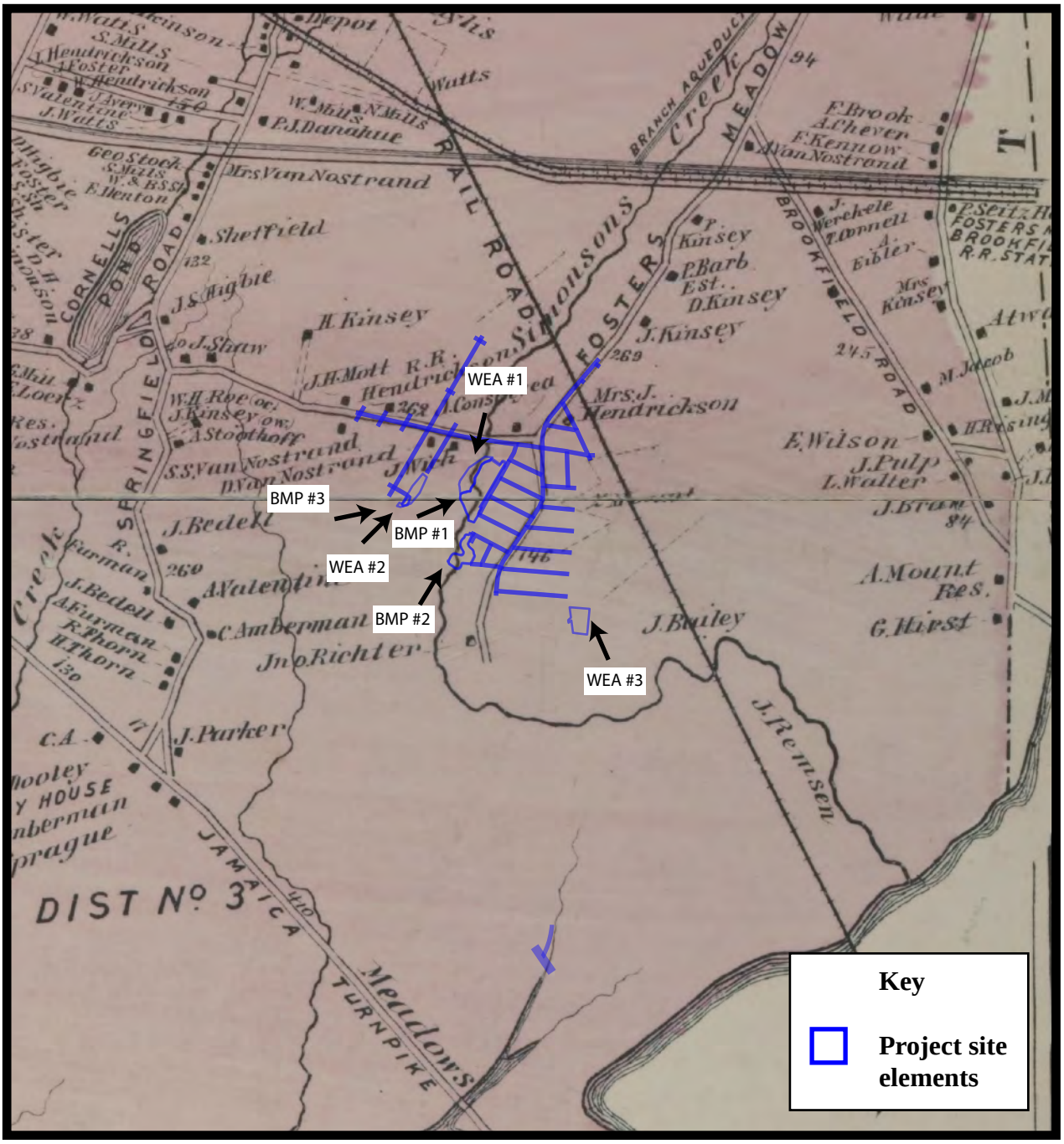

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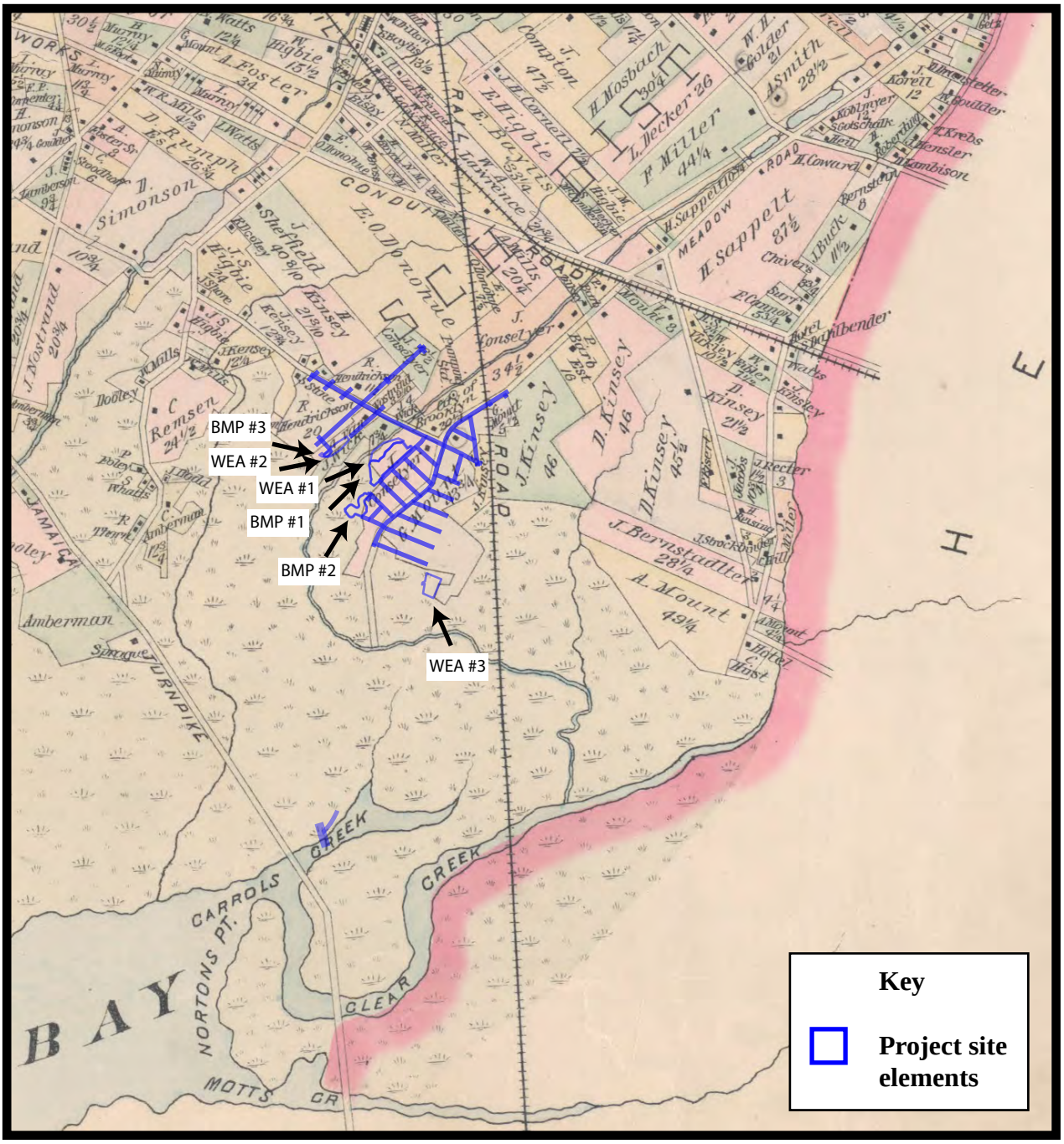
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 5: Project site elements on *Atlas of Long Island, New York* (Beers 1873).



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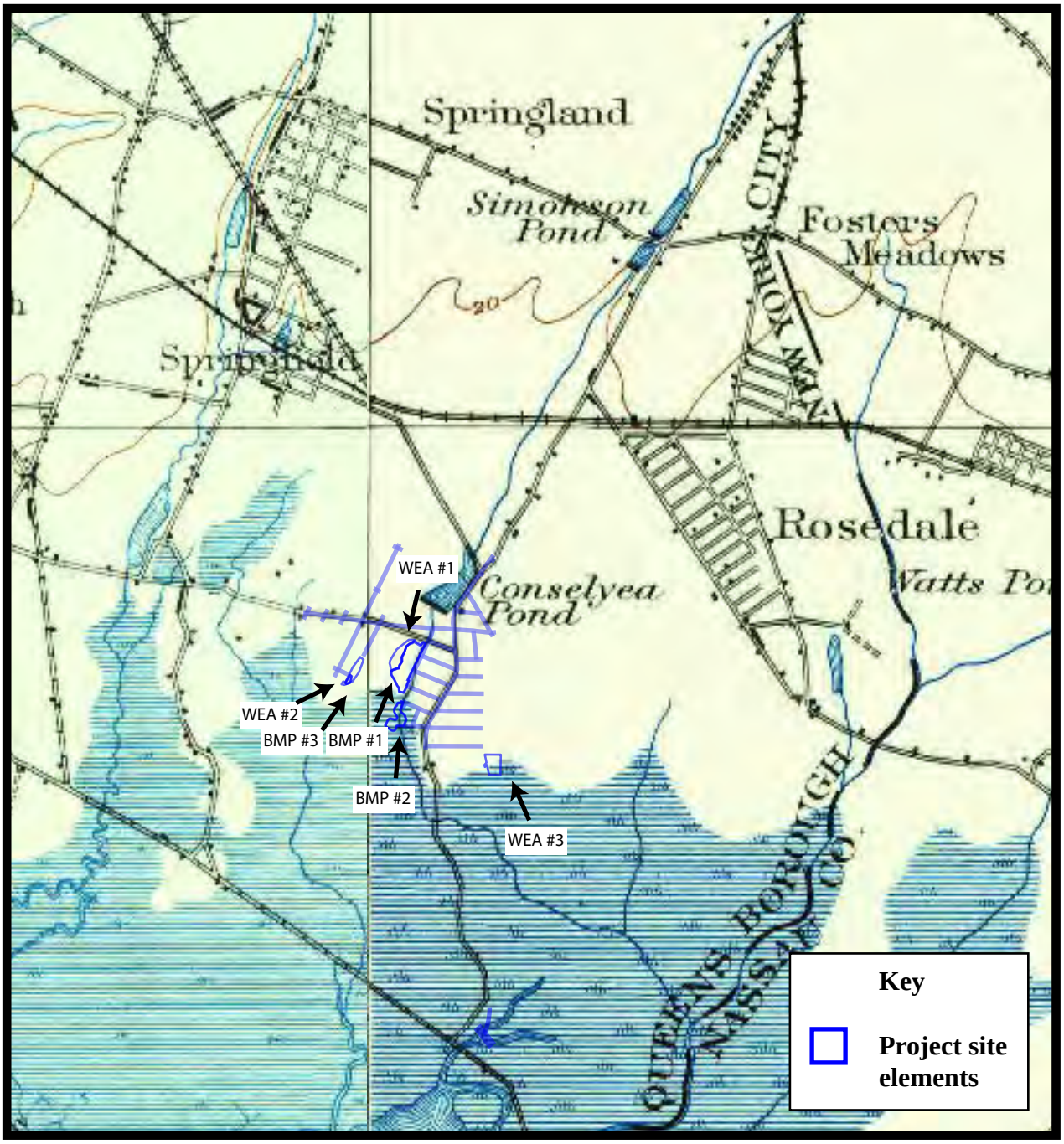
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 6: Project site elements on *Atlas of Queens County, Long Island, New York* (Wolverton 1891).



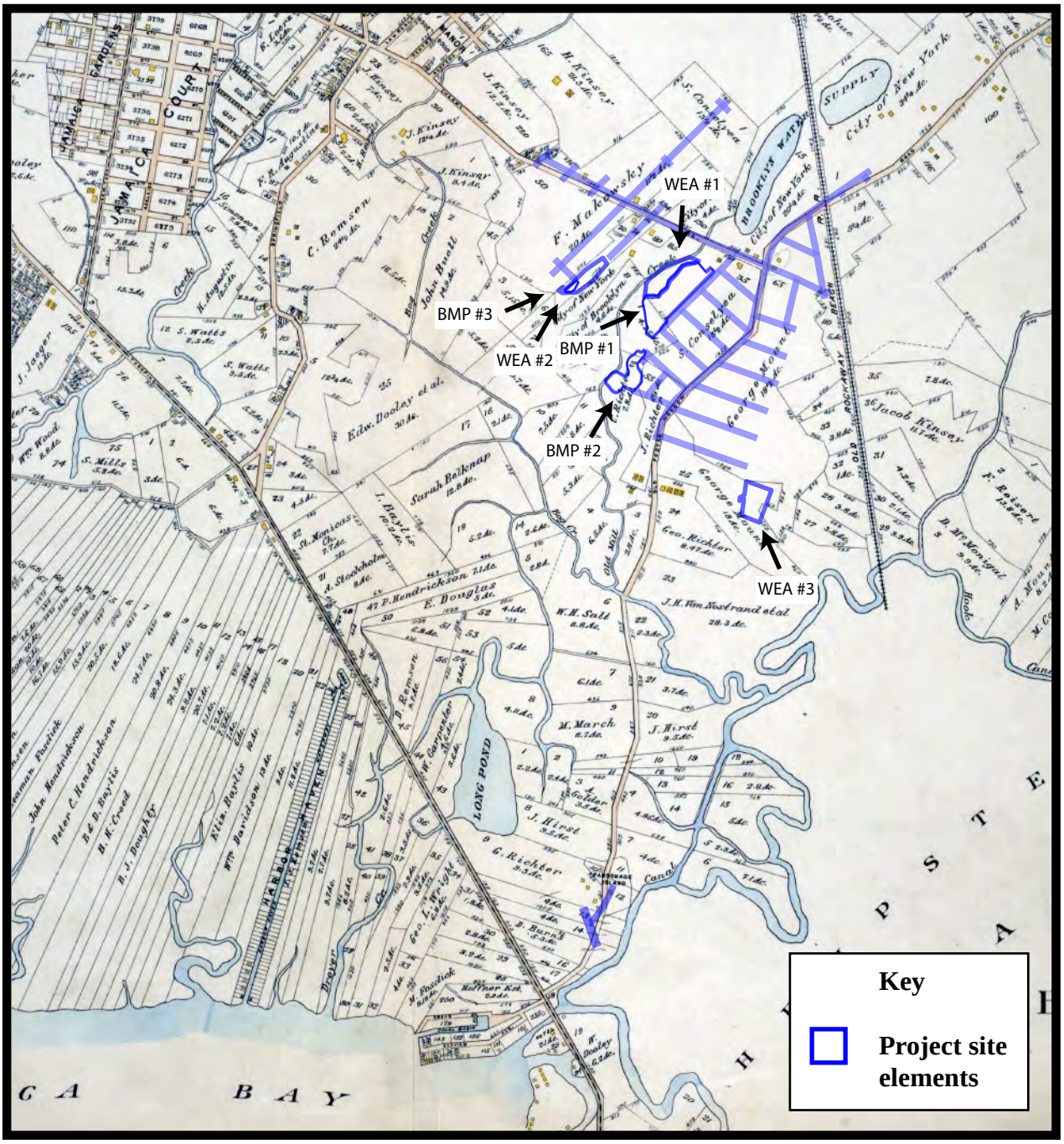
Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

N

HP

Figure 7: Project site elements on *Brooklyn, N.Y.* and *Hempstead, N.Y.* 15 minute topographic quadrangles (U.S.G.S. 1897).

0 1000 2000 3000 4000 5000 FEET



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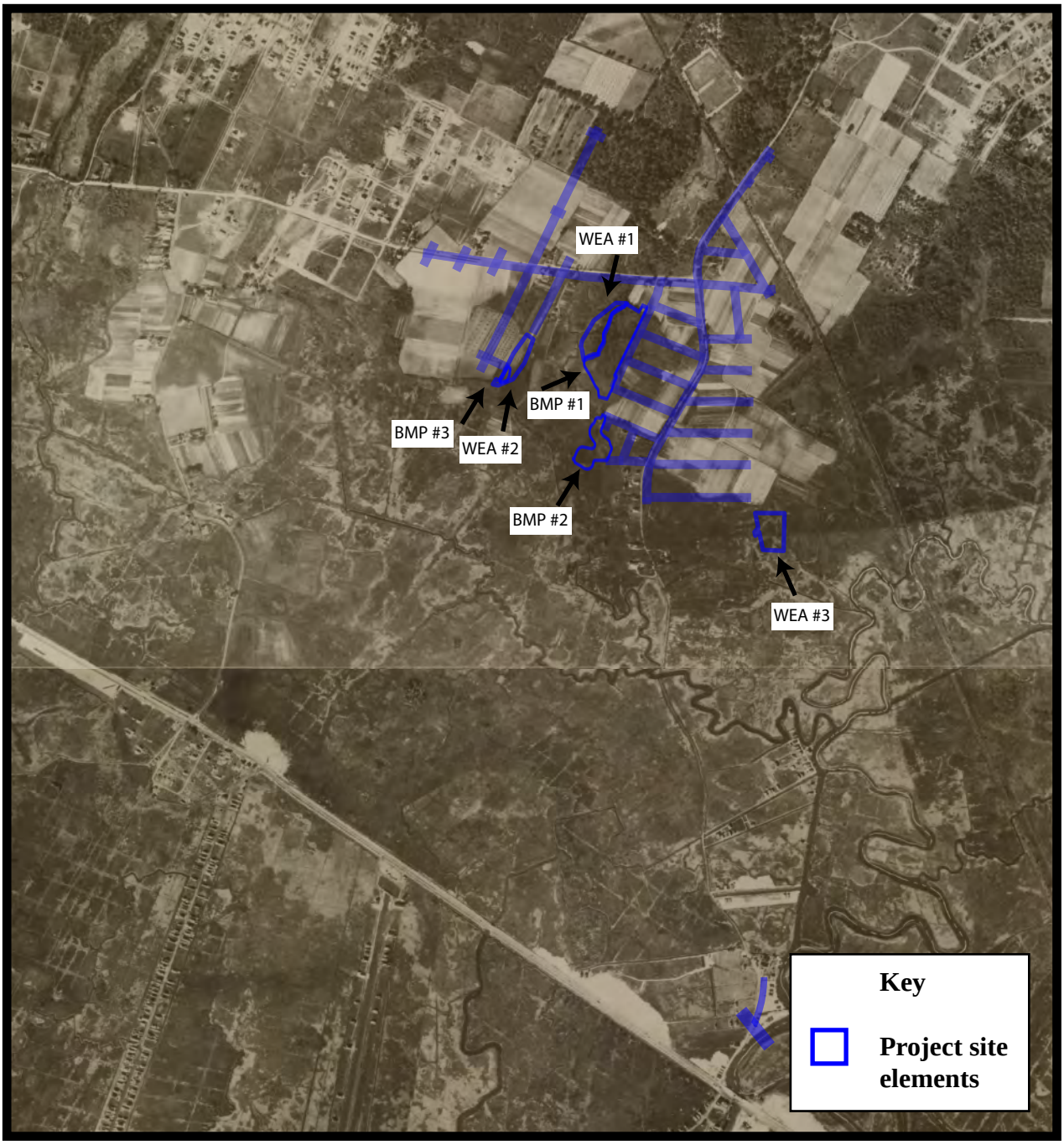
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

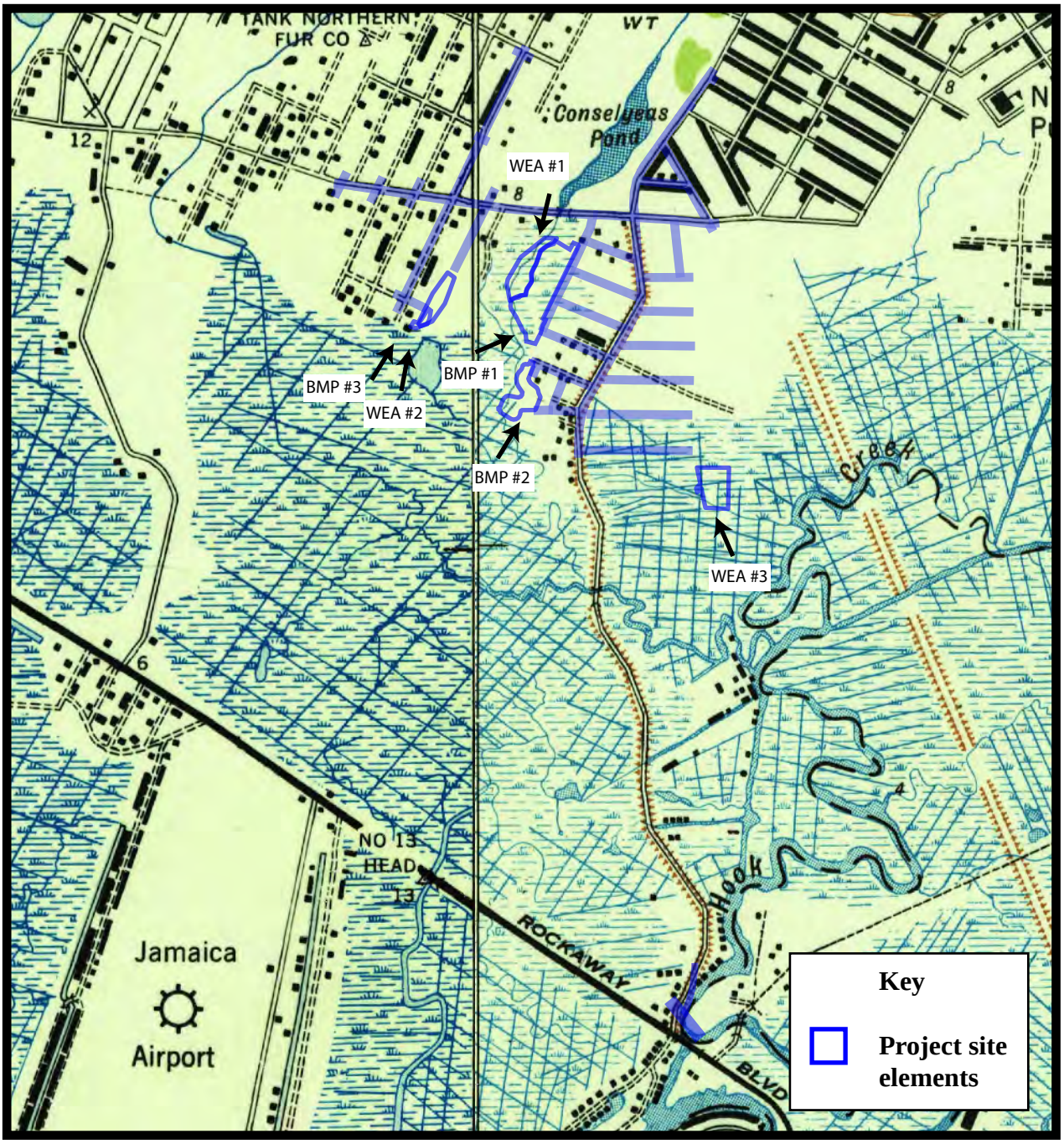
Figure 8: Project site elements on *Atlas of the City of New York, Borough of Queens* (Bromley 1909).

0 500 1000 1500 2000 2500 FEET



Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 9: Project site elements on *Sectional Aerial Maps of the City of New York* (Bureau of Engineering 1924).



Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 10: Project site elements on *Jamaica, N.Y.* and *Lynbrook, N.Y.* 7.5 minute topographic quadrangles (U.S.G.S. 1947).

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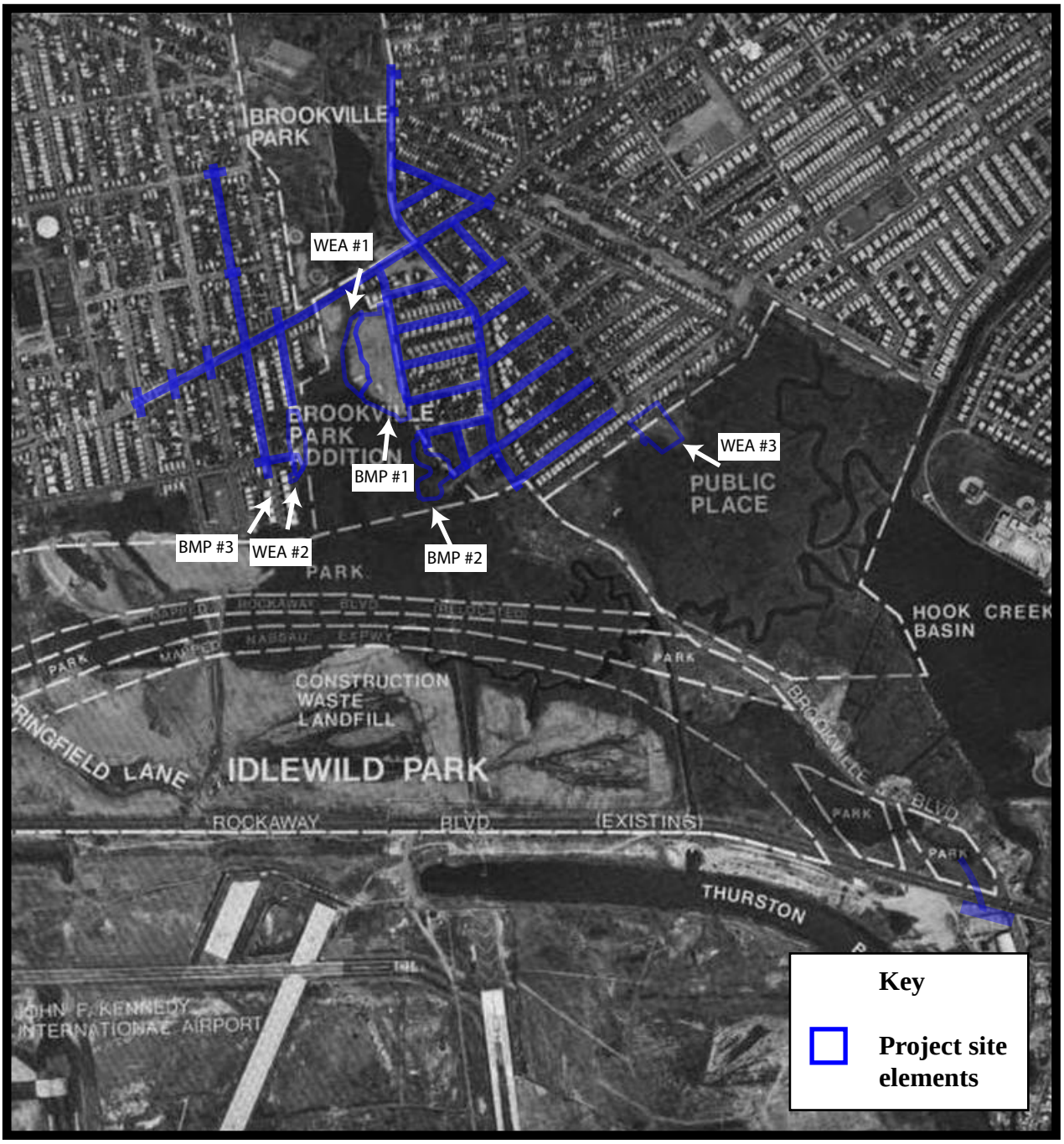


Phase IA Archaeological Documentary Study
Reconstruction of Streets and Drainage Improvements in the Brookville-Edgewood Triangle
Queens County, New York

Figure 11: Project site elements on *Physical Conditions of Idlewild Park* (Vollmer Associates 1981).

0 500 1000 1500 2000 2500 FEET

PHOTOGRAPHS

Roadways

Photograph 1. Brookville Boulevard looking north from the intersection of 149th Avenue.

Photograph 2. Brookville Boulevard looking southwest from the intersection of 148th Avenue.

Photograph 3. Brookville Boulevard looking northwest from the intersection of 147th Road.


Photograph 4. Brookville Boulevard at the intersection of 147th Avenue. View looking northwest with Brookville Park in the left background.

Photograph 5. Brookville Boulevard looking southwest at the intersection of Edgewood Avenue. Brookville Park is on the right.

Photograph 6. Brookville Boulevard at the intersection of Mayda Road, looking southwest. Brookville Park is in the right and center background.

Photograph 7. 149th Avenue looking west from near the intersection of 241st Street.

Photograph 8. 148th Drive looking east from Brookville Boulevard.

Photograph 9. 148th Road looking west from 241st Street.

Photograph 10. 148th Avenue looking east from Brookville Boulevard.

Photograph 11. 147th Drive looking west from 241st Street.

Photograph 12. 147th Road looking east from Brookville Boulevard.

Photograph 13. 240th Street looking north from 147th Road.

Photograph 14. Edgewood Avenue looking northwest from 147th Avenue.

Photograph 15. 148th Road looking northwest from Brookville Boulevard. BMP #1 is in the far background.

Photograph 16. 147th Drive looking northwest from Brookville Boulevard. BMP #1 is in the far background.

Photograph 17. Bentley Road looking southeast from 235th Street.

Photograph 18. 236th Street looking southwest from Bentley Road.

Photograph 19. 235th Street looking southeast from 148th Avenue. BMP #1 is on the right.


Photograph 20. 235th Street looking southwest from 147th Road. BMP #1 is in the right background.

Photograph 21. 148th Avenue looking southeast from 235th Street.

Photograph 22. 147th Road looking southeast from 235th Street.

Photograph 23. 147th Avenue looking west from 235th Street.


Photograph 24. 147th Avenue looking east where Conselyea's Creek crosses under the roadway and new outfalls will be activated. Note stone walls on both sides of the roadway marking the location of the creek.

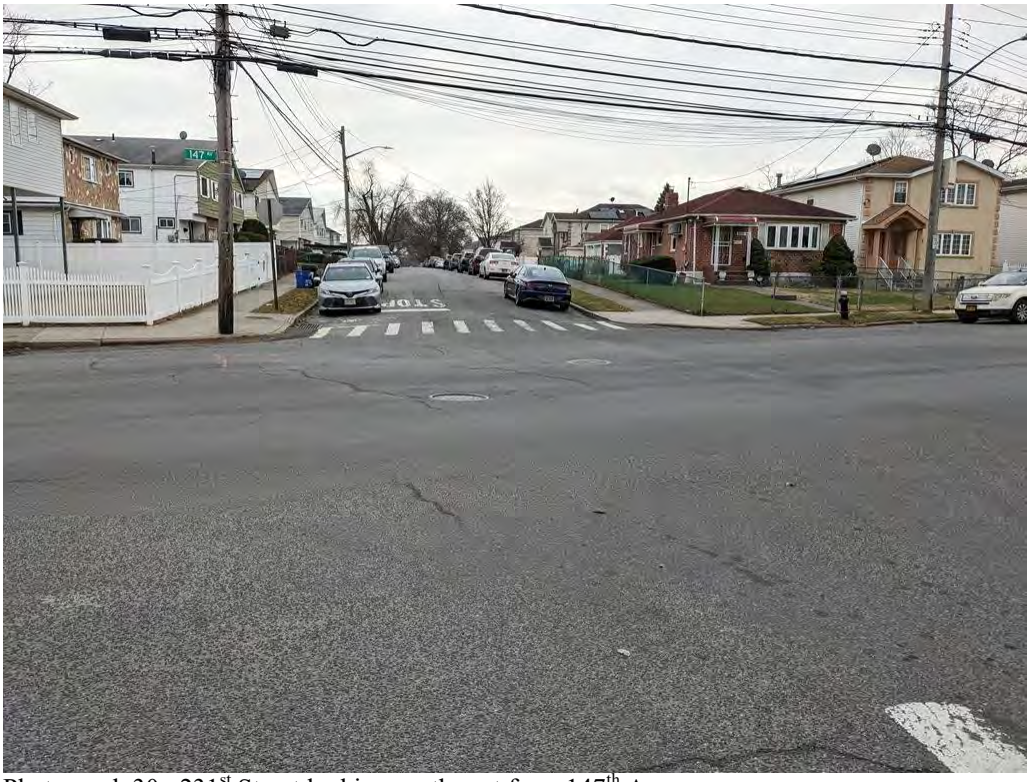
Photograph 25. Detail of the area on the downstream side of Conselyea's Creek where the new outfalls will be activated, looking northeast.

Photograph 26. 147th Avenue looking west toward 232nd Street.

Photograph 27. 232nd Street looking southwest from 147th Avenue.


Photograph 28. 148th Avenue looking northwest from 232nd Street.

Photograph 29. 231st Street looking northeast from 148th Street.



Photograph 30. 231st Street looking southwest from 147th Avenue.

Photograph 31. 231st Street looking northeast from 147th Avenue.

Photograph 32. 231st Street looking southwest from 145th Avenue.

Photograph 33. 147th Avenue looking west from 230th Place, with road construction marked by barriers.


Photograph 34. 147th Avenue looking southeast from 229th Street.

Photograph 35. Brookville Boulevard and Rockaway Boulevard intersection. View looking northwest.


Photograph 36. Brookville Boulevard looking south toward the intersection with Rockaway Boulevard.

BMPs and WEAs

Photograph 37. BMP #1gated entrance from 235th Street. View looking northwest.


Photograph 38. BMP #1 entrance showing asphalt paving. View looking northeast.

Photograph 39. BMP #1 showing dumping, with 235th Street in the background. View looking northeast.

Photograph 40. BMP #1 interior looking northwest with WEA #1 in the far background.

Photograph 41. BMP #1 interior looking northeast with 235th Street in the far background.

Photograph 42. WEA #1 showing large mounds and downed trees. View looking southwest.

Photograph 43. BMP #2 showing the terminus of Bentley Road where a new outfall will be located. View looking northwest.

Photograph 44. BMP #2 in the background. View looking southwest.

Photograph 45. The gate leading into the elevated portion of BMP #2. View looking west from 148th Drive and 236th Street.


Photograph 46. The roadway leading through the southern end of BMP #2. View looking west.

Photograph 47. BMP #2 showing the raised landform in the background with a portion of the creek. View looking west.

Photograph 48. BMP #3 at the terminus of 148th Avenue. View looking southeast.

Photograph 49. BMP #3. View looking south.

Photograph 50. WEA #2 within the unbuilt portion of 232nd Street. View looking northeast.

Photograph 51. WEA #3 behind the fence, looking southwest.


Photograph 52. WEA #3 with invasive vegetation in the center and natural marshlands in the background beyond WEA #3, looking southwest.

APPENDIX A: ROADWAY DRAWINGS SHOWING EXISTING AND PROPOSED CONDITIONS

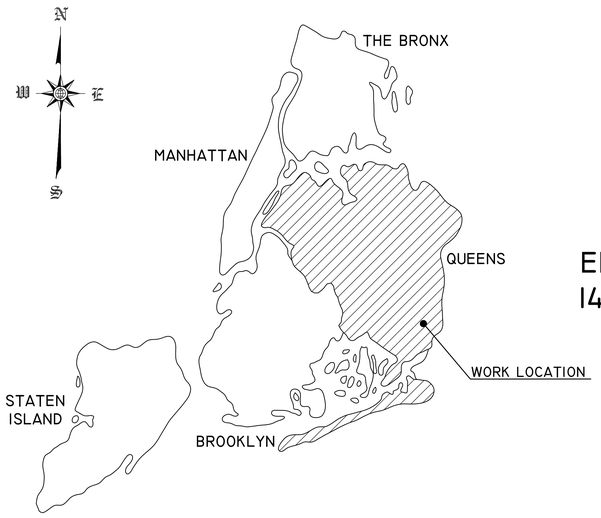
Department of Design and Construction

DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

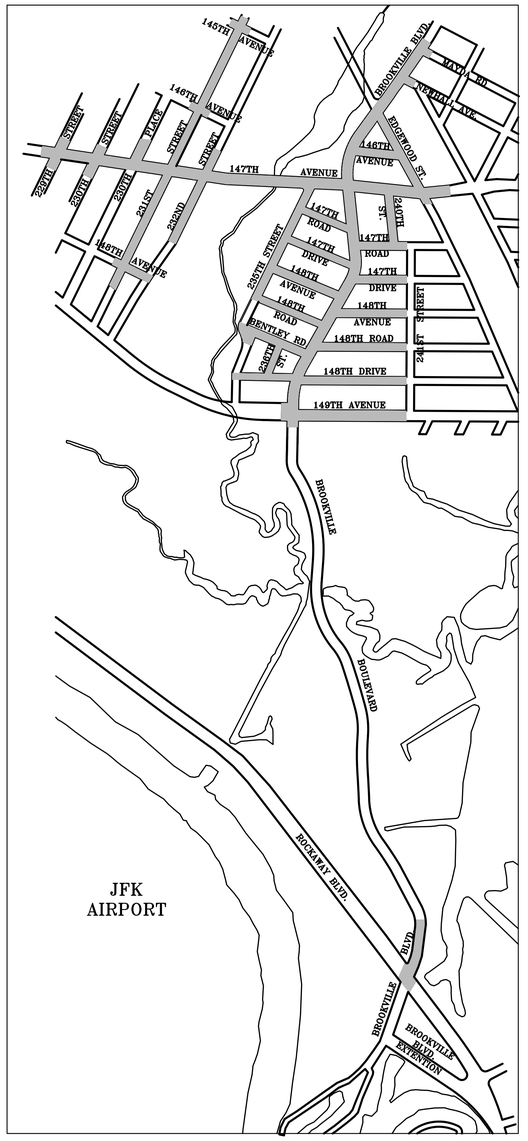
PROJECT ID HWQ724B
RECONSTRUCTION OF STREETS
IN THE BROOKVILLE - EDGEWOOD TRIANGLE

147TH AVENUE FROM 229TH SREET TO EDGEWOOD STREET
BROOKVILLE BOULEVARD FROM MAYDA ROAD TO 149TH AVENUE
EDGEWOOD STREET FROM BROOKVILLE BOULEVARD TO 147TH AVENUE
146TH AVENUE FROM BROOKVILLE BOULEVARD TO EDGEWOOD STREET
240TH STREET FROM 147TH AVENUE TO 147TH ROAD
147TH ROAD FROM 235TH STREET TO 241ST STREET
147TH DRIVE FROM 235TH STREET TO 241ST STREET
148TH AVENUE FROM 235TH STREET TO 241ST STREET
148TH ROAD FROM 235TH STREET TO 241ST STREET
BENTLEY ROAD FROM 235TH STREET TO BROOKVILLE BOULEVARD
148TH DRIVE FROM 235TH STREET TO 241ST STREET
149TH AVENUE FROM BROOKVILLE BOULEVARD TO 241ST STREET
235TH STREET FROM 147TH AVENUE TO 148TH ROAD
236TH STREET FROM BENTLEY ROAD TO 148TH DRIVE
148TH AVENUE FROM 231ST STREET TO 232ND STREET
BROOKVILLE BOULEVARD 400'± NORTH OF ROCKAWAY BOULEVARD

INCLUDING STORM AND SANITARY SEWERS, WATER MAINS, STREET LIGHTING, AND TRAFFIC WORK



BOROUGH OF QUEENS
CITY OF NEW YORK



LOCATION PLAN
N.T.S.
COMMUNITY BOARD NO. 13

PROJECT SITE

	DATE
ERIC MACFARLANE, P.E. DEPUTY COMMISSIONER	DATE
THOMAS WYNNE, P.E. FIRST ASSOCIATE COMMISSIONER	DATE
HOW SHEEN PAU, P.E. ASSISTANT COMMISSIONER	DATE
THOMAS M. LEUNG, P.E., ESQ. DIRECTOR	DATE
SOAD MAKAR, P.E DEPUTY DIRECTOR	DATE

AREAS OF STORM AND SANITARY SEWER AND WATER MAIN WORK ONLY:
23IST STREET, FROM 145TH AVENUE TO 149TH AVENUE (WATER MAIN ONLY)

0 1 2 3 4
ORIGINAL SIZE IN INCHES

ADD/ FLD. CH.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

PROJECT ID: HWQ724B	DATE: 9/30/2021	SHEET 01 OF 148	1/1

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

ABBREVIATIONS

ABANDONED	ABDN.
APARTMENT	APT.
ASPHALT	ASPH.
BASEMENT	BSMT.
BITUMINOUS	BIT.
BLOCK	BLK.
BLUESTONE	B.S.
BLUESTONE CURB	B.S.C.
BLUESTONE WALK	B.S.W.
BOTTOM OF CURB	B.C.
BRICK	BRK.
BUILDING	BLDG.
BUILT	BLT.
CAST IRON	C.I.
CENTER LINE	C.L.
CHAIN LINK FENCE	C.L.F.
CHAMBER	CH.
CLASS NUMBER	CL. #
COMBINED	COMB.
COMMERCIAL	COMM.
CONCRETE	CONC.
CONCRETE CURB	C.C.
CONCRETE WALK	C.W.
DIAMETER	DIA.
DOUBLE BARREL	D.B.
DOWN	DN.
DRAWING	DWG.
DUCTILE IRON PIPE	D.I.P.
EXISTING	EXIST.
EXTRA STRENGTH VITRIFIED PIPE	E.S.V.P.
FIRE ALARM	F.A.
FIRE DEPARTMENT	F.D.
FLAT TOP REINFORCED CONCRETE	F.T.R.C.
FRAME	FR.
GRANITE	GRAN.
GRANITE CURB	GRAN. C.
INTERCEPTOR	INT.
INVERT ELEVATION	INV.
IRREGULAR	IRR.
MANHOLE	MH
NOT IN CONTRACT	N.I.C.
NOT TO SCALE	N.T.S.
PAVEMENT	PVMT.
POINT OF CURVATURE	P.C.
POINT OF INTERSECTION	P.I.
POINT OF TANGENCY	P.T.
PRECAST REINFORCED CONCRETE	P.R.C.
RADIUS	R
REINFORCED CONCRETE PIPE	R.C.P.
ROADWAY	RDWY.
SANITARY	SAN.
SEWER	SWR.
SIDEWALK	SW.
STANDARD	STD.
STEAM	ST.
STEEL	STL.
STEEL FACED CURB	SFC
STEEL NOSED CURB	S.N.C.
STONE	STN.
STORM	STM.
STORY	STY.
TOP OF CURB	T.C.
TRAFFIC SIGN	T.S.
VACANT	VAC.
WORKING POINT	W.P.

LEGEND

	EXISTING	PROPOSED
MANHOLES		
ELECTRIC	(E)	E
CABLE TV	C	
TELEPHONE	T	
TRAFFIC	Tf	
NYC MH	□NYC	
GAS	G	
WATER	W	
FIRE DEPT.	F	
SUBWAY	Su	
COAL CHUTE	○CC	
STORM SEWER	STM	STM
COMBINED SEWER	COMB	COMB
SANITARY SEWER	SAN	SAN
INTERCEPTOR SEWER	INT	INT
UNIDENTIFIED MANHOLE (NO RECORD AVAILABLE)	M	
BUILT MANHOLE REPLACED BY NEW MANHOLE		◉
RECORD MANHOLE	S	
HARDWARE RIM EL. & INV. EL. (SEWER, ETC.)	S 61.23 INV.47.89	
BASINS		
CATCH BASIN WITH CURB PIECE – TYPE 1	1	
CATCH BASIN WITHOUT CURB PIECE – TYPE 2	2	
CATCH BASIN WITHOUT CURB PIECE – TYPE 3	3	
EXISTING CATCH BASIN TO BE REMOVED		
TO BE ABANDONED		A
TO BE MODIFIED		M
TO BE ADJUSTED		A
CATCH BASIN – NON–STANDARD		N
NEW CATCH BASIN TO BE CONSTRUCTED IN SAME LOCATION AS OLD BASIN		
INLET	◪	
SEEPAGE BASIN	○SB	SB
HYDRANTS		
LOW PRESSURE HYDRANT		
HIGH PRESSURE HYDRANT		
LOW PRESSURE HYDRANT TO BE RELOCATED		R
HIGH PRESSURE HYDRANT TO BE RELOCATED		R
LOW PRESSURE HYDRANT TO BE ADJUSTED (VERTICALLY)		A
HIGH PRESSURE HYDRANT TO BE ADJUSTED (VERTICALLY)		A
SIAMESE CONNECTION		
STREET LIGHTING AND TRAFFIC SIGNALS		
WOOD UTILITY POLE		
WOOD UTILITY POLE WITH STREET LIGHT		
WOOD UTILITY POLE WITH TRAFFIC SIGNAL	T	
WOOD UTILITY POLE WITH STREET LIGHT AND FIRE ALARM BOX	F	
WOOD UTILITY POLE WITH FIRE ALARM BOX	F	
WOOD UTILITY POLE WITH PEDESTRIAN SIGNAL	PS	
WOOD UTILITY POLE WITH TRAFFIC AND PEDESTRIAN SIGNAL	TPS	
WOOD UTILITY POLE WITH STREET LIGHT AND TRAFFIC AND PEDESTRIAN SIGNAL	TPS	
WOOD UTILITY POLE WITH STREET LIGHT AND PEDESTRIAN SIGNAL	PS	
STREET LIGHT (METAL POLE)		
STREET LIGHT AND TRAFFIC SIGNAL	T	
STREET LIGHT AND TRAFFIC SIGNAL WITH PEDESTRIAN SIGNAL	TPS	
STREET LIGHT WITH PEDESTRIAN SIGNAL	PS	
STREET LIGHT WITH FIRE ALARM BRACKET	F	
TRAFFIC SIGNAL POST	T	
TRAFFIC SIGNAL CONTROL BOX	◫	
STANCHION WITH TRAFFIC SIGNAL	T	
STANCHION W/PEDESTRIAN SIGNAL	TPS	
TRAFFIC SIGNAL POST W/PEDESTRIAN SIGNAL	TPS	

LEGEND

	EXISTING	PROPOSED
VALVE BOXES		
GAS	□G	
WATER	□W	
STEAM	□St	
TREES		
EXISTING TREE (SIZE AS LABELED)		
EXISTING TREE TO BE REMOVED		
NEW TREE TO BE PLANTED		⊗
SHRUB		
HEDGE (HEIGHT AS LABELED)		
MISCELLANEOUS		
VAULT (SIDEWALK)	V	
CELLAR WINDOW GRATING		
CELLAR DOOR	CD	
SUBWAY GRATING		
SURFACE WATER FLOW		
TRAFFIC DIRECTION		
PARKING METER		
OIL FILL CAP OR OIL VENT	◎ OR ○FILL	
FIRE ALARM POST	□F	
POLICE CALL BOX	□P	
MAIL BOX, PUBLIC PHONE	□MB □TEL.	
COLUMN – FOUNDATION (OF ELEVATED STRUCTURES)	⊠ OR ▣	
HEADER		
AREA OF ADJUSTMENT		
LIMIT OF NEW PAVEMENT		
BUS PAD		
SIGN (GROUND MOUNTED)		
SIGN (OVERHEAD)		
TRAIN STATION ENTRANCE	DOWN	
SHAFT TO BUILDING BASEMENT	SH	
PEDESTRIAN RAMP		
CURB (CONCRETE UNLESS OTHERWISE INDICATED)		
CURB WITH DROP CURB (DRIVEWAY)	DC	DC
EDGE OF PAVEMENT WITHOUT CURB		
PROPOSED CONSTRUCTION (TOP OF CURB) ELEVATION AND STATION		T.C. 13.8 STA. 26+33
ROCK OUTCROP		
NORTH ARROW		
BARRIERS		
BEAM TYPE MALL BARRIER		
PORTABLE PRECAST CONCRETE BARRIER		
CAST IN PLACE CONCRETE BARRIER		
RETAINING WALL (W/TYPE)	RW (STN.)	
RAILROAD/TROLLEY TRACK		
FENCE (WITH HEIGHT AND TYPE)		
CHAIN LINK FENCE	6'	
IRON PICKET FENCE	5'	
WIRE FENCE	5'	
IRON ON CONCRETE COPING		
WOOD PICKET FENCE	4'	
GUARD POST	GP	
BUILDINGS		
HOUSE INFORMATION (HOUSE NUMBER, BLDG TYPE, FIRST FLOOR ELEV., (CE) CELLAR ENTR., (GE) GARAGE ENTR.)	95–02 2–STY.FR. ▼ FF 25.3 G.E.17.5	
STAIRS OR STOOPS		
CANOPY	CANOPY	

LEGEND

	EXISTING	PROPOSED
CONDUITS		
6" WATER MAIN		
8" WATER MAIN		
12" WATER MAIN		
16" WATER MAIN		
20" WATER MAIN		
24" WATER MAIN		
30" WATER MAIN		
36" WATER MAIN		
42" WATER MAIN		
48" WATER MAIN		
54" WATER MAIN		
60" WATER MAIN		
66" WATER MAIN		
72" WATER MAIN		
84" WATER MAIN		
96" WATER MAIN		
STORM SEWER (WITH SIZE – LESS THAN 24")	15" STM. SEWER	15" STM. SEWER
STORM SEWER (WITH SIZE – 24" AND GREATER)*	24" STM. SEWER	24" STM. SEWER
SANITARY SEWER (WITH SIZE – LESS THAN 24")	15" SAN. SEWER	15" SAN. SEWER
SANITARY SEWER (WITH SIZE – 24" AND GREATER)*	24" SAN. SEWER	24" SAN. SEWER
COMBINED SEWER (WITH SIZE – LESS THAN 24")	15" COMB. SEWER	15" COMB. SEWER
COMBINED (WITH SIZE – 24" AND GREATER)*	24" COMB. SEWER	24" COMB. SEWER
INTERCEPTOR SEWER (WITH SIZE – LESS THAN 24")	15" INTERCEPTOR SEWER	15" INTERCEPTOR SEWER
INTERCEPTOR SEWER (WITH SIZE – 24" AND GREATER)*	24" INTERCEPTOR SEWER	24" INTERCEPTOR SEWER
CATCH BASIN CONNECTION		
GAS LINE (WITH SIZE)	4" GAS	
STEAM (WITH SIZE)	16" STEAM	
ELECTRIC	ELECTRIC	
TELEPHONE	TELEPHONE	
CABLE	CABLE	
FIRE ALARM	FIRE ALARM	
OVERHEAD (AERIAL) UTILITY LINE	A/E,T,F	
TA SUBWAY CONDUIT	Su	
LEGAL DATA		
LOT & BLOCK NUMBER	39 BLOCK 2109	
ESTABLISHED/LEGAL GRADE	0.00	
ANGLE	86°30'48"	
BLOCK LENGTH	167.01' (65.75 m)	
INTERPOLATED/CALCULATED ANGLE OR LENGTH	[86°30'48"] [167.01'(65.75 m)]	
PROPERTY POSSESSION LINE		
MAPPED PROPERTY LINE (RIGHT–OF–WAY LINE)		
LOT LINE		
SURVEY MONUMENT (CITY) – IDENTIFY BY TOPO NUMBER	M#	
BENCH MARK (LABEL)	BM#	
SURVEY CONTROLS		
CONTROL SURVEY TRAVERSE		
CENTER LINE BASE LINE	10+00 11+00	

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:

DESIGNED M.K
DRAWN M.K.
CHECKED S.M.
CADD FILE

ENGINEER
ENGINEER–IN–CHARGE
DIRECTOR
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

LEGEND & ABBREVIATIONS

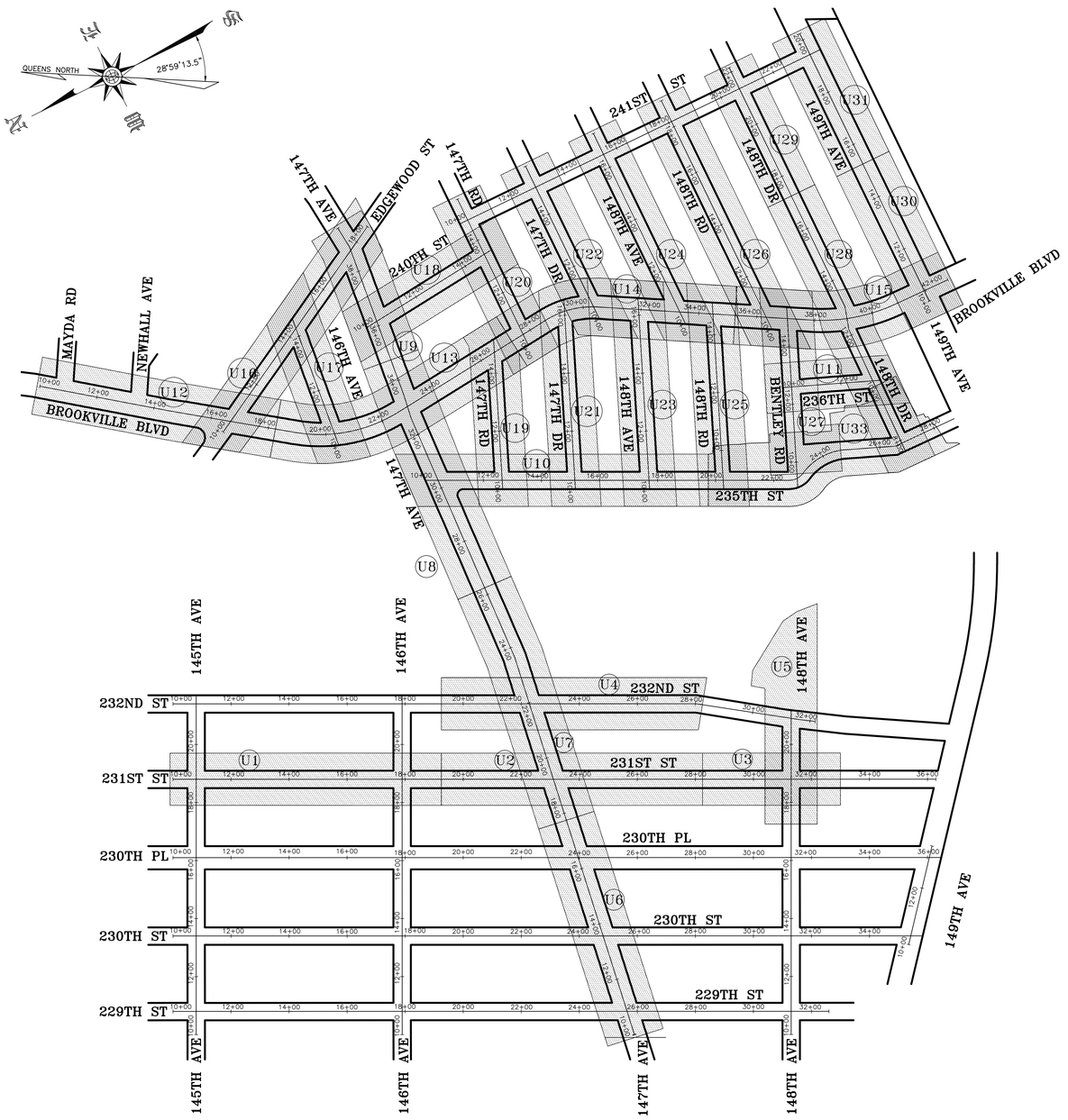
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

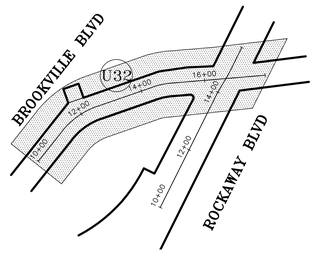
PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 3 OF 148 | 1/1

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: U:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In–house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\3–5 LEGEND & GENERAL NOTES.dwg
Date/Time: Sep 30, 2021, 5:56pm





KEY MAP

SCALE: 1" = 200'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–MAR 2021

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED Y.C.
DRAWN Y.C.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER–IN–CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

UTILITY KEY MAP
BROOKVILLE-EDGEWOOD TRIANGLE AREA
AND SURROUNDING AREAS

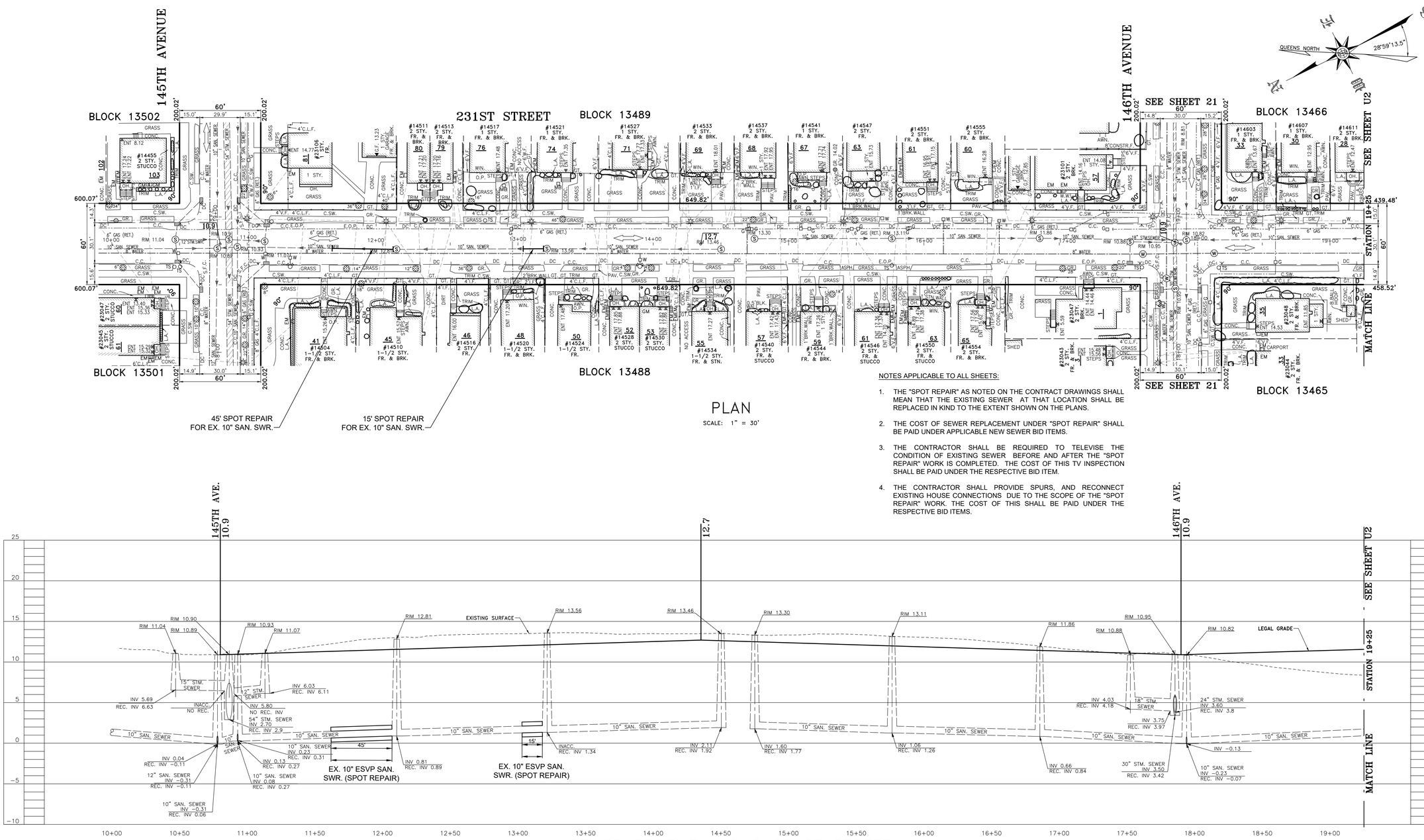
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 75 OF 148 | 01/01

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\75–075 UTILITY KEY MAP HWQ724B.dwg
Date/Time: Sep 30, 2021, 5:40pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



PLAN

SCALE: 1" = 30'

NOTES APPLICABLE TO ALL SHEETS:

1. THE "SPOT REPAIR" AS NOTED ON THE CONTRACT DRAWINGS SHALL MEAN THAT THE EXISTING SEWER AT THAT LOCATION SHALL BE REPLACED IN KIND TO THE EXTENT SHOWN ON THE PLANS.
2. THE COST OF SEWER REPLACEMENT UNDER "SPOT REPAIR" SHALL BE PAID UNDER APPLICABLE NEW SEWER BID ITEMS.
3. THE CONTRACTOR SHALL BE REQUIRED TO TELEVISE THE CONDITION OF EXISTING SEWER BEFORE AND AFTER THE "SPOT REPAIR" WORK IS COMPLETED. THE COST OF THIS TV INSPECTION SHALL BE PAID UNDER THE RESPECTIVE BID ITEM.
4. THE CONTRACTOR SHALL PROVIDE SPURS, AND RECONNECT EXISTING HOUSE CONNECTIONS DUE TO THE SCOPE OF THE "SPOT REPAIR" WORK. THE COST OF THIS SHALL BE PAID UNDER THE RESPECTIVE BID ITEMS.

SEWER PROFILE ALONG 231ST STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER–IN–CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

231ST STREET
BETWEEN 145TH AVENUE AND 146TH AVENUE
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 76 OF 148 | U1/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\WM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
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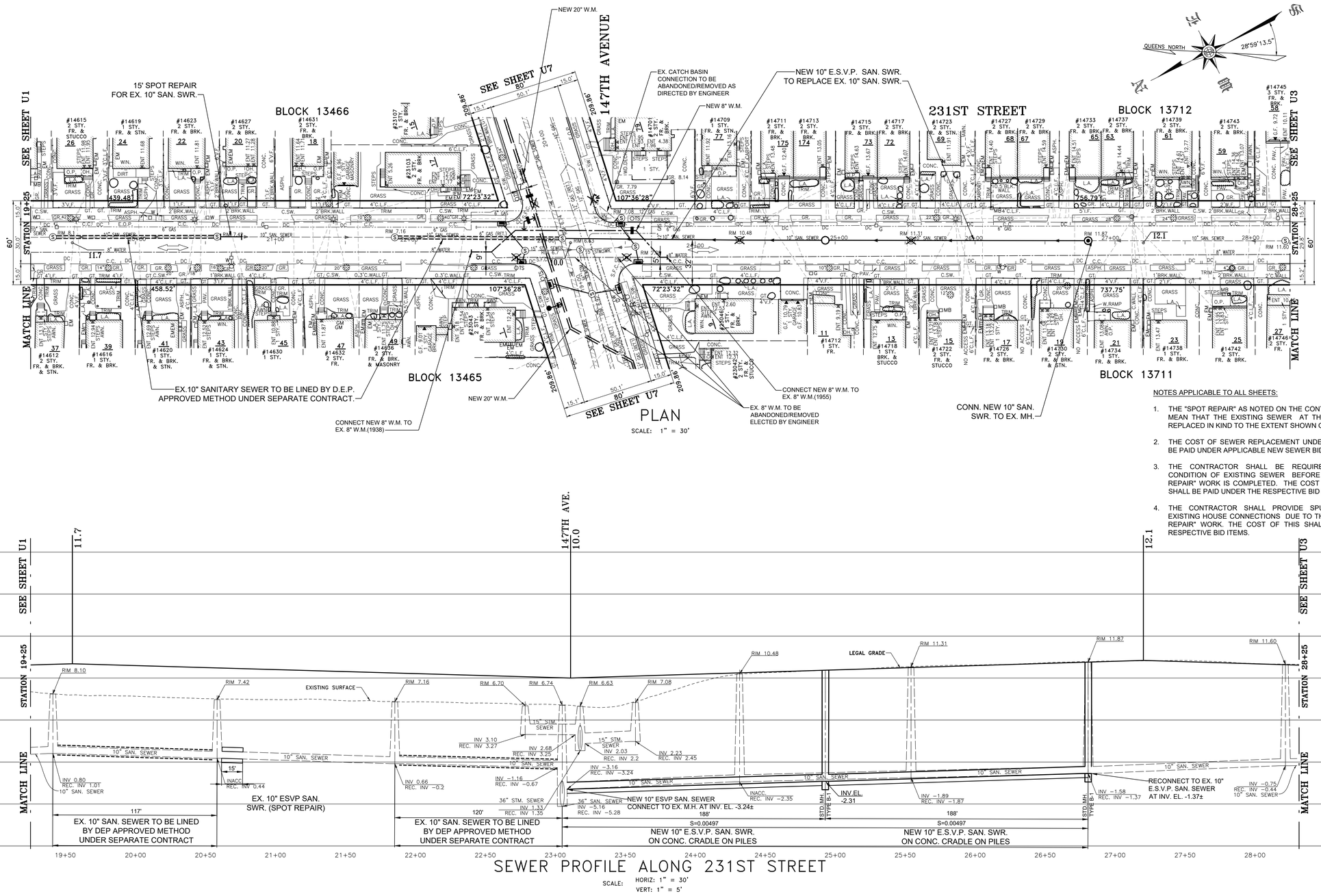
CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



SEWER PROFILE ALONG 231ST STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

NOTES APPLICABLE TO ALL SHEETS:

1. THE "SPOT REPAIR" AS NOTED ON THE CONTRACT DRAWINGS SHALL MEAN THAT THE EXISTING SEWER AT THAT LOCATION SHALL BE REPLACED IN KIND TO THE EXTENT SHOWN ON THE PLANS.
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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER-IN-CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

231ST STREET
BETWEEN 146TH AVENUE AND 148TH AVENUE
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 77 OF 148 | U2/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
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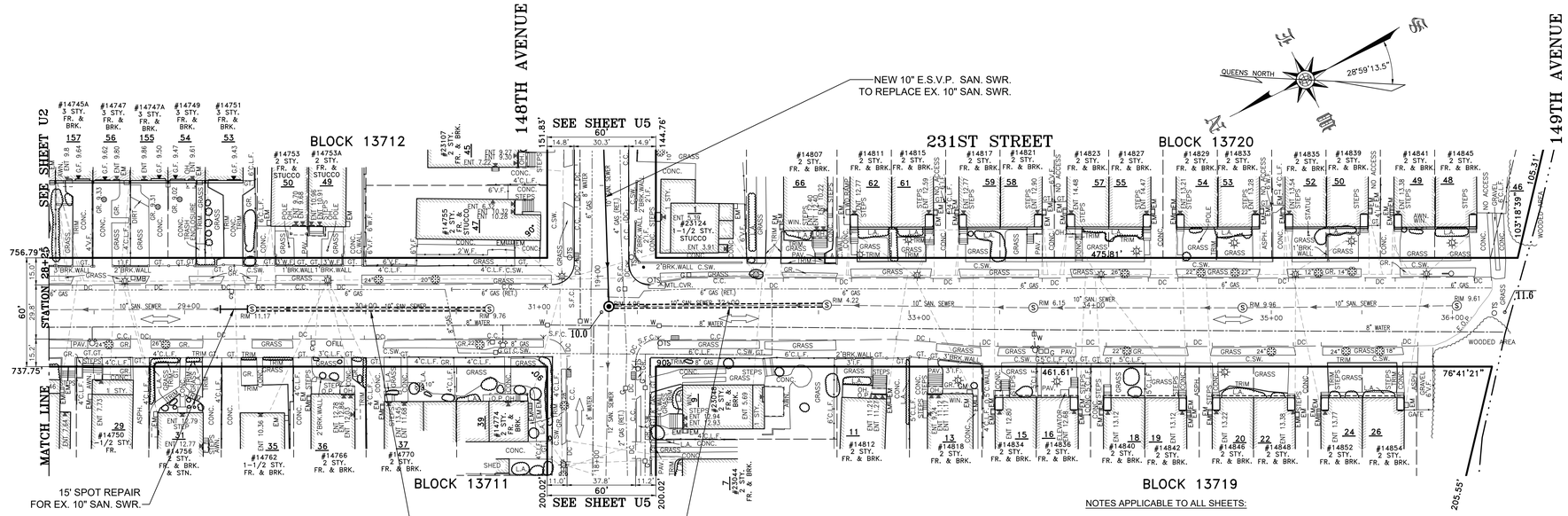
CAPITAL PROJECT HWQ724B: STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



PLAN

SCALE: 1" = 30'

SEWER PROFILE ALONG 231ST STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

NOTES APPLICABLE TO ALL SHEETS:

1. THE "SPOT REPAIR" AS NOTED ON THE CONTRACT DRAWINGS SHALL MEAN THAT THE EXISTING SEWER AT THAT LOCATION SHALL BE REPLACED IN KIND TO THE EXTENT SHOWN ON THE PLANS.
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"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER-IN-CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

231ST STREET
BETWEEN 147TH AVENUE AND 149TH AVENUE
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 78 OF 148 | U3/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 - PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
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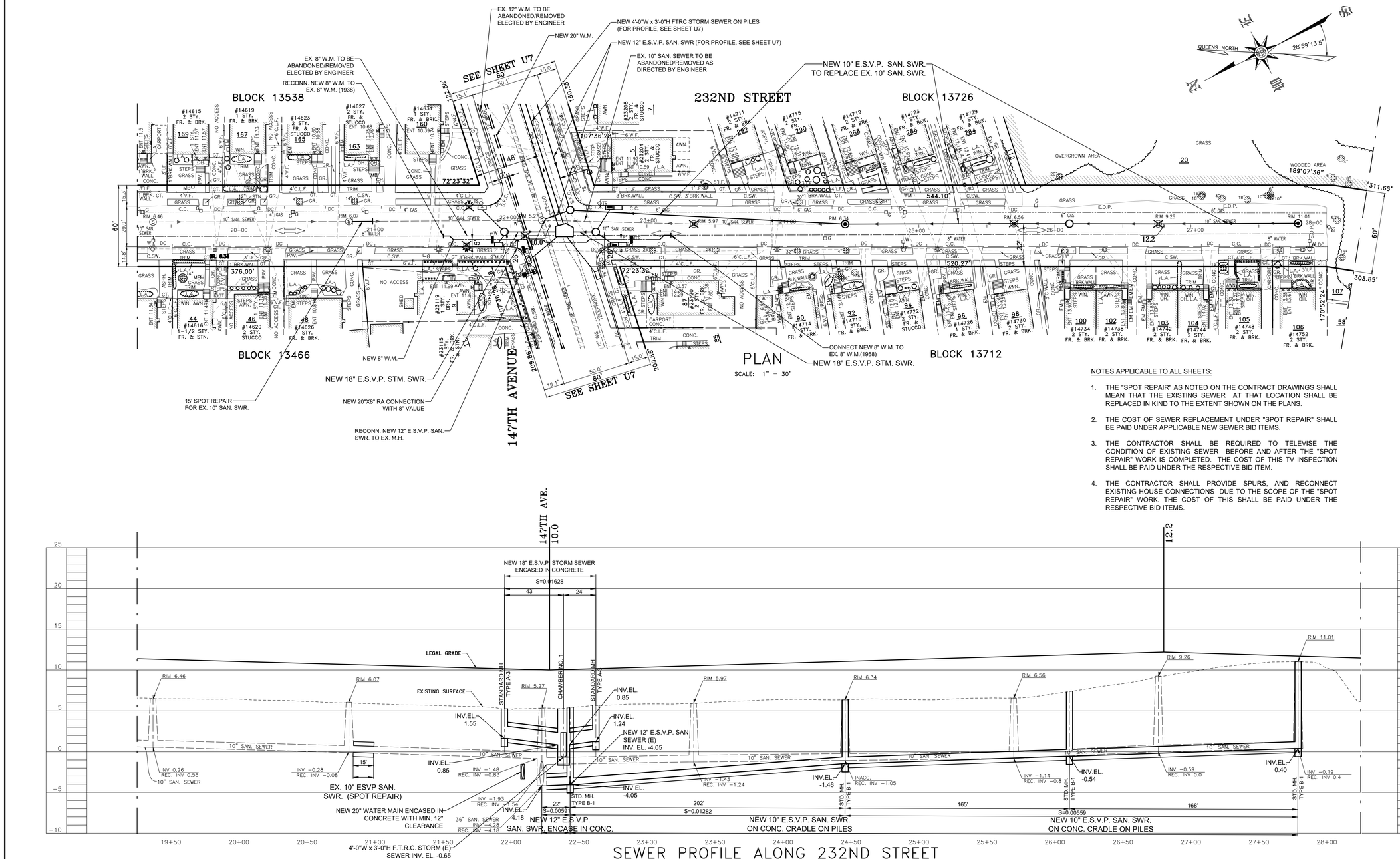
CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



SEWER PROFILE ALONG 232ND STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

NOTES APPLICABLE TO ALL SHEETS:

1. THE "SPOT REPAIR" AS NOTED ON THE CONTRACT DRAWINGS SHALL MEAN THAT THE EXISTING SEWER AT THAT LOCATION SHALL BE REPLACED IN KIND TO THE EXTENT SHOWN ON THE PLANS.
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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

ENGINEER–IN–CHARGE P.E.
DIRECTOR P.E.

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

232ND STREET
BETWEEN 145TH AVENUE AND 148TH AVENUE
UTILITY PLAN AND PROFILE

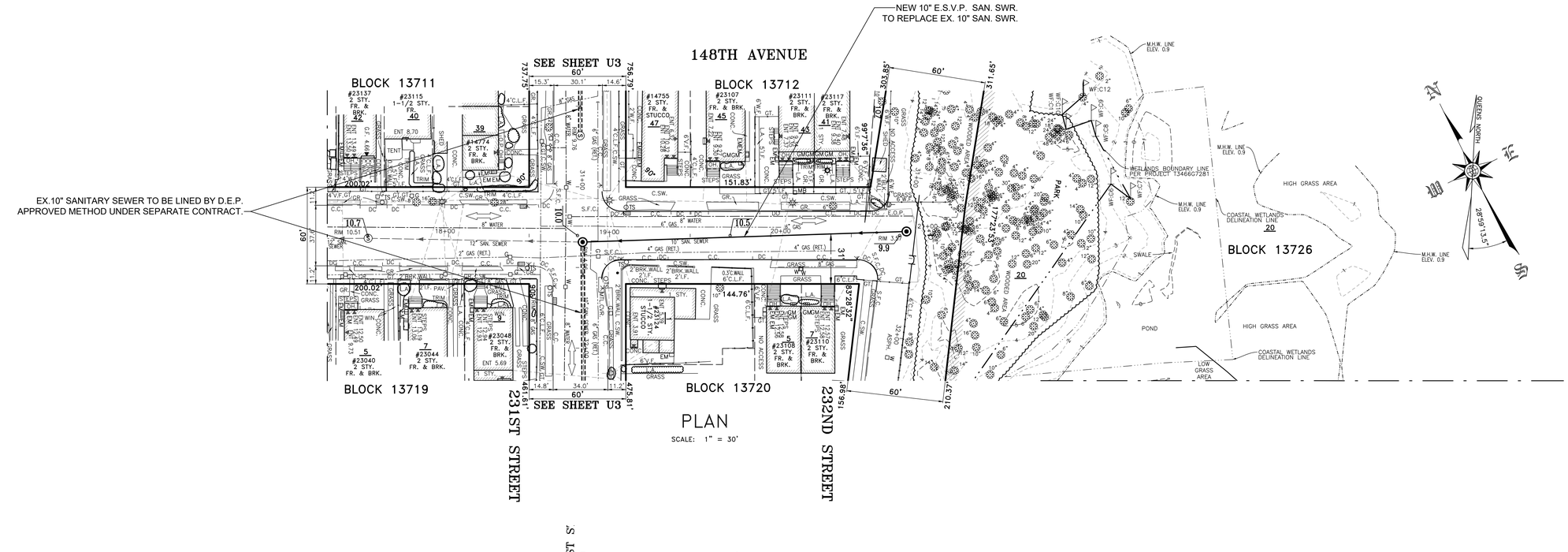
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 79 OF 148 | U4/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Sep 30, 2021, 4:48pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH AVENUE
BETWEEN 231ST STREET AND 232ND STREET
UTILITY PLAN AND PROFILE

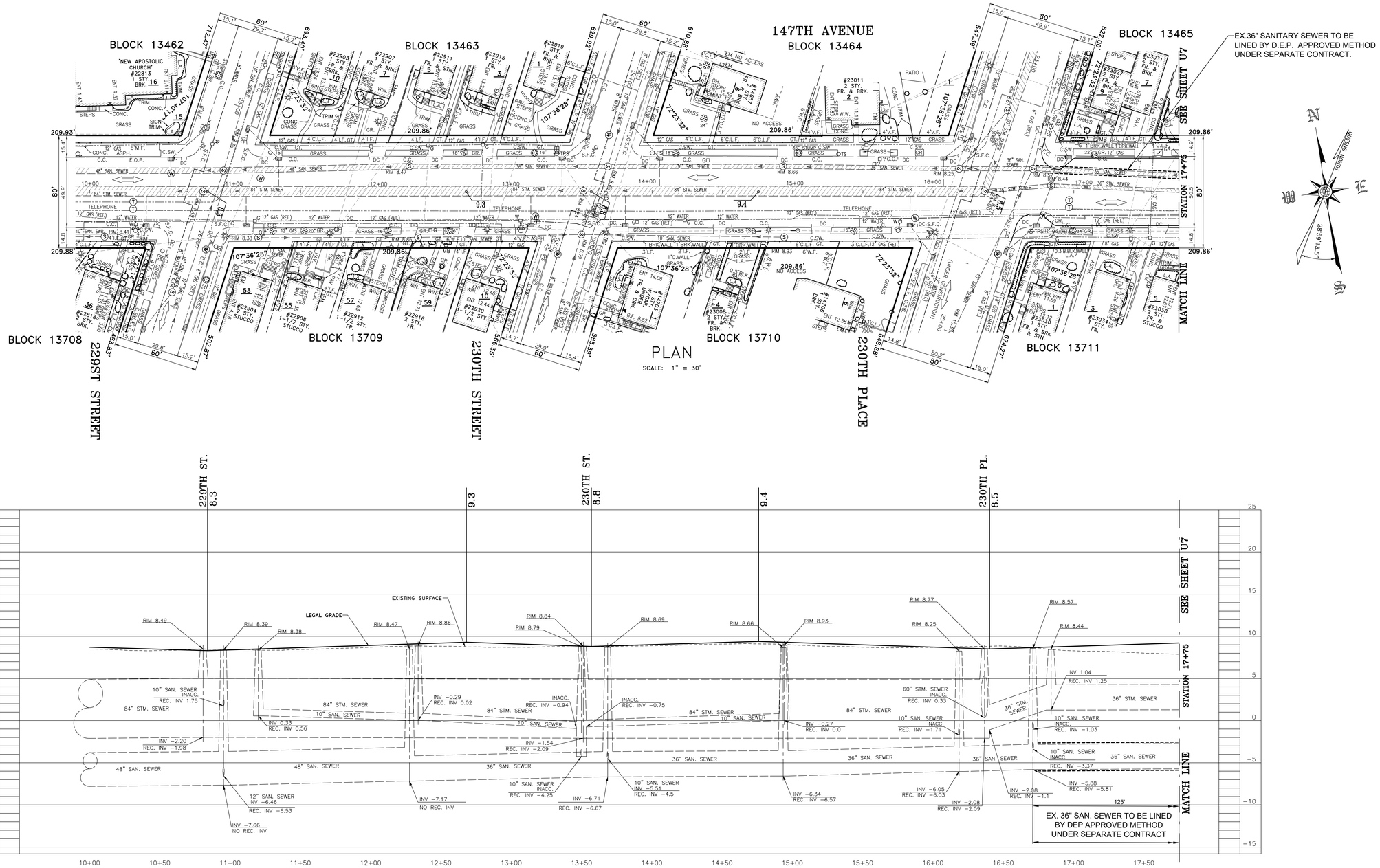
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 80 OF 148 | U5/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-86 115 UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Oct 01, 2021, 7:24am



SEWER PROFILE ALONG 147TH AVENUE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER–IN–CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH AVENUE
BETWEEN 229TH STREET AND 230TH PLACE
UTILITY PLAN AND PROFILE

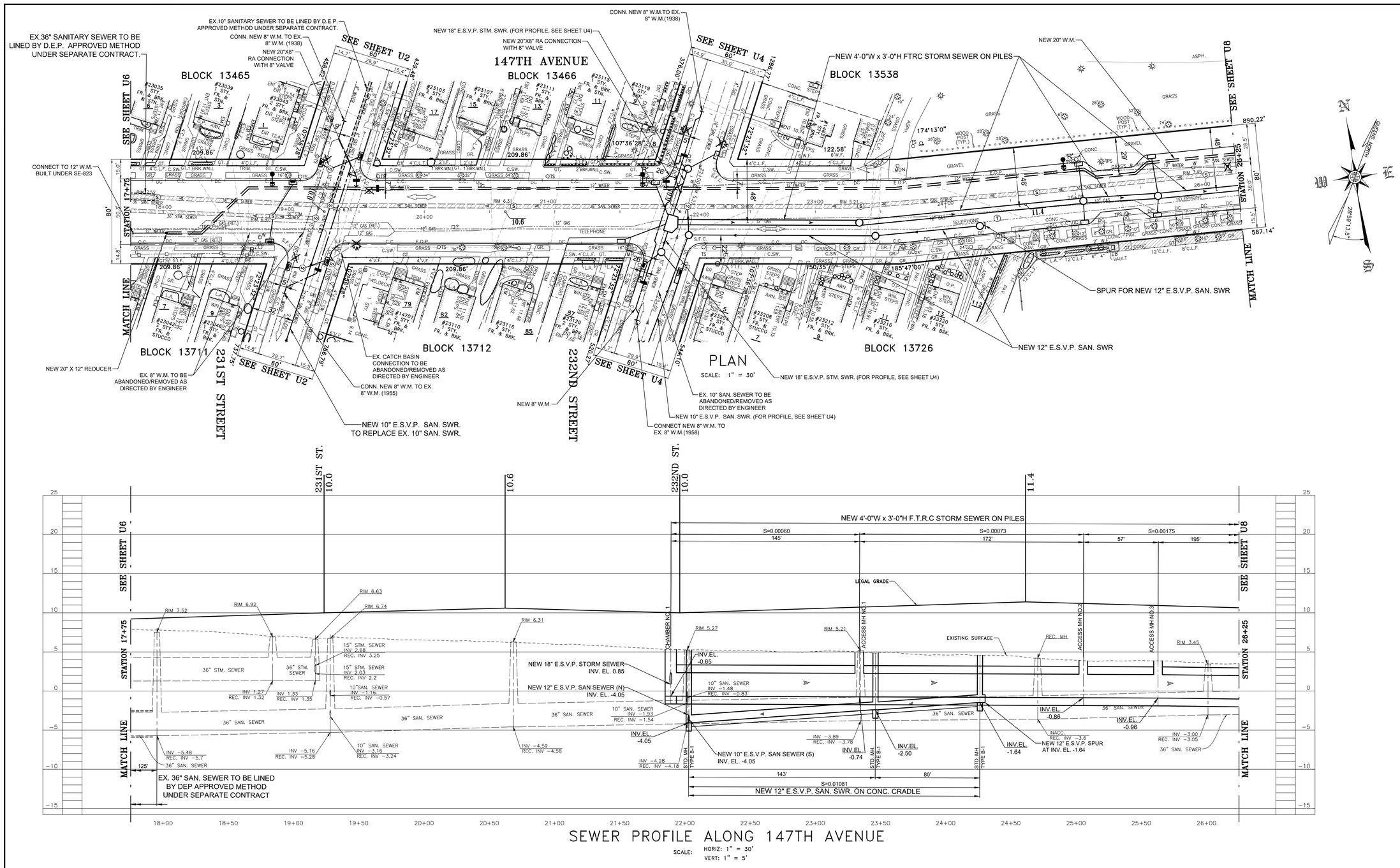
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 81 OF 148 | U6/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Sep 30, 2021, 4:50pm



"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER–IN–CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH AVENUE
BETWEEN 231ST STREET AND 232ND STREET
UTILITY PLAN AND PROFILE

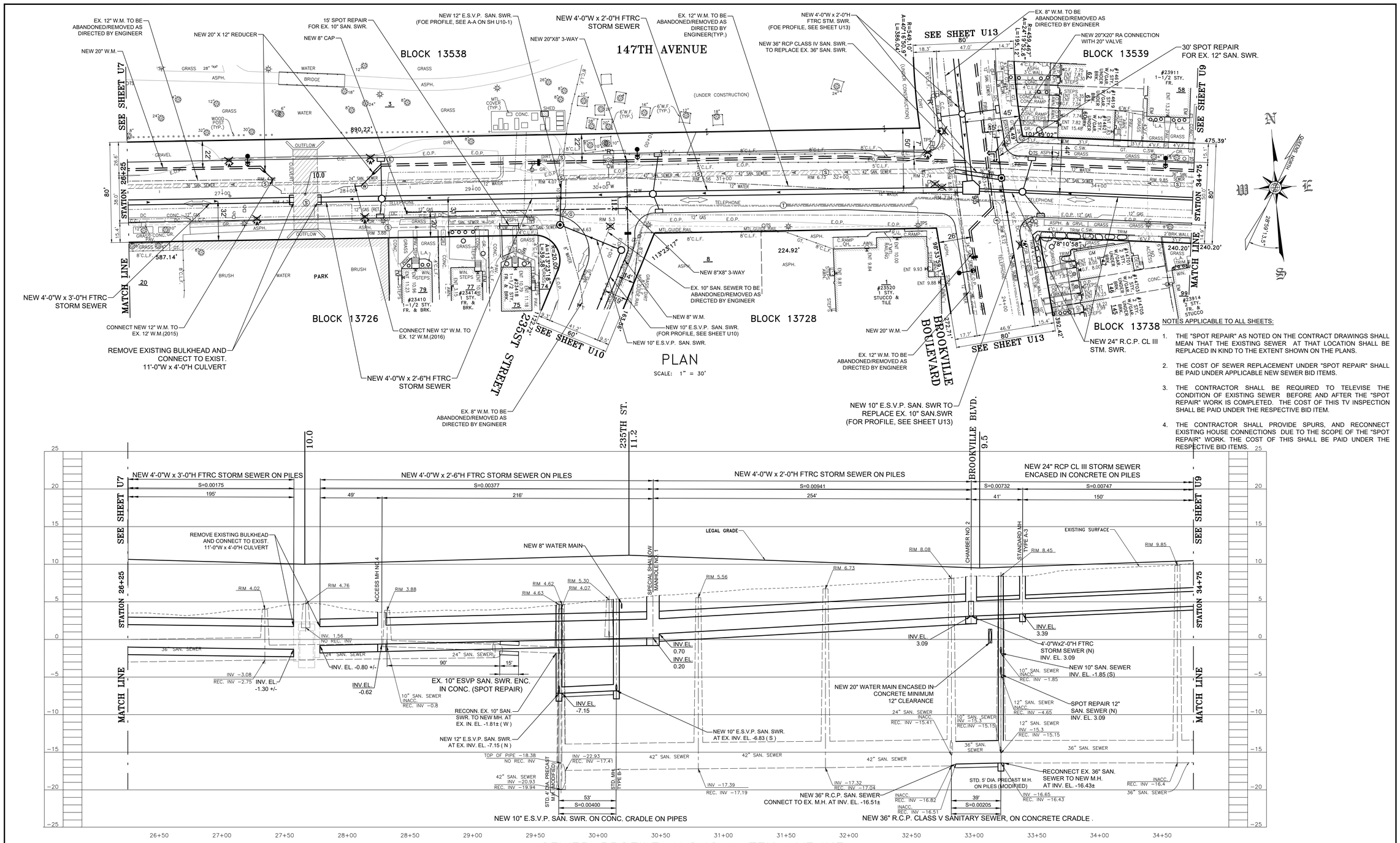
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 82 OF 148 | U7/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Sep 30, 2021, 4:52pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



PLAN

SCALE: 1" = 30'

SEWER PROFILE ALONG 147TH AVENUE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E.
ENGINEER–IN–CHARGE
P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH AVENUE
BETWEEN 235TH STREET AND BROOKVILLE BLVD.
UTILITY PLAN AND PROFILE

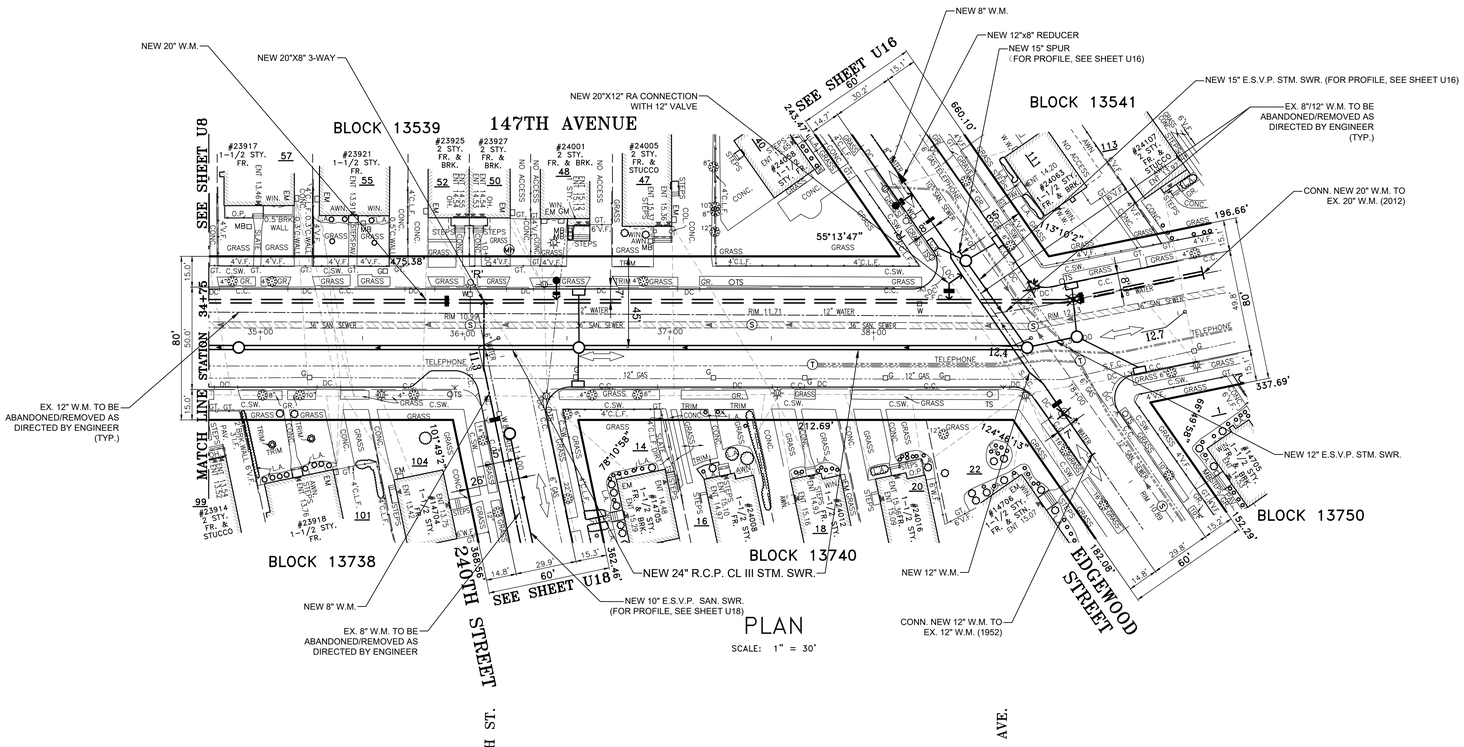
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

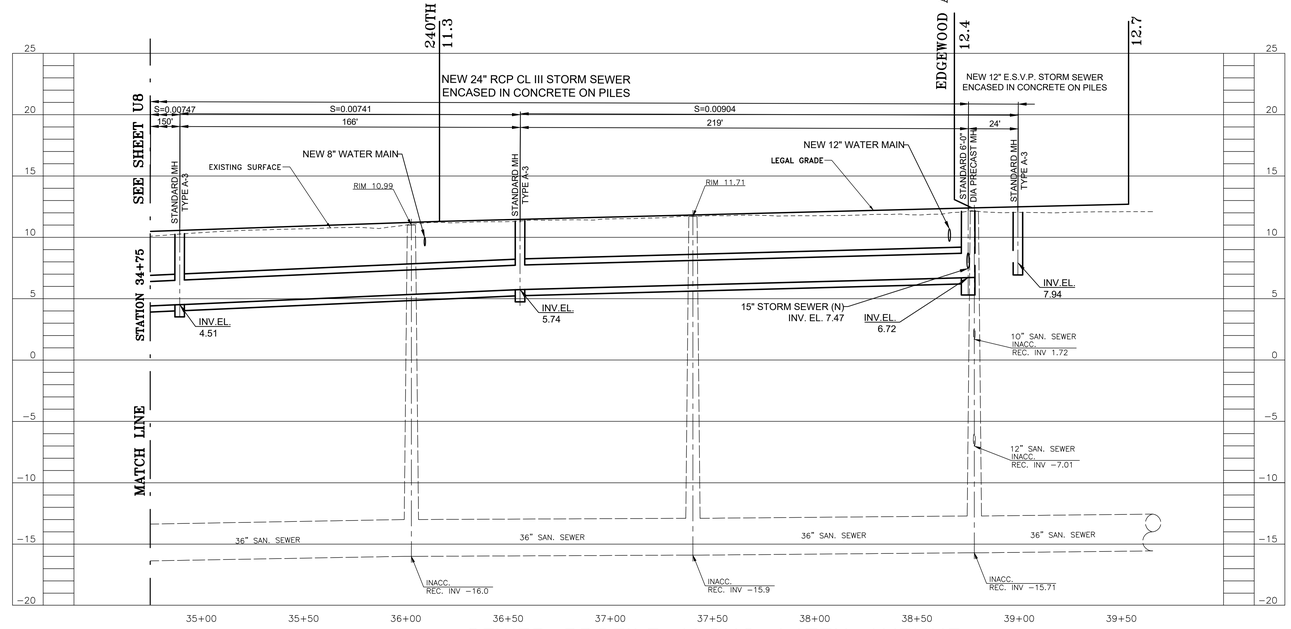
PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 83 OF 148 | U8/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Sep 30, 2021, 4:53pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG 147TH AVENUE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH AVENUE
BETWEEN BROOKVILLE BLVD. AND EDGEWOOD STREET
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 84 OF 148 | U9/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
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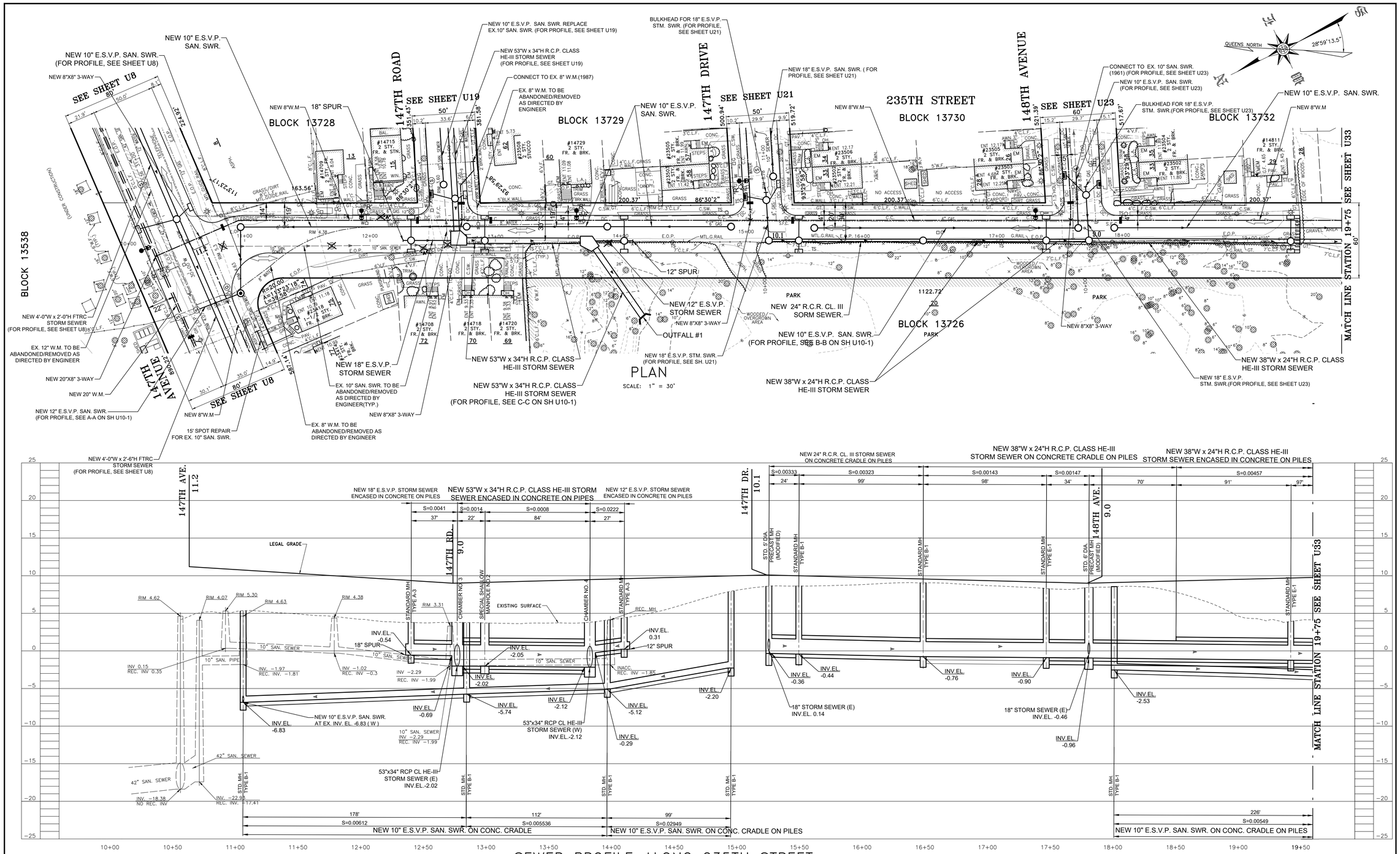

SEWER PROFILE ALONG 235TH STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E.
ENGINEER–IN–CHARGE
P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

235TH STREET
BETWEEN 147TH AVENUE AND 148TH AVENUE
UTILITY PLAN AND PROFILE

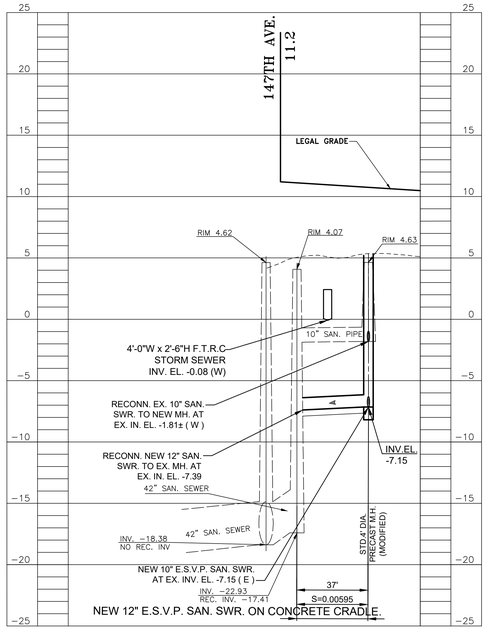
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 85 OF 148 | U10/40

IN-HOUSE DESIGN

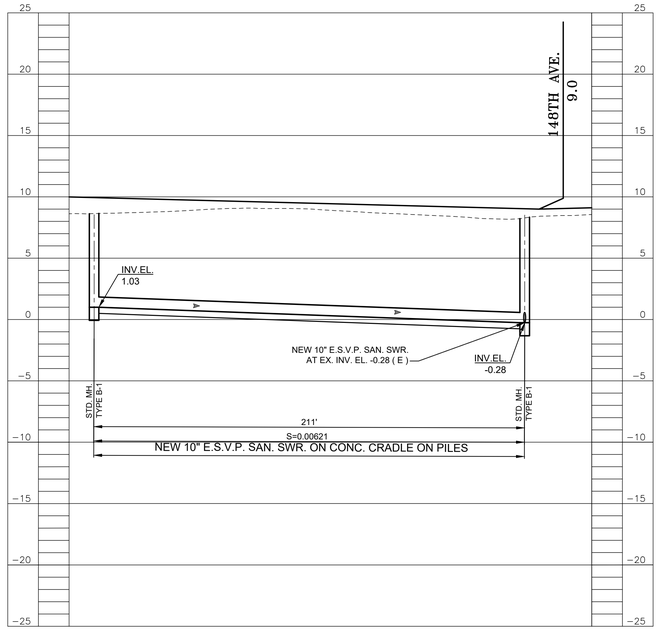
Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Sep 30, 2021, 4:55pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



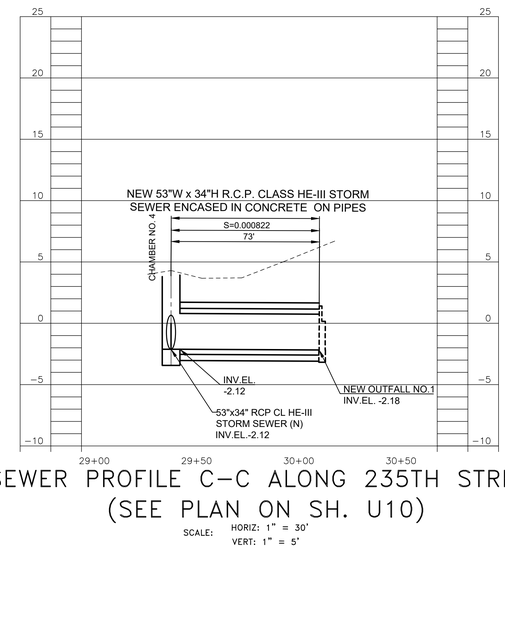
SEWER PROFILE A–A ALONG 147TH AVE.
(SEE PLAN ON SH. U8/U10)

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'



SEWER PROFILE B–B ALONG 235TH STREET
(SEE PLAN ON SH. U10)

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'



SEWER PROFILE C–C ALONG 235TH STREET
(SEE PLAN ON SH. U10)

SCALE: HORIZ: 1" = 30'
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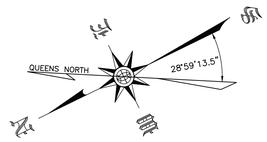

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"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E.
ENGINEER–IN–CHARGE
P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

UTILITY PROFILES

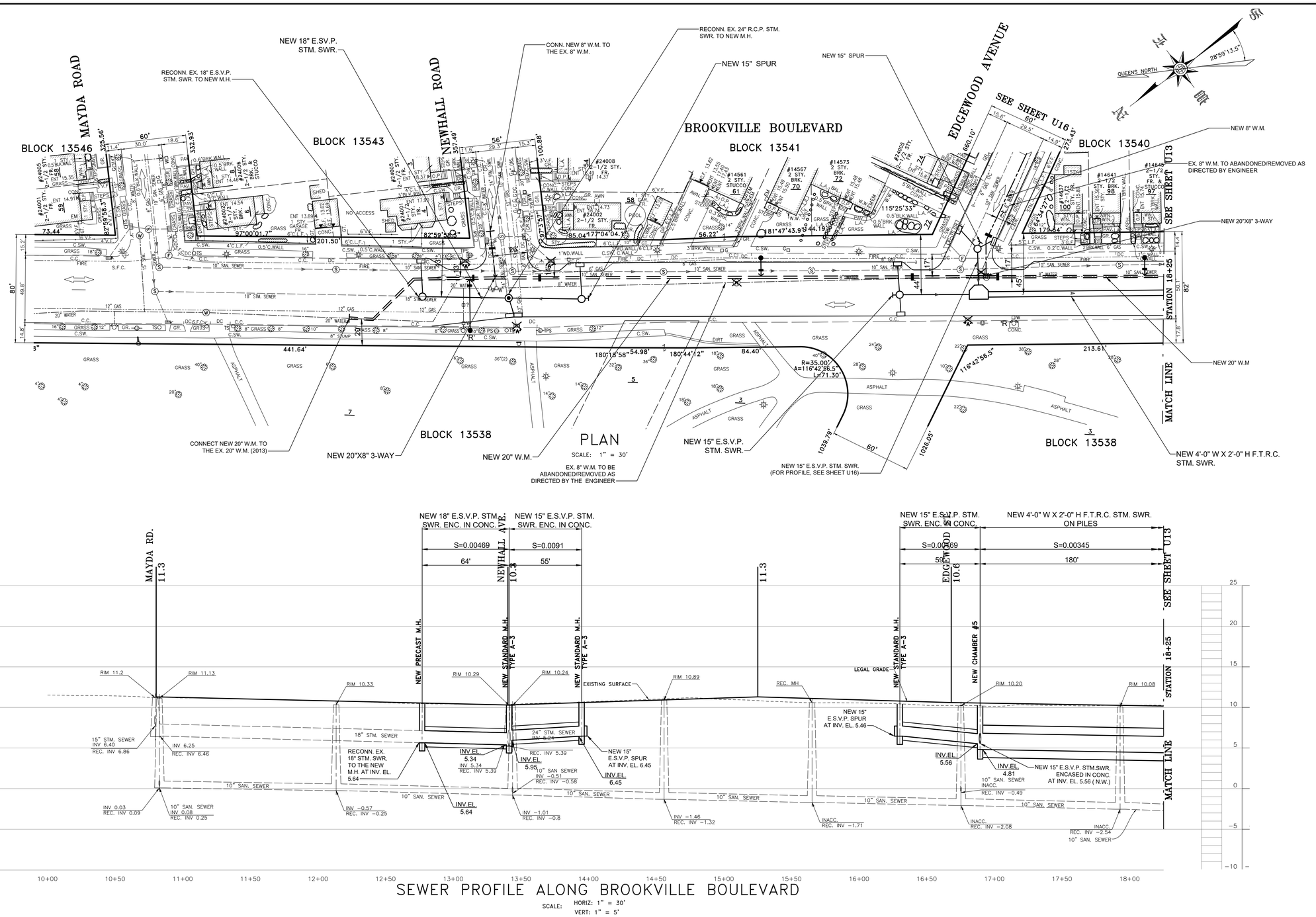
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 86 OF 148 | U10-1 / 40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DOC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-87-UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Sep 30, 2021, 4:56pm



SEWER PROFILE ALONG BROOKVILLE BOULEVARD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED S.L.
DRAWN S.L.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER-IN-CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD
BETWEEN MAYDA ROAD AND EDGEWOOD ST.

UTILITY PLAN AND PROFILE

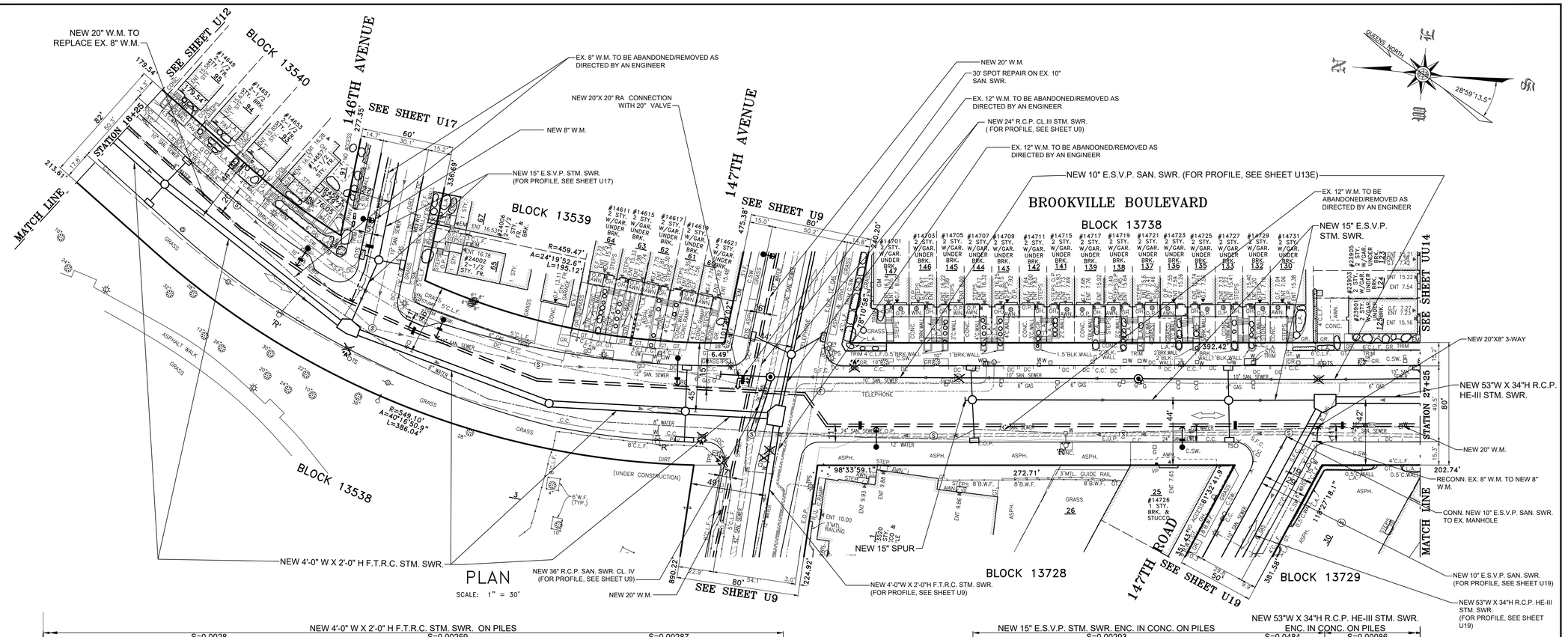
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

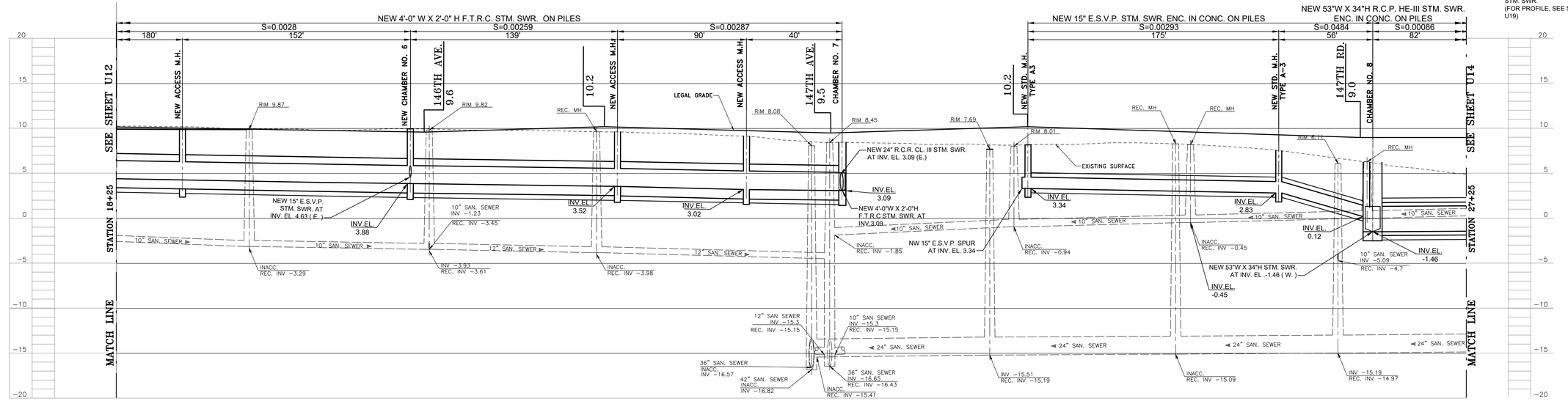
PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 87 OF 148 | U12/39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKVILLE MM2 SETS\12-15U.dwg
Date/Time: Oct 01, 2021, 9:26am

CAPITAL PROJECT HWQ724B. STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG BROOKVILLE BOULEVARD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED S.L.
DRAWN S.L.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E.
ENGINEER–IN–CHARGE
P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD
BETWEEN 146TH AVE. & 147TH RD.
UTILITY PLAN AND PROFILE

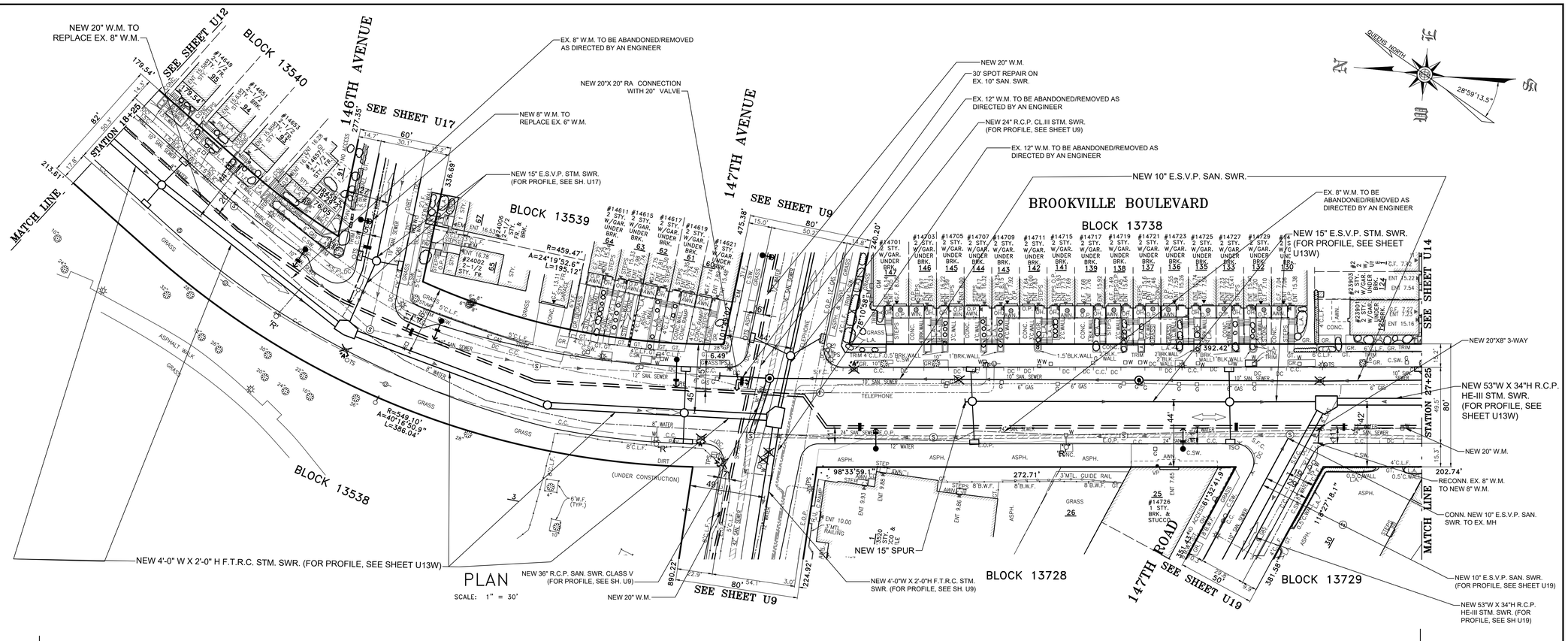
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 89 OF 148 | U13W 39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKEVILLE MM2 SETS\12–15U.dwg
Date/Time: Oct 01, 2021, 9:26am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED S.L.
DRAWN S.L.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER–IN–CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD
BETWEEN 146TH AVE. & 147TH RD.
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 90 OF 148 | U13E/39

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: E:\Brookville\BROOKVILLE MM2 SETS\12-15U.dwg
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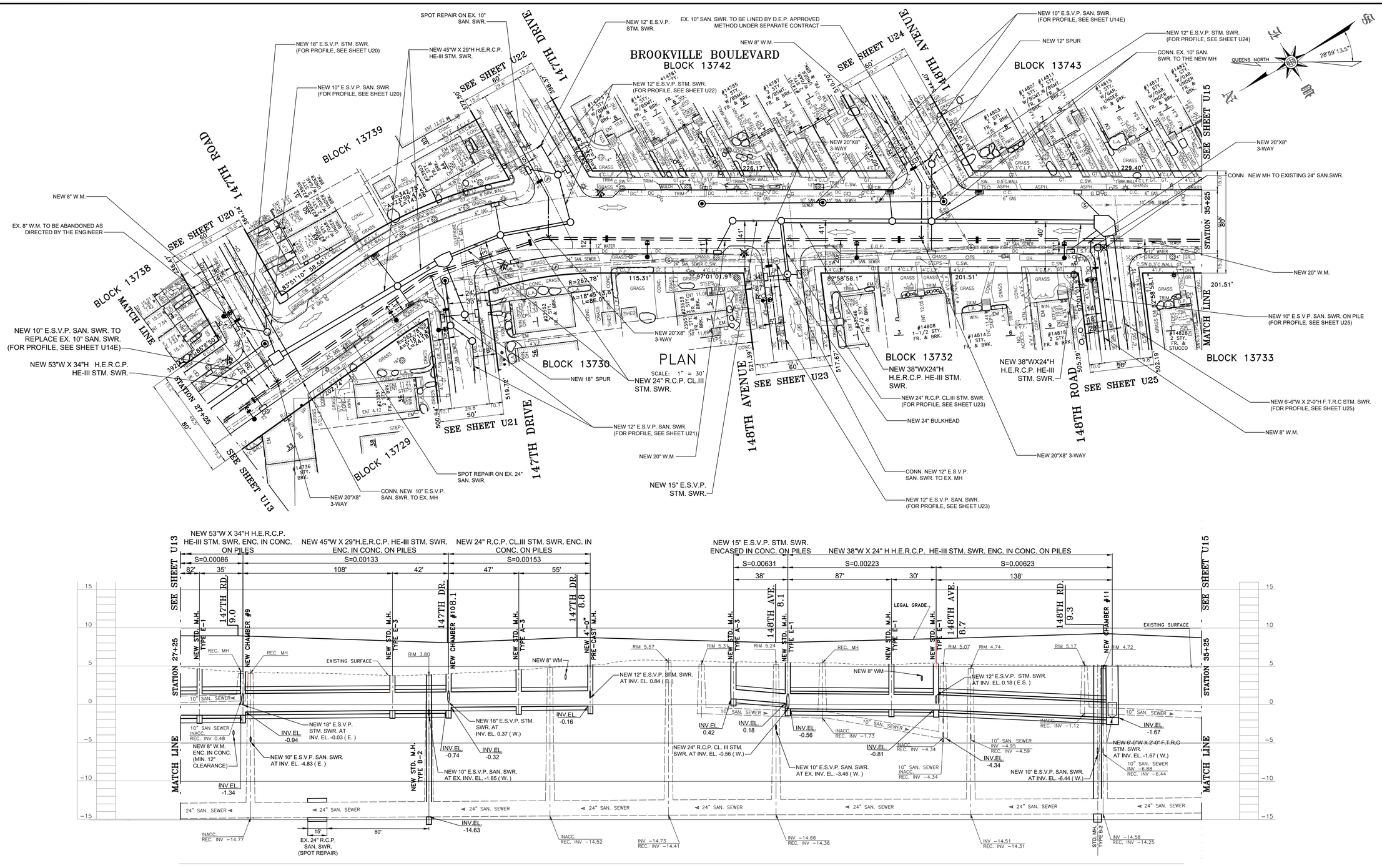

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SEWER PROFILE ALONG BROOKVILLE BOULEVARD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS REVISIONS	BY	APPR'D

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LICENSED LAND SURVEYOR

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ENGINEER–IN–CHARGE

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BROOKVILLE BOULEVARD
BETWEEN 147TH RD. & 148TH RD.
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 91 OF 148 | U14W 39

IN-HOUSE DESIGN

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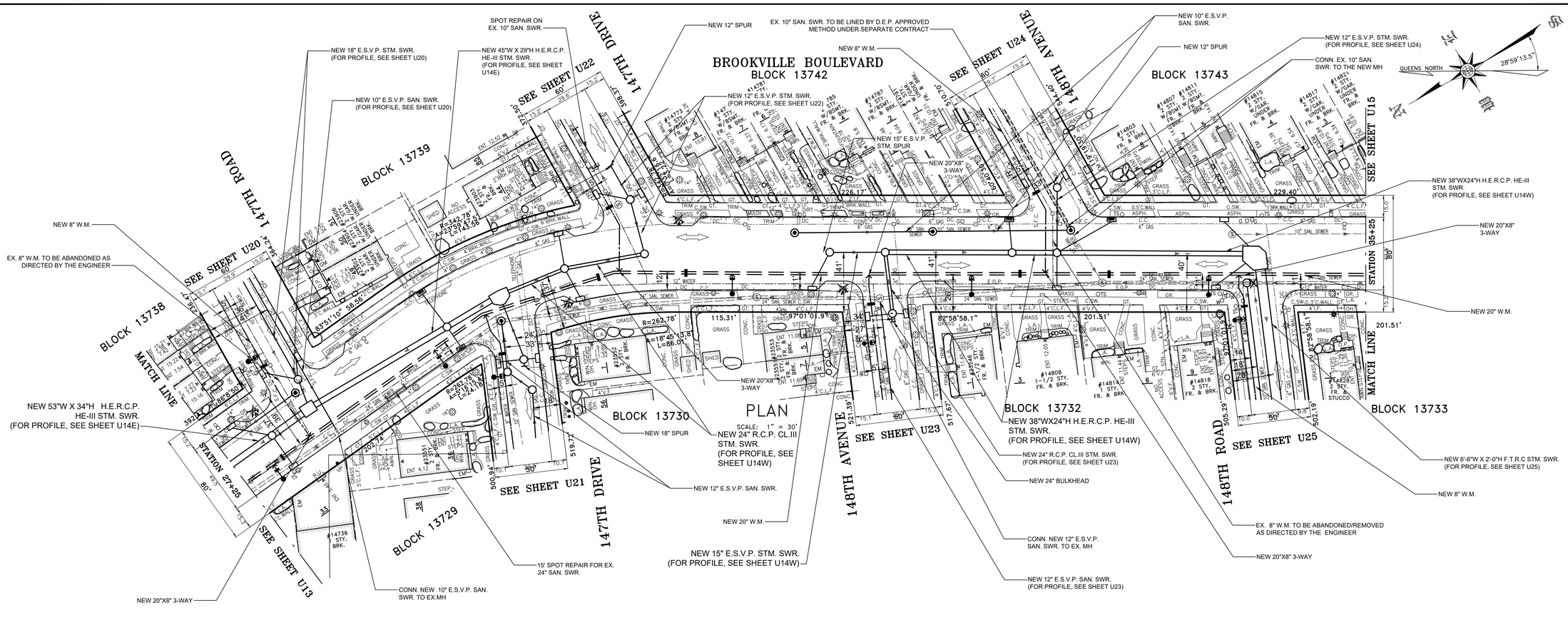
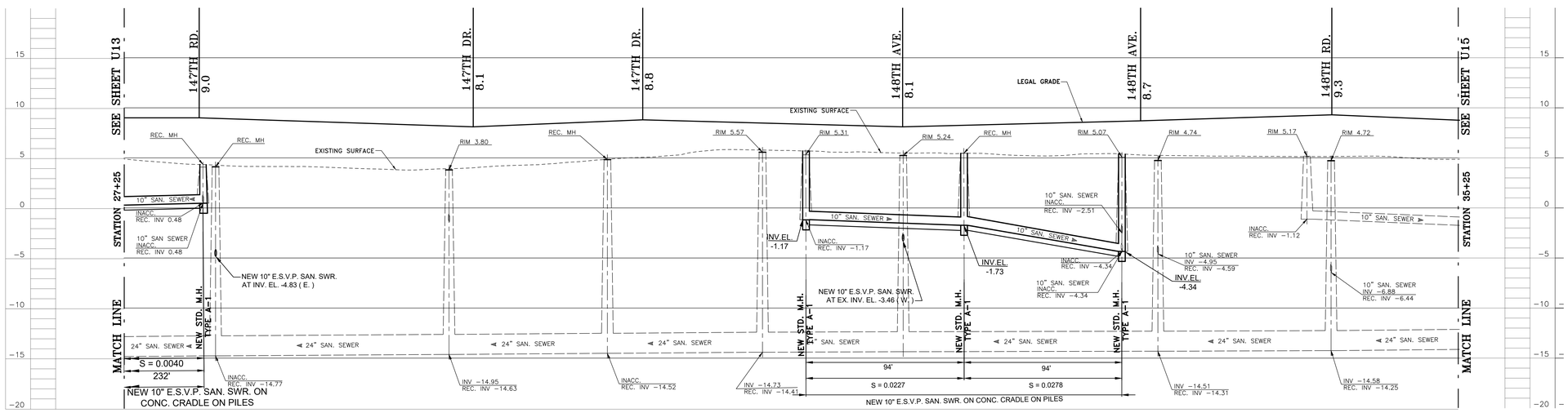
Date/Time: Oct 01, 2021, 9:27am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG BROOKVILLE BOULEVARD

SCALE: HORIZ: 1" = 30'
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		REVISIONS		

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LICENSED LAND SURVEYOR

DESIGNED S.L.
DRAWN S.L.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E.
ENGINEER–IN–CHARGE
P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD
BETWEEN 147TH RD. & 148TH RD.
UTILITY PLAN AND PROFILE

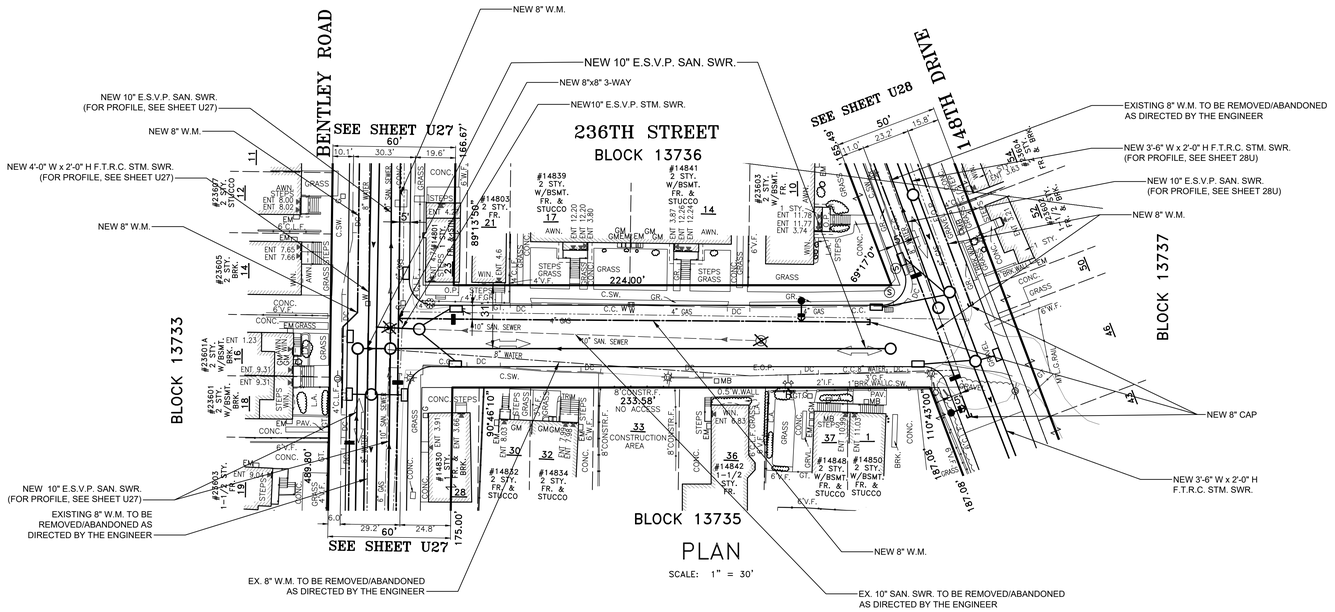
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

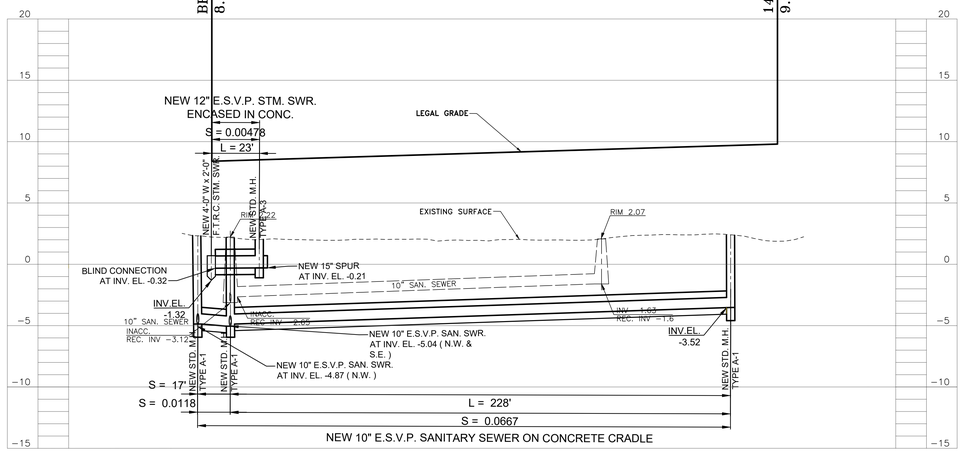
PROJECT ID: HWQ724B | DATE: 10/26/2020 | SHEET 92 OF 148 | U14S 39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKEVILLE MM2 SETS\12-15U.dwg
Date/Time: Oct 01, 2021, 9:28am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG 236TH STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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		REVISIONS		

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NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED S.L.
DRAWN S.L.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER–IN–CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD
BETWEEN BENTLEY AVE. & 148TH DR.

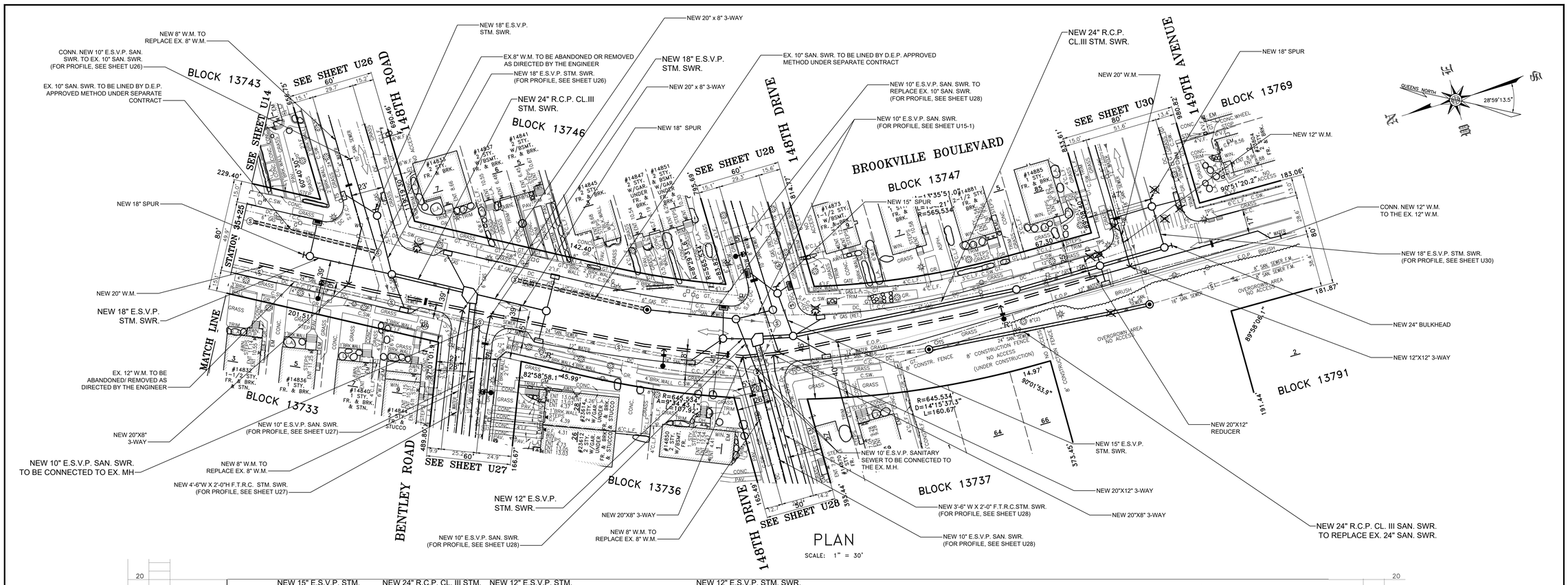
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 87 OF 148 | U11/39

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B. STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



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DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD
BETWEEN 148TH RD. & 149TH AVE.

UTILITY PLAN AND PROFILE

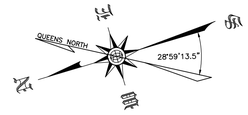
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

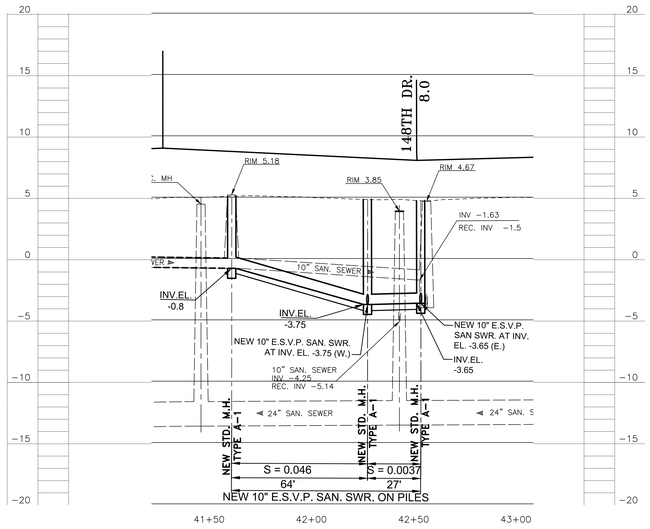
PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 93 OF 148 | U15/39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKVILLE MM2 SETS\12-15U.dwg
Date/Time: Oct 01, 2021, 9:29am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE B−B ALONG BROOKEVILLE BOULEVARD
(SEE PLAN ON SH. U15)

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019−JAN 2020

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REVISIONS

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED S.L.
DRAWN S.L.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER−IN−CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD
BETWEEN 148TH RD. & 149TH AVE.
UTILITY PLAN AND PROFILE

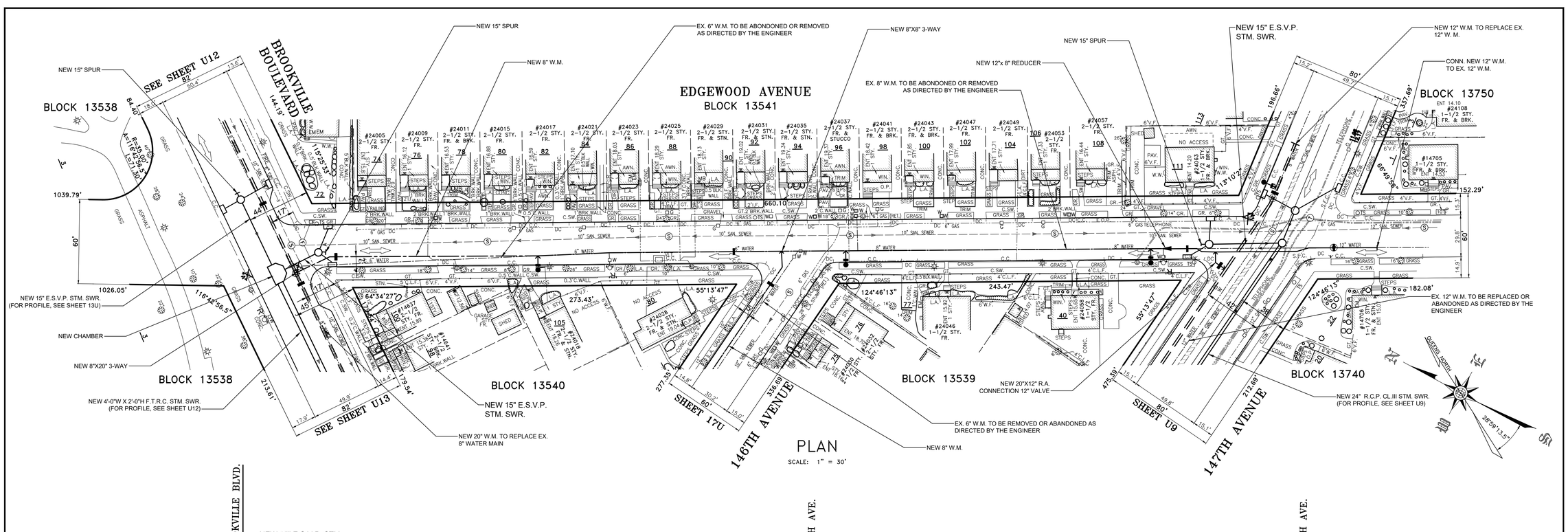
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

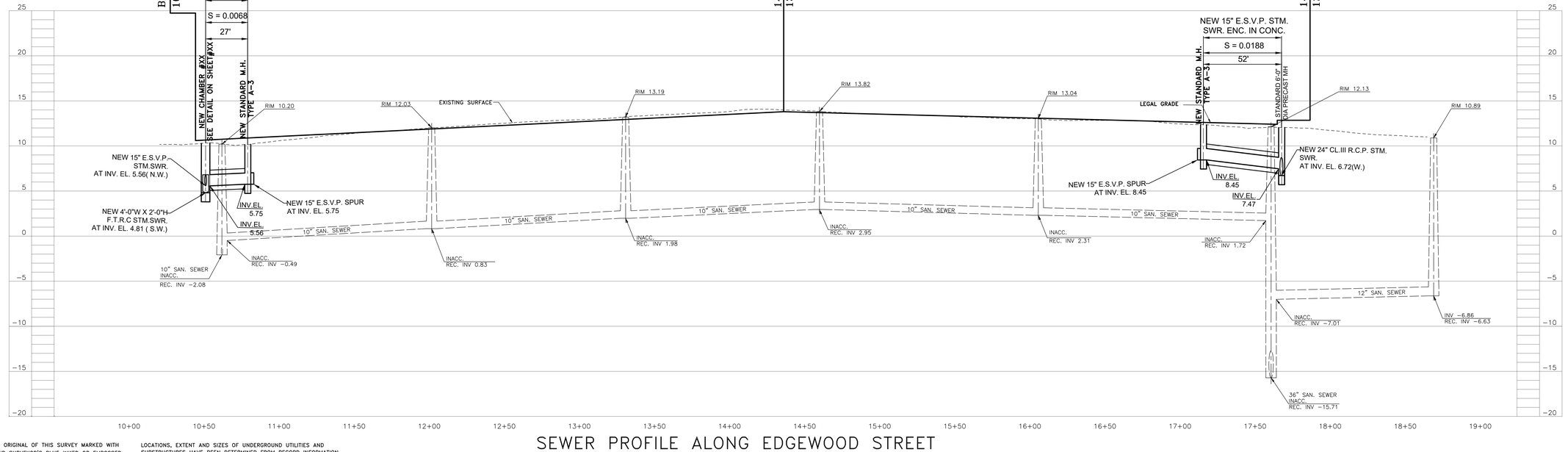
PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 94 OF 148 | U15-1/39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKEVILLE MM2 SETS\12-15U.dwg
Date/Time: Oct 01, 2021, 9:29am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG EDGEWOOD STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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DESIGNED S.L.
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CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER-IN-CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

EDGEWOOD STREET
BETWEEN BROOKVILLE BOULEVARD AND 147TH AVENUE
UTILITY PLAN AND PROFILE

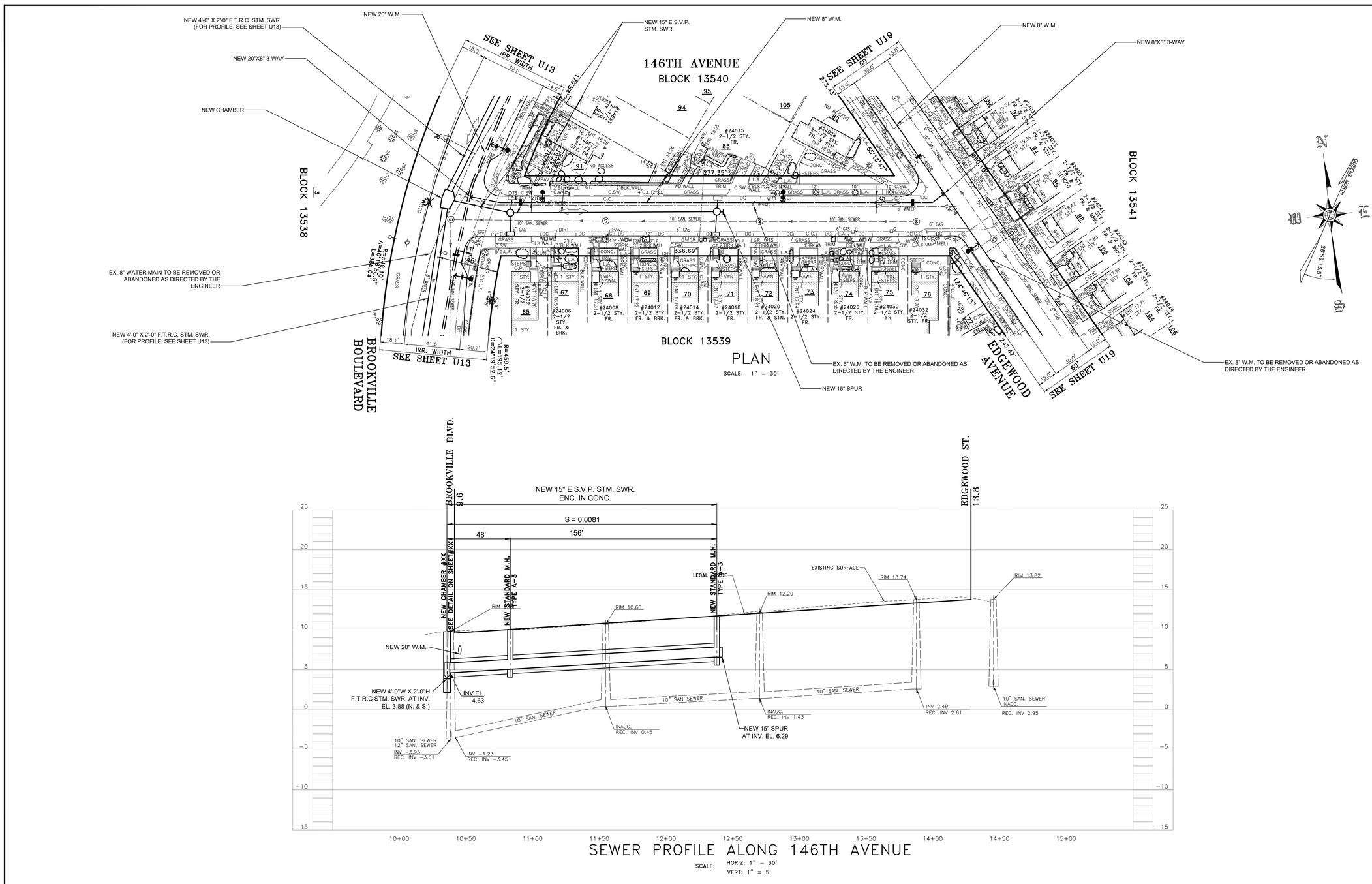
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 96 OF 148 | U17/39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKEVILLE MM2 SETS\16-18U.dwg
Date/Time: Sep 30, 2021, 6:04pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



PLAN

SCALE: 1" = 30'

SEWER PROFILE ALONG 146TH AVENUE

SCALE: HORIZ: 1" = 30'
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P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
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BUREAU OF DESIGN

146TH AVENUE
BETWEEN BROOKVILLE BOULEVARD AND 147TH AVENUE
UTILITY PLAN AND PROFILE

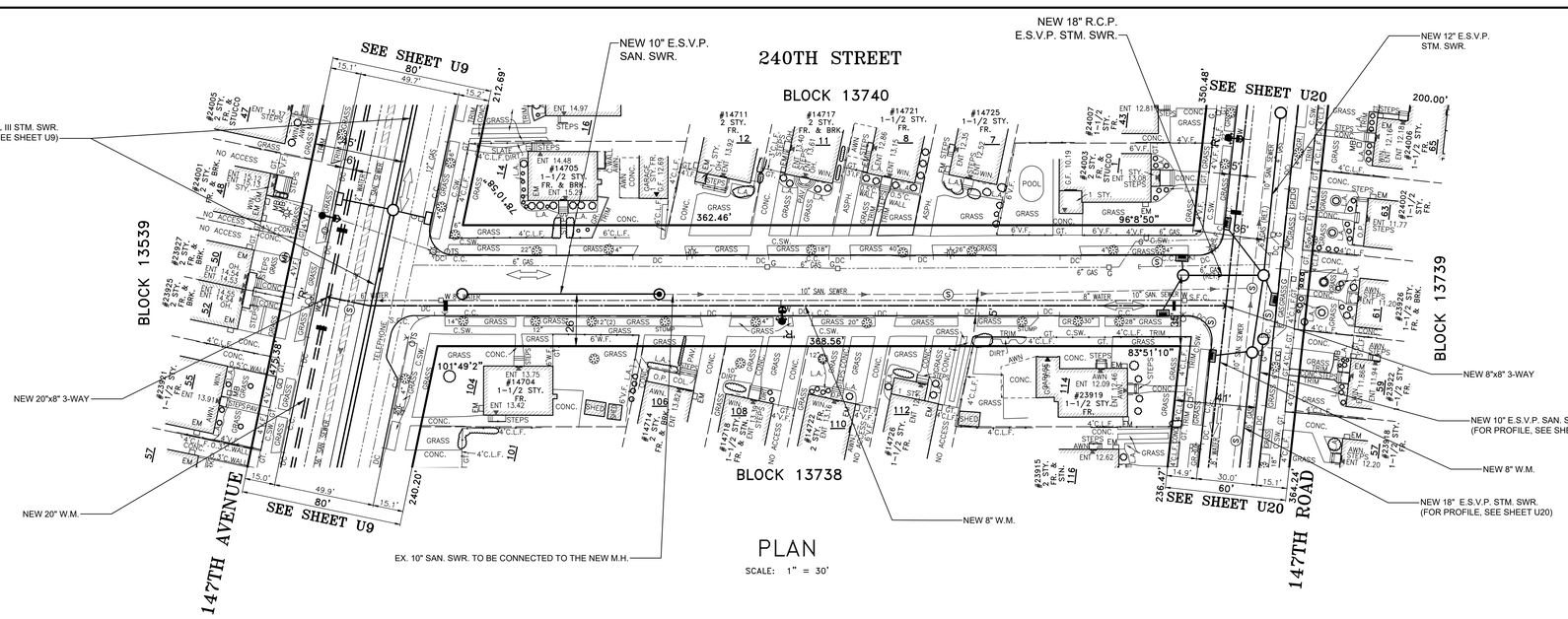
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

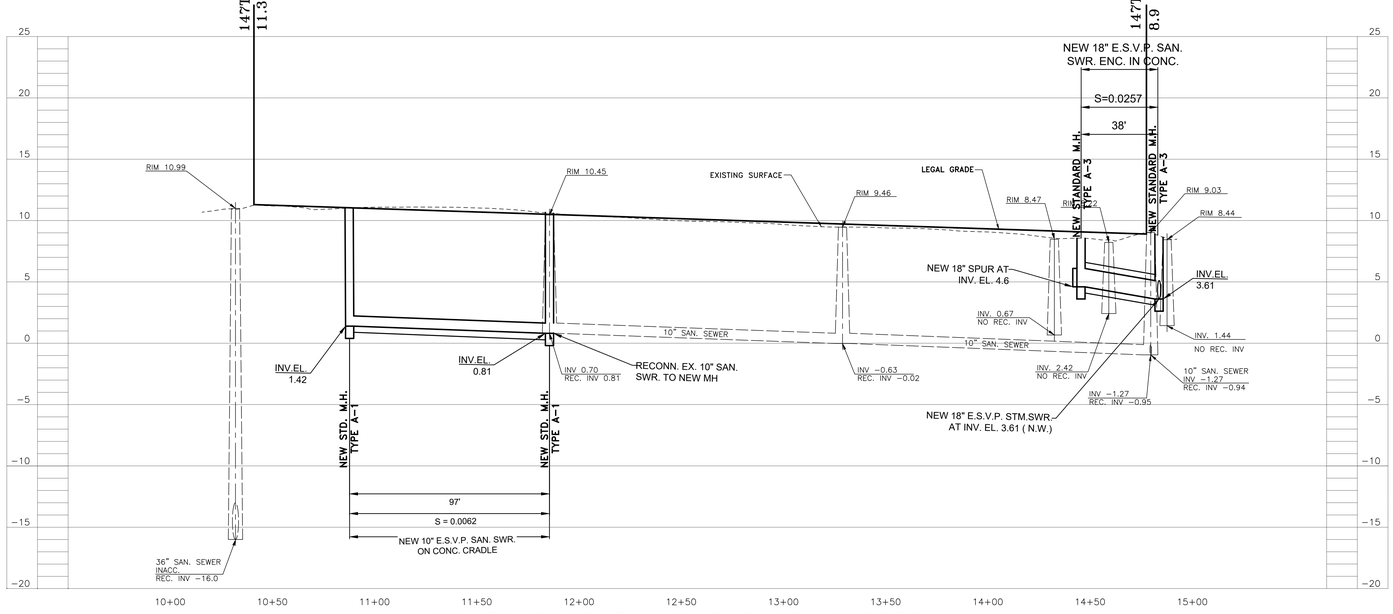
PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET XX OF 148 | U17/39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKEVILLE MM2 SETS\16–18U.dwg
Date/Time: Sep 30, 2021, 6:04pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG 240TH STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED S.L.
DRAWN S.L.
CHECKED S.M.

SCALE AS SHOWN
CADD FILE

P.E.
ENGINEER–IN–CHARGE
P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

240TH STREET
BETWEEN 147TH AVENUE AND 147TH ROAD
UTILITY PLAN AND PROFILE

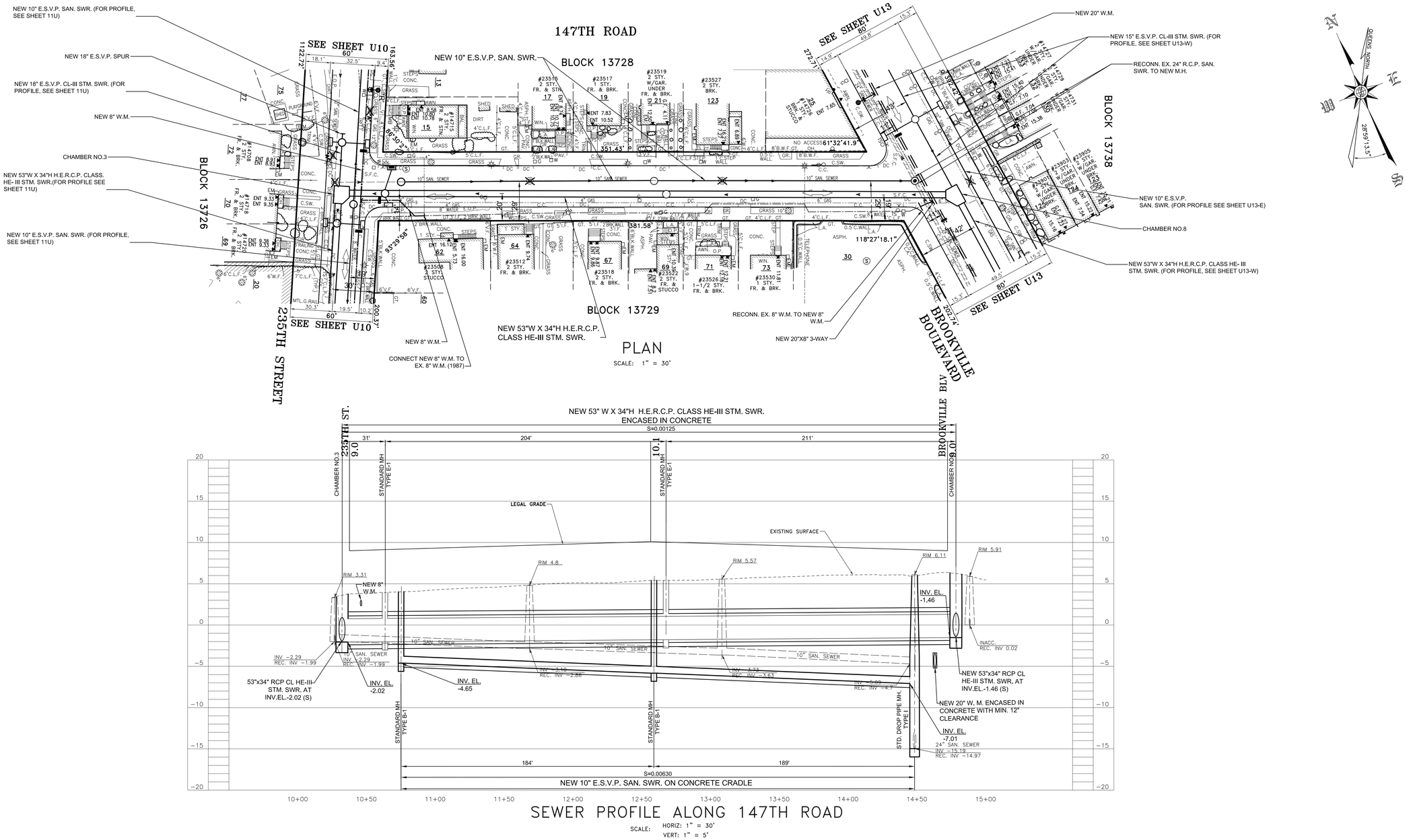
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 97 OF 148 | U18/39

IN-HOUSE DESIGN

Sheet File: E:\Brookville\BROOKEVILLE MM2 SETS\16-18U.dwg
Date/Time: Sep 30, 2021, 6:05pm

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



SEWER PROFILE ALONG 147TH ROAD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED H.Z.
DRAWN H.Z.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER–IN–CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH ROAD
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 98 OF 148 | U19/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B. STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\98-102 – UTILITY PLAN SET 19-23_JH_HZ.dwg
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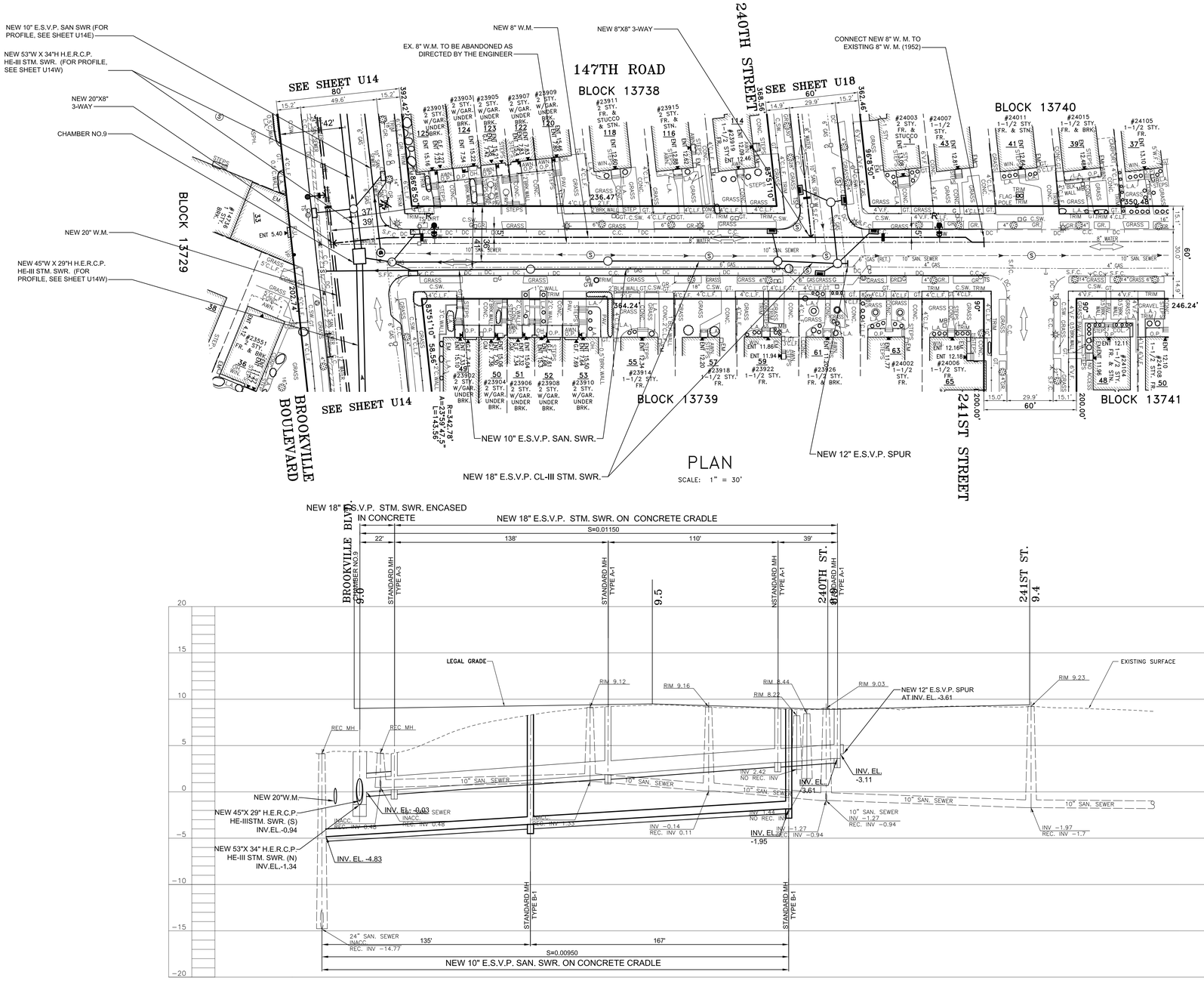

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		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED H.Z.
DRAWN H.Z.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH ROAD
FROM BROOKVILLE BOULEVARD AND 241ST STREET
UTILITY PLAN AND PROFILE

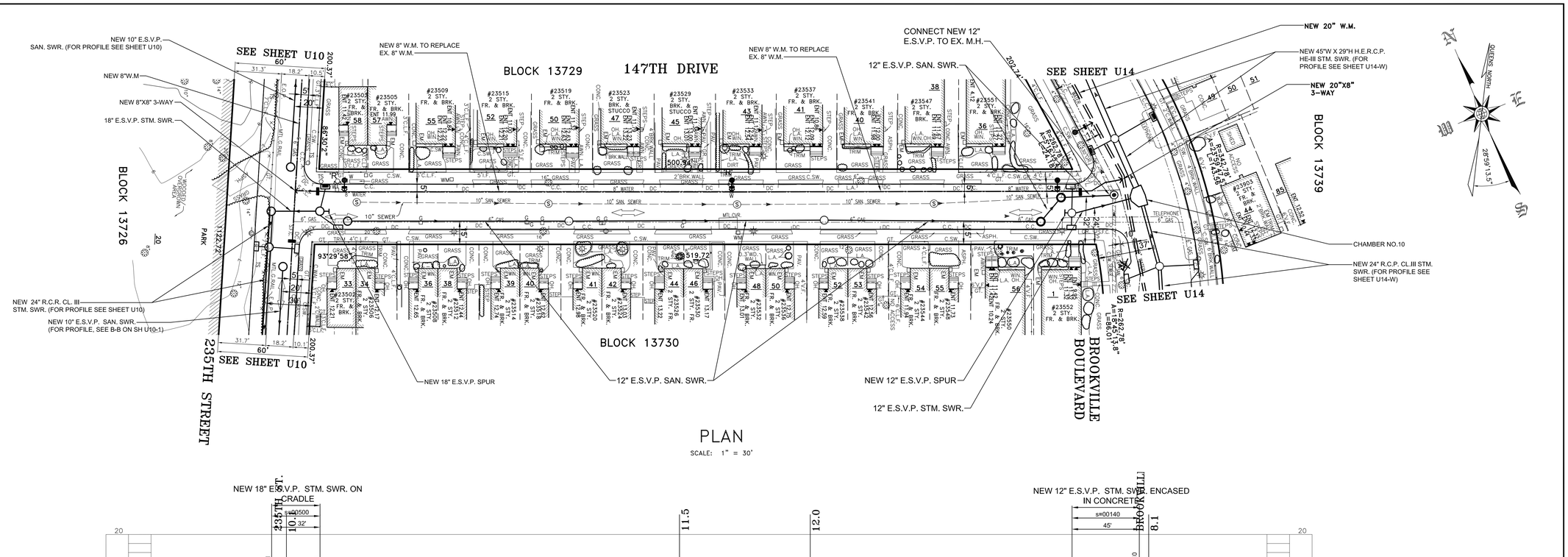
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 99 OF 148 | U20/40

IN-HOUSE DESIGN

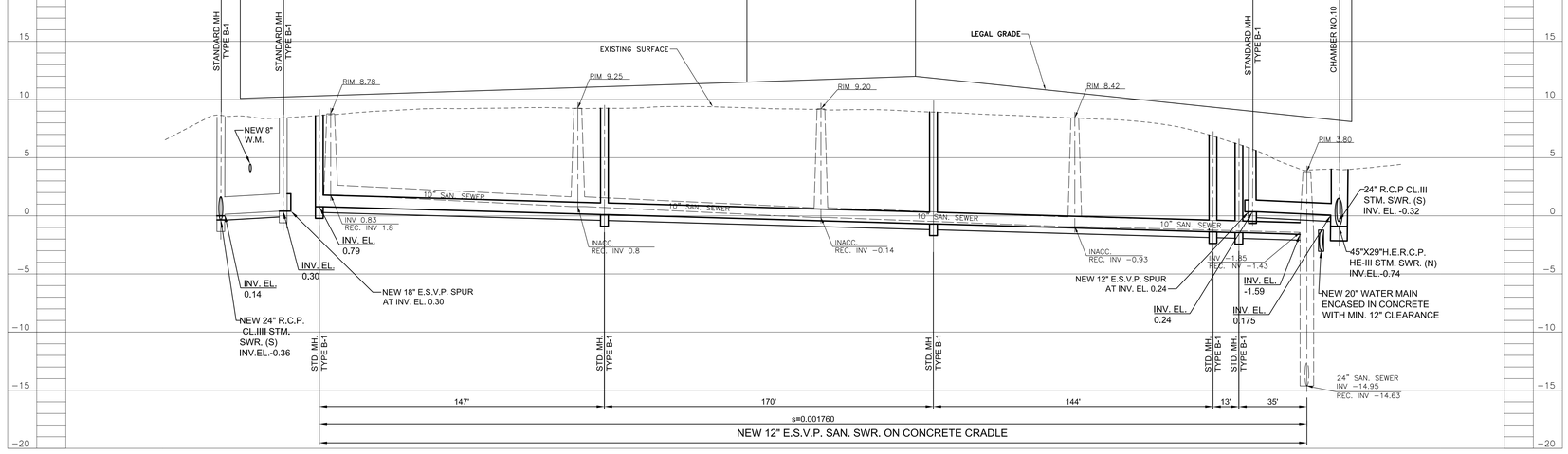
Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\98-102 – UTILITY PLAN SET 19-23_JH_HZ.dwg
Date/Time: Oct 01, 2021, 11:56am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



PLAN

SCALE: 1" = 30'



SEWER PROFILE ALONG 147TH DRIVE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED H.Z.
DRAWN H.Z.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER–IN–CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH DRIVE
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD
UTILITY PLAN AND PROFILE

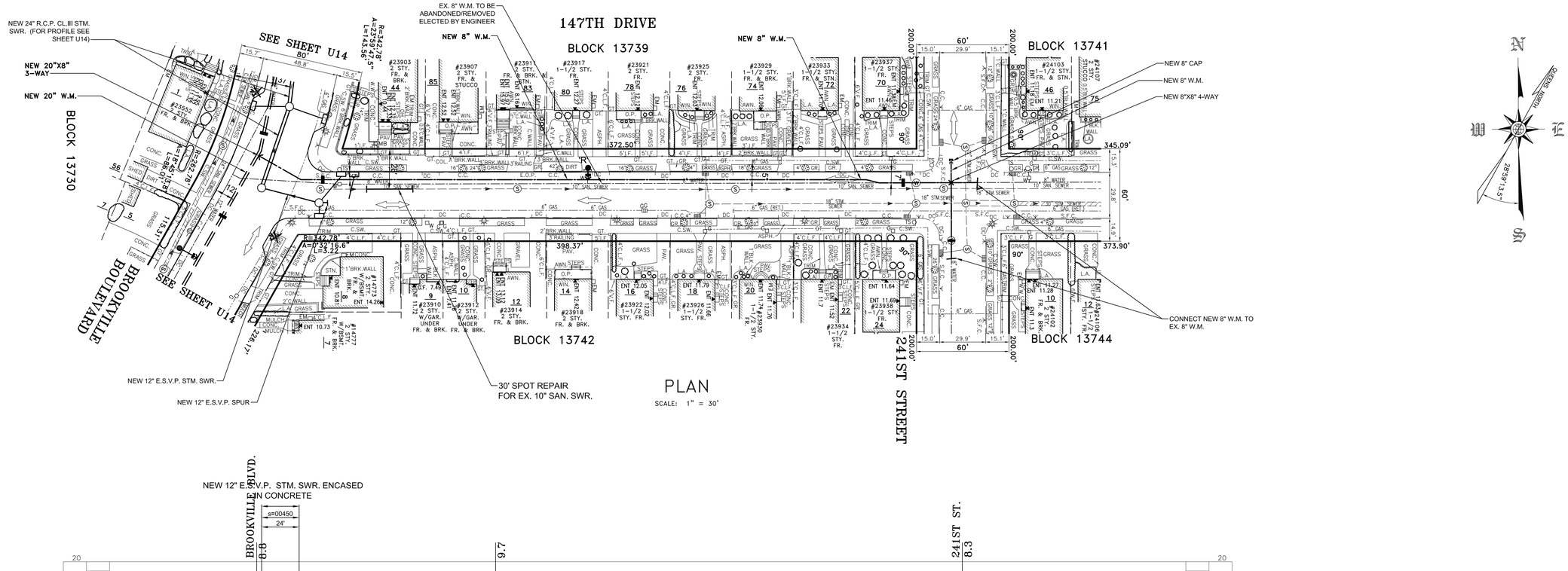
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

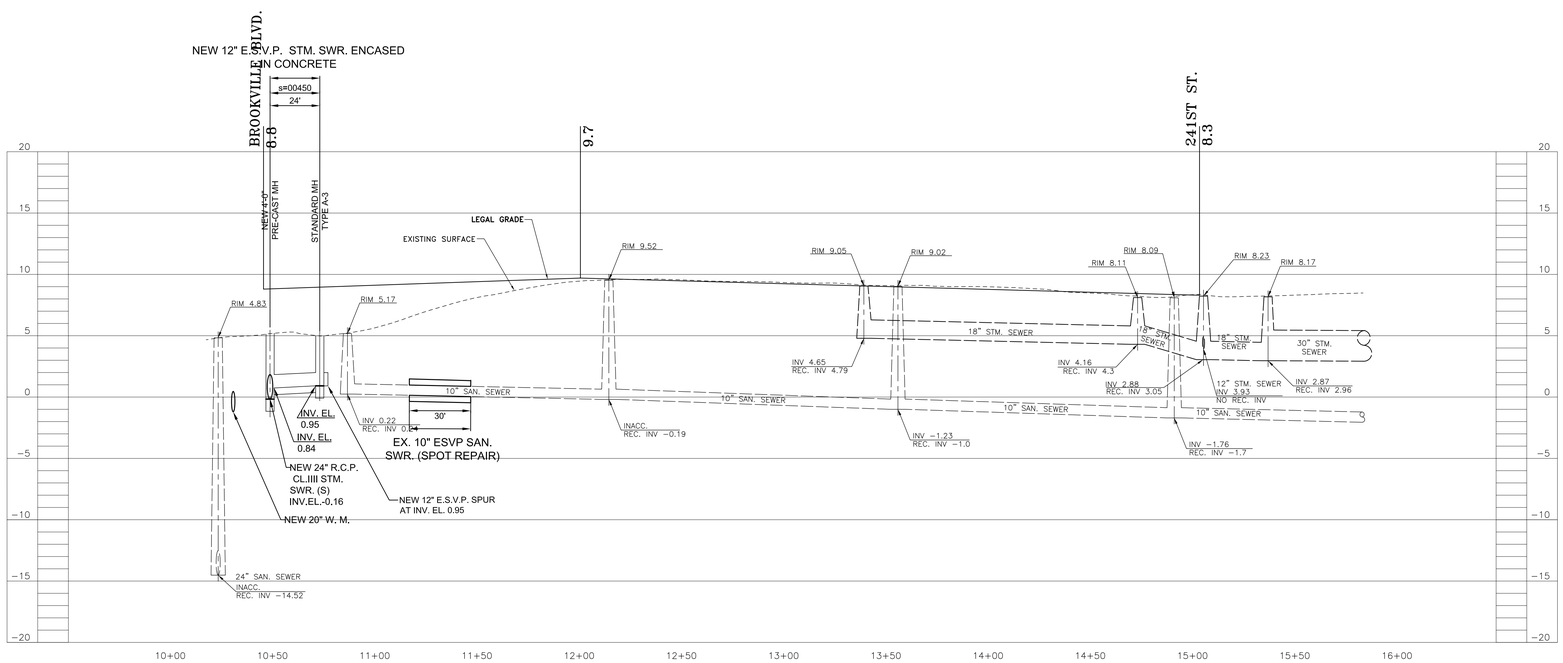
PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 100 OF 148 | U21/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\98-102 – UTILITY PLAN SET 19-23_JH_HZ.dwg
Date/Time: Oct 01, 2021, 11:34am





SEWER PROFILE ALONG 147TH DRIVE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

NOTES APPLICABLE TO ALL SHEETS:

1. THE "SPOT REPAIR" AS NOTED ON THE CONTRACT DRAWINGS SHALL MEAN THAT THE EXISTING SEWER AT THAT LOCATION SHALL BE REPLACED IN KIND TO THE EXTENT SHOWN ON THE PLANS.
2. THE COST OF SEWER REPLACEMENT UNDER "SPOT REPAIR" SHALL BE PAID UNDER APPLICABLE NEW SEWER BID ITEMS.
3. THE CONTRACTOR SHALL BE REQUIRED TO TELEVISE THE CONDITION OF EXISTING SEWER BEFORE AND AFTER THE "SPOT REPAIR" WORK IS COMPLETED. THE COST OF THIS TV INSPECTION SHALL BE PAID UNDER THE RESPECTIVE BID ITEM.
4. THE CONTRACTOR SHALL PROVIDE SPURS, AND RECONNECT EXISTING HOUSE CONNECTIONS DUE TO THE SCOPE OF THE "SPOT REPAIR" WORK. THE COST OF THIS SHALL BE PAID UNDER THE RESPECTIVE BID ITEMS.

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED H.Z.
DRAWN H.Z.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

147TH DRIVE
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD
UTILITY PLAN AND PROFILE

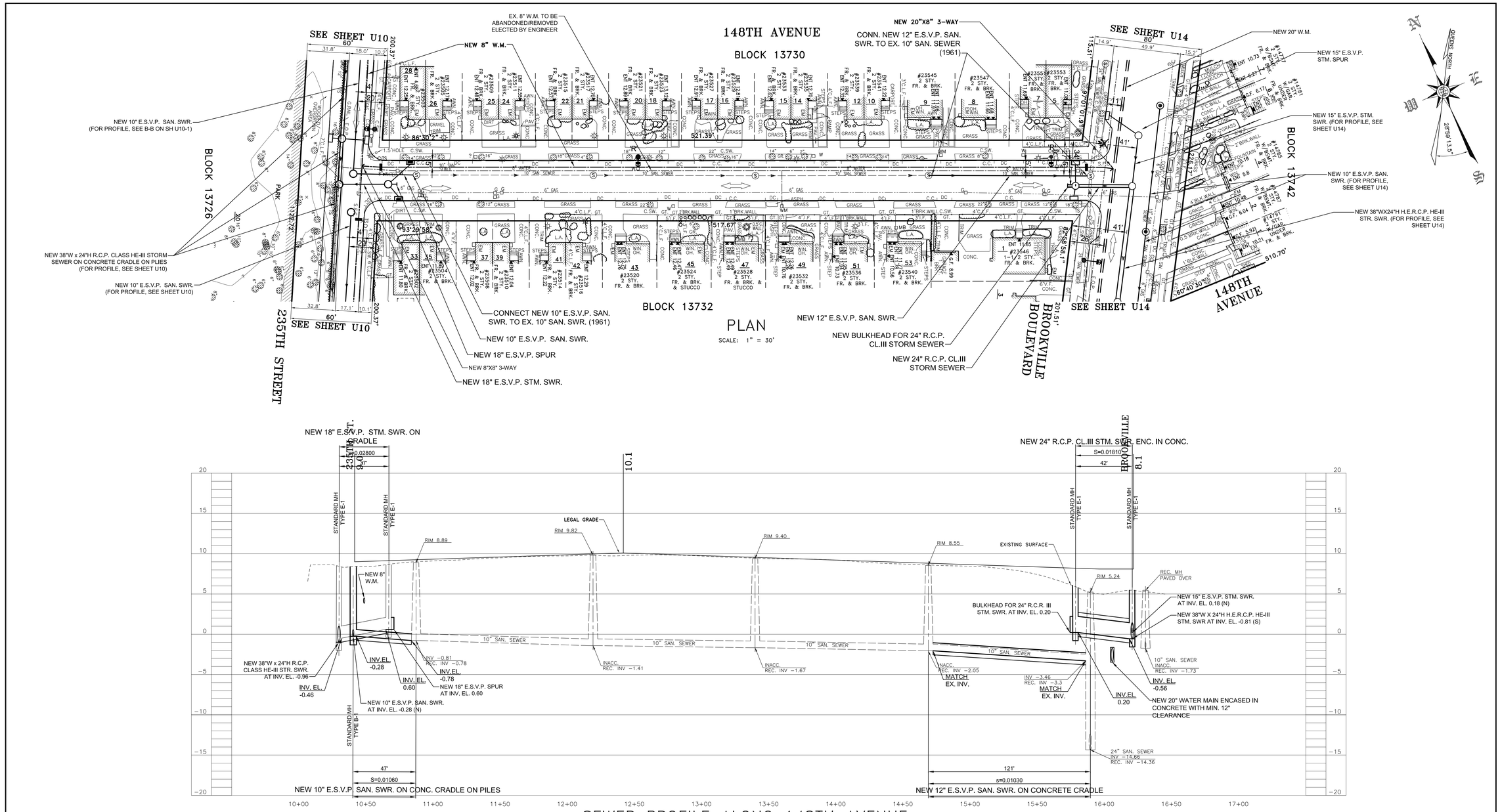
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 101 OF 148 | U22/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\98–102 – UTILITY PLAN SET 19–23_JH_HZ.dwg
Date/Time: Oct 01, 2021, 10:50am



SEWER PROFILE ALONG 148TH AVENUE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019-JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED H.Z.
DRAWN H.Z.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER-IN-CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH AVENUE
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD

UTILITY PLAN AND PROFILE

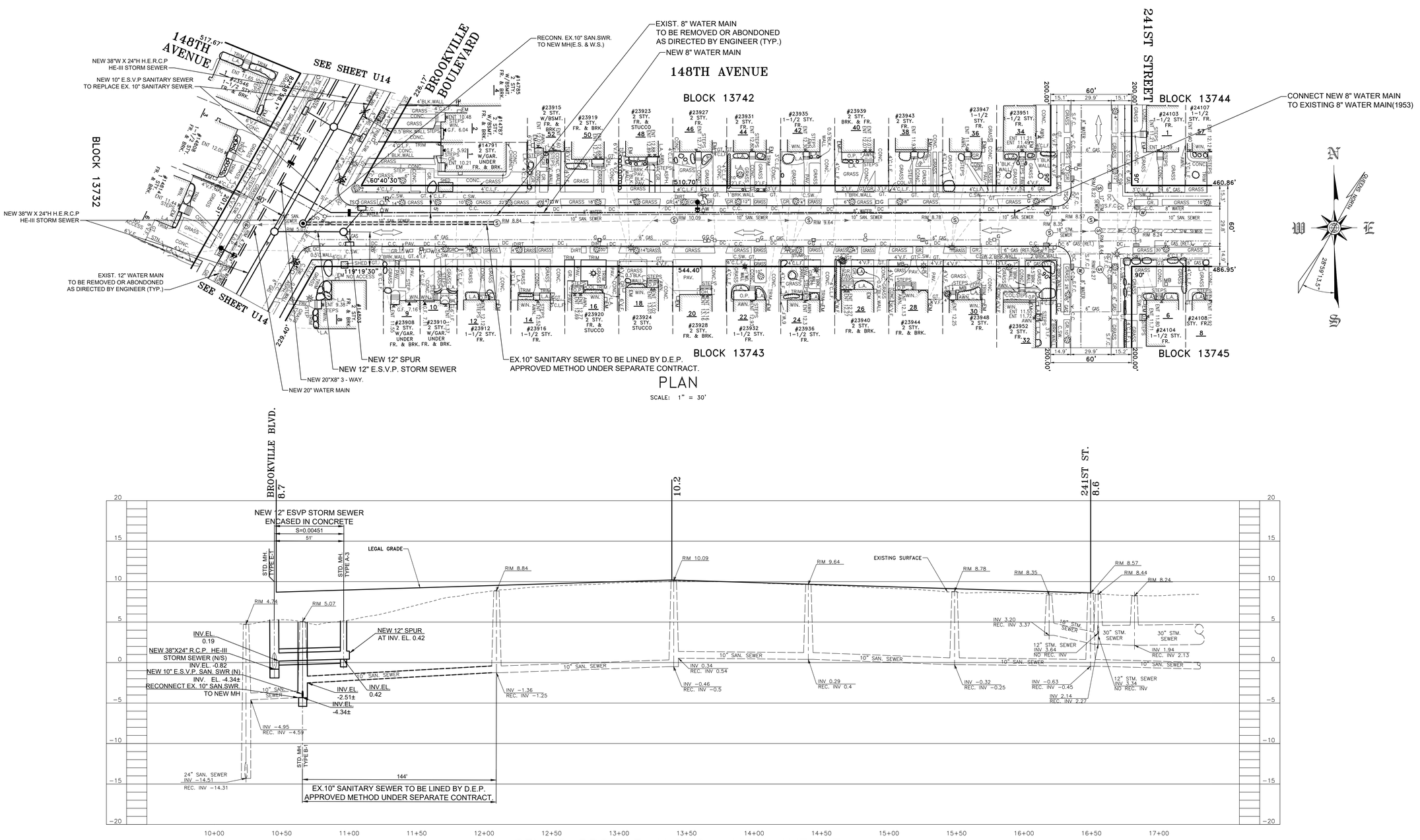
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 102 OF 148 | U23/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 - PROJECTS\HWQ724B\DDC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\98-102 - UTILITY PLAN SET 19-23_JH_HZ.dwg
Date/Time: Oct 01, 2021, 11:43am



SEWER PROFILE ALONG 148TH AVENUE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED Y.C.
DRAWN Y.C.
CHECKED M.S.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER–IN–CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH AVENUE
BETWEEN BROOKVILLE BOULEVARD AND 241ST STREET
UTILITY PLAN AND PROFILE

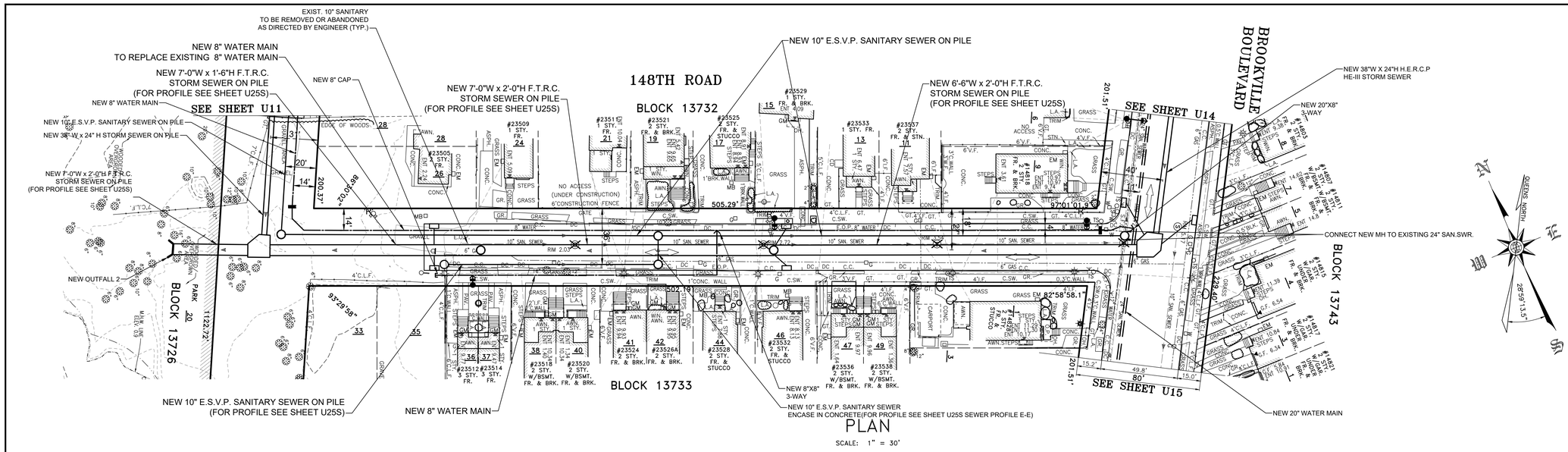
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 103 OF 148 | U24/40

IN-HOUSE DESIGN

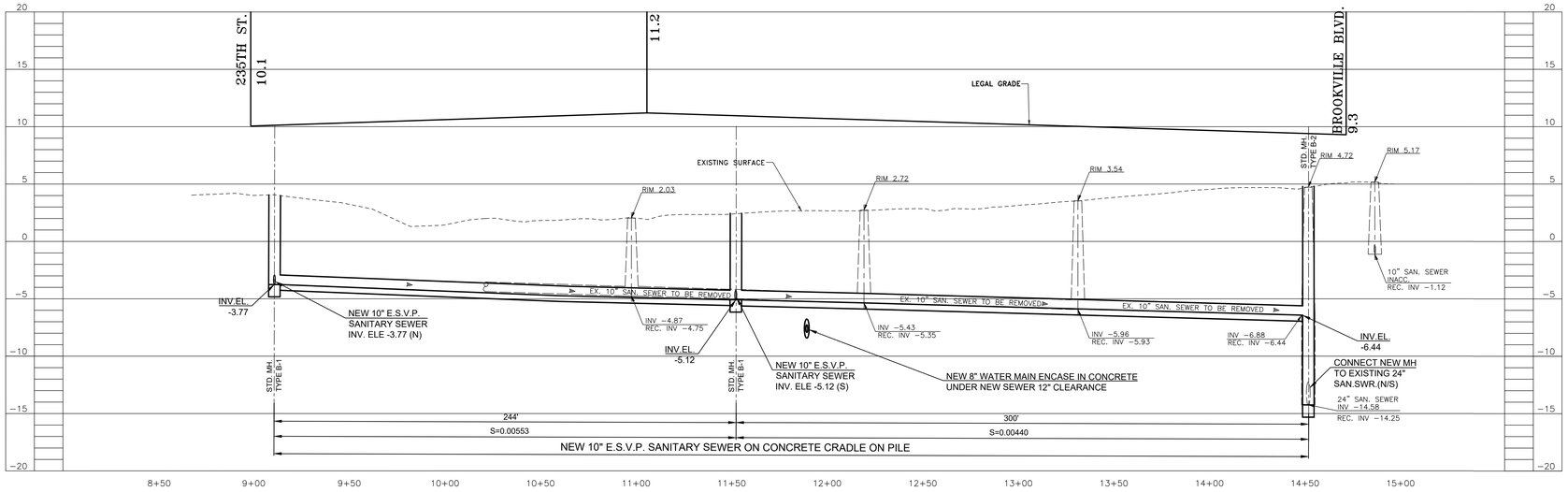
Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\103–110 Utility Plan and Profile U24–U28_ivan.dwg
Date/Time: Oct 01, 2021, 7:07am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



PLAN

SCALE: 1" = 30'



SEWER PROFILE ALONG 148TH ROAD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED Y.C.
DRAWN Y.C.
CHECKED M.S.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH ROAD
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD
UTILITY PLAN AND PROFILE

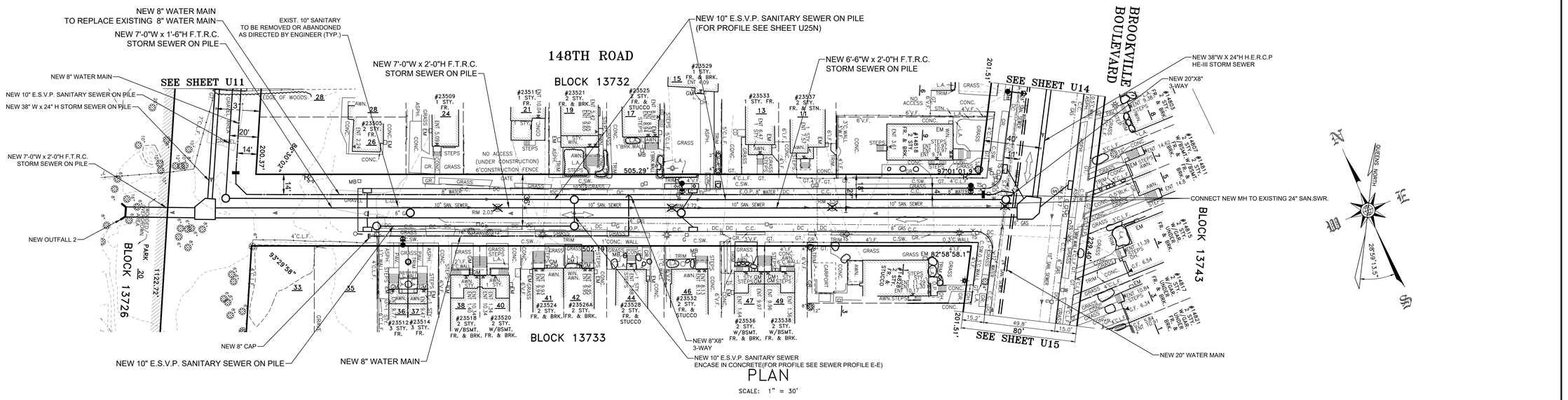
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

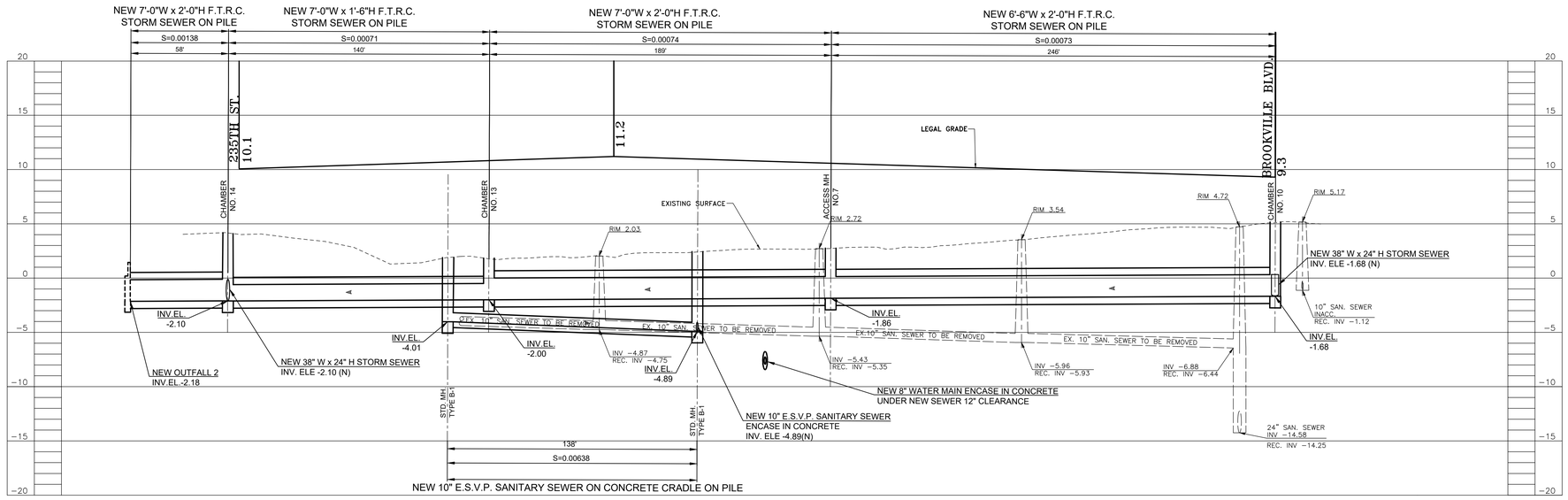
PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 104 OF 148 | U25N / 40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\103–110 Utility Plan and Profile U24–U28_Ivan.dwg
Date/Time: Oct 01, 2021, 7:09am





SEWER PROFILE ALONG 148TH ROAD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

SEWER PROFILE E-E
(SEE PLAN ON SH. U25N/U25S)

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED Y.C.
DRAWN Y.C.
CHECKED M.S.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER-IN-CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH ROAD
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 105 OF 148 | U25S / 40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 - PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\WM2 final drawings\103-110 Utility Plan and Profile U24-U28_ivan.dwg
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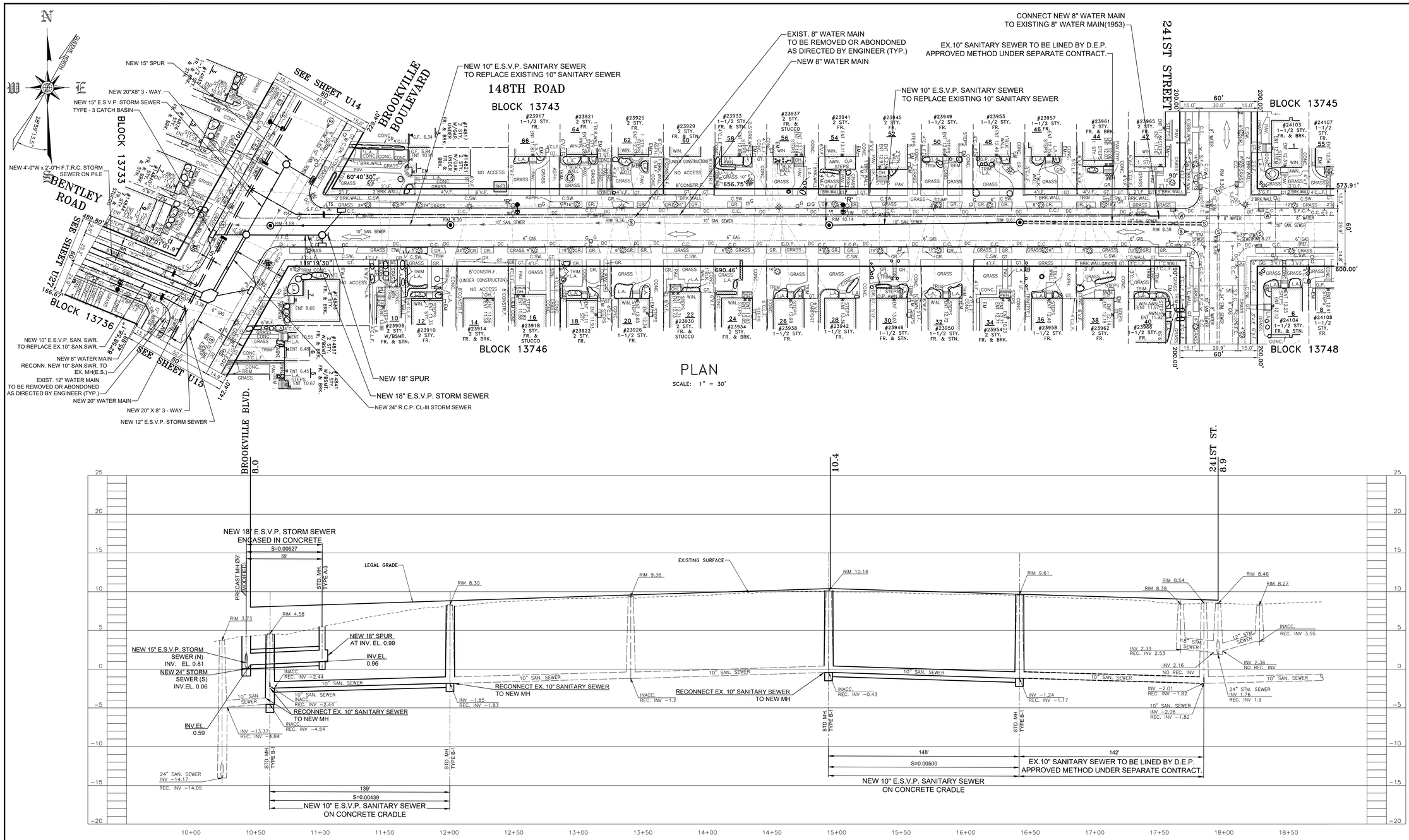

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

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		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
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SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH ROAD
BETWEEN BROOKVILLE BOULEVARD AND 241ST STREET
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 106 OF 148 | U26/40

IN-HOUSE DESIGN

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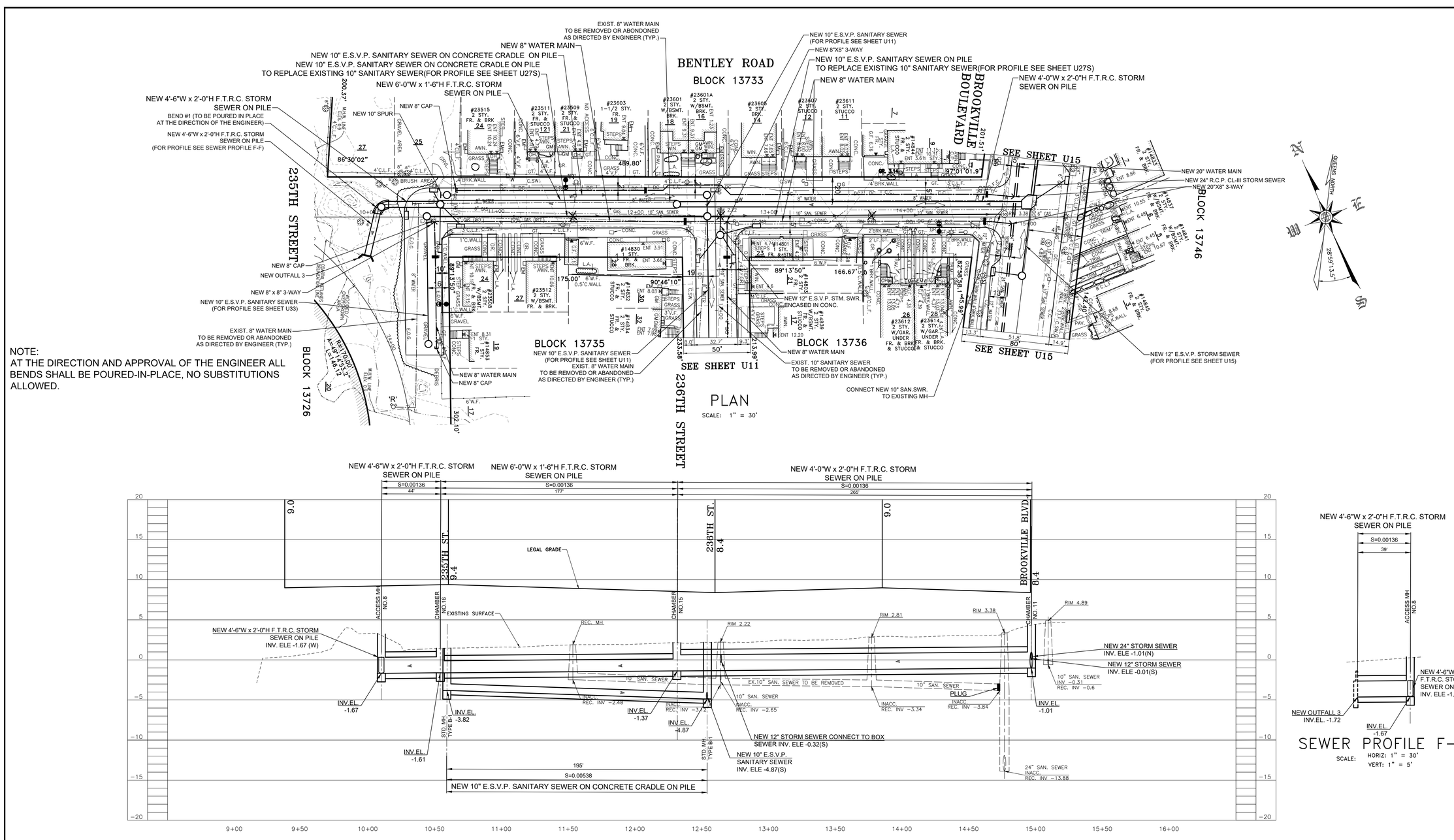
CAPITAL PROJECT HWQ724B. STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



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P.E. DIRECTOR

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BUREAU OF DESIGN

BENTELY ROAD
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 107 OF 148 | U27N/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

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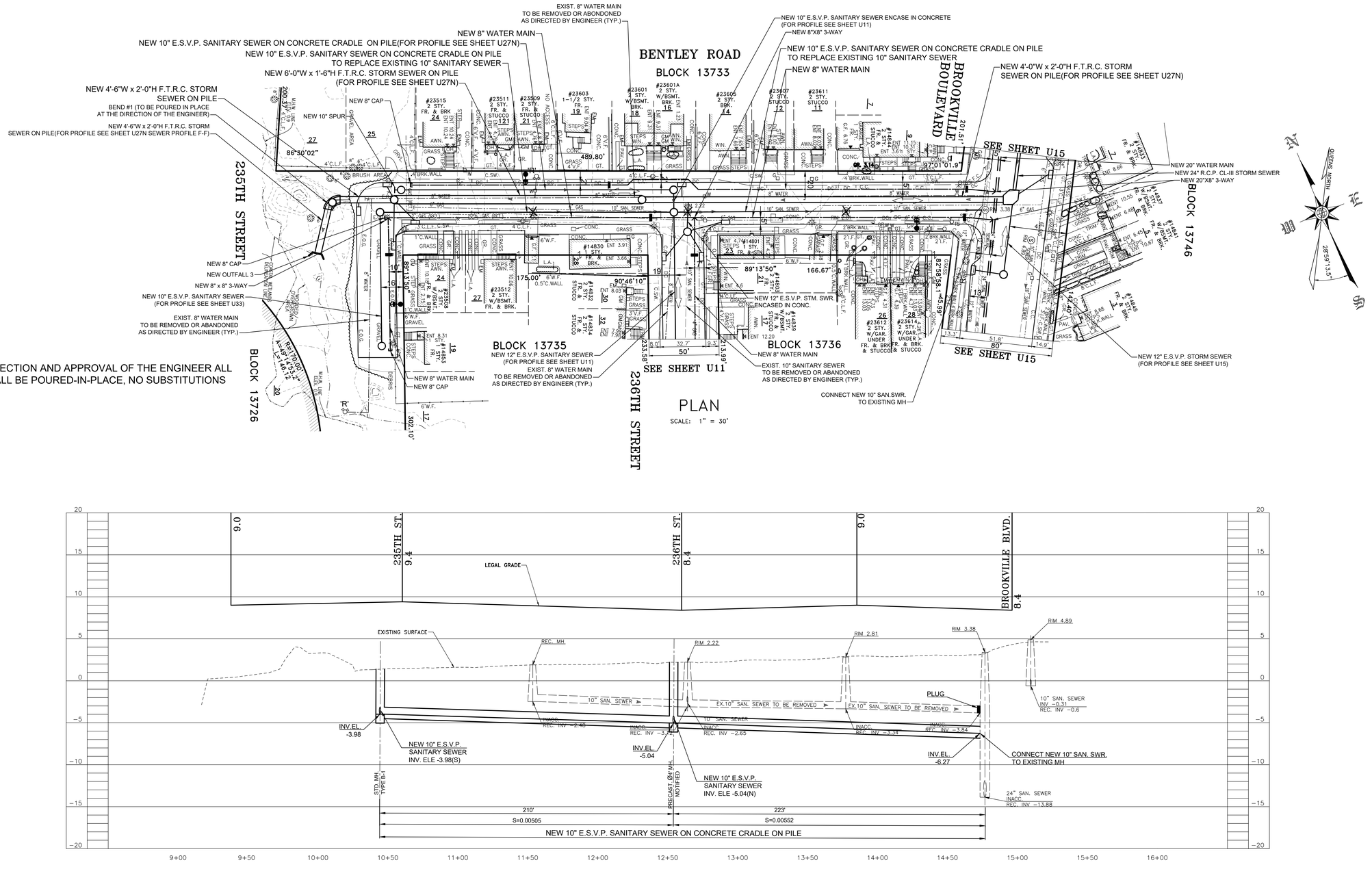

SEWER PROFILE ALONG BENTLEY ROAD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED Y.C.
DRAWN Y.C.
CHECKED M.S.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER–IN–CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BENTELY ROAD
BETWEEN 235TH STREET AND BROOKVILLE BOULEVARD
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 108 OF 148 | U27S/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\103–110 Utility Plan and Profile U24–U28_Ivan.dwg
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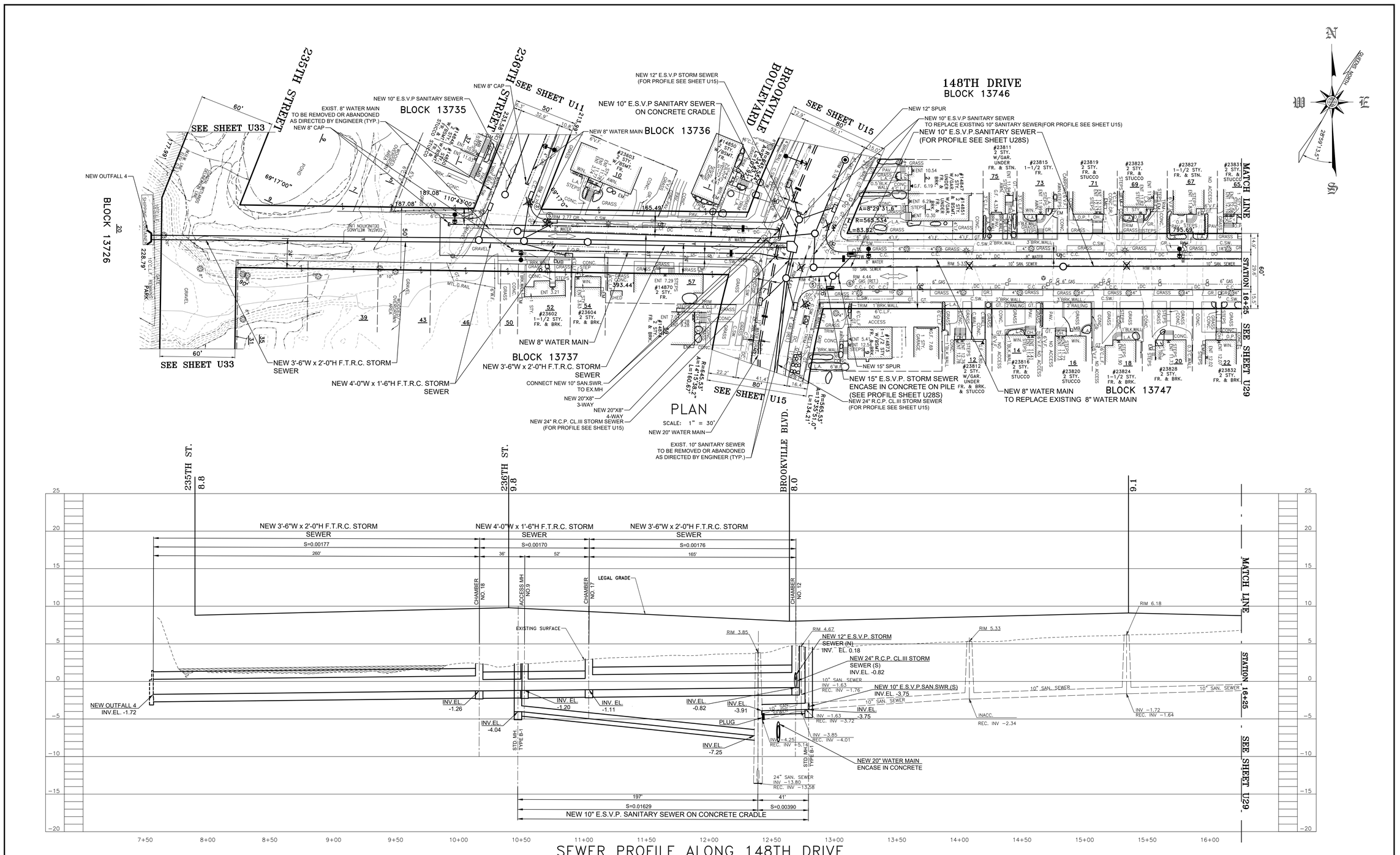
CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



SEWER PROFILE ALONG 148TH DRIVE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED Y.C.
DRAWN Y.C.
CHECKED M.S.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER–IN–CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH DRIVE
BETWEEN 236TH STREET AND 241ST STREET
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 109 OF 148 | U28N 40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\103–110 Utility Plan and Profile U24–U28_ivan.dwg
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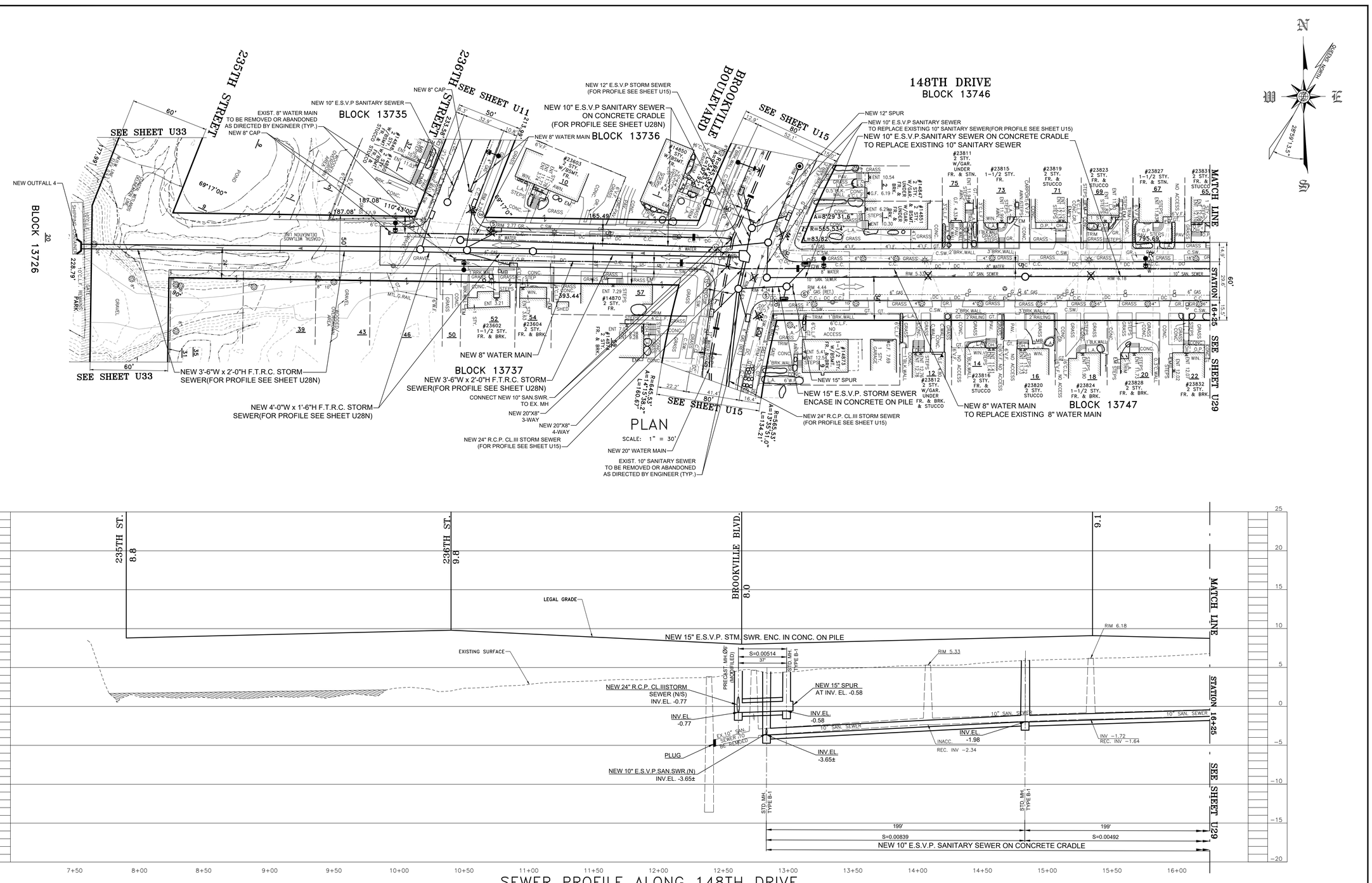

SEWER PROFILE ALONG 148TH DRIVE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS REVISIONS	BY	APPR'D

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM
LICENSED LAND SURVEYOR

DESIGNED Y.C.
DRAWN Y.C.
CHECKED M.S.

SCALE AS SHOWN
CADD FILE

P.E. ENGINEER–IN–CHARGE
P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH DRIVE
BETWEEN 236TH STREET AND 241ST STREET
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 110 OF 148 | U28S/40

IN-HOUSE DESIGN

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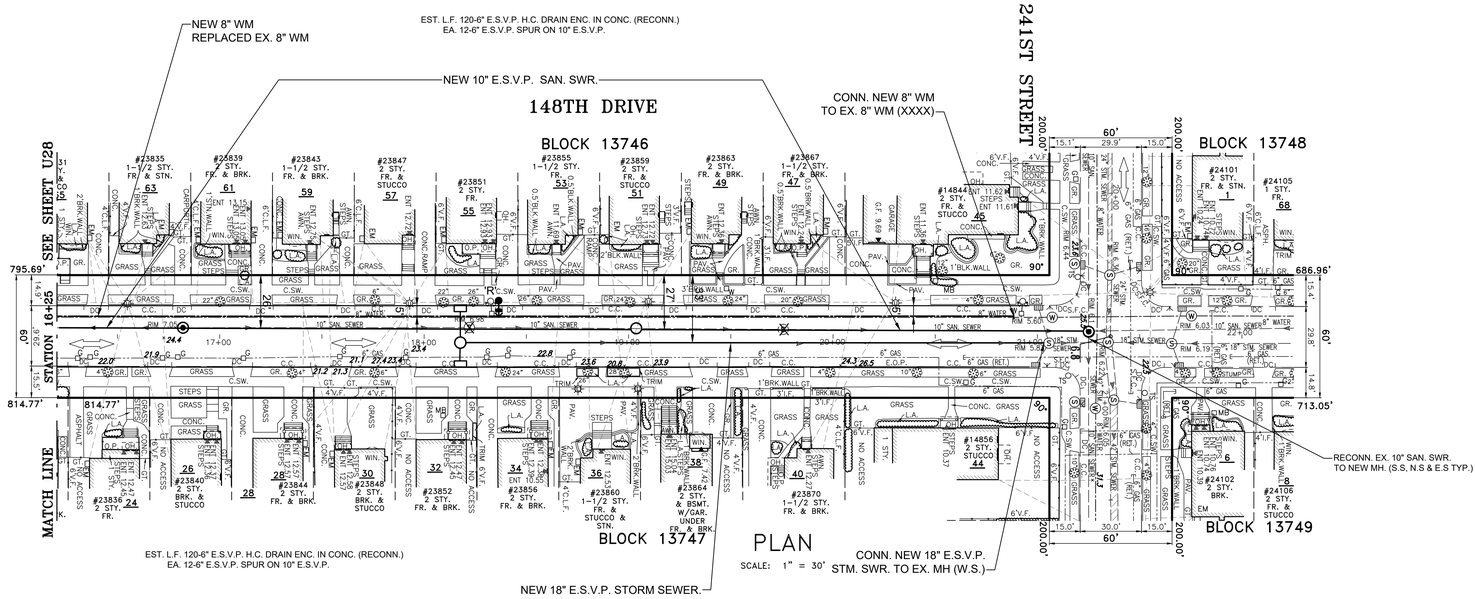
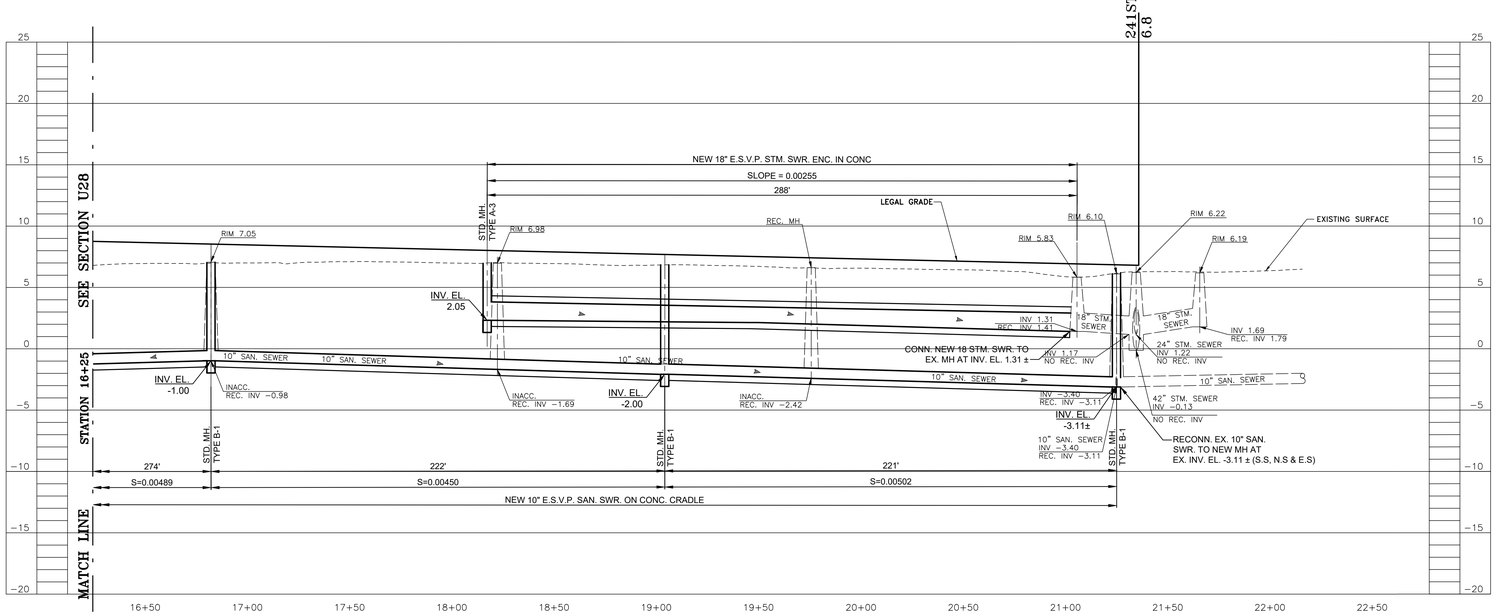
Date/Time: Oct 01, 2021, 7:14am

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG 148TH DRIVE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED M.K.
DRAWN M.K.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER–IN–CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

148TH DRIVE
BETWEEN 236TH STREET AND 241ST STREET
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 111 OF 148 | U29/40

IN-HOUSE DESIGN

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\111–114 U29–U32 UTILITY –MK.dwg
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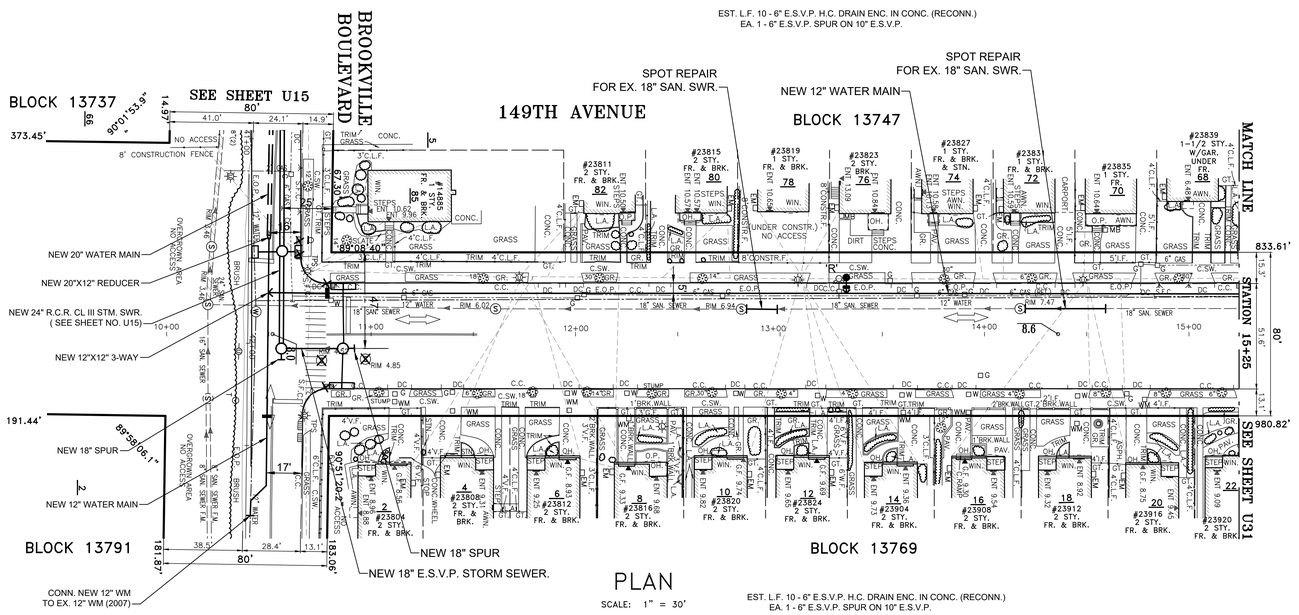
CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS



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P.E. DIRECTOR

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BUREAU OF DESIGN

149TH AVENUE
BETWEEN BROOKVILLE BOULEVARD AND 241ST STREET
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 112 OF 148 | U30/40

IN-HOUSE DESIGN

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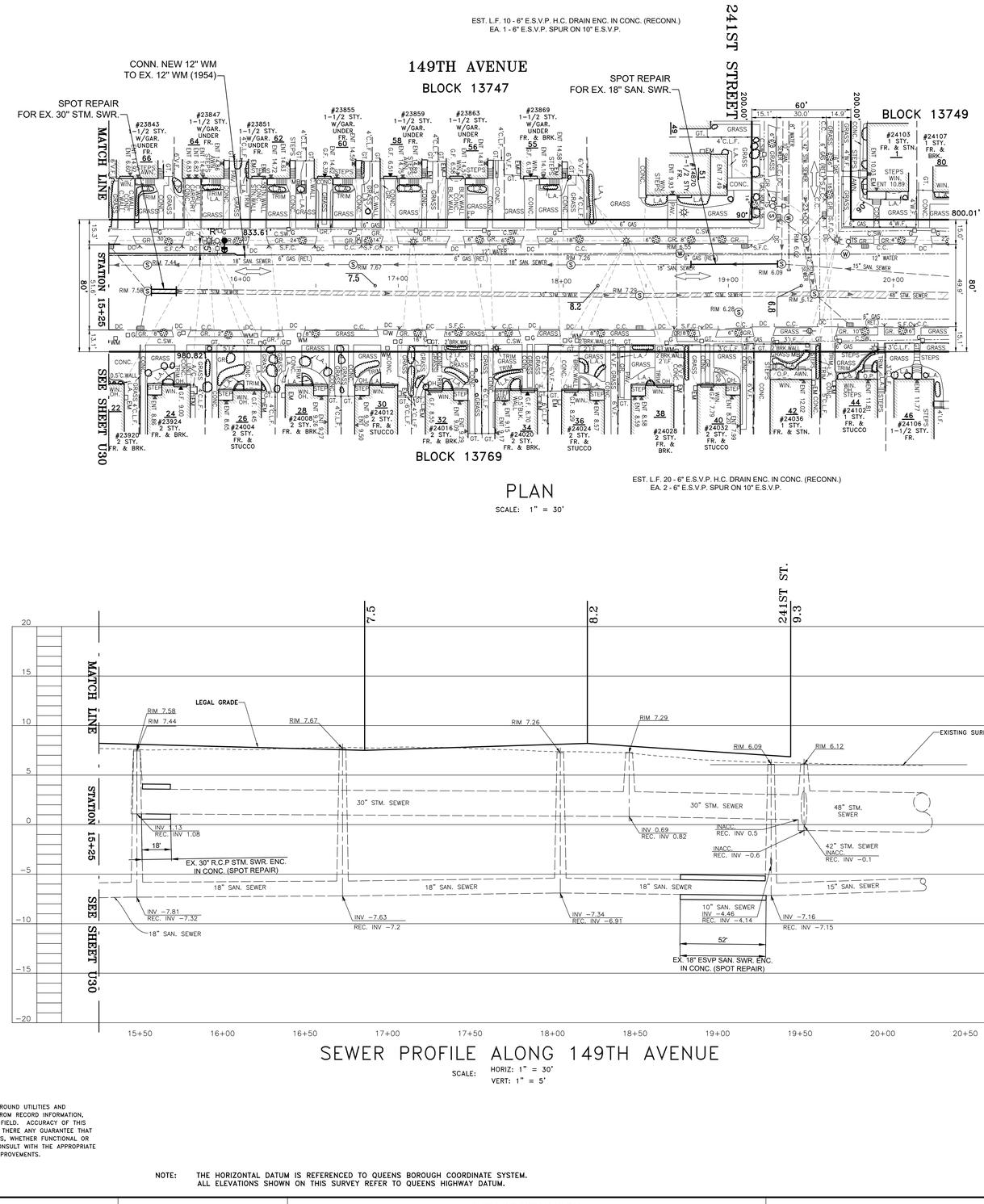
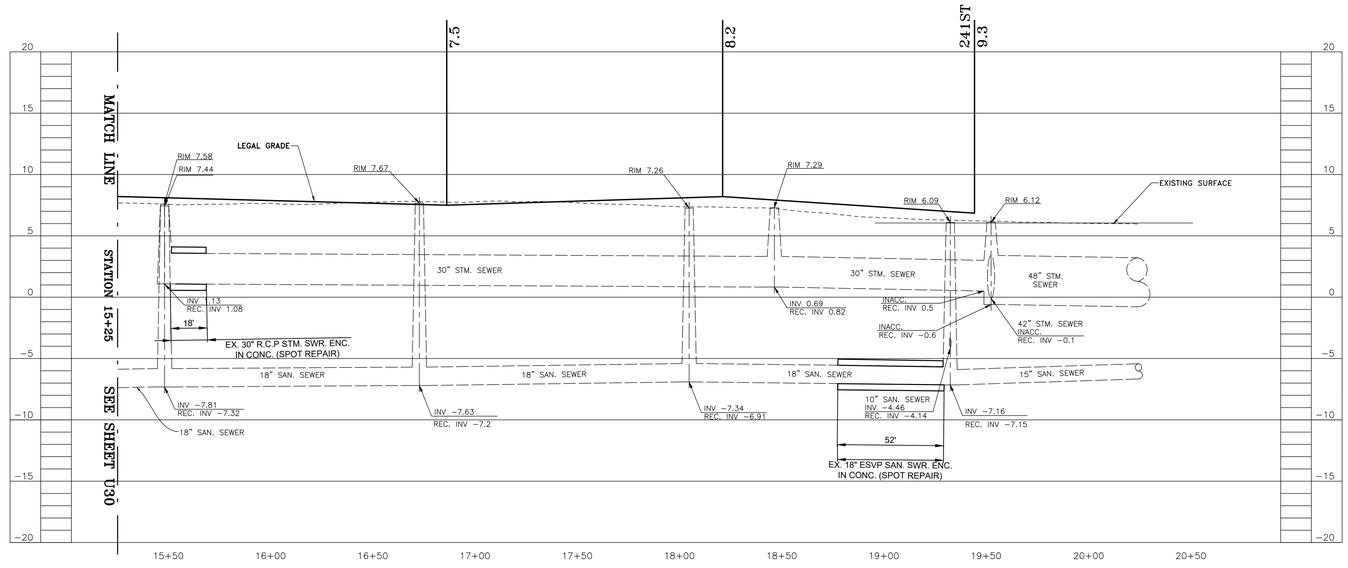
CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS





SEWER PROFILE ALONG 149TH AVENUE

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

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		REVISIONS		

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NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED M.K.
DRAWN M.K.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

149TH AVENUE
BETWEEN BROOKVILLE BOULEVARD AND 241ST STREET
UTILITY PLAN AND PROFILE

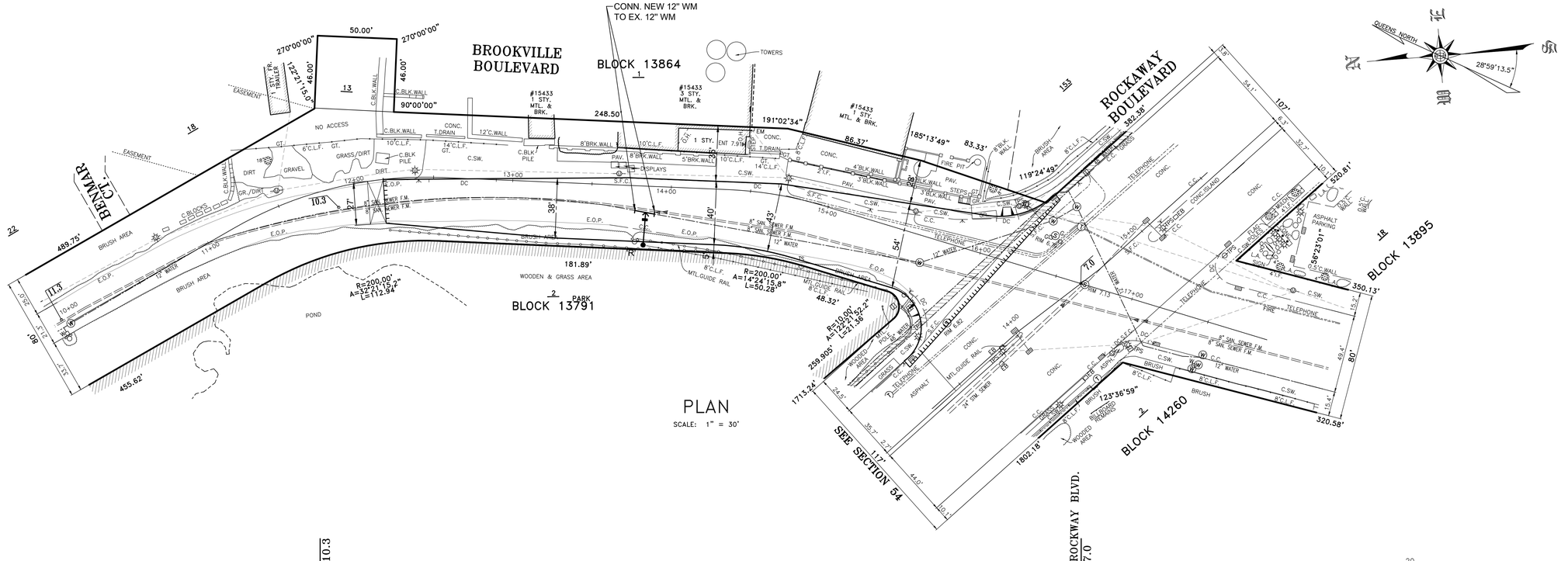
FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 113 OF 148 | U31/40

IN-HOUSE DESIGN

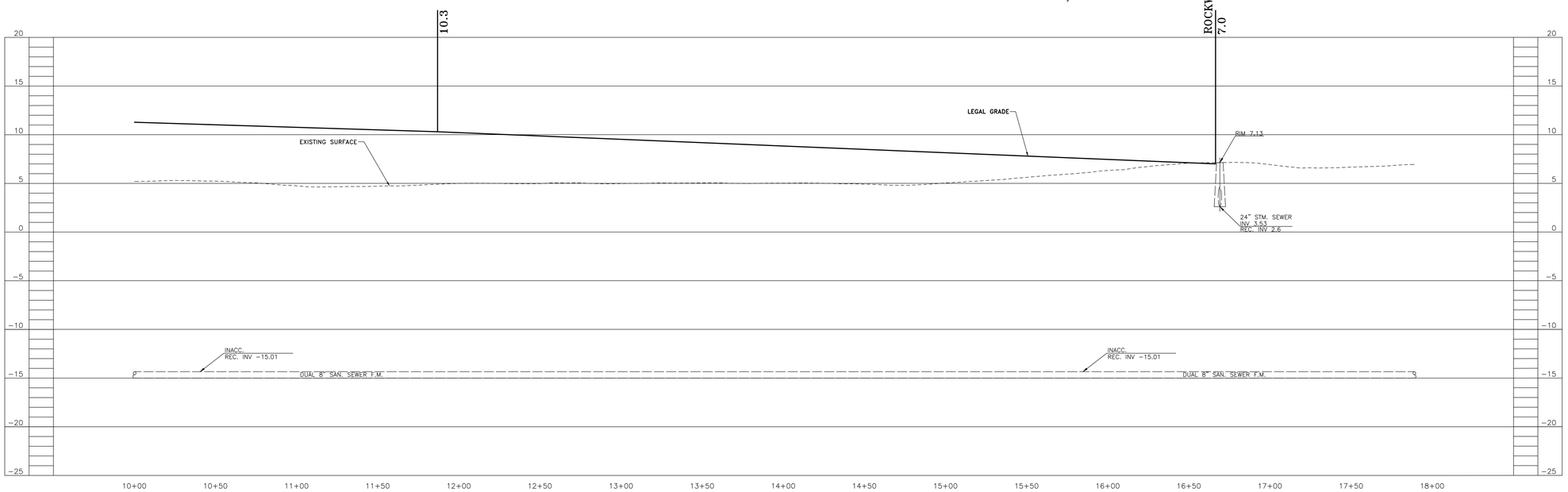
CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC In-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\111–114 U29–U32 UTILITY –MK.dwg
Date/Time: Oct 01, 2021, 7:18am



PLAN

SCALE: 1" = 30'



SEWER PROFILE ALONG BROOKVILLE BOULEVARD

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED M.K.
DRAWN M.K.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E. ENGINEER–IN–CHARGE

P.E. DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BROOKVILLE BOULEVARD & ROCKAWAY BOULEVARD
AND SURROUNDING AREAS

UTILITY PLAN

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 09/30/2021 | SHEET 114 OF 148 | U32/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B, STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DOC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\111–114 U29–U32 UTILITY –MK.dwg
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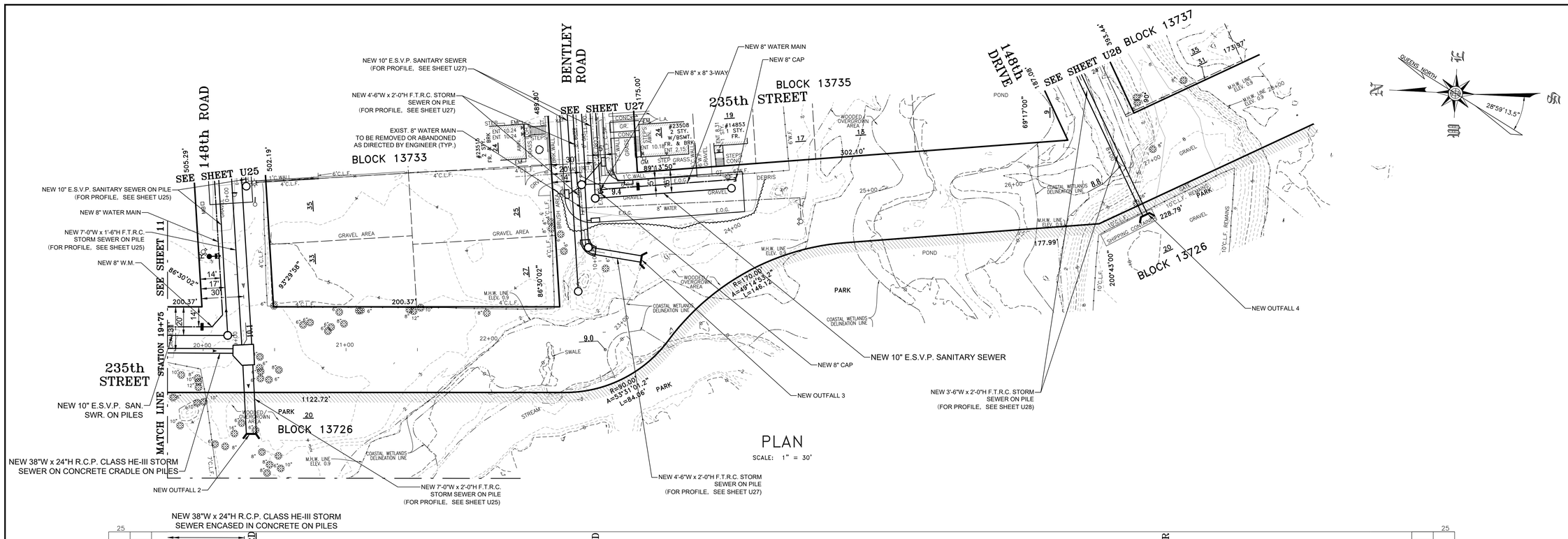
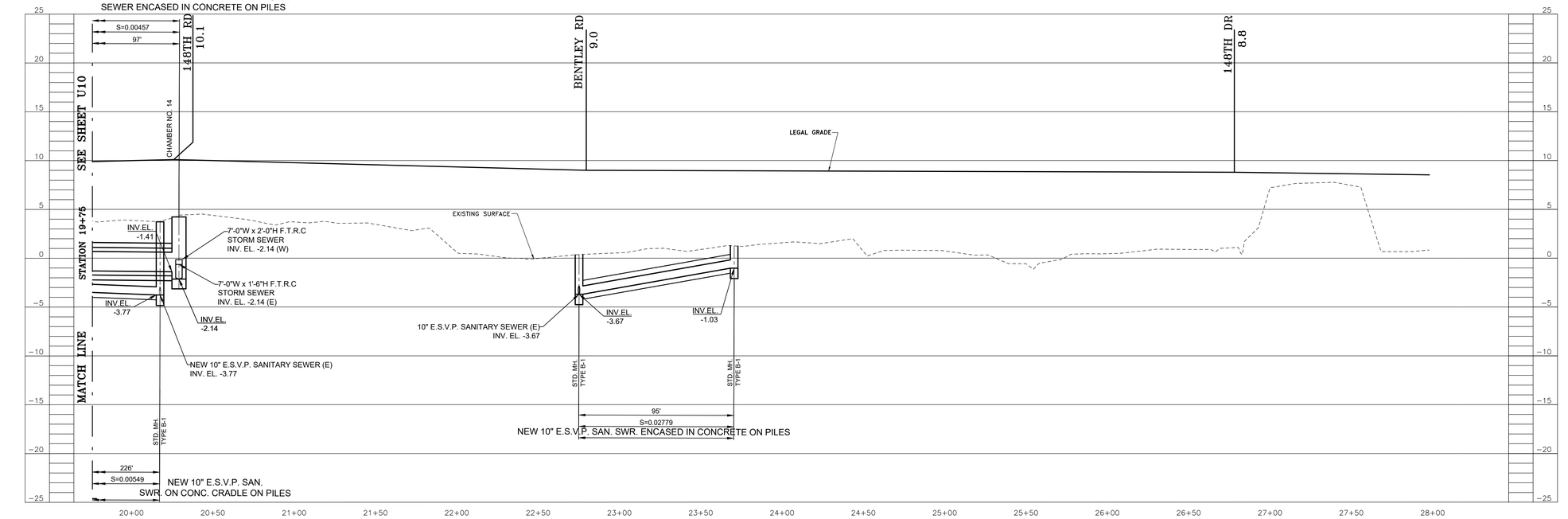




SEWER PROFILE ALONG 235TH STREET

SCALE: HORIZ: 1" = 30'
VERT: 1" = 5'

"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

"UNAUTHORIZED ALTERATIONS OR ADDITION TO A LAND SURVEYING DRAWING BEARING A LICENSED PROFESSIONAL LAND SURVEYOR'S SEAL IS A VIOLATION OF ARTICLE 145, SECTION 7209, PARAGRAPH 2 OF THE NEW YORK STATE EDUCATION LAW"

FIELD SURVEY WAS COMPLETED ON: SEPT 2019–JAN 2020

LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP. CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY DESIGN IMPROVEMENTS.

NOTE: THE HORIZONTAL DATUM IS REFERENCED TO QUEENS BOROUGH COORDINATE SYSTEM. ALL ELEVATIONS SHOWN ON THIS SURVEY REFER TO QUEENS HIGHWAY DATUM.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:
NAME OF SURVEYING FIRM

LICENSED LAND SURVEYOR

DESIGNED B.C.
DRAWN B.C.
CHECKED S.M.

SCALE AS SHOWN

CADD FILE

P.E.
ENGINEER–IN–CHARGE

P.E.
DIRECTOR

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

235TH STREET
BETWEEN 148TH ROAD AND 148TH DRIVE
UTILITY PLAN AND PROFILE

FOR THE CONSTRUCTION OF STORM, SANITARY SEWERS & WATER MAIN IN
BROOKVILLE-EDGEWOOD TRIANGLE AREA
BOROUGH OF QUEENS

PROJECT ID: HWQ724B | DATE: 9/30/2021 | SHEET 115 OF 148 | U33/40

IN-HOUSE DESIGN

CAPITAL PROJECT HWQ724B. STORM, SANITARY SEWER & WM IN STREET LOCATION, ETC. BOROUGH OF QUEENS

Sheet File: F:\DESIGN\ZLEUNG\000 – PROJECTS\HWQ724B\DDC in-house design\Preliminary Design (Queens Datum)\Preliminary Design\MM2 final drawings\76-86 115 UTILITY PLAN SET 1-10 33 -BC.dwg
Date/Time: Oct 01, 2021, 10:55am

APPENDIX B: BMP DRAWINGS SHOWING EXISTING AND PROPOSED CONDITIONS

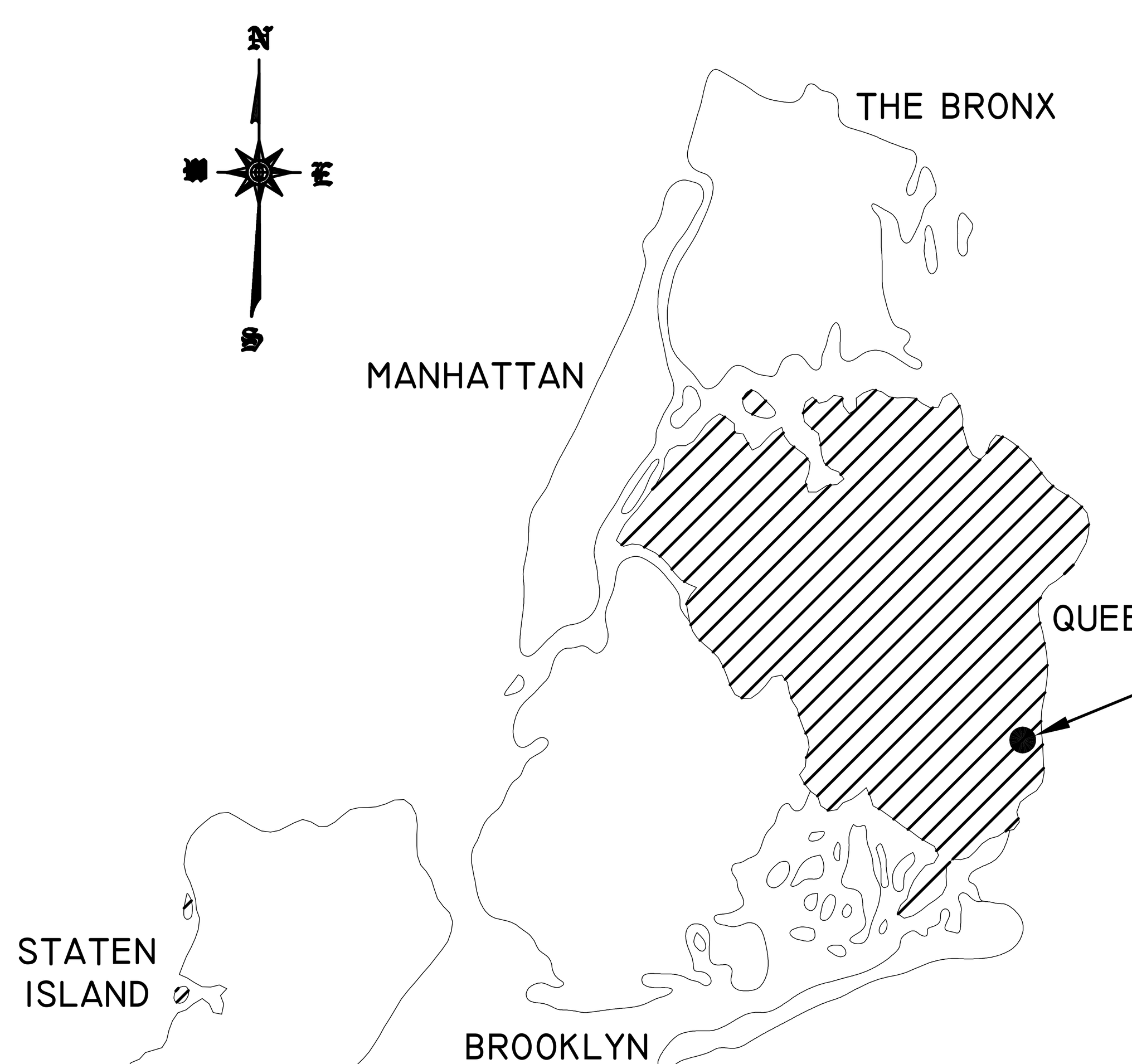
NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

DIVISION OF INFRASTRUCTURE
PROGRAM ADMINISTRATION - ENGINEERING SUPPORT UNIT

PROJECT ID: HWQ724B

CONSTRUCTION OF STORMWATER BEST MANAGEMENT PRACTICES
AND ASSOCIATED FACILITIES:
BROOKVILLE BOULEVARD AND EDGEWOOD TRAINGLE
QUEENS, NY

BOROUGH OF QUEENS
MAY 2019



LOCATION PLAN
N.T.S.

WARNING

IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER
DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE G-1

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

COVER SHEET WITH LOCATION MAP

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B
DATE: MAY 2019
SHEET 1 OF 29
G1/G2

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

PLOT DATE 05/03/2019 7:02P O:\9781-000-NYC\Drawings\9781-037 Triangle\CIVIL\G-1.dwg Last Saved By: RManley
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GENERAL NOTES

TOPOGRAPHIC NOTES:

1. ALL ELEVATIONS REFER TO THE BOROUGH OF QUEENS SEWER DATUM WHICH IS 2.725 FEET ABOVE MEAN SEA LEVEL AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY AT SANDY HOOK, NEW JERSEY.

2. EXISTING TOPOGRAPHIC CONDITIONS OF THE WORK SITE, AS SHOWN ON THE CONTRACT DRAWINGS, ARE OBTAINED FROM THE MOST CURRENT INFORMATION AVAILABLE BUT ARE NOT GUARANTEED TO BE ACCURATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY EXISTING AND PROPOSED GRADES.

UTILITY NOTES:

3. EXISTING UNDERGROUND AND OVERHEAD UTILITIES AS SHOWN OR DESCRIBED HEREIN HAVE BEEN DETERMINED BY STANDARD SURVEYING METHODS, FIELD RECONNAISSANCE AND AVAILABLE RECORDS. NEITHER THE EXACT LOCATION NOR THE INFORMATION OF THESE EXISTING UTILITIES IS GUARANTEED TO BE COMPLETE OR CORRECT.

4. EXCAVATION AND FILL IN AREAS WHERE UTILITIES ARE PRESENT SHALL BE DONE WITH UTMOST CARE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN EXISTING GAS, ELECTRIC, TELEPHONE, COMMUNICATIONS, SEWER, AND WATER LINES. ANY DAMAGE OR INJURY RESULTING FROM THIS OPERATION TO UTILITY LINES SHALL BE REPAIRED IMMEDIATELY AT NO COST TO THE CITY.

5. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH UTILITY COMPANIES AND AGENCIES PRIOR TO THE START OF WORK.

EROSION AND SEDIMENT CONTROL:

6. THE IMPACTS TO ADJACENT NATURAL AREAS DUE TO EROSION AND SEDIMENTATION FROM SEWER INSTALLATION AND ASSOCIATED BMP CONSTRUCTION WITHIN THIS CONTRACT SHALL NOT BE ANY GREATER DURING AND FOLLOWING LAND DISTURBANCE ACTIVITIES THAN UNDER PRE-CONSTRUCTION CONDITIONS.

7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED PRIOR TO BEGINNING ANY LAND DISTURBANCES AS REQUIRED BY THE SOIL EROSION AND SEDIMENTATION CONTROL PLAN. ALL RUNOFF FROM DISTURBED AREAS SHALL BE DIRECTED TO THE SEDIMENT CONTROL DEVICES. THESE DEVICES SHALL NOT BE REMOVED UNTIL THE DISTURBED LAND AREAS ARE STABILIZED.

8. ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL", 2005, OR LATEST EDITION.

GENERAL:

9. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL ITEMS REQUIRED TO COMPLETE ALL WORK ACCORDING TO PLANS AND SPECIFICATIONS.

10. SLOPE, X:Y, 

11. CONTRACTOR SHALL REPLACE ANY LOST OR DAMAGED SIGNS.

12. CONTRACTOR SHALL REPAINT ROADMARKINGS AFTER COMPLETION OF WORK.

13. BOULDER LOCATIONS AND QUANTITIES (AS SHOWN ON THE CONTRACT DRAWINGS) ARE APPROXIMATE. EXACT LOCATIONS AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

14. SIGN LOCATIONS (AS SHOWN ON THE CONTRACT DRAWINGS) ARE APPROXIMATE. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER.

DRAWING LIST

SHEET NO.	DRAWING NO.	SHEET TITLE
		GENERAL
1	G-1	COVER SHEET WITH LOCATION MAP
2	G-2	DRAWING INDEX, LEGEND, AND NOTES
		CIVIL
3	C-1	BMP-1 EROSION AND SEDIMENT CONTROL PLAN
4	C-2	BMP-2 EROSION AND SEDIMENT CONTROL PLAN
5	C-3	BMP-3 EROSION AND SEDIMENT CONTROL PLAN
6	C-4	BMP-1 FINAL SITE PLAN
7	C-5	BMP-2 FINAL SITE PLAN
8	C-6	BMP-3 FINAL SITE PLAN AND PROFILE
9	C-7	BMP-1 GEOMETRY PLAN
10	C-8	BMP-2 GEOMETRY PLAN
11	C-9	BMP-1 PROFILES AND CROSS-SECTION
12	C-10	BMP-2 PROFILES AND CROSS-SECTION
13	C-11	BMP-1 LANDSCAPING PLAN
14	C-12	BMP-2 LANDSCAPING PLAN
15	C-13	BMP-3 LANDSCAPING PLAN
16	C-14	LANDSCAPING DETAILS
17	D-1	EROSION AND SEDIMENT CONTROL DETAILS
18	D-2	EROSION AND SEDIMENT CONTROL DETAILS - CIVIL DETAILS
19	D-3	CIVIL DETAILS
20	D-4	CIVIL DETAILS CONTINUED
		STRUCTURAL
21	S-1	GENERAL NOTES AND ABBREVIATIONS
22	S-2	BMP 1 & BMP 2 CONCRETE HEADWALLS PLANS
23	S-3	BMP 1 & BMP 2 CONCRETE HEADWALLS SECTIONS AND DETAILS
24	S-4	BMP-1 WEIR CHAMBER PLANS
25	S-5	BMP 1 WEIR CHAMBER SECTIONS AND DETAILS
26	S-6	BMP-2 WEIR CHAMBER PLANS
27	S-7	BMP-2 WEIR CHAMBER SECTIONS AND DETAILS
28	SD-1	STANDARD DETAILS
29	SD-2	STANDARD DETAILS

LEGEND *

- CONSTRUCTION LIMITS
- CONSTRUCTION LIMIT FENCE
- REINFORCED SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- OBJECT TO BE REMOVED
- TREE TO BE REMOVED
- TREE TO BE SAVED
- REMOVABLE BOLLARD
- BOULDER
- GUIDE RAIL

ABBREVIATIONS

APP'D	APPROVED
ASPH	ASPHALT
B&B	BALLED & BURLAPPED
BMP	BEST MANAGEMENT PRACTICE
C to C	CENTER TO CENTER
CAL	CALIPER
CB	CATCH BASIN
CI	CAST IRON
CJ	CONSTRUCTION JOINT
CONC	CONCRETE
D_{50} or d_{50}	RIP-RAP SIZE
DIA	DIAMETER
DWG	DRAWING
EA	EACH
EF	EACH FACE
EL	ELEVATION
ESVP	EXTRA STRENGTH VITRIFIED PIPE
EW	EACH WAY
EXP	EXPAND OR EXPOSED
FTRC	FLAT TOP REINFORCED CONCRETE
GAL	GALLONS
GALV	GALVANIZED
H	HIGH
HP or HPT	HIGH POINT
HYD	HYDRANT
IN2	SQUARE INCHES
LF	LINEAR FEET
INV	INVERT
JT	JOINT
LBS	POUNDS
LL	LIVE LOAD
LP or LPT	LOW POINT
MAX	MAXIMUM
MH	MAN HOLE
MIN	MINIMUM or MINUTE
NTS	NOT TO SCALE
OC	ON CENTER
OPN'G	OPENING
REINF	REINFORCED
REQ'D	REQUIRED
ROW	RIGHT OF WAY
SF	SQUARE FEET
SPECS	SPECIFICATIONS
SQ	SQUARE
SS or SST	316 STAINLESS STEEL
T&B	TOP AND BOTTOM
TYP	TYPICAL
VERT	VERTICAL
W	WIDE
WS	WATER STOP
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
SF	SQUARE FEET
NYC DDC	NEW YORK CITY DEPARTMENT OF DESIGN AND CONSTRUCTION

* THIS LIST IS EXCLUSIVE OF PLANTING ZONES, WHICH ARE AS SHOWN ON THE INDIVIDUAL PLANTING PLANS.

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

_____ P.E.
HAZEN AND SAWYER PROJECT MANAGER

_____
DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE G-2

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

DRAWING INDEX, LEGEND, AND NOTES

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 2 OF 29 | G2/G2

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

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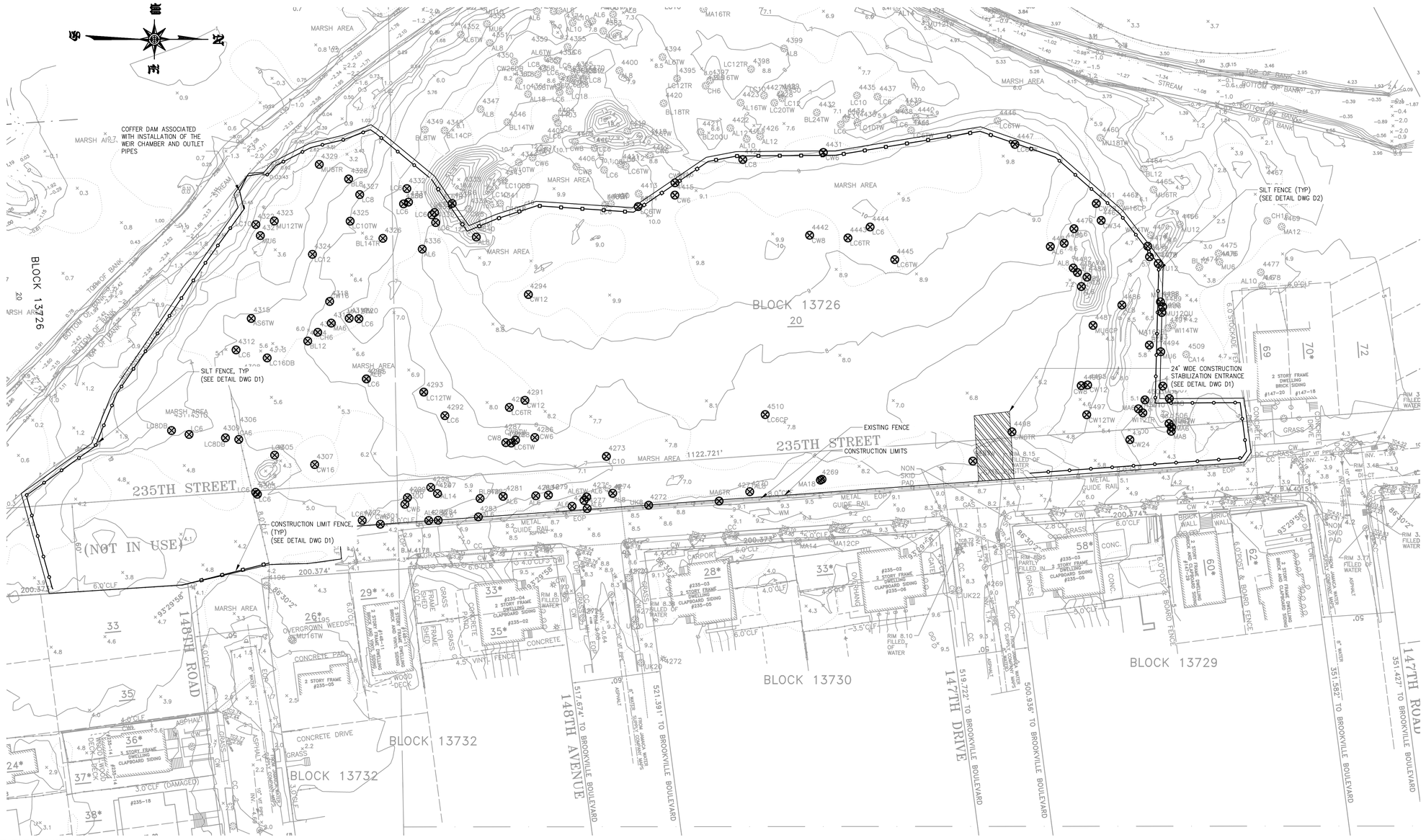

PLAN

SCALE: 1" = 30'

1"=30'-0" 30 15 0 30'

SUGGESTED SEQUENCE OF CONSTRUCTION

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DRAWINGS, AND UPON APPROVAL OF THE PROJECT ENGINEER AND THE DDC REPRESENTATIVE. STAKE OUT AND RECEIVE APPROVAL FROM THE DDC REPRESENTATIVE FOR THE LIMITS OF WORK BEFORE BEGINNING CLEARING. THE DDC REPRESENTATIVE SHALL IDENTIFY ALL TREES TO RECEIVE TREE GUARDS AND GIVE APPROVAL FOR ALL TREES IDENTIFIED FOR REMOVAL BEFORE TREE REMOVAL OPERATIONS BEGIN.

A) INSTALL STABILIZED CONSTRUCTION ENTRANCE AT 235TH ST. INTERIOR ACCESS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
B) INSTALL PERIMETER EROSION CONTROL MEASURES, INCLUDING REINFORCED SILT FENCES, CONSTRUCTION LIMIT FENCES AND TREE GAURDS. EXISTING FENCE SHALL REMAIN FOR USE AS CONSTRUCTION FENCE. PAYMENT SHALL ONLY BE MADE IF NEW CONSTRUCTION FENCE IS INSTALLED.
C) PERFORM GENERAL SITE CLEARING, GRUBBING AND REMOVALS
D) PRIOR TO INSTALLATION OF THE OUTLET STRUCTURE INSTALL A COFFER DAM, OR OTHER APPROVED METHOD FOR WORK WITHIN THE MARSH AREA.
E) INSTALL A SEDIMENT TRAP OR APPROVED EQUAL. A SEDIMENT TRAP SHALL BE USED TO TREAT THE DEWATERING EFFLUENT. IF THE SEDIMENT TRAP NEEDS TO BE PLACED OUTSIDE THE WORK AREA SHOWN, THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE ENGINEER PRIOR TO PLACEMENT AND THE NECESSARY PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED FOR THE NEW LOCATION. CONSTRUCTION MATERIALS INCLUDING BUT NOT LIMITED TO DEBRIS, SEDIMENTS AND FRESH CONCRETE SHALL BE PREVENTED FROM ENTERING THE WATERWAYS.
F) INSTALL APPROVED DEWATERING MEASURES, THE WORK AREA FOR THE INSTALLATION OF STRUCTURES SHALL NOT CONTAIN STANDING WATER.
G) MAINTAIN PUMPS ON SITE TO PUMP WATER FROM WORK AREAS DURING STORM EVENTS. DURING LARGE STORMS, ALLOW DEWATERING MEATURS TO OVERTOP AND DEWATER AS NEEDED PRIOR TO RESUMING CONSTRUCTION.
H) INSTALL STORM SEWERS
 1) INSTALL OUTFALL STRUCTURES
 2) INSTALL ROADWAY STORM SEWERS
I) PERFORM GRADING:
 1) MICROPOOL AT THE OUTLET STRUCTURE,
 2) BMP GRADING AND ACCESS ROADWAY
 3) INLET FOREBAYS
J) ONCE COMPLETE, INSTALL STABILIZATION MEASURES SUCH AS JUTE MESH OR EQUIVALENT AND SEEDING
K) INSTALL PERIMETER TREATMENT SUCH AS FENCING, GUARDRAILS AND SIGNS.
L) INSTALL LANDSCAPING
M) REMOVE EROSION CONTROL MEASURES

NOTES:
1. CONTRACTOR TO PROVIDE ROOT PROTECTION WITHIN THE TREE DRIP LINE FOR ALL TREES TO REMAIN.
2. TREES OUTSIDE THE LIMIT OF DISTURBANCE SHALL NOT BE DISTURBED AND SHALL BE REPLACED AT THE CONTRACTORS EXPENSE IF THEY ARE DAMAGED

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-1

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-1 EROSION AND SEDIMENT CONTROL PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 3 OF 29 | C1 C14

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE: 05/03/2019 7:04P D:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\C-1 BMP-1 Clearing – Erosion and Sediment Control Plan.dwg Last Saved By: RManley
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PLOT DATE 05/03/2019 7:05P O:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\C-2 BMP-2 Clearing - Erosion and Sediment Control Plan.dwg Last Saved By: RManley
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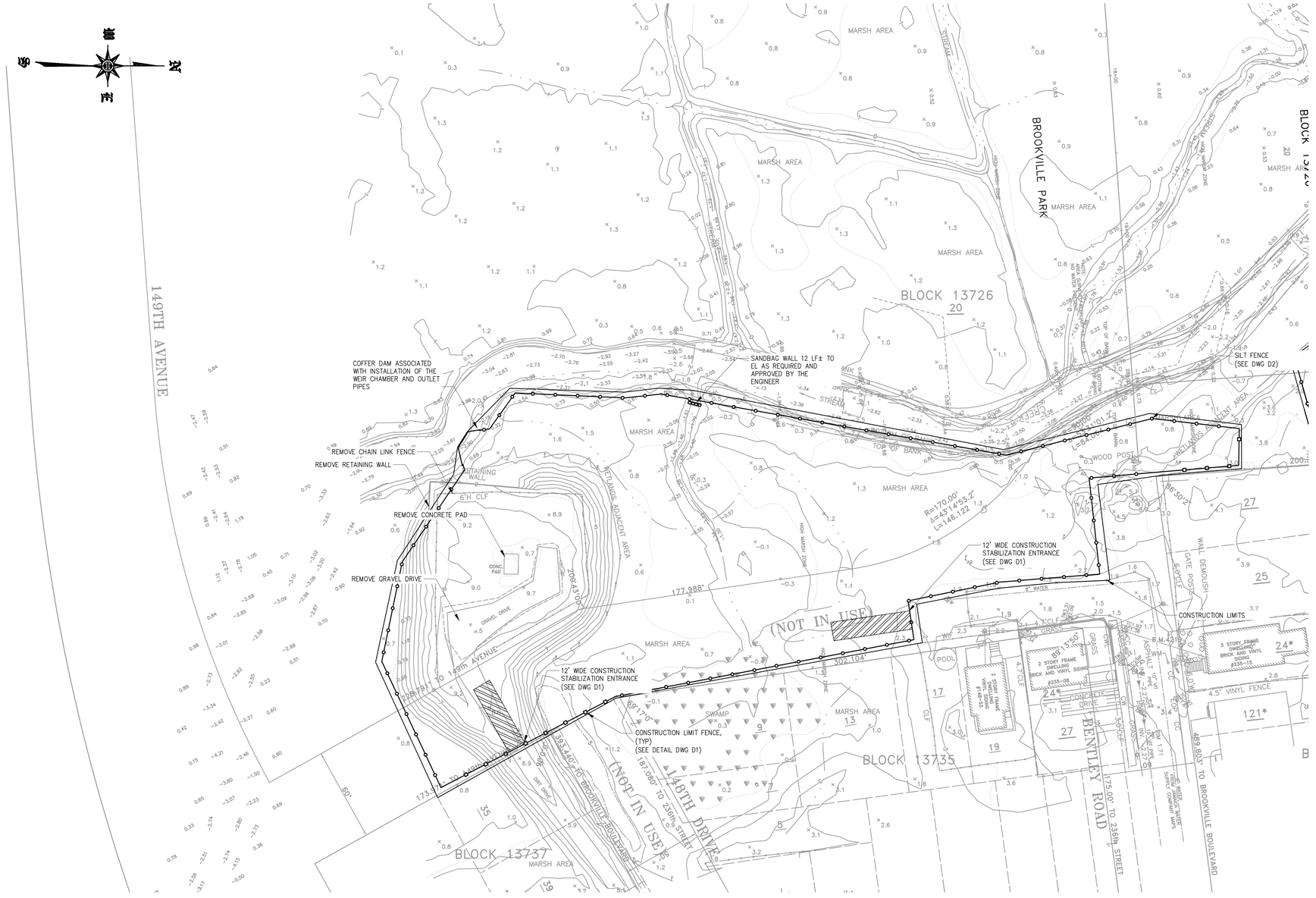


PLAN

SCALE: 1" = 30'

1"=30'-0" 30 15 0 30'

SUGGESTED SEQUENCE OF CONSTRUCTION

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DRAWINGS, AND UPON APPROVAL OF THE PROJECT ENGINEER AND THE DDC REPRESENTATIVE. STAKE OUT AND RECEIVE APPROVAL FROM THE DDC REPRESENTATIVE FOR THE LIMITS OF WORK BEFORE BEGINNING CLEARING. THE DDC REPRESENTATIVE SHALL IDENTIFY ALL TREES TO RECEIVE TREE GUARDS AND GIVE APPROVAL FOR ALL TREES IDENTIFIED FOR REMOVAL BEFORE TREE REMOVAL OPERATIONS BEGIN.

- A) INSTALL STABILIZED CONSTRUCTION ENTRANCE AT 148TH DRIVE AND BENTLEY RD. INTERIOR ACCESS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- B) INSTALL PERIMETER EROSION CONTROL MEASURES, INCLUDING REINFORCED SILT FENCES, CONSTRUCTION LIMIT FENCES AND TREE GAURDS.
- C) PERFORM GENERAL SITE CLEARING, GRUBBING AND REMOVALS
- D) PRIOR TO INSTALLATION OF THE STRUCTURE INSTALL A COFFER DAM, OR OTHER APPROVED METHOD FOR WORK WITHIN THE MARSH AREA.
- E) INSTALL A SEDIMENT TRAP OR APPROVED EQUAL. A SEDIMENT TRAP SHALL BE USED TO TREAT THE DEWATERING EFFLUENT. IF THE SEDIMENT TRAP NEEDS TO BE PLACED OUTSIDE THE WORK AREA SHOWN, THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE ENGINEER PRIOR TO PLACEMENT AND THE NECESSARY PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED FOR THE NEW LOCATION. CONSTRUCTION MATERIALS INCLUDING BUT NOT LIMITED TO DEBRIS, SEDIMENTS AND FRESH CONCRETE SHALL BE PREVENTED FROM ENTERING THE WATERWAYS.
- F) INSTALL APPROVED DEWATERING MEASURES. THE WORK AREA FOR THE INSTALLATION OF STRUCTURES SHALL NOT CONTAIN STANDING WATER.
- G) MAINTAIN PUMPS ON SITE TO PUMP WATER FROM WORK AREAS DURING STORM EVENTS. DURING LARGE STORMS, ALLOW DEWATERING MEATURS TO OVERTOP AND DEWATER AS NEEDED PRIOR TO RESUMING CONSTRUCTION.
- H) INSTALL STORM SEWERS
  - 1) INSTALL OUTFALL STRUCTURES
  - 2) INSTALL ROADWAY STORM SEWERS
- I) PERFORM GRADING:
  - 1) MICROPOOL AT THE OUTLET STRUCTURE
  - 2) BMP GRADING AND ACCESS ROADWAY
  - 3) INLET FOREBAYS
- J) ONCE COMPLETE, INSTALL STABILIZATION MEASURES SUCH AS JUTE MESH OR EQUIVALENT AND SEEDING
- K) INSTALL PERIMETER TREATMENT SUCH AS FENCING, GUARDRAILS AND SIGNS.
- L) INSTALL LANDSCAPING
- M) REMOVE EROSION CONTROL MEASURES

WARNING

IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

______________________ P.E.
HAZEN AND SAWYER PROJECT MANAGER   DATE: ________

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-2

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

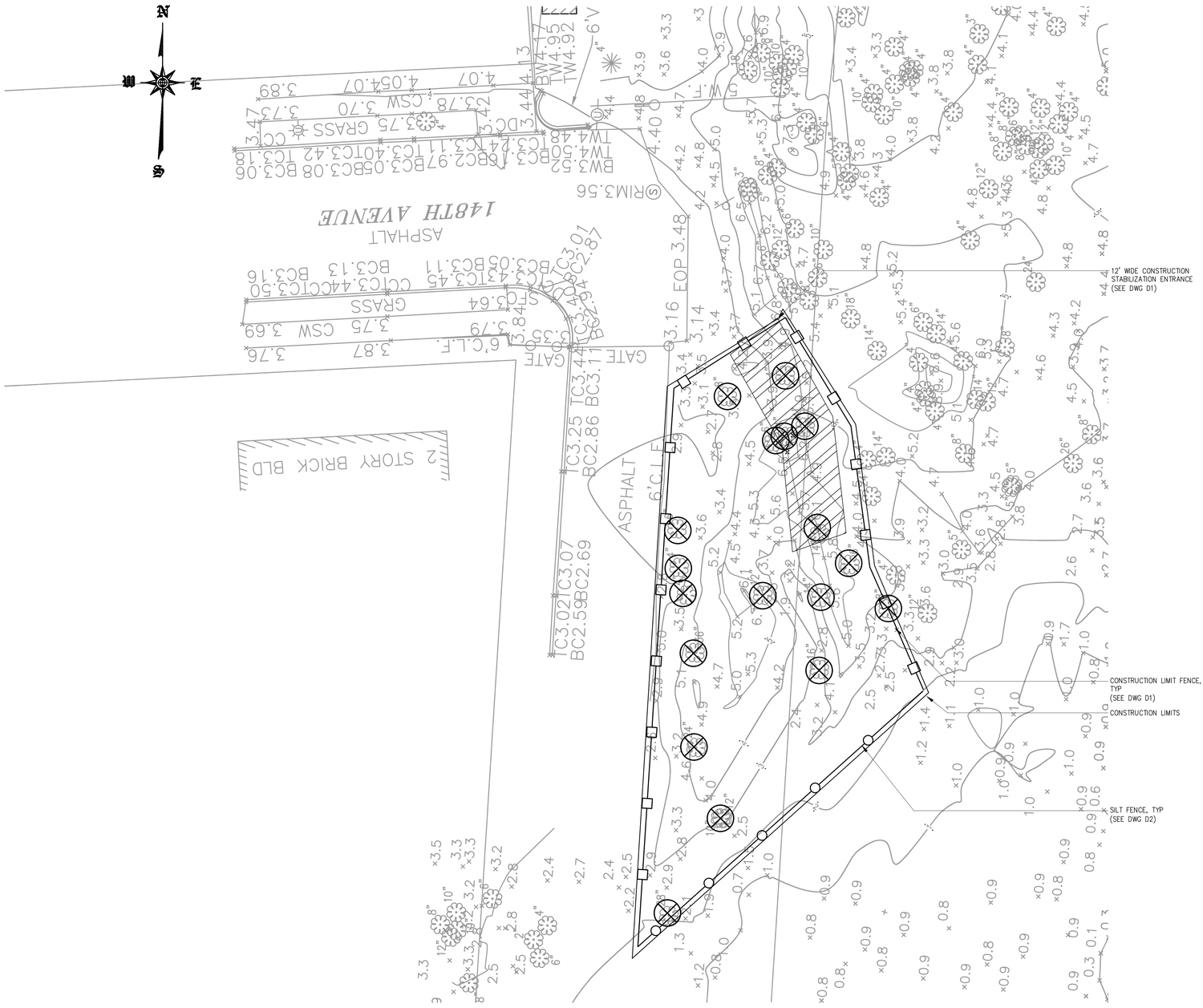
BMP-2 EROSION AND SEDIMENT CONTROL PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B
DATE: MAY 2019
SHEET 4 OF 29
C2/C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN



PLAN

SCALE: 1" = 10'

1"=10'-0" 10 5 0 10'

SUGGESTED SEQUENCE OF CONSTRUCTION

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DRAWINGS, AND UPON APPROVAL OF THE PROJECT ENGINEER AND THE DDC REPRESENTATIVE. STAKE OUT AND RECEIVE APPROVAL FROM THE DDC REPRESENTATIVE FOR THE LIMITS OF WORK BEFORE BEGINNING CLEARING. THE DDC REPRESENTATIVE SHALL IDENTIFY ALL TREES TO RECEIVE TREE GUARDS AND GIVE APPROVAL FOR ALL TREES IDENTIFIED FOR REMOVAL BEFORE TREE REMOVAL OPERATIONS BEGIN.

A) CONSTRUCT ROADWAY
B) INSTALL STABILIZED CONSTRUCTION ENTRANCE AT 148TH AVENUE. INTERIOR ACCESS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
C) INSTALL PERIMETER EROSION CONTROL MEASURES, INCLUDING REINFORCED SILT FENCES, CONSTRUCTION LIMIT FENCES AND TREE GAURDS.
D) PERFORM GENERAL SITE CLEARING, GRUBBING AND REMOVALS
E) INSTALL DEWATERING AS REQUIRED BASED ON FIELD VERIFIED GROUNDWATER ELEVATIONS.
   A) INSTALL A SEDIMENT TRAP OR APPROVED EQUAL. A SEDIMENT TRAP SHALL BE USED TO TREAT THE DEWATERING EFFLUENT. IF THE SEDIMENT TRAP NEEDS TO BE PLACED OUTSIDE THE WORK AREA SHOWN, THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE ENGINEER PRIOR TO PLACEMENT AND THE NECESSARY PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED FOR THE NEW LOCATION. CONSTRUCTION MATERIALS INCLUDING BUT NOT LIMITED TO DEBRIS, SEDIMENTS AND FRESH CONCRETE SHALL BE PREVENTED FROM ENTERING THE WATERWAYS.
   B) INSTALL APPROVED DEWATERING MEASURES.THE WORK AREA FOR THE INSTALLATION OF STRUCTURES SHALL NOT CONTAIN STANDING WATER.
   C) MAINTAIN PUMPS ON SITE TO PUMP WATER FROM WORK AREAS DURING STORM EVENTS. DURING LARGE STORMS, ALLOW DEWATERING MEATURS TO OVERTOP AND DEWATER AS NEEDED PRIOR TO RESUMING CONSTRUCTION.
F) PERFORM GRADING:
   A) SITE GRADING
   B) STILLING BASIN
G) ONCE COMPLETE, INSTALL STABILIZATION MEASURES SUCH AS JUTE MESH OR EQUIVALENT AND SEEDING
H) INSTALL PERIMETER TREATMENT SUCH AS FENCING, GUARDRAILS AND SIGNS.
I) INSTALL LANDSCAPING

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

_____ P.E.
HAZEN AND SAWYER PROJECT MANAGER

_____
DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-6

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-3 EROSION AND SEDIMENT CONTROL PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 5 OF 29 | C3 / C14

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE: 05/03/2019 7:06P D:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\C-3 BMP-3 Clearing - Erosion and Sediment Control Plan.dwg Last Saved By: RMonley
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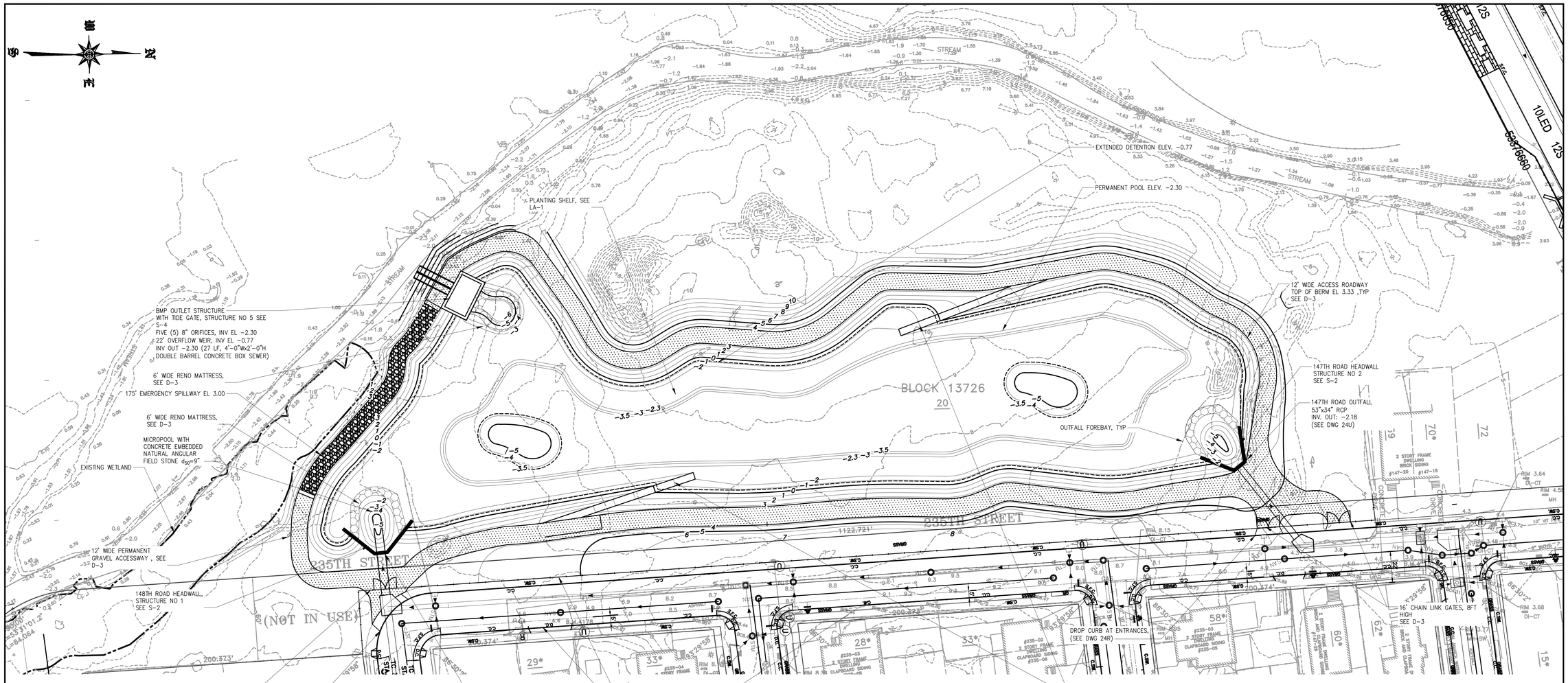

PLAN

SCALE: 1" = 30'

1"=30'-0" 30 15 0 30'

WARNING

IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:
P.E.
HAZEN AND SAWYER PROJECT MANAGER
DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-4

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-1
FINAL SITE PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND
ADJOINING STREETS IN BROOKVILLE BOULEVARD AND
EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B
DATE:
MAY 2019
SHEET
6 OF 29
C4
C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

PLOT DATE 05/03/2019 7:07P O:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\C-4 Final Site Plan BMP-1.dwg Last Saved By: RManley
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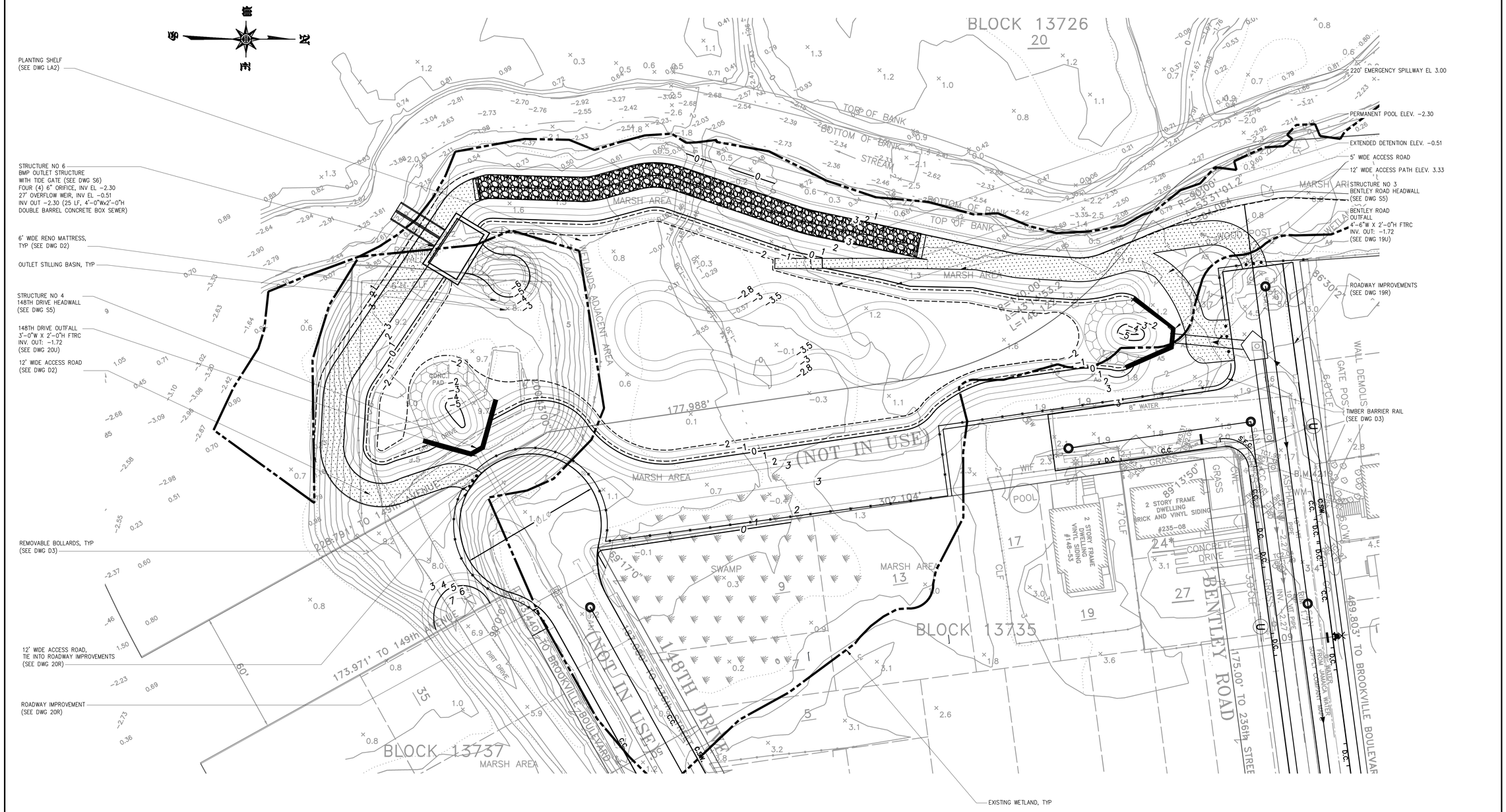

PLAN

SCALE: 1" = 20'

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-5

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-2
FINAL SITE PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 7 OF 29 | C5 / C14

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

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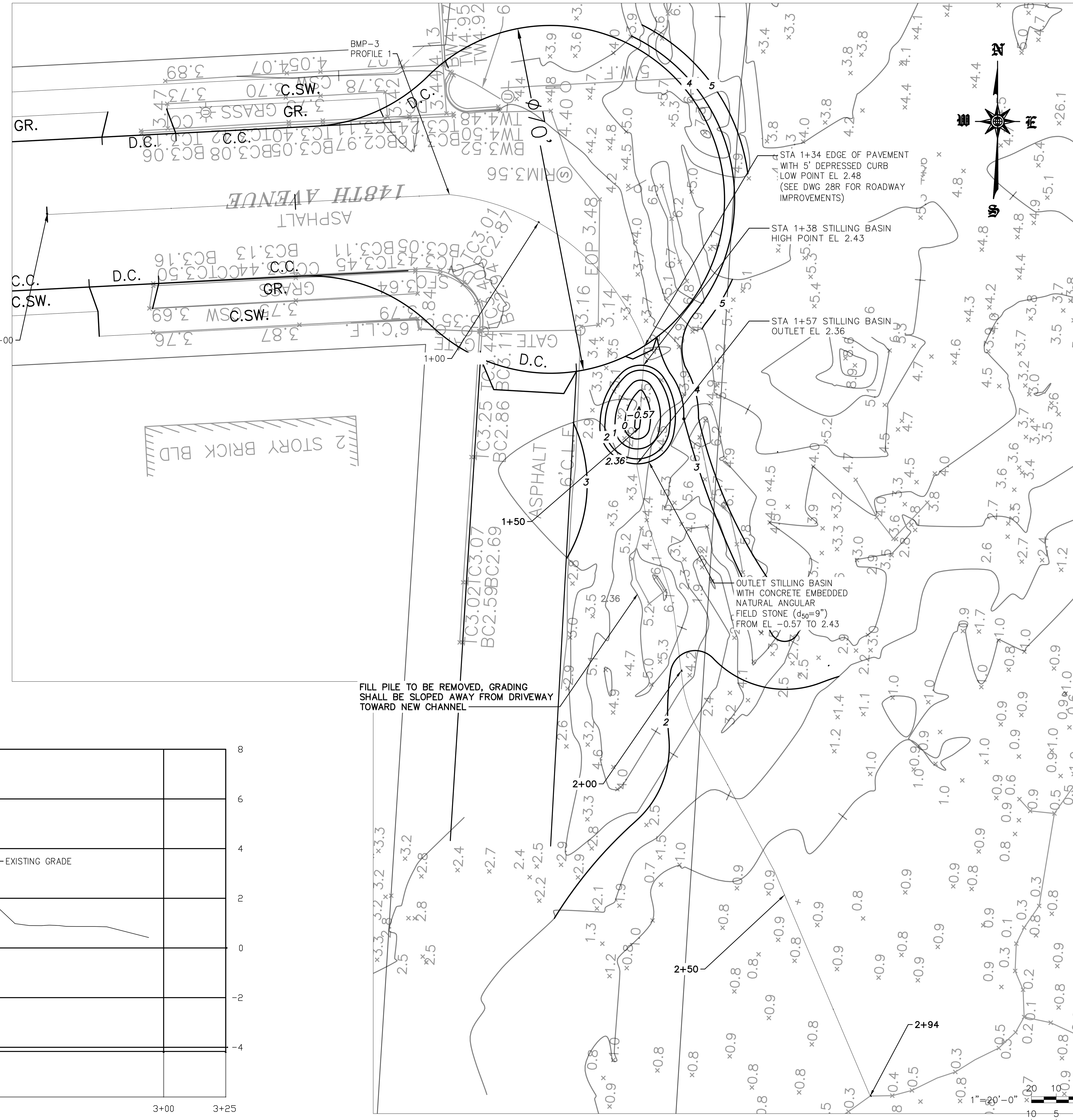
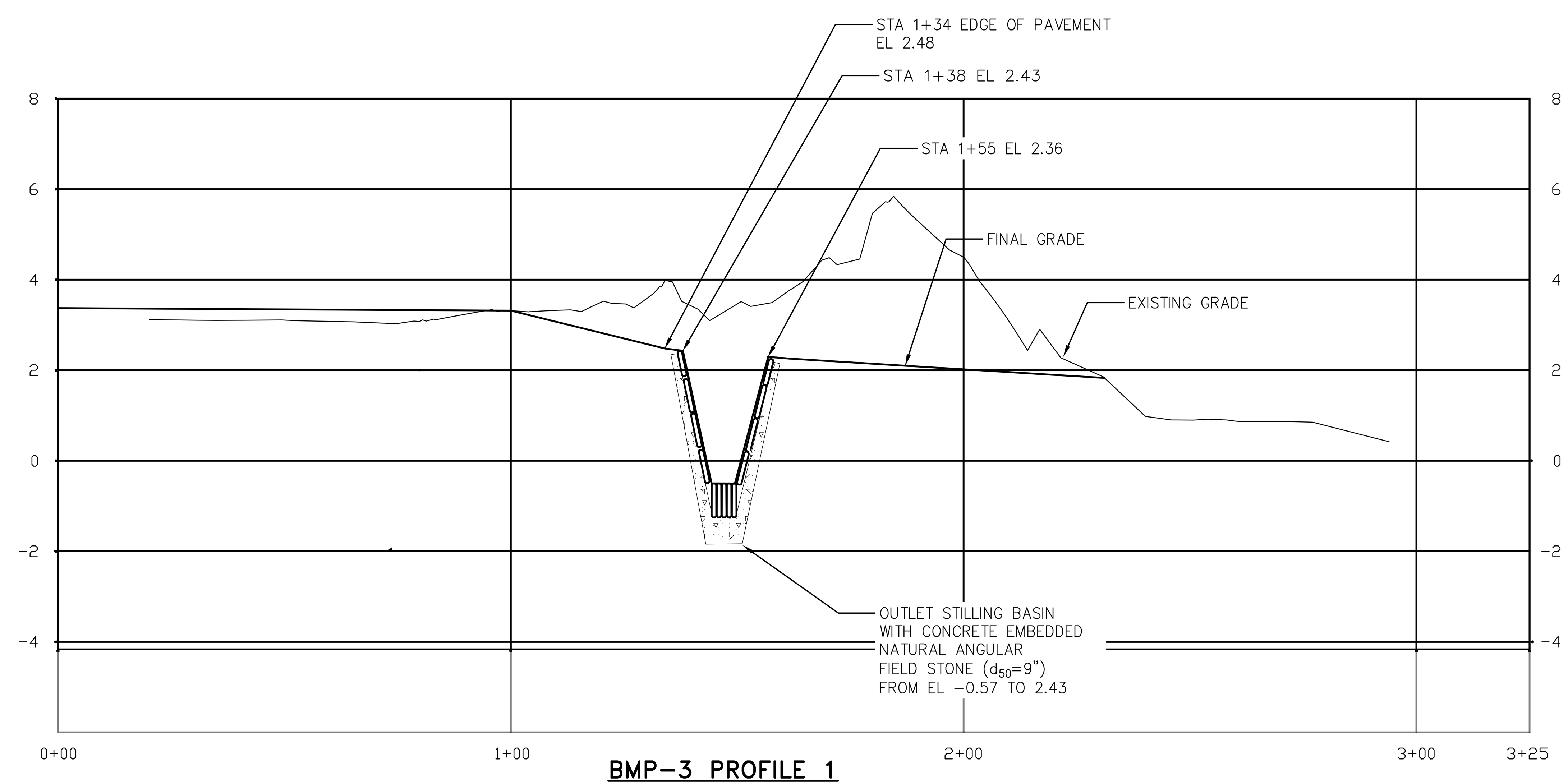


PLAN

SCALE: 1" = 10'



BMP-3 PROFILE 1

HORIZ: 1"=20'
VERT: 1"=2'

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NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E.

HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY W.SAEED
DESIGNED BY W.SAEED
CHECKED BY D.THOMPSON
CADD FILE

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

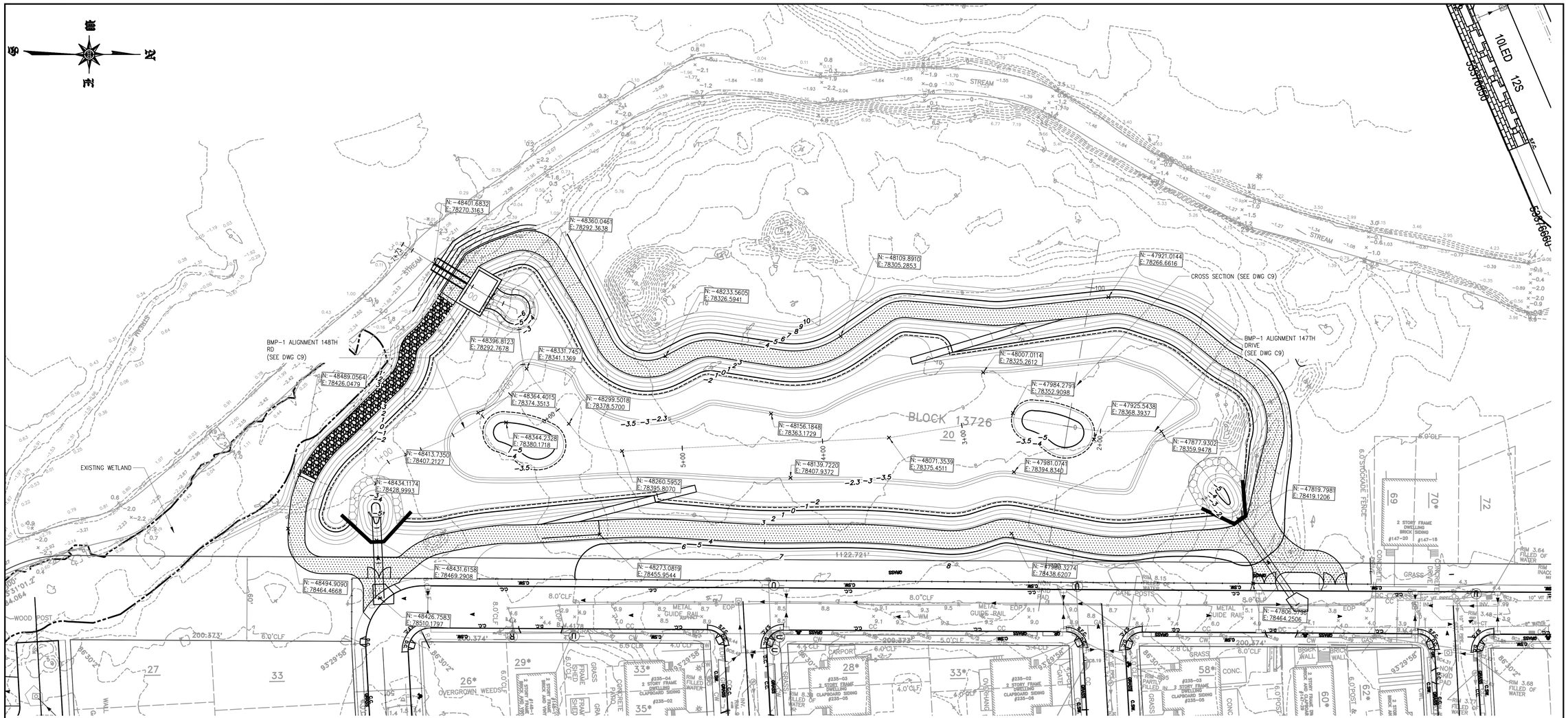
BMP-3
FINAL SITE PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 8 OF 29 | C6 C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN



PLAN

SCALE: 1" = 30'

1"=30'-0" 30 15 0 30'

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.

HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-7

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-1
GEOMETRY PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 9 OF 29 | C7 / C14

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

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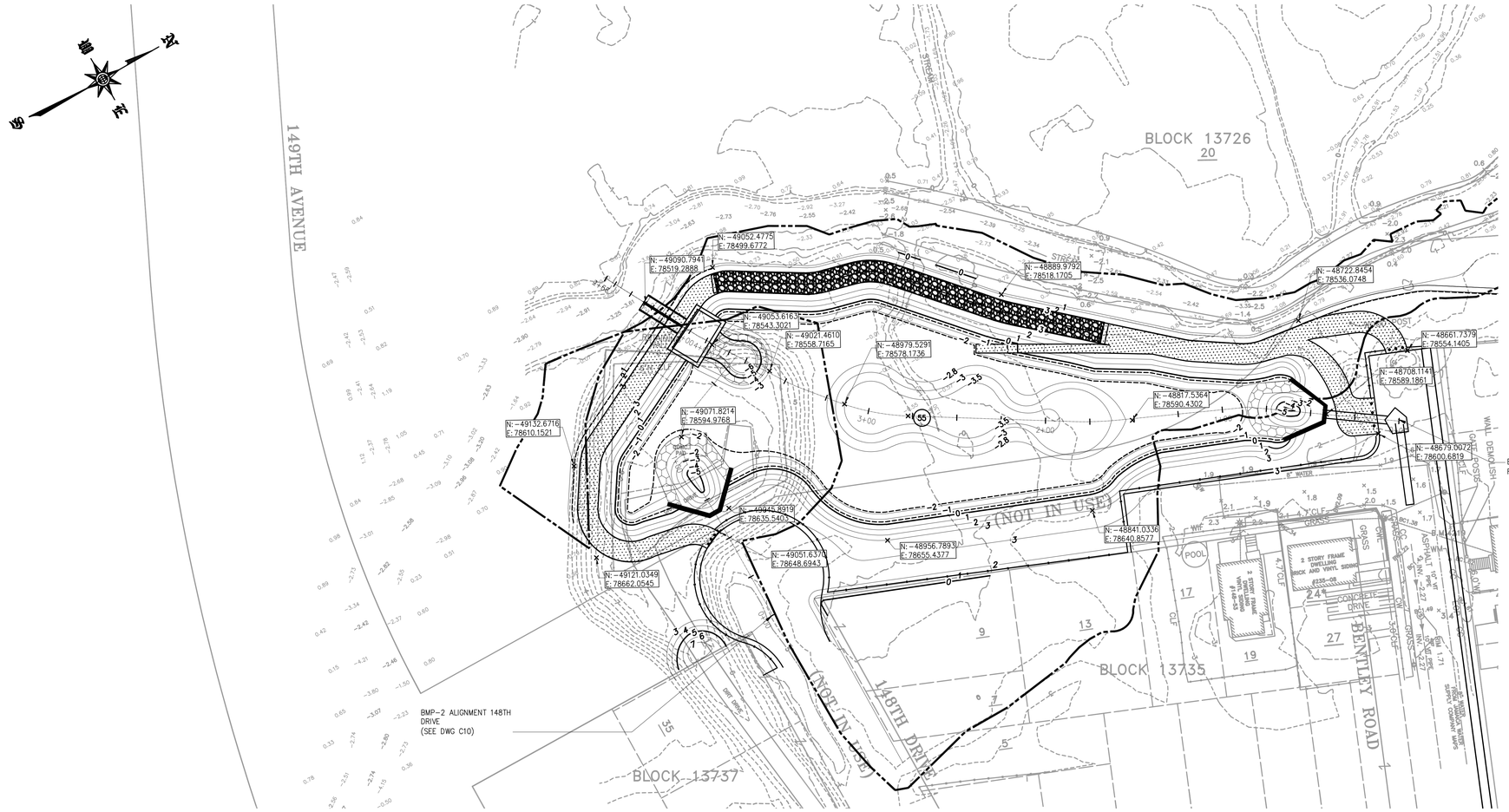

PLAN

SCALE: 1" = 30'

1"=30'-0" 30 15 0 30'

WARNING

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NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-8

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-2
GEOMETRY PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 10 OF 29 | C8 / C14

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

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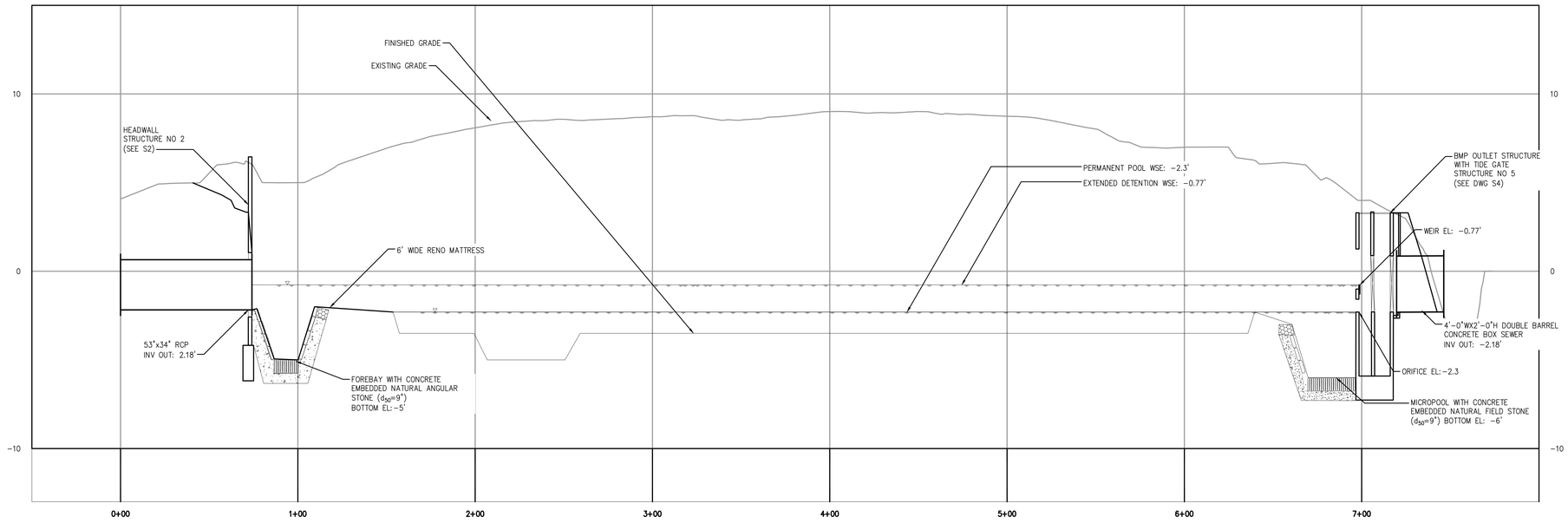
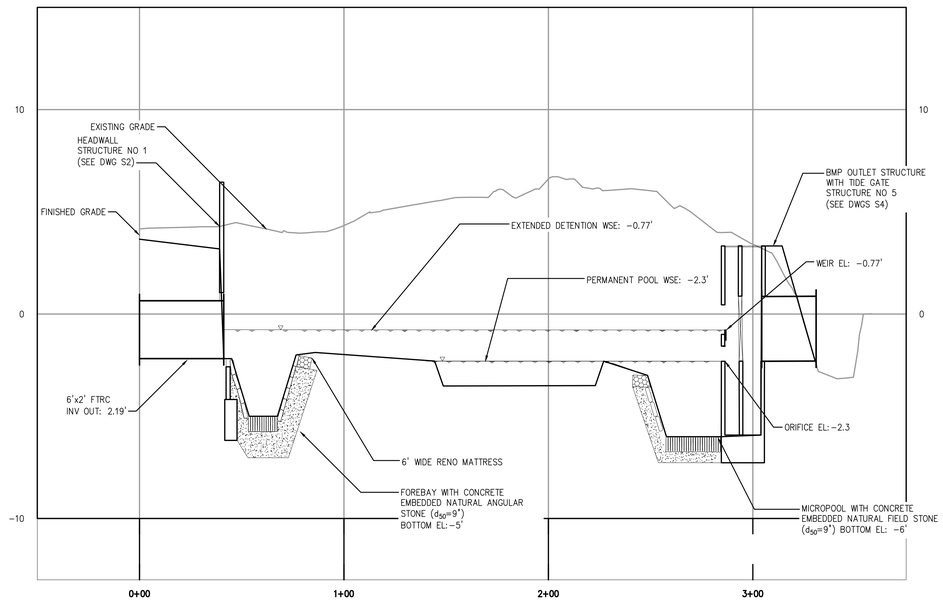


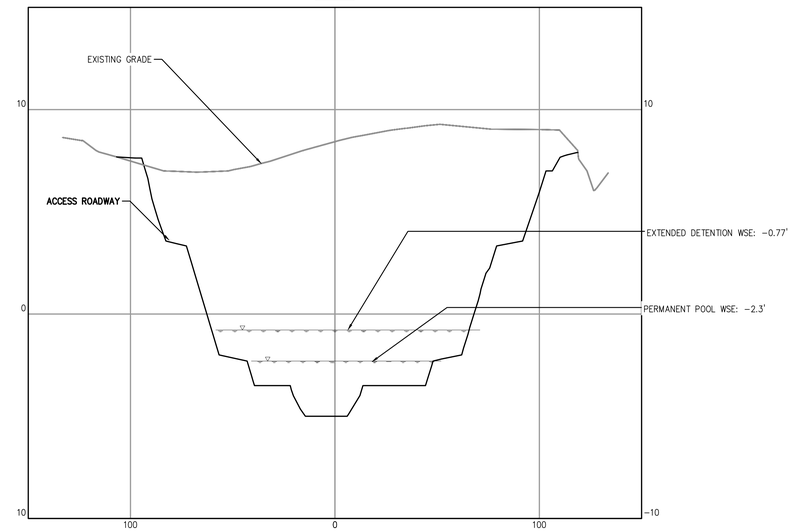
BMP-1 PROFILE
147TH DRIVE

HORIZ: 1"=30'
VERT: 1"=3'



BMP-1 PROFILE
148TH ROAD

HORIZ: 1"=30'
VERT: 1"=3'



BMP-1 CROSS SECTION

HORIZ: 1"=30'
VERT: 1"=3'

1"=30'-0" 30 15 0 30'
1"=3'-0" 3 2 1 0 3'

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER

DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-9

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-1
PROFILES AND CROSS SECTION

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 11 OF 29 | C9 / C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

PLOT DATE: 05/03/2019 7:14P G:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\C-9 Profiles and Cross Section BMP-1.dwg Last Saved By: RMonley
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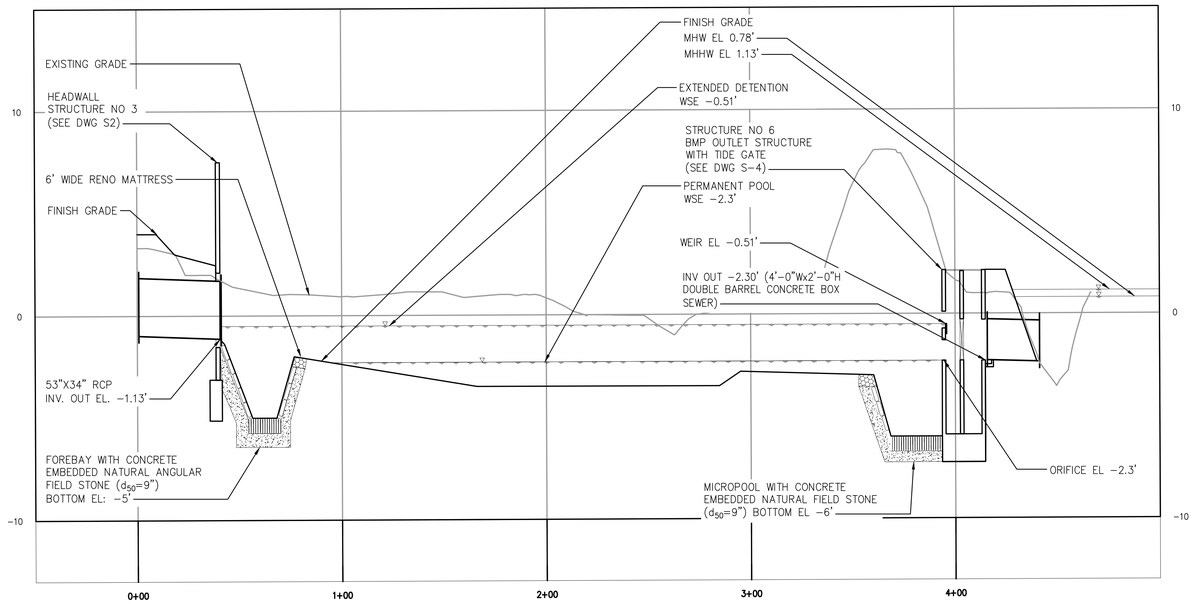
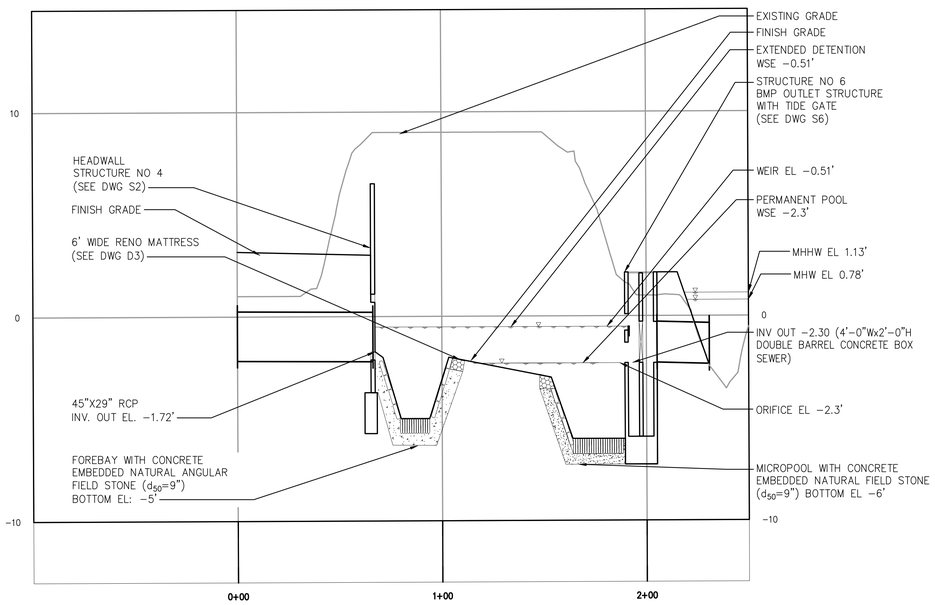


BMP−2 PROFILE
BENTLEY ROAD
HORIZ: 1"=30'
VERT: 1"=3'



BMP−2 PROFILE
148TH DRIVE
HORIZ: 1"=30'
VERT: 1"=3'

1"=30'−0" 30 15 0 30'

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 12 OF 29 | C10/C14

BMP−2
PROFILES AND CROSS SECTION

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

SCALE
AS SHOWN

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C−10

FINAL DESIGN PREPARED BY:

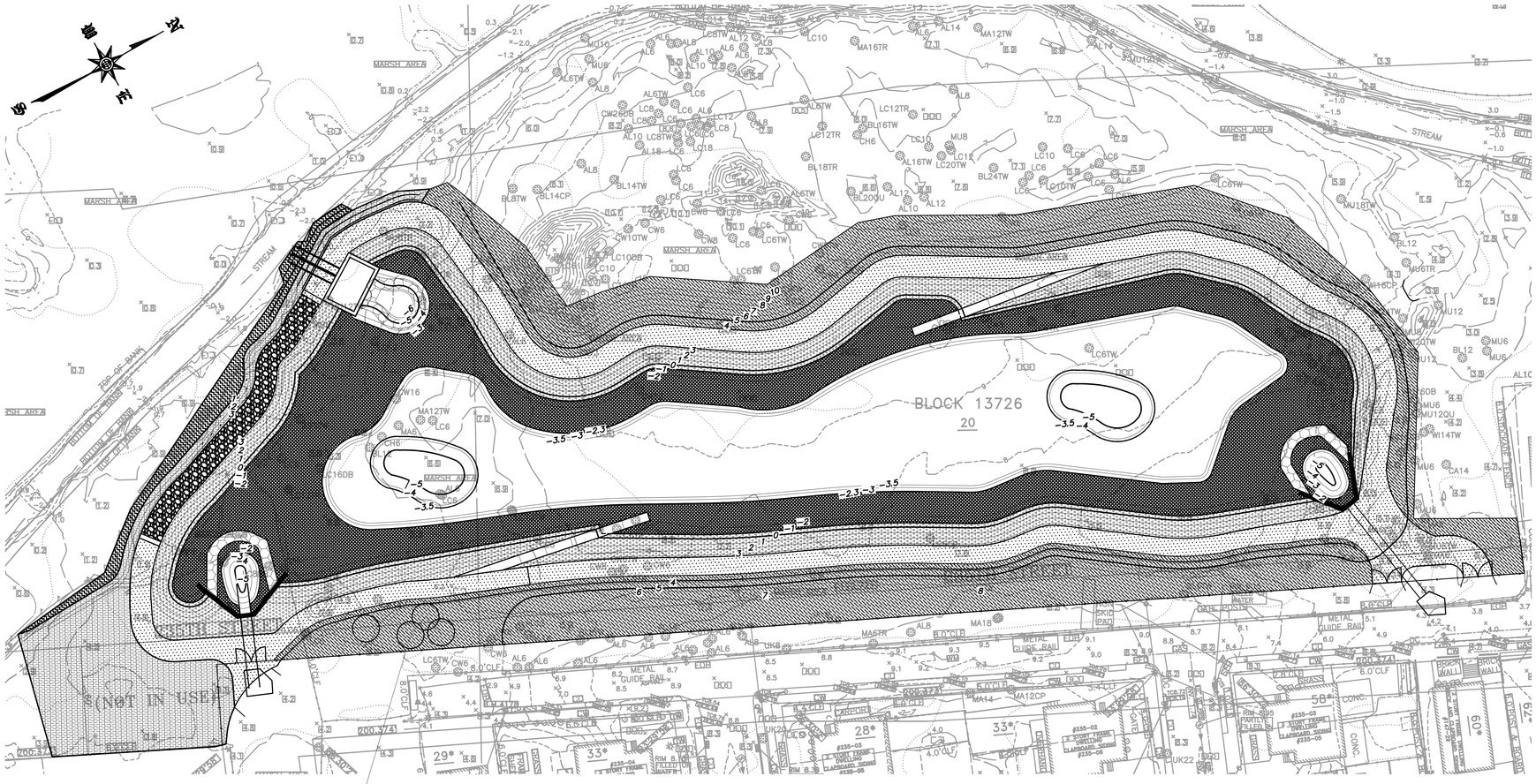
P.E.
HAZEN AND SAWYER PROJECT MANAGER DATE:

Hazen

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE: 05/03/2019 7:15P C:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\C-10 Profiles and Cross Section BMP-2.dwg Last Saved By: RMonley
XREFs: 14044AI-50476;9781-037 TITLEBLOCK,GN-Profiles



PLAN

SCALE: 1" = 30'

PLANTING SCHEDULE

SALT MARSH — SF 31,735

NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS
	Herbaceous Plants					
	Spartina alterniflora	Smooth cordgrass	2"	PLUG	ALTERNATING ROWS - 1.5' O.C. IN GROUPS OF 10	Plant up to El. 0.80
	Spartina patens	Saltmeadow cordgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. 0.80 and 1.00

HIGH SALT MARSH — SF 31,735

NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS
	Herbaceous Plants					
	Spartina patens	Saltmeadow cordgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. 1.00 and 1.15
	Distichlis spicata	Spike grass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. 1.00 and 1.15
	Solidago sempervirens	Seaside goldenrod	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5	Plant between El. 1.15 and 3.00
	Schizachrium sempervirens	Little bluestem	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5	Plant between El 1.15 and 3.00
	Hibiscus moscheutos	Swamp rosemallow	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5	Plant between El 1.15 and 3.00
	Sympyotrichum novae-angliae	New England aster	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5	Plant between El 1.15 and 3.00

Overseed with Grassland Seed Mix as Per Specification

EMERGENT LOW MARSH — SF

NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS
	Herbaceous Plants					
1,470	*Iris versicolor*	Northern blue flag	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. -2.30 to El. -0.77
1,480	*Hibiscus mosheutos*	Swamp mallow	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. -2.30 to El. -0.77
1,480	*Pontederia cordata*	Pickerelweed	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. -2.30 to El. -0.77
1,480	*Sagittaria latifolia*	Broadleaf arrowhead	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. -2.30 to El. -0.77
1,480	*Schoenoplectus tabernaemontani*	Softstem bulrush	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. -2.30 to El. -0.77
1,470	*Schoenoplectus pungens*	Common threesquare	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	Plant between El. -2.30 to El. -0.77

PLANTING SCHEDULE CONTINUED

EMERGENT HIGH MARSH — SF

NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS
	Herbaceous Plants					
770	*Asclepias incarnata*	Swamp milkweed	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	
770	*Eupatorium luecolepsis*	White-bracted boneset	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	
770	*Juncus effusus*	Soft rush	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	
770	*Panicum virgatum*	Switchgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	
780	*Soldago sempervirens*	Seaside goldenrod	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	
780	*Schoenoplectus cyperinus*	Woolgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	
780	*Symphyotrichum novae-angliae*	New England aster	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	
780	*Vernonia novebooracensis*	New York Ironweed	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10	

Overseed with Grassland Seed Mix as Per Specification

SHRUBLAND — SF

NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS
	Shrubs					
930	*Aronia arbutifolia*	Red chokeberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10	
930	*Cephalanthus occidentalis*	Buttonbush	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10	
930	*Cornus racemosa*	Gray dogwood	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10	
920	*Ilex glabra*	Inkberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10	
930	*Myrica pensylvanica*	Bayberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10	
930	*Sambucus canadensis*	Elderberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10	

Overseed with Grassland Seed Mix as per Specification

TREES — SF

NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS
	Trees					
4	*Liquidambar styraciflua*	American sweetgum	2-2.5" Cal	B&B	As shown	Underplant with Shrubs

1"=30'-0" (30 15 0 30')

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E. _____ DATE:
HAZEN AND SAWYER PROJECT MANAGER

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-11

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-1
LANDSCAPING PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 13 OF 29 | C11/C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

PLOT DATE: 05/06/2019 3:34P D:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\C-11 Landscaping Plan BMP-1.dwg Last Saved By: RManley
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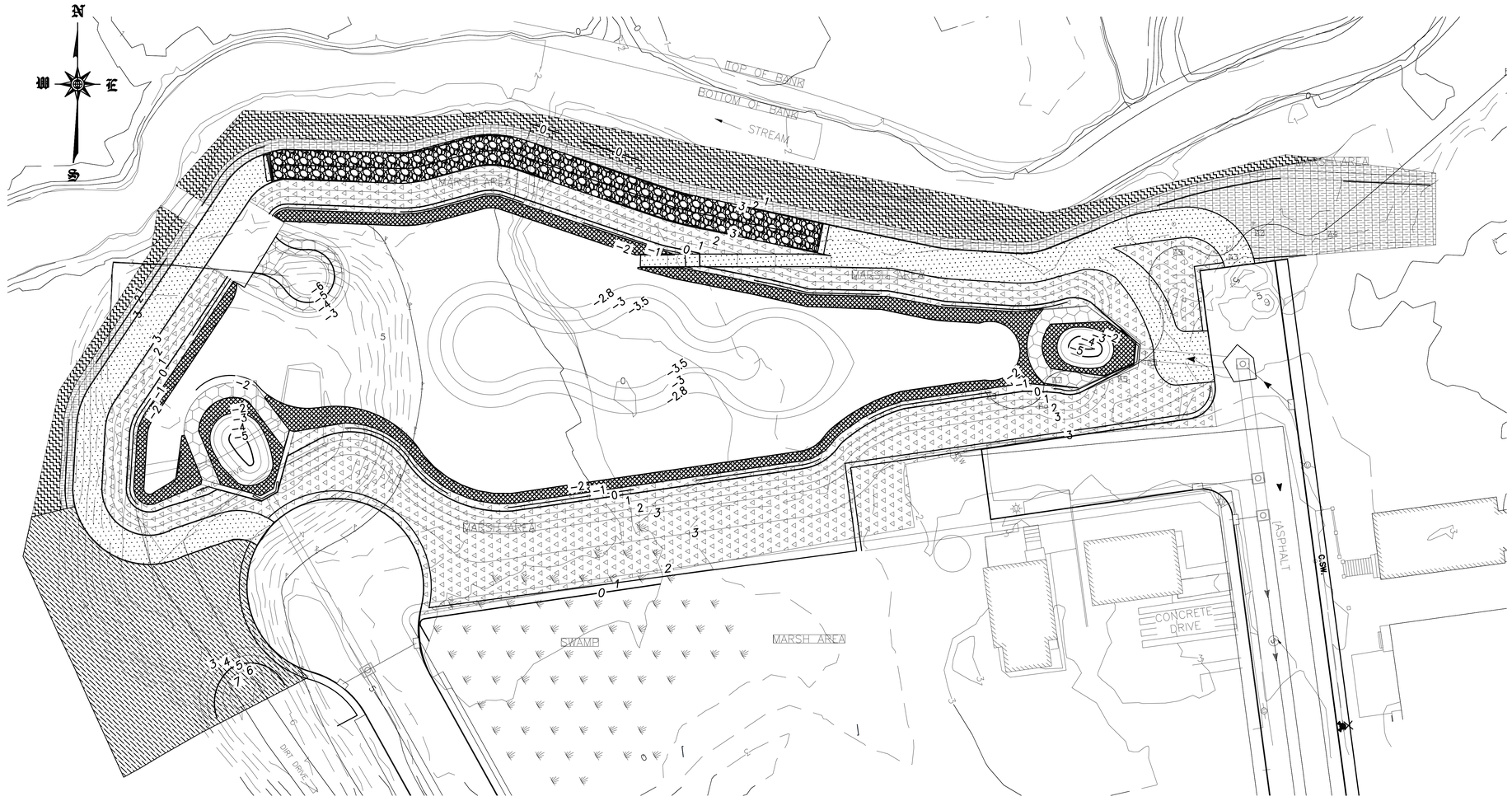

PLAN

SCALE: 1" = 20'

PLANTING SCHEDULE

	SALT MARSH			SF	31,735		
NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING		REMARKS
	Herbaceous Plants						
	Spartina alterniflora	Smooth cordgrass	2"	PLUG	ALTERNATING ROWS - 1.5' O.C. IN GROUPS OF 10		Plant up to El. 0.80
	Spartina patens	Saltmeadow cordgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. 0.80 and 1.00

	HIGH SALT MARSH			SF	31,735		
NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING		REMARKS
	Herbaceous Plants						
	Spartina patens	Saltmeadow cordgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. 1.00 and 1.15
	Distichlis spicata	Spike grass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. 1.00 and 1.15
	Solidago sempervirens	Seaside goldenrod	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5		Plant between El. 1.15 and 3.00
	Schizachrium sempervirens	Little bluestem	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5		Plant between El 1.15 and 3.00
	Hibiscus moscheutos	Swamp rosemallow	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5		Plant between El 1.15 and 3.00
	Sympyotrichum novae-angliae	New England aster	2"	PLUG	NATURALISTIC CLUSTERS IN GROUPS OF 5		Plant between El 1.15 and 3.00

Overseed with Grassland Seed Mix as Per Specification

	EMERGENT LOW MARSH			SF			
NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING		REMARKS
	Herbaceous Plants						
210	*Iris versicolor*	Northern blue flag	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. -2.30 to El. -0.51
210	*Hibiscus mosheutos*	Swamp mallow	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. -2.30 to El. -0.51
220	*Pontederia cordata*	Pickerelweed	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. -2.30 to El. -0.51
220	*Schoenoplectus tabernaemontani*	Softstem bulrush	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. -2.30 to El. -0.51
210	*Schoenoplectus pungens*	Common threesquare	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. -2.30 to El. -0.51
210	*Spartina cynosuroides*	Big cordgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		Plant between El. -2.30 to El. -0.51

PLANTING SCHEDULE CONTINUED

	EMERGENT HIGH MARSH			SF			
NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING		REMARKS
	Herbaceous Plants						
260	*Asclepias incarnata*	Swamp milkweed	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		
270	*Eupatorium luecolepsis*	White-bracted boneset	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		
280	*Juncus effusus*	Soft rush	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		
260	*Panicum virgatum*	Switchgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		
260	*Solidago sempervirens*	Seaside goldenrod	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		
1,330	*Schoenoplectus cyperinus*	Woolgrass	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		
50	*Symphyotrichum novae-angliae*	New England aster	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		
50	*Vernonia noveboaracensis*	New York Ironweed	2"	PLUG	ALTERNATING ROWS - 2.0' O.C. IN GROUPS OF 10		

Overseed with Grassland Seed Mix as Per Specification

	SHRUBLAND			SF			
NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING		REMARKS
	Shrubs						
130	*Aronia arbutifolia*	Red chokeberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		
130	*Cephalanthus occidentalis*	Buttonbush	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		
140	*Cornus racemosa*	Gray dogwood	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		
140	*Ilex glabra*	Inkberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		
130	*Myrica pensylvanica*	Bayberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		
130	*Sambucus canadensis*	Elderberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		

Overseed with Grassland Seed Mix as per Specification

1"=20'-0" 20 10 0 20'

NOTES:

1. REFER TO DWG C-14 FOR LANDSCAPE DETAILS AND SEEDING MIX.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

_____ P.E.
HAZEN AND SAWYER PROJECT MANAGER

_____
DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-12

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF BUREAU

BMP-2
LANDSCAPING PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 14 OF 29 | C12 C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

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LEGEND

SHRUBLAND

PLAN
SCALE: 1" = 20'

1"=20'-0" 20 10 0 20'

PLANTING SCHEDULE

	SHRUBLAND			SF			Area
NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS	4200
	Shrubs						536.13
90	*Aronia arbutifolia*	Red chokeberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		90
90	*Cephalanthus occidentalis*	Buttonbush	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		90
90	*Cornus racemosa*	Gray dogwood	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		90
90	*Ilex glabra*	Inkberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		90
90	*Myrica pensylvanica*	Bayberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		90
90	*Sambucus canadensis*	Elderberry	6"	TUBELING	ALTERNATING ROWS - 3.0' O.C. IN GROUPS OF 10		90
Overseed with Grassland Seed Mix as per Specification							
BMP 3	**TREES**			SF			
NO.	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING	REMARKS	
	Trees						
3	*Amelanchier canadensis*	Serviceberry	2-2.5" Cal	B&B	As shown	Underplant with Shrubs	
4	*Liquidambar styraciflua*	American sweetgum	2-2.5" Cal	B&B	As shown	Underplant with Shrubs	

NOTES:

1. REFER TO DWG C-14 FOR LANDSCAPE DETAILS AND SEEDING MIX.

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER   DATE:

DRAWN BY K.AVALOS
DESIGNED BY E.MOSKALENKO
CHECKED BY D.SHEERAN
CADD FILE C-13

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

BMP-3
LANDSCAPING PLAN

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B
DATE: MAY 2019
SHEET 15 OF 29
C13/C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

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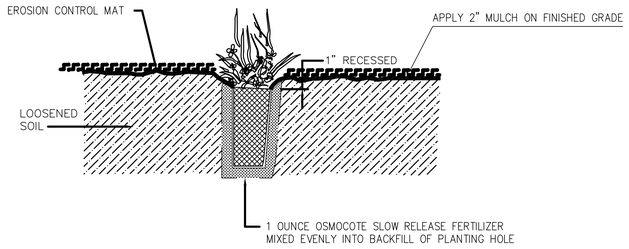
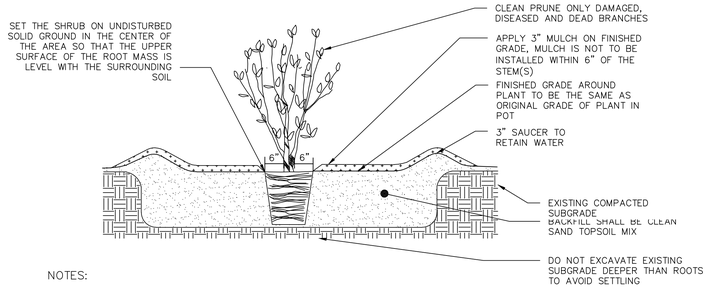


PLANTING HOLE -- GRASSES & FORBS, THROUGHOUT

SCALE: NOT TO SCALE

NOTES:
ALL PLASTIC WRAP SHALL BE REMOVED PRIOR TO PLANTING

FOR WETLAND PLANTING OMIT OSMOCOTE FERTILIZER.

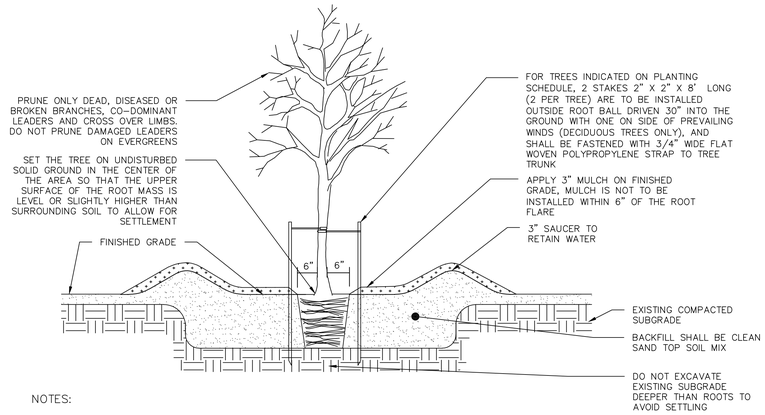


NOTES:

1. PRUNING, IF NECESSARY, SHALL BE DONE BY A CERTIFIED ARBORIST.
2. NOTIFY ENGINEER IF IMPERVIOUS OR UNACCEPTABLE NATIVE SOIL TO BE REMOVED IS ENCOUNTERED IN SHRUB PLANTING LOCATIONS.
3. ROTOTILL/CULTIVATE SOILS TO A DEPTH EQUAL TO THE DEPTH OF ROOT BALL AND TWO TIMES THE DIAMETER OF THE ROOT BALL.
2. APPLY FERTILIZER AND MYCORRHIZAL INOCULANT PER PLANTING SPECIFICATION. TAMP SOIL IN 6" LAYERS AROUND ROOT BALL AND WATER THOROUGHLY AFTER PLANTING. WATER THOROUGHLY AFTER EXCAVATION AND AFTER PLANT INSTALLATION.
3. CONTAINER: REMOVE ROOT BALL FROM CONTAINER. LOOSEN POT- BOUND, SPIRALLY-GROWING AND GIRDLING ROOTS. B&B: CAREFULLY REMOVE TOP 1/3 OF BURLAP. CUT SEVERAL SLITS IN BURLAP TO FACILITATE ROOT PENETRATION
4. REMOVE AND DISPOSE OF ALL NON-BIODEGRADABLES FROM PLANTING HOLES AND ROOT BALL.

TYPICAL SHRUB PLANTING DETAIL

NOT TO SCALE

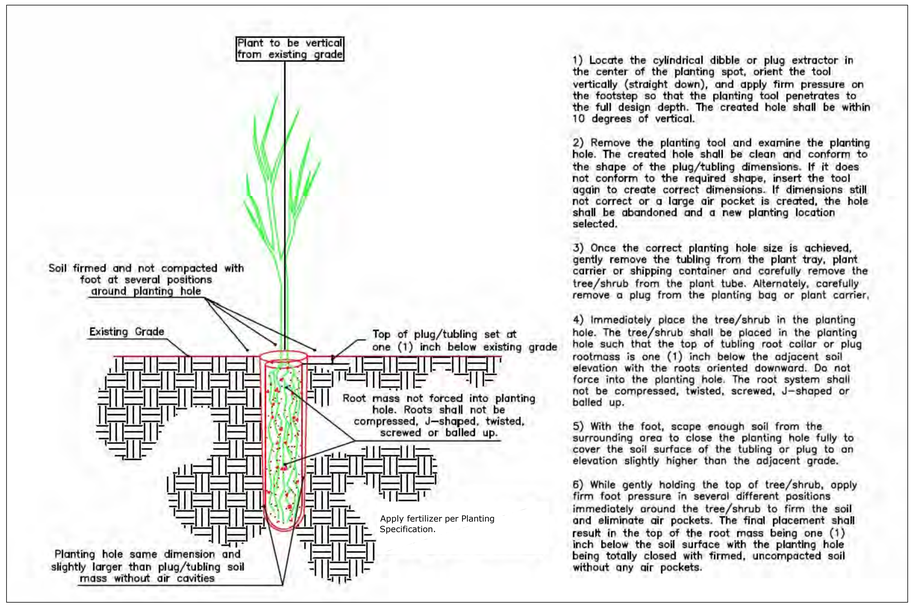


NOTES:

1. PRUNING, IF NECESSARY, SHALL BE DONE BY A CERTIFIED ARBORIST.
2. NOTIFY ENGINEER IF IMPERVIOUS OR UNACCEPTABLE NATIVE SOIL TO BE REMOVED IS ENCOUNTERED IN TREE PIT LOCATIONS.
3. ROTOTILL/CULTIVATE SOILS TO A DEPTH EQUAL TO THE DEPTH OF ROOT BALL AND TWO TIMES THE DIAMETER OF THE ROOT BALL.
4. APPLY FERTILIZER AND MYCORRHIZAL INOCULANT PER PLANTING SPECIFICATION. TAMP SOIL IN 6" LAYERS AROUND ROOT BALL AND WATER THOROUGHLY AFTER PLANTING. WATER THOROUGHLY AFTER EXCAVATION AND AFTER PLANT INSTALLATION.
5. COMPLETELY UNWRAP OR CUT GIRDLING ROOTS. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE.
6. FOR CONTAINER: REMOVE ROOT BALL FROM CONTAINER. LOOSEN POT- BOUND, SPIRALLY-GROWING ROOTS. FOR B&B: CUT TWINE AND REMOVE BURLAP AND WIRE BASKET.
7. REMOVE AND DISPOSE OF ALL NON-BIODEGRADABLES FROM PLANTING HOLES AND ROOT BALL.
8. REMOVE STAKES AFTER FIRST YEAR.

TYPICAL TREE PLANTING DETAIL

NOT TO SCALE



TUBELING PLANTING DETAIL

NOT TO SCALE

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E. _____ _____
HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE C-14

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

LANDSCAPING DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 16 OF 29 | C14/C14

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

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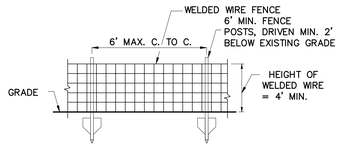
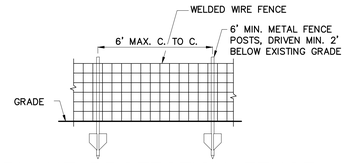


CONSTRUCTION LIMIT FENCE

NOT TO SCALE

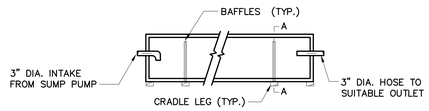
SPEC. SECT. 7.502



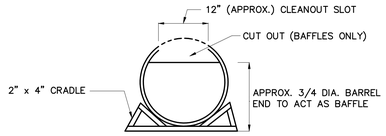
PLANT PROTECTION FENCE

NOT TO SCALE

SPEC. SECT. 7.410



LONGITUDINAL SECTION



GENERAL NOTES

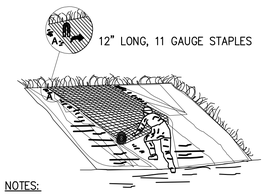
1. CLEAN OUT THE SEDIMENT TANK WHEN ONE THIRD (1/3) FILLED WITH SILT OR AS DIRECTED BY ENGINEER.
2. ALL SEDIMENT COLLECTED IN THE TANK SHALL BE DISPOSED OF OFF SITE AT AN APPROVED LOCATION.

SECTION A–A

PORTABLE SEDIMENT TANK

NOT TO SCALE

SPEC. SECT. 7.510



NOTES:

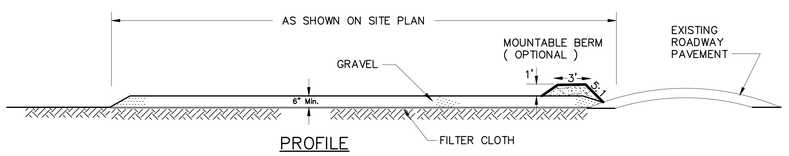
1. AREA SHALL BE CLEARED AND GRUBBED ACCORDING TO SPECIFICATIONS.
2. SEED BANK ACCORDING TO PLAN SPECIFICATIONS.
3. SECURE MATS/MESH AT THE TOP OF THE SLOPE BY TOEING IT IN AND REINFORCING IT WITH A ROW OF AT LEAST 5 STAPLES, SPACING EACH ONE APPROXIMATELY 8" APART.
4. PLACE STAPLES 18"–24" APART ALONG LENGTH OF MAT BLANKET TO SECURE TO THE SOIL SURFACE. ALL STAPLES MUST BE FLUSH TO THE SURFACE.

EROSION CONTROL MAT/ JUTE MESH

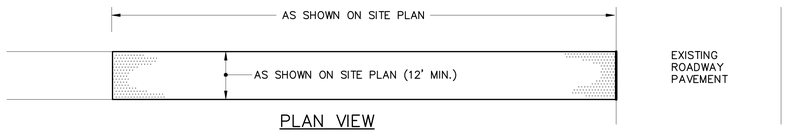
NOT TO SCALE

SPEC. SECT. 7.705 OR

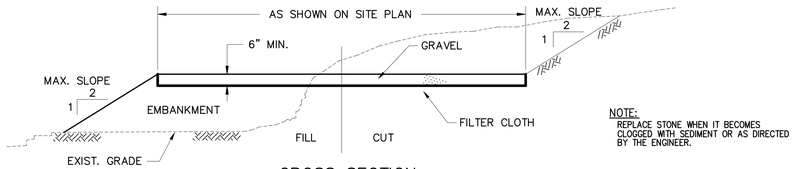
SPEC. SECT. 7.407



PROFILE



PLAN VIEW



NOTE:
REPLACE STONE WHEN IT BECOMES CLOGGED WITH SEDIMENT OR AS DIRECTED BY THE ENGINEER.

CROSS SECTION

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

SPEC. SECT. 7.509

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E. _____ DATE: _____

HAZEN AND SAWYER PROJECT MANAGER

DRAWN BY K.AVALOS

DESIGNED BY P.RAYAPROLU

CHECKED BY D.SHEERAN

CADD FILE D-1

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

EROSION AND SEDIMENT CONTROL DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 17 OF 29 | D1 / D4

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE: 05/03/2019 7:19P D:\9781-000-NYC\Drawings\9781-037 Triangle\CIVIL\D-1 Erosion and Sediment Control Details.dwg Last Saved By: RMonley
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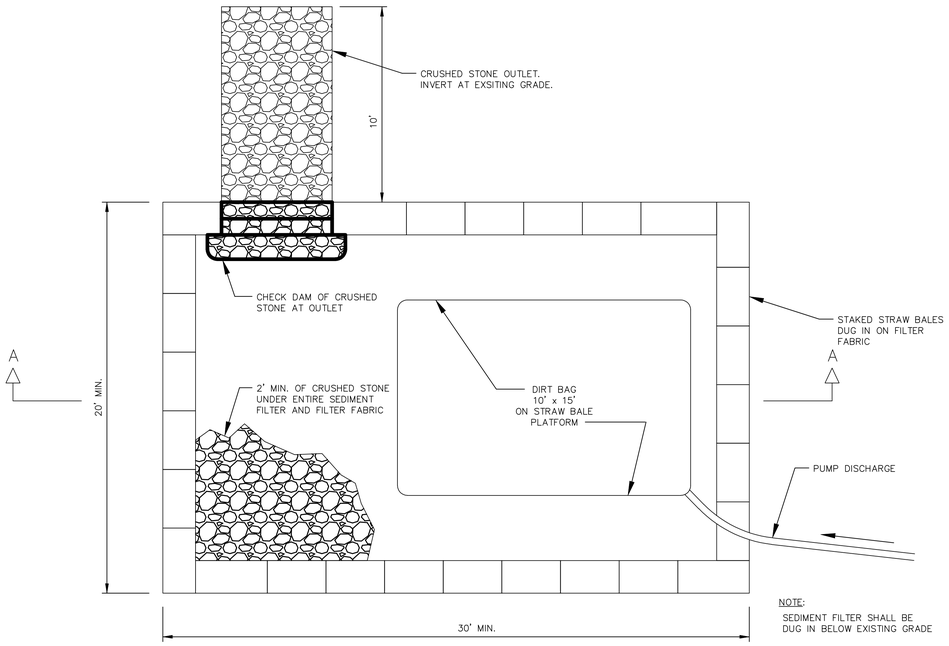
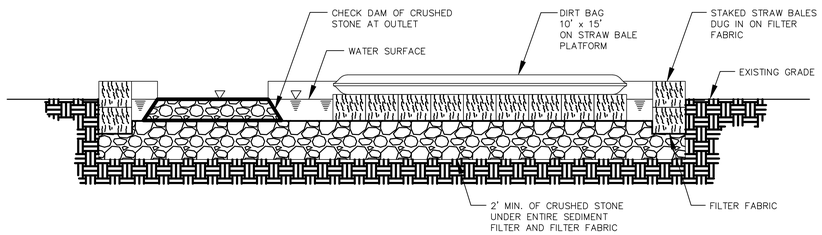


NOTE:
SEDIMENT FILTER SHALL BE
DUG IN BELOW EXISTING GRADE

PLAN

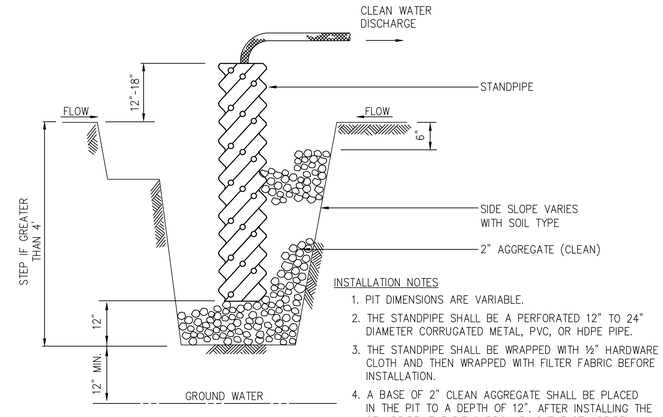


SECTION A–A

SEDIMENT TRAP (TYP.)

NOT TO SCALE

SPEC. SECT. 7.506 & 7.512



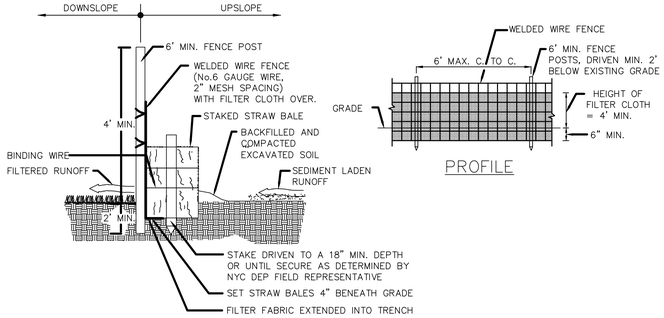
INSTALLATION NOTES

1. PIT DIMENSIONS ARE VARIABLE.
2. THE STANDPIPE SHALL BE A PERFORATED 12" TO 24" DIAMETER CORRUGATED METAL, PVC, OR HDPE PIPE.
3. THE STANDPIPE SHALL BE WRAPPED WITH ½" HARDWARE CLOTH AND THEN WRAPPED WITH FILTER FABRIC BEFORE INSTALLATION.
4. A BASE OF 2" CLEAN AGGREGATE SHALL BE PLACED IN THE PIT TO A DEPTH OF 12". AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STANDPIPE SHALL THEN, BE BACKFILLED WITH 2" AGGREGATE.
5. THE STANDPIPE SHALL EXTEND 12" - 18" ABOVE THE LIP OF THE PIT.

SUMP PIT DETAIL

NOT TO SCALE

SPEC. SECT. 7.102



NOTE: WEDGE LOOSE STRAW BETWEEN BALES

CROSS SECTION

PROFILE

CONSTRUCTION SPECIFICATIONS

1. WELDED WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 12" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED REGULARLY AND MATERIAL REMOVED AS SPECIFIED.

REINFORCED SILT FENCE

NOT TO SCALE

SPEC. SECT. 7.504

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

_____ P.E. _____
HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE D-2

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

EROSION AND SEDIMENT CONTROL
DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND
ADJOINING STREETS IN BROOKVILLE BOULEVARD AND
EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 18 OF 29 | D2/D4

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE: 05/03/2019 7:20P D:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\D-2 Erosion and Sediment Control Details.dwg Last Saved By: RMonley
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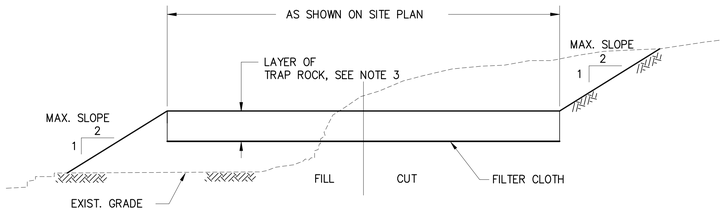
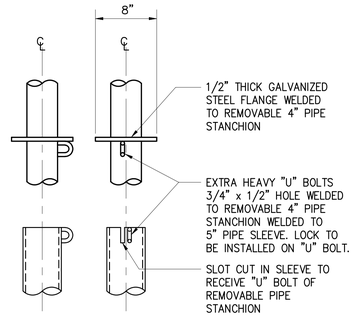


NOTES:
1. CROWN ACCESS WAYS TO PREVENT WATER COLLECTION AT SLOPE OF 15:1
2. SLOPE ROAD AS SHOWN ON PLANS
3. 12" MIN LAYER OF TRAP ROCK SHALL BE PLACED FOR THE MAINTENANCE ACCESS WAY AND A 6" MIN. LAYER OF TRAP ROCK SHALL BE PLACED FOR THE GRAVEL ACCESS PATH.

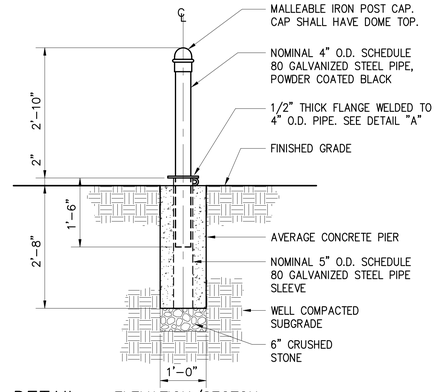
PERMANENT MAINTENANCE ACCESS WAY/GRAVEL ACCESS PATH WITH GRAVEL BASE

N.T.S.

SPEC. SECT. 7.606



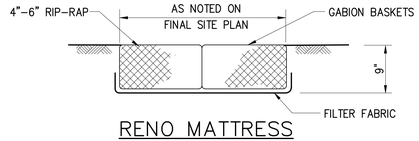
DETAIL "A"
N.T.S.



ELEVATION/SECTON
N.T.S.

REMOVABLE BOLLARD DETAIL

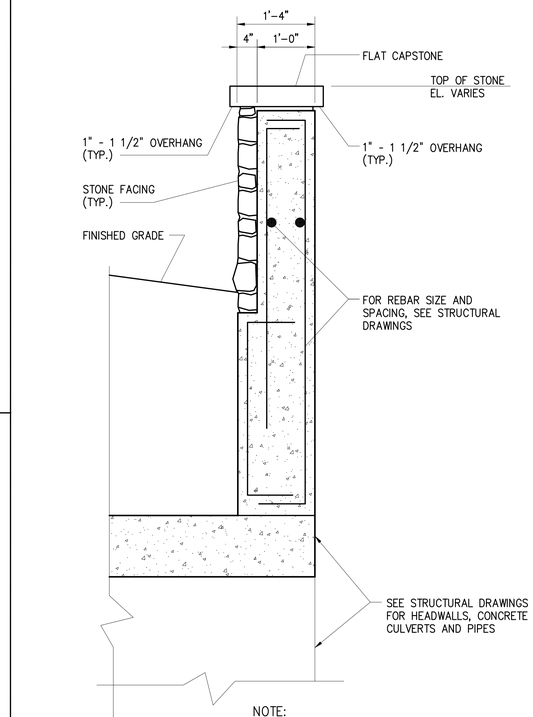
SPEC. SECT. 7.603



RENO MATTRESS

NOT TO SCALE

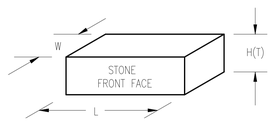
SPEC. SECT. 7.710



NOTE:
SEE STRUCTURAL DRWAINGS FOR DIMENSIONS OF STONE FACING AND CONCRETE WALL.

CROSS SECTION (TYP)

N.T.S.

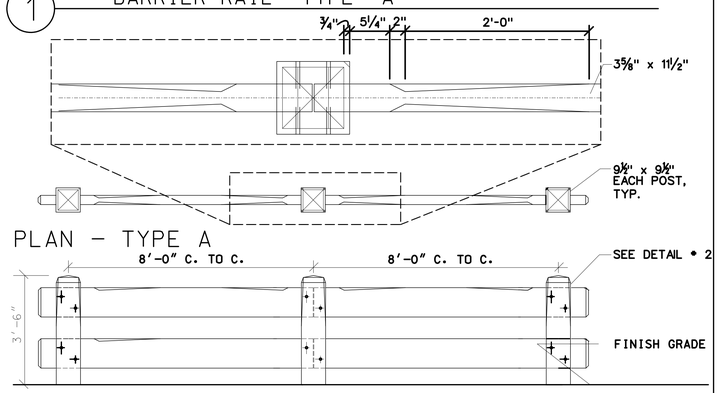


STONE DIMENSIONS

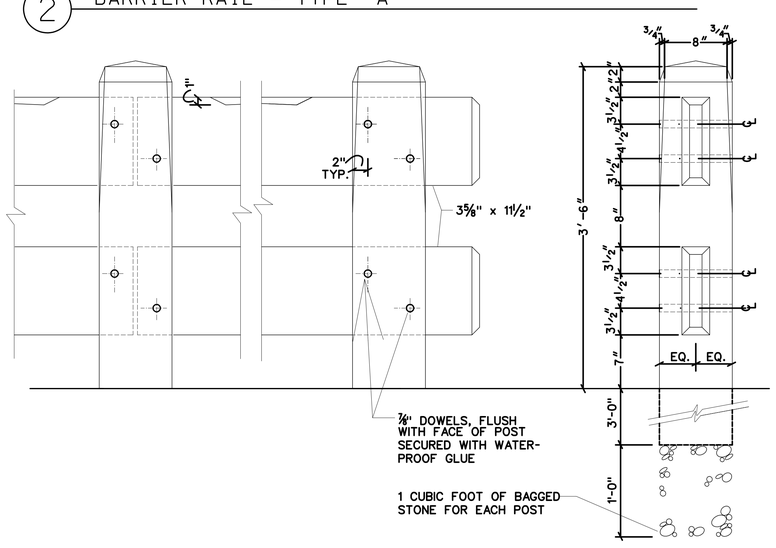
STONE FACING DETAIL

SPEC. SECT. 7.129 & 7.204

1 BARRIER RAIL -TYPE 'A'



2 BARRIER RAIL - TYPE 'A'



NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E. _____ DATE: _____
HAZEN AND SAWYER PROJECT MANAGER

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE VALUE

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

CIVIL
DETAILS

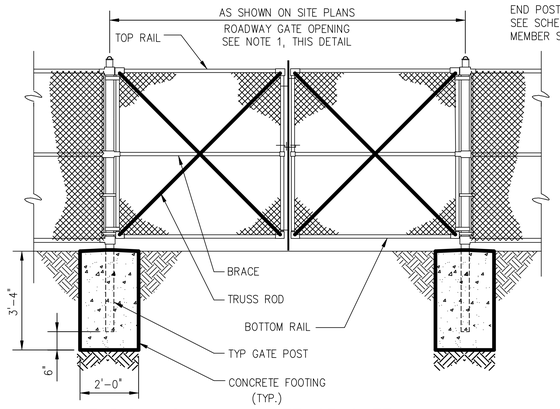
RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 19 OF 29 | D3/D4

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE: 05/03/2019 7:20P D:\9781-000-nyc\Drawings\9781-037 triangle\CIVIL\D-3 Civil Details.dwg Last Saved By: RMonley
XREFs: 9781-037 TITLEBLOCK_TIMBER BARRIER RAIL DETAILS.x



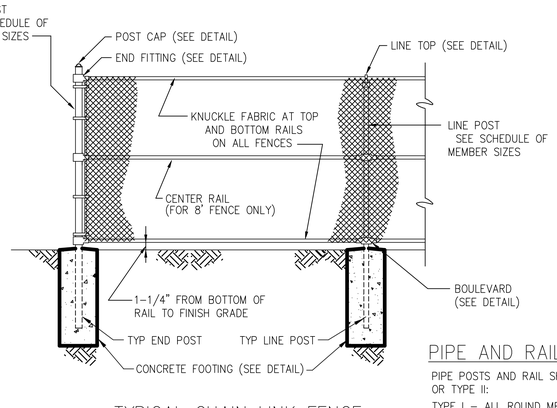
TYPICAL CHAIN LINK FENCE GATE

NOT TO SCALE

SPEC. SECT. 7.604

NOTE:

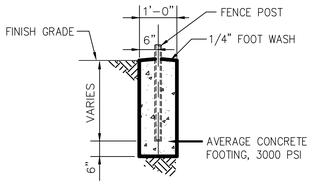
1. PROVIDE LATCHING DEVICES TO HOLD GATES IN OPEN POSITION AND PADLOCK MASTER LOCK NUMBER 12 OR EQUAL TO LOCK GATES CLOSED.



TYPICAL CHAIN LINK FENCE

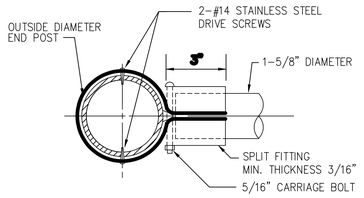
NOT TO SCALE

SPEC. SECT. 7.604



TYPICAL CONCRETE FOOTING FOR CHAIN LINK FENCE

NOT TO SCALE



NOTE: MINIMUM WIDTH OF END CLAMP TO BE 2 1/4"

END FITTING

NOT TO SCALE

PIPE AND RAIL NOTES

PIPE POSTS AND RAIL SHALL BE TYPE I OR TYPE II:

TYPE I – ALL ROUND MEMBERS SHALL BE GALVANIZED STEEL CONFORMING TO ASTM A-120, STANDARD WEIGHT SCHEDULE 40.

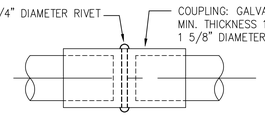
TYPE II – ALL ROUND MEMBERS SHALL BE COLD ROLLED WELDED STEEL CONFORMING TO ASTM A-569, TENSILE STRENGTH TO BE 60,000 PSI.

WIRE MESH NOTE

WIRE MESH SHALL BE PLACED ON THE OUTSIDE OF THE POSTS OF ALL EXTERIOR CHAIN LINK FENCES.

PIPE SCHEDULE	
NORMINAL OUTSIDE DIAMETER	ACTUAL OUTSIDE DIAMETER
1-5/8"	1.666
2"	1.9
2-1/2"	2.375

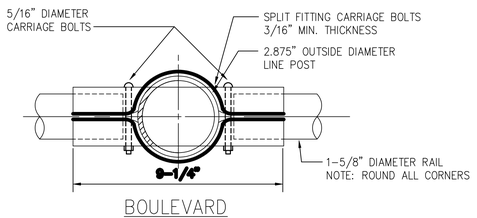
SCHEDULE OF SIZES OF MEMBERS						
HEIGHT OF FENCE	DIA OF LINE POSTS	MAX. POST SPACING	END POST	TOP RAIL	BOTTOM SPACING	DEPTH OF POST INTO CONCRETE FOOTING
4'-0"	2"	6'-0"	2-1/2"	1-5/8"	1-5/8"	1'-6"
6'-0"	2"	6'-0"	2-1/2"	1-5/8"	1-5/8"	2'-6"
8'-0"	2"	6'-0"	2-1/2"	1-5/8"	1-5/8"	2'-6"



NOTE: FURNISH ONE COUPLING FOR EACH LENGTH OF PIPE IN TOP RAIL. FULL LENGTH OF PIPE IS 21'-0"

TOP RAIL COUPLING

NOT TO SCALE



BOULEVARD

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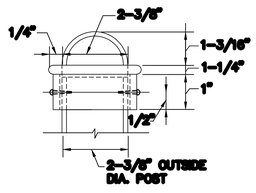
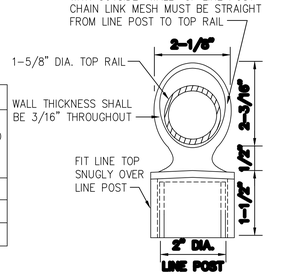


NOTE: POST CAP IS TO BE OF MALLEABLE IRON. CAP TOP FOR 4' HIGH CHAIN LINK FENCE TO BE A SMOOTH "DOME" SHAPE. FIT POST CAP SNUGLY OVER POST AND FIX IN PLACE WITH 2 #14 STAINLESS STEEL DRIVE OR SET SCREWS.

WALL THICKNESS SHALL BE 3/16" THROUGHOUT

SMALL POST CAP

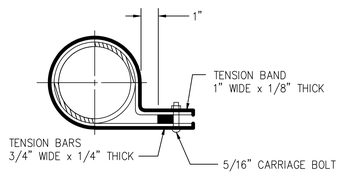
NOT TO SCALE



NOTE: WIDTH OF LINE TOP OVAL TO BE MIN. OF 5/8" AND A MAX OF 7/8"

LINE TOP

NOT TO SCALE



TENSION MEMBERS

NOT TO SCALE

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER

DATE:

DRAWN BY K.AVALOS
DESIGNED BY P.RAYAPROLU
CHECKED BY D.SHEERAN
CADD FILE D-4

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

CIVIL
DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 20 OF 29 | D4/D4

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

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GENERAL NOTES:

1. FOR SITE, GRADES, SEE CIVIL PLANS

2. DESIGN LOADS:
   DEAD: SELF WEIGHT
   ROOF LIVE = AASHTO H-20 DESIGN TRUCK
   SOIL = 125 PCF
   VERTICAL CONSTRUCTION SURCHARGE = 600 PSF
   VERTICAL SERVICE SURCHARGE: 240 PSF
   LATERAL COEFFICIENT : Ko = 0.5

   SNOW LOAD:

   GROUND SNOW LOAD (Pg) = 20 PSF
   SNOW EXPOSURE FACTOR (Ce) = 0.9
   SNOW LOAD IMPORTANCE FACTOR (Is) = .80
   THERMAL FACTOR (Ct) = 1.20

   WIND DESIGN CRITERIA:

   BASIC WIND SPEED = 111 MPH
   RISK CATEGORY = I
   WIND EXPOSURE = C

   SEISMIC LOAD:

   RISK CATEGORY = I
   SEISMIC IMPORTANCE FACTOR (Ie) = 1.00
   SITE CLASS = E
   MAPPED SPECTRAL RESPONSE ACCELERATIONS (Ss/S1) = 0.257/0.068
   SPECTRAL RESPONSE ACCELERATIONS (SMS/SM1) = 0.660/0.255
   SPECTRAL RESPONSE COEFFICIENTS (SDS/SD1) = 0.440/0.170
   SEISMIC DESIGN CATEGORY = C

3. UNIT WEIGHTS
   CONCRETE: 150 PCF
   SOIL: 120 PCF
   STONE: 160 PCF
   WATER: 62.4 PCF

4. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURE. DURING CONSTRUCTION, THE STRUCTURES SHALL BE PROTECTED BY BRACING AND TEMPORARY SUPPORTS WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR. OVERSTRESSING OF ANY STRUCTURAL ELEMENT IS PROHIBITED.

5. NO BACKFILL SHALL BE PLACED AGAINST ANY SUBSTRUCTURE WALLS UNLESS ALL ADJACENT SUPPORTING ELEMENTS HAVE ACHIEVED DESIGN STRENGTH, OR WALLS HAVE BEEN PROPERLY BRACED, AND IN ANY CASE NOT SOONER THAN 28 DAYS AFTER THE PLACING OF CONCRETE UNLESS APPROVED BY THE ENGINEER. SUPPORTING ELEMENTS SHALL INCLUDE ADJACENT WALLS, SLABS, BEAMS AND COLUMNS.

METAL NOTES:

1. STEEL MATERIAL:
   A) STRUCTURAL TUBING: ASTM A500, GRADE B OR A501 (42 KSI)
   B) STRUCTURAL PIPE: ASTM A53, TYPE E OR S, GRADE B (35 KSI)
   C) PLATES AND ANGLES: ASTM A36 UNO (36 KSI)
   D) STRUCTURAL W SHAPES: ASTM A992 (50 KSI)
   E) STRUCTURAL S, M, C & H SHAPES: ASTM A572 GRADE 50 (50 KSI)

2. DO NOT PAINT STEEL SURFACES WHICH ARE TO BE WELDED OR ARE TO BE ENCASED IN CONCRETE.

3. ALL STAINLESS STEEL FABRICATIONS EXPOSED TO UNDERWATER SERVICE SHALL BE TYPE 316. ALL OTHER STAINLESS STEEL FABRICATIONS SHALL BE TYPE 304, UNLESS NOTED OTHERWISE.

4. ALL BOLTS, ANCHOR BOLTS, AND CONCRETE ANCHORS CONNECTING ALUMINUM SHALL BE TYPE 316 STAINLESS STEEL.

5. ALL GROOVE AND BUTT WELDS SHALL BE FULL PENETRATION.

6. FILLET WELD SIZES SHALL BE THE MINIMUM SIZE REQUIRED BY AISC CODE FOR PLATE SIZES TO BE CONNECTED AND SHALL BE APPLIED TO THE ENTIRE JOINT CONTACT LENGTH, BUT NOT LESS THAN 3/16".

7. STRUCTURAL WELDED JOINTS SHALL CONFORM TO THE PROVISIONS OF AWS D1.1, STRUCTURAL WELDING CODE BY AMERICAN WELDING SOCIETY. PROOF OF WELDER CERTIFICATION SHALL BE AVAILABLE AT THE JOB SITE DURING TIMES OF INSPECTION.

8. SPECIAL PERIODIC AND CONTINUOUS INSPECTIONS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND THE BUILDING CODE OF THE CITY OF NEW YORK. PERIODIC INSPECTION OF STRUCTURAL STEEL CONNECTIONS, ROOF DECK, LIGHT GAGE STEEL FRAMING AND REINFORCING STEEL ARE REQUIRED.

CONCRETE NOTES:

1. ALL CONCRETE SHALL BE AIR ENTRAINED UNLESS DENOTED OTHERWISE ON DRAWINGS.

2. WHERE THE SPECIFICATIONS AND THE DRAWINGS DO NOT HAVE PROVISIONS, THE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF "CODE REQUIREMENTS FOR CONCRETE STRUCTURES" (ACI 318 – LATEST EDITION).

3. FOR CONCRETE MIX DESIGN SEE GENERAL SPECIFICATION 11 – CONCRETE AS AMENDED BY THE NYCDEP BWSO-STANDARD SEWER AND WATER MAIN SPECIFICATION SECTION 2.15.

4. ALL REINFORCING BARS TO BE DEFORMED BARS OF NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60. WHERE REINFORCEMENT IS TO BE WELDED IN ACCORDANCE WITH AWS D1.4, ASTM A706 GRADE 60 SHALL BE USED. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

5. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:
   CAST-IN-PLACE CONCRETE: f'c = 4000 PSI.
   PRECAST CONCRETE: f'c = 5000 PSI

6. CONCRETE PROTECTION FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED ON DRAWINGS:

   A. CONCRETE DEPOSITED DIRECTLY AGAINST SOIL _____ 3"
   B. CONCRETE EXPOSED TO WEATHER/FLUID _____ 2"

7. WHERE BARS ARE TO BE SPLICED OR EMBEDDED, THE LENGTH OF SPLICE OR EMBEDMENT SHALL COMPLY WITH THE LATEST EDITION OF THE MANUAL OF STANDARD PRACTICE OF THE AMERICAN CONCRETE INSTITUTE. FOR TENSION LAP SPLICES SEE TABLE ON SHEET SD-1 FOR CLASS B SPLICES.

8. ALL EXPOSED CORNERS SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE ON DRAWINGS.

9. ALL EMBEDDED ITEMS SHALL BE INSTALLED AND SECURED IN PLACE BEFORE CONCRETE PLACEMENT. CONSULT APPROPRIATE DRAWINGS FOR PIPING, EMBEDDED ITEMS AND OPENINGS.

10. SLABS WITH SLOPING SURFACES SHALL HAVE THE INDICATED SLAB THICKNESS MAINTAINED AS THE MINIMUM. SLAB BOTTOMS CAN EITHER SLOPE WITH THE TOP SURFACE OR BE LEVEL. REINFORCEMENT IN SLABS WITH SLOPING SURFACES SHALL BE PLACED AT THE REQUIRED CLEARANCE FROM THE SLAB SURFACE.

11. ALL EXPOSED CONCRETE SHALL HAVE A PLYWOOD SMOOTH FORM FINISH.

FOUNDATION NOTES:

1. HEADWALL STRUCTURES ARE DESIGNED TO BE SUPPORTED ON A SHALLOW FOUNDATION WITH A MAXIMUM ALLOWABLE BEARING PRESSURE OF 3000 PSF.

2. WEIR CHAMBER STRUCTURES ARE DESIGNED TO BE FOUNDED ON A DEEP PILE FOUNDATION MEETING THE FOLLOWING REQUIREMENTS:
   - PILES SHALL BE TREATED TIMBER PILES CONFORMING TO ASTM D25, CLASS B FOR MARINE STRUCTURES.
   - PILES SHALL BE PROVIDED IN ACCORDANCE WITH NYCDEP BWSO-STANDARD SEWER AND WATER MAIN SPECIFICATION SECTION 70.11
   - PILES SHALL HAVE A MINIMUM TIP DIAMETER OF 12" AND SHALL HAVE A 6" MIN EMBEDMENT INTO FOUNDATION SLAB.
   - PILES SHALL BE INSTALLED AS REQUIRED TO DEVELOP A MINIMUM VERTICAL DOWNWARD ALLOWABLE LOAD OF 20 TONS AND A MINIMUM ALLOWABLE LATERAL LOAD OF 1 TON.
   - FOR INITIAL BID PURPOSES, ALL TIMBER SHALL HAVE A MINIMUM ASSUMED LENGTH OF 40 FT.

ABBREVIATIONS

ADH	ADHESIVE	EMBED	EMBEDMENT	PL	PLATE
AL	ALUMINUM	EQ	EQUAL	PLCS	PLACES
ADDTL	ADDITIONAL	EQPT	EQUIPMENT	PSF	POUNDS PER SQUARE FOOT
ARCH	ARCHITECTURAL	EXIST	EXISTING	REQD	REQUIRED
BLDG	BUILDING	EXP	EXPANSION	SIM	SIMILAR
BOT	BOTTOM	FT	FOOT	SQ	SQUARE
CIP	CAST IN PLACE	GRTG	GRATING	SST	STAINLESS STEEL
CL	CENTERLIN	HORZ	HORIZONTAL	STD	STANDARD
CMU	CONCRETE MASONRY UNIT	HPT	HIGHPOINT	STL	STEEL
COL	COLUMN	HS	HIGH STRENGTH	T	TOP; TREAD
CONC	CONCRETE	INV	INVERT	T&B	TOP AND BOTTOM
CONST	CONSTRUCTION	JT	JOINT	TOC	TOP OF CONCRETE
DB	DOUBLE BARRELL	LPT	LOWPOINT	TOG	TOP OF GRATING
DET	DETAIL	MAX	MAXIMUM	TOS	TOP OF STEEL
DWG	DRAWING	MIN	MINIMUM	TOW	TOP OF WALL
DWL	DOWEL	NO	NUMBER	TYP	TYPICAL
EF	EACH FACE	OC	ON CENTER	UNO	UNLESS NOTED OTHERWISE
EL	ELEVATION	OPNG	OPENING	VERT	VERTICAL
				W	WIDE; WIDTH
				/	OF

1/4"=1'-0" (1 0 1 2 3 7")

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

_____ P.E.
HAZEN AND SAWYER PROJECT MANAGER

_____
DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE S-1.DWG

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL
GENERAL NOTES AND ABBREVIATIONS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 21 OF 29 | S-1 / S-7

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE 05/06/2019 5:10P D:\9781-000-NYC\Drawings\9781-037 Triangle\STRUCTURAL\S-1.dwg Last Saved By: ssetzer
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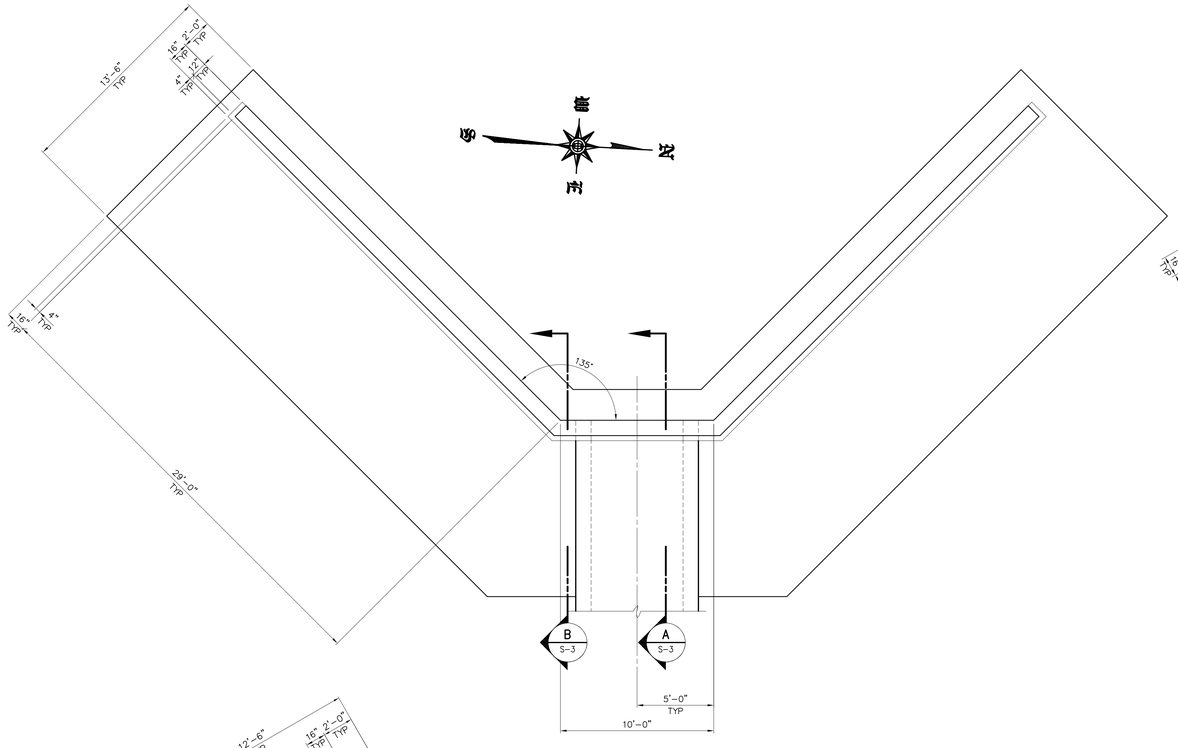
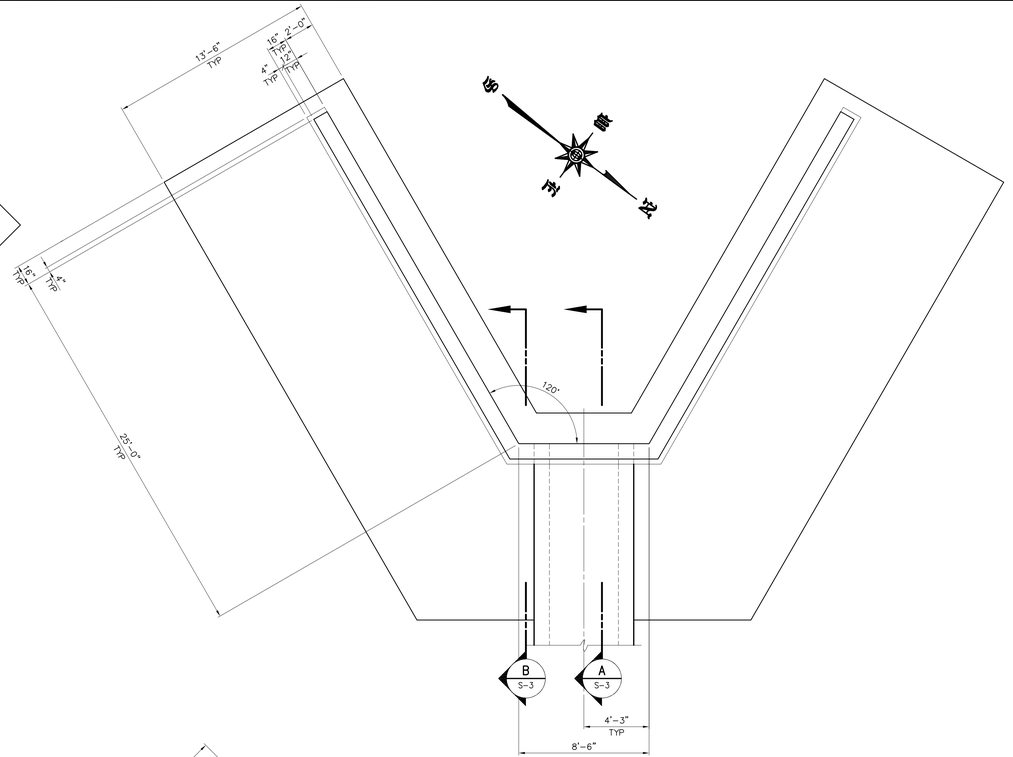
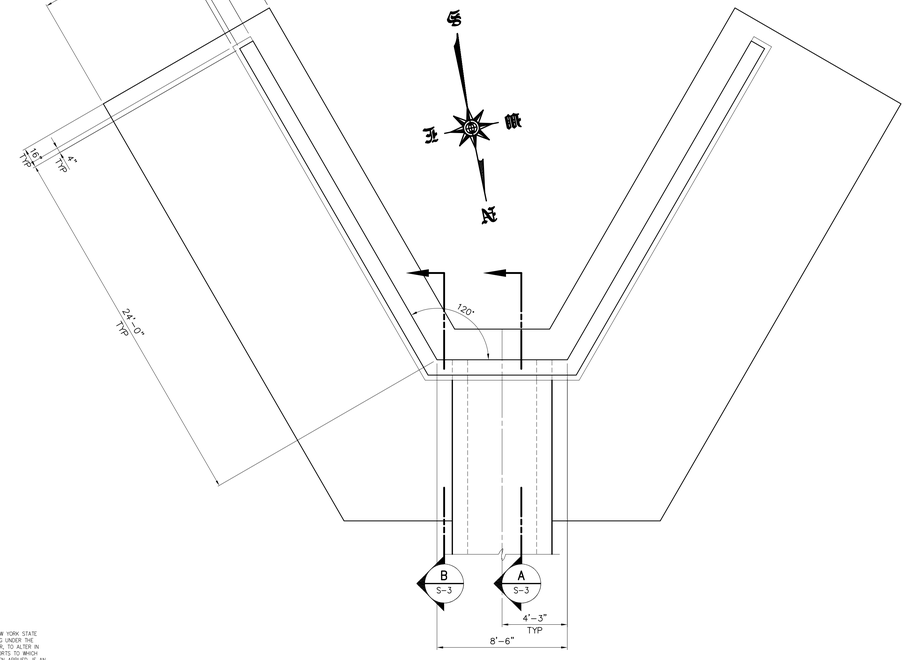


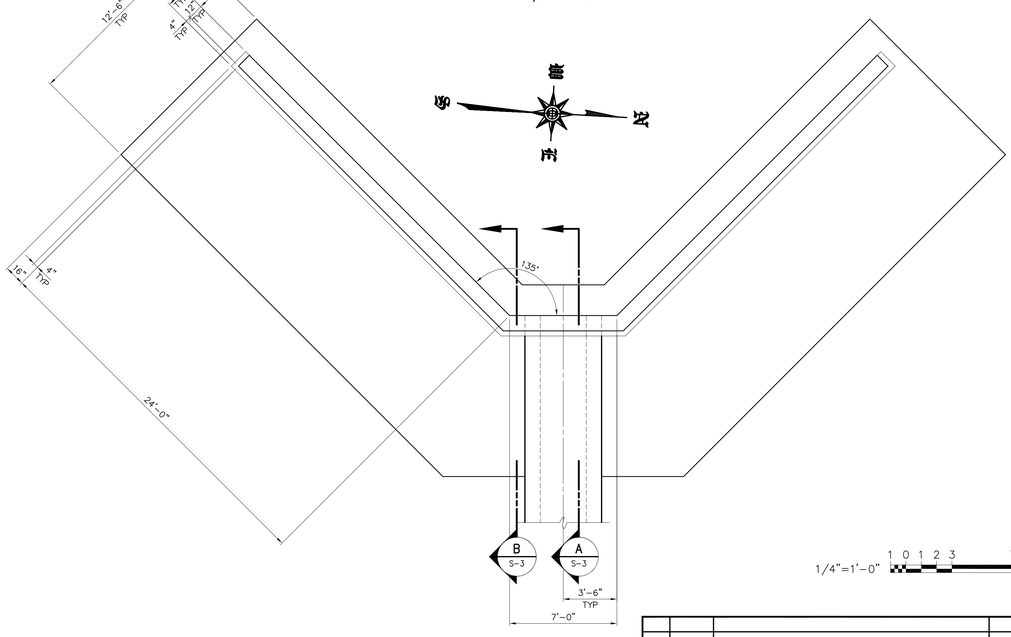
STRUCTURE NO. 1 148TH RD. HEADWALL PLAN
1/4" = 1'-0"



STRUCTURE NO. 2 147TH RD. HEADWALL PLAN
1/4" = 1'-0"



STRUCTURE NO. 3 BENTLEY RD. HEADWALL PLAN
1/4" = 1'-0"



STRUCTURE NO. 4 148TH DR HEADWALL PLAN
1/4" = 1'-0"

1/4"=1'-0" 1 0 1 2 3 7'

WARNING
IT IS A VIOLATION OF SECTION 7209-2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE S-2.DWG

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL
BMP 1 & BMP 2 CONRETE HEADWALL PLANS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 22OF 29 | S-2 S-7

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

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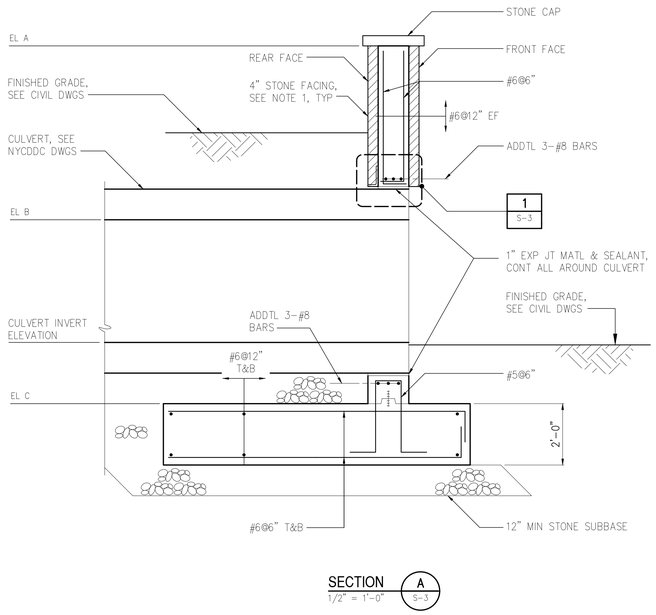
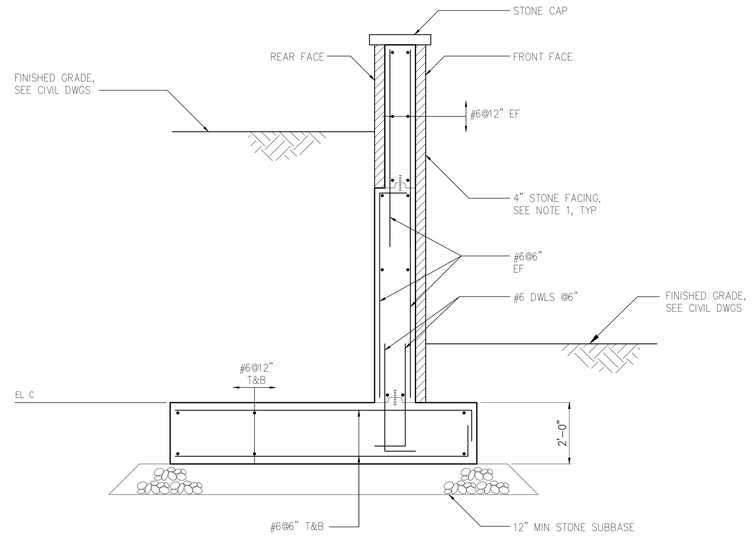


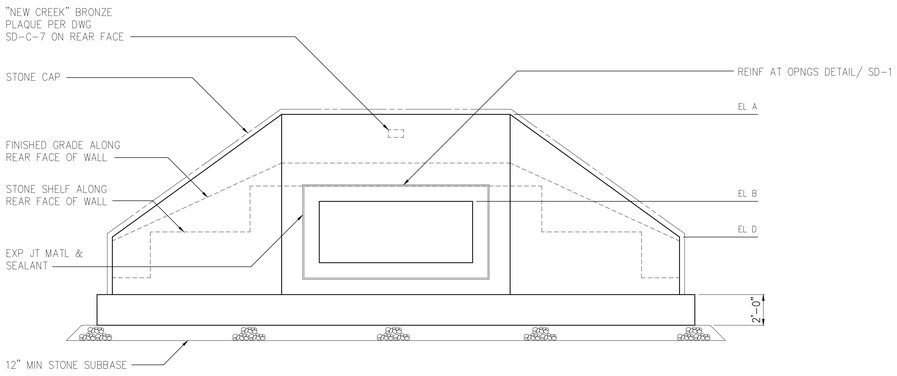
SECTION A (1/2" = 1'-0") — S-3



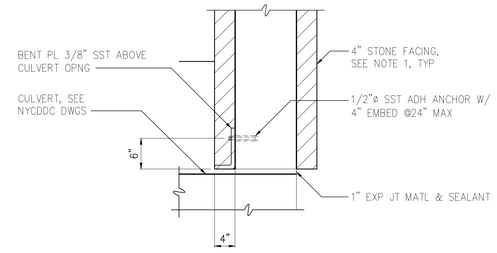
SECTION B (1/2" = 1'-0") — S-3

HEADWALL SCHEDULE

BMP	HEADWALL ID	EL A	EL B	EL C	EL D	CULVERT INVERT ELEVATION
1	STRUCTURE NO. 1 148TH RD.	6.50	-0.19	-4.19	-1.50	-2.19
1	STRUCTURE NO. 2 147TH RD.	6.82	0.65	-4.18	-0.50	-2.18
2	STRUCTURE NO. 3 BENTLEY RD.	6.50	0.28	-3.72	0.50	-1.72
2	STRUCTURE NO. 4 148TH DRIVE	6.50	0.28	-3.72	-0.50	-1.72



TYPICAL FRONT FACE OF HEADWALL ELEVATION
1/4" = 1'-0"



DETAIL 1 (1" = 1'-0") — S-3

3/8"=1'-0"

12" 0 1 2 4'

NO.	DATE	DESCRIPTIONS	BY	APPR'D

REVISIONS

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER — DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE S-3.DWG

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL
BMP 1 & BMP 2 CONCRETE HEADWALLS
SECTIONS AND DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 23 OF 29 | S-3 / S-7

CONSULTANT DESIGN

CAPITAL PROJECT HWQ724B

PLOT DATE 05/06/2019 5:13P C:\9781-000-NYC\Drawings\9781-037 Triangle\STRUCTURAL\S-3.dwg Last Saved By: ssetzer
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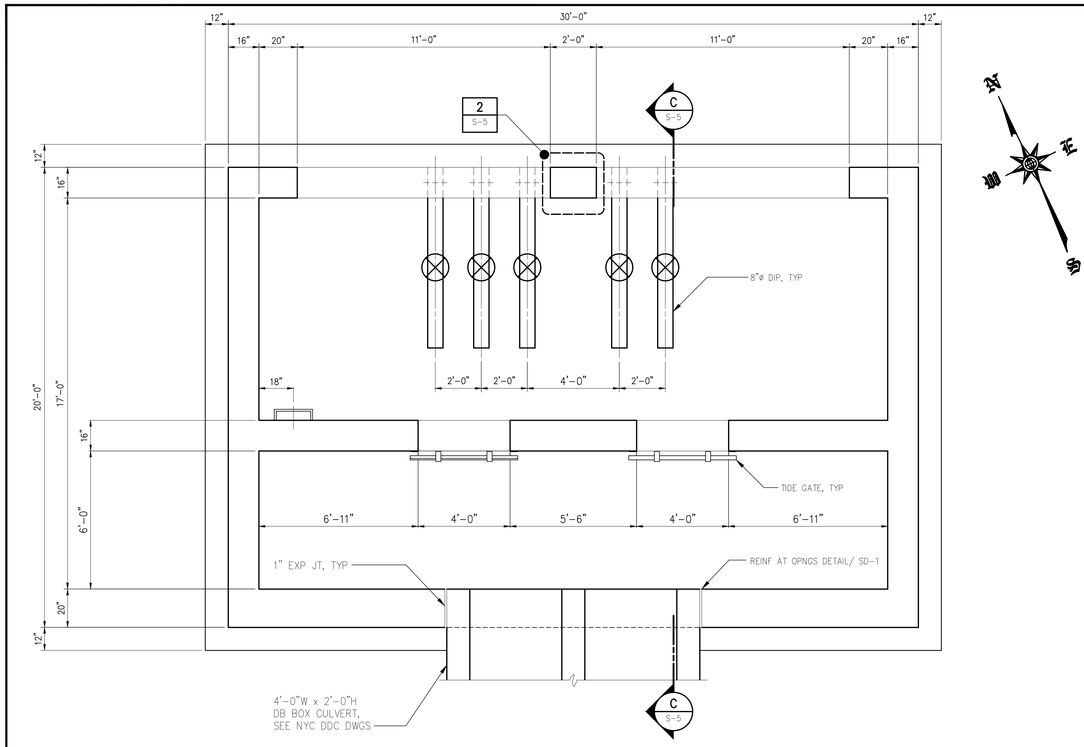
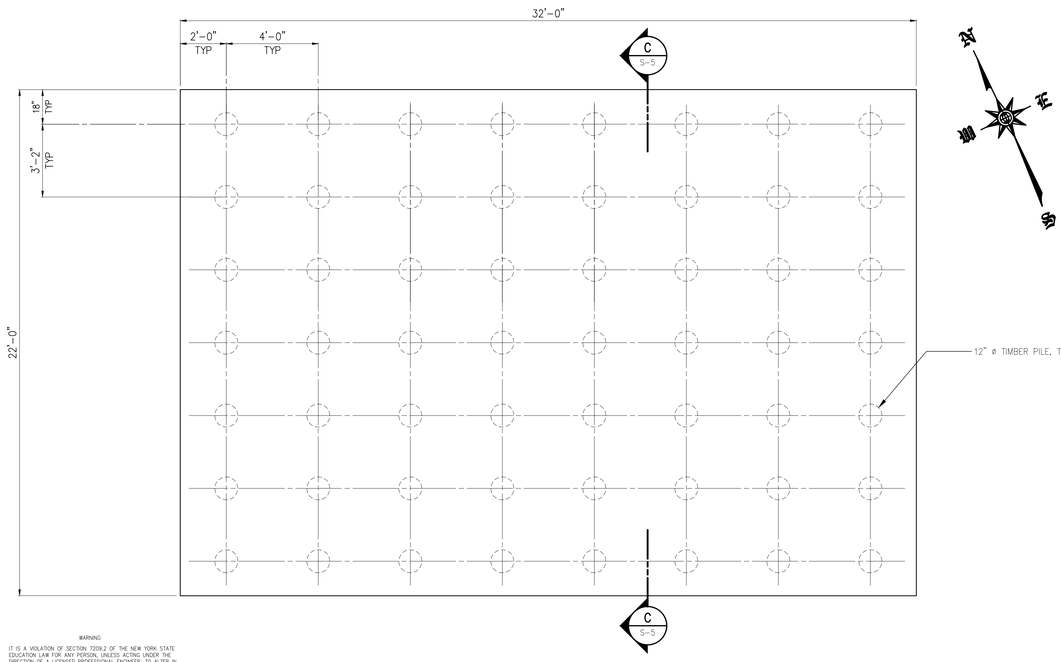


STRUCTURE NO. 5 BMP-1 WEIR CHAMBER BOTTOM PLAN

3/8" = 1'-0"

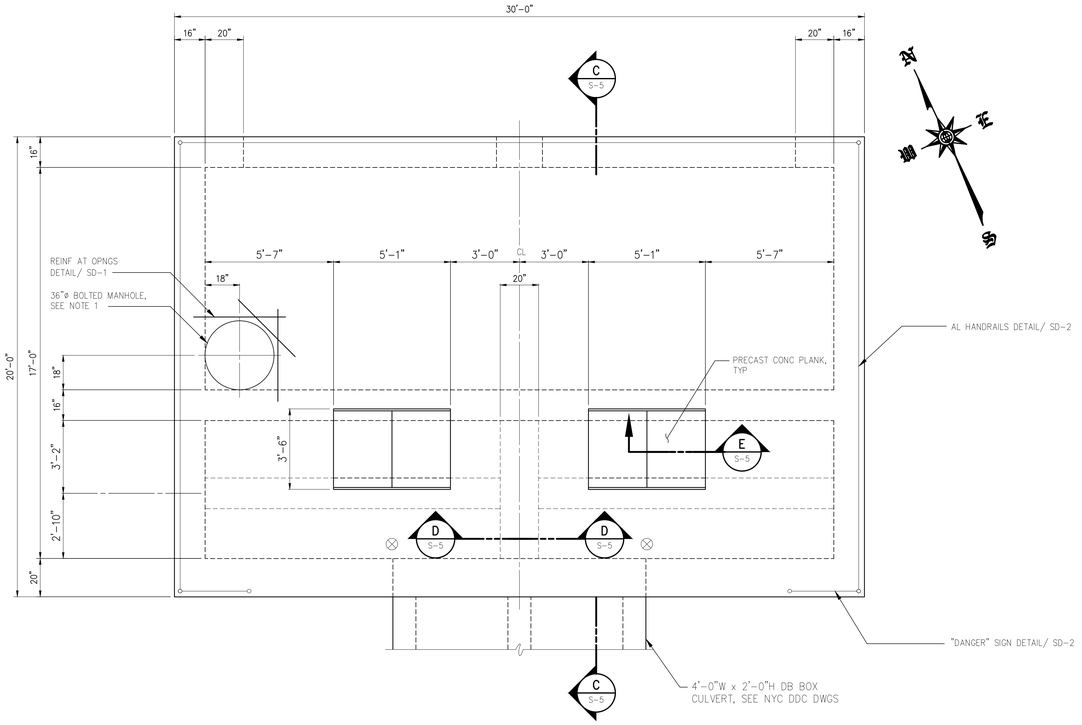


STRUCTURE NO. 5 BMP-1 WEIR CHAMBER PILE PLAN

3/8" = 1'-0"

GENERAL NOTES:

1. PROVIDE NEENAH R-6460-G1 MANHOLE FRAME WITH CUSTOM PATTERN COVER REQUIREMENTS PER CITY OF NEW YORK DEP STANDARD DETAIL SE41.



STRUCTURE NO. 5 BMP-1 WEIR CHAMBER TOP PLAN

3/8" = 1'-0"

1/4"=1'-0"

1 0 1 2 3 7'

WARNING

IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER

DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE S-4.DWG

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL
BMP-1 WEIR CHAMBER
PLANS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 24 OF 29 | S-4 / S-7

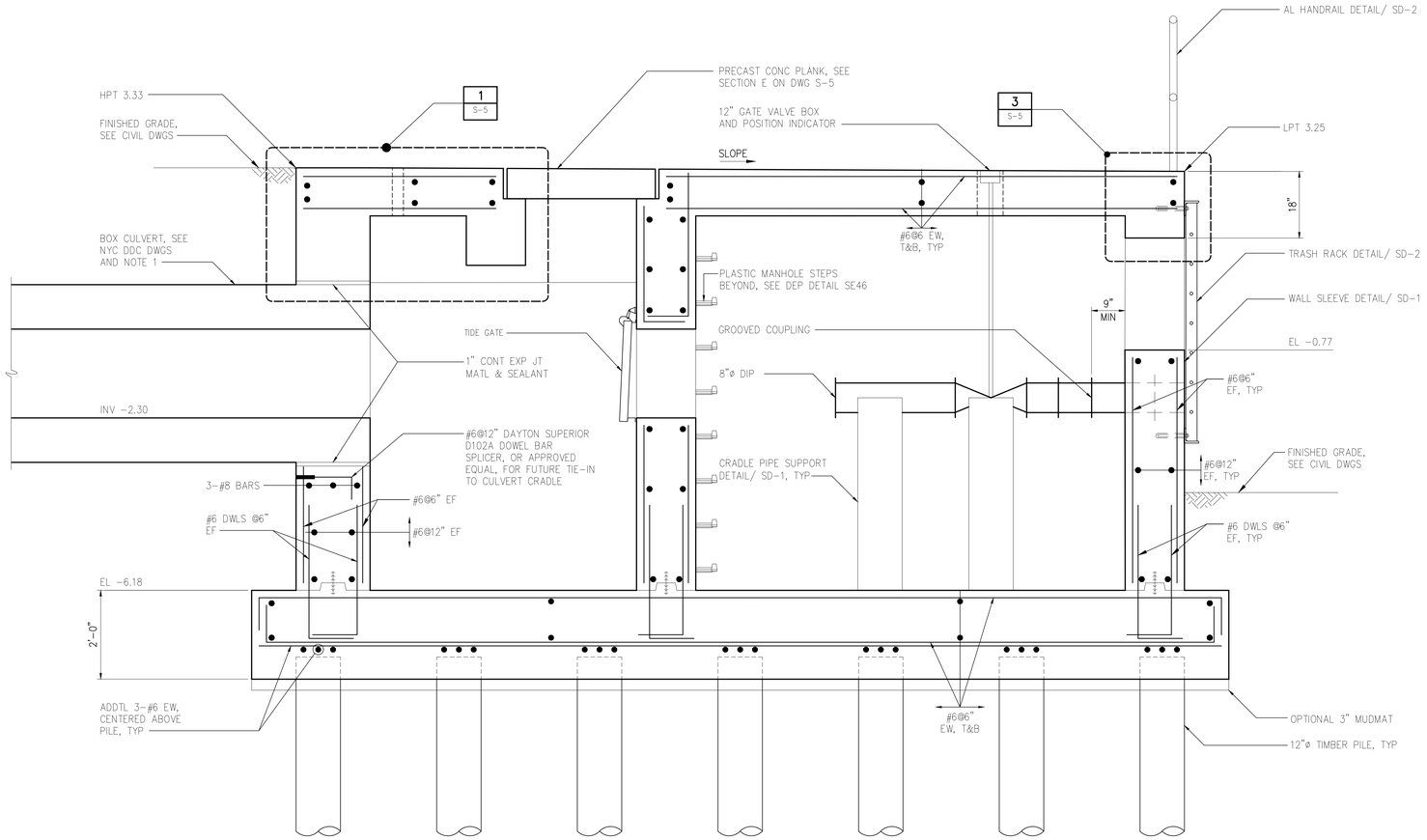
CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

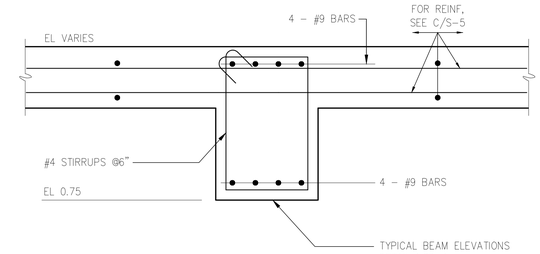
PLOT DATE: 05/06/2019 5:17P D:\9781-000-NYC\Drawings\9781-037 Triangle\STRUCTURAL\S-4.DWG Last Saved By: seltzer
XREFs: 9781-037 TITLEBLOCK,BMP-1-WC-PB-S,BMP-1-WC-PT-S,BMP-1-WC-PP-S

GENERAL NOTES:

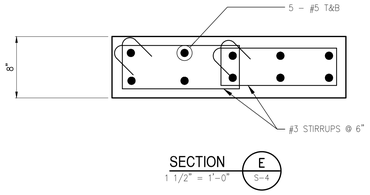
1. OPENING SIZE BASED ON DDC CAST IN PLACE OPTION FOR CULVERT WALL THICKNESS OF 12". ADJUST OPENING SIZE ACCORDINGLY IF PRECAST CULVERT IS TO BE USED.



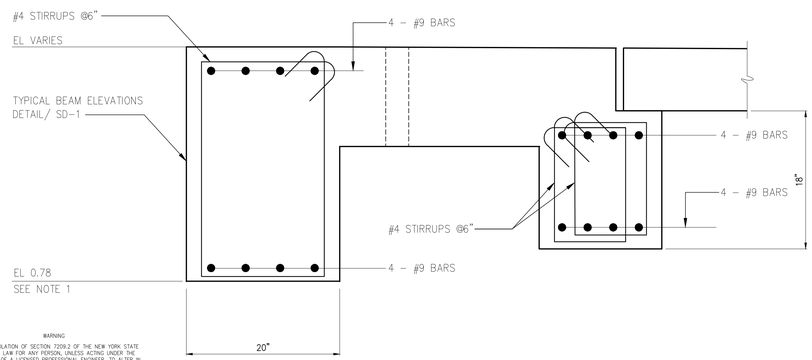
SECTION C
3/4" = 1'-0"



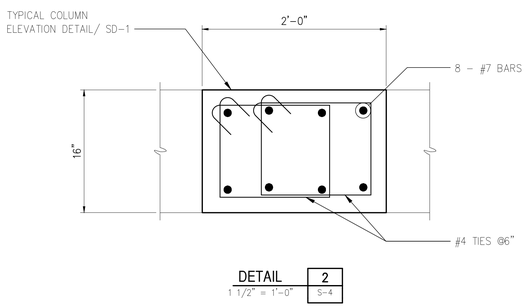
SECTION D
1" = 1'-0"



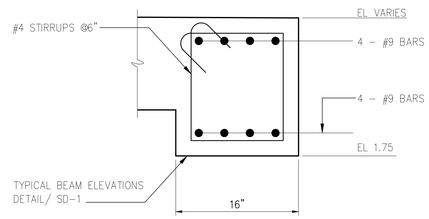
SECTION E
1 1/2" = 1'-0"



DETAIL 1
1 1/2" = 1'-0"



DETAIL 2
1 1/2" = 1'-0"



DETAIL 3
1 1/2" = 1'-0"

1/4"=1'-0"

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER

DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE S-5.DWG

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

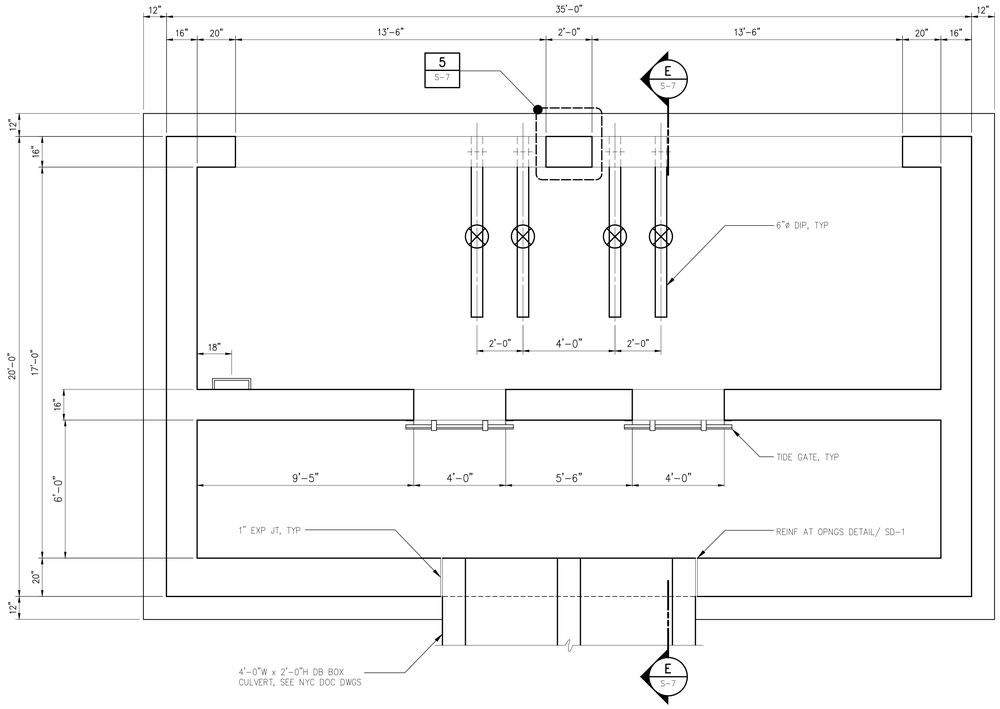
STRUCTURAL
BMP 1 WEIR CHAMBER
SECTIONS AND DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 25 OF 29 | S-5 / S-7

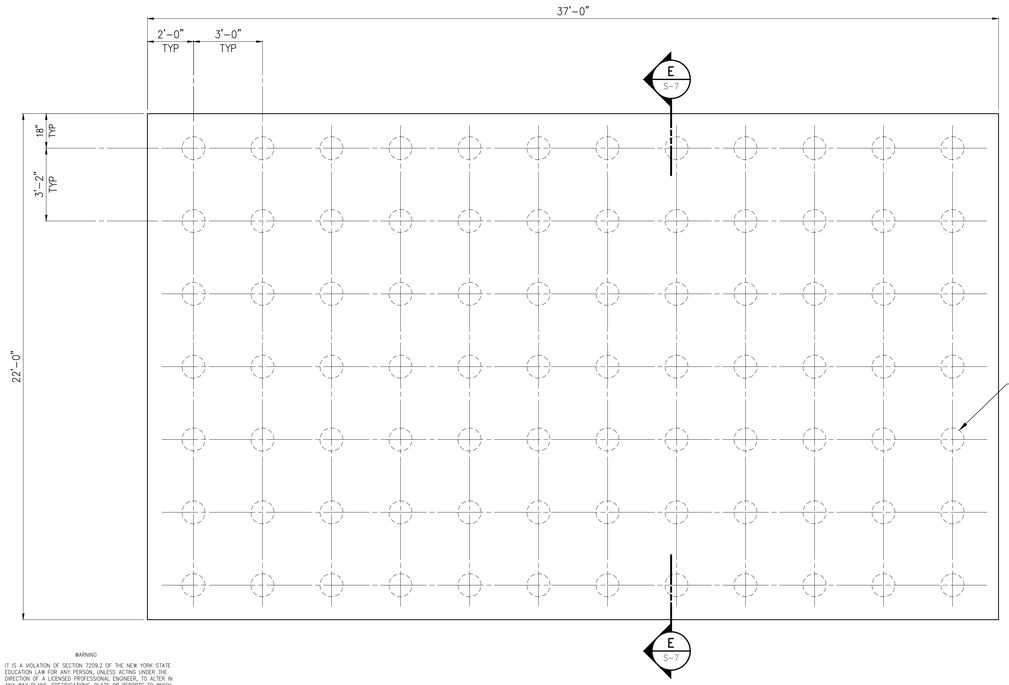
CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN



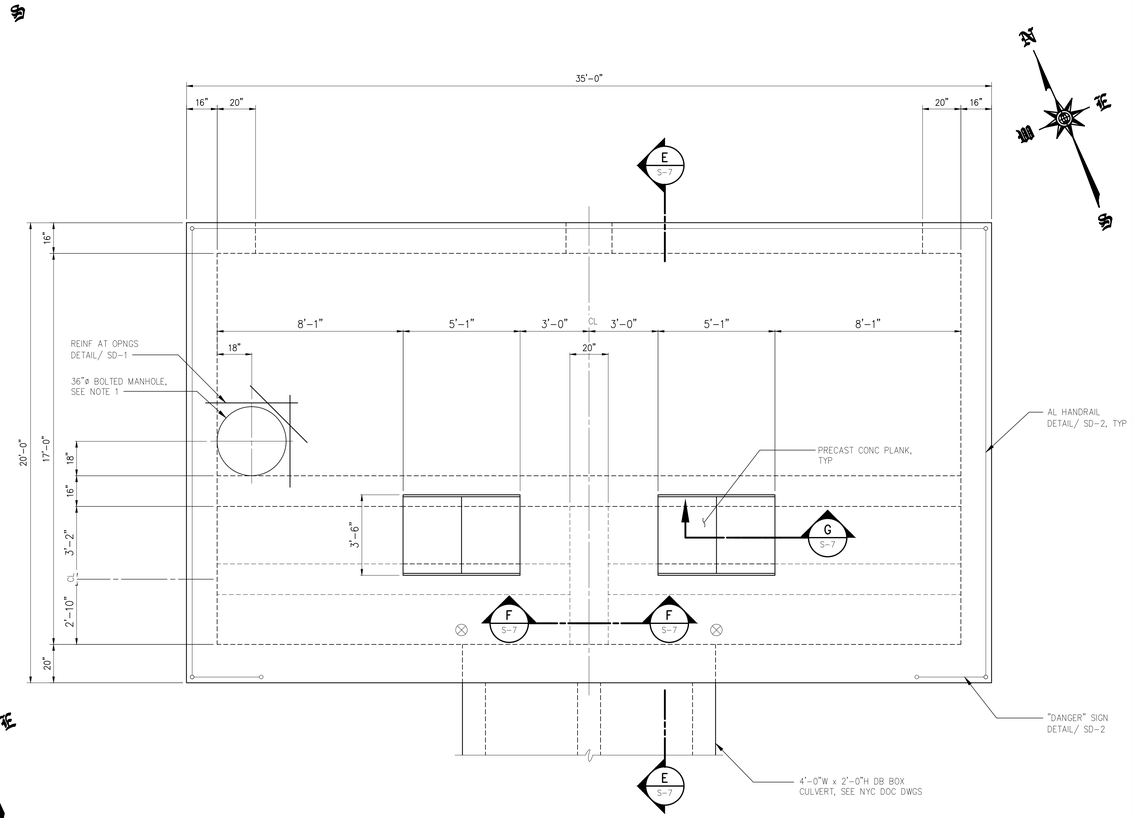
STRUCTURE NO. 6 BMP 2 WEIR CHAMBER BOTTOM PLAN

3/8" = 1'-0"



STRUCTURE NO. 5 BMP-1 WEIR CHAMBER PILE PLAN

3/8" = 1'-0"



STRUCTURE NO. 6 BMP 2 WEIR CHAMBER TOP PLAN

3/8" = 1'-0"

GENERAL NOTES:

1. PROVIDE NEENAH R-6460-G1 MANHOLE FRAME WITH CUSTOM PATTERN COVER REQUIREMENTS PER CITY OF NEW YORK DEP STANDARD DETAIL SE41.

1/4"=1'-0" 1 0 1 2 3 7'

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER

DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE S-6.DWG

SCALE
AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL
BMP-2 WEIR CHAMBER
PLANS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 26 OF 29 | S-6 / S-7

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

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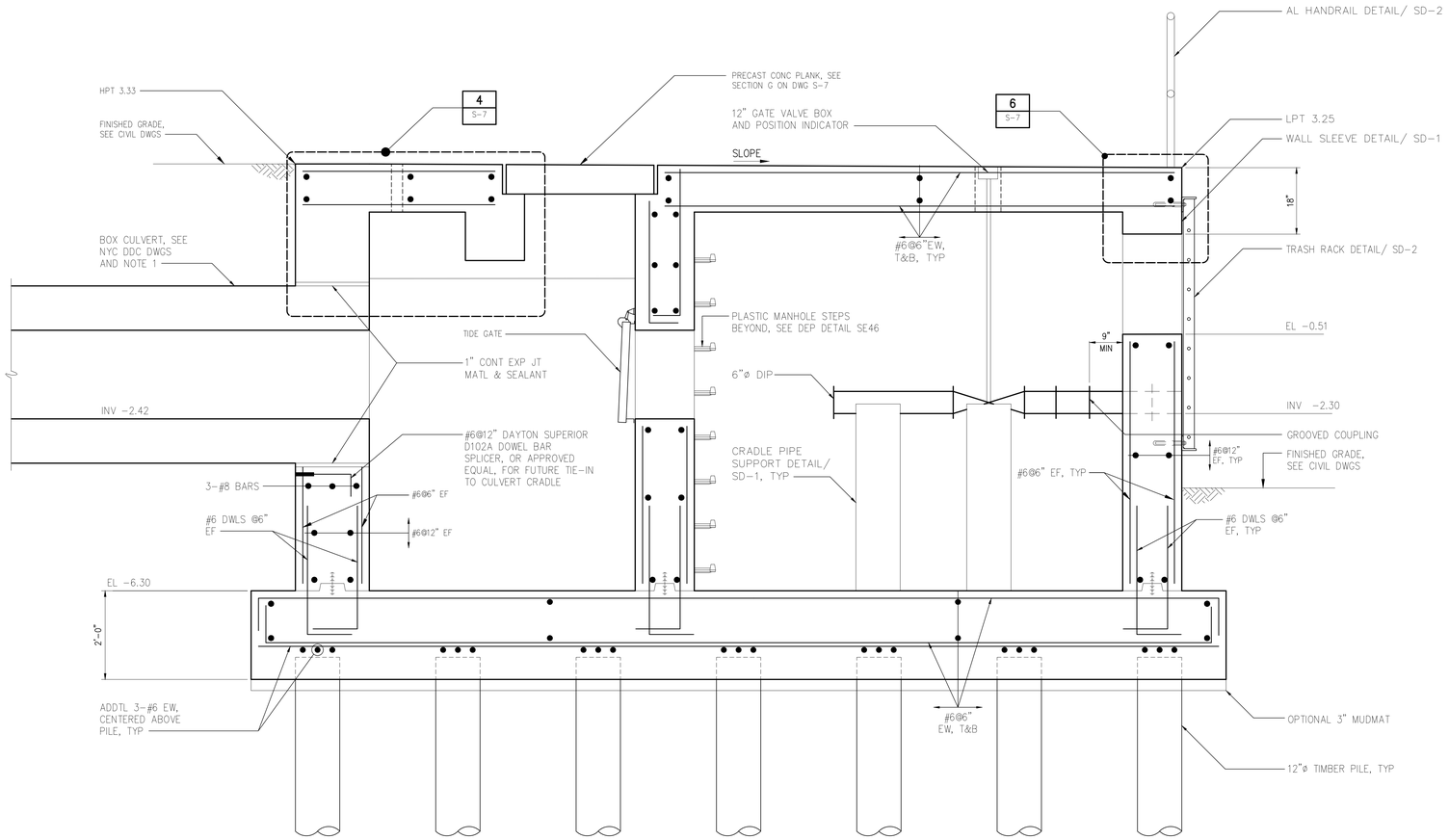
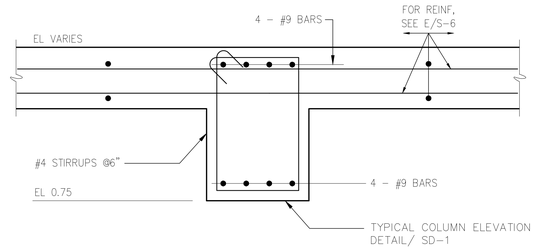
XREFs= 9781-037 TITLEBLOCK,BMP-2-WC-FB-S,BMP-2-WC-PT-S,BMP-2-WC-PP-S

GENERAL NOTES:

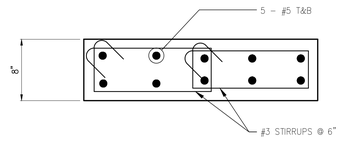
1. OPENING SIZE BASED ON DDC CAST IN PLACE OPTION FOR CULVERT WALL THICKNESS OF 12". ADJUST OPENING SIZE ACCORDINGLY IF PRECAST CULVERT IS TO BE USED.



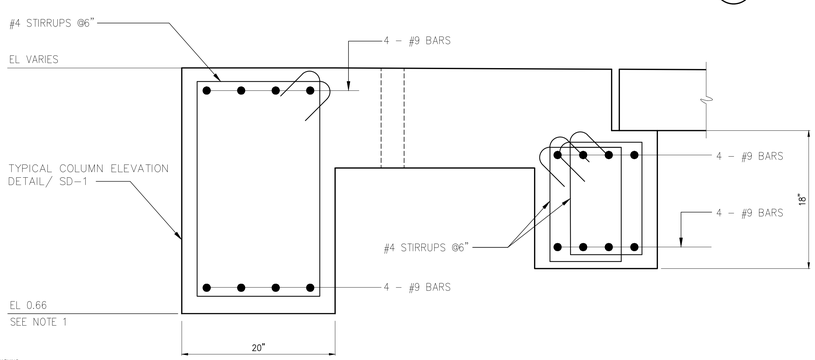
SECTION E
3/4" = 1'-0"



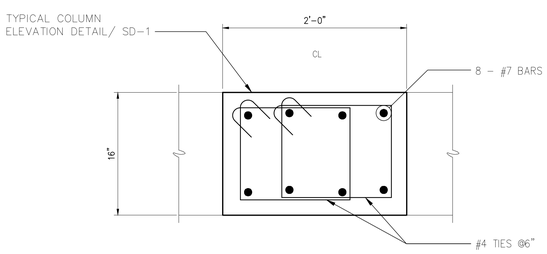
SECTION F
1" = 1'-0"



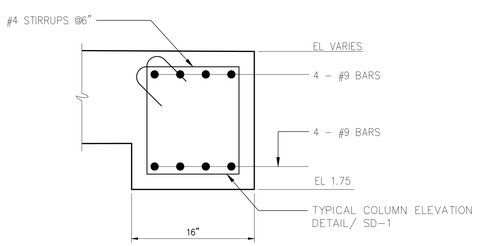
SECTION G
1 1/2" = 1'-0"



DETAIL 4
1 1/2" = 1'-0"



DETAIL 5
1 1/2" = 1'-0"



DETAIL 6
1 1/2" = 1'-0"

1/4"=1'-0"

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER

DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE S-7.DWG

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL
BMP-2 WEIR CHAMBER
SECTIONS AND DETAILS

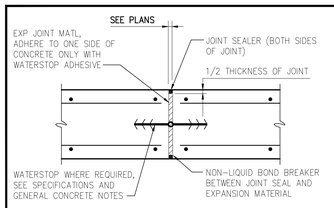
RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 27 OF 29 | S-7 / S-7

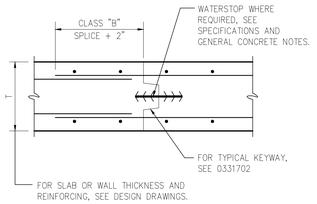
CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

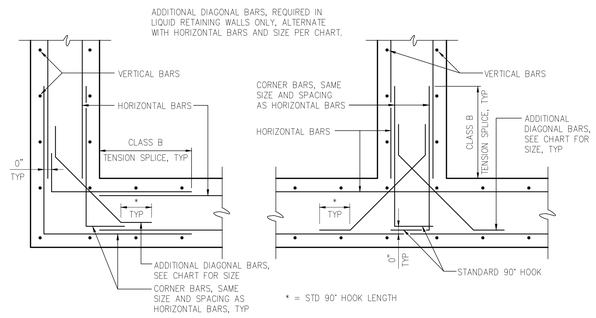
PLOT DATE: 05/06/2019 5:22P D:\9781-000-NYC\Drawings\9781-037 Triangle\STRUCTURAL\S-7.dwg Last Saved By: ssetzer
XREFs= 9781-037 TITLEBLOCK,BMP-2-WC-FB-S,BMP-2-WC-S01,BMP-2-WC-S02,BMP-2-WC-S03



TYPICAL EXPANSION JOINT DETAIL

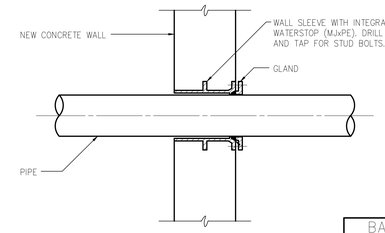


TYPICAL SLAB HORIZONTAL CONSTRUCTION JOINT DETAIL



TYPICAL WALL REINFORCING DETAIL

DIAGONAL BAR SIZE CHART	
BAR SIZE – HORIZONTAL REINFORCEMENT	BAR SIZE – DIAGONAL REINFORCEMENT
# 3	# 3
# 4	# 3
# 5	# 4
# 6	# 5
# 7	# 5
# 8	# 6
# 9	# 7
# 10	# 8
# 11	# 9
AT LOCATIONS WHERE DIFFERENT SIZE HORIZONTAL BARS CONVERGE, THE LARGER BAR SIZE SHALL CONTROL	



WALL SLEEVE DETAIL

NOTES:

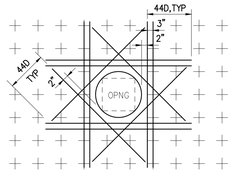
1 THIS DETAIL APPLIES FOR OPENINGS 8"ø AND LARGER. FOR SMALLER OPENINGS, BEND BARS OR ADJUST SPACING OF REINFORCEMENT TO AVOID OPENING.

2 PLACE EXTRA BARS OF THE SAME SIZE AS THE INTERRUPTED BARS AT EACH SIDE OF OPENING. QUANTITY OF EXTRA BARS AT EACH SIDE SHALL EQUAL HALF THE QUANTITY OF INTERRUPTED BARS EXCEPT WHERE NOTED OTHERWISE.

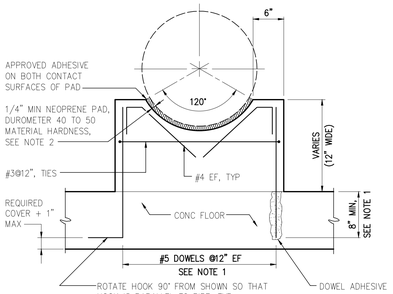
3 PROVIDE ONE DIAGONAL BAR EACH SIDE OF OPENING WITH SIZE EQUAL TO MAIN REINFORCEMENT, TYPICAL EACH FACE.

4 WHERE INVERT OF OPENING IN WALL IS LESS THAN 44 BAR DIAMETERS FROM TOP OF SLAB, EXTRA REINFORCEMENT ON EACH SIDE SHALL INCLUDE DOWELS EMBEDDED INTO SLAB WITH STANDARD 90 DEGREE HOOKS TO SPLICE WITH EXTRA VERTICAL REINFORCEMENT. DOWELS SHALL ALSO STILL BE PROVIDED BELOW OPENING.

5 WHERE INVERT OF OPENING IN WALL OR SLAB IS CLOSER THAN 44 BAR DIAMETERS TO EDGE OF SLAB OR BOTTOM OF WALL, EXTRA DIAGONAL BARS MAY BE TERMINATED TWO INCHES FROM EDGE OF SLAB OR BOTTOM OF WALL. DOWELS DO NOT HAVE TO BE PROVIDED TO SPLICE WITH DIAGONAL BARS.



TYPICAL REINF AT OPNGS DETAIL

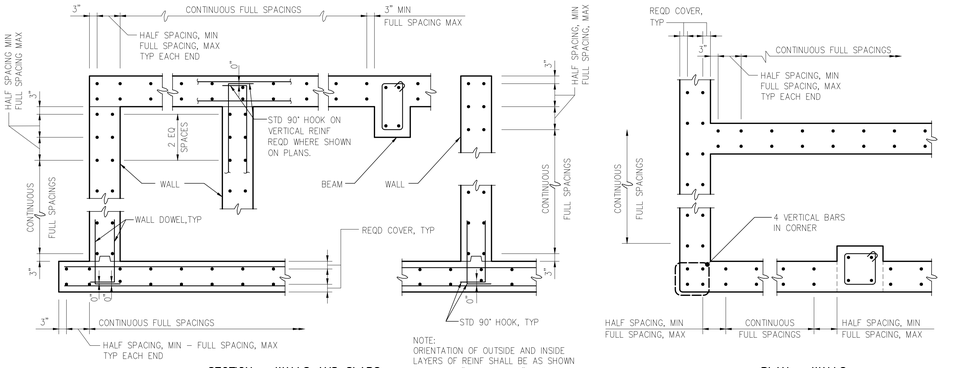


NOTES:
1. DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS 8" THICK OR LESS, USE #4 DOWELS EMBEDDED TO WITHIN 2" OF BOTTOM OF FLOOR SLAB.
2. ENGINEER SHALL VERIFY THICKNESS OF PAD WILL ACCOMMODATE DESIGN MOVEMENT, PARTICULARLY FOR OUTSIDE AERIAL PIPE.

CRADLE PIPE SUPPORT DETAIL

NOTES:
BARS TO BE WELDED SHALL CONFORM TO ASTM A706. WELDING SHALL BE DONE BY CERTIFIED WELDERS IN CONFORMANCE WITH AWS D1.4. WELDING IS PERMITTED ONLY WHERE SHOWN ON PLANS OR OTHERWISE APPROVED BY THE ENGINEER.

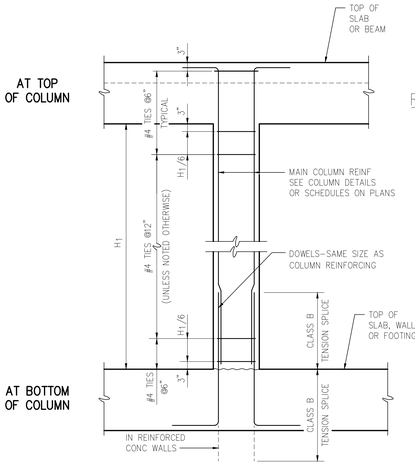
REINFORCING BAR WELDMENT DETAIL



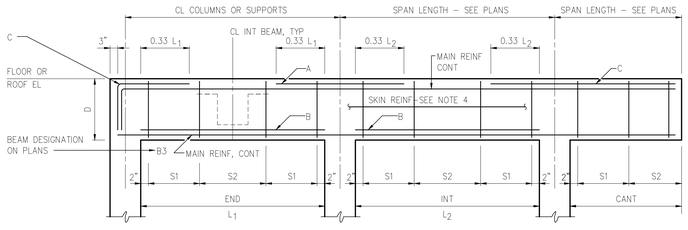
SECTION – WALLS AND SLABS

NOTE:
ORIENTATION OF OUTSIDE AND INSIDE LAYERS OF REINF SHALL BE AS SHOWN ON PLANS. "FULL SPACING" IS BAR SPACING CALLED OUT ON PLANS.

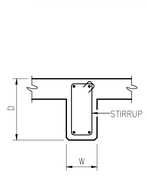
PLAN – WALLS



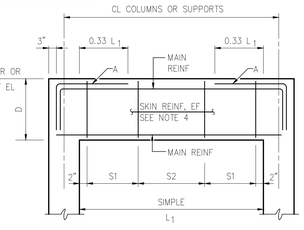
TYPICAL COLUMN ELEVATIONS DETAIL



TYPICAL BEAM REPLACEMENT DETAIL



TYPICAL BEAM SECTION



NOTES:

1 **WHERE BEAMS FRAME INTO CONCRETE WALLS, WALLS SHALL BE BLOCKED OUT FULL HEIGHT AND WIDTH OF BEAM TO PROVIDE A MINIMUM 8" SEAT FOR BEAM BEARING. WALL REINFORCEMENT SHALL NOT BE INTERRUPTED THROUGH BLOCKOUT.**

2 **S1 = 2x"D" FOR STIRRUP SPACING SEE BEAM SCHEDULE**

3 CONTINUOUS BOTTOM BARS IN ALL BEAMS MAY BE SPLICED AT COLUMN CENTERLINES. CONTINUOUS TOP BARS MAY BE SPLICED AT MID–SPAN.

4 UNLESS NOTED OTHERWISE, PROVIDE SKIN REINFORCEMENT BETWEEN TOP AND BOTTON MAIN REINFORCEMENT AS FOLLOWS:
FOR BEAMS 18" OR LESS IN DEPTH, NO SKIN REINFORCEMENT IS REQUIRED
FOR BEAMS >18" THRU 36" IN DEPTH, PROVIDE #5@12" EF
FOR BEAMS >36" THRU 84" IN DEPTH, PROVIDE #5@6 EF
FOR BEAMS >84" IN DEPTH, SEE REMARKS IN BEAM SCHEDULE.

5 ALL STIRRUPS SHALL BE CLOSED TIES, TYPE T1, (ACI 315) UNLESS NOTED OTHERWISE.

6 SEE DRAWINGS FOR BEAM ELEVATION DIAGRAMS SPECIFICALLY REFERRED TO IN THE BEAM SCHEDULES.

7 WHEN TWO LAYERS OF FLEXURAL REINFORCEMENT ARE REQUIRED THE SPACING BETWEEN THE LAYERS SHALL BE 3 INCHES.

TYPICAL BEAM ELEVATIONS DETAIL

1/4"=1'–0"

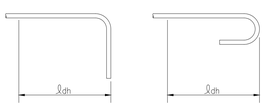
BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH FOR BARS IN TENSION								
fy = 60,000 psi UNCOATED BARS CLEAR COVER ≥ 1.5 INCHES					** BASED ON MATERIALS AND CONDITIONS AS FOLLOWS: fc' = 4000 psi OR GREATER NORMAL WEIGHT CONCRETE			
BASIC DEVELOPMENT LENGTH ld				BAR SIZE	CLASS B SPLICE LENGTH 1.3 x ld			
CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"			CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"	
BASIC	TOP *	BASIC	TOP *		BASIC	TOP *	BASIC	TOP *
1'–0"	1'–0"	1'–0"	1'–4"	# 3	1'–0"	1'–3"	1'–4"	1'–8"
1'–0"	1'–3"	1'–7"	2'–1"	# 4	1'–3"	1'–8"	2'–1"	2'–9"
1'–3"	1'–7"	2'–4"	3'–0"	# 5	1'–7"	2'–0"	3'–0"	3'–11"
1'–6"	1'–11"	3'–1"	4'–0"	# 6	1'–11"	2'–5"	4'–0"	5'–2"
2'–5"	3'–1"	4'–11"	6'–4"	# 7	3'–1"	4'–0"	6'–4"	8'–3"
3'–0"	3'–11"	6'–0"	7'–9"	# 8	3'–11"	5'–1"	7'–9"	10'–1"
3'–8"	4'–9"	6'–9"	8'–9"	# 9	4'–9"	6'–3"	8'–9"	11'–4"
4'–6"	5'–10"	7'–7"	9'–10"	# 10	5'–10"	7'–7"	9'–10"	12'–9"
5'–5"	7'–0"	8'–5"	10'–11"	# 11	7'–0"	9'–1"	10'–11"	14'–2"

* TOP REINFORCEMENT IS HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.

** FOR MATERIALS OR CONDITIONS DIFFERENT FROM THOSE STATED, LENGTHS SHOWN IN CHART SHALL BE MODIFIED TO CONFORM TO THE PROVISIONS OF ACI 318, SECTION 12.2.

DEVELOPMENT LENGTH OF STANDARD HOOKS FOR BARS IN TENSION		
fy = 60,000 psi fc' = 4000 psi OR GREATER		
BAR SIZE	DEVELOPMENT LENGTH ldh	
	BASIC	W/ CONC COVER *
#3	8"	6"
#4	10"	7"
#5	1'–0"	9"
#6	1'–3"	11"
#7	1'–5"	1'–0"
#8	1'–7"	1'–2"
#9	1'–10"	1'–4"
#10	2'–1"	1'–6"
#11	2'–3"	1'–7"

* SIDE COVER NORMAL TO PLANE OF HOOK AT LEAST 2 1/2"; AND FOR 90° HOOK, END COVER BEYOND OUTSIDE END OF HOOK AT LEAST 2".



BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH FOR BARS IN COMPRESSION fy = 60,000 psi fc' = 4000 psi OR GREATER				
BASIC DEVELOPMENT LENGTH		BAR SIZE	SPLICE LENGTH	
BASIC	CONFINEMENT *		BASIC	CONFINEMENT *
8"	8"	# 3	12"	12"
10"	8"	# 4	1'–3"	12"
1'–0"	9"	# 5	1'–7"	1'–3"
1'–3"	1'–0"	# 6	1'–11"	1'–6"
1'–5"	1'–1"	# 7	2'–3"	1'–9"
1'–7"	1'–3"	# 8	2'–6"	1'–11"
1'–10"	1'–4"	# 9	2'–10"	2'–2"
2'–1"	1'–7"	# 10	3'–3"	2'–6"
2'–3"	1'–8"	# 11	3'–7"	2'–9"

* BAR ENCLOSED WITHIN SPIRALS OF NOT LESS THAN 1/4 INCH DIAMETER AND NOT MORE THAN 4 INCH PITCH OR WITHIN #4 TIES IN CONFORMANCE WITH ACI 318, SECTION 7.10.5 AT NOT MORE THAN 4 INCHES ON CENTER, FACTOR 0.75 USED.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER

DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE SD-1.DWG

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL STANDARD DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 28 OF 29 | SD-1 ~~SD-2~~

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

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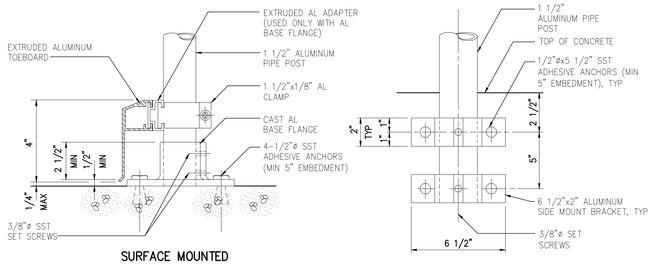
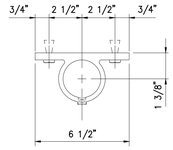
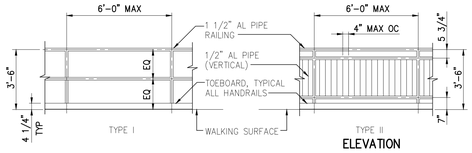


SURFACE MOUNTED TO CONCRETE

SIDE MOUNT TO CONCRETE

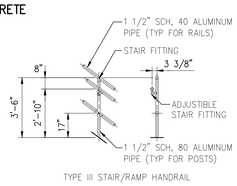


PLAN

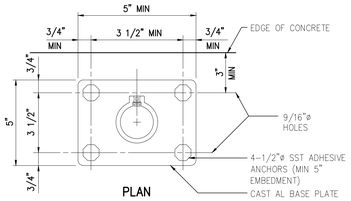


ELEVATION

NOTE:
UNLESS SHOWN OTHERWISE ON THE CONTRACT DRAWING, HANDRAILS SHALL BE TYPE I.

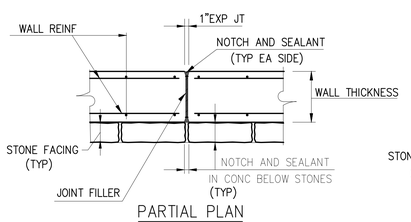


TYPE III STAIR/RAMP HANDRAIL



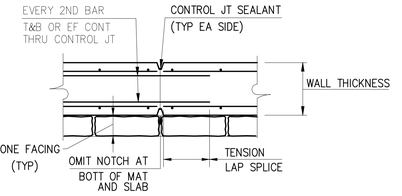
PLAN

ALUMINUM HANDRAILS DETAIL



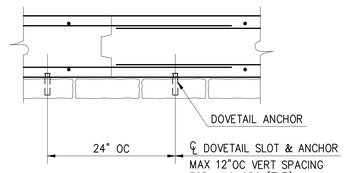
PARTIAL PLAN

EXPANSION JOINT DETAIL
NTS



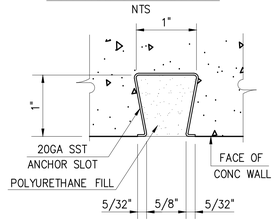
PARTIAL PLAN

CONTROL JOINT DETAIL
NTS



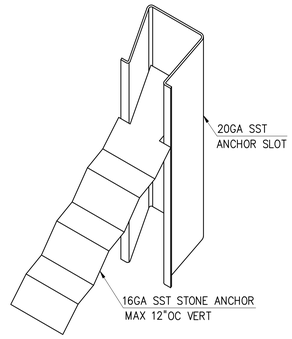
PARTIAL PLAN

TYPICAL DOVETAIL & CONSTRUCTION JOINT DETAIL
NTS



ENLARGED PLAN

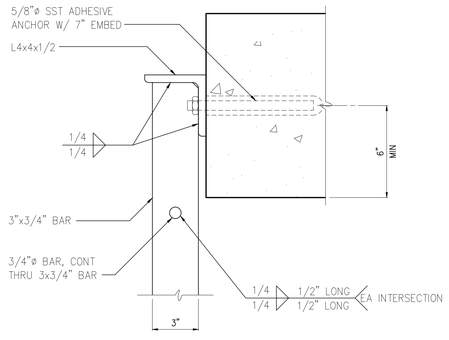
TYPICAL DOVETAIL & STONE ANCHOR DETAIL
NTS



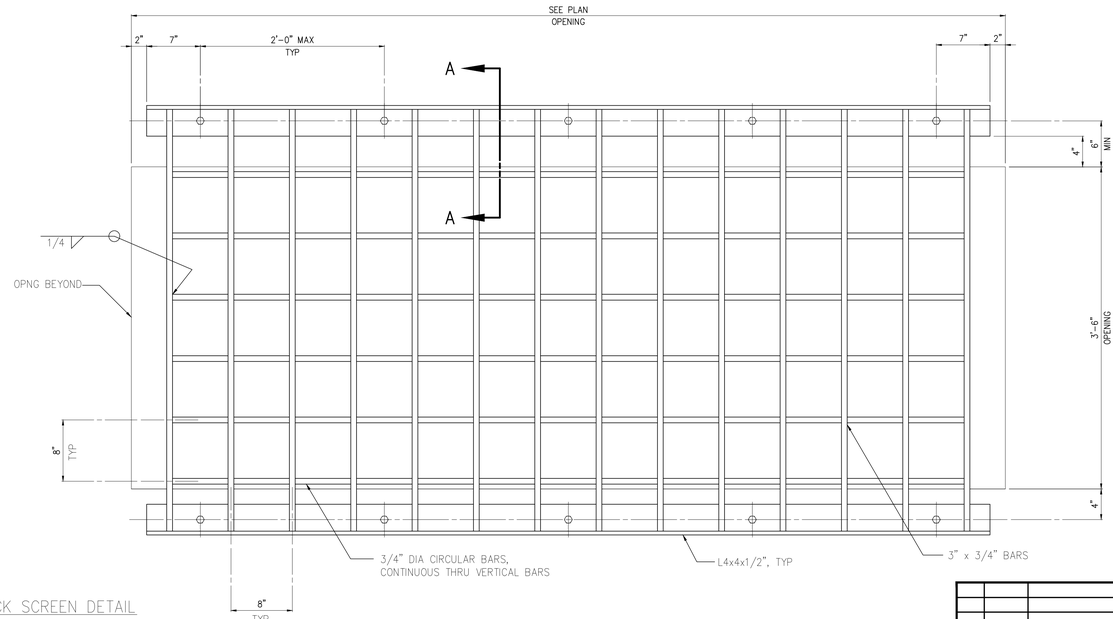
ISOMETRIC

DANGER
PERMIT-REQUIRED CONFINED SPACE
HAZARDOUS AREA
UNAUTHORIZED PERSONNEL
KEEP OUT

"DANGER" SIGN DETAIL



SECTION A–A
3" = 1'-0"



TRASH RACK SCREEN DETAIL

TRASH RACK NOTES

NOTES:
1. ANCHOR BOLT SHALL BE FASTENED WITH AN EPOXY ADHESIVE. ADHESIVE SHALL BE HILTI POWERS PE 1000+ OR EQUAL SUITABLE FOR USE IN MARINE ENVIRONMENT. ALL MANUFACTURER INSTALLATIONS INSTRUCTIONS AND RECOMMENDATIONS SHALL BE FOLLOWED.
2. ALL MEMBERS SHALL BE 316L STAINLESS STEEL.
3. ALL FASTENERS SHALL BE STAINLESS STEEL.

1/4"=1'-0"

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

Hazen

FINAL DESIGN PREPARED BY:

P.E.
HAZEN AND SAWYER PROJECT MANAGER — DATE:

DRAWN BY S. ROESER
DESIGNED BY C. HUNT
CHECKED BY C. PHILLIPS
CADD FILE SD-2.DWG

SCALE AS SHOWN

CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

STRUCTURAL
STANDARD DETAILS

RECONSTRUCTION OF BROOKVILLE BOULEVARD AND ADJOINING STREETS IN BROOKVILLE BOULEVARD AND EDGEWOOD TRIANGLE,NY
BOROUGH OF QUEENS

PROJECT ID: - HWQ724B | DATE: MAY 2019 | SHEET 29 OF 29 | SD-2

CAPITAL PROJECT HWQ724B

CONSULTANT DESIGN

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XREFs= 9781-037 TITLEBLOCK,BMP-1-WC-S-DC

APPENDIX C: SOIL BORING DATA (CDM SMITH 2015)

GEOTECHNICAL DATA REPORT

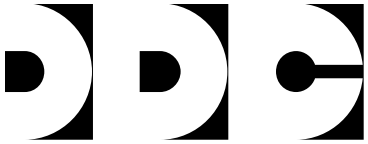
DDC PROJECT: Reconstruction of Brookville Boulevard, Brookville Boulevard Between 149th Avenue and Newhall Street, Borough of Queens, New York, NY

SES NO.: 4053

CONTRACT REG NO.: 20121431561

WORK ORDER NO.: 9084-CDM-8592

Prepared for:



City of New York Department of Design and Construction
Bureau of Environmental and Geotechnical Services
30-30 Thomson Avenue, Fourth Floor
Long Island City, New York 11101

Prepared by:
CDM Smith

Project No. : HWQ724B
February 05, 2015

RECORD OF BORINGS

Zone 3104	Geographic		NAD83		NAD27		QUEENS	
BORING	Lat (N)	Lng(W)	N	E	N	E	E	S
B-1	40.6546	-73.7521	177865.80	1053040.17	156424.69	2068792.01	77589.28	-49078.86
B-2	40.6549	-73.7518	177978.99	1053125.87	156537.88	2068877.71	77609.44	-48938.32
B-3	40.6552	-73.7517	178077.40	1053142.24	156636.29	2068894.08	77576.10	-48844.29
B-4	40.6555	-73.7515	178186.88	1053205.75	156745.77	2068957.59	77578.64	-48717.75
B-5	40.6594	-73.7490	179617.02	1053895.32	158175.88	2069647.17	77489.33	-47132.52
B-6	40.6595	-73.7489	179649.89	1053922.97	158208.75	2069674.83	77497.60	-47090.37
B-7	40.6598	-73.7487	179741.13	1053978.19	158299.99	2069730.06	77501.73	-46983.79
B-8	40.6599	-73.7487	179803.05	1053972.47	158361.91	2069724.33	77466.73	-46932.39
B-9	40.6566	-73.7497	178574.48	1053698.53	157133.35	2069450.38	77822.08	-48139.96
B-10	40.6568	-73.7495	178654.75	1053742.69	157213.63	2069494.55	77821.84	-48048.33
B-11	40.6571	-73.7493	178771.50	1053797.85	157330.37	2069549.71	77813.56	-47919.48
B-12	40.6574	-73.7492	178866.37	1053847.52	157425.24	2069599.38	77811.07	-47812.42
B-13	40.6540	-73.7478	177657.14	1054222.25	156216.03	2069974.11	78724.59	-48688.89
B-14	40.6542	-73.7478	177709.64	1054235.41	156268.53	2069987.28	78710.68	-48636.58
B-15	40.6545	-73.7476	177846.77	1054284.96	156405.66	2070036.83	78687.62	-48492.60
B-18	40.6553	-73.7475	178124.48	1054315.79	156683.36	2070067.66	78580.10	-48234.70
B-19	40.6554	-73.7475	178150.01	1054324.04	156708.89	2070075.91	78574.95	-48208.37
B-20	40.6556	-73.7474	178226.56	1054340.47	156785.44	2070092.34	78552.25	-48133.43
B-21	40.6553	-73.7466	178128.85	1054568.28	156687.73	2070320.15	78798.89	-48108.59
B-22	40.6560	-73.7470	178364.23	1054449.67	156923.11	2070201.55	78581.12	-47960.10
B-23	40.6562	-73.7469	178441.94	1054486.91	157000.82	2070238.78	78576.06	-47874.07
B-24	40.6564	-73.7464	178539.97	1054620.36	157098.84	2070372.24	78645.35	-47723.67
B-25	40.6566	-73.7466	178583.49	1054553.92	157142.37	2070305.80	78566.13	-47717.77
B-26	40.6569	-73.7463	178693.78	1054644.33	157252.66	2070396.21	78591.82	-47577.48
B-27	40.6572	-73.7463	178816.94	1054648.69	157375.81	2070400.57	78535.99	-47467.62
B-28	40.6523	-73.7466	177045.30	1054554.49	155604.20	2070306.36	79311.62	-49063.28
B-29	40.6527	-73.7466	177163.34	1054553.31	155722.23	2070305.19	79253.42	-48960.57
B-30	40.6531	-73.7466	177309.47	1054565.38	155868.36	2070317.25	79193.20	-48826.88
B-31	40.6533	-73.7466	177395.10	1054571.51	155954.00	2070323.39	79157.09	-48748.98
B-32	40.6536	-73.7464	177509.25	1054611.69	156068.15	2070363.57	79136.96	-48629.65
B-33	40.6531	-73.7456	177310.24	1054833.14	155869.14	2070585.02	79427.10	-48696.51
B-34	40.6544	-73.7459	177794.61	1054768.19	156353.50	2070520.07	79135.68	-48304.19
B-35	40.6578	-73.7453	179044.36	1054926.05	157603.22	2070677.93	78668.52	-47134.32
B-36	40.6551	-73.7451	178067.34	1054967.18	156626.23	2070719.06	79177.70	-47969.19
B-37	40.6557	-73.7449	178251.86	1055025.19	156810.74	2070777.07	79139.08	-47779.66
B-38	40.6561	-73.7450	178407.74	1055006.14	156966.62	2070758.03	79046.93	-47652.50
B-39	40.6564	-73.7450	178513.04	1055009.72	157071.92	2070761.61	78999.06	-47558.64
B-40	40.6566	-73.7451	178610.97	1054983.91	157169.85	2070735.80	78929.04	-47485.46
B-41	40.6568	-73.7450	178683.13	1054991.47	157242.01	2070743.36	78900.71	-47418.67
B-42	40.6571	-73.7451	178781.07	1054967.32	157339.94	2070719.21	78832.15	-47344.68
B-43	40.6577	-73.7452	179005.44	1054948.36	157564.31	2070700.24	78706.89	-47157.56
B-44	40.6580	-73.7452	179100.19	1054956.68	157659.05	2070708.57	78668.28	-47070.63
B-45	40.6582	-73.7450	179192.15	1055008.57	157751.02	2070760.46	78669.15	-46965.04
B-46	40.6585	-73.7448	179287.77	1055065.73	157846.63	2070817.62	78672.84	-46853.70
B-47	40.6587	-73.7446	179358.57	1055108.53	157917.44	2070860.42	78676.00	-46771.02
B-48	40.6589	-73.7444	179450.18	1055162.36	158009.04	2070914.26	78678.73	-46664.80
B-50	40.6594	-73.7439	179624.37	1055302.52	158183.23	2071054.42	78717.00	-46444.51
B-51	40.6563	-73.7437	178502.76	1055356.30	157061.64	2071108.20	79307.28	-47399.77
B-52	40.6568	-73.7439	178667.31	1055313.09	157226.19	2071064.99	79189.77	-47276.73
B-53	40.6577	-73.7440	178990.41	1055291.61	157549.28	2071043.51	79014.50	-47004.45
B-54	40.6576	-73.7432	178964.82	1055511.71	157523.69	2071263.62	79219.47	-46920.24
B-55	40.6579	-73.7434	179061.15	1055437.63	157620.02	2071189.53	79107.99	-46871.84
B-56	40.6581	-73.7436	179150.26	1055387.70	157709.13	2071139.60	79021.15	-46818.05
B-57	40.6580	-73.7437	179101.76	1055370.92	157660.63	2071122.82	79029.96	-46868.62
B-58	40.6586	-73.7438	179311.13	1055331.19	157870.00	2071083.08	78893.79	-46704.68
B-59	40.6580	-73.7440	179121.93	1055290.12	157680.79	2071042.02	78949.49	-46890.11

Zone 3104	Geographic		NAD83		NAD27		QUEENS	
BORING	Lat (N)	Lng(W)	N	E	N	E	E	S
B-60	40.6582	-73.7444	179171.09	1055158.74	157729.96	2070910.63	78810.73	-46910.73
B-61	40.6577	-73.7498	178994.83	1053671.52	157553.70	2069423.38	77594.86	-47785.27
B-62	40.6578	-73.7491	179023.41	1053853.73	157582.28	2069605.59	77740.44	-47672.01
B-63	40.6577	-73.7493	179007.62	1053812.16	157566.49	2069564.02	77711.71	-47705.96
B-64	40.6577	-73.7489	178998.12	1053928.44	157556.99	2069680.30	77818.06	-47657.95
B-65	40.6577	-73.7487	178997.56	1053986.71	157556.43	2069738.57	77869.31	-47630.22
B-66	40.6577	-73.7482	178982.25	1054111.05	157541.12	2069862.92	77985.52	-47583.39
B-67	40.6576	-73.7480	178965.30	1054170.48	157524.17	2069922.35	78045.73	-47569.44
B-68	40.6576	-73.7476	178964.48	1054266.76	157523.35	2070018.63	78130.36	-47523.52
B-69	40.6576	-73.7471	178940.85	1054410.55	157499.72	2070162.42	78267.62	-47474.55
B-70	40.6575	-73.7468	178933.84	1054507.68	157492.71	2070259.56	78355.99	-47433.64
B-71	40.6575	-73.7465	178934.11	1054599.24	157492.98	2070351.12	78435.98	-47389.06
B-72	40.6575	-73.7460	178938.09	1054715.76	157496.96	2070467.64	78536.00	-47329.14
B-73	40.6575	-73.7457	178927.47	1054821.23	157486.34	2070573.11	78633.42	-47287.35
B-74	40.6575	-73.7453	178927.72	1054907.24	157486.59	2070659.13	78708.56	-47245.47
B-75	40.6575	-73.7449	178917.51	1055031.02	157476.38	2070782.91	78821.80	-47194.45
B-76	40.6575	-73.7445	178913.09	1055139.79	157471.96	2070891.69	78919.11	-47145.63
B-77	40.6574	-73.7441	178887.90	1055245.86	157446.77	2070997.75	79024.11	-47116.30
B-78	40.6574	-73.7437	178887.12	1055355.45	157446.00	2071107.35	79120.38	-47063.90
B-79	40.6574	-73.7435	178881.13	1055424.28	157440.00	2071176.18	79183.50	-47035.80
B-80	40.6578	-73.7432	179021.59	1055490.74	157580.46	2071242.64	79173.62	-46880.72
B-81	40.6568	-73.7460	178661.25	1054733.21	157220.12	2070485.10	78685.35	-47562.90
B-82	40.6566	-73.7455	178610.60	1054855.44	157169.47	2070607.33	78816.82	-47548.01
B-83	40.6565	-73.7453	178574.38	1054927.69	157133.25	2070679.58	78897.58	-47544.71
B-84	40.6561	-73.7445	178397.54	1055129.92	156956.42	2070881.81	79160.17	-47601.48
B-85	40.6561	-73.7441	178415.74	1055249.45	156974.62	2071001.35	79255.94	-47527.66
B-86	40.6562	-73.7463	178431.81	1054636.77	156990.69	2070388.65	78712.09	-47810.35
B-87	40.6560	-73.7459	178373.51	1054761.79	156932.39	2070513.68	78849.71	-47800.80
B-88	40.6560	-73.7455	178373.85	1054878.33	156932.73	2070630.21	78951.51	-47744.06
B-89	40.6558	-73.7453	178319.33	1054922.88	156878.21	2070674.77	79016.90	-47770.18
B-90	40.6555	-73.7444	178181.96	1055168.29	156740.85	2070920.18	79298.14	-47771.50
B-91	40.6554	-73.7440	178150.23	1055280.75	156709.12	2071032.65	79411.91	-47744.79
B-92	40.6556	-73.7471	178237.73	1054423.68	156796.61	2070175.55	78619.64	-48083.36
B-93	40.6556	-73.7465	178212.68	1054579.13	156771.56	2070331.01	78767.79	-48029.99
B-94	40.6554	-73.7463	178147.30	1054648.69	156706.18	2070400.57	78860.31	-48053.50
B-95	40.6552	-73.7459	178096.63	1054765.37	156655.52	2070517.25	78986.94	-48041.31
B-96	40.6551	-73.7455	178053.56	1054862.33	156612.44	2070614.22	79092.64	-48032.03
B-97	40.6548	-73.7451	177933.31	1054981.44	156492.20	2070733.33	79255.09	-48079.55
B-98	40.6547	-73.7447	177907.72	1055077.52	156466.61	2070829.41	79351.55	-48055.40
B-99	40.6547	-73.7444	177909.79	1055161.59	156468.68	2070913.48	79424.10	-48012.88
B-100	40.6550	-73.7473	178014.20	1054355.23	156573.09	2070107.11	78668.02	-48312.08
B-101	40.6549	-73.7471	177973.98	1054432.21	156532.87	2070184.08	78754.84	-48309.98
B-102	40.6548	-73.7468	177935.54	1054492.53	156494.42	2070244.41	78826.24	-48314.40
B-103	40.6547	-73.7464	177894.01	1054620.01	156452.90	2070371.89	78957.89	-48288.99
B-104	40.6546	-73.7462	177871.92	1054667.25	156430.81	2070419.12	79009.92	-48285.44
B-105	40.6556	-73.7511	178230.92	1053316.61	156789.80	2069068.45	77654.31	-48625.53
B-106	40.6555	-73.7508	178187.44	1053402.75	156746.33	2069154.59	77750.73	-48621.84
B-107	40.6540	-73.7456	177641.41	1054832.18	156200.31	2070584.06	79265.87	-48407.23
B-108	40.6540	-73.7453	177639.83	1054912.93	156198.72	2070664.81	79337.29	-48369.51
B-109	40.6543	-73.7475	177774.01	1054321.52	156332.90	2070073.39	78754.85	-48538.55
B-110	40.6541	-73.7469	177682.30	1054483.00	156241.19	2070234.87	78940.55	-48540.58
B-111	40.6540	-73.7465	177655.26	1054582.13	156214.15	2070334.01	79040.38	-48516.22
B-112	40.6538	-73.7471	177578.29	1054420.03	156137.18	2070171.91	78935.84	-48662.08
B-113	40.6536	-73.7475	177488.71	1054309.58	156047.60	2070061.45	78882.58	-48793.95
B-114	40.6533	-73.7468	177385.45	1054509.11	155944.34	2070260.98	79107.17	-48787.66
B-115	40.6532	-73.7461	177369.23	1054695.89	155928.13	2070447.77	79278.45	-48711.38

Zone 3104	Geographic		NAD83		NAD27		QUEENS	
BORING	Lat (N)	Lng(W)	N	E	N	E	E	S
B-116	40.6533	-73.7457	177382.65	1054800.19	155941.54	2070552.07	79363.20	-48649.12
B-117	40.6525	-73.7461	177118.57	1054694.96	155677.47	2070446.84	79399.03	-48931.14
B-118	40.6527	-73.7458	177160.37	1054788.62	155719.27	2070540.51	79460.74	-48849.19

Zone 3104	Geographic		NAD83		NAD27		QUEENS	
BORING	Lat (N)	Lng(W)	N	E	N	E	E	S
B-1A	40.6538	-73.7484	177589.29	1054064.84	156148.18	2069816.70	78619.73	-48824.50
B-2A	40.6539	-73.7484	177622.09	1054068.63	156180.98	2069820.49	78607.16	-48793.96
B-3A	40.6539	-73.7485	177626.39	1054043.92	156185.28	2069795.78	78583.46	-48802.17
B-4A	40.6539	-73.7481	177613.93	1054148.01	156172.83	2069899.87	78680.56	-48762.65
B-5A	40.6538	-73.7479	177566.76	1054211.96	156125.65	2069963.83	78759.37	-48772.95
B-6A	40.6542	-73.7480	177709.86	1054186.02	156268.75	2069937.89	78667.36	-48660.31
B-7A	40.6542	-73.7480	177713.11	1054175.19	156272.00	2069927.06	78656.31	-48662.71
B-8A	40.6542	-73.7477	177704.57	1054245.97	156263.46	2069997.84	78722.38	-48635.90
B-9A	40.6543	-73.7477	177754.87	1054253.04	156313.76	2070004.91	78704.20	-48588.47
B-10A	40.6549	-73.7479	177963.85	1054202.22	156522.73	2069954.08	78558.52	-48430.25
B-11A	40.6550	-73.7479	177996.62	1054196.85	156555.51	2069948.72	78537.95	-48404.17
B-12A	40.6550	-73.7480	178000.53	1054164.10	156559.42	2069915.96	78507.40	-48416.61
B-13A	40.6551	-73.7477	178031.06	1054264.18	156589.95	2070016.05	78580.18	-48341.43
B-14A	40.6551	-73.7476	178034.00	1054271.38	156592.88	2070023.25	78585.06	-48335.37
B-15A	40.6555	-73.7477	178206.31	1054267.00	156765.19	2070018.87	78497.77	-48186.74
B-16A	40.6562	-73.7473	178447.80	1054370.35	157006.67	2070122.23	78471.25	-47925.40
B-17A	40.6563	-73.7473	178490.02	1054357.47	157048.90	2070109.34	78439.52	-47894.70

EXPLANATION OF TERMS

SOIL SIZES

Description Term	Pass Sieve No.	Retained Sieve No.	Size Range
Clay Silt	200	(Note 1)	< 0.075 mm
Fine Sand (F)	40	200	0.075 to 0.420 mm
Medium Sand (M)	10	40	0.420 to 2.00 mm
Coarse Sand (C)	4	10	2.00 to 4.75 mm
Gravel (Note 2)	-----	-----	4.75 to 75 mm (3")
Cobbles	-----	-----	3" to 12"
Boulders	-----	-----	>12"

NOTES: 1. Atterberg limit can be conducted to classify fine grained soil to classify the sample in addition to field tests.
2. For visual identification, NYC Building Code does not distinguish between Fine and Coarse Gravel.

QUANTITATIVE ESTIMATE

Minor Components	Percentage Range
AND	35 - 50
SOME	20 - 35
LITTLE	10 - 20
TRACE	<10

FINE-GRAINED SOIL

Soil Type	Thread Dia.	Plasticity Index
SILT	None	Zero
CLAYEY SILT	1/4 inch thread	1 to 5
SILT & CLAY	1/8 inch thread	5 to 10
CLAY & SILT	1/16 inch thread	10 to 20
SILTY CLAY	1/32 inch thread	20 to 40
CLAY	1/64 inch thread	40 or more

UNIFIED SOIL CLASSIFICATION SYSTEM

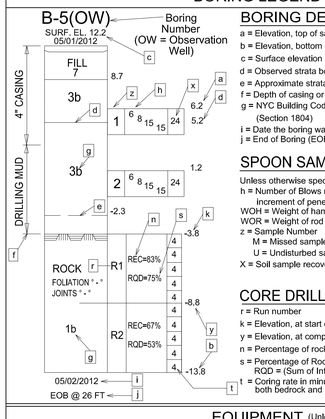
USCS	Typical Descriptions	USCS	Typical Descriptions
GW	Well-graded gravels, gravel - sand mixtures, less than 5% fines.	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
GP	Poorly-graded gravels, gravels - sand mixtures, less than 5% fines.	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
GM	Silty gravels, gravel - sand - silt mixtures, more than 12% fines.	OL	Organic silts and organic silty clays of low plasticity
GC	Clayey gravels, gravel-sand-clay mixtures, more than 12% fines.	MH	Inorganic silt, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
SW	Well-graded sands, gravelly sands, less than 5% fines.	CH	Inorganic clays of high plasticity. Fat clays.
SP	Poorly-graded sands, gravelly sands, less than 5% fines.	OH	Organic clays of medium to high plasticity, organic silts.
SM	Silty sands, sand - silt mixtures, more than 12% fines.	PT	Peat and other highly organic soils.
SC	Clayey sands, sand - clay mixtures, more than 12% fines.		

ROCK CLASSIFICATION

HARDNESS:	WEATHERING:
Extremely (Ext) Hard - Intact specimen can only be chipped, not broken, by repeated, heavy blows of a geological hammer	Fresh (Fr) - No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces
Very (V) Hard - Cannot be scratched with a steel nail. Inact specimen breaks only by repeated, heavy blows with geological hammer	Slightly - Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition
Hard - Intact hand-held specimen requires more than one hammer blow to break it. Can be faintly scratched by steel nail	
Moderately (Mod) Hard - Can't be peeled or scraped with knife. Can be distinctly scratched with a steel nail	Moderately (Mod) - Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones
Moderately (Mod) Soft - Shallow indentations (0.04 to 0.12 in.) can be made by firm blows with point of geologic pick. Can be peeled with pocket knife with difficulty	Highly - More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones
Soft - Hand-held specimen crumbles under firm blows with point of geologic pick	
Very (V) Soft - Can be scratched with fingernail. Slight indentation produced by light blow of point of geologic pick. Requires power tools for excavation	Completely (Comp) - All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact
FRACTURE SPACING (Sp.):	
Extremely (Ext) Close: <3/4 inch	Moderate (Mod): 8 inches to 2 feet
Very (V) Close: 3/4 inch to 2-1/2 inches	Wide: 2 to 6 feet
Close: 2-1/2 to 8 inches	Very (V) Wide: 6 to 20 feet

GENERAL NOTES:
1. Soil analyzed with organic content greater than 12 percent is classified as organic soil (OL or OH). Soil with less than 12 percent is classified as "trace organics" and not classified as organic soil. Soil with 30 percent or more organic content is classified as Peat (PT).
2. When laboratory results are not available, the group symbols are assigned based on the DDC soil description by visual identification and field tests by the inspector.
3. All Borings unless otherwise noted are cleared for utilities using either hand auger or vacuum extraction method to 6 feet below ground surface. Strata elevations and soil classification indicated in the borings within this zone are inferred based on visual observations and field judgement by the field inspector.
4. If any of the f-m-c grain size is less than 10 percent by weight of the sample then the grain size is not included in the sample description. If any of the two grain sizes is less than 10 percent by weight but the summation of the two equals or greater than 10 percent, then report all sizes.
5. Joints: The average natural angle of observed rock fractures in that particular core run. Mechanical breaks from drilling equipment are not accounted in the joint angle.
6. Foliation: A general term for, the planar arrangement of textural or structural features in any rock, especially the planar structure that results from flattening of the constituent grains of a metamorphic rock.

BORING LEGEND



BORING DETAILS

a = Elevation, top of sample
b = Elevation, bottom of boring
c = Surface elevation and start date of the drilling
d = Observed strata boundary and elevation
e = Approximate strata boundary and elevation
f = Depth of casing or drilling mud
g = NYC Building Code Class of Materials (Section 1804)
i = Date the boring was terminated
j = End of Boring (EOB) depth

SPOON SAMPLES

Unless otherwise specified, sample spoon was driven 24 inches.
h = Number of Blows required to drive sample spoon for each 6-inch increment of penetration in accordance with ASTM D-1586
WOH = Weight of hammer
WOR = Weight of rod
z = Sample Number or :
M = Missed sample
U = Undisturbed sample
X = Soil sample recovered in the split spoon (inches)

CORE DRILLING

r = Run number
k = Elevation, at start of core drilling
y = Elevation, at completion of Run
n = Percentage of rock core recovered
s = Percentage of Rock Quality Designation (RQD)
RQD = (Sum of Intact and Sound Rock ≥ 4") / (Core Run Length)
t = Coring rate in minutes/foot for both bedrock and boulder

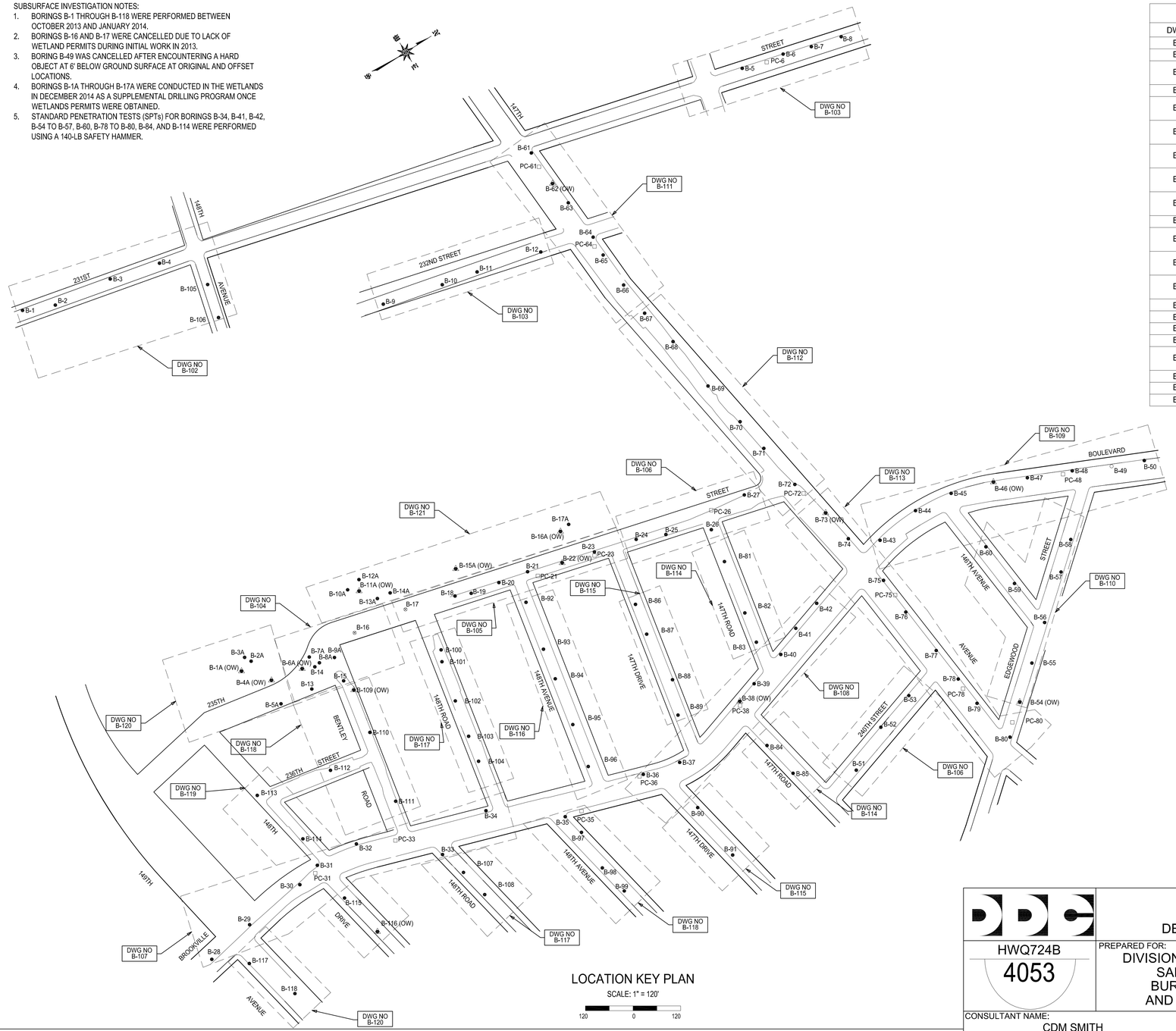
EQUIPMENT (Unless otherwise noted)

Type of spoon hammer	AUTO	Size of Split spoon	2.0 inches.
Weight of casing hammer	140 lbs.	Size of Core Bit	- inches.
Weight of spoon hammer	140 lbs.	Type of Core Barrel	-
Size of Casing	4.0 inches.		

DATUM NOTE: All Elevations refer to the Borough of QUEENS HIGHWAY Datum, which is 2.725 Feet above Mean Sea Level at Sandy Hook as established by the U.S. Coast & Geodetic Survey.

SUBSURFACE INVESTIGATION NOTES:
1. BORINGS B-1 THROUGH B-118 WERE PERFORMED BETWEEN OCTOBER 2013 AND JANUARY 2014.
2. BORINGS B-16 AND B-17 WERE CANCELLED DUE TO LACK OF WETLAND PERMITS DURING INITIAL WORK IN 2013.
3. BORING B-49 WAS CANCELLED AFTER ENCOUNTERING A HARD OBJECT AT 6' BELOW GROUND SURFACE AT ORIGINAL AND OFFSET LOCATIONS.
4. BORINGS B-1A THROUGH B-17A WERE CONDUCTED IN THE WETLANDS IN DECEMBER 2014 AS A SUPPLEMENTAL DRILLING PROGRAM ONCE WETLANDS PERMITS WERE OBTAINED.
5. STANDARD PENETRATION TESTS (SPTs) FOR BORINGS B-34, B-41, B-42, B-54 TO B-57, B-60, B-78 TO B-80, B-84, AND B-114 WERE PERFORMED USING A 140-LB SAFETY HAMMER.

DRAWING INDEX



LOCATION KEY PLAN

SCALE: 1" = 120'

120 0 120

LEGEND

- TEST BORING
- TEST BORING (FAILED ATTEMPT)
- TEST BORING (CANCELLED)
- TEST BORING WITH OBSERVATION WELL
- PAVEMENT CORE

IMPORTANT NOTES:

1. The Boring Logs shown on this sheet are the result of inferences drawn by the engineers or scientists during boring operations at the site, and from certain visual evidence such as: (a) samples of subsurface materials recovered during boring operations; (b) the logs kept by the drill operator and the inspector, which contain, among other things, expression of their opinions as to the nature of subsurface materials encountered during boring operations; and (c) other records concerning the site deemed pertinent by the engineers. The driller's log, the inspector's log, the samples and the records, together with the engineer's reports, are made available for inspection and study by the bidders so that they may draw their own inferences from all of the available evidence.
2. Bidders are warned that in the subsurface, other than that actually penetrated by the borings, obstructions, both natural and man-made, and which are not indicated on the Boring Logs, may be encountered, and that the Boring Logs make no representations or warranties either as to the presence or absence of such obstructions, or as to their nature and extent. Where possible, borings are located to avoid all obstructions and previous construction which can be found by inspection of the surface, and the bidder is required to estimate the influence of such features from his own inspection of the site.
3. In addition, bidders are warned that in the subsurface other than that actually penetrated by the borings, soil or rock may vary widely, with regard to elevation, composition, texture, structure, perviousness, soundness, and other characteristics, from the descriptions given on the Boring Logs and all reports.
4. The "groundwater reading", shows the elevation of groundwater in the boring holes at the times indicated. They may or may not indicate the elevations of perched water or true groundwater table during boring operations or subsequently thereafter.
5. The samples are described using the DDC Soil Description and Rock Classification, followed by Group Symbols from the Unified Soil Classification System and the 2008 NYC Building Code Class of Materials.

DAVID ANTOINE AND ROBERT BUNTING SOIL AND ROCK ANALYSIS BY	KAPILA PATHIRAGE, PH.D, P.E. GEOTECHNICAL ENGINEER CDM SMITH	RICHARD G. MESEROLE SECTION CHIEF B.E.G.S.
JEFFREY K. AU, P.E. GEOTECHNICAL ENGINEER B.E.G.S.	JEAN M. JEAN-LOUIS DIRECTOR	MARK A. CANU ASSOCIATE COMMISSIONER DIVISION OF PROGRAM MANAGEMENT SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR'D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

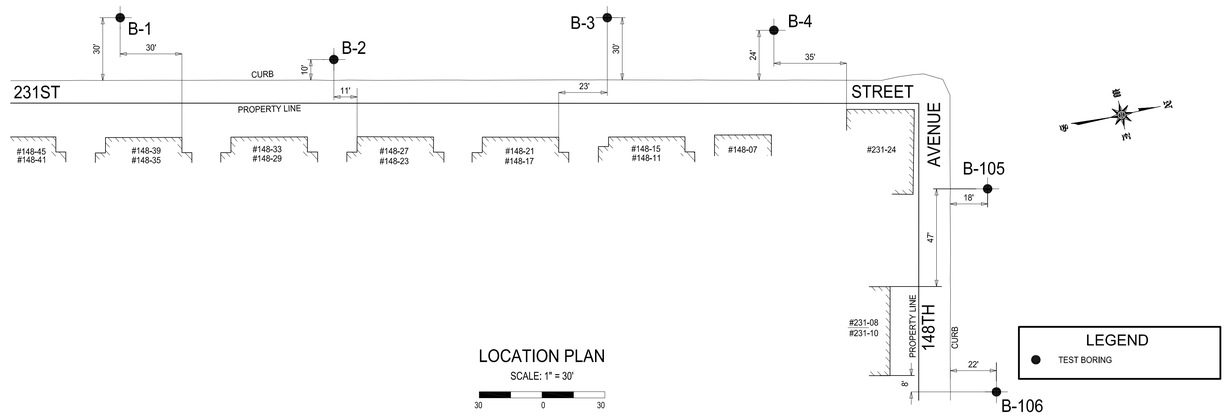
CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

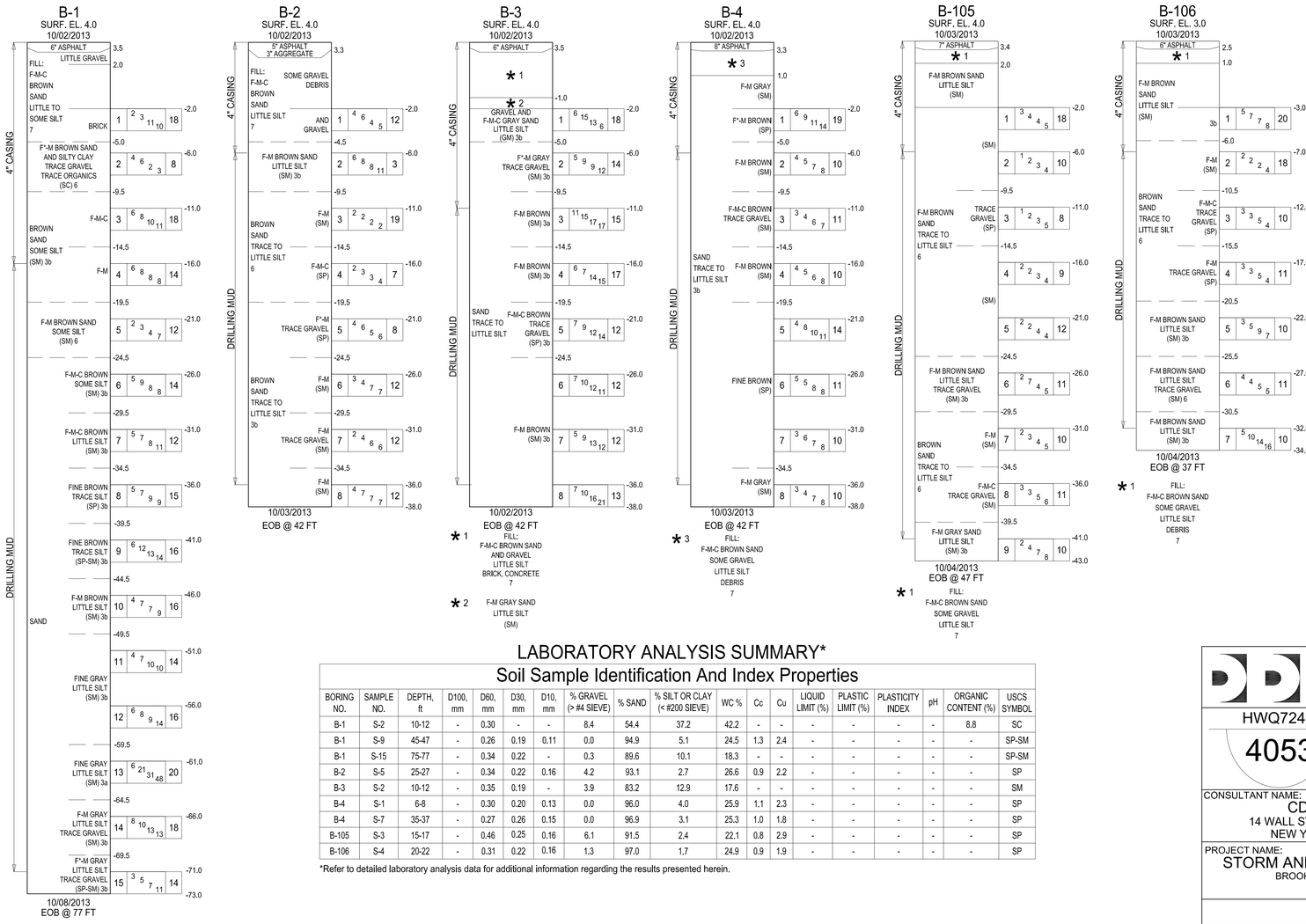
DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-101.00
CADD FILE No :	4053-ROB-01
SHEET	1 OF 21



LOCATION PLAN

SCALE: 1" = 30'

30 0 30



LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-1	S-2	10-12	-	0.30	-	-	8.4	54.4	37.2	42.2	-	-	-	-	-	-	8.8	SC
B-1	S-9	45-47	-	0.26	0.19	0.11	0.0	94.9	5.1	24.5	1.3	2.4	-	-	-	-	-	SP-SM
B-1	S-15	75-77	-	0.34	0.22	-	0.3	89.6	10.1	18.3	-	-	-	-	-	-	-	SP-SM
B-2	S-5	25-27	-	0.34	0.22	0.16	4.2	93.1	2.7	26.6	0.9	2.2	-	-	-	-	-	SP
B-3	S-2	10-12	-	0.35	0.19	-	3.9	83.2	12.9	17.6	-	-	-	-	-	-	-	SM
B-4	S-1	6-8	-	0.30	0.20	0.13	0.0	96.0	4.0	25.9	1.1	2.3	-	-	-	-	-	SP
B-4	S-7	35-37	-	0.27	0.26	0.15	0.0	96.9	3.1	25.3	1.0	1.8	-	-	-	-	-	SP
B-105	S-3	15-17	-	0.46	0.25	0.16	6.1	91.5	2.4	22.1	0.8	2.9	-	-	-	-	-	SP
B-106	S-4	20-22	-	0.31	0.22	0.16	1.3	97.0	1.7	24.9	0.9	1.9	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK · KAPILA S. PATHIRAGE · LICENSED PROFESSIONAL ENGINEER · NO. 087328

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-102.00
CADD FILE No :	4053-ROB-01
SHEET	2 OF 21

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

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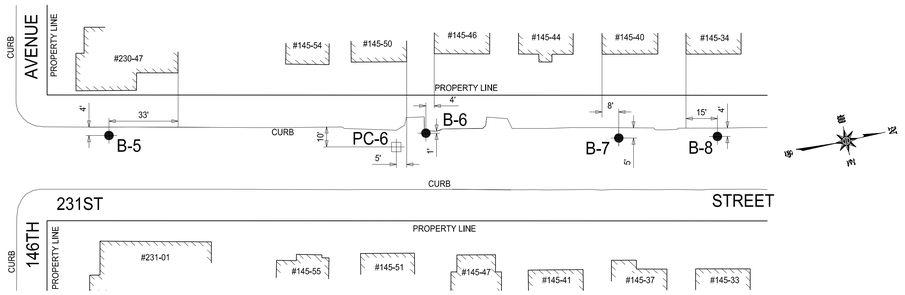
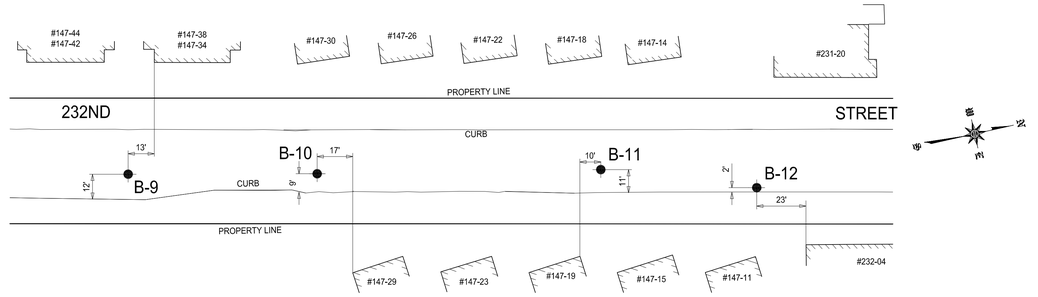
NO.	DATE	DESCRIPTIONS	APPR`D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS





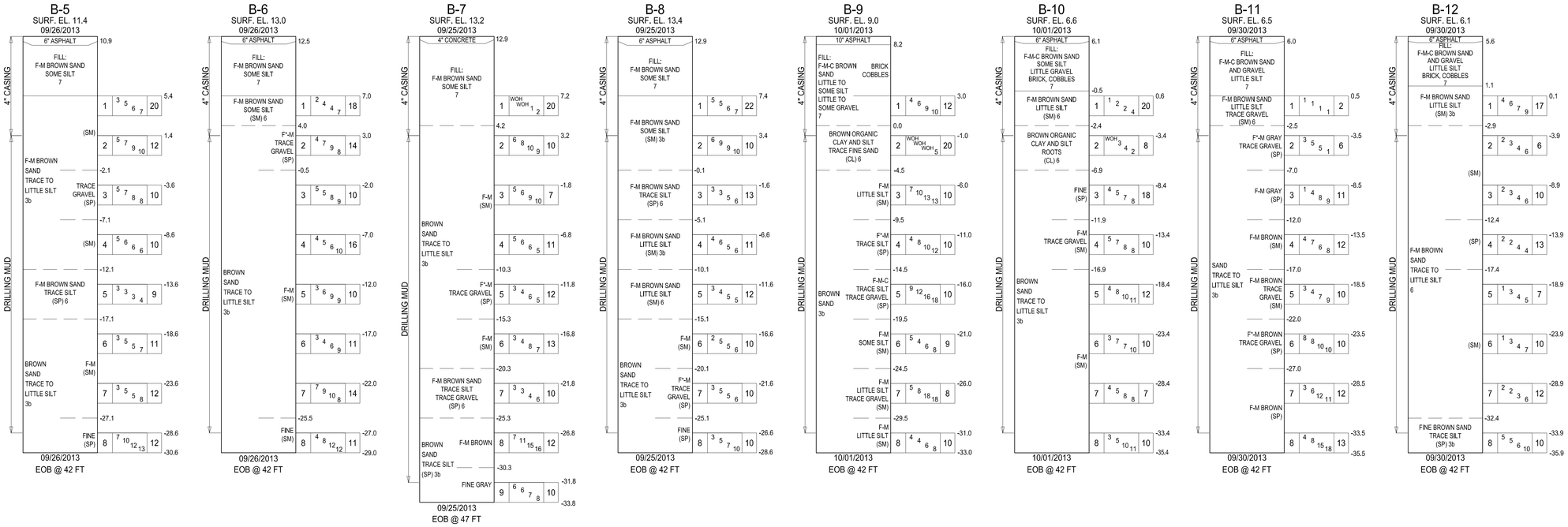
LOCATION PLAN

SCALE: 1" = 30'

30 0 30

LEGEND

- TEST BORING
- PAVEMENT CORE



LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-5	S-3	15-17	-	0.52	0.28	0.17	5.0	91.1	3.9	18.4	0.9	3.1	-	-	-	-	-	SP
B-6	S-2	10-12	-	0.36	0.23	0.15	0.1	96.5	3.4	15.0	0.9	2.4	-	-	-	-	-	SP
B-7	S-5	25-27	-	0.38	0.24	0.17	0.6	97.4	2.0	23.0	0.9	2.2	-	-	-	-	-	SP
B-8	S-7	35-37	-	0.30	0.22	0.16	0.7	97.0	2.3	23.9	0.9	1.9	-	-	-	-	-	SP
B-9	S-2	10-12	-	-	-	-	-	-	-	150.5	-	-	-	-	-	-	27.7	-
B-9	S-4	20-22	-	0.31	0.21	0.13	0.0	96.0	4.0	22.4	1.1	2.3	-	-	-	-	-	SP
B-10	S-2	10-12	-	-	-	-	-	-	-	113.5	-	-	-	-	-	-	13.1	-
B-10	S-3	15-17	-	0.27	0.19	0.13	0.0	97.6	2.4	29.5	1.1	2.1	-	-	-	-	-	SP
B-11	S-2	10-12	-	0.45	0.25	0.17	0.9	94.8	4.3	23.1	0.9	2.7	-	-	-	-	-	SP
B-11	S-6	30-32	-	0.32	0.21	0.15	1.3	94.5	4.2	25.4	1.0	2.2	-	-	-	-	-	SP
B-12	S-8	40-42	-	0.27	0.20	0.16	0.0	97.8	2.2	27.4	1.0	1.7	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-6
1 (RD SURFACE)	ASPHALT	8"

* All Pavement Cores are 4"-Diameter Circular-Shaped unless otherwise noted

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SOIL AND ROCK ANALYSIS BY

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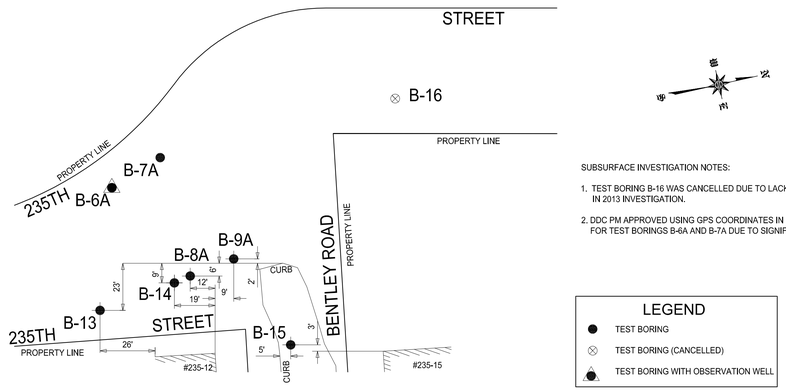
RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK
KAPILA S. PATHIRAGE
LICENSED No. 087328
PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-103.00
CADD FILE No :	4053-ROB-01

SHEET
3 OF 21



LOCATION PLAN

SCALE: 1" = 30'

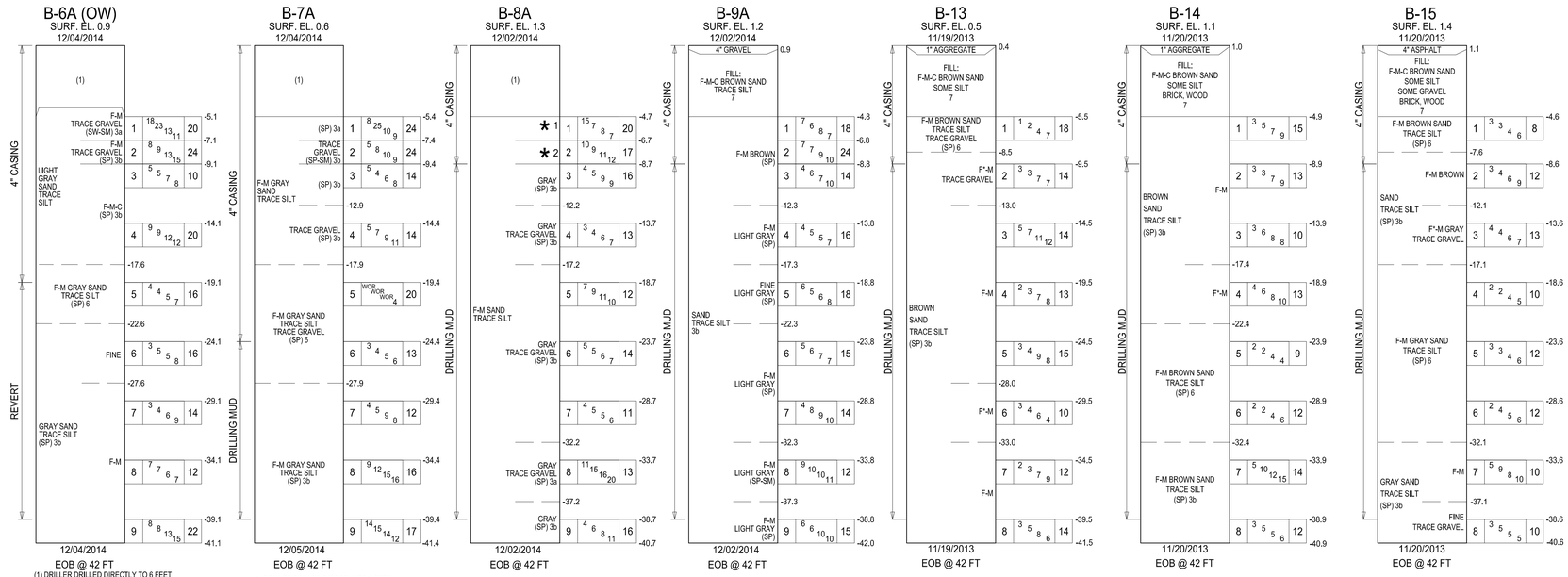
30 0 30

SUBSURFACE INVESTIGATION NOTES:

1. TEST BORING B-16 WAS CANCELLED DUE TO LACK OF WETLAND PERMIT IN 2013 INVESTIGATION.
2. DDC PM APPROVED USING GPS COORDINATES IN PLACE OF TIE-OFF DISTANCES FOR TEST BORINGS B-6A AND B-7A DUE TO SIGNIFICANT DISTANCE INTO WETLANDS.

LEGEND

- TEST BORING
- TEST BORING (CANCELLED)
- TEST BORING WITH OBSERVATION WELL



(1) DRILLER DRILLED DIRECTLY TO 6 FEET BELOW GROUND SURFACE PER DDC GUIDELINES APPROVED BY DDC PM.

2"- DIA. WELLPOINT INSTALLED TO ELEVATION -15.1

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/30/2014	10:00 AM	1.3	-0.4
01/05/2015	03:15 PM	1.1	-0.2
01/06/2015	03:15 PM	1.3	-0.4

(1) DRILLER DRILLED DIRECTLY TO 6 FEET BELOW GROUND SURFACE PER DDC GUIDELINES APPROVED BY DDC PM.

(1) DRILLER DRILLED DIRECTLY TO 6 FEET BELOW GROUND SURFACE PER DDC GUIDELINES APPROVED BY DDC PM.

* 1 F-M LIGHT BROWN SAND TRACE SILT TRACE ORGANICS TRACE GRAVEL (SP-SM) 3b

* 2 F-M LIGHT BROWN SAND TRACE SILT TRACE GRAVEL (SP) 3b

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-6A	S-1	6-8	-	0.47	0.25	0.08	1.3	88.8	9.9	16.1	1.7	6.1	-	-	-	-	-	SW-SM
B-6A	S-6	25-27	-	0.28	0.20	0.16	0.0	96.4	3.6	24.7	1.0	1.8	-	-	-	-	-	SP
B-7A	S-2	8-10	-	0.58	0.33	0.18	0.7	94.2	5.1	18.8	1.1	3.3	-	-	-	-	-	SP-SM
B-8A	S-1	6-8	-	0.41	0.25	0.16	0.1	94.6	5.3	19.4	1.0	2.5	-	-	-	-	0.2	SP-SM
B-8A	S-4	15-17	-	0.36	0.23	0.16	2.8	92.6	4.6	19.0	0.9	2.3	-	-	-	-	-	SP
B-9A	S-8	35-37	-	0.34	0.22	0.13	0.0	94.1	5.9	22.1	1.1	2.7	-	-	-	-	-	SP-SM
B-13	S-2	10-12	-	0.45	0.26	0.15	0.1	95.5	4.4	20.8	1.0	3.0	-	-	-	-	-	SP
B-13	S-6	30-32	-	0.34	0.23	0.17	0.0	98.2	1.8	24.8	0.9	2.0	-	-	-	-	-	SP
B-14	S-4	20-22	-	0.29	0.20	0.14	0.0	95.8	4.2	23.4	1.0	2.1	-	-	-	-	-	SP
B-15	S-3	15-17	-	0.33	0.22	0.15	0.6	95.6	3.8	21.5	1.0	2.2	-	-	-	-	-	SP
B-15	S-8	40-42	-	0.26	0.17	0.11	6.0	90.5	3.5	24.8	1.1	2.4	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

CITY OF NEW YORK
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HWQ724B

4053

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SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
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BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-104.00
CADD FILE No :	4053-ROB-01
SHEET	4 OF 21

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

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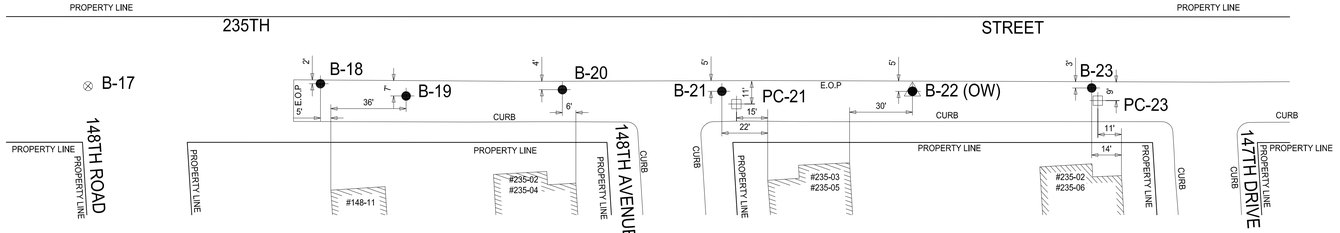
SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR'D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS



SUBSURFACE INVESTIGATION NOTES:

1. TEST BORING B-17 WAS CANCELLED IN 2013 INVESTIGATION DUE TO LACK OF WETLAND PERMIT.

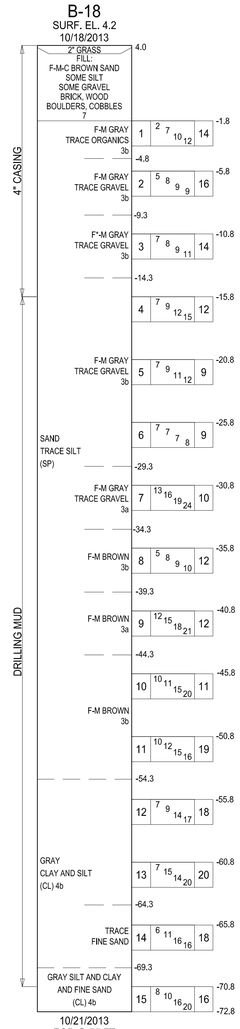
LOCATION PLAN

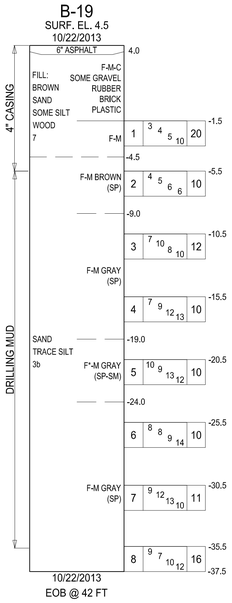
SCALE: 1" = 30'

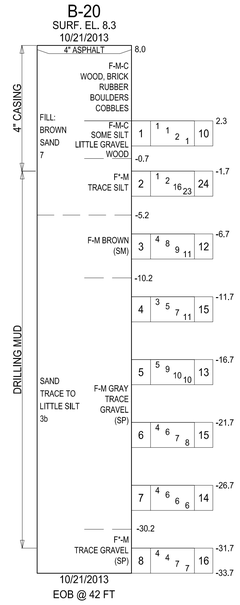
30 0 30

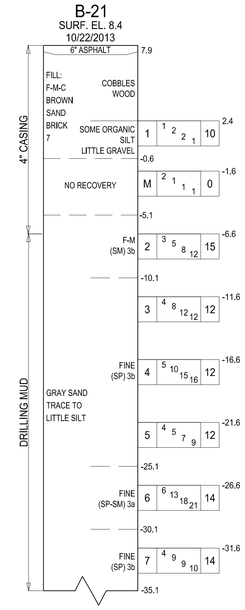
LEGEND

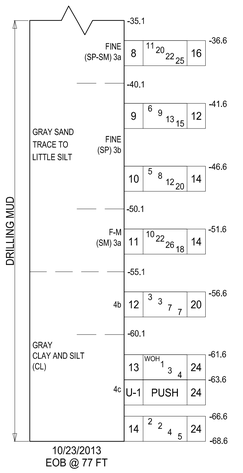
- TEST BORING
- TEST BORING WITH OBSERVATION WELL
- TEST BORING (CANCELLED)
- PAVEMENT CORE

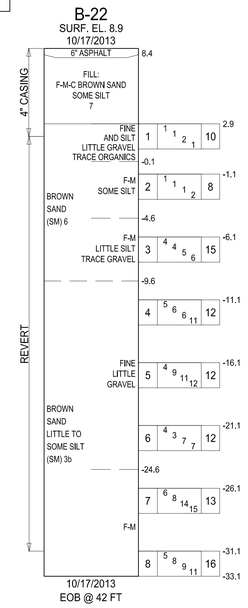


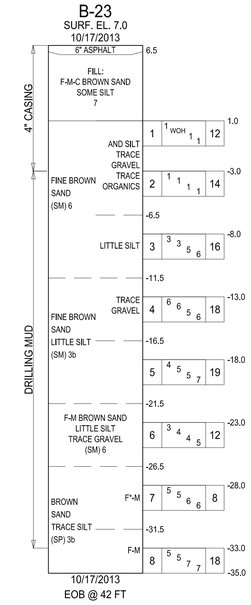












2"- DIA. WELLPOINT INSTALLED
TO ELEVATION -31.1
GROUNDWATER OBSERVATIONS
FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
10/25/2013	02:00 PM	8.7	0.2
12/19/2013	08:45 AM	8.7	0.2
12/26/2013	08:16 AM	8.9	0.0

PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-21	PC-23
1 (RD SURFACE)	ASPHALT	6"	6"

* All Pavement Cores are 4"-Diameter Circular-Shaped

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties | Consolidation Tests

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL	Cv (ft^2/yr)	eo	Preconsol pressure (tsf)	Cc	Cr
B-18	S-3	15-17	-	0.33	0.21	0.12	1.1	94.5	4.4	20.4	1.1	2.7	-	-	-	-	-	SP	-	-	-	-	-
B-18	S-12	60-62	-	-	-	-	-	-	-	31.3	-	-	42	24	18	-	-	CL	-	-	-	-	-
B-18	S-15	75-77	-	0.10	-	-	0.0	42.9	57.1	29.1	-	-	27	18	9	-	-	CL	-	-	-	-	-
B-19	S-5	25-27	-	0.27	0.18	0.11	0.0	92.3	7.7	21.7	1.1	2.5	-	-	-	-	-	SP-SM	-	-	-	-	-
B-20	S-2	10-12	-	0.35	0.22	0.12	0.0	93.3	6.7	19.7	1.1	2.9	-	-	-	-	-	SP-SM	-	-	-	-	-
B-20	S-8	40-42	-	0.29	0.21	0.17	0.2	98.0	1.8	25.9	0.9	1.8	-	-	-	-	-	SP	-	-	-	-	-
B-21	S-6	35-37	-	0.26	0.18	0.09	0.0	91.9	8.1	22.8	1.5	3.0	-	-	-	-	-	SP-SM	-	-	-	-	-
B-21	S-8	45-47	-	0.25	0.17	0.08	0.0	90.4	9.6	22.0	1.6	3.3	-	-	-	-	-	SP-SM	-	-	-	-	-
B-21	S-13	70-72	-	-	-	-	-	-	-	45.5	-	-	46	26	20	-	-	CL	-	-	-	-	-
B-21	U-1	72-74	-	-	-	-	-	-	-	33.3	-	-	-	-	-	-	-	-	400	0.92	5.0	0.298	0.042
B-21	S-14	75-77	-	-	-	-	-	-	-	38.6	-	-	46	26	20	-	-	CL	-	-	-	-	-
B-23	S-7	35-37	-	0.29	0.21	0.15	0.0	95.8	4.2	27.4	1.0	1.9	-	-	-	-	-	SP	-	-	-	-	-

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

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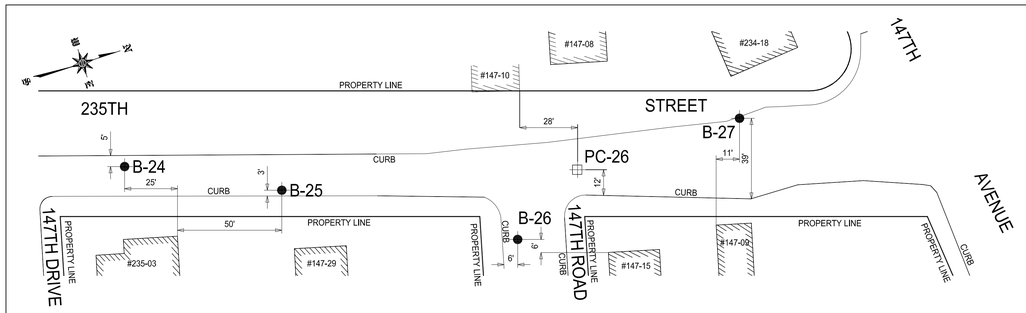
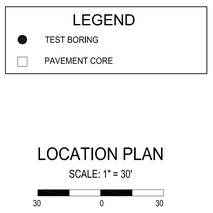
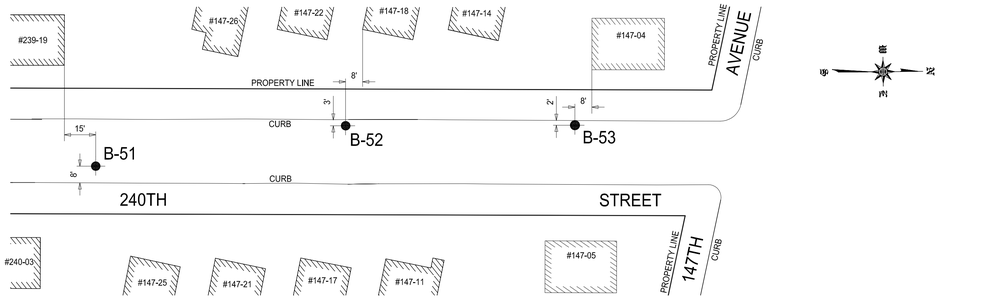
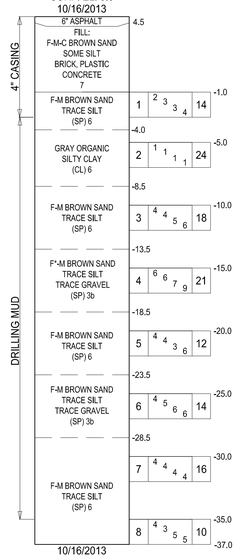
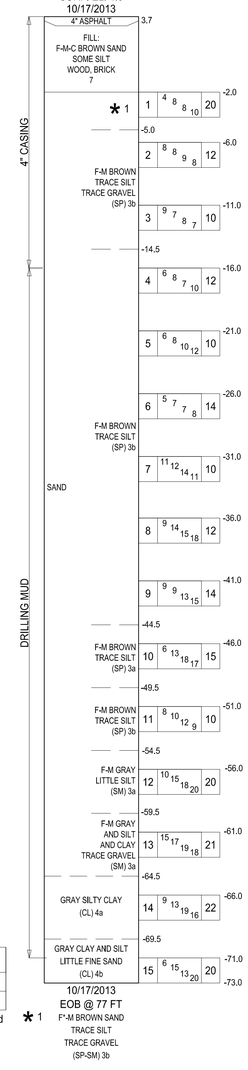
SHEET	5 OF 21

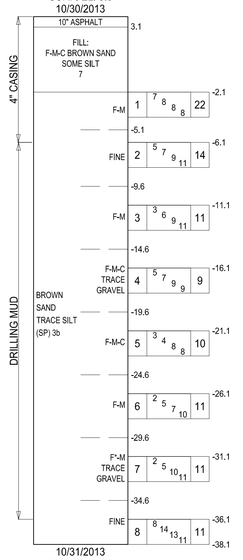


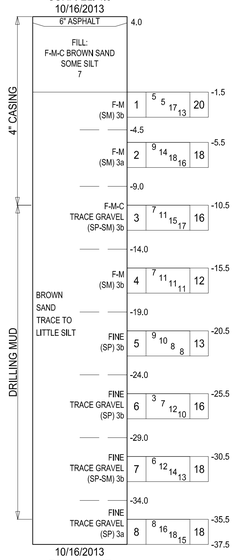


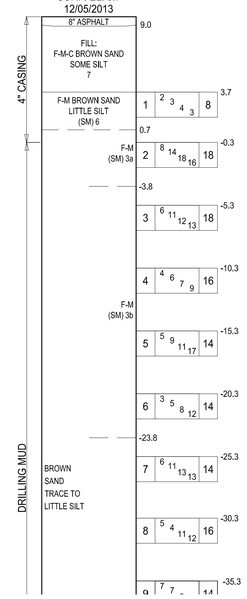


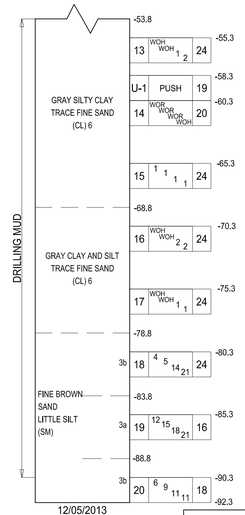


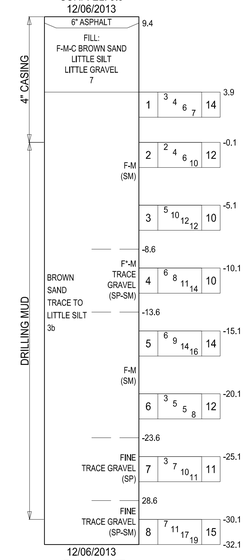


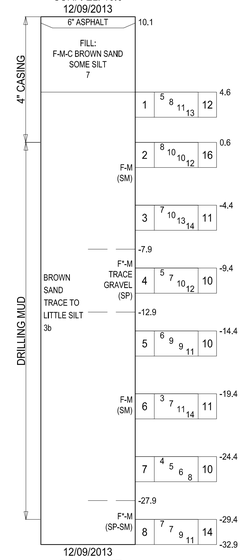












PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-26
1 (RD SURFACE)	ASPHALT	12"

* All Pavement Cores are 4"-Diameter Circular-Shaped

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties																		Consolidation Tests			
BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL	Initial Void ratio (e_0)	Preconsolidation pressure (psf)	Compression Index (Cc)	Recompression Index (Cr)
B-24	S-2	10-12	-	-	-	-	-	-	-	115.6	-	-	-	-	-	-	25.2	-	-	-	-	-
B-24	S-4	20-22	-	0.31	0.21	0.15	0.8	95.6	3.6	26.0	1.0	2.1	-	-	-	-	-	SP	-	-	-	-
B-25	S-1	6-8	-	0.29	0.18	0.10	1.0	93.3	5.7	21.4	1.1	2.8	-	-	-	-	-	SP-SM	-	-	-	-
B-25	S-13	65-67	-	0.41	-	-	0.6	63.5	35.9	37.1	-	-	-	-	-	-	-	SM	-	-	-	-
B-25	S-14	70-72	-	-	-	-	-	-	-	43.2	-	-	54	28	26	-	-	CL	-	-	-	-
B-25	S-15	75-77	-	-	-	-	-	-	-	44.0	-	-	36	22	14	-	-	CL	-	-	-	-
B-26	S-2	10-12	-	0.28	0.20	0.13	0.0	96.1	3.9	24.8	1.1	2.2	-	-	-	-	-	SP	-	-	-	-
B-26	S-7	35-37	-	0.32	0.22	0.16	0.1	97.8	2.1	22.5	0.9	2.0	-	-	-	-	-	SP	-	-	-	-
B-27	S-3	15-17	-	0.64	0.28	0.15	8.2	86.7	5.1	14.9	0.8	4.3	-	-	-	-	-	SP-SM	-	-	-	-
B-27	S-7	35-37	-	0.24	0.16	0.09	0.4	92.4	7.2	23.7	1.2	2.7	-	-	-	-	-	SP-SM	-	-	-	-
B-51	S-10	50-52	-	0.27	0.20	0.14	0.0	96.3	3.7	26.7	1.1	2.0	-	-	-	-	-	SP	-	-	-	-
B-51	S-13	65-67	-	-	-	-	-	-	-	50.5	-	-	48	27	21	-	-	CL	-	-	-	-
B-51	U-1	68-70	-	-	-	-	-	-	-	43.9	-	-	-	-	-	-	-	-	1.19	4,000	0.180	0.022
B-51	S-16	80-82	-	-	-	-	-	-	-	46.8	-	-	43	25	18	-	-	CL	-	-	-	-
B-51	S-19	95-97	-	0.23	0.15	-	0.0	87.3	12.7	23.2	-	-	-	-	-	-	-	SM	-	-	-	-
B-52	S-4	20-22	-	0.32	0.20	0.12	2.4	90.8	6.8	21.4	1.0	2.7	-	-	-	-	-	SP-SM	-	-	-	-
B-52	S-8	40-42	-	0.27	0.19	0.09	0.1	92.7	7.2	23.8	1.4	2.9	-	-	-	-	-	SP-SM	-	-	-	-
B-53	S-4	20-22	-	0.40	0.24	0.15	0.8	94.9	4.3	20.9	0.9	2.6	-	-	-	-	-	SP	-	-	-	-
B-53	S-8	40-42	-	0.26	0.17	-	0.0	89.9	10.1	23.3	-	-	-	-	-	-	-	SP-SM	-	-	-	-

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

KAPILA PATHIRAGE, PH.D, P.E.
GEOTECHNICAL ENGINEER
CDM SMITH

RICHARD G. MESEROLE
SECTION CHIEF
B.E.G.S.

JEFFREY K. AU, P.E.
GEOTECHNICAL ENGINEER | JEAN M. JEAN-LOUIS
DIRECTOR
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MARK A. CANU
ASSOCIATE COMMISSIONER
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR'D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

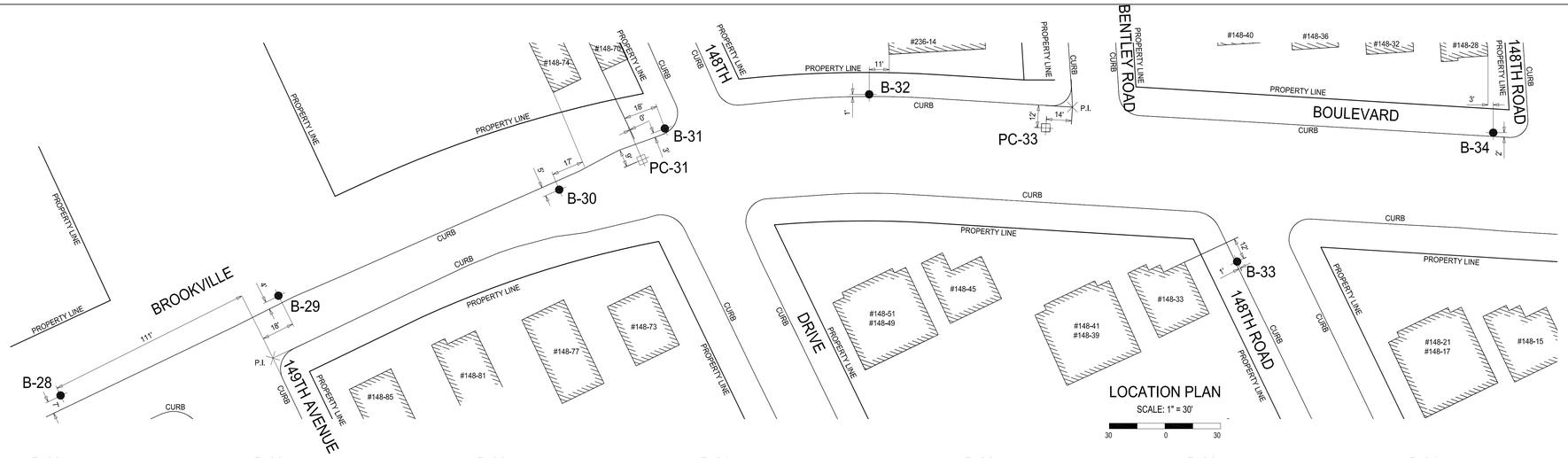
CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

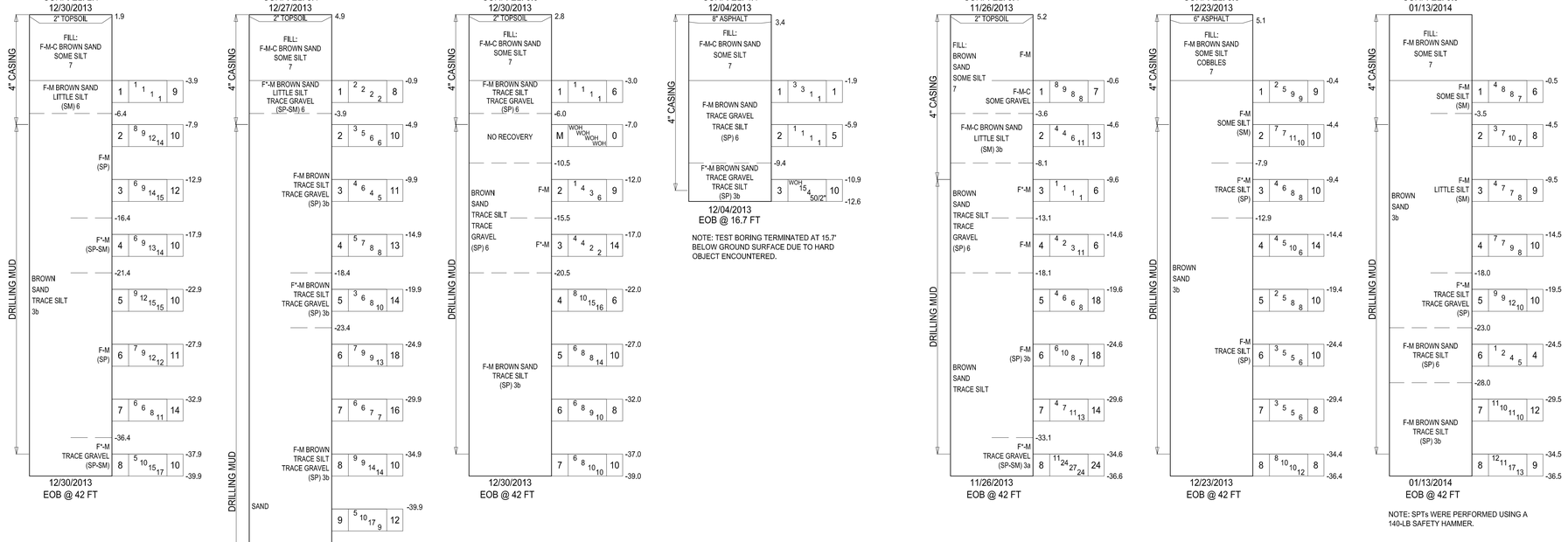
PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE
STATE OF NEW YORK
KAPILA S. PATHIRAGE
LICENSED No. 087328
PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-106.00
CADD FILE No :	4053-ROB-01
SHEET	6 OF 21





NOTE: TEST BORING TERMINATED AT 15.7' BELOW GROUND SURFACE DUE TO HARD OBJECT ENCOUNTERED.

NOTE: SPTs WERE PERFORMED USING A 140-LB SAFETY HAMMER.

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-28	S-4	20-22	-	0.30	0.20	0.12	0.0	94.8	5.2	22.1	1.1	2.4	-	-	-	-	-	SP-SM
B-28	S-8	40-42	-	0.28	0.20	0.10	0.4	92.4	7.2	19.9	1.4	2.9	-	-	-	-	-	SP-SM
B-29	S-1	6-8	-	0.42	0.22	-	8.2	80.9	10.9	22.7	-	-	-	-	-	-	-	SP-SM
B-29	S-5	25-27	-	0.32	0.22	0.16	0.3	96.2	3.5	21.9	0.9	2.1	-	-	-	-	-	SP
B-29	S-13	65-67	-	0.29	0.19	0.09	0.0	91.5	8.5	17.9	1.5	3.4	-	-	-	-	-	SP-SM
B-30	S-3	20-22	-	0.35	0.23	0.16	0.4	96.4	3.2	20.7	0.9	2.1	-	-	-	-	-	SP
B-31	S-3	15-17	-	0.35	0.22	0.14	7.0	88.9	4.1	24.3	1.0	2.5	-	-	-	-	-	SP
B-32	S-3	15-17	-	0.34	0.23	0.16	0.4	97.7	1.9	26.2	0.9	2.1	-	-	-	-	-	SP
B-32	S-8	40-42	-	0.39	0.21	0.11	2.5	92.3	5.2	17.6	1.0	3.4	-	-	-	-	-	SP-SM
B-33	S-3	15-17	-	0.38	0.24	0.16	0.0	96.2	3.8	21.1	0.9	2.3	-	-	-	-	-	SP
B-34	S-5	25-27	-	0.35	0.22	0.14	0.3	95.7	4.0	22.4	1.0	2.5	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-31	PC-33
1 (RD SURFACE)	ASPHALT	8"	6"

* All Pavement Cores are 4"-Diameter Circular-Shaped

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

KAPILA PATHIRAGE, PH.D, P.E.
GEOTECHNICAL ENGINEER
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RICHARD G. MESEROLE
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B.E.G.S.

JEFFREY K. AU, P.E.
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MARK A. CANU
ASSOCIATE COMMISSIONER
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR`D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

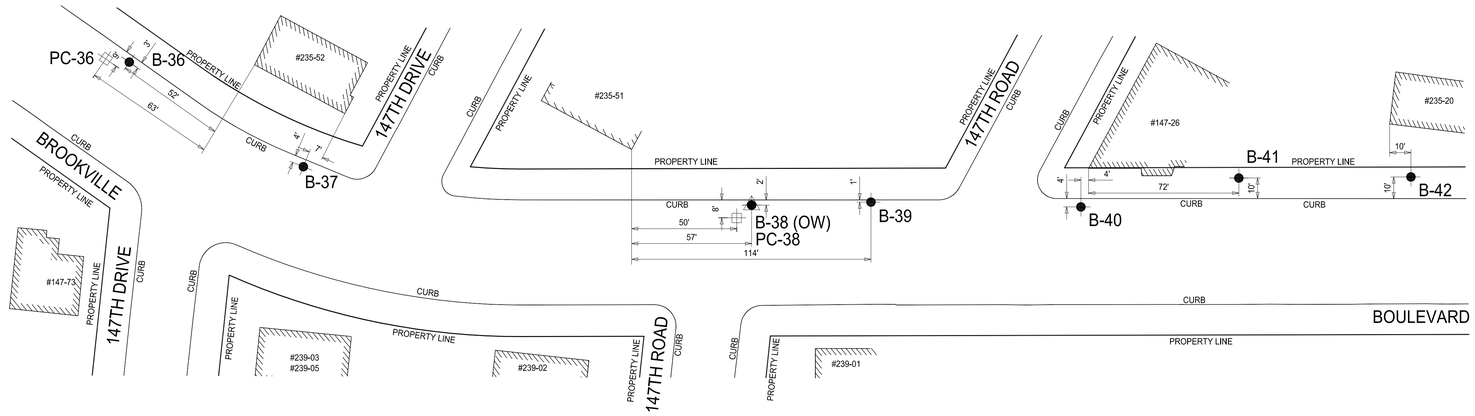
PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

KAPILA S. PATHIRAGE, STATE OF NEW YORK, No. 087328, LICENSED PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-107.00
CADD FILE No :	4053-ROB-01
SHEET	7 OF 21



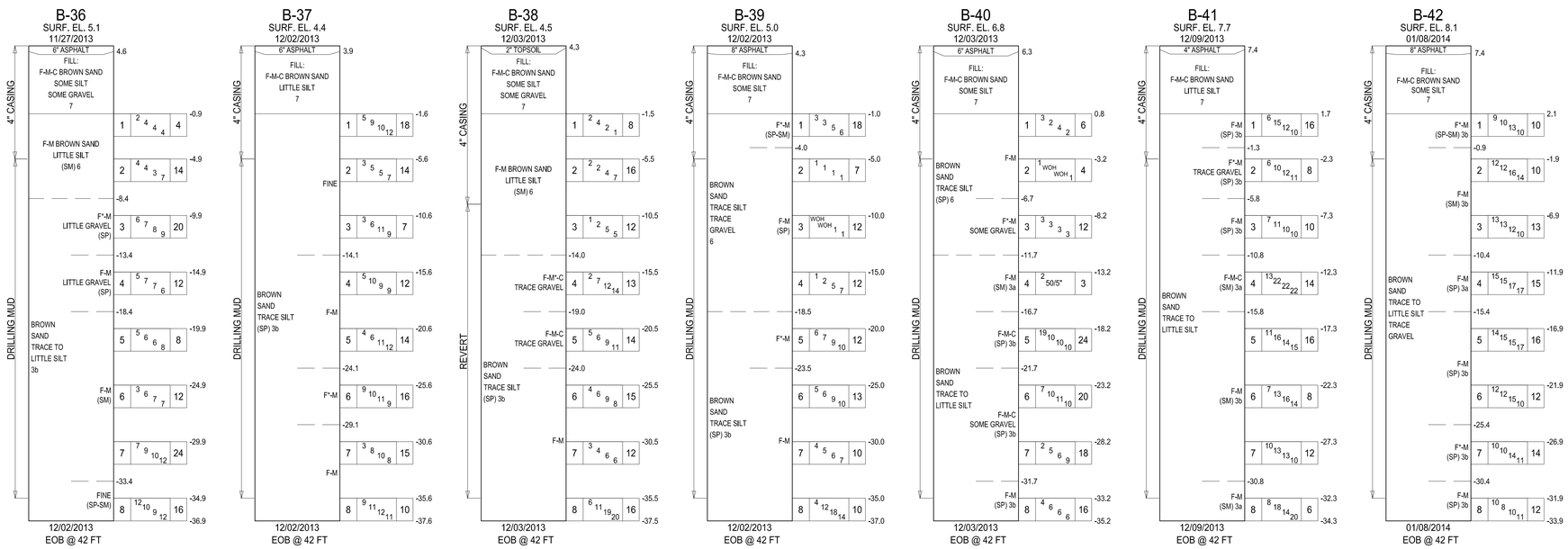
LOCATION PLAN

SCALE: 1" = 30'

30 0 30

LEGEND

- TEST BORING
- TEST BORING WITH OBSERVATION WELL
- PAVEMENT CORE



NOTE: SPTs WERE PERFORMED USING A 140-LB SAFETY HAMMER.

NOTE: SPTs WERE PERFORMED USING A 140-LB SAFETY HAMMER.

2"- DIA. WELLPOINT INSTALLED TO ELEVATION -35.5

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/19/2013	08:54 AM	3.9	0.6
12/26/2013	08:40 AM	3.9	0.6
01/13/2014	08:18 AM	3.8	0.7
01/16/2014	01:40 PM	3.8	0.7

PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-36	PC-38
1 (RD SURFACE)	ASPHALT	8"	12"

* All Pavement Cores are 4"-Diameter Circular-Shaped

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-36	S-3	15-17	-	0.35	0.22	0.16	13.2	84.8	2.0	20.0	0.9	2.2	-	-	-	-	-	SP
B-36	S-8	40-42	-	0.25	0.17	0.10	0.0	93.7	6.3	20.7	1.1	2.4	-	-	-	-	-	SP-SM
B-37	S-2	10-12	-	0.27	0.20	0.15	0.0	97.6	2.4	26.8	1.0	1.8	-	-	-	-	-	SP
B-37	S-6	30-32	-	0.29	0.20	0.11	0.0	95.6	4.4	23.0	1.2	2.6	-	-	-	-	-	SP
B-38	S-4	20-22	-	0.71	0.35	0.18	4.9	91.3	3.8	15.5	1.0	4.0	-	-	-	-	-	SP
B-39	S-1	6-8	-	0.29	0.19	0.11	0.6	93.1	6.3	24.1	1.1	2.6	-	-	-	-	-	SP-SM
B-39	S-5	25-27	-	0.34	0.22	0.14	0.0	95.6	4.4	23.5	1.0	2.4	-	-	-	-	-	SP
B-40	S-3	15-17	-	0.67	0.30	0.19	23.8	75.1	1.1	17.7	0.7	3.6	-	-	-	-	-	SP
B-40	S-6	30-32	-	3.61	0.69	0.23	30.2	67.8	2.0	12.6	0.6	15.5	-	-	-	-	-	SP
B-41	S-2	10-12	-	0.35	0.23	0.16	5.9	91.8	2.3	22.7	0.9	2.2	-	-	-	-	-	SP
B-42	S-1	6-8	-	0.30	0.20	0.11	0.1	94.0	5.6	19.7	1.2	2.7	-	-	-	-	-	SP-SM
B-42	S-7	35-37	-	0.29	0.21	0.16	2.3	94.5	3.2	23.2	1.0	1.9	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

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SOIL AND ROCK ANALYSIS BY

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1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

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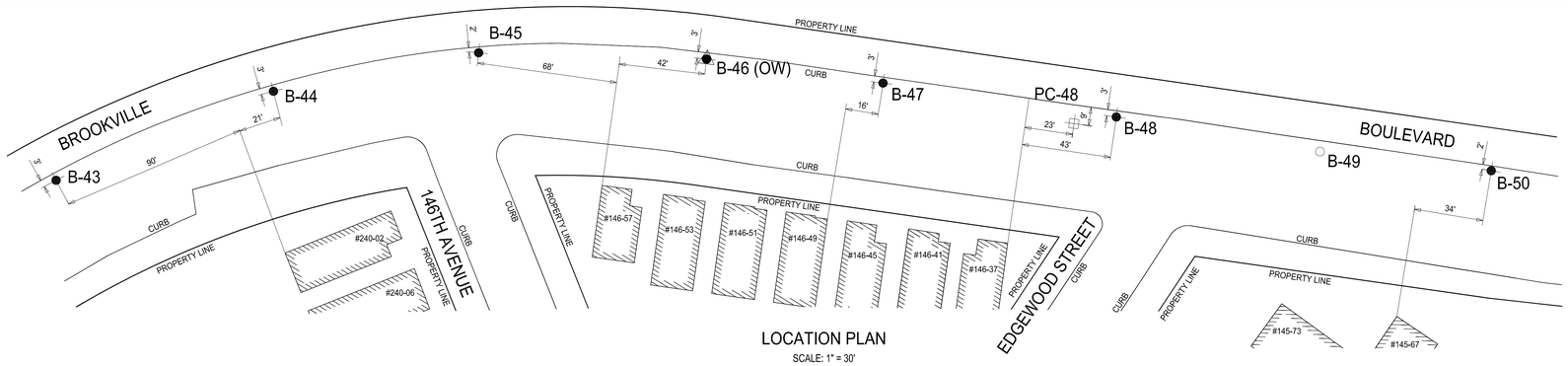
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK · KAPILA S. PATHIRAGE · LICENSED PROFESSIONAL ENGINEER · No. 087328

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-108.00
CADD FILE No :	4053-ROB-01
SHEET	8 OF 21



LOCATION PLAN

SCALE: 1" = 30'

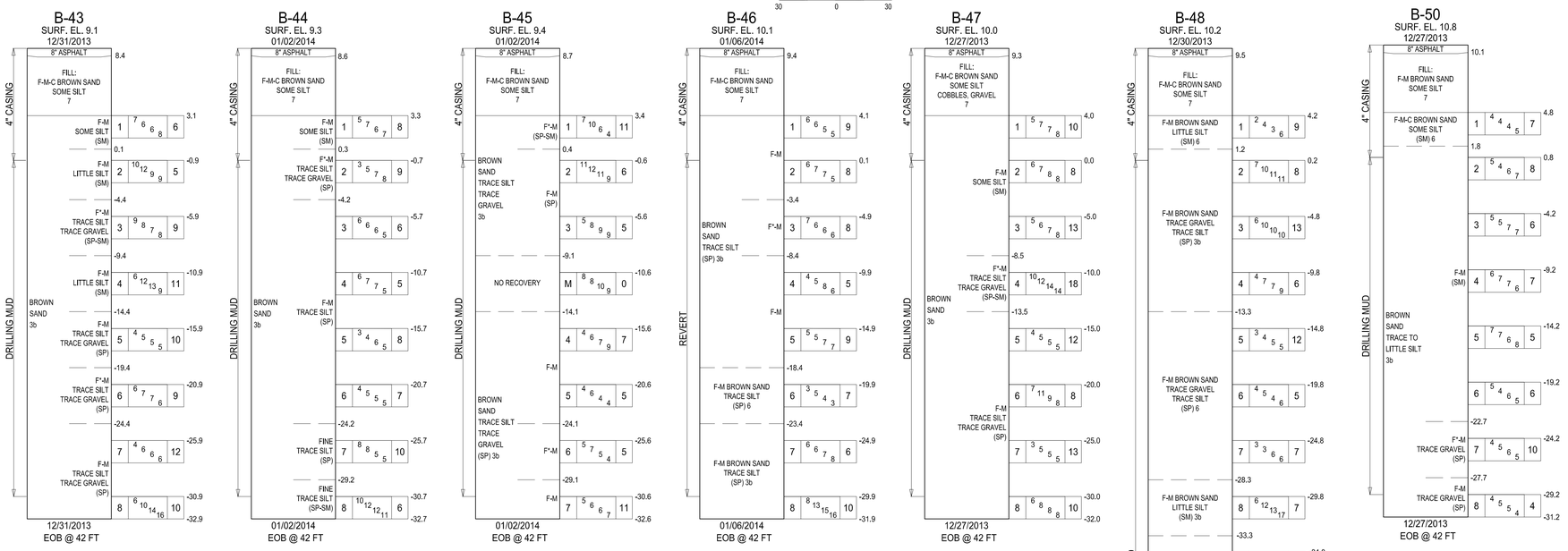
30 0 30

LEGEND

- TEST BORING
- TEST BORING (FAILED ATTEMPT)
- TEST BORING WITH OBSERVATION WELL
- PAVEMENT CORE

SUBSURFACE INVESTIGATION NOTES:

1. BORING B-49 WAS CANCELED AFTER ENCOUNTERING A HARD OBJECT AT 6' BELOW GROUND SURFACE AT ORIGINAL AND OFFSET LOCATIONS.



2"- DIA. WELLPOINT INSTALLED
TO ELEVATION -29.9
GROUNDWATER OBSERVATIONS
FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
01/13/2014	08:08 AM	9.2	0.9
01/15/2014	09:05 AM	8.8	1.3
01/16/2014	01:35 PM	9.0	1.1

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-43	S-3	15-17	-	0.28	0.19	0.11	0.4	91.8	7.8	20.6	1.1	2.5	-	-	-	-	-	SP-SM
B-43	S-6	30-32	-	0.29	0.20	0.13	0.3	95.5	4.2	22.4	1.1	2.2	-	-	-	-	-	SP
B-44	S-2	10-12	-	0.32	0.22	0.16	1.0	96.0	3.0	23.9	0.9	2.0	-	-	-	-	-	SP
B-44	S-8	40-42	-	0.25	0.17	0.10	0.0	93.5	6.5	23.6	1.1	2.4	-	-	-	-	-	SP-SM
B-45	S-1	6-8	-	0.29	0.20	0.11	2.0	93.0	5.0	6.4	1.2	2.6	-	-	-	-	-	SP-SM
B-45	S-6	35-37	-	0.34	0.22	0.16	0.5	95.6	3.9	20.3	0.9	2.2	-	-	-	-	-	SP
B-46	S-3	15-17	-	0.31	0.21	0.15	0.0	95.4	4.6	25.5	1.0	2.1	-	-	-	-	-	SP
B-47	S-4	20-22	-	0.37	0.22	0.12	2.7	89.8	7.5	17.6	1.0	3.1	-	-	-	-	-	SP-SM
B-48	S-3	15-17	-	0.53	0.30	0.18	2.9	94.6	2.5	20.6	0.9	2.9	-	-	-	-	-	SP
B-48	S-13	70-72	-	-	-	-	-	-	-	17.2	-	-	23	15	8	-	-	CL
B-48	S-16	85-87	-	0.16	0.08	-	0.1	72.5	27.4	22.2	-	-	-	-	-	-	-	SM
B-50	S-7	35-37	-	0.33	0.23	0.17	0.3	98.4	1.3	23.2	0.9	1.9	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-48
1 (RD SURFACE)	ASPHALT	12"

* All Pavement Cores are 4"-Diameter Circular-Shaped

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

KAPILA PATHIRAGE, PH.D, P.E.
GEOTECHNICAL ENGINEER
CDM SMITH

RICHARD G. MESEROLE
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MARK A. CANU
ASSOCIATE COMMISSIONER
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR'D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

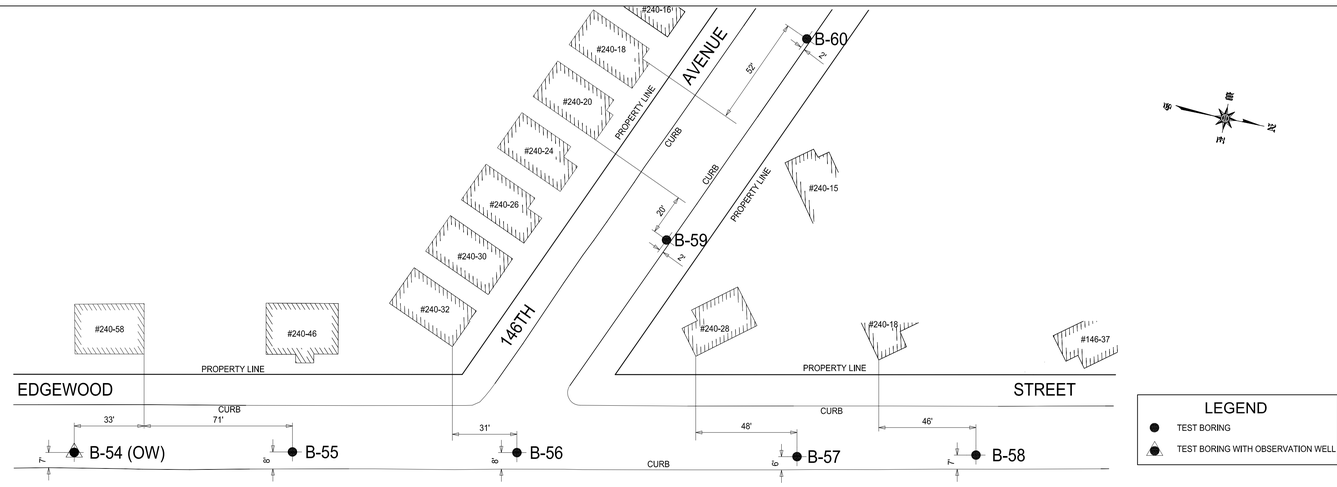
PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

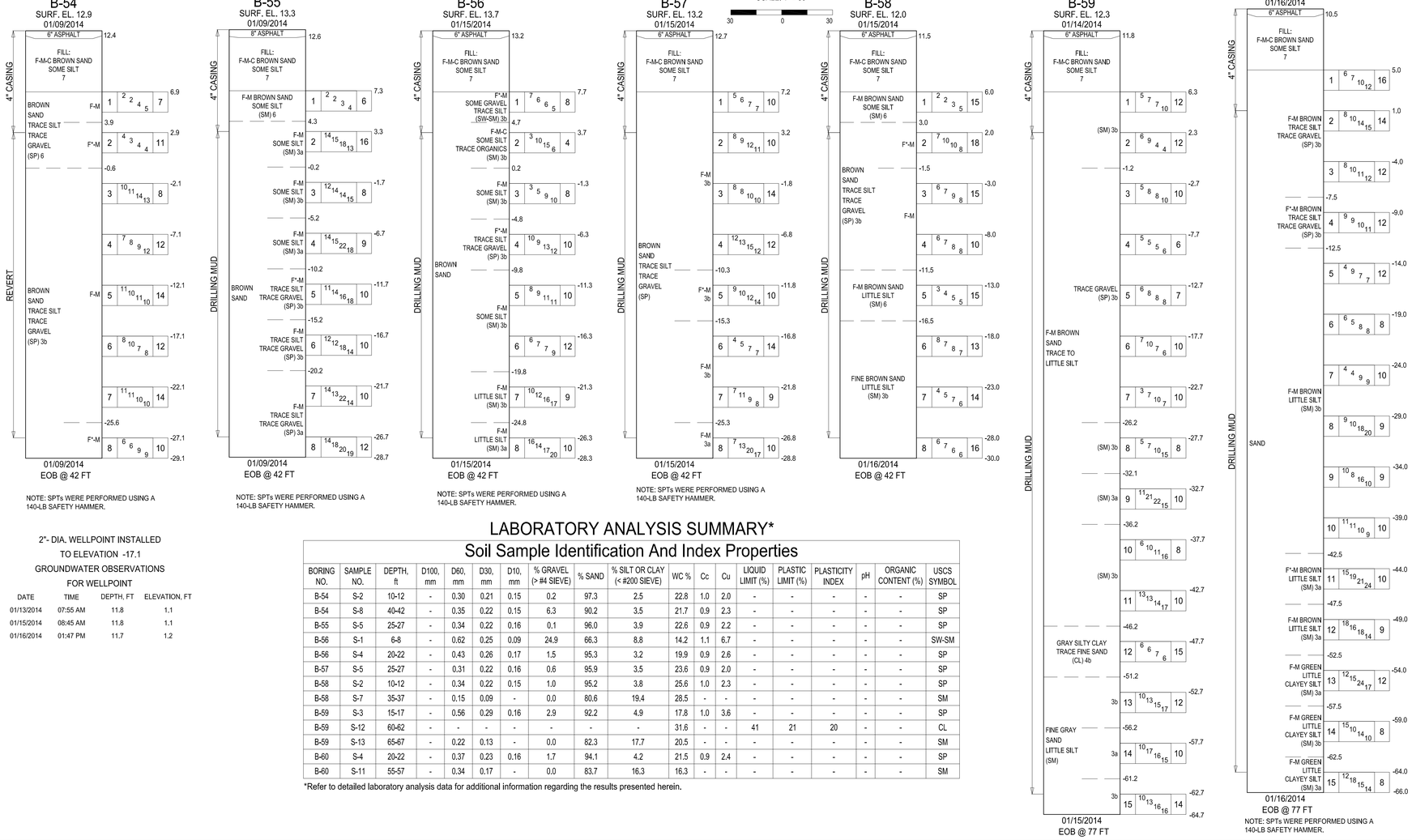
STATE OF NEW YORK
KAPILA S. PATHIRAGE
087326
LICENSED PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-109.00
CADD FILE No :	4053-ROB-01
SHEET	9 OF 21



LOCATION PLAN

SCALE: 1" = 30'



2"- DIA. WELLPOINT INSTALLED TO ELEVATION -17.1

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
01/13/2014	07:55 AM	11.8	1.1
01/15/2014	08:45 AM	11.8	1.1
01/16/2014	01:47 PM	11.7	1.2

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-54	S-2	10-12	-	0.30	0.21	0.15	0.2	97.3	2.5	22.8	1.0	2.0	-	-	-	-	-	SP
B-54	S-8	40-42	-	0.35	0.22	0.15	6.3	90.2	3.5	21.7	0.9	2.3	-	-	-	-	-	SP
B-55	S-5	25-27	-	0.34	0.22	0.16	0.1	96.0	3.9	22.6	0.9	2.2	-	-	-	-	-	SP
B-56	S-1	6-8	-	0.62	0.25	0.09	24.9	66.3	8.8	14.2	1.1	6.7	-	-	-	-	-	SW-SM
B-56	S-4	20-22	-	0.43	0.26	0.17	1.5	95.3	3.2	19.9	0.9	2.6	-	-	-	-	-	SP
B-57	S-5	25-27	-	0.31	0.22	0.16	0.6	95.9	3.5	23.6	0.9	2.0	-	-	-	-	-	SP
B-58	S-2	10-12	-	0.34	0.22	0.15	1.0	95.2	3.8	25.6	1.0	2.3	-	-	-	-	-	SP
B-58	S-7	35-37	-	0.15	0.09	-	0.0	80.6	19.4	28.5	-	-	-	-	-	-	-	SM
B-59	S-3	15-17	-	0.56	0.29	0.16	2.9	92.2	4.9	17.8	1.0	3.6	-	-	-	-	-	SP
B-59	S-12	60-62	-	-	-	-	-	-	-	31.6	-	-	41	21	20	-	-	CL
B-59	S-13	65-67	-	0.22	0.13	-	0.0	82.3	17.7	20.5	-	-	-	-	-	-	-	SM
B-60	S-4	20-22	-	0.37	0.23	0.16	1.7	94.1	4.2	21.5	0.9	2.4	-	-	-	-	-	SP
B-60	S-11	55-57	-	0.34	0.17	-	0.0	83.7	16.3	16.3	-	-	-	-	-	-	-	SM

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

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SOIL AND ROCK ANALYSIS BY

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SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR'D
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REVISIONS

CITY OF NEW YORK
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DESIGN & CONSTRUCTION

HWQ724B
4053

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BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

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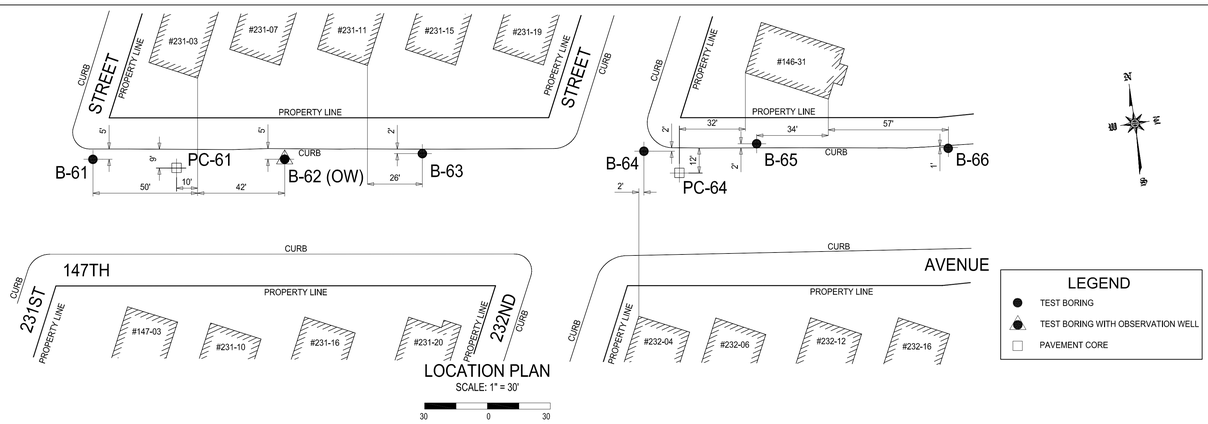
BOROUGH OF QUEENS

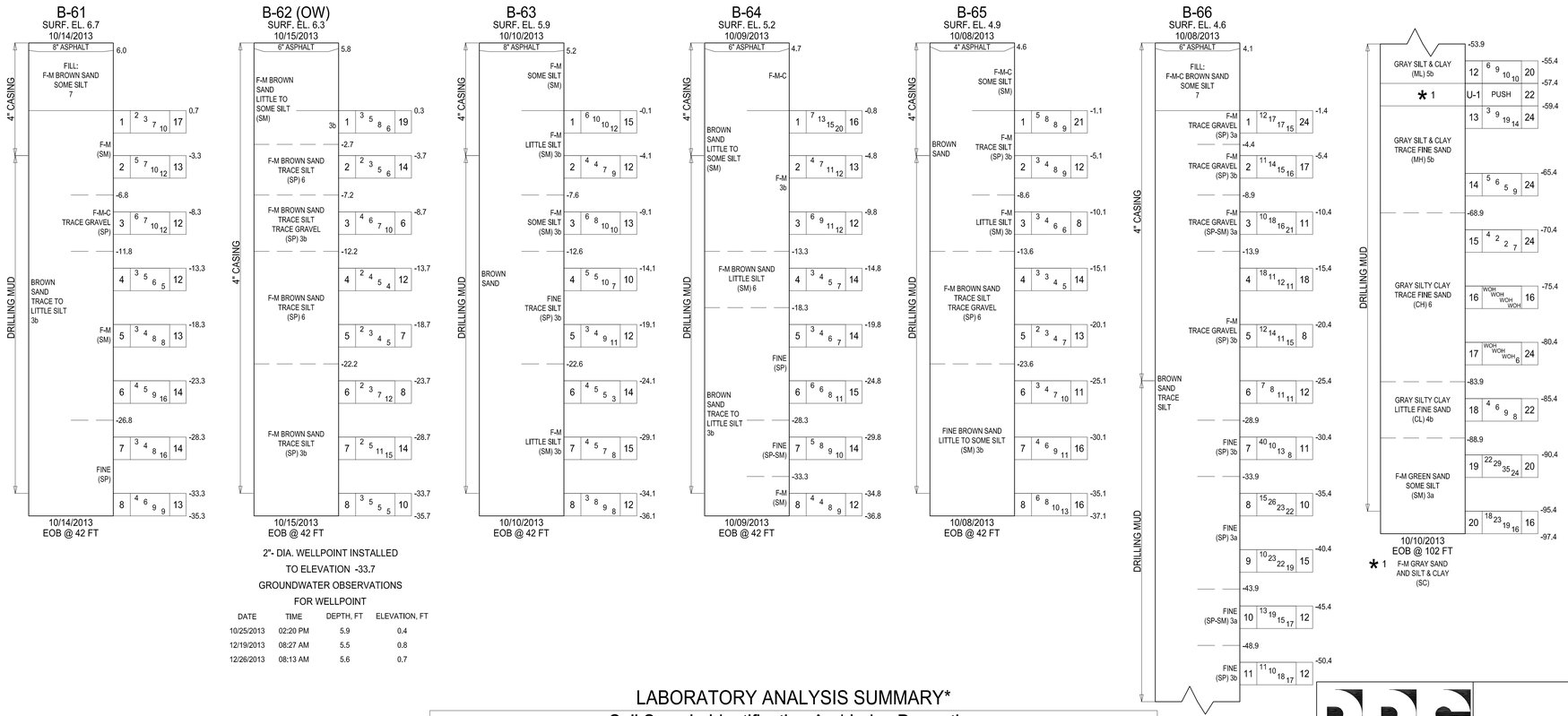
RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK · KAPILA S. PATHIRAGE · LICENSED PROFESSIONAL ENGINEER · No. 087328

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-110.00
CADD FILE No :	4053-ROB-01
SHEET	10 OF 21





2"- DIA. WELLPOINT INSTALLED TO ELEVATION -33.7

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
10/25/2013	02:20 PM	5.9	0.4
12/19/2013	08:27 AM	5.5	0.8
12/26/2013	08:13 AM	5.6	0.7

PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-61	PC-64
1 (RD SURFACE)	ASPHALT	6"	4"
2	CONCRETE	0"	8"

* All Pavement Cores are 4"-Diameter Circular-Shaped

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-61	S-3	15-17	-	0.62	0.30	0.17	4.0	92.0	4.0	16.5	0.9	3.7	-	-	-	-	-	SP
B-61	S-8	40-42	-	0.26	0.18	0.10	0.0	95.2	4.8	29.4	1.3	2.5	-	-	-	-	-	SP
B-62	S-3	15-17	-	0.42	0.26	0.17	0.1	96.8	3.1	25.2	0.9	2.5	-	-	-	-	-	SP
B-63	S-5	25-27	-	0.26	0.18	0.10	0.0	95.7	4.3	26.6	1.3	2.5	-	-	-	-	-	SP
B-64	S-7	35-37	-	0.25	0.17	0.11	0.0	94.6	5.4	26.7	1.1	2.4	-	-	-	-	-	SP-SM
B-65	S-1	6-8	-	0.32	0.21	0.14	0.0	96.5	3.5	25.1	1.0	2.3	-	-	-	-	-	SP
B-65	S-4	20-22	-	0.29	0.20	0.12	0.5	96.6	2.9	24.1	1.1	2.4	-	-	-	-	-	SP
B-66	S-3	15-17	-	0.48	0.25	0.13	5.5	88.1	6.4	17.3	0.9	3.5	-	-	-	-	-	SP-SM
B-66	S-10	50-52	-	0.25	0.17	0.09	0.0	92.4	7.6	22.0	1.2	2.6	-	-	-	-	-	SP-SM
B-66	U-1	62-64	-	0.24	-	-	0.0	63.6	36.4	64.7	-	-	25	16	9	-	-	SC
B-66	S-17	85-87	-	-	-	-	-	-	-	46.8	-	-	50	25	25	-	-	CH

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

CONTRACTOR NAME:
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75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK · KAPILA S. PATHIRAGE · 087328 · LICENSED PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-111.00
CADD FILE No :	4053-ROB-01
SHEET	11 OF 21

NO.	DATE	DESCRIPTIONS	APPR`D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

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RICHARD G. MESEROLE
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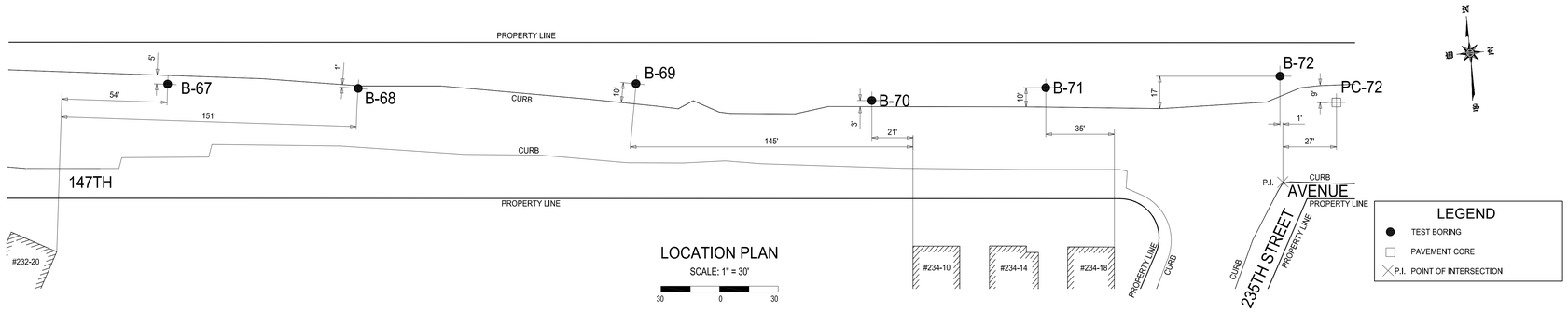
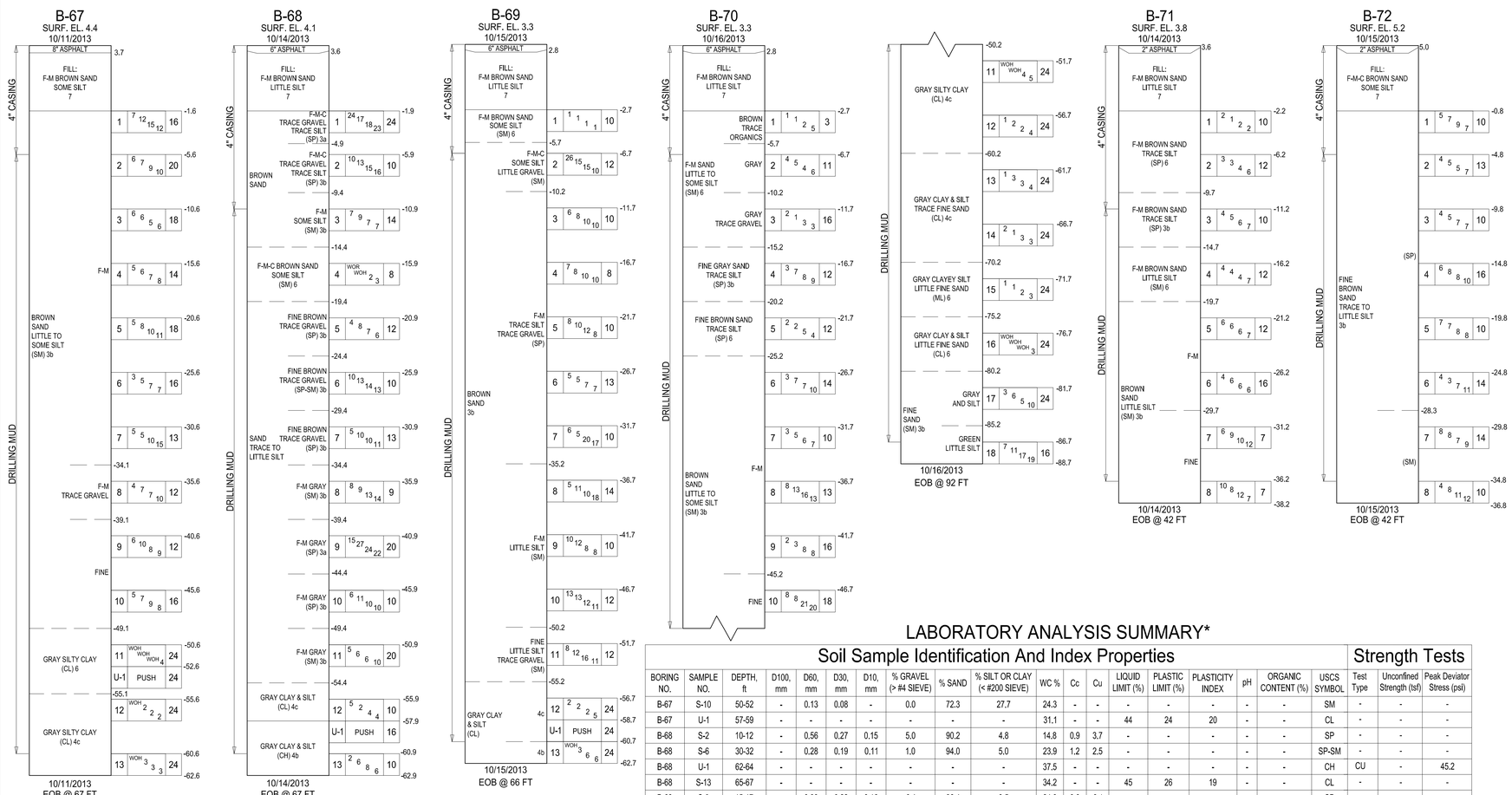
ASSOCIATE COMMISSIONER
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT



LOCATION PLAN

SCALE: 1" = 30'

30 0 30



LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties																		Strength Tests		
BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL	Test Type	Unconfined Strength (tsf)	Peak Deviator Stress (psi)
B-67	S-10	50-52	-	0.13	0.08	-	0.0	72.3	27.7	24.3	-	-	-	-	-	-	-	SM	-	-	-
B-67	U-1	57-59	-	-	-	-	-	-	-	31.1	-	-	44	24	20	-	-	CL	-	-	-
B-68	S-2	10-12	-	0.56	0.27	0.15	5.0	90.2	4.8	14.8	0.9	3.7	-	-	-	-	-	SP	-	-	-
B-68	S-6	30-32	-	0.28	0.19	0.11	1.0	94.0	5.0	23.9	1.2	2.5	-	-	-	-	-	SP-SM	-	-	-
B-68	U-1	62-64	-	-	-	-	-	-	-	37.5	-	-	-	-	-	-	-	CH	CU	-	45.2
B-68	S-13	65-67	-	-	-	-	-	-	-	34.2	-	-	45	26	19	-	-	CL	-	-	-
B-69	S-3	15-17	-	0.33	0.22	0.16	0.1	96.4	3.5	24.9	0.9	2.1	-	-	-	-	-	SP	-	-	-
B-69	S-11	55-57	-	0.23	0.14	-	2.1	85.0	12.9	23.1	-	-	-	-	-	-	-	SM	-	-	-
B-69	U-1	62-64	-	-	-	-	-	-	-	32.8	-	-	44	25	19	-	-	CL	-	-	-
B-70	S-4	20-22	-	0.27	0.19	0.13	0.0	95.7	4.3	25.7	1.1	2.1	-	-	-	-	-	SP	-	-	-
B-70	S-11	55-57	-	-	-	-	-	-	-	34.1	-	-	46	25	21	-	-	CL	-	-	-
B-70	S-13	65-67	-	-	-	-	0.0	3.9	96.1	41.5	-	-	-	-	-	-	-	CL	-	-	-
B-70	S-16	80-82	-	-	-	-	0.0	10.0	90.0	39.6	-	-	-	-	-	-	-	CL	-	-	-
B-70	S-18	90-92	-	0.24	0.16	-	0.0	87.3	12.7	23.9	-	-	-	-	-	-	-	SM	-	-	-
B-71	S-3	15-17	-	0.31	0.21	0.16	0.0	96.6	3.4	25.1	1.0	2.0	-	-	-	-	-	SP	-	-	-
B-72	S-6	30-32	-	0.27	0.20	0.14	0.0	96.3	3.7	25.0	1.0	1.9	-	-	-	-	-	SP	-	-	-

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-72
1 (RD SURFACE)	ASPHALT	6"

* All Pavement Cores are 4"-Diameter Circular-Shaped

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B

4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
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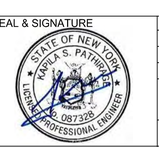
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE



DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-112.00
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SHEET	12 OF 21

DAVID ANTOINE AND ROBERT BUNTING
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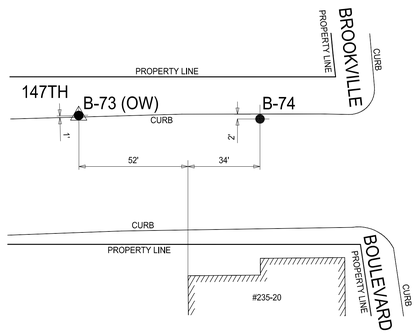
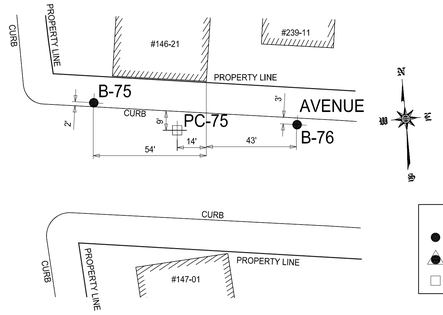
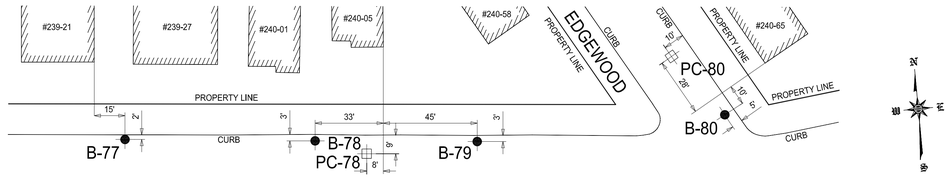
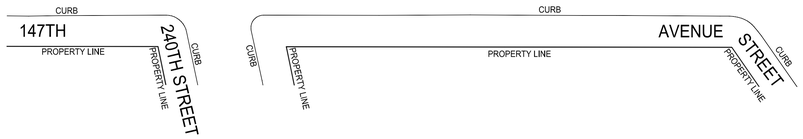
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM









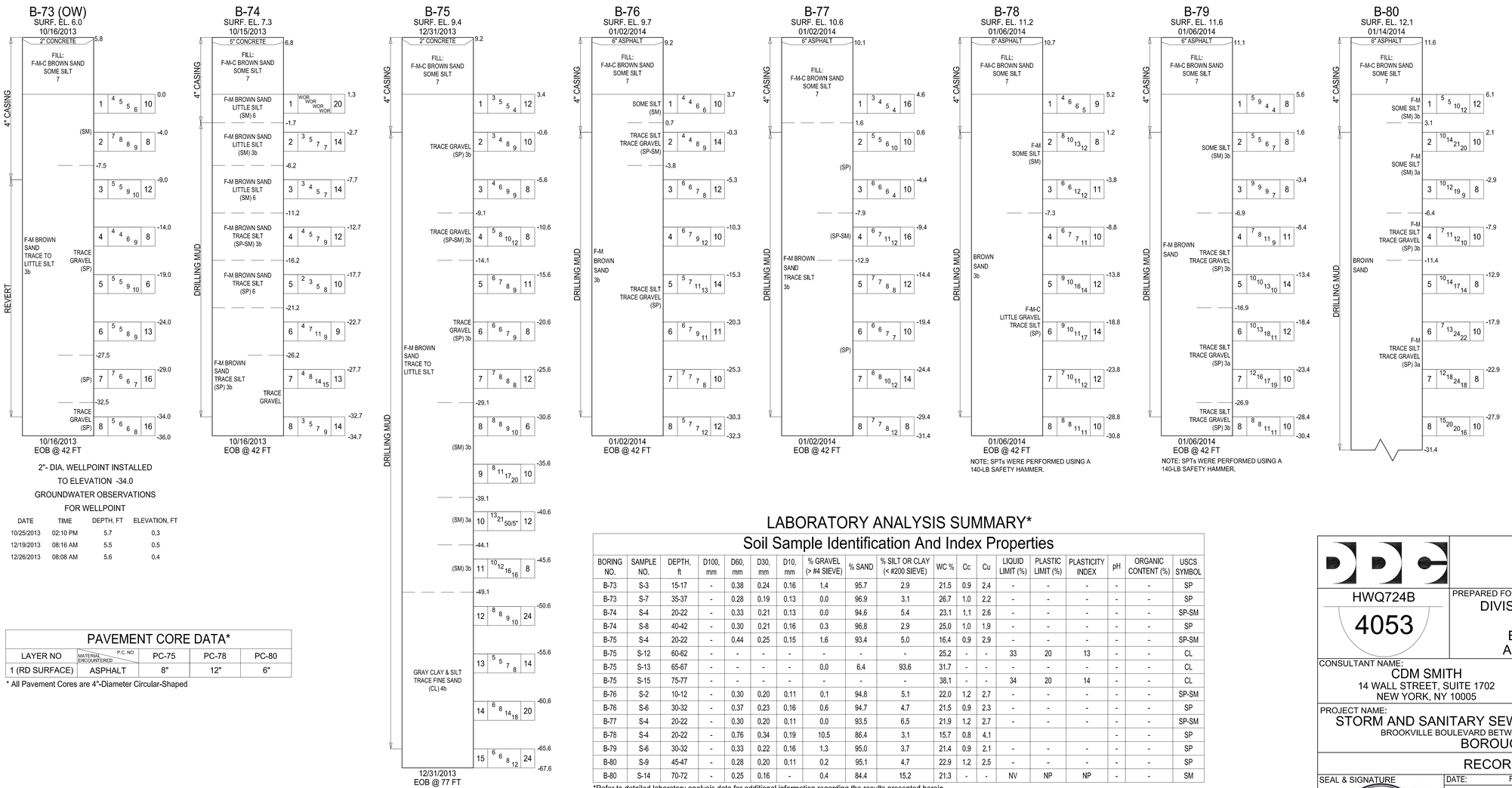
LEGEND

- TEST BORING
- TEST BORING WITH OBSERVATION WELL
- PAVEMENT CORE

LOCATION PLAN

SCALE: 1" = 30'

30 0 30



2"- DIA. WELLPOINT INSTALLED TO ELEVATION -34.0

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
10/25/2013	02:10 PM	5.7	0.3
12/19/2013	08:16 AM	5.5	0.5
12/26/2013	08:08 AM	5.6	0.4

PAVEMENT CORE DATA*

LAYER NO	P.C. NO / MATERIAL ENCOUNTERED	PC-75	PC-78	PC-80
1 (RD SURFACE)	ASPHALT	8"	12"	6"

* All Pavement Cores are 4"-Diameter Circular-Shaped

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-73	S-3	15-17	-	0.38	0.24	0.16	1.4	95.7	2.9	21.5	0.9	2.4	-	-	-	-	-	SP
B-73	S-7	35-37	-	0.28	0.19	0.13	0.0	96.9	3.1	26.7	1.0	2.2	-	-	-	-	-	SP
B-74	S-4	20-22	-	0.33	0.21	0.13	0.0	94.6	5.4	23.1	1.1	2.6	-	-	-	-	-	SP-SM
B-74	S-8	40-42	-	0.30	0.21	0.16	0.3	96.8	2.9	25.0	1.0	1.9	-	-	-	-	-	SP
B-75	S-4	20-22	-	0.44	0.25	0.15	1.6	93.4	5.0	16.4	0.9	2.9	-	-	-	-	-	SP-SM
B-75	S-12	60-62	-	-	-	-	-	-	-	25.2	-	-	33	20	13	-	-	CL
B-75	S-13	65-67	-	-	-	-	0.0	6.4	93.6	31.7	-	-	-	-	-	-	-	CL
B-75	S-15	75-77	-	-	-	-	-	-	-	38.1	-	-	34	20	14	-	-	CL
B-76	S-2	10-12	-	0.30	0.20	0.11	0.1	94.8	5.1	22.0	1.2	2.7	-	-	-	-	-	SP-SM
B-76	S-6	30-32	-	0.37	0.23	0.16	0.6	94.7	4.7	21.5	0.9	2.3	-	-	-	-	-	SP
B-77	S-4	20-22	-	0.30	0.20	0.11	0.0	93.5	6.5	21.9	1.2	2.7	-	-	-	-	-	SP-SM
B-78	S-4	20-22	-	0.76	0.34	0.19	10.5	86.4	3.1	15.7	0.8	4.1				-	-	SP
B-79	S-6	30-32	-	0.33	0.22	0.16	1.3	95.0	3.7	21.4	0.9	2.1	-	-	-	-	-	SP
B-80	S-9	45-47	-	0.28	0.20	0.11	0.2	95.1	4.7	22.9	1.2	2.5	-	-	-	-	-	SP
B-80	S-14	70-72	-	0.25	0.16	-	0.4	84.4	15.2	21.3	-	-	NV	NP	NP	-	-	SM

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK · KAPILA S. PATHIRAGE · LICENSED PROFESSIONAL ENGINEER · No. 087328

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-113.00
CADD FILE No :	4053-ROB-01
SHEET	13 OF 21

NO.	DATE	DESCRIPTIONS	APPR`D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

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GEOTECHNICAL ENGINEER
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RICHARD G. MESEROLE
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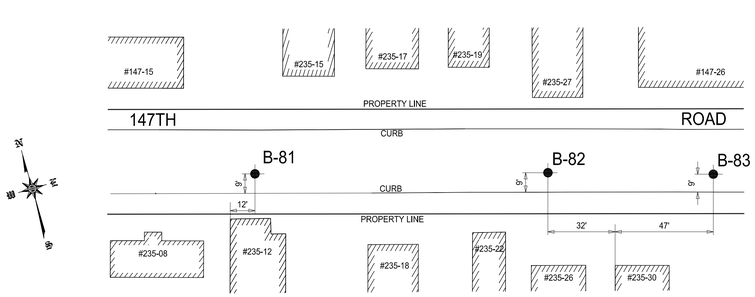
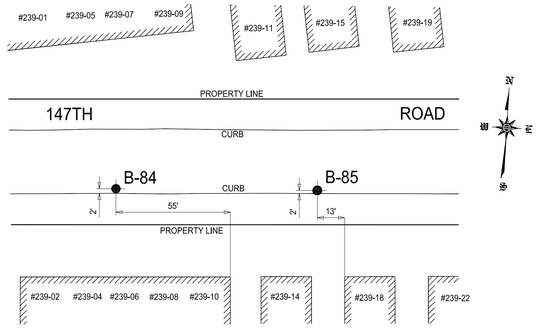
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT





LOCATION PLAN

SCALE: 1" = 30'

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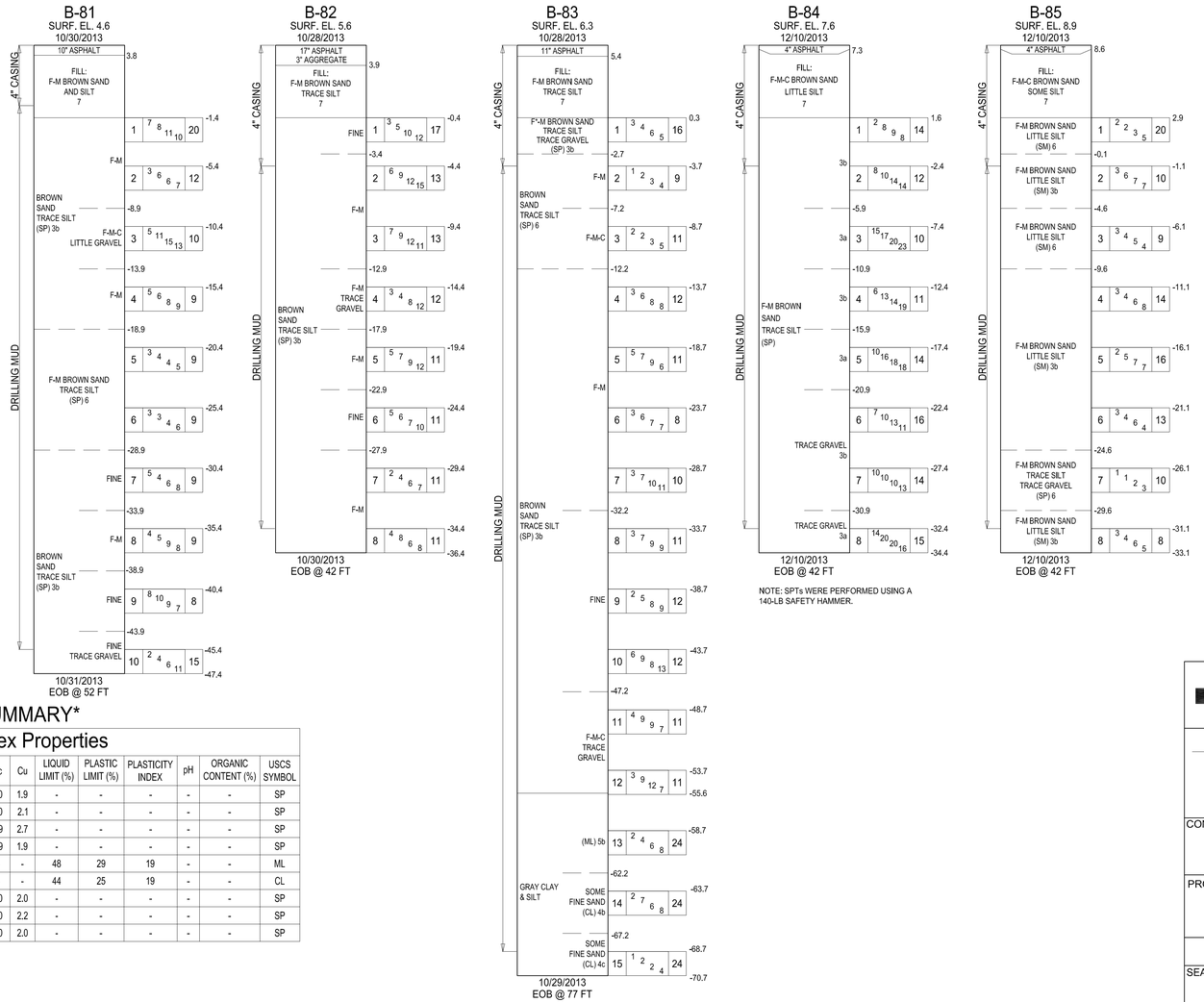
LEGEND

● TEST BORING



NOTE: SPTs WERE PERFORMED USING A 140-LB SAFETY HAMMER.

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-81	S-5	25-27	-	0.30	0.21	0.16	0.0	98.0	2.0	22.9	1.0	1.9	-	-	-	-	-	SP
B-81	S-10	50-52	-	0.27	0.19	0.13	0.1	95.6	4.3	25.8	1.0	2.1	-	-	-	-	-	SP
B-82	S-4	20-22	-	0.42	0.25	0.16	1.2	96.2	2.6	20.1	0.9	2.7	-	-	-	-	-	SP
B-83	S-1	6-8	-	0.30	0.21	0.16	0.1	97.7	2.2	26.8	0.9	1.9	-	-	-	-	-	SP
B-83	S-13	65-67	-	-	-	-	-	-	-	34.3	-	-	48	29	19	-	-	ML
B-83	S-15	75-77	-	-	-	-	0.0	23.3	76.7	42.5	-	-	44	25	19	-	-	CL
B-84	S-3	15-17	-	0.29	0.20	0.14	0.0	96.5	3.5	24.2	1.0	2.0	-	-	-	-	-	SP
B-84	S-6	30-32	-	0.33	0.22	0.15	0.1	97.0	2.9	22.6	1.0	2.2	-	-	-	-	-	SP
B-85	S-7	35-37	-	0.31	0.21	0.15	0.1	97.9	2.0	25.7	1.0	2.0	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

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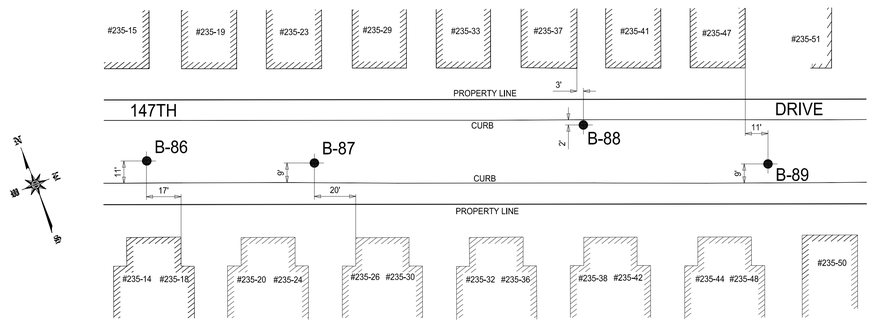
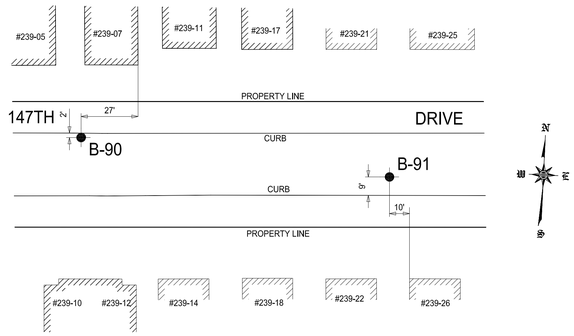
RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK · KAPILA S. PATHIRAGE · 087328 · LICENSED PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-114.00
CADD FILE No :	4053-ROB-01
SHEET	14 OF 21





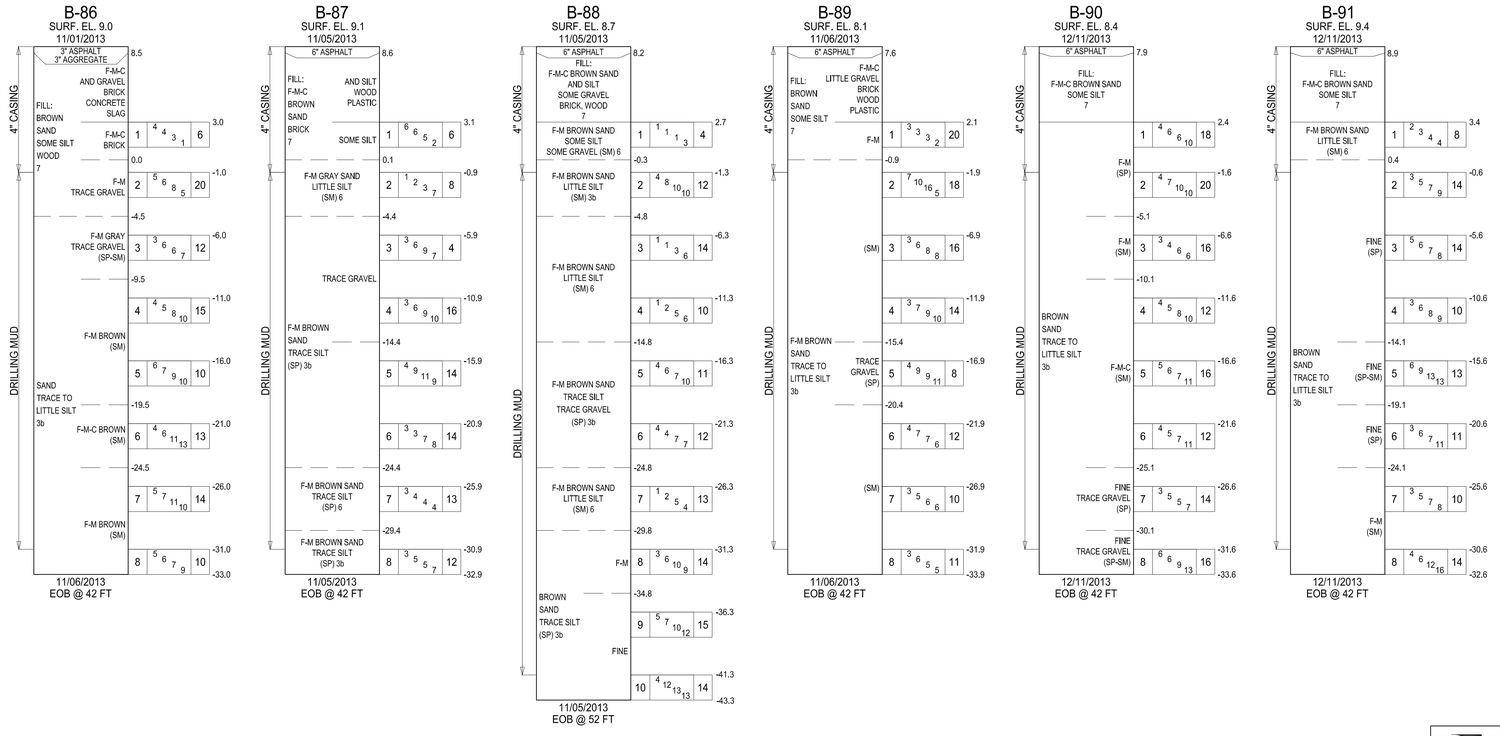
LOCATION PLAN

SCALE: 1" = 30'

30 0 30

LEGEND

● TEST BORING



LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-86	S-2	10-12	-	0.33	0.08	-	1.2	70.2	28.6	34.7	-	-	-	-	-	-	-	SM
B-86	S-3	15-17	-	0.40	0.24	0.15	2.1	90.3	7.6	19.8	1.0	2.7	-	-	-	-	-	SP-SM
B-87	S-4	20-22	-	0.29	0.20	0.13	1.0	95.2	3.8	23.7	1.0	2.2	-	-	-	-	-	SP
B-87	S-8	40-42	-	0.29	0.21	0.17	0.0	98.4	1.6	24.3	0.9	1.8	-	-	-	-	-	SP
B-88	S-6	30-32	-	0.31	0.21	0.13	0.2	96.4	3.4	23.0	1.1	2.3	-	-	-	-	-	SP
B-89	S-5	25-27	-	0.53	0.28	0.16	4.1	91.6	4.3	17.5	0.9	3.3	-	-	-	-	-	SP
B-90	S-2	10-12	-	0.28	0.18	0.12	0.0	95.7	4.3	26.3	1.0	2.4	-	-	-	-	-	SP
B-90	S-8	40-42	-	0.26	0.17	0.09	1.5	91.2	7.3	23.4	1.2	2.8	-	-	-	-	-	SP-SM
B-91	S-5	20-22	-	0.27	0.19	0.09	0.0	91.8	8.2	23.7	1.5	3.1	-	-	-	-	-	SP-SM

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

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RECORD OF BORINGS

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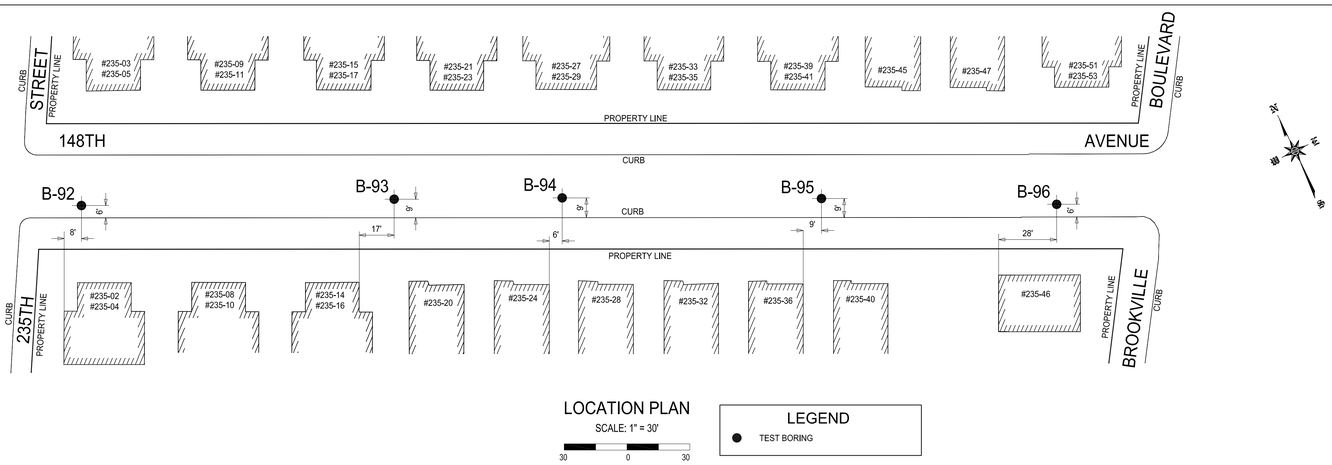
STATE OF NEW YORK · KAPILA S. PATHIRAGE · 087328 · LICENSED PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-115.00
CADD FILE No :	4053-ROB-01
SHEET	15 OF 21



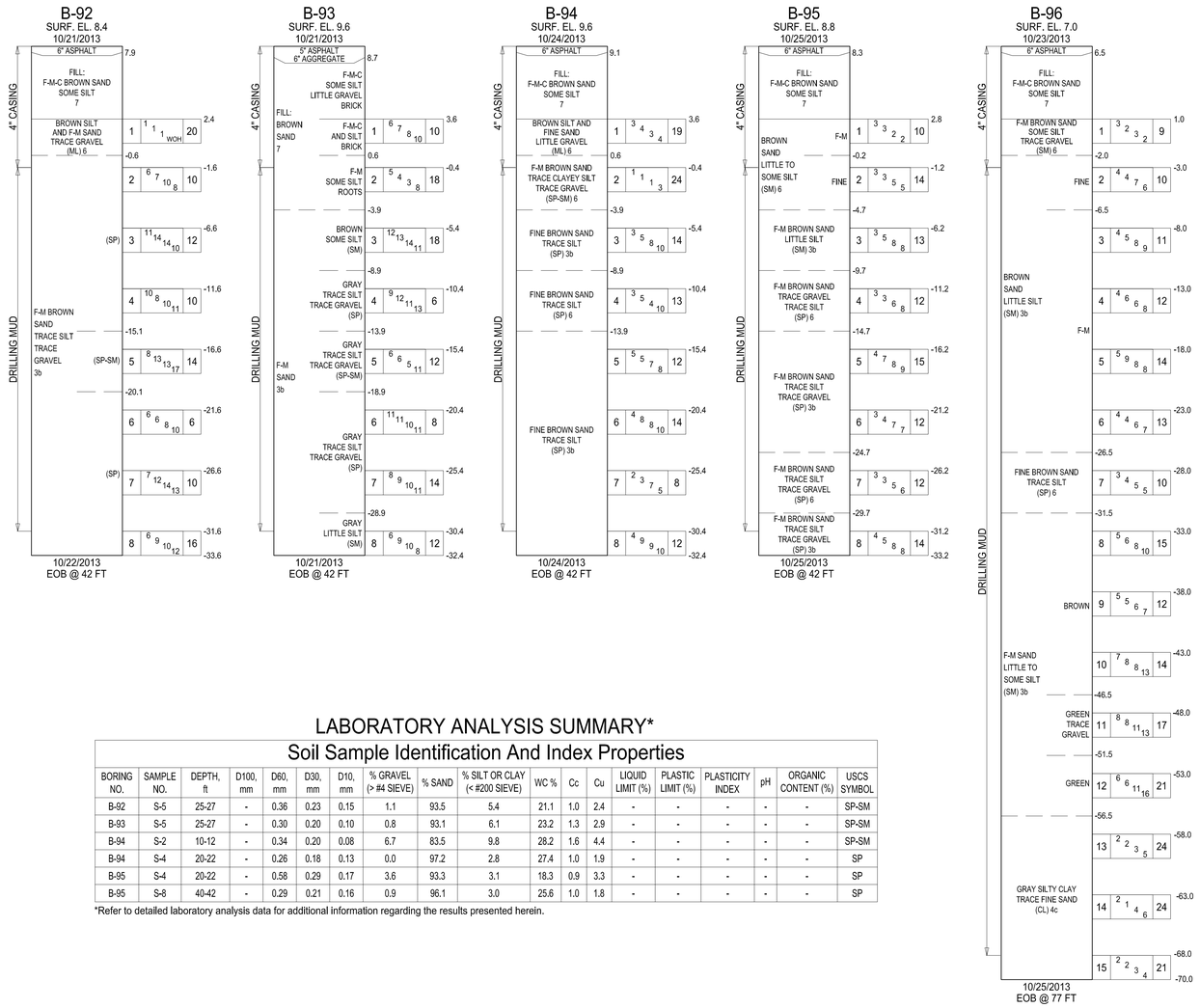
LOCATION PLAN

SCALE: 1" = 30'

30 0 30

LEGEND

● TEST BORING



LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-92	S-5	25-27	-	0.36	0.23	0.15	1.1	93.5	5.4	21.1	1.0	2.4	-	-	-	-	-	SP-SM
B-93	S-5	25-27	-	0.30	0.20	0.10	0.8	93.1	6.1	23.2	1.3	2.9	-	-	-	-	-	SP-SM
B-94	S-2	10-12	-	0.34	0.20	0.08	6.7	83.5	9.8	28.2	1.6	4.4	-	-	-	-	-	SP-SM
B-94	S-4	20-22	-	0.26	0.18	0.13	0.0	97.2	2.8	27.4	1.0	1.9	-	-	-	-	-	SP
B-95	S-4	20-22	-	0.58	0.29	0.17	3.6	93.3	3.1	18.3	0.9	3.3	-	-	-	-	-	SP
B-95	S-8	40-42	-	0.29	0.21	0.16	0.9	96.1	3.0	25.6	1.0	1.8	-	-	-	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

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DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-116.00
CADD FILE No :	4053-ROB-01
SHEET	16 OF 21

DAVID ANTOINE AND ROBERT BUNTING
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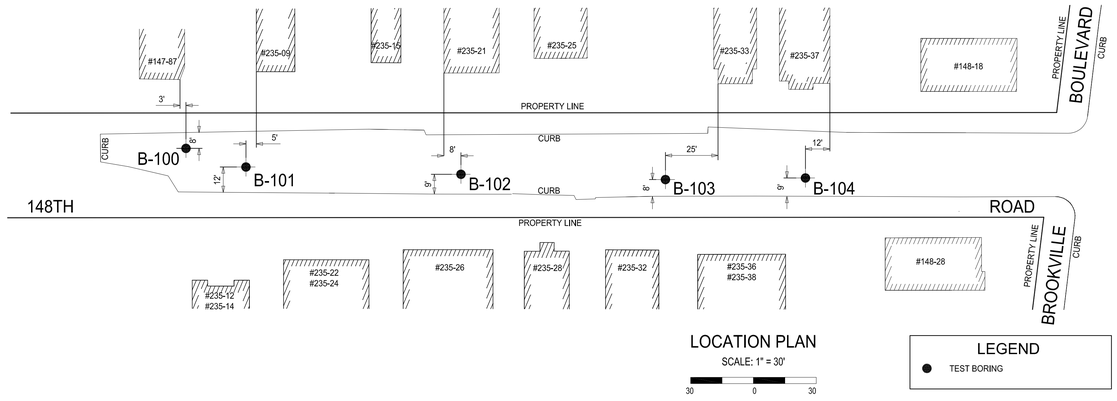
REVISIONS



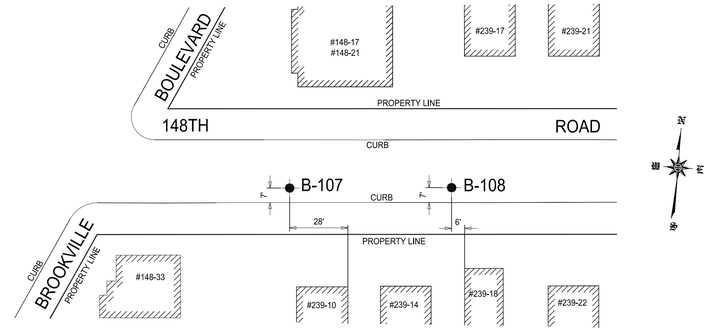
LOCATION PLAN

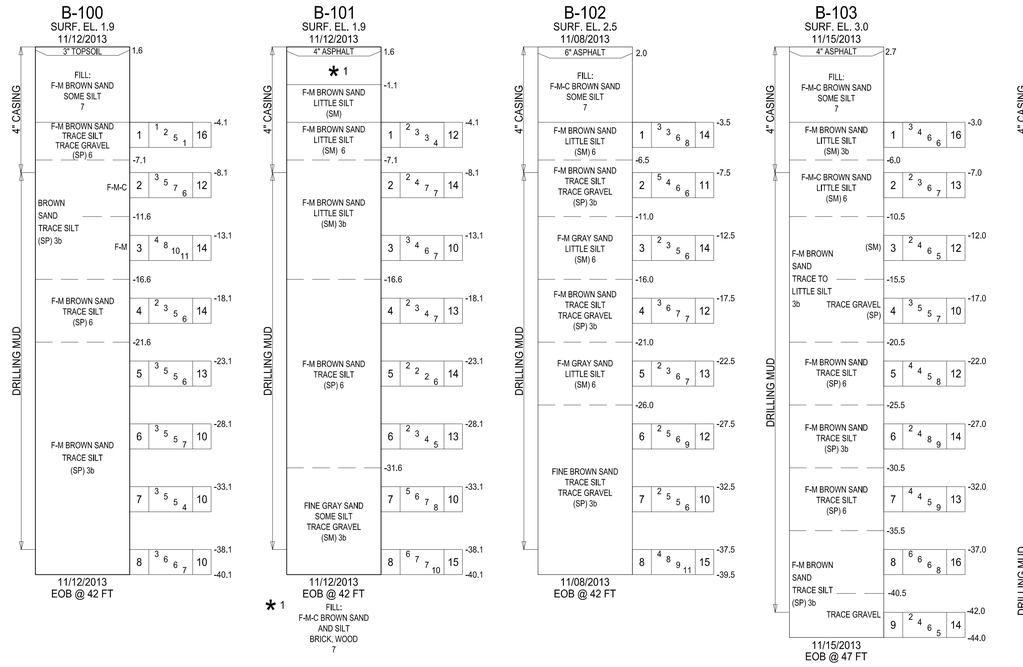
SCALE: 1" = 30'

30 0 30

LEGEND

● TEST BORING





LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties																			Consolidation Tests			
BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL	Cv (ft^2/yr)	eo	Preconsol pressure (tsf)	Cc	Cr
B-100	S-1	6-8	-	0.36	0.23	0.16	0.4	97.4	2.2	23.8	0.9	2.2	-	-	-	-	-	SP	-	-	-	-	-
B-100	S-5	25-27	-	0.27	0.18	0.11	0.0	95.9	4.1	24.5	1.1	2.4	-	-	-	-	-	SP	-	-	-	-	-
B-101	S-8	40-42	-	0.20	0.10	-	1.4	77.2	21.4	22.4	-	-	-	-	-	-	-	SM	-	-	-	-	-
B-102	S-4	20-22	-	0.29	0.20	0.12	1.3	94.4	4.3	22.8	1.1	2.4	-	-	-	-	-	SP	-	-	-	-	-
B-102	S-7	35-37	-	0.26	0.18	0.12	0.3	95.0	4.7	23.8	1.0	2.1	-	-	-	-	-	SP	-	-	-	-	-
B-103	S-4	20-22	-	0.33	0.23	0.17	0.5	97.7	1.8	23.1	0.9	2.0	-	-	-	-	-	SP	-	-	-	-	-
B-103	S-9	45-47	-	0.28	0.19	0.12	0.2	96.2	3.6	23.5	1.2	2.4	-	-	-	-	-	SP	-	-	-	-	-
B-104	S-6	30-32	-	0.27	0.20	0.15	0.0	97.8	2.2	24.7	1.0	1.8	-	-	-	-	-	SP	-	-	-	-	-
B-104	S-12	60-62	-	0.26	0.19	-	0.0	88.9	11.1	19.0	-	-	-	-	-	-	-	SP-SM	-	-	-	-	-
B-104	S-14	65-67	-	-	-	-	-	-	-	29.1	-	-	35	23	12	-	-	CL	-	-	-	-	-
B-104	U-1	67-69	-	-	-	-	-	-	-	34.6	-	-	-	-	-	-	-	CL	600	0.99	5.0	0.299	0.042
B-104	S-15	70-72	-	-	-	-	-	-	-	43.2	-	-	50	30	20	-	-	MH	-	-	-	-	-
B-107	S-1	6-8	-	0.32	0.19	-	3.0	82.4	14.6	16.4	-	-	-	-	-	-	-	SM	-	-	-	-	-
B-108	S-4	20-22	-	0.30	0.20	0.11	0.0	93.3	6.7	21.5	1.2	2.8	-	-	-	-	-	SP-SM	-	-	-	-	-

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

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JEFFREY K. AU, P.E.
GEOTECHNICAL ENGINEER | JEAN M. JEAN-LOUIS
DIRECTOR
B.E.G.S.

MARK A. CANU
ASSOCIATE COMMISSIONER
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR'D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM
		REVISIONS	

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B
4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
CDM SMITH
14 WALL STREET, SUITE 1702
NEW YORK, NY 10005

CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

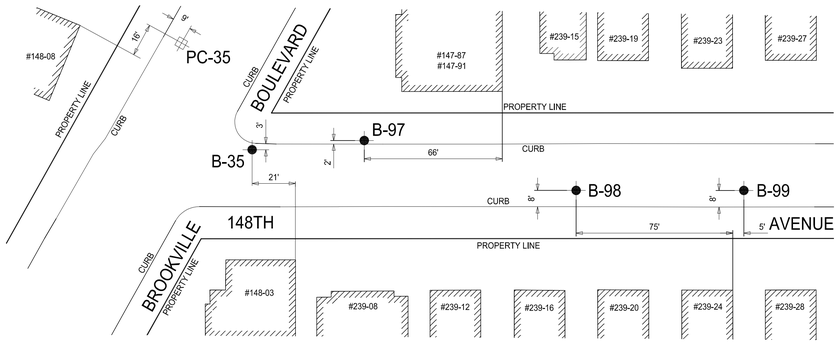
PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

STATE OF NEW YORK
KAPILA S. PATHIRAGE
LICENSED No. 087328
PROFESSIONAL ENGINEER

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-117.00
CADD FILE No :	4053-ROB-01
SHEET	17 OF 21



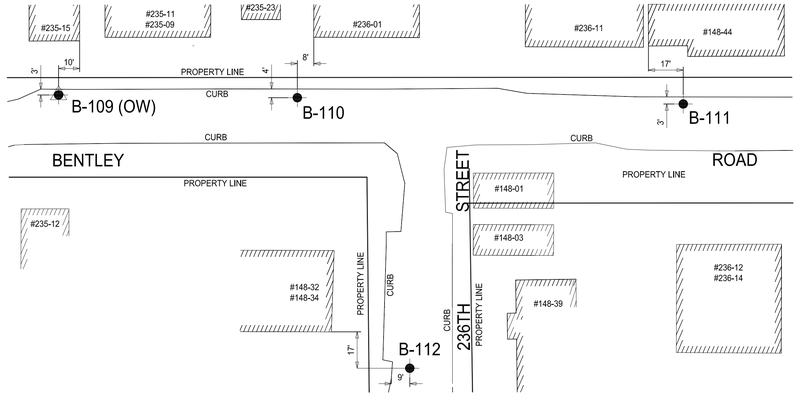
LEGEND

- TEST BORING
- TEST BORING WITH OBSERVATION WELL
- PAVEMENT CORE

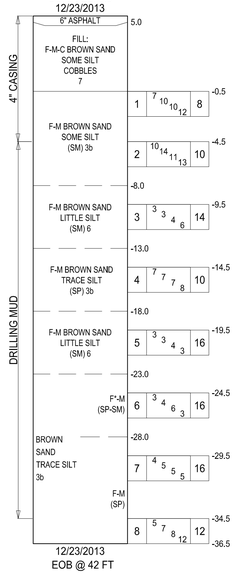
LOCATION PLAN

SCALE: 1" = 30'

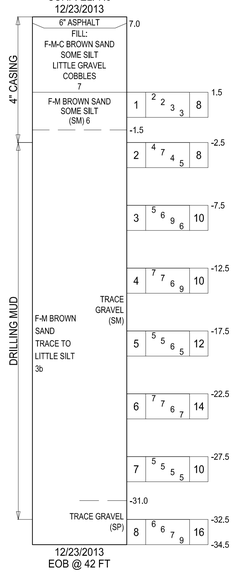
30 0 30



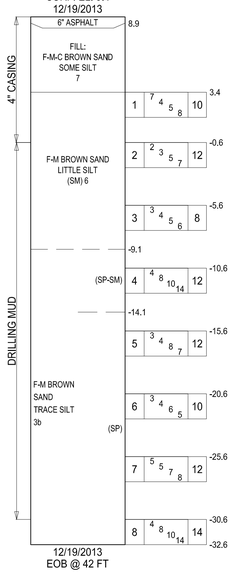
B-35
SURF. EL. 5.5
12/23/2013



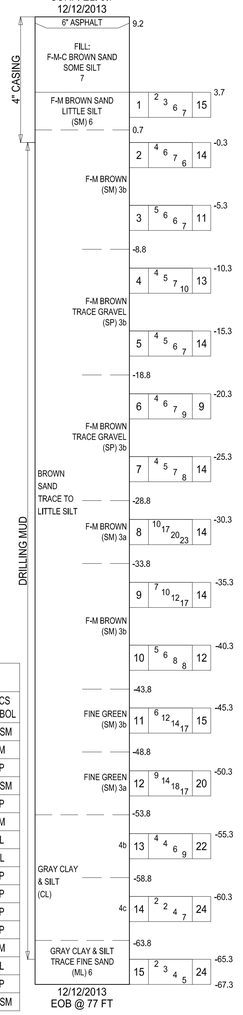
B-97
SURF. EL. 7.5
12/23/2013



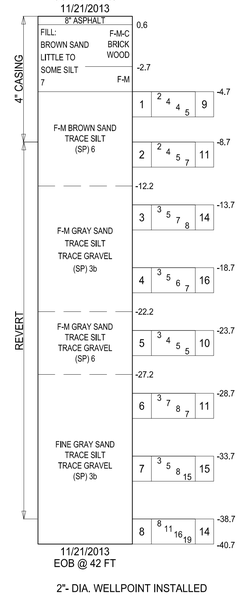
B-98
SURF. EL. 9.4
12/19/2013



B-99
SURF. EL. 9.7
12/12/2013



B-109 (OW)
SURF. EL. 1.3
11/21/2013

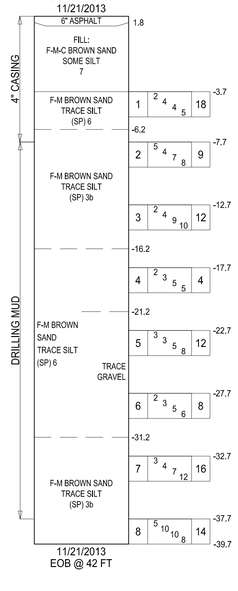


2"- DIA. WELLPOINT INSTALLED TO ELEVATION -38.7

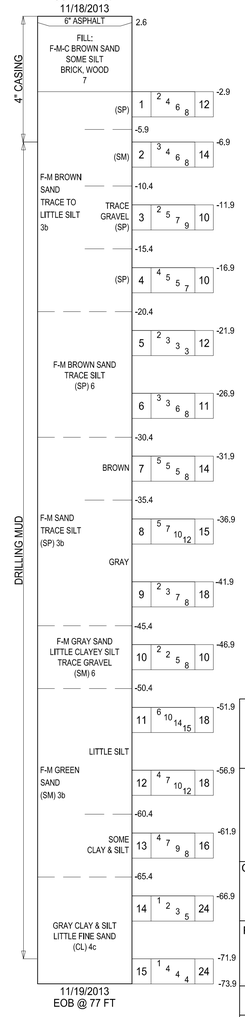
GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/19/2013	09:03 AM	1.1	0.2
12/26/2013	08:55 AM	1.1	0.2
01/13/2014	07:45 AM	1.0	0.3
01/15/2014	07:30 AM	1.0	0.3

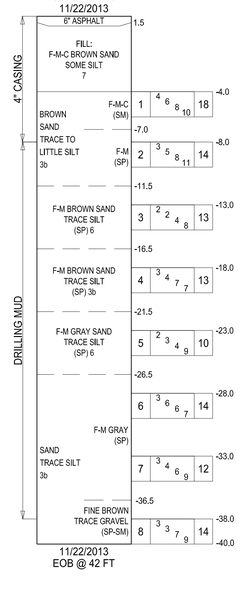
B-110
SURF. EL. 2.3
11/21/2013



B-111
SURF. EL. 3.1
11/18/2013



B-112
SURF. EL. 2.0
11/22/2013



PAVEMENT CORE DATA*

LAYER NO	MATERIAL ENCOUNTERED / P.C. NO	PC-35
1 (RD SURFACE)	ASPHALT	9"

* All Pavement Cores are 4"-Diameter Circular-Shaped

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-35	S-6	30-32	-	0.29	0.20	0.12	0.0	94.1	5.9	25.0	1.2	2.4	-	-	-	-	-	SP-SM
B-97	S-2	10-12	-	0.43	0.20	-	9.6	73.3	17.1	13.8	-	-	-	-	-	-	-	SM
B-97	S-8	40-42	-	0.30	0.21	0.15	0.9	95.1	4.0	24.1	1.0	2.0	-	-	-	-	-	SP
B-98	S-4	20-22	-	0.31	0.20	0.11	0.0	94.5	5.5	23.6	1.2	2.9	-	-	-	-	-	SP-SM
B-99	S-5	25-27	-	0.33	0.22	0.15	0.2	95.8	4.0	25.2	1.0	2.1	-	-	-	-	-	SP
B-99	S-11	55-57	-	0.26	0.17	-	0.0	86.6	13.4	19.3	-	-	-	-	-	-	-	SM
B-99	S-13	65-67	-	-	-	-	-	-	-	29.7	-	-	38	23	15	-	-	CL
B-99	S-15	75-77	-	-	-	-	0.0	7.9	92.1	42.5	-	-	45	28	17	-	-	ML
B-109	S-4	20-22	-	0.39	0.25	0.17	0.3	96.5	3.2	21.2	0.9	2.4	-	-	-	-	-	SP
B-109	S-7	35-37	-	0.27	0.19	0.12	0.1	95.7	4.2	24.0	1.2	2.4	-	-	-	-	-	SP
B-110	S-5	25-27	-	0.33	0.22	0.14	0.6	95.7	3.7	24.2	1.0	2.3	-	-	-	-	-	SP
B-111	S-3	15-17	-	0.33	0.21	0.12	2.5	93.4	4.1	20.4	1.1	2.7	-	-	-	-	-	SP
B-111	S-10	50-52	-	0.29	0.18	-	0.6	82.2	17.2	19.1	-	-	-	-	-	-	-	SM
B-111	S-14	70-72	-	-	-	-	-	-	-	35.4	-	-	39	22	17	-	-	CL
B-112	S-5	25-27	-	0.28	0.20	0.15	0.0	97.0	3.0	23.5	1.0	1.9	-	-	-	-	-	SP
B-112	S-8	40-42	-	0.29	0.20	0.13	5.6	89.2	5.2	30.7	1.1	2.3	-	-	-	-	-	SP-SM

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

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STATE OF NEW YORK
KAPILA S. PATHIRAGE
087328
LICENSED PROFESSIONAL ENGINEER

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DRAWING BY:	RON BARDHAN AND JANET CONNOR
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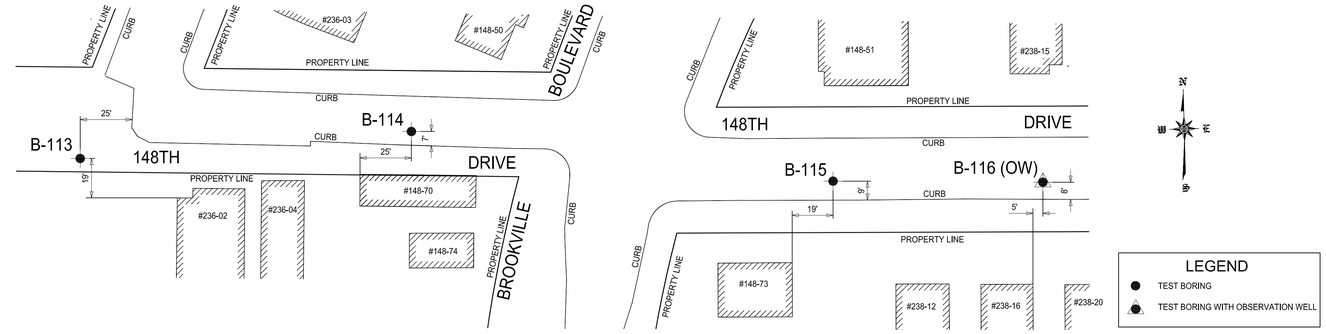
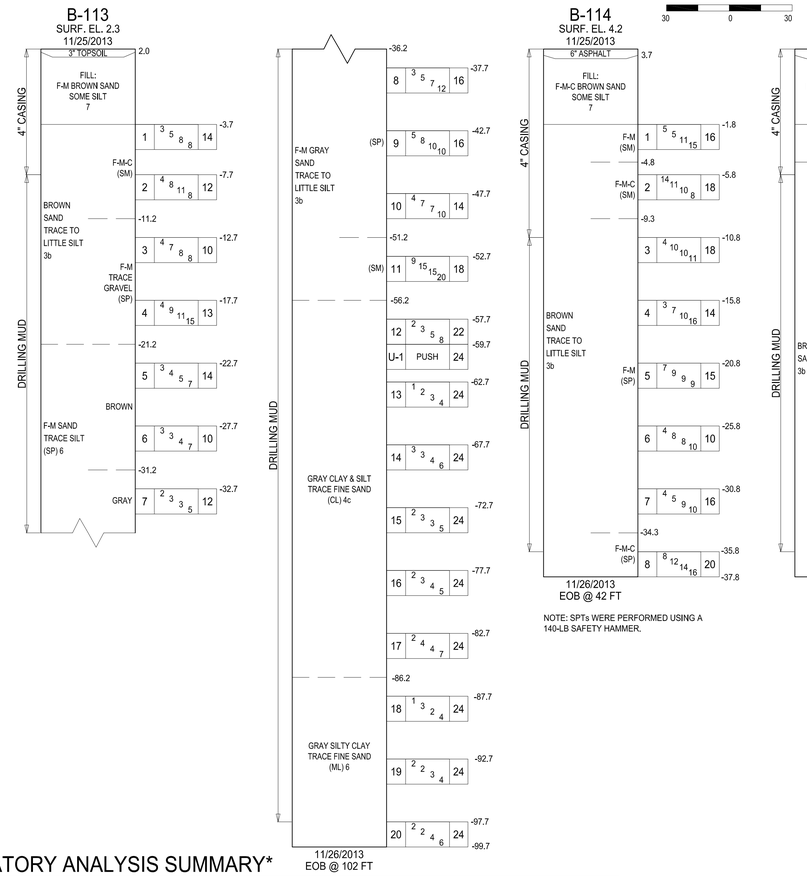
DWG No:	B-118.00
CADD FILE No :	4053-ROB-01
SHEET	18 OF 21



LOCATION PLAN

SCALE: 1" = 30'



2"- DIA. WELLPOINT INSTALLED TO ELEVATION -24.4

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/30/2013	07:30 AM	4.8	0.8
01/02/2014	11:00 AM	5.0	0.6
01/13/2014	07:50 AM	5.2	0.4
01/15/2014	09:30 AM	5.3	0.3

NOTE: SPTs WERE PERFORMED USING A 140-LB SAFETY HAMMER.

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties																	Consolidation Tests				
BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL	Consol. coef. (Cv)	Init. Void ratio (e_0)	Preconsol pressure (tsf)	Comp. index (Cc)	Recomp. index (Cr)
B-113	S-3	15-17	-	0.32	0.21	0.14	0.3	95.2	4.5	20.7	1.0	2.3	-	-	-	-	-	SP	-	-	-	-	-
B-113	S-12	60-62	-	-	-	-	-	-	-	31.3	-	-	38	22	16	-	-	CL	-	-	-	-	-
B-113	U-1	62-64	-	-	-	-	-	-	-	34.0	-	-	-	-	-	-	-	-	700	1.09	2.5	0.382	0.050
B-113	S-18	90-92	-	-	-	-	-	-	-	45.9	-	-	49	29	20	-	-	ML	-	-	-	-	-
B-114	S-4	20-22	-	0.31	0.19	0.12	0.0	95.8	4.2	20.0	1.0	2.5	-	-	-	-	-	SP	-	-	-	-	-
B-115	S-3	15-17	-	0.31	0.21	0.14	0.1	96.0	3.9	22.6	1.0	2.2	-	-	-	-	-	SP	-	-	-	-	-
B-115	S-8	40-42	-	0.25	0.17	0.08	0.0	90.8	9.2	22.3	1.3	3.0	-	-	-	-	-	SP-SM	-	-	-	-	-
B-116	S-7	35-37	-	0.30	0.21	0.16	0.0	97.2	2.8	22.4	0.9	1.9	-	-	-	-	-	SP	-	-	-	-	-
B-116	S-14	70-72	-	-	-	-	0.0	11.6	88.4	33.1	-	-	36	23	13	-	-	CL	-	-	-	-	-

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

NOTE: RESULTS FOR CV ARE IN FT^2/YEAR.

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SOIL AND ROCK ANALYSIS BY

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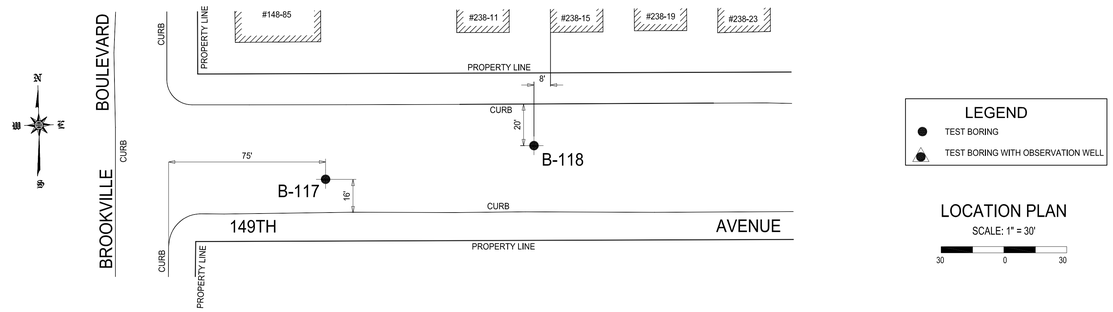


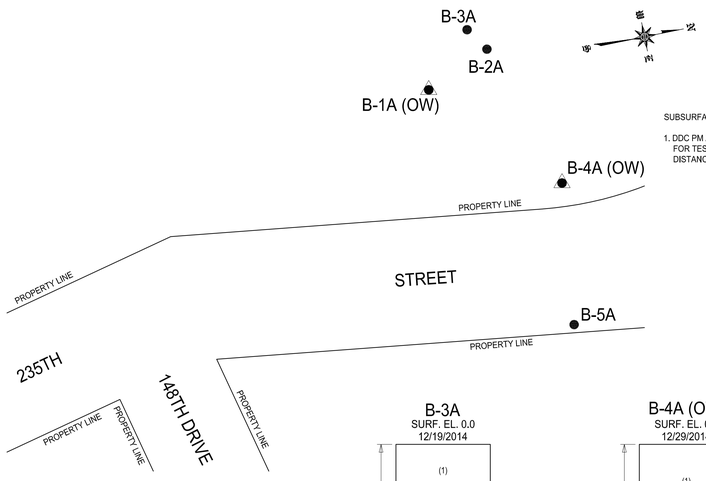
LEGEND

- TEST BORING
- TEST BORING WITH OBSERVATION WELL

LOCATION PLAN

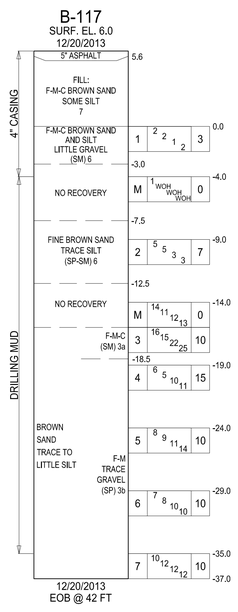
SCALE: 1" = 30'

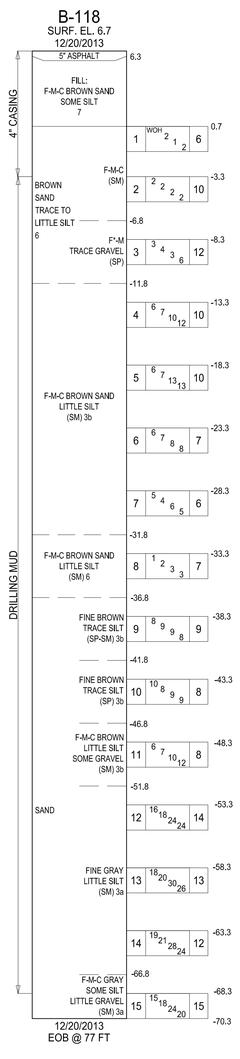
30 0 30

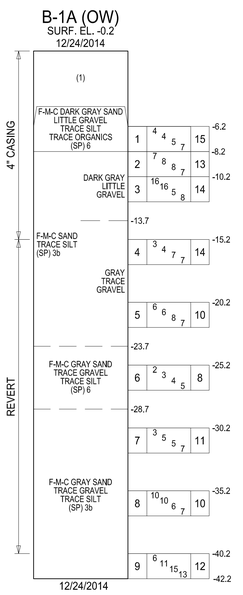


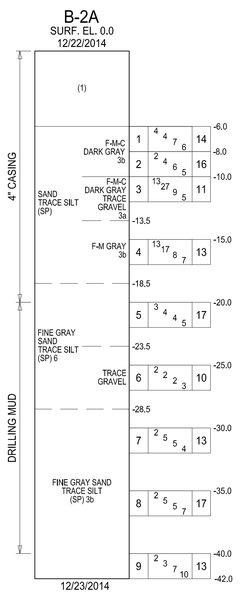
SUBSURFACE INVESTIGATION NOTES:

1. DDC PM APPROVED USING GPS COORDINATES IN PLACE OF TIE-OFF DISTANCES FOR TEST BORINGS B-1A (OW), B-2A, B-3A, B-4A (OW), AND B-5A DUE TO SIGNIFICANT DISTANCE INTO WETLANDS.





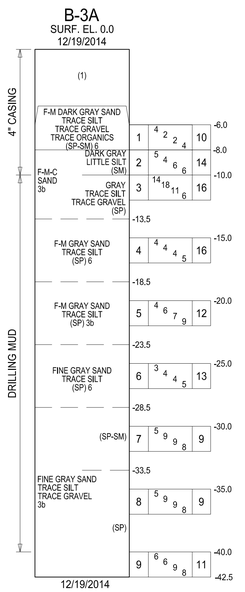


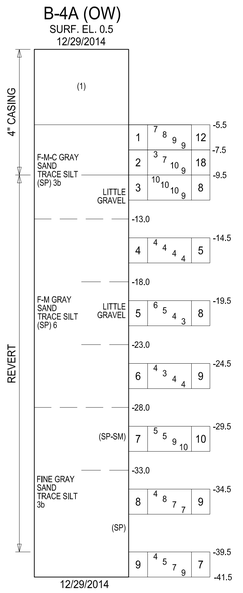


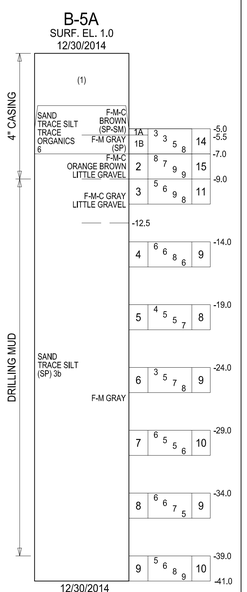
2"-DIA. WELL POINT INSTALLED TO ELEVATION -16.2

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/30/2014	10:00 AM	0.6	-0.8
01/05/2015	03:15 PM	0.6	-0.8
01/06/2015	03:15 PM	0.7	-0.9







2"-DIA. WELL POINT INSTALLED TO ELEVATION -15.5

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/30/2014	10:00 AM	0.7	-0.2
01/05/2015	03:15 PM	0.7	-0.2
01/06/2015	03:15 PM	0.9	-0.4

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-117	S-2	15-17	-	0.26	0.19	0.10	0.0	94.5	5.5	25.5	1.3	2.6	-	-	-	-	-	SP-SM
B-117	S-6	35-37	-	0.31	0.21	0.16	0.3	95.7	4.0	21.6	0.9	2.0	-	-	-	-	-	SP
B-118	S-3	15-17	-	0.33	0.21	0.13	0.3	95.1	4.6	22.6	1.1	2.6	-	-	-	-	-	SP
B-118	S-9	45-47	-	0.28	0.19	0.11	0.0	94.5	5.5	21.6	1.2	2.5	-	-	-	-	-	SP-SM
B-118	S-13	65-67	-	0.21	0.13	-	0.0	85.8	14.2	20.3	-	-	-	-	-	-	-	SM
B-1A	S-1	6-8	-	1.40	0.43	0.20	19.3	76.7	4.0	20.0	0.7	7.2	-	-	-	-	0.6	SP
B-1A	S-4	15-17	-	0.78	0.40	0.21	4.8	91.8	3.4	17.5	1.0	3.8	-	-	-	-	-	SP
B-2A	S-6	25-27	-	0.27	0.19	0.12	0.9	95.7	3.4	24.9	1.1	2.2	-	-	-	-	-	SP
B-3A	S-1	6-8	-	0.40	0.23	0.08	2.3	88.3	9.4	27.4	1.6	4.8	-	-	-	-	1.4	SP-SM
B-3A	S-7	30-32	-	0.27	0.19	0.12	0.3	94.5	5.2	25.3	1.0	2.2	-	-	-	-	-	SP-SM
B-4A	S-7	30-32	-	0.26	0.19	0.11	0.0	94.4	5.6	24.7	1.3	2.4	NV	NP	NP	-	-	SP-SM
B-5A	S-1	6-8	-	0.46	0.25	0.09	0.2	90.6	9.2	20.6	1.6	5.2	-	-	-	-	0.6	SP-SM
B-5A	S-4	15-17	-	0.31	0.21	0.12	0.0	95.3	4.7	19.8	1.1	2.6	NV	NP	NP	-	-	SP

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

HWQ724B

4053

PREPARED FOR:
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT
BUREAU OF ENVIRONMENTAL
AND GEOTECHNICAL SERVICES

CONSULTANT NAME:
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CONTRACTOR NAME:
AQUIFER DRILLING AND TESTING, INC.
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

PROJECT NAME:
STORM AND SANITARY SEWERS IN BROOKVILLE BOULEVARD
BROOKVILLE BOULEVARD BETWEEN 149TH AVENUE AND NEWHALL STREET
BOROUGH OF QUEENS

RECORD OF BORINGS

SEAL & SIGNATURE

DATE:	FEBRUARY 05, 2015
PROJECT NO:	HWQ724B
DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-120.00
CADD FILE No :	4053-ROB-01
SHEET	20 OF 21

NO.	DATE	DESCRIPTIONS	APPR'D
1	02/05/2015	ADDED SUPPLEMENTAL BORINGS	RM

REVISIONS

DAVID ANTOINE AND ROBERT BUNTING
SOIL AND ROCK ANALYSIS BY

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GEOTECHNICAL ENGINEER
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RICHARD G. MESEROLE
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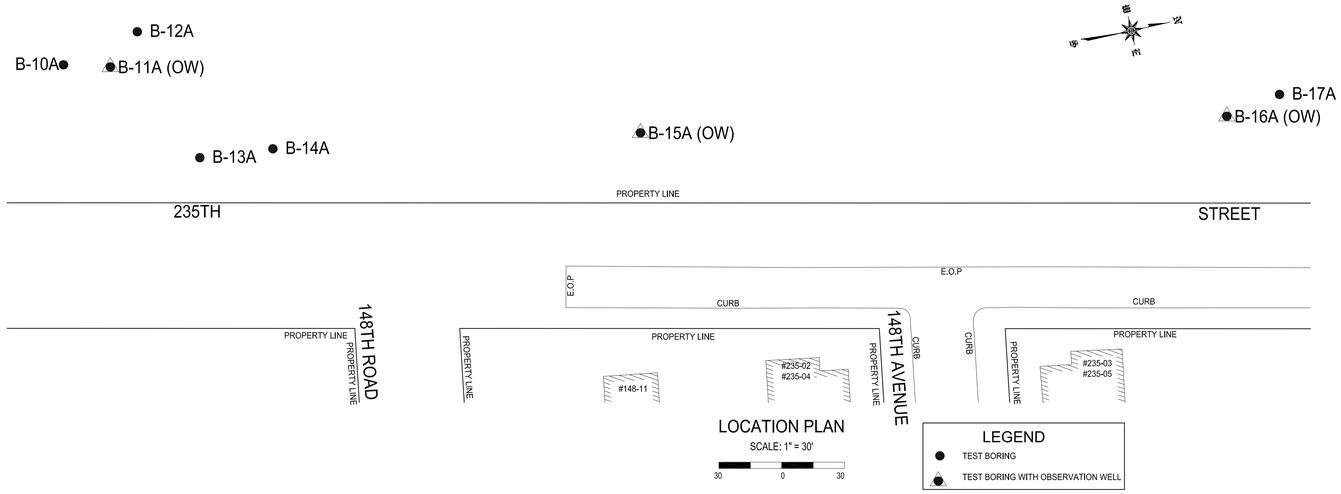
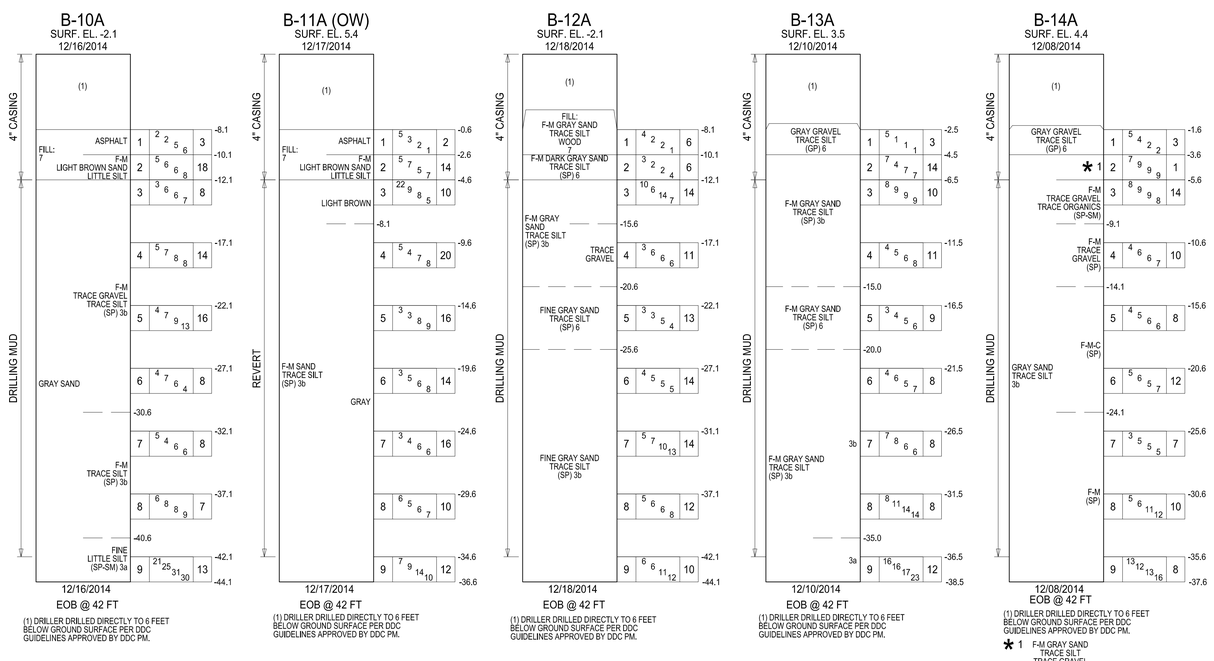
B.E.G.S.

MARK A. CANU
ASSOCIATE COMMISSIONER
DIVISION OF PROGRAM MANAGEMENT
SAFETY AND SITE SUPPORT



SUBSURFACE INVESTIGATION NOTES:

1. DDC PM APPROVED USING GPS COORDINATES IN PLACE OF TIE-OFF DISTANCES FOR TEST BORINGS B-10A, B-11A (OW), B-12A, B-13A, B-14A, B-15A (OW), B-16A (OW), AND B-17A DUE TO SIGNIFICANT DISTANCE INTO WETLANDS.



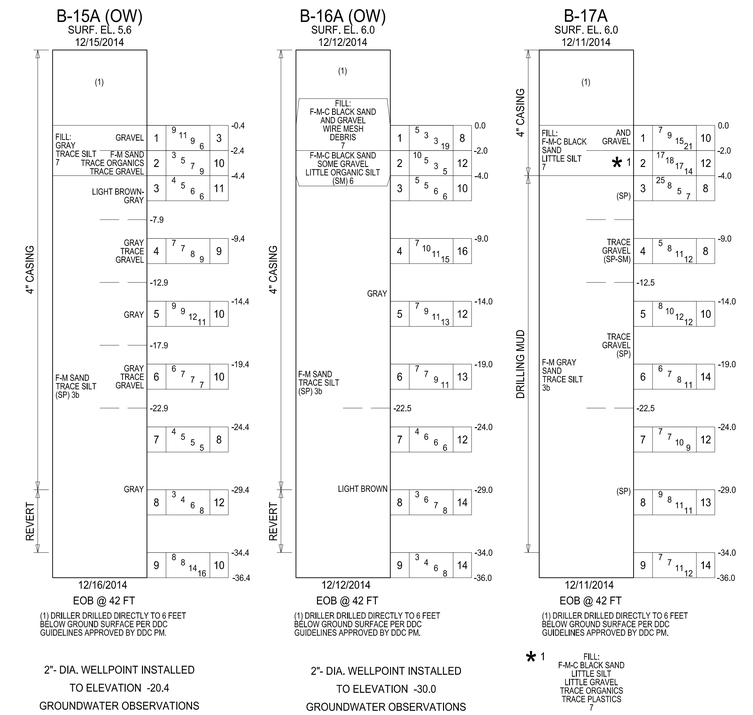
(1) DRILLER DRILLED DIRECTLY TO 6 FEET BELOW GROUND SURFACE PER DDC GUIDELINES APPROVED BY DDC PM.

2"- DIA. WELLPOINT INSTALLED TO ELEVATION -10.6

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/30/2014	10:00 AM	3.5	1.9
01/05/2015	03:15 PM	3.6	1.8
01/06/2015	03:15 PM	3.6	1.8

✱ 1 F-M GRAY SAND TRACE SILT TRACE GRAVEL TRACE ORGANICS (SP) 3b



(1) DRILLER DRILLED DIRECTLY TO 6 FEET BELOW GROUND SURFACE PER DDC GUIDELINES APPROVED BY DDC PM.

2"- DIA. WELLPOINT INSTALLED TO ELEVATION -20.4

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/30/2014	10:00 AM	7.0	-1.4
01/05/2015	03:15 PM	6.9	-1.3
01/06/2015	03:15 PM	6.9	-1.3

2"- DIA. WELLPOINT INSTALLED TO ELEVATION -30.0

GROUNDWATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION, FT
12/30/2014	10:00 AM	7.4	-1.4
01/05/2015	03:15 PM	7.3	-1.3
01/06/2015	03:15 PM	7.4	-1.4

✱ 1 FILL: F-M-C BLACK SAND LITTLE SILT LITTLE GRAVEL TRACE ORGANICS TRACE PLASTICS 7

LABORATORY ANALYSIS SUMMARY*

Soil Sample Identification And Index Properties

BORING NO.	SAMPLE NO.	DEPTH, ft	D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (> #4 SIEVE)	% SAND	% SILT OR CLAY (< #200 SIEVE)	WC %	Cc	Cu	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	pH	ORGANIC CONTENT (%)	USCS SYMBOL
B-10A	S-3	10-12	-	0.37	0.23	0.16	3.3	93.9	2.8	22.1	0.9	2.3	NV	NP	NP	-	-	SP
B-10A	S-9	40-42	-	0.24	0.15	-	0.0	88.3	11.7	20.1	-	-	-	-	-	-	-	SP-SM
B-11A	S-5	20-22	-	0.29	0.20	0.13	0.0	96.5	3.5	24.7	1.1	2.2	-	-	-	-	-	SP
B-12A	S-4	15-17	-	0.32	0.22	0.16	1.1	96.1	2.8	24.0	0.9	2.0	-	-	-	-	-	SP
B-13A	S-6	25-27	-	0.31	0.22	0.17	0.0	98.3	1.7	25.2	0.9	1.9	NV	NP	NP	-	-	SP
B-14A	S-2	8-10	-	-	-	-	-	-	-	70.4	-	-	-	-	-	-	5.0	-
B-14A	S-3	10-12	-	0.31	0.20	0.10	0.6	92.4	7.0	21.0	1.3	3.2	-	-	-	-	0.1	SP-SM
B-15A	S-2	8-10	-	0.46	0.26	0.10	0.7	90.9	8.4	26.1	1.4	4.6	-	-	-	-	1.8	SP-SM
B-15A	S-6	25-27	-	0.31	0.21	0.16	0.2	95.8	4.0	22.8	1.0	1.9	-	-	-	-	-	SP
B-16A	S-2	8-10	-	1.62	0.24	-	20.8	61.5	17.7	115.4	-	-	NV	NP	NP	-	19.4	SM
B-16A	S-7	30-32	-	0.31	0.21	0.16	0.0	97.6	2.4	24.8	0.9	1.9	-	-	-	-	-	SP
B-17A	S-2	8-10	-	0.97	0.26	-	19.9	62.2	17.9	20.1	-	-	NV	NP	NP	-	2.8	SM
B-17A	S-4	15-17	-	0.29	0.18	0.10	0.1	91.9	8.0	25.9	1.2	2.8	NV	NP	NP	-	-	SP-SM

*Refer to detailed laboratory analysis data for additional information regarding the results presented herein.

DAVID ANTOINE AND ROBERT BUNTING
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STATE OF NEW YORK · KAPILA S. PATHIRAGE · 087328 · LICENSED PROFESSIONAL ENGINEER

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DRAWING BY:	RON BARDHAN AND JANET CONNOR
CHK BY:	JOHN BRIAND
DWG No:	B-121.00
CADD FILE No :	4053-ROB-01
SHEET	21 OF 21

APPENDIX D: BROOKVILLE PARK DUMPING PHOTOGRAPHS (PARKS 1966)

32472_1_Q008_05-11-1966_Brookville Park, Dumping

32472_2_Q008_05-11-1966_Brookville Park, Dumping

32472_3_Q008_05-11-1966_Brookville Park, Dumping

32472_4_Q008_05-11-1966_Brookville Park, Dumping

32472_5_Q008_05-11-1966_Brookville Park, Dumping

32472_6_Q008_05-11-1966_Brookville Park, Dumping

32472_7_Q008_05-11-1966_Brookville Park, Dumping

32472_8_Q008_05-11-1966_Brookville Park, Dumping

32472_9_Q008_05-11-1966_Brookville Park, Dumping

32472_10_Q008_05-11-1966_Brookville Park, Dumping