

Phase IB Archaeological Report for the Washington Square Park, New York, New York County, New York Water Mains Replacement and Connections Project (MED608)



Prepared for:

City of New York - Landmarks Preservation Commission
New York, New York

City of New York – Department of Design and Construction

and

WSP-Parsons Brinckerhoff

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Chrysalis Archaeological Consultants, Inc.

July 2020

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EXECUTIVE SUMMARY

Chrysalis Archaeological Consultants, Inc. (Chrysalis), was retained by WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) (the Project) at Washington Square Park, located at West Fourth Street/Washington Square South between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York.

The Project installed new water mains and upgraded existing water utilities within the street beds and curbs surrounding the eastern half of Washington Square Park, New York, New York including: Washington Square South between Thompson Street and Washington Square East, Washington Square North between Fifth Avenue and University Place, Washington Square East between Washington Square Park North and Washington Square South/West Fourth Street, and West Fourth Street between Washington Square East and Broadway. Additional excavation occurred within the intersections of Washington Square Park North and Fifth Avenue, Washington Square North/Waverly Place and University Place, Washington Square South and Thompson Street, Washington Square South and LaGuardia Place, West Fourth Street and Greene Street, and West Fourth Street and Mercer Street.

The Project APE in these streets surrounding Washington Square Park was considered archaeologically sensitive due to the land's seventeenth and eighteenth century usage as colonial farmland and the eighteenth and early nineteenth century use of the eastern two-thirds of the Washington Square Park area as a potter's field and burial ground for several City churches. The approved work plan called for Archaeological Monitoring of the Project. This occurred from September 2015 through December 2018, covering 104 test pits and 111 trenches. Excavation revealed 16 features, including 2 burial vaults and 6 human skeletal remains burials. Both burial vaults and five burials were identified at the west side of Washington Square East, north of Washington Place. Burial 6 was identified in the center of Washington Square North, east of Fifth Avenue. All features exhibited previous disturbance to their form or integrity.

Streets within the Project area showed evidence of extensive disturbance to at least 5' below the modern road surface. The streets surrounding the park do not warrant further archaeological excavation or field monitoring unless work is performed on the 225' of the west curb area of Washington Square East between Washington Square North and Washington Place, the vicinity of Burial Vaults 1-2 and Burials 1-5 that appeared to extend further below the west sidewalk. Monitoring would also be recommended should work occur in the area immediately east of Burial 6 in the center of Washington Square North, 250' west of the west Washington Square East curb line.

Alyssa Loorya, PhD, RPA acted as Principal Investigator, and Matthew Brown, PhD, RPA was the Forensic Anthropologist. Field support was provided by Lisa Geiger, MA, RPA, Alexander Agran, Eileen Kao, Caitlin Welks, Leah Mollin-Kling, MA, RPA, and Elissa Rutigliano.

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I. INTRODUCTION

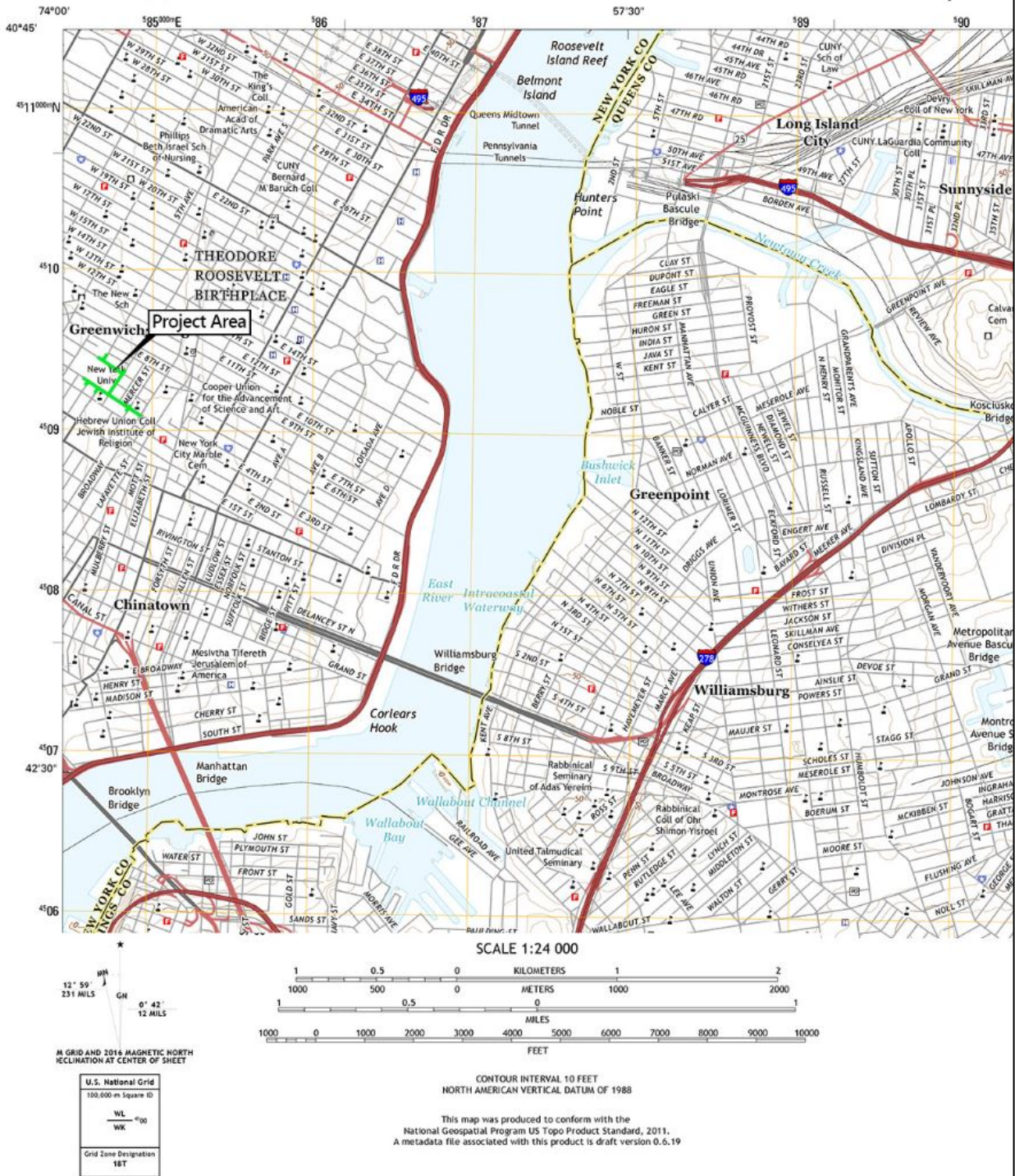
Chrysalis Archaeological Consultants, Inc. (Chrysalis), was retained by WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) (the Project) at Washington Square Park, located at West Fourth Street/Washington Square South between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York (Map 01). Parts of the Project are located within the LPC Landmarked and National Register-listed Greenwich Village Historic District (NR#90NR00758) and the LPC Landmarked NoHo Historic District (Spencer-Ralph 1979, Presa 1999) (see Appendix B – Project Plans).

The Project occurred within the street beds and curbs surrounding the eastern half of Washington Square Park, New York, New York including: Washington Square South between Thompson Street and Washington Square East, Washington Square North between Fifth Avenue and University Place, Washington Square East between Washington Square Park North and Washington Square South/West Fourth Street, and West Fourth Street between Washington Square East and Broadway. Additional excavation occurred within the intersections of Washington Square Park North and Fifth Avenue, Washington Square North/Waverly Place and University Place, Washington Square South and Thompson Street, Washington Square South and LaGuardia Place, West Fourth Street and Greene Street, and West Fourth Street and Mercer Street (Map 02).

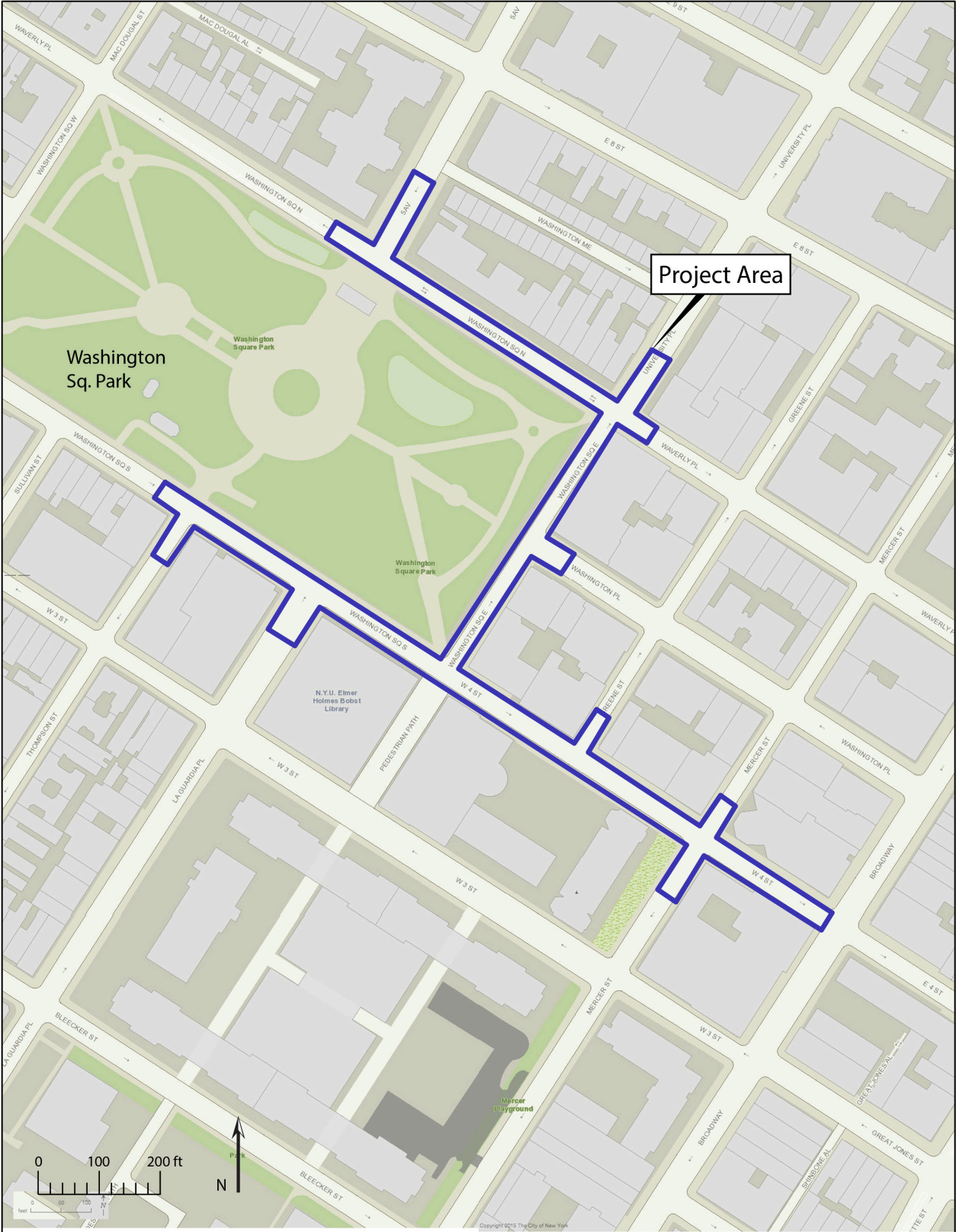
An Archaeological Monitoring Plan, Unanticipated Discoveries Plan, and Human Remains Protocol Plan previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), described the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Appendix A). Archaeological Monitoring of the Project occurred from September 2015 through December 2018. During the course of the project, two nineteenth century burial vaults and six areas of buried human remains were exposed along Washington Square East and Washington Square North. Ten non-burial features were noted in the field, all disturbed architectural elements within fill matrices. No other culturally significant materials were documented.

This report will synthesize the methodology and work performed during the span of the project, the archaeological materials identified, the laboratory and analysis activities, and recommendations and conclusions proposed by Chrysalis personnel.

Alyssa Loorya, Ph.D., R.P.A. acted as Principal Investigator, and Matthew Brown, Ph.D., R.P.A. the Forensic Anthropologist. Field support was provided by Lisa Geiger, MA, RPA, Alexander Agran, Eileen Kao, Leah Mollin-Kling, M.A.A., R.P.A, Elissa Rutigliano, and Caitlin Welks M.A (see Appendix H for credentials).



Map 01: USGS – Brooklyn Quadrangle, 2016



Map 02: Project area map (NYC DoITT 2015).

II. SYNTHESIS OF PREVIOUS WORK

A Phase IA was not required for this project due to existing archaeological assessments having been completed that cover the project area. Washington Square Park is contained within the LPC Landmarked and National Register-listed Greenwich Village Historic District (NR#90NR00758), and the Project's Area of Potential Effects (APE) also includes an eastern-most block from Mercer Street to Broadway that extends into the LPC Landmarked NoHo Historic District (Spencer-Ralph 1979, Presa 1999). The proposed project work area was deemed archaeologically sensitive and required cultural resources assessment based on Binding Report, SRB 16-1376 on August 13, 2014 (NYC LPC personal communication June 11, 2020).

Given this existing assessment, a traditional "Background History" section is not included in this report. Multiple reports on file with the NYC LPC provide detail of the Washington Square Park area's history and developments (see Harris and Pipes 1985, Geismar 2005, AKRF 2011). To place this project in context, a summation of project area history is provided.

PREHISTORIC CONTEXT

Native settlement in North America is generally divided into three eras for research purposes: Paleo-Indian (11,000-10,000 BCE), Archaic (10,000-2,700 BCE), and Woodland (2,700 BCE-1500 AD). These delineations are based on the changes in environment, tool technology advancements, and cultural adaptations. There is evidence for Native American usage of and settlement in the area making up New York City as early as the Paleo-Indian period, but much of this evidence is in the form of poorly documented collections of Paleo and Archaic era stone tools.

The Paleo-Indian period was characterized by highly mobile hunter-gatherer groups who did not maintain permanent campsites. Although these seasonal sites are often found near water sources, and Manhattan island provided terrestrial resources and access to water and marine resources, few Paleo-Indian artifacts have been found or documented in New York City (Cantwell and Wall 2001).

The Archaic period saw advances in fishing technologies and a shift from non-permanent campsites to permanent and semi-permanent sites. Like the Paleo-Indian period, there are various reports of Archaic lithics recovered from Manhattan but little documented evidence of settlement. This may be due to low Native American populations in the area, substantial land development in the post-colonial era destroying prehistoric archaeological materials, and poorly documented collection of surface materials by avocational archaeologists in the nineteenth and twentieth centuries.

The Woodland period was characterized by more permanent living sites and a focus on agriculture. Tool technology also changed but hunting, gathering, and a focus on marine resources was still present. The Woodland period is considered to end with European contact in the early 1500s in the Manhattan area. Native American village settlements did not form in Manhattan until sometime around the late 1400s or early 1500s. Once Europeans began to settle Manhattan, indigenous settlements quickly waned and moved to the margins of colonized areas (Lenik 1992; Cantwell and Wall 2001; Bolton 1920, 1922, 1934; Burrows and Wallace 1999).

HISTORICAL CONTEXT

Shortly after New Amsterdam began to be settled in the seventeenth century, the Dutch West India Company created several *bouwerij* farm and plantation plots granted to individual settlers. The project area was originally granted to Wouter Van Twiller, who was the Dutch Director-General of the colony of New Netherland (AKRF 2011). The Washington Square Park area was then later granted in segments to several individuals. The area comprising the southern portion of the park and Washington Square South between Thompson Street and Washington Square East was granted to Anthony Portuguese, formerly a bondservant brought to New Amsterdam in 1625 or 1626, in September 1645. Groot Manuel was granted the area that became Washington Square South/West Fourth Street between Washington Square East and Greene Street on December 21, 1644. The land that became West Fourth Street from Greene Street to Broadway, Washington Square East from West Fourth Street to Washington Square North, and Washington Square North from Fifth Avenue to University Place was granted to Manuel Trompeter in December 1643. The area in total was considered part of the Elbert Herring farm; Herring lived 1706 to 1773 and received control of the overarching property as a descendent of the Pieterse family, early Dutch settlers and area landowners (Stokes 1967, Burrows and Wallace 1999).

A number of these seventeenth century grants covering the Washington Square Park area were given to formerly enslaved peoples, likely of mixed African and European ancestry, by New Netherland Director William Kieft after they petitioned for their emancipation in the 1640s. These early landowners or lessees, including Anthony Portuguese, Domingo Anthony, and Manuel Trompeter, tilled land but were still expected to work for wages with West Indian Company when called and pay special annual taxes (Harris 2004). Likely they were granted less arable lands around the Minetta Creek and situated on the northern outskirts of the colony as a bulwark against indigenous activity or attack during a period of violence between colonists and natives, placing them in liminal space reflecting their half-free status with the colony (Burrows and Wallace 1999).

While free black landowners increasingly settled further from the growing City in the eighteenth century, the area around the Collect Pond, south of the Project area, grew into a free black community and housed the African Burial Grounds, where free and formerly enslaved black residents were buried from the alter 1600s into the eighteenth century. The area continued to house black residents as the neighborhood urbanized into the multiethnic Five Points neighborhood (Harris 2004, Hodges 2005).

The project area was utilized as farmland by a mix of black and European residents for most of seventeenth and eighteenth centuries. Elbert Herring's farm encompassed the entirety of modern-day Washington Square Park, with his heirs conveyed the land upon his death in 1773. Farmland still dominated the landscape of modern-day Greenwich Village into the nineteenth century. At this time, most of the developed areas of the city remained near the southern end of the island. Due to Greenwich Village's sparse population and distance from the more densely populated Lower Manhattan, a large potter's field was established in 1797 in what is now Washington Square Park and was used for burials of impoverished residents until 1825 (AKRF 2011). Establishing the potter's field and surrounding residential construction required generally filling the banks of the Minetta Creek, a stream that ran northeast to southwest across the western third of the Washington

Square Park area, west of the project area. Drains and culverts were added to the path the Minetta flowed through in the first half of the nineteenth century to regulate its path (Geismar 2005).

As disease swept through densely populated Lower Manhattan in the early nineteenth century amidst continued influx of new residents to the city, there was a rapid population growth of the Greenwich Village area as inhabitants of Lower Manhattan moved north. With this influx of inhabitants, the potter's field was closed and converted first into a parade ground beginning 1826 and then a park in the following decades (AKRF 2011).

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Previous investigations into Washington Square Park's developmental history have created a picture of the project area's history and better defined the boundaries of the potter's field. Harris and Pipes note documentary evidence suggesting both the establishment and closure of the potter's field were followed by grading and infilling the site, likely impacting any potential indigenous resources (Harris and Pipes 1985). Geismar's 2004 and 2005 investigations used historic maps and soil borings to determine the potter's field likely occupied the entire eastern two-thirds of the current park, extending into the current footprint of Washington Square East. There was also evidence a Scotch Presbyterian Church used the northeast corner of the project area for burials as early as 1817, from close to the center of Washington Square East north to its intersection with Washington Square North. Soil borings indicated disturbance near the park's north-central arch to at least 10' below ground surface, and extensive re-filling across the southern park area, possibly as deep as 19' below ground surface. However, the date or nature of fill, and whether it may have pre- or post-dated the potter's field, remained unknown.

Previous Phase IAs and investigations into Washington Square Park's history lead to the following portions of the project area being deemed archaeologically sensitive, and therefore required archaeological monitoring (Appendix A – Monitoring Plan):

- Washington Square South between Thompson Street and Washington Square East,
- Washington Square North between Fifth Avenue and University Place,
- Washington Square East between Washington Square Park North and Washington Square South/West Fourth Street
- West Fourth Street between Washington Square East and Greene Street
- Intersection of Washington Square Park North and Fifth Avenue
- Intersection of Washington Square North/Waverly Place and University Place
- Intersection of Washington Square South and Thompson Street
- Intersection of Washington Square South and LaGuardia Place

III. CONTEXT AND RESEARCH DESIGN

Phase IB fieldwork was designed to ascertain the presence/absence, type, and extent of archaeological resources within the site based upon the limitations of the project circumstances. Due to the location of the heavily trafficked project area of Washington Square Park and surrounding New York University, as well as the large swath of public roadway slated for disruption, archaeological monitoring during project construction was employed to assess subsurface soils and resources during excavation. The ultimate goal was to determine whether significant (i.e. National Register [NR] eligible) resources that could be adversely affected by project construction were extant within the APE.

With the discovery of intact burial vaults along Washington Square East, project goals turned toward the documentation and preservation of these vaults. Extensive research was undertaken to identify the descendant community. The results of archaeological monitoring and a discussion of this research and outreach is provided in Section V below.

IV. PROJECT METHODS

As noted above, due to the project location within the heavily trafficked Washington Square Park/New York University area street beds and extensive nature of the construction, there was no suitable way to sample the APE. Therefore, archaeological monitoring of construction activities was undertaken. Archaeological monitoring is defined as “the observation of construction excavation activities by an archaeologist in order to identify, recover, protect and/or document archaeological information or materials” (NYAC 2002).

All monitoring activities were in compliance with NYC LPC’s Guidelines for Archaeological Work in New York City (LPC 2002)¹ and NYAC’s Guidelines for the Use of Archaeological Monitoring (NYAC 2002). The archaeological team maintained drawings, photographs, and written notes of all excavation areas and resources encountered. These field notes and maps are provided in Appendix E – Field Documentation.

Archaeological Monitoring occurred in each of the sections listed below once the concrete and/or asphalt roadbed surfaces were removed. Removal of the concrete and/or asphalt surfaces was generally performed with wet saws prior to soil excavation and did not require archaeological monitoring. Monitoring occurred until the final construction depths were reached, or the archaeological monitor determined the excavation area had reached sterile soil (with regard to potential archaeological deposits and resources). Excavation work was performed mechanically and by manual hand excavation by laborers hired by JLJ Contracting Company. Excavation work took place during weekdays and select weekends. Archaeological monitors were present on weekdays and weekends as called for by project excavation plans.

FIELD DOCUMENTATION

Project construction methodology consisted of several test pits being excavated to locate existing utilities in advance of more extensive trench excavation to augment or replace utilities. Each of the test pits was numbered sequentially, beginning with Test Pit 1 (TP1) in September 2015. A total of 104 test pits of varying dimensions were excavated throughout the project area. See Maps 03-19 for the location of each test pit.

After test pits were excavated within different project areas, excavation trenches were excavated across that area for different construction activities over the course of the 38-month project. Trenches were of varying sizes and dimension, often crossing and overlapping each other as they followed specific utility elements. Trench locations and order of excavation were determined in the field by construction needs. The archaeological team tracked excavation trenches by numbering them sequentially, beginning with Trench 1 (TR1). A total of 111 trenches were excavated for the Project. To best facilitate documentation of trench excavation, large trenches were divided into sections. Trenches were generally divided into 25’ sections, but sometimes section distinctions were made at different lengths based upon the extent of the trench opened at one time. Maps 03-19 document all sensitive areas excavated as part of the Project. Digitized field

¹ This project began before the release and implementation of NYC LPC’s *Guidelines for Archaeological Work in New York City* (NYC LPC 2018), and project field work ended shortly after the official release of the guidelines in September 2018.

maps distinguish trench excavation boundaries by color-coding the trenches. Maps also include east-west and north-south street “station” measurements used by the project team to geolocate trenching and utility installation activities within each portion of the Project.

REPORT METHODOLOGY

This report generally follows the NYC LPC required format for Evaluative Testing (Phase IB²) reports. However, there is some modification to the order and format outlined in NYC LPC’s *Guidelines for Archaeological Work in New York City* (NYC LPC 2018) to accommodate project specifics and flow of the report. Most notably, documentary research is incorporated into the Field Results section where appropriate to burial features researched, and details of actions to mitigate project impacts to archaeological resources – all human remains – are also detailed in the Field Results, Features: Burial section.

² This report uses the term Phase IB as was standard in the archaeological community when the Project began in 2015, prior to the release of NYC LPC’s 2018 guidelines.

V. FIELD RESULTS

This report section is sub-divided into eight subsections to detail field results, labelled V.1-V.8 and corresponding to geographic excavation areas, followed by detailed descriptions of Non-Burial Features and Burial Features documented. Table 01 defines the boundaries of the Project area field results sub-divisions. Each subsection contains a map of the trenches and test pits excavated within it and a summary description of each excavation unit. Details of each excavation area describe depths for strata and materials below ground surface (bgs), with ground surface equal to the height of the modern road surface at the boundaries of each excavation.

Overall, the entire Project area excavated exhibited extensive disturbance from previous utility excavations and installations. Over the course of the project 104 test pits and 111 trenches were excavated. Excavation revealed 16 features, including 2 burial vaults and 6 human skeletal remains burials (Table 02). These features all exhibited some level of previous disturbance to their form or integrity. Note that Appendix C is a compilation of the various “In Progress Field Memorandum” that was developed and submitted throughout the project.

The following abbreviations are utilized throughout the report discussion and on the field maps: TR – Trench; TP – Test Pit; S – Trench Section; CNX – Connection; bgs – below ground surface.

Table 01: Project Excavation Areas

REPORT SECTION	LOCATION	BOUNDARY BLOCKS
V.1	Washington Square East	Washington Square Park North and Washington Square South/West Fourth Street
V.2	Washington Square North	Fifth Avenue and University Place
V.3	Fifth Avenue	Intersection of Washington Square Park North and Fifth Avenue to Washington Mews
V.4	University Place	Waverly Place to Washington Mews
V.5	Waverly Place	Intersection of Washington Square North/Waverly Place and University Place to Greene Street
V.6	Washington Square South	Thompson Street and Washington Square East
V.7	LaGuardia Place	Intersection of Washington Square South and LaGuardia Place to West Third Street
V.8	West Fourth Street	Washington Square East and Greene Street

Table 02: Feature Log³

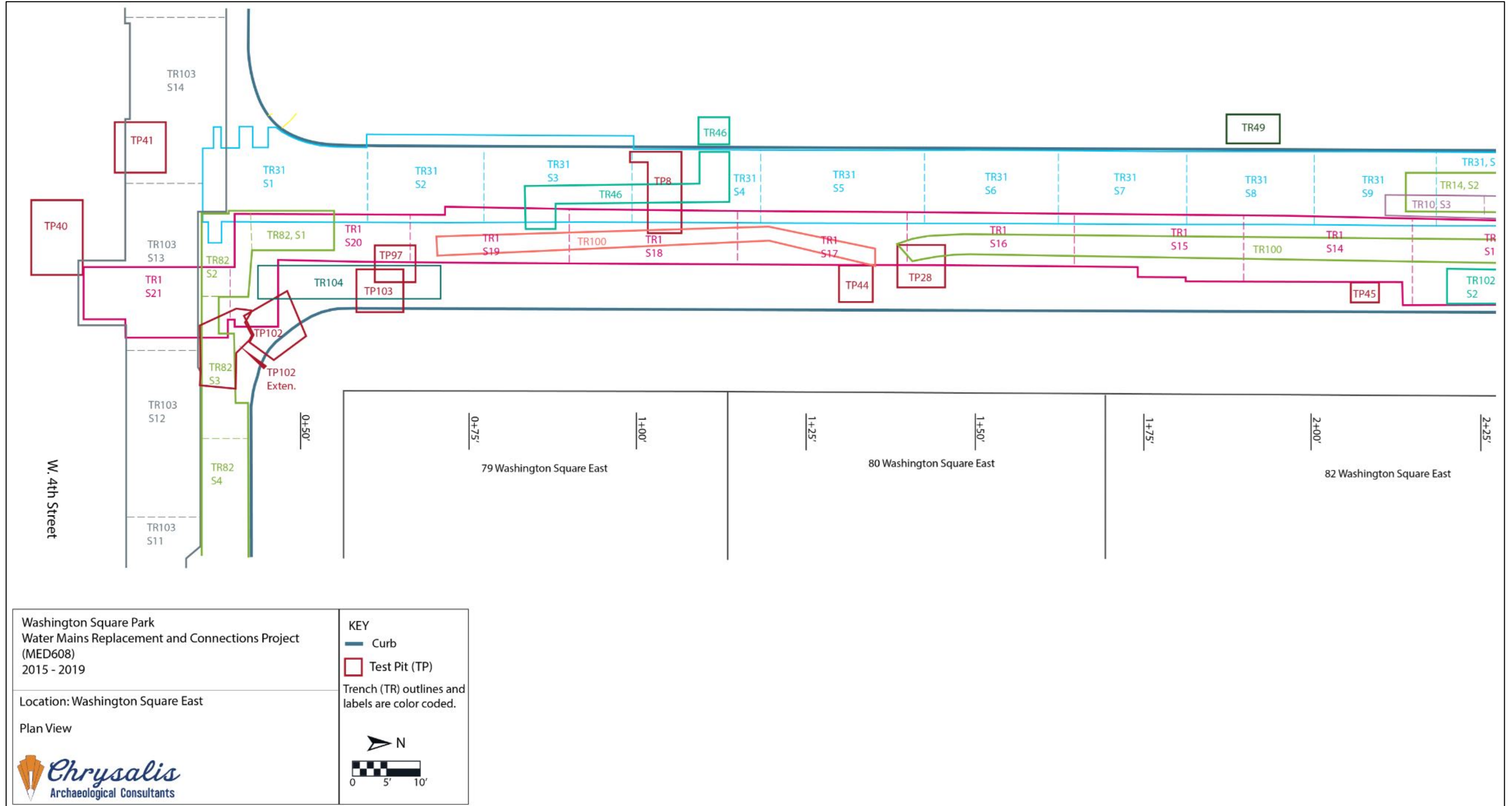
FEATURE NUMBER	DESCRIPTION	LOCATION
1	Segment of mortared brick wall visible in west profile	TP 17 – LaGuardia Pl.
2	Stone-faced brick barrel-style burial vault	TR1, S3/4 – Washington Sq. East
3	Stone-faced brick barrel-style burial vault. Same style as, and contiguous with, Feature 2	TR1, S4 – Washington Sq. East
4	Open burial	TR1, S7 – Washington Sq. East
5	Open burial	TR1, S8 – Washington Sq. East
6	Open burial	TR1, S8 – Washington Sq. East
7	Builder’s trench	TR5, S23 – Washington Sq. North
8	Brick barrel vault	TR16, S4 – LaGuardia Pl.
9	Mortared brick structure, possibly utility-related	TR15/16 CNX – Washington Sq. South/LaGuardia Pl.
10	Three timbers, oriented east - west in TR39 floor	TR39, S7 – Greene St.
11	Timber in TR39 floor	TR39, S9 – Greene St.
12	Brick arch observed in north profile	TR64, S1 – Waverly Pl.
13	Disarticulated/disturbed human skeletal elements	TP73 – Washington Sq. North
14	Articulated brick structure, possible sidewalk vault	TR84, S6 – W. Fourth St.
15	<i>Concrete slab – determined to be archaeologically insignificant utility element</i>	<i>TR103, S17 – Washington Sq. South</i>
16	Mortared brick structure, possibly utility-related	TR103, S24 – LaGuardia Pl.

V.1 WASHINGTON SQUARE EAST

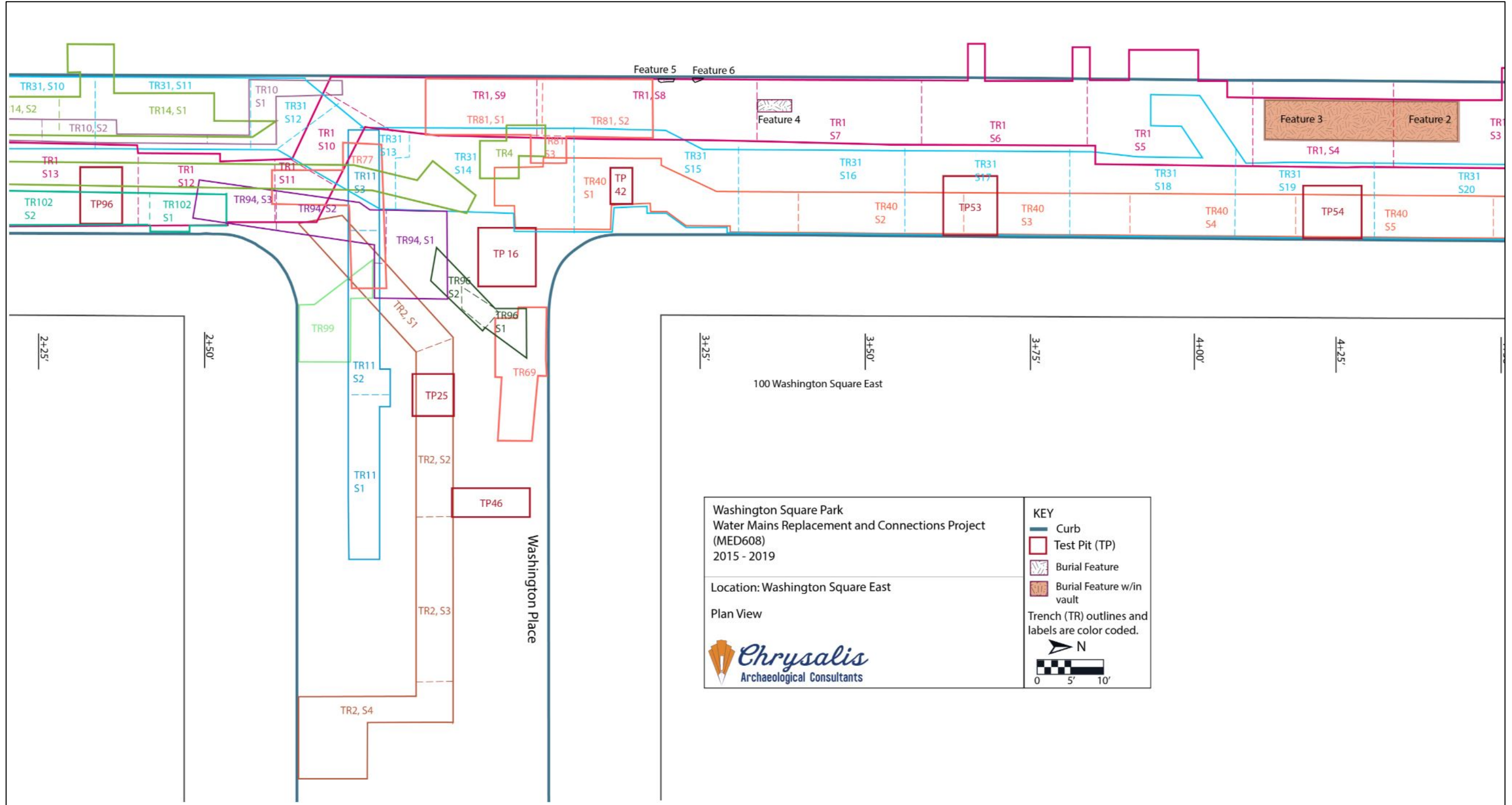
Excavation across Washington Square East extended along the entire north-south length of Washington Square Park, approximately 505’ in length, from Washington Square Park North to Washington Square South/West Fourth Street (Maps 03-05). Excavations extended into the intersections of Washington Square East with Washington Square North/Waverly Place, Washington Place, and Washington Square South/West Fourth Street. Within this Project subsection 15 test pits (TP 8, 16, 20, 25, 28, 42, 44, 45, 46, 53, 54, 96, 97, 102, 103) and 25 trenches (TR1, 2, 4, 10, 11, 14, 30 S20-22, 31 S1-23, 32, 40, 46, 48, 49, 69, 77, 80, 81, 86, 94, 96, 99, 100,

³ Due to Feature 6 initially being documented as part of Feature 5, field notes refer to Features 7-16 as Features 6-15.

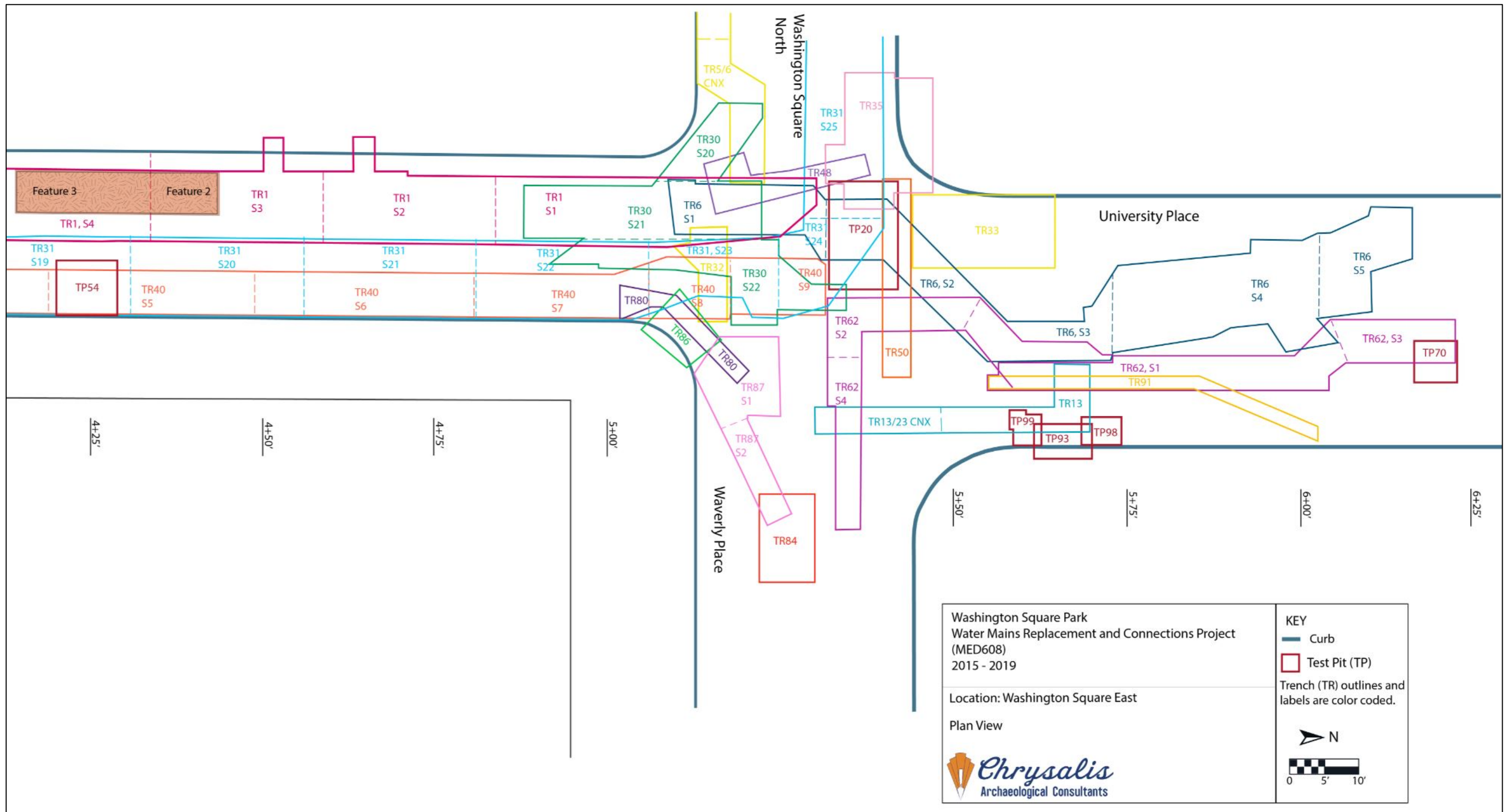
101, 102, 104) were excavated (Maps 03-05). Five features were documented along Washington Square East (Features 2-6), including two brick-lined vaults containing interred human remains (Features 2-3) and three areas of buried human remains (Features 4-6).



Map 03: Digitized Field Map, Washington Square East, segment 1 of 3.



Map 04: Digitized Field Map, Washington Square East, segment 2 of 3.



Map 05: Digitized Field Map, Washington Square East, segment 3 of 3.

Summary of Washington Square East Test Pits: TP8, 16, 20, 25, 28, 42, 44, 45, 46, 53, 54, 96, 97, 102, 103

Test Pit 8

Dimensions: Width: 5', Length: 11'
Depth of Excavation: 2.8'
Depth of Utilities: 1.1' – 2.8'

TP8 was excavated at the intersection of Washington Square East and West Fourth Street. It was expanded 2' west and 2.5' south to fix a sink hole after its initial opening. Soil was clean, well-sorted 7.5YR 4/4 sand throughout.

Test Pit 16

Dimensions: Width: 8.5', Length: 9'
Depth of Excavation: 3'
Depth of Utilities: 1' – 3'

TP16 was excavated at the northeast portion of the intersection of Washington Square East and Washington Place, its west side 2' west of the Washington Place curb and its north side 1' south of the Washington Square East curb, to locate gas utility lines for possible relocation. All soil was redeposited sand surrounding metal, concrete-encased, and brick utility lines to 3' bgs with fragmented brick, concrete and cobble inclusions throughout.

Test Pit 20

Dimensions: Width: 16', Length: 10'
Depth of Excavation: 9.3'
Depth of Utilities: 1.3' – 9.2'

TP20 was excavated at the intersection of Washington Square East and Washington Square North, 10' from the north curb line and 4' from the west University Place curb line. The test pit was excavated to locate existing sewer and other utilities. Excavation to 5.8' bgs exposed a variety of clean sandy fills. Excavation from 5.8' to 9.3' bgs exposed fill soil with large brick fragments, some marked "TERRY", along with concrete and cobble inclusions, likely associated with construction or maintenance of the existing brick sewer utility in the area.

Test Pit 25

Dimensions: Width: 6', Length: 6.3'
Depth of Excavation: 5'
Depth of Utilities: N/A

TP25 was excavated on Washington Place 14.5' from the north curb and 10' east of the northeast Washington Square East and Washington Place intersection curb radius. Excavation to 2.2' bgs exposed 10YR 4/3 sand mixed with 10YR 4/2 loamy sand with modern rubble elements of

concrete fragments, whole and partial machine-made bricks, and wood fragments. This likely represents previous work to maintain or move utility encasements in the area. Excavation from 2.2' to the base of the test pit at 5' bgs revealed 10YR 4/3 sandy clean fill underlying this stratum.

Test Pit 28

Dimensions: Width: 6.5', Length: 6.2'

Depth of Excavation: 4'

Depth of Utilities: 1' – 4'

TP28 was excavated on Washington Square East between Washington Square South and Washington Place, 14.4' from the east curb line and 131' north of the south West Fourth Street curb line. All soil exposed was 10YR 4/6 loamy sand fill with fragmented brick and pebble inclusions throughout surrounding existing utilities.

Test Pit 42

Dimensions: Width: 6.25', Length: 21'

Depth of Excavation: 7.25'

Depth of Utilities: 2.5' – 7.25'

TP42 was located northeast of the intersection of Washington Square East and Washington Place, its northeast corner 4.5' from the east Washington Square East curb and 12.8' north of the north Washington Place curb line. Excavation exposed two clean soil strata surrounding an existing gas main and concrete manhole to 7.25' bgs.

Test Pit 44

Dimensions: Width: 5.7', Length: 5'

Depth of Excavation: 3.3'

Depth of Utilities: 1.7' – 3.3'

TP44 was excavated on Washington Square East between Washington Square South and Washington Place, its southeast corner 1' from the east curb and 88' north of the north West Fourth Street curb line. The test pit abutted TR1 S17 to the west. All exposed soil was clean sandy fill surrounding existing utilities.

Test Pit 45

Dimensions: Width: 4.2', Length: 5.5'

Depth of Excavation: 3.5'

Depth of Utilities: 1.5' – 3.5'

TP45 was excavated for a gas tie-in 1.3' from the east curb of Washington Square East, its northeast corner 55' south of the Washington Place south curb line. Excavation exposed clean sandy fill surrounding existing utilities to its base at 3.5' bgs.

Test Pit 46

Dimensions: Width: 4.3', Length: 12.9'

Depth of Excavation: 4'

Depth of Utilities: 1.9' – 4'

TP46 was excavated on the north side of Washington Place 40' from the east Washington Square East curb line and 2.5' from the north Washington Place curb. TP46 was an extension north from TR2 S2 for utility tie-ins that wove around a network of existing east – west ducts. All soil exposed was 10YR 6/3 sand and 7/5YR 4/2 sand clean fills surrounding existing utilities.

Test Pit 53

Dimensions: Width: 8', Length: 9.4'

Depth of Excavation: 10'

Depth of Utilities: N/A

TP53 was excavated along the east Washington Square East curb, its south wall at station 3+61.5'. TP53 lay across the previously excavated and backfilled TR40 S2-3 but extended deeper. While backfill lay to 4.7' bgs, 7.5YR 4/3 loamy sand clean fill typical of the area was exposed to 10' bgs.

Test Pit 54

Dimensions: Width: 8.8', Length: 10.5'

Depth of Excavation: 10'

Depth of Utilities: 5' – 9'

TP54 was excavated along the east Washington Square East curb, its south wall at station 4+16.5'. TP54 lay across the previously excavated and backfilled TR40 S4 but extended deeper. While backfill lay to 4' bgs, 7.5YR 4/3 loamy sand clean fill typical of the area was exposed to 10' bgs surrounding existing utilities exposed in its east wall along the curb.

Test Pit 96

Dimensions: Width: 8.8', Length: 6.2'

Depth of Excavation: 7'

Depth of Utilities: 1.5' – 3.5'

TP96 was excavated on Washington Square East between Washington Place and West Fourth Street for the installation of a new catch basin, its northeast corner 1.5' from the east Washington Square East curb line and 25' south of the Washington Place south curb line. Excavation exposed 10YR 4/3 loamy sand fill surrounding existing utilities to 5' bgs and mottled 10YR 6/6 and 7.5YR 4/6 loamy sand clean fill to 7' bgs.

Test Pit 97

Dimensions: Width: 5.6', Length: 6'

Depth of Excavation: 8'

Depth of Utilities: 2.85' – 4'

TP97 was excavated on Washington Square East between Washington Place and West Fourth Street for the installation of a new catch basin, its northeast corner 3.6' from the east curb line and 23' north of the West Fourth Street curb line. Exposed soils were two levels of clean sandy fill to 8' bgs.

Test Pit 102

Dimensions: Width: 4.5', Length: 7.5'

Depth of Excavation: 9'

Depth of Utilities: N/A

TP102 was excavated at the intersection of West Fourth Street and Washington Square East, spanning the curb at the northeast part of the intersection with a 2.5' northwest and 7' southeast extension from its center. Within the street bed, all exposed soil was 10YR 4/3 loamy sand clean fill to 9' bgs. Below the sidewalk, a stratum of 10YR 4/2 loamy sand fill with loose brick to 2.4' bgs yielded a cattle tarsal (FS 131). 7.5YR 4/3 sandy clean fill underlaid this stratum to 9' bgs.

Test Pit 103

Dimensions: Width: 6.5', Length: 7'

Depth of Excavation: 5'

Depth of Utilities: N/A

TP 103 was excavated on Washington Square East between Washington Place and West Fourth Street on the east side of the street, straddling the curblines, its northeast corner 25' north of the north West Fourth Street curb line. The test pit largely overlaps the former location of Trench 104. Consistent clean fill soil was documented throughout.

Summary of Washington Square East Trenches: TR1, 2, 4, 10, 11, 14, 30 S20-22, 31 S1-23, 32, 40, 46, 48, 49, 69, 77, 80, 81, 86, 94, 96, 99, 100, 101, 102, 104

Trench 1

Number of Sections: 21

Dimensions: Width: 10', Length: 550'

Depth of Excavation: 9'

Depth of Utilities: 1.75' – 4.3'

TR1 was excavated beginning approximately 4' south of the south Waverly Place curb, 3' east of the west Washington Square East curb line. Excavation around utilities generally extended to a maximum depth of 9' bgs, and extended to 12' bgs in S9-11 and 21. Excavation proceeded south down Washington Square East in 25' north-south sections, extending west to abut the Washington Square East curb from S5-9. Features 2 and 3, a pair of adjacent brick-lined burial vaults, were encountered in S3-4. See Features: Burial discussion for more information about these features.

South of the intersection with Washington Place, TR1's path shifted east to run down the center of Washington Square East. General depth of excavation extended between 5' bgs to 9' bgs.

Soils in TR1 were generally 7.5YR – 10YR 4/3 sand fill to 3' - 4' bgs atop 7.5YR 4/3 clay sandy fill. Small pockets of TR1, at the Washington Square East and Washington Square South intersection and just south of the Washington Square East and Washington Square North intersection, contained 7.5YR 4/3 loamy sand subsoil with small brick and pebble inclusions.

Trench 2

Number of Sections: 4
Dimensions: Width: 5.75' Length: 25'
Depth of Excavation: 5.2' – 11'
Depth of Utilities: 1' – 11'

TR2 was opened as a spur from the northeast corner of TR1 at Washington Square East, turning east into Washington Place in TR2 S2 for 55' before turning 90 degrees south to the south Washington Place curb at TR2 S4. TR2 S1 was excavated to 11' bgs, and TR2 S2 was excavated to 8' bgs to expose a complex crossing network of existing utilities to the base of each excavated area, surrounded by six corresponding strata of sandy modern clean fills. TR2 S3-4 were shallower, excavated to 5.2' bgs; these sections both exhibited simple stratigraphy of a lighter 2.5Y 5/3 loamy sand to 2.7' bgs atop 7.5YR 4/3 sand to the base of excavation. East – west oriented existing utilities continued to cross these areas to their base of excavation.

Trench 4

Number of Sections: 1
Dimensions: Width: 7.4', Length: 9.3'
Depth of Excavation: 4.5'
Depth of Utilities: 2.5' – 4.5'

TR4 was excavated at the Washington Square East and Washington Place intersection, 7.5' from the east Washington Square East curb at its east side; its north wall was even with the north Washington Place curb line. TR4 was excavated without notifying archaeological monitors, and thus was inspected on the workday following its excavation. It consisted of two roughly 5' by 4' rectangular excavation areas, the southernmost excavated to just below the road surface before being abandoned and the second rectangular area opened instead to avoid an existing utility main. Inspection of the excavation profiles to the base of the trench at 4.5' bgs revealed two large north – south utility mains surrounded by clean utility fill. This area was later more extensively excavated within TR31 S14.

Trench 10

Number of Sections: 3
Dimensions: Width: 8.4', Length: 68'
Depth of Excavation: 6'
Depth of Utilities: 1.3' – 3.6'

TR10 was excavated at the south side of the Washington Square East and University Place intersection, abutting the Washington Square East curb line. It shifted to 9.1' west of the west curb line and ran south in three sections, terminating 50' south of the south Washington Place curb line. Although TR10 ran largely within the footprint of TR1 backfill, the previously unexcavated portions of land in TR10 exhibited sandy fill with pebble and small cobble inclusions to 6' bgs. No cultural materials were recovered from TR1.

Trench 11

Number of Sections: 3
Dimensions: Width: 4.5', Length: 65.3'
Depth of Excavation: 5.5'
Depth of Utilities: 1.8' – 5.5'

TR11 was excavated at the south side of Washington Place and extending east into Washington Square East, running parallel to and 7.8' from the south curb in two 25' sections and one 15.3' section. Excavation extended to 5.5' bgs in TR11 S1 and to 5' bgs in TR11 S2-3. Excavation revealed existing two east – west utility mains at the north and south sides of the trench, with 7.5YR 4/2 loamy sand filling the entire excavated area except where the trench intersected previously excavated and backfilled TR2 S1 and TR1 10. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

Trench 14

Number of Sections: 2
Dimensions: Width: 6', Length: 14'-25'
Depth of Excavation: 5'
Depth of Utilities: 2' – 4'

TR14 was opened on the west side of Washington Square East 2.6' east of the west curb line. The trench had 2 sections and overlapped with the former location of TR10 in the eastern portion of Trench 14. Excavation exposed sandy fills to 5' bgs. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

Trench 30, Sections 20-22

Number of Sections: 3 (of 22 total for TR30)
Dimensions: Width: 8' – 21', Length: 40'
Depth of Excavation: 5.5' – 6.4'
Depth of Utilities: 1.3' – 3'

TR30 extended across Washington Square North and turned southeast at the Washington Square North and Washington Square East intersection for S20-22. Documented soils were sandy fills to 5.5' bgs, with with loamy sand from 4.8' to 6.4' bgs in S20. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

Trench 31, Sections 1-23

Number of Sections: 23 (of 46 total for TR31)

Dimensions: Width: 14', Length: 500'
Depth of Excavation: 10'
Depth of Utilities: 1.8' - 5'

TR31 was excavated beginning at the northwest side of the intersection of Washington Square East and Washington Square North and continued north to the Washington Square East and University Place intersection. The 12.5' wide trench abutted the Washington Square East west curb line between Washington Square North and Washington Place. TR31 shifted east at the Washington Place intersection, at S13, to run along the east Washington Square East curb line to the University Place intersection. S13-23 were 14' wide east-west by 25' north-south segments. TR31 turned west at the University Place intersection to continue down Washington Square North (see section V.2).

TR31 S1-12, along the west Washington Square East curb line, exhibited a variety of clean sandy fills to 10' bgs. TR31 S13-23, along the east Washington Square East curb line, exhibited clean sandy fills with sparse areas of cobble and brick inclusions to 9.3' bgs. An intact 7-UP bottle, recovered from 4' bgs in TR31 S3, and a large mammal longbone was recovered at 3' bgs in TR31 S7. No other cultural materials were recovered from TR31 S1-23.

Trench 32

Number of Sections: 1
Dimensions: Width: 9.45', Length: 19.6'
Depth of Excavation: 3.5'
Depth of Utilities: 1.6' – 3.5'

TR32 was opened on the east side of Washington Square East at the intersection with Waverly Place. TR32 had a slightly irregular shape, with a spur 3' south on its southwest side. Excavation showed a very dense network of existing utilities, surrounded by 10YR 4/3 loamy sand with few pebbles and brick fragments. This area was later re-excavated and expanded for parts of TR30 S22, TR31 S23, and TR40 S8.

Trench 40

Number of Sections: 9
Dimensions: Width: 7'-8.4', Length: 240'
Depth of Excavation: S1-2: 5', S3-9: 4'
Depth of Utilities: 1.3' – 5'

TR40 began with the re-opening of TP42 at the northeast side of the Washington Square East and Washington Place intersection. TR40 proceeded north, following a gas main slated for replacement as it approached the east Washington Square East curb line. Exposed soils consisted of clean loamy sand fills to the base of excavation, between 4'-5' bgs. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

Trench 46

Number of Sections: 1
Dimensions: Width: 7.2', Length: 32.1'

Depth of Excavation: 5.8
Depth of Utilities: N/A

TR46 was excavated 6.9' from the west Washington Square East curb between West Fourth Street and Washington Place. It ran from station 0+79.5' to 1+11.6' entirely within previously excavated Project areas TR1 S19, TP8, and TR31 S3-4 before turning north into the west sidewalk. Soil under the sidewalk showed 10YR 4/2 loamy sand to 3.7' bgs atop 7.5YR 4/2 loamy sand to 5.8' bgs with no archaeological features or materials within.

Trench 48

Number of Sections: 1
Dimensions: Width: 7.6', Length: 26.6'
Depth of Excavation: 5'
Depth of Utilities: N/A

TR48 was excavated at the west side of the Washington Square East and Washington Square North intersection, its northwest corner 4' from the north curb line. This trench lay almost completely within previously excavated and backfilled Project areas (TR1 S1, TR5/6 CNX, TR30 S20-21, TR31 S25, TR35). The only newly excavated area showed 10YR 4/3 loamy sand clean fill.

Trench 49

Number of Sections: 1
Dimensions: Width: 4.4', Length: 7.5'
Depth of Excavation: 6'
Depth of Utilities: N/A

TR49 was excavated in the west sidewalk of Washington Square East between Washington Square South and Washington Place, running 7.5' south from station 1+96.2' at .7' west of the curb. Excavation below the sidewalk revealed three fill strata of clean sandy fill below the sidewalk bedding to 6' bgs without nearby utilities, indicative of several fill episodes in the past likely associated with nearby utility work.

Trench 69

Number of Sections: 1
Dimensions: Width: 10.2', Length: 20.5'
Depth of Excavation: 10'
Depth of Utilities: 1.3' – 8.3'

TR69 was excavated at the northeast Washington Square East and Washington Place intersection, alongside the north curb line. It revealed a dense network of utilities including an existing catch basin and brick-lined storm drains abutting and underlaying the curb. Most of the trench was excavated to 8.3' bgs, but the area between the brick drains and catch basin below the curb was excavated to 10' bgs. All the soil above, between, and underlying this group of utilities under and alongside the curb was 10YR 4/3 loamy sand fill with small cobbles, pebbles, and brick fragments. A 10YR 6/3 sandy matrix lay above it and abutting it in the south part of the trench, associated with shallower utility ducts that ran east – west alongside the south trench wall.

Trench 77

Number of Sections: 2
Dimensions: Width: 5.8', Length: 20.7'
Depth of Excavation: 3'
Depth of Utilities: N/A

TR77 was opened at the east side of the Washington Square East and Washington Place intersection. It ran entirely within the boundaries of previously excavated and backfilled TR1 S10-11, TR2 S1, and TR11 S2-3, revealing clean fill soils throughout.

Trench 80

Number of Sections: 1
Dimensions: Width: 2.5', Length: 23.5'
Depth of Excavation: 2.3'
Depth of Utilities: 1.6' – 2.3'

TR80 was opened in the southeast corner of the intersection of Washington Square East and Waverly Place. The trench extended northeast around the curb onto Waverly place, ending 9' east of Washington Square East's east curb line. The trench overlapped with the location of TR 31 and TR40 and exposed only sandy fill. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

Trench 81

Number of Sections: 3
Dimensions: Width: 9', Length: 35'
Depth of Excavation: 8' (9.3' in S3)
Depth of Utilities: 1.6' – 6.2'

TR81 was excavated alongside the west Washington Square East curb between Washington Place and Waverly Place, almost entirely within the footprint of previously excavated and backfilled TR1 S8-9, TR4, and TR31 S14-15. Where excavation depth in TR81 exceeded previous Project work, soils revealed were a 10YR 6/3 mixed with 10YR 3/1 sandy modern clean fill in TR81 S1-2 and a 2.5Y 5/4 and 6/3 mottled silty loam in TR81 S3.

Trench 86

Number of Sections: 1
Dimensions: Width: 9.5', Length: 9.2'
Depth of Excavation: 9.5'
Depth of Utilities: 1.3' – 9.5'

TR86 was excavated alongside the southeast curb radius at the intersection of Washington Square East and Waverly Place for the replacement of an existing brick catch basin with a new concrete catch basin. The existing catch basin was dismantled concurrent with trench excavation. Soils exposed were 7.5YR 5/4 sandy loam and a band of 10YR 5/6 sandy loam in the north side of the trench around existing utility ducts. While the existing catch basin terminated at 9' bgs, a brick

sewer connection was seen in the base of excavation at 9.5' bgs before construction of the replacement basin.

Trench 94

Number of Sections: 3
Dimensions: Width: 6'-11', Length: 35'
Depth of Excavation: 15'
Depth of Utilities: 2.2' – 10'

TR94 was excavated at the side of the intersection of Washington Square East and Washington Place, its west side 3' west of the Washington Square East curb line. It was extended southwest in two sections, excavated to 7' bgs and extended to 15' bgs within wooden shoring that obscured in situ profile stratigraphy. Soils removed to 9' bgs were 10YR 4/3 loamy sand fill, with soils below this assessed at 7.5YR 4/3 loamy sand fill. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

Trench 96

Number of Sections: 2
Dimensions: Width: 4', Length: 22'
Depth of Excavation: 4.6'
Depth of Utilities: N/A

TR96 was excavated at the northeast Washington Square East and Washington Place intersection in two sections from station 2+85' to 2+98.8'. TR96 S1 overlapped the previously backfilled TR69, and TR96 S2 overlapped the previously backfilled TR94. Soil exposed in newly excavated areas was 10YR 4/2 loamy sand fill.

Trench 99

Number of Sections: 1
Dimensions: Width: 8', Length: 8.75'
Depth of Excavation: 8.5'
Depth of Utilities: N/A

TR99 was excavated against the south Washington Place curb 10.8' east of the east curb of Washington Square East. Excavation revealed an existing concrete utility box or basement wall across the entire south trench profile at the modern curb line, and 7.5YR 4/3 loamy sand with cobbles, pebbles, and some brick inclusions was the only stratum noted throughout the trench.

Trench 100

Number of Sections: 1
Dimensions: Width: 2.75', Length: 6.5'
Depth of Excavation: 2.75'
Depth of Utilities: N/A

TR100 was excavated in the center of the Washington Square East roadbed between Washington Square South and Washington Place, from station 0+70' to 1+35'. This entire footprint was

previously excavated as TR1, and new excavation for TR100 ended up not exceeding previous depths. All material encountered was Project backfill.

Trench 101

Number of Sections: 1
Dimensions: Width: 2.75', Length: 156'
Depth of Excavation: 2.5'
Depth of Utilities: N/A

TR101 was excavated beginning 7' from the east Washington Square East curb before quickly turning northwest and running parallel to, and 9' from, the east curb. TR101 extended north for 156', but it was not divided into smaller sections because its entire footprint was in the previously excavated TR1 and TR31. All material encountered was Project backfill.

Trench 102

Number of Sections: 2
Dimensions: Width: 5.1' – 5.8', Length: 36.5'
Depth of Excavation: 3' – 5'
Depth of Utilities: N/A

TR102 was opened along the east Washington Square East curb line, 10' south of the south Washington Place curb. The trench was entirely excavated in the location of the backfilled TR1, to deeper depths along the east curb. Documented soils were backfill to 3' bgs, and 7/5YR 4/3 loamy sand fill with loose brick fragments, likely from an existing adjacent brick manhole, to 5' bgs. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

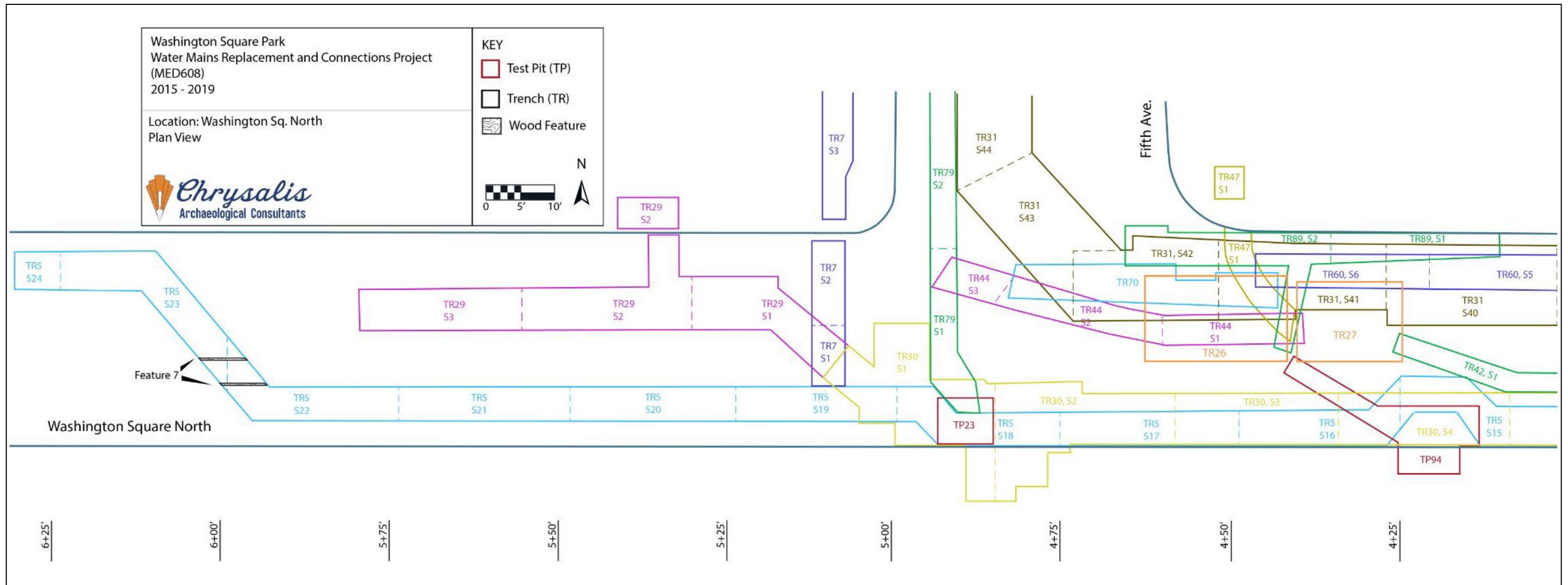
Trench 104

Number of Sections: 1
Dimensions: Width: 5', Length: 26.8'
Depth of Excavation: 5'
Depth of Utilities: N/A

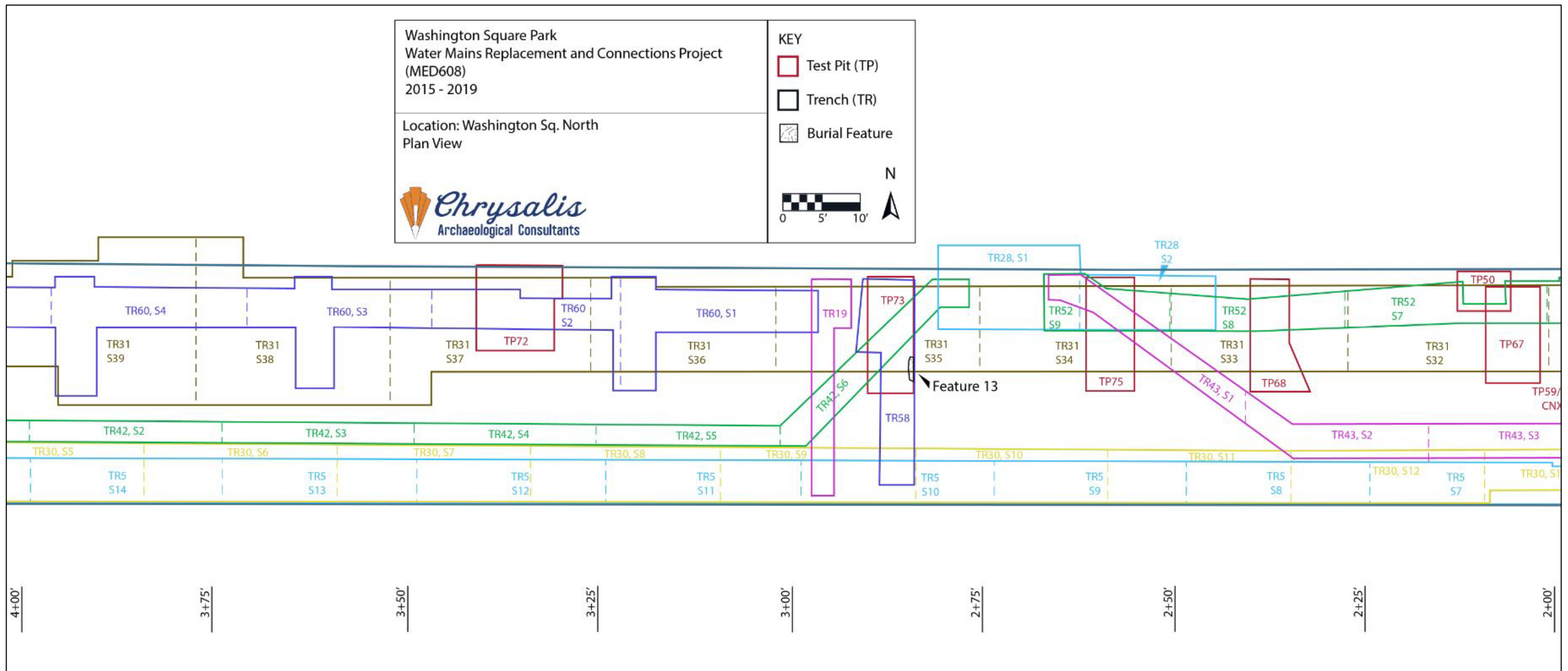
TR 104 was opened on the east side of Washington Square East, 1.2' from the east curb line, with its south end even with the north Washington Square North curb line. TR 104 overlapped with the former locations of TR 1 and TP 97 at its northern and southern 4', respectively. Undisturbed soils were all 7.5YR 4/2 loamy sand with small pebble and brick fragment inclusions. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

V.2 WASHINGTON SQUARE NORTH

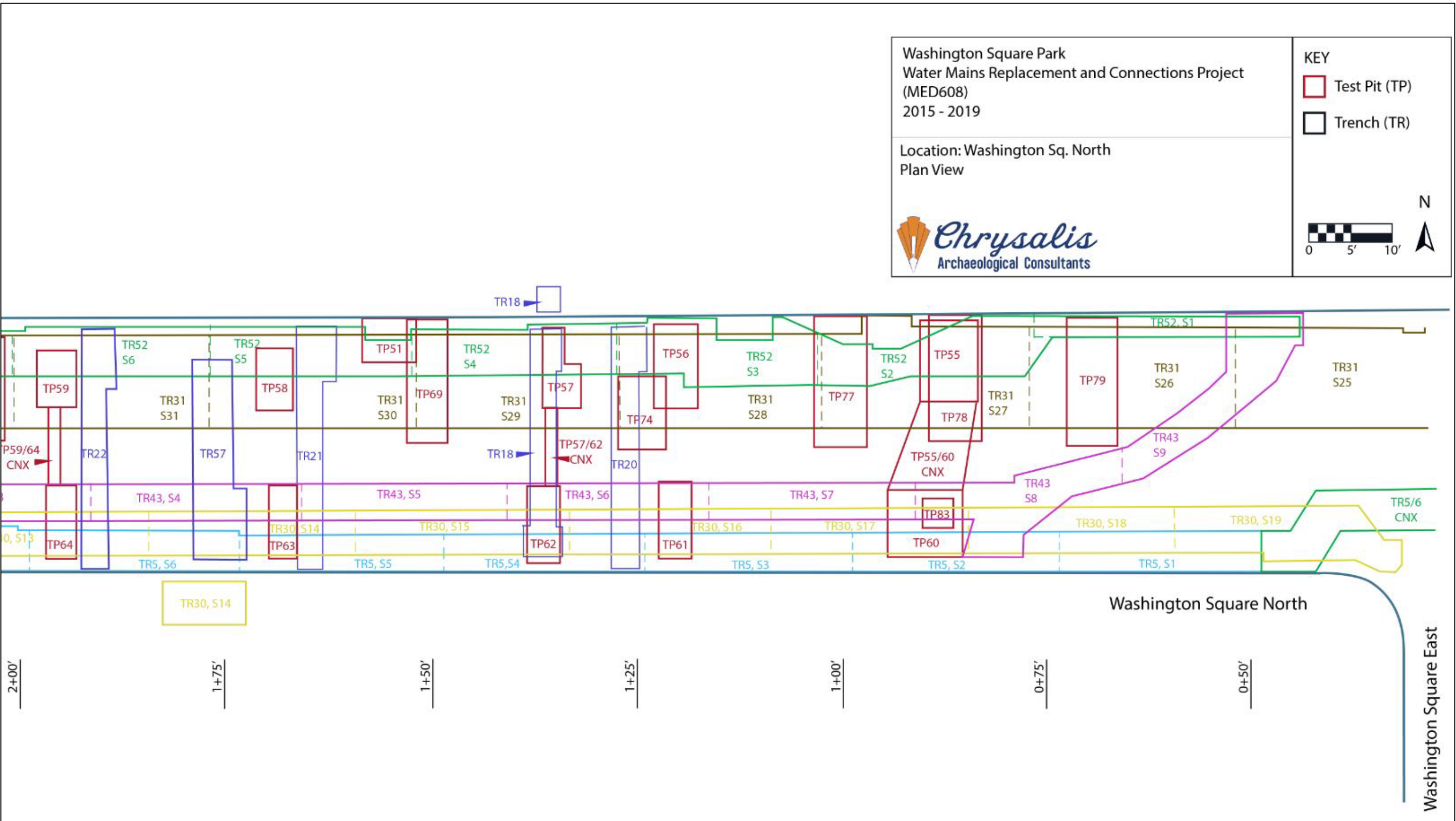
Excavation across the Washington Square North roadbed extended 650' west from the intersections of Washington Square North, Washington Square East, University Place, and Waverly Place (Maps 06-08). Excavation extended into the intersection with Fifth Avenue (see V.3 Fifth Avenue). Within this Project subsection 25 test pits (TP23, 50, 51, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 67, 68, 69, 72, 73, 74, 75, 77, 78, 79, 83, 94) and 22 trenches (TR5, 18, 19, 20, 21, 22, 26, 27, 28, 29, 30 S1-19, 31 S24-43, 42, 43, 44, 47 S1, 52, 57, 58, 60, 70, 89) were excavated. Two features were documented within excavation across Washington Square North. Feature 7 in TR5 appeared to be wooden shoring for previous utility trench work in the area. Feature 13 in TP73 was an area of uninterred partial human remains.



Map 06: Digitized Field Map, Washington Square North, segment 1 of 3.



Map 07: Digitized Field Map, Washington Square North, segment 2 of 3.



Map 08: Digitized Field Map, Washington Square North, segment 3 of 3.

Summary of Washington Square North Test Pits: TP23, 50, 51, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 67, 68, 69, 72, 73, 74, 75, 77, 78, 79, 83, 94

Test Pit 23

Dimensions: Width: 7', Length: 8'
Depth of Excavation: 5'
Depth of Utilities: 5'

TP23 was excavated along the south Washington Square North curb line, 6' east of the west Fifth Avenue curb line. All soil documented was 10YR 4/4 sand with few small brick and concrete fragment inclusions well-dispersed throughout.

Test Pit 50

Dimensions: Width: 6.8', Length: 5.2'
Depth of Excavation: 4'
Depth of Utilities: 1.2' – 4'

TP50 was excavated along the north Washington Square North curb, 200' west of the Washington Square East west curb line. The test pit exposed an existing concrete utility box directly below the road base. All surrounding soil was 2.5Y 4/2 loamy sand clean fill.

Test Pit 51

Dimensions: Width: 6.6', Length: 5.2'
Depth of Excavation: 5'
Depth of Utilities: 1.6' – 5'

TP51 was excavated along the north Washington Square North curb, its west side 50' east of TP 50's east side, to expose an existing concrete utility box beginning at 1.6' bgs. All surrounding soil was 2.5Y 4/2 loamy sand clean fill.

Test Pit 55

Dimensions: Width: 9', Length: 28.5'
Depth of Excavation: 5.5'
Depth of Utilities: 1.6' – 4'

TP55 was excavated near the north Washington Square North curb, its east side 50' west of the west Washington Square East curb line, overlapping with the location of the backfilled TR52 S2 but extending excavation deeper to 5.5' bgs. All documented soil below TR52 backfill was 10YR 4/3 clean sand with some pebble inclusions.

Test Pit 56

Dimensions: Width: 5.2', Length: 10'
Depth of Excavation: 3.7'
Depth of Utilities: 3.7'

TP56 was excavated near the north Washington Square North curb, its west side 80' west of the west Washington Square East curb line, overlapping the location of backfilled TR52 S3. All documented soil below TR52 backfill was 10YR 4/3 clean sand with some pebble inclusions.

Test Pit 57

Dimensions: Width: 5', Length: 9.7'
Depth of Excavation: 4.7'
Depth of Utilities: 1-3'

TP57 was excavated near the north Washington Square North curb, its east side 100' west of the west Washington Square East curb line, overlapping the locations of backfilled TR52 S4 and TR18 but extending deeper. All documented soil below TR52 and TR18 backfill was 10YR 4/3 clean sand with some pebble inclusions.

Test Pit 58

Dimensions: Width: 4.3', Length: 7.4'
Depth of Excavation: 4.1'
Depth of Utilities: N/A

TP58 was excavated 3.7' from the north Washington Square North curb, 135' from the west Washington Square East curb line, overlapping the location of backfilled TR52 S5. All documented soil below TR52 backfill was 10YR 4/3 clean sand with some pebble inclusions.

Test Pit 59

Dimensions: Width: 4.7', Length: 7'
Depth of Excavation: 4'
Depth of Utilities: N/A

TP59 was excavated 3.8' from the north Washington Square North curb, 160' from the west Washington Square East curb line, overlapping the location of backfilled TR52 S6. All documented soil below TR52 backfill was 10YR 4/3 clean sand with some pebble inclusions.

Test Pit 60

Dimensions: Width: 9', Length: 8'
Depth of Excavation: 5.5'
Depth of Utilities: N/A

TP60 was excavated 2.2' from the south Washington Square North curb, 50' from the west Washington Square East curb line, overlapping with the locations of backfilled TR5 S2, TR30 S17, and TR43 S7-8. A small trench was dug connecting TP60 with TP55 to the north. All documented soil was revealed to be clean backfill from the various previous excavation episodes, with a small amount of clean fill below the road base.

Test Pit 61

Dimensions: Width: 4', Length: 9.2'
Depth of Excavation: 4.2'

Depth of Utilities: N/A

TP61 was excavated 2' from the south Washington Square North curb, 80' from the west Washington Square East curb line, overlapping with the locations of backfilled TR5 S3, TR30 S16, and TR43 S6. A small trench was dug connecting TP61 with TP56 to the north. All documented soil that was not backfill was 10YR 4/3 clean sand with some pebble inclusions.

Test Pit 62

Dimensions: Width: 3.6', Length: 8.75'

Depth of Excavation: 4.3'

Depth of Utilities: N/A

TP62 was excavated 2.2' from the south Washington Square North curb, 100' from the west Washington Square East curb line, overlapping with the locations of backfilled TR5 S4, TR18, TR30 S15, and TR43 S6. A small trench was dug connecting TP62 with TP57 to the north. All documented soil that was not backfill was 10YR 4/3 clean sand with some pebble inclusions.

Test Pit 63

Dimensions: Width: 3.5', Length: 8.8'

Depth of Excavation: 5.5'

Depth of Utilities: N/A

TP63 was excavated 2.15' from the south Washington Square North curb, 100' from the west Washington Square East curb line, overlapping with the locations of backfilled TR5 S5, TR21, TR30 S14, and TR43 S4. A small trench was dug connecting TP63 with TP58 to the north. All documented soil that was not backfill was 10YR 4/3 clean sand with some pebble and cobble inclusions.

Test Pit 64

Dimensions: Width: 3.9', Length: 8.7'

Depth of Excavation: 6'

Depth of Utilities: N/A

TP64 was excavated 2.15' from the south Washington Square North curb, 125' from the west Washington Square East curb line, overlapping with the locations of backfilled TR5 S6, TR30 S13, and TR43 S3. A small trench was dug connecting TP64 with TP59 to the north. All documented soil that was not backfill was 10YR 4/3 clean sand with some pebble and cobble inclusions.

Test Pit 67

Dimensions: Width: 7', Length: 14.6'

Depth of Excavation: 11.3'

Depth of Utilities: 2.2' – 5'

TP67 was excavated 1.4' from the north Washington Square North curb, 170' from the west Washington Square East curb line. All documented soil was 10YR 4/3 clean sand with some pebble and cobble inclusions.

Test Pit 68

Dimensions: Width: 8.75', Length: 15'
Depth of Excavation: 11'
Depth of Utilities: 8.5' – 9.5'

TP68 was excavated 1' from the north Washington Square North curb, 200' from the west Washington Square East curb line. All documented soil was 10YR 4/3 clean sand with some pebble and cobble inclusions. At approximately 3' bgs within this fill, one intact cattle metacarpal, one mammal long bone fragment, and one oyster shell fragment were recovered (FS 120). These materials were not recovered from an undisturbed context.

Test Pit 69

Dimensions: Width: 5', Length: 15.3'
Depth of Excavation: 11'
Depth of Utilities: N/A

TP69 was excavated along the north Washington Square North curb, 140' from the west Washington Square East curb line and overlapped the location of backfilled TR 52 S4. All documented soil that was not backfill was 10YR 4/3 clean sand with some pebble and cobble inclusions.

Test Pit 72

Dimensions: Width: 9.5', Length: 12.75'
Depth of Excavation: 11'
Depth of Utilities: N/A

TP72 was excavated along the north Washington Square North curb, 130' from the east Fifth Avenue curb line and overlapped the location of backfilled TR60. All documented soil that was not backfill was 10YR 4/3 clean sand with some pebble and cobble inclusions.

Test Pit 73

Dimensions: Width: 6', Length: 15.3'
Depth of Excavation: 11.5'
Depth of Utilities: 1.3' – 10.5'

TP73 was excavated along the north Washington Square North curb, 180' from the east Fifth Avenue curb line and overlapped the location of backfilled TR42 S6, and TR58. Most of the soil revealed in TP73 was 10YR 4/3 loamy sand fill. A pocket of disturbed, slumping 2.5Y 4/4 loamy sand lay from 6.25' to 9.5' bgs in the southern part of the test pit's east wall. Feature 13, a possible burial with associated partial human remains – mostly intact cranium and tibia with femur and tibia fragments – was encountered at 9.5' bgs within this pocket.

Test Pit 74

Dimensions: Width: 5.8', Length: 15.25'
Depth of Excavation: 11'
Depth of Utilities: 1' – 11'

TP74 was excavated 1' from the north Washington Square North curb, its west side 78' west of the west Washington Square East curb line, overlapping the location of backfilled TR20, TR52 S3, and TP56. All documented soil that was not backfill was 10YR 4/3 clean sand with some pebble, cobble, and brick fragment inclusions.

Test Pit 75

Dimensions: Width: 6.25', Length: 15.25'
Depth of Excavation: 12.3'
Depth of Utilities: 1' – 10.5'

TP75 was excavated 1' from the north Washington Square North curb, 200' from the east Fifth Avenue curb line, overlapping the location of backfilled TR28 S2, TR43 S1, and TR52 S9. All documented soil below previous 6.8' bgs backfill was 10YR 4/3 clean sand.

Test Pit 77

Dimensions: Width: 15.3', Length: 6.4'
Depth of Excavation: 11.5'
Depth of Utilities: 1.5' – 11.5'

TP77 was excavated along the north Washington Square North curb, its east side 50' west of the west Washington Square East curb line. Soil exposed was 10YR 4/3 sandy loam with brick fragment inclusions to 8' bgs. Below this, 10YR 4/3 sandy loam was mottled with 2.5Y 6/2 sandy loam to the base of excavation at 11.5' surrounding existing utilities.

Test Pit 78

Dimensions: Width: 15.3', Length: 6.4'
Depth of Excavation: 11.5'
Depth of Utilities: 1' – 11.5'

TP78 was excavated along the north Washington Square North curb, its east side 49' west of the west Washington Square East curb line. Soil exposed was 10YR 4/3 sandy loam with brick fragment inclusions to 8' bgs. Below this, 10YR 4/3 sandy loam was mottled with 2.5Y 6/2 sand to the base of excavation at 11.5' surrounding existing utilities.

Test Pit 79

Dimensions: Width: 15.5', Length: 6.2'
Depth of Excavation: 11.5'
Depth of Utilities: 1' – 11'

TP79 was excavated along the north Washington Square North curb, its east side 49' west of the west Washington Square East curb line. Soil exposed was 10YR 4/3 sandy loam clean fill to 8' bgs. Below this, 10YR 4/3 sandy loam was mottled with 2.5Y 6/2 sand fill to the base of excavation at 11.5' surrounding existing utilities.

Test Pit 83

Dimensions: Width: 3.8', Length: 3.6'
Depth of Excavation: 5'
Depth of Utilities: N/A

TP83 was excavated 5.5' from the south Washington Square North curb, its east side 53' west of the west Washington Square East curb line, overlapping with the former locations of TR30 S17, TR43 S8, and TP60. All soils encountered were backfill from previous excavation in this location by the Project.

Test Pit 94

Dimensions: Width: 11.5', Length: 10'
Depth of Excavation: 9'
Depth of Utilities: 2.1' – 9'

TP94 was excavated on the south Washington Square North curb, its east side 50' from the east Fifth Avenue curb line, for the installation of a new catch basin. Excavation extended 4' south of the curb line, with an extension 17' to the northwest. Soils expose were 10YR 4/4 loamy sand to 3.4' bgs, 10YR 6/4 sand to 5' bgs, and 7.5YR 4/1 loamy sand to 9' bgs. All soils were fill surrounding an existing concrete catch basin and associated utilities.

Summary of Washington Square North Trenches: TR5, 18, 19, 20, 21, 22, 26, 27, 28, 29, 30 S1-19, 31 S24-43, 42, 43, 44, 47 S1, 52, 57, 58, 60, 70, 89

Trench 5

Number of Sections: 24
Dimensions: Width: 5.5' – 6', Length: 580'
Depth of Excavation: 9.3'
Depth of Utilities: 1.5' – 5'

TR5 was opened on Washington Square North, abutting the south curb line, the east wall beginning 27' west of the western curb of Washington Square East. TR5 continued 450' west before shifting 5' north and continuing 100' west in the center of Washington Square North. TR5 S22-24 shifted further northeast to 2.6' south of the north curb for its final 40'.

Excavation in TR5 S1-14 extended to 5' bgs and exposed a variety of clean sand fills surrounding existing utilities. Excavation in TR5 S15-18 extended to 9.3' bgs and exposed similar clean fills. Excavation in TR5 S19-24 extended to 5.4' bgs and exposed clean fills. Within TR5 S22-23 was

Feature 7, a set of two east-west oriented wooden walls running parallel to each other, 6' apart. The area between the wooden walls was filled with 2.5Y 5/4 sand that matched the surrounding clean fill sand matrix but with an elevated number of non-diagnostic brick fragments. As excavation proceeded, it appeared Feature 7 was shoring for a builder's trench related to previous episodes of utility installation.

Trench 18

Number of Sections: 1
Dimensions: Width: 4.7', Length: 28.4'
Depth of Excavation: 3.8'
Depth of Utilities: N/A

TR18 was opened for a gas tie-in and was oriented north – south across Washington Square North, beginning 1.3' north of the south curb line and extending to 1.3' from the north curb. The trench overlapped with the former location of TR5 S4. All soil exposed were clean coarse sand fills. No archaeologically sensitive material, features, artifacts or other were exposed in this trench.

Trench 19

Number of Sections: 1
Dimensions: Width: 5', Length: 28'
Depth of Excavation: 2.7'
Depth of Utilities: N/A

TR19 was opened for a gas tie-in, oriented north – south across Washington Square North, located 1.9' north of the south curb line with its east wall at station 2+94.5'. The trench overlapped with the former location of TR5 S10. All soils exposed were clean sand fills. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 20

Number of Sections: 1
Dimensions: Width: 4.8', Length: 29.5'
Depth of Excavation: 3.3'
Depth of Utilities: N/A

TR20 was opened for a gas tie-in, oriented north-south across Washington Square North, located .3' north of the south curb with its southeast corner at station point 1+24.3' and its north end 1.2' from the north curb. The trench overlapped with the former location of TR5 S4. All soils exposed were clean coarse sand fills. Several whole bricks marked "JJJ" were noted and discarded from .9' to 2.3' bgs, likely from previous local utility work. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 21

Number of Sections: 1
Dimensions: Width: 4.9', Length: 30.1'
Depth of Excavation: 3.5'
Depth of Utilities: N/A

TR21 was opened for a gas tie-in, oriented north – south across Washington Square North, extending from the south curb with its southeast corner at station point 1+63’ and its north end .9’ from the north curb. The trench overlapped with the former location of TR5 S5. All soils exposed were clean coarse sand fills containing modern refuse. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 22

Number of Sections: 1
Dimensions: Width: 4.2’, Length: 30’
Depth of Excavation: 3’
Depth of Utilities: N/A

TR22 was opened for a gas tie-in, oriented north – south across Washington Square North, extending from the south curb with its southeast corner at station point 1+89.2’ and its north end 1’ from the north curb. The trench overlapped with the former location of TR5 S6. All soils exposed were clean coarse sand fills. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 26

Number of Sections: 1
Dimensions: Width: 12’, Length: 19’
Depth of Excavation: 5.6’
Depth of Utilities: 2’ – 5.6’

TR26 was opened at the northeast area of the Washington Square North and Fifth Avenue intersection to construct a new manhole, its east wall at station 4+43’ and its north wall 7’ from the north curb. The east half of the trench was abandoned shortly after removing the road base and excavating within fill to between 2’ and 3’ bgs because the beginning of a network of existing utilities made it unsuitable for the manhole scheduled to be added. TR26’s west half was excavated to 5.6’ bgs and revealed three sets of existing utilities across the center and north sections of the trench. All soil documented in the trench was 10YR 4/6 sandy loam dense with large brick fragment surrounding utilities, indicating possible demolition of a previous structure or utility box in this area before current excavations.

Trench 27

Number of Sections: 1
Dimensions: Width: 11’, Length: 17’
Depth of Excavation: 9’
Depth of Utilities: 4’ – 5’

TR27 was opened along the north half of Washington Square North just east of Fifth Avenue, running east – west 8’ from the north curb between stations 4+24.3’ and 4+41.3’, for construction of a new manhole. Excavation to 9’ bgs revealed one existing utility main. Two strata of sandy clean fill soil surrounded this existing east – west main and lay atop it. Below the main was 10YR

4/3 loamy sand with some bricks and Belgian blocks, probably disturbed and redeposited in the area during previous construction and/or filling activity in the street.

Trench 28

Number of Sections: 2
Dimensions: Width: 11.4', Length: 36'
Depth of Excavation: 11'
Depth of Utilities: 1' – 5.5'

TR28 was opened for utility work around an existing manhole at the north side of Washington Square North, extending 8' south from the curb and 3.4' north of the curb line in its westernmost section. It was excavated in two 18' wide sections, its eastern end at station point 2+51.5'. All soils exposed in the roadway were clean sand fills. The area excavated below the sidewalk in S1 revealed five alternating .5' to .8' thick bands of 7/5YR 4/4 sand and 2.5Y 4/4 sand. Evidence of oxidation bands in these strata suggests they had been in place long-term and subject to drainage periods, perhaps natural subsoil. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 29

Number of Sections: 3
Dimensions: Width: 7.6', Length: 72.5'
Depth of Excavation: 6'
Depth of Utilities: 2' – 6'

TR29 was opened for utility work in the center of Washington Square North just west of the Fifth Avenue intersection, its northeast corner beginning 8' from the north curb and running northwest to turn west 6.4' from the north curb. A 6' wide east – west segment was excavated north below the sidewalk within TR29 S2. Soils within the street bed were a mix of clean sandy fills, while soil below the sidewalk was a slightly darker 2.5Y 4/4 clean sand from 2.2' to the base of sub-sidewalk excavation 5' bgs. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 30, Sections 1-19

Number of Sections: 19 (of 22 total for TR30)
Dimensions: Width: 5.5' – 18.4', Length: 490'
Depth of Excavation: 6.6'
Depth of Utilities: 1.3' – 6'

TR30 extended east from the southeast corner of TR29 S1, extending 490' east along the Washington Square North south curb in 19 25'-long sections. S20-22 were located at the intersection with Washington Square East and discussed in report Section V.1. In TR30 S4, a southern extension into the sidewalk was excavated for the placement of a hydrant. The trench overlapped with the locations of backfilled TR5, TR5/6 CNX, TR18, and TR19. All soils documented that were not Project backfill were 710YR – 2.5Y 4/3 loamy sand surrounding a variety of existing utility lines. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 31, Sections 24-43

Number of Sections: 20 (of 46 total for TR 30)
Dimensions: Width: 11.4', Length: 490'
Depth of Excavation: 9.3'
Depth of Utilities: 1.3' – 6'

TR31 was a large trench that began at the southern end of Washington Square East to its intersection with Washington Square North. It turned west to run 475' across the north half of Washington Square North in 25' sections, beginning with TR31 S24, before turning north at S43 to extend up Fifth Avenue. The portion within Washington Square North, TR31 S24-43, extended across numerous previously backfilled Project trenches and test pits, but its general excavation depth of 9.3' bgs was deeper than most of the previously excavated areas it passed through. TR31 S24-43 uncovered a variety of existing utilities running mainly east – west down Washington Square North, with utilities amongst layers of backfill and fill soil generally ranging from 1.3' to 6' bgs. From 6 to 9.3' bgs, soils uncovered were 7.5YR 4/3 loamy sand within S24-29 and 2.5Y 4/3 loamy sand in S30-43. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 42

Number of Sections: 6
Dimensions: Width: 3' – 4.3', Length: 25' – 32''
Depth of Excavation: 6'
Depth of Utilities: N/A

TR42 was opened on Washington Square North near Fifth Avenue, its southwest corner at station 4+26', 14' north of the south curb line. TR42 ran southeast for 17' until it turned due east and ran parallel with the curb, 8' north of the south curb line in S2. Its south wall abutted the backfilled TR30. TR42 S6 turned back northeast to the north curb line.

Excavation in TR42 S1 extended to 6' bgs and revealed 10YR 5/3 loamy sand with non-diagnostic large and small brick fragments distributed throughout from 1.2' to 6' bgs, below modern utility fill. The rest of TR42 reached 4' bgs, terminating in 10YR 4/3 loamy sand fill with brick fragments. In TR42 S4, a large mammal long bone fragment was recovered at 3' bgs from this context, and in TR42 S5 an intact clear glass bottle embossed with "One Pint" was recovered at 3' bgs from the same context. Both represented materials deposited within sandy fill.

Trench 43

Number of Sections: 9
Dimensions: Width: 3.6' – 9.25', Length: 230'
Depth of Excavation: 6.5'
Depth of Utilities: N/A

TR43 was opened on Washington Square North, its northwest corner 0.5' south of the north curb at station 2+66.5'. The trench ran southeast for 32', turned eastward to run parallel with the south curb for 150', to curb 6.75' to the south. It turned backed northeast in TR43 S8-9 to end at the north Washington Square North curb. Excavation extended to 4.5' bgs in S1-2, 5.5' bgs in S1-7,

and to 6.5' bgs in S9. Soils exposed were almost entirely clean fills from previous excavation work, with 7.5YR to 10YR 4/3 loamy sand with brick fragment inclusions present outside of backfill from previous Project trenches. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 44

Number of Sections: 3
Dimensions: Width: 4.5' – 5.5', Length: 54'
Depth of Excavation: 6.2'
Depth of Utilities: 2.5' – 6.2'

TR44 was opened in the center of Washington Square North 15.2' from the south curb, running from station 4+39' to 4+93 across the intersection with Fifth Avenue. It exposed an existing utility box and associated lines for upgrades. Excavation extended to 6.2' bgs only at the east side of S1 near the existing utility box, with excavation to 3.5' to 5' west of this in S2-3. All soils exposed were clean sandy fills surrounding utility work.

Trench 47, Section 1

Number of Sections: 1 (of 3 total for TR47)
Dimensions: Width: 5', Length: 26'
Depth of Excavation: 4.7'
Depth of Utilities: 2.3' – 4'

TR47 was opened on Washington Square North at the east side of its intersection with Fifth Avenue, beginning 11.6' south of the north curb line at station 4+39.5' and running northwest to the curb, with a 4' by 4' section opened in the sidewalk 5' north of the curb, connected to the main body of the trench by tunneling below the curb. S2-3 continued north into Fifth Avenue. All soils documented were a mix of clean sandy fills, with 2.5Y 4/3 loamy sand under the sidewalk and 10YR 4/2 loamy sand below the street bed. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 52

Number of Sections: 9
Dimensions: Width: 3' – 8.5', Length: 215'
Depth of Excavation: 3.8'
Depth of Utilities: 1' – 3.8'

TR52 was opened on Washington Square North, beginning at the north curb at station 0+51' and proceeding west over 9 25'-long sections. Excavation was relatively shallow, generally terminating at 3' bgs with a maximum depth of 3.8' bgs. TR52 overlapped with the backfilled TR18, TR20, TR21, TR22, TR28, TR43 and TP51. All soils outside of backfill were clean sandy fills surrounding existing utilities. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 57

Number of Sections: 1
Dimensions: Width: 6.1', Length: 24.45'
Depth of Excavation: 4'
Depth of Utilities: N/A

TR57 was opened on Washington Square North, its northeast side at station 1+74.1' and 4.9' from the north curb line, extending 24.45' south. The trench overlapped backfilled TR5, TR30, and TR42. All soil revealed was previous backfill and 10YR 4/3 loamy sand fill. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 58

Number of Sections: 1
Dimensions: Width: 7', Length: 29'
Depth of Excavation: 4'
Depth of Utilities: N/A

TR58 was opened on Washington Square North, its northeast side at station 2+84' and .9' from the north curb line, extending 29' south. The trench overlapped backfilled TR5, TR30, and TP73. All soil revealed was previous backfill and 2.5Y to 10YR 4/4 loamy sand fill. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 60

Number of Sections: 6
Dimensions: Width: 5', Length: 150'
Depth of Excavation: 3.3' – 11.8'
Depth of Utilities: 2' – 11.5'

TR60 was opened on the north side of Washington Square North, its northeast side at station 2+96.5' and 2.9' from the north curb. Excavation continued west over 6 25'-long sections, generally excavated to 3' bgs and expanded to 9' – 11.8' bgs in three expanded utility work areas in S1, S3, and S4. All soil revealed, including in the expanded deeper excavation areas, was clean loamy sand fill surrounding existing utilities. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 70

Number of Sections: 1
Dimensions: Width: 6', Length: 39.3'
Depth of Excavation: 4'
Depth of Utilities: 1.9' – 3.2'

TR70 was excavated at the northeast side of the Washington Square North and Fifth Avenue intersection, from station 4+42.7' to 4+82'. The trench exposed numerous crossing utilities at the intersection and overlapped the previously backfilled locations of TR44, TR 47, and TR60. Newly excavated material was all a single clean fill stratum around the existing utilities.

Trench 89

Number of Sections: 2

Dimensions: Width: 4.9' – 5.7', Length: 54.7'

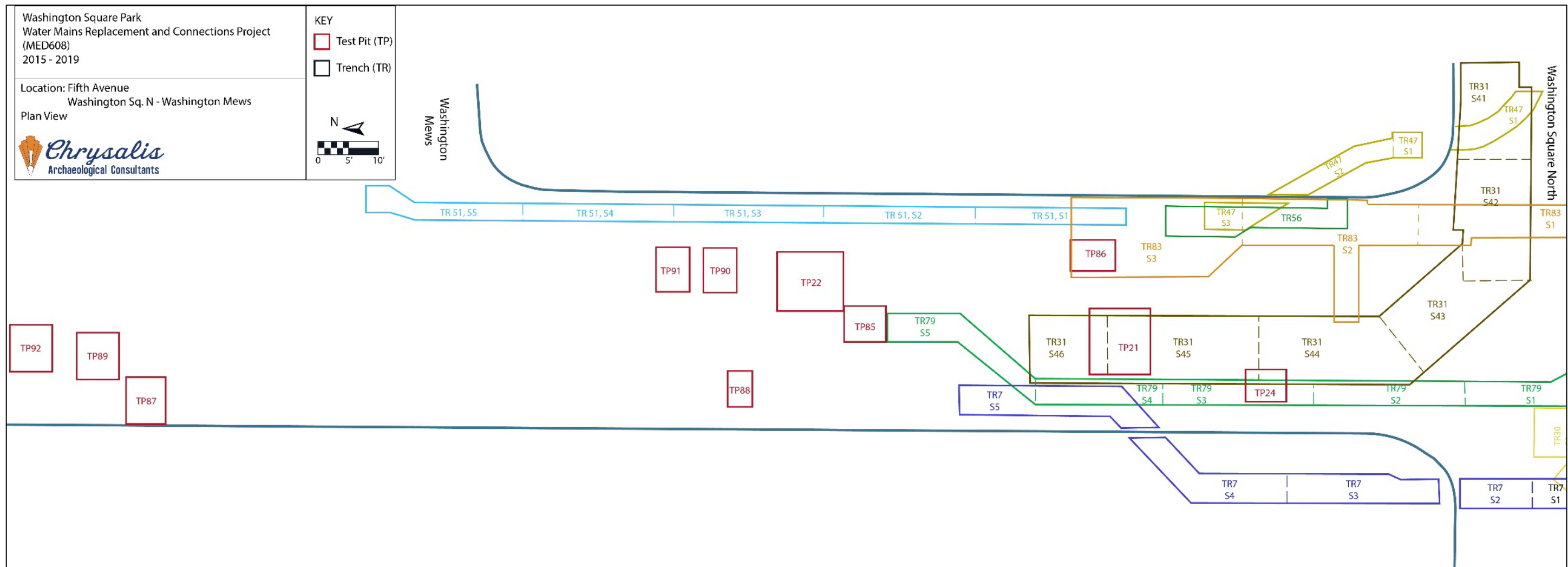
Depth of Excavation: 10'

Depth of Utilities: 1.95'

TR89 was opened on the north side of Washington Square North, at the northeast corner of the Fifth Avenue intersection, abutting the north Washington Square North curb. TR89 began 40' east of the east Fifth Avenue curb line and extended west in one 24.7' and one 30' section. The trench overlapped with the backfilled TR31, TR47, TR60, and TR83. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

V.3 FIFTH AVENUE

Excavation along Fifth Avenue extended 207' north from Washington Square Park North to Washington Mews (Map 09). Excavations extended into the intersection of Washington Square North and Washington Mews. Though excavation was not curb to curb, it did extend into the sidewalk of the southeast and southwest corners of the Fifth Avenue intersection with Washington Square North. Within this boundary, 11 test pits (TP21, 22, 24, 85, 86, 87, 88, 89, 90, 91, 92) and 7 trenches (TR7, 31 S44-46, 47, 51, 56, 79, 83) were excavated. No archaeological features, artifacts, or other archaeologically sensitive materials were exposed along Fifth Avenue.



Map 09: Digitized Field Map, Fifth Avenue.

Summary of Fifth Avenue Test Pits: TP21, 22, 24, 85, 86, 87, 88, 89, 90, 91, 92

Test Pit 21

Dimensions: Width: 10', Length: 11'
Depth of Excavation: 7.8'
Depth of Utilities: 2' – 7.8'

TP21 was excavated 10' west of the Fifth Avenue curb line and 38' north of the northeast Washington Square North/Fifth Avenue curb radius. It was excavated to locate and measure the diameter of an existing watermain for tie-in. All soil uncovered was 10YR 4/4 – 5/5 sandy fill with fragmented brick, concrete, and cobble inclusions throughout.

Test Pit 22

Dimensions: Width: 10.5', Length: 11'
Depth of Excavation: 10.5'
Depth of Utilities: 6.7' – 10.5'

TP22 was excavated 90' north of the northeast Washington Square North and Fifth Avenue curb radius and 10' from the east Fifth Avenue curb to locate an existing 36" utility main. All soil exposed in the test pit to the exposure of the existing main and surrounding the utility was consistent 10YR 4/4 fine sandy fill with few well-sorted small brick fragments and concrete fragments.

Test Pit 24

Dimensions: Width: 7', Length: 5.5'
Depth of Excavation: 7'
Depth of Utilities: 2'-7'

TP24 was excavated 5.5' west of the Fifth Avenue curb line and 15.4' north of the northwest Washington Square North/Fifth Avenue curb radius. All soil uncovered was consistent 2.5Y 4/2 sandy clean fill surrounding existing utilities.

Test Pit 85

Dimensions: Width: 5', Length: 7.3'
Depth of Excavation: 5.8'
Depth of Utilities: 4.6' – 5.8'

TP85 was excavated on Fifth Avenue north of Washington Square North, its west side 15.1' east of the west Fifth Avenue curb line. All soil uncovered was consistent 2.5Y 4/3 loamy sand fill surrounding existing utilities.

Test Pit 86

Dimensions: Width: 5', Length: 7.3'
Depth of Excavation: 5.8'
Depth of Utilities: 4.8' – 5.8'

TP86 was excavated on Fifth Avenue north of Washington Square North, its east wall 7.5' west of the east Fifth Avenue curb line. All soil uncovered was consistent 2.5Y 4/3 loamy sand fill surrounding existing utilities.

Test Pit 87

Dimensions: Width: 6', Length: 8'
Depth of Excavation: 5.95'
Depth of Utilities: 5.5' – 5.95'

TP87 was excavated 209' north of Washington Square North on Fifth Avenue, alongside the west curb. TP87 was excavated to locate an existing 36" main, found at 5.5' bgs covered by three clean fill strata with loamy soil mixed in.

Test Pit 88

Dimensions: Width: 4', Length: 6'
Depth of Excavation: 7'
Depth of Utilities: 5.65' – 7'

TP88 was excavated near the west Fifth Avenue curb from station 1+09.6' to 1+13.6' in order to locate an existing 36" utility main. The main was uncovered at 5.65' bgs and excavation continued around its sides to 7' bgs, exposing consistent 10YR 4/4 mixed with 10YR 4/6 loamy sand fill soil.

Test Pit 89

Dimensions: Width: 7.5', Length: 10'
Depth of Excavation: 4.5'
Depth of Utilities: N/A

TP89 was excavated 9.6' from the west Fifth Avenue curb from station 2+10.5' to 2+18'. Excavation exposed consistent 10YR 5/4 mixed with 10YR 5/6 loamy sand fill soil to the base of excavation at 4.5' bgs.

Test Pit 90

Dimensions: Width: 8', Length: 6'
Depth of Excavation: 4.5'
Depth of Utilities: N/A

TP90 was excavated on Fifth Avenue, 123.5' north of the Washington Square North curb and 10.4' from the east Fifth Avenue curb. All soil uncovered was consistent mottled loamy sand modern fill.

Test Pit 91

Dimensions: Width: 8', Length: 6'
Depth of Excavation: 7'
Depth of Utilities: 6.5' – 7'

TP91 was excavated on the east side of Fifth Avenue from station 1+19' to 1+25', north of Washington Square North. TP91 was opened to expose an existing 36" utility main, which was identified at 6.5' bgs. Excavation revealed one stratum of 10YR 4/2 and 4/3 loamy sand clean fill above and surrounding the sides of this existing main.

Test Pit 92

Dimensions: Width: 6', Length: 8'

Depth of Excavation: 8.5'

Depth of Utilities: 4.2' – 8.5'

TP92 was excavated 9.4 from the west Fifth Avenue curb from station 2+26' to 2+32' to locate an existing 48" utility main running north – south. Excavation revealed one consistent 10YR 4/1 to 4/2 loamy sand clean fill stratum above and surrounding this 48" main as well as a second main identified at 4.2' bgs.

Summary of Fifth Avenue Trenches: TR7, 31 S44-46, 47, 51, 56, 79, 83

Trench 7

Number of Sections: 5

Dimensions: Width: 9', Length: 100'

Depth of Excavation: 6.2'

Depth of Utilities: 1.2' – 6.2'

TR7 S1 began at the north edge of TR5, S19 in Washington Square North at its intersection with Fifth Avenue, at station 5+07', 21' south of the north Washington Square North curb. S1 extended 9' north, and S2 extended a further 12' north to the north curb line. S3 began in the west Fifth Avenue sidewalk. S3-4 each extended 25' further north, and S5 turned east into the Fifth Avenue street bed for 32' north to the trench's north terminus.

All soils documented, both in the street beds and below the sidewalk, were clean sandy fills surrounding utilities throughout the trench. A concentration of stoneware sewer pipe sherds was noted in S2 between .9' and 3' bgs within the Washington Square North street bed, originating from a defunct, damaged utility line. No intact or in situ features or artifacts were exposed.

Trench 31, Sections 44-46

Number of Sections: 3 (of 46 total for TR31)

Dimensions: Width: 10', Length: 70'

Depth of Excavation: 9'

Depth of Utilities: 1.5'+

TR31 was a long trench that began at the south side of Washington Square East, ran north, turned west down Washington Square North, and then turned north up Fifth Avenue in S1-43. TR31 S44-46 extended 70' north of the north Washington Square North curb line up Fifth Avenue. All soils

uncovered were clean sandy soil surrounding existing utility lines within the center of the Fifth Avenue street bed.

Trench 47, Sections 2-3

Number of Sections: 2 (of 3 total for TR47)
Dimensions: Width: 5', Length: 26'
Depth of Excavation: 4.7'
Depth of Utilities: 2.3' – 4'

TR47 was opened on Washington Square North at the east side of its intersection with Fifth Avenue, beginning 11.6' south of the north curb line at station 4+39.5' and running northwest to the curb. A 4' by 4' section was opened in the sidewalk 5' north of the curb, connected to the main body of the trench by tunneling below the curb. S2-3 continued north into Fifth Avenue. All soils documented were a mix of clean sandy fills, with 2.5Y 4/3 loamy sand under the sidewalk and 10YR 4/2 loamy sand below the street bed. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 51

Number of Sections: 5
Dimensions: Width: 3', Length: 126.8'
Depth of Excavation: 2.5' – 3'
Depth of Utilities: 3'+

TR51 was a narrow, 3' wide trench running parallel to, and 2' from, the east curb of Fifth Avenue. The trench extended to the Washington Mews intersection in five 25'-long sections. All soils documented were clean sandy fills atop existing utilities. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 56

Number of Sections: 1
Dimensions: Width: 4.5', Length: 26.1'
Depth of Excavation: 3'
Depth of Utilities: N/A

TR56 was excavated 1.2' from the east Fifth Avenue curb beginning 15' north of the north Washington Square North curb to connect utilities to an existing streetlight in the sidewalk. All excavated was below the Fifth Avenue street bed, revealing 10YR 6/3 coarse sand road base atop 2.5Y 4/2 coarse sand clean fill with some concrete and brick fragment inclusions. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 79

Number of Sections: 5
Dimensions: Width: 4.25' – 6.75', Length: 121'
Depth of Excavation: 5.5'
Depth of Utilities: N/A

TR79 was excavated beginning 4.25' from the south Washington Square North curb at the intersection with Fifth Avenue, its southeast corner at station 4+86.75'. It continued 121' north to TP85. TR79 significantly overlapped the backfilled TR5, and TR30. All soils documented were a variety of clean fills associated with existing utilities. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 83

Number of Sections: 3

Dimensions: Width: 6.5' – 8', Length: 90'

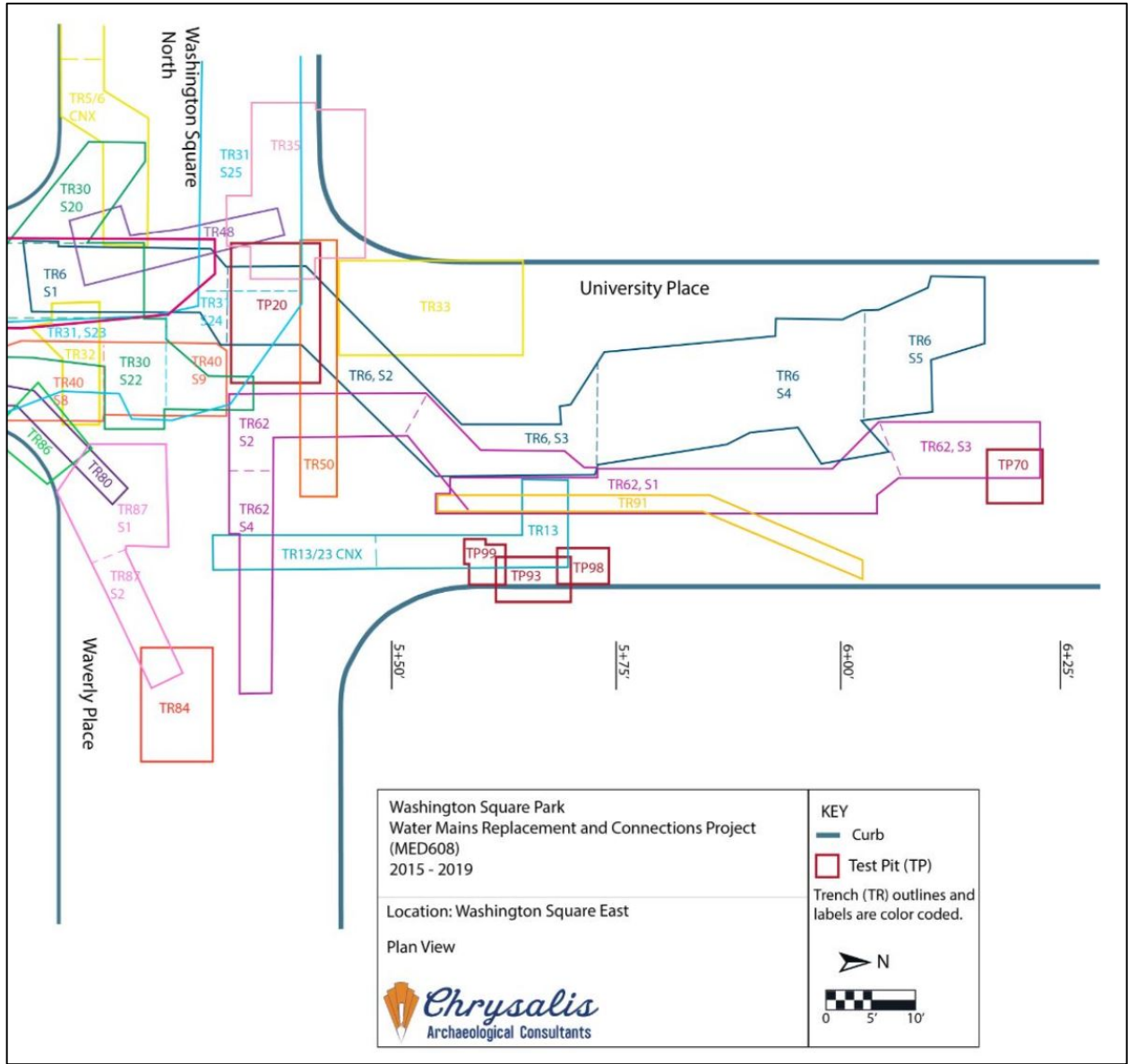
Depth of Excavation: 5.8' – 6.5' (varies)

Depth of Utilities: 1.3' – 6.5'

TR83 was excavated beginning at the southeast portion of the Washington Square North and Fifth Avenue intersection and running north along the Fifth Avenue east curb line in three roughly 30' sections. The trench widened from 6.5' in TR83 S1 to 8' in TR83 S2, to 13' in TR83 S3. TR83 S2 included a 14' offshoot west into the middle of the Fifth Avenue roadway. TR83 S1 exposed 7.5YR 5/4 loamy sand fill to the base of excavation, cut by 7.5YR 7/2 clean sand packed around existing utilities. TR83 S2-3 were largely 7.5YR 5/3 mixed with 2.5YR 6/4 loamy sand fill interrupted by clean sand fills surrounding several sets of crossing utilities. TR83 S3 was excavated over a weekend without contacting archaeological monitors – its extent and profiles were assessed on the following work day and contained no evident archaeologically sensitive material, features, or artifacts.

V.4 UNIVERSITY PLACE

Excavation at University Place extended 80' north from the Washington Square Park East intersection (Map 10). Excavation was not curb to curb, but it did extend across the street center and into a small area of the east sidewalk. University Place excavations included four test pits (TP70, 93, 98, 99) and six trenches (TR6, 33, 35, 50, 62, 91). No archaeological features, artifacts, or other archaeologically sensitive materials were exposed along University Place.



Map 10: Digitized Field Map, University Place.

Summary of University Place Test Pits: TP70, 93, 98, 99

Test Pit 70

Dimensions: Width: 6', Length: 6'
Depth of Excavation: 6'
Depth of Utilities: N/A

TP70 was opened just east of the center of the University Place roadway between Waverly Place and Washington Mews, its north wall at station 6+25'. Brick rubble was found below the road base to 3' bgs, corresponding with a matrix identified in TR62 S1 and S3 at the same area and depth. No diagnostic materials or articulated brick elements were found within this stratum. Fill soil with fragmented brick, concrete and cobble inclusions lay below this stratum to 6' bgs.

Test Pit 93

Dimensions: Width: 5.25', Length: 10.2'
Depth of Excavation: 10'
Depth of Utilities: N/A

TP93 was excavated at the east University Place curb, its south wall beginning at station 5+64' with its east wall extending 1.75' into the sidewalk. All soil within the street and sidewalk was a consistent 7/5YR 4/2 loamy sand with some pebble inclusions.

Test Pit 98

Dimensions: Width: 4.5', Length: 6.1'
Depth of Excavation: 3.6'
Depth of Utilities: N/A

TP98 was excavated at the east University Place curb, overlapping the north end of TP93. Previously unexcavated soil was fill soil with fragmented brick, pebble and cobble inclusions throughout.

Test Pit 99

Dimensions: Width: 5.15', Length: 4.65'
Depth of Excavation: 3.5'
Depth of Utilities: N/A

TP99 was excavated at the east University Place curb, its south wall 4' south of TP93 and overlapping 2' of TP93. Previously unexcavated soil was fill soil with fragmented brick, pebble and cobble inclusions throughout.

Summary of University Place Trenches: TR6, 33, 35, 50, 62, 91

Trench 6

Number of Sections: 5
Dimensions: Width: 6' – 13', Length: 110'
Depth of Excavation: 7' – 11.5'
Depth of Utilities: 1.8' – 7' (1.8' – 11.5' in TR6 S2 around sewer)

TR6 began at the southwest portion of the Washington Square East and University Place intersection at station 5+09' and continued north to the north Washington Square North curb line before turning 45 degrees northeast to run to the center of University Place in TR6 S2-3. TR6 S4 opened a 13' by 25' long north-south area across the center of the University Place street bed, and TR6 S5 turned slightly northwest to close 1.75' from the west University Place curb.

TR6 exposed a great number of utilities crossing the intersection, as well as a large brick sewer running north-south down University Place at 10' bgs. TR6 S1 reached a maximum depth of 9' bgs, TR6 S2 reached 5' bgs except where it extended to 11.3' bgs around the brick sewer, TR 6 S3 reached 7' bgs, TR6 S 4 reached 7.6' bgs, an TR 6 S 5 reached 8.5' bgs. Terminal depths were associated with locating existing utilities in each portion of the trench, and soils uncovered all were clean sandy fills that corresponded to work backfilling these existing utilities. The only exception was a small window on the east side of TR6 S5 where a shovel-dug hole to place a shoring pile exposed 10YR 5/6 sand with clay inclusions from 8.5' to 9.1' bgs. This was considered possibly natural or undisturbed soil at the time of excavation, but Project work did not expose or impact any further portions of this matrix.

Trench 33

Number of Sections: 1
Dimensions: Width: 10.6', Length: 20.5'
Depth of Excavation: 4.5'
Depth of Utilities: 1.2' – 4'

TR33 was opened on the northwest corner of the intersection of Washington Square North and University Place. The trench's west wall abutted the west University Place curb line. Numerous utilities were exposed crossing the entire excavated area, and the trench overlapped with the backfilled TR6 S2. No archaeologically sensitive material, features, or artifacts or other were exposed.

Trench 35

Number of Sections: 1
Dimensions: Width: 12.6', Length: 30'
Depth of Excavation: 6'
Depth of Utilities: 1.3' – 6'

TR35 was opened on the northwest corner of the intersection of Washington Square North and University Place. It was initially excavated in the street abutting the north curb line and was extended north, south, and west to reach an irregularly shaped 12.6' by 30' extent. TR35 exposed

an existing concrete utility box that extended to the trench floor at 6' bgs and was destroyed and replaced. Four distinct sandy fill strata were documented surrounding several different sets of existing utilities crossing the trench, and no archaeologically sensitive material, features, or artifacts were exposed.

Trench 50

Number of Sections: 1
Dimensions: Width: 4', Length: 29.1'
Depth of Excavation: 4.5'
Depth of Utilities: 1.5' – 4.25'

TR50 was opened on the northeast corner of the intersection of Washington Square North and University Place and was extended eastward over three days. Numerous utilities were exposed during excavation, and the trench overlapped with the backfilled TR6, TR35, and TP20. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 62

Number of Sections: 4
Dimensions: Width: 5' – 6.9', Length: 91'
Depth of Excavation: 7'
Depth of Utilities: 1.75' – 4.5'

TR62 was opened along the east side of University Place, beginning TR62 S1 as a large 44.5' long trench with its south end at station 5+50'. TR62 S2 turned 45 degrees southwest to station 5+34', while TR62 S3 was a 19' expansion to the north end of S1. TR62 S4 expanded TR62 S2 25' to the east.

The north side of TR62 S1 and the east side of TR62 S3 included a layer of crushed brick with brick fragments from 1.3' (directly below the concrete road base) to 3' bgs. With the alignment of TR62 S3 turning northwest, this layer may be a segment of demolition debris from a razed structure, or, more likely given the shallow depth and thin band of material less than 5' wide, debris from a demolished brick encasement for a defunct utility. All other soils encountered during TR62 were typical of utility fill found across the Project area, clean sandy fill or loamy sand fills with some pebble and brick fragment inclusions.

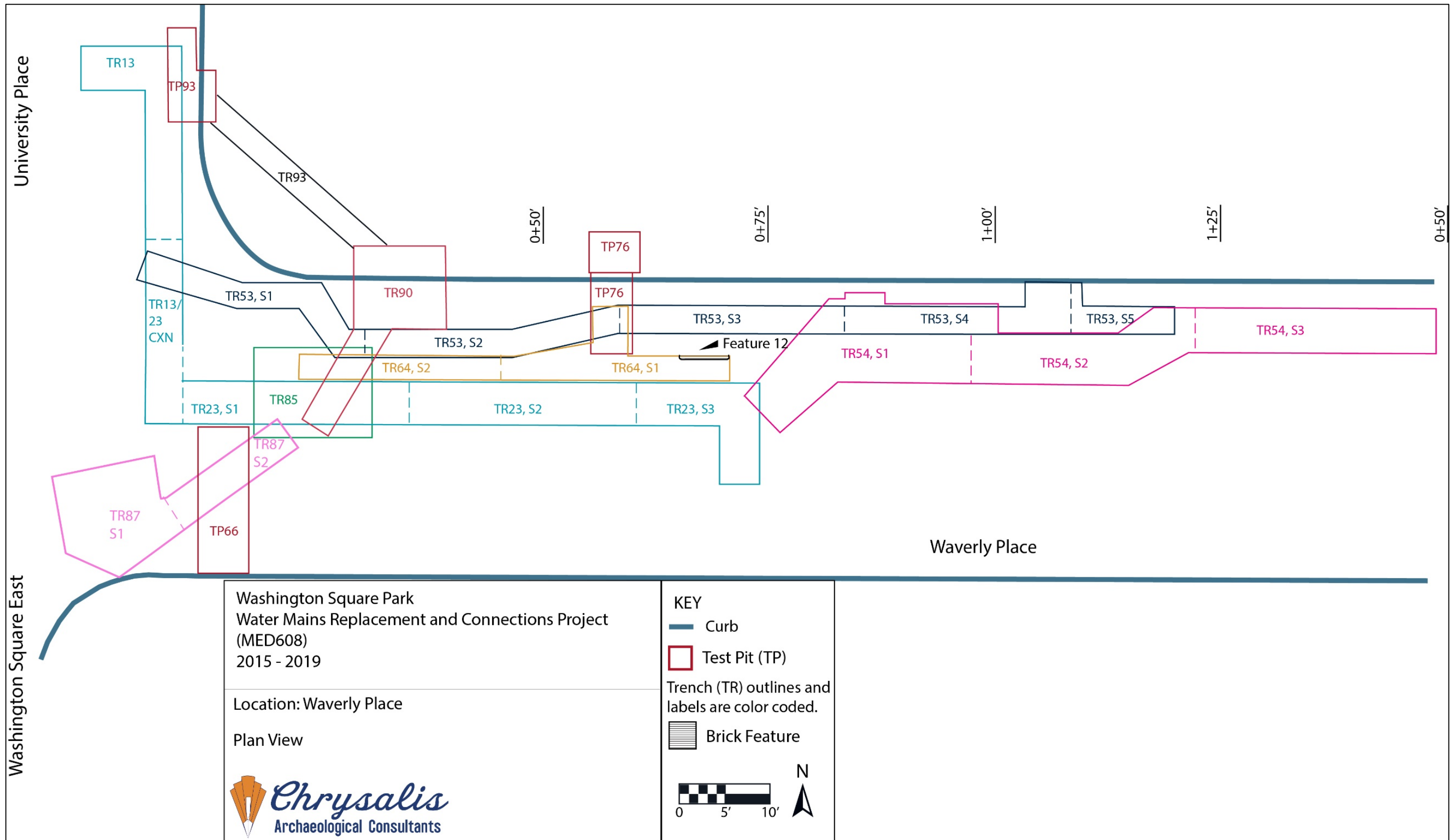
Trench 91

Number of Sections: 2
Dimensions: Width: 2', Length: 30.75'
Depth of Excavation: 2'
Depth of Utilities: N/A

TR91 was excavated on the east side of University Place, its southeast corner at station 5+57' with the trench continuing 10' north before turning northeast to the east curb line. TR91 was relatively shallow, terminating at 2' bgs, and uncovered only 10YR 4/3 loamy sand fill with some pebbles and brick fragments. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

V.5 WAVERLY PLACE

Excavation along Waverly Place extended 135' east from the University Place east curb line (Map 11). Excavation was not curb to curb but limited to following existing utilities across the north half of the Waverly Place roadway. Waverly Place excavations included 2 test pits (TP66, 76) and 10 trenches (TR13, 13/23 CNX, 23, 53, 54, 64, 85, 87, 90, 93). One feature was identified in Waverly Place excavations: Feature 12 was the top of an arched brick structure, likely a barrel-vaulted basement remnant or defunct sewer, encountered in the north profile of TR64 S1.



Map 11: Digitized Field Map, Waverly Place.

Summary of Waverly Place Test Pits: TP66, 76

Test Pit 66

Dimensions: Width: 7.1', Length: 16.6'
Depth of Excavation: 6'
Depth of Utilities: N/A

TP66 was excavated at the south Waverly Place curb, its west wall 25.3' from the east Washington Square East curb line. Excavation exposed a single matrix to 6' bgs of 7.5YR 4/3 loamy sand with pebble inclusions. An intact wine bottle with TPQ of 1940 was found at 3' bgs within this stratum.

Test Pit 76

Dimensions: Width: 5.4', Length: 13.7'
Depth of Excavation: 5.4'
Depth of Utilities: N/A

TP76 was excavated on the north side of Waverly Place, its southwest corner 55' east of the University Place east curb line. The southern part of the test pit abutted the north curb, with a 5.4' by 5.4' segment opened north of the curb in the sidewalk. All soils documented within the street bed were recent backfill and 2.5Y 4/3 loamy sand. Soil below the sidewalk was all 10YR 4/3 loamy sand fill.

Summary of Waverly Place Trenches: TR13, 13/23 CNX, 23, 53, 54, 64, 85, 87, 90, 93

Trench 13

Number of Sections: 1
Dimensions: Width: 5', Length: 21.5'
Depth of Excavation: 4.6'
Depth of Utilities: 1.7' – 4.6'

TR13 was excavated along the east University Place curb at the intersection with Waverly Place. Numerous existing utilities cross this area, surrounded entirely by clean fill soils. No archaeologically sensitive materials were exposed.

Trench 13/23 CNX

Number of Sections: 1
Dimensions: Width: 4', Length: 20.5'
Depth of Excavation: 5.5'
Depth of Utilities: 1.3' - 4'

TR13/23 CNX was excavated to join the south end of TR13 with west end of TR23 at the northeast intersection of University Place and Waverly Place. Numerous utility lines were exposed to 4' bgs, surrounded by homogenous 10YR 4/3 loamy sand fill soil. No archaeologically sensitive materials were exposed.

Trench 23

Number of Sections: 4
Dimensions: Width: 4.8', Length: 95'
Depth of Excavation: 4.5'
Depth of Utilities: 1' – 4.5'

TR23 was opened on Waverly Place, 11.6' from the north curb and even with the west University Place curb line. TR23 extended east in four 25' segments before turning northeast and terminating 3' from the north curb. Numerous existing utilities were exposed, surrounded by 7.5YR 4/3 and 10YR 4/2 loamy sand clean fill. No archaeologically sensitive materials were exposed.

Trench 53

Number of Sections: 5
Dimensions: Width: 3.5', Length: 111'
Depth of Excavation: 4.2'
Depth of Utilities: 2.8' – 4.2'

TR53 was excavated along the north side of Waverly Place beginning at the west side of TR13/23 CNX at the intersection with University Place. The 3.5' wide trench continued east in four 25' sections and one final fifth 11' section. Excavation encountered 7.5YR 4/3 and 2.5Y 4/3 loamy sand fill as well as backfill from the previously excavated TR23. No archaeologically sensitive materials were exposed.

Trench 54

Number of Sections: 4
Dimensions: Width: 5' – 5.5', Length: 97.8'
Depth of Excavation: 3.7'
Depth of Utilities: 0.4' – 2.2'

TR54 was excavated in the center of Waverly Place at station 0+60', running northeast and turning east to run parallel with, and 3' from, the north curb. Soil exposed was loamy sand fill from 1' to 3.7' throughout the trench. No archaeologically sensitive materials were exposed.

Trench 64

Number of Sections: 2
Dimensions: Width: 3.2', Length: 48.5'
Depth of Excavation: 4.6'
Depth of Utilities: 1' – 4.8'

TR64 was excavated on Waverly Place between TR23 and TR53. Soils encountered were a mix of 2.5Y 5/3 and 7.5YR 4/3 loamy sand fills. A mortared single course of bricks formed an arch, Feature 12, observed in the north wall of TR64 S1 beginning at 3.35' bgs, below a pocket of 10YR 5/1 loamy sand fill devoid of inclusions and continuing to the trench floor. The feature was not faced in a formal south terminus. An existing water line ran east – west just south of Feature 12, its installation likely having impacted the south end of the feature's original extent. East and west ends of the feature were not evident, as they extended below the trench floor. This may have been

a previously impacted barrel vault, an abandoned brick sewer, or similar structure that was previously partially destroyed. For more information about Feature 12, see Features: Non-Burial below.

Trench 85

Number of Sections: 1
Dimensions: Width: 10', Length: 13'
Depth of Excavation: 17'
Depth of Utilities: 3.4' – 13'

TR85 was excavated on the north side of Waverly Place east of the Washington Square East intersection, 6.5' east of University Place's curb line and 9.3' north of Waverly Place's curb line, for construction of a new manhole next to an existing sewer line located 9.2' to approximately 13' bgs. Excavation revealed sandy fill to the existing sewer, with a mix of 7/5YR and 5YR 4/3 reddish loamy sand with large rock, concrete, and several whole brick fragments north of the sewer line to the base of excavation at 17' bgs. Several artifacts were uncovered from sandy fill surrounding existing sewage utilities: a clear glass fragment with a translucent tint, a nail, and several ceramic utility pipe fragments. These materials came from mixed disturbed utility fill.

Trench 87

Number of Sections: 2
Dimensions: Width: 4' – 11.5', Length: 27.2'
Depth of Excavation: 6'
Depth of Utilities: 1.5' – 6'

TR87 was excavated along the south Waverly Place curb just east of TR86 to connect a manhole to a utility box created in TR85 to the northeast. TR87 S1 abutted the curb and exposed an existing concrete manhole to 6' bgs as well as numerous surrounding utilities. Also noted in the south wall was the north edge of an existing building's brick basement wall found in TR87 S1's south profile with existing utilities running into the brick. 10YR 5/4 sandy fill surrounded the entire complex exposed. TR87 S2 extended 15.7' to the northeast to TR85 and exposed 7.5YR 4/3 loamy sand fill with pebbles and small cobble inclusions to 5' bgs.

Trench 90

Number of Sections: 1
Dimensions: Width: 10', Length: 9.4'
Depth of Excavation: 10'
Depth of Utilities: 1.5' – 6'

TR90 was opened at the north side of Waverly Place, its west wall beginning at station 0+29.1' and its north side extending 3.7' into the north sidewalk. Excavation uncovered 7.5YR 4/3 loamy sand with modern refuse inclusions to 8.3' bgs and clean 7.5YR 6/3 sand to 10' bgs below the street and sidewalk. An existing semicircular brick sewer ran across the southwest trench corner from 3' to 6' bgs. A 5' long extension was made southwest, dug to 5.5' bgs into backfill from TR23, TR53, TR64, and TR85 for utility connections. No archaeologically sensitive materials were exposed.

Trench 93

Number of Sections: 1

Dimensions: Width: 2.6', Length: 25.3'

Depth of Excavation: 4'

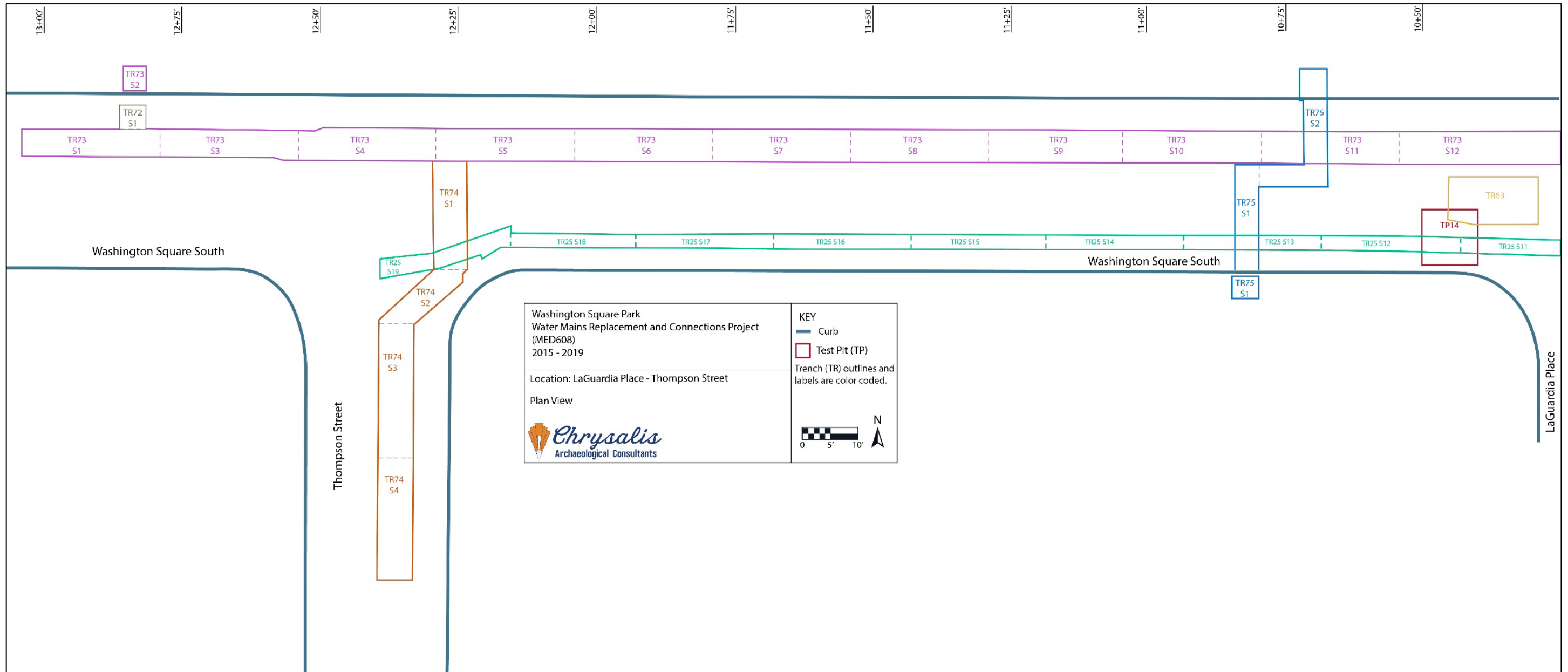
Depth of Utilities: N/A

TR93 was excavated overlapping the street and sidewalk at the northeast corner of the intersection of Waverly Place and University Place to connect catch basins installed in TP93 and TR90. It ran 25' east across the sidewalk to connect to TR90. The 10YR 4/2 loamy sand dense with pebbles found to 2.3' bgs and the adjacent 7.5YR 4/4 loamy sand with pebbles and small cobbles found to 4' bgs were consistent with underlayment for sidewalk construction. No archaeologically sensitive materials were exposed.

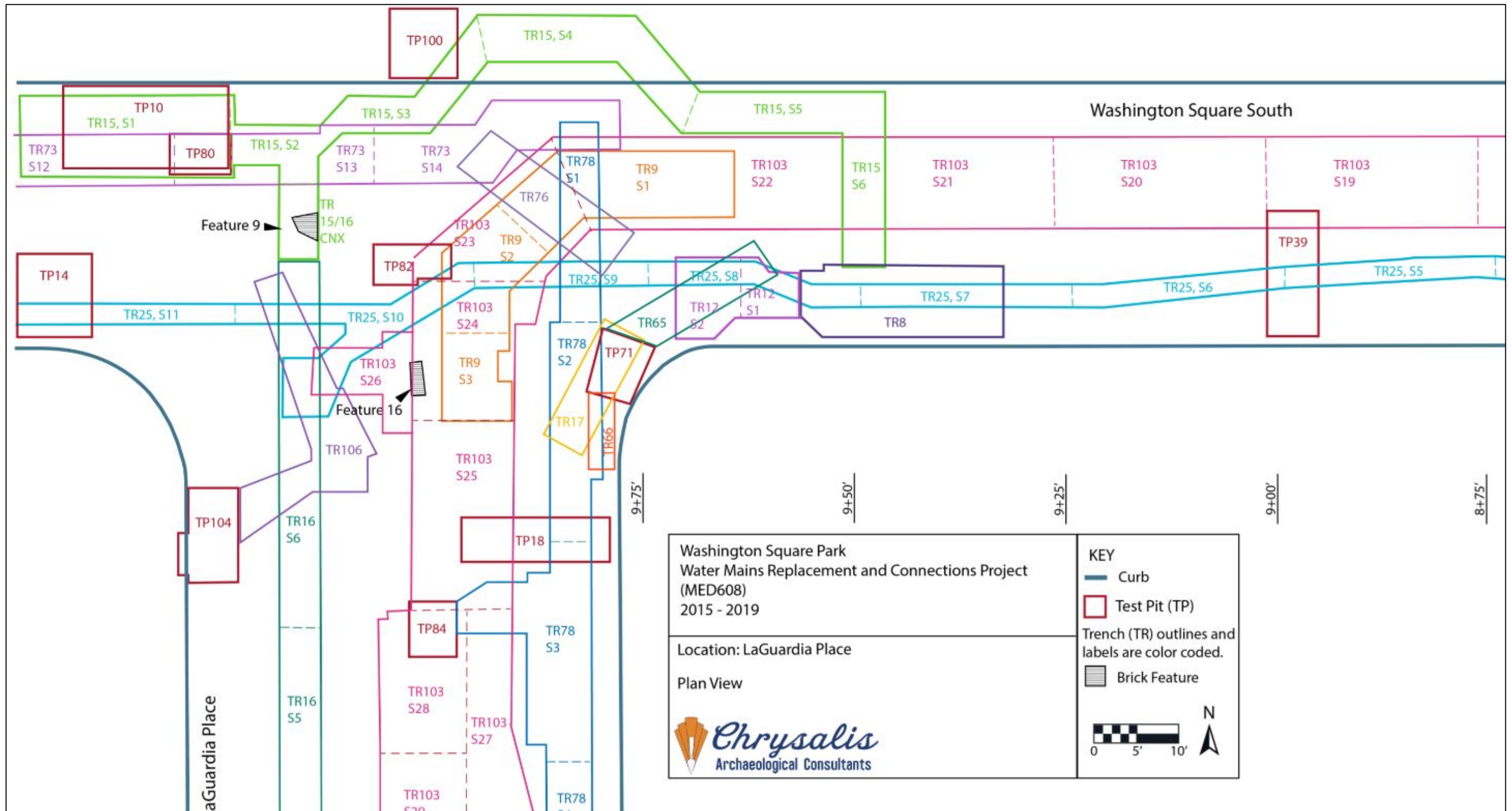
V.6 WASHINGTON SQUARE SOUTH

Excavation across Washington Square South covered most of the street bed in a series of trenches from 40' west of the intersection with Thompson Street to Washington Square South's intersection with Washington Square East, approximately 550' feet east (Maps 12-14). At this point, Washington Square South transitions to become West Fourth Street, covered separately in Section V.8. Excavation extended into the intersections of Washington Square South and Thompson Street, covered here, and Washington Square South and LaGuardia Place, covered separately in Section V.7.

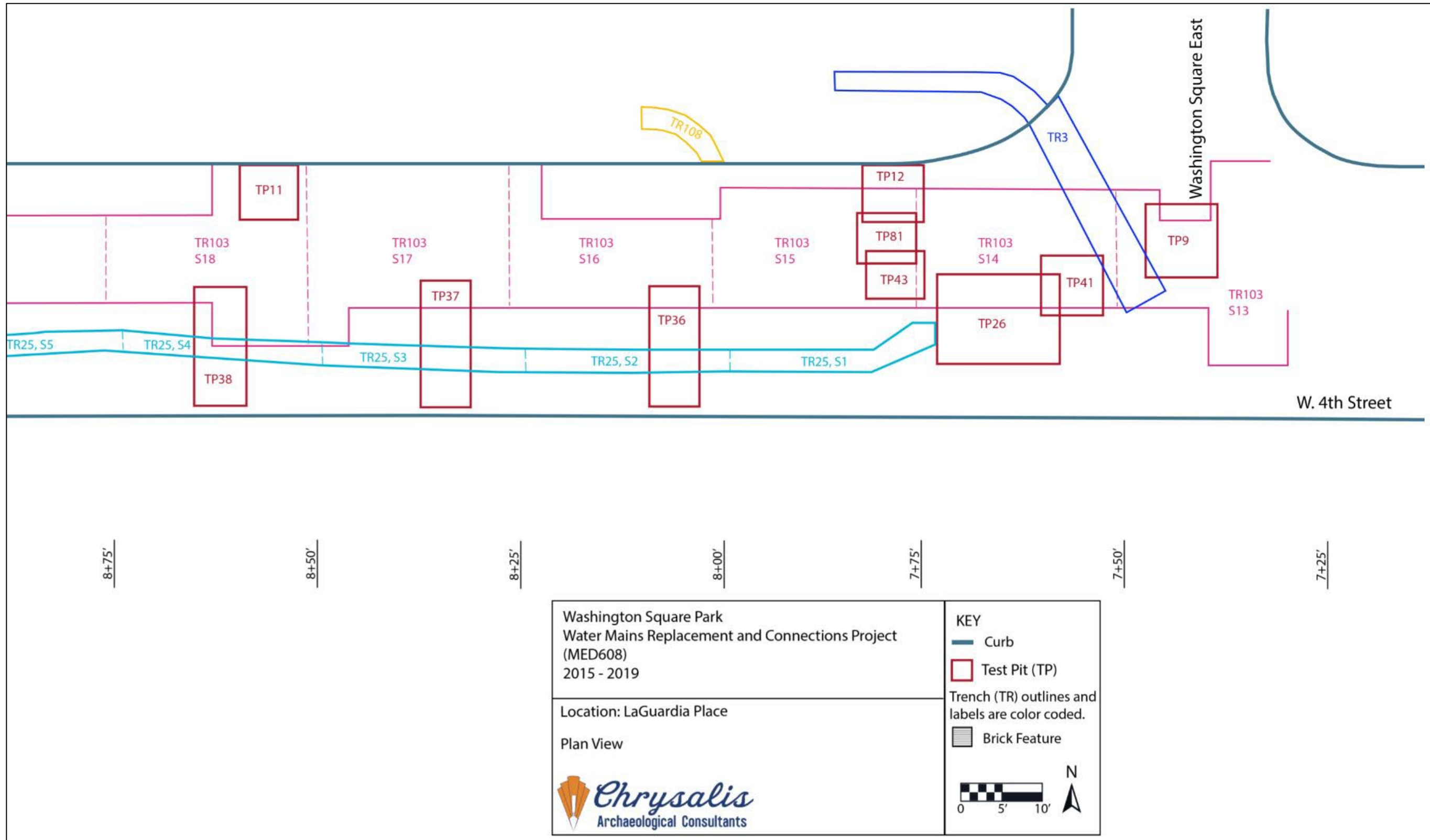
This section of the Project included 17 test pits (TP9, 10, 11, 12, 14, 26, 36, 37, 38, 39, 41, 43, 71, 80, 81, 82, 100) and 16 trenches (TR3, 8, 9, 12, 15, 15/16 CNX, 17, 25, 63, 65, 66, 73, 74, 75, 76, 103 S14-S23). Two features were documented in this area: Feature 9, a previously impacted mortared brick structure in TR15/16 CNX and Feature 15, a concrete slab in TR 103 S17/18 that proved to be a utility elements.



Map 12: Digitized Field Map, Washington Square South, segment 1 of 3.



Map 13: Digitized Field Map, Washington Square South, segment 2 of 3



Map 14: Digitized Field Map, Washington Square South, segment 3 of 3.

Summary of Washington Square South Test Pits: TP9, 10, 11, 12, 14, 26, 36, 37, 38, 39, 41, 43, 71, 80, 81, 82, 100

Test Pit 9

Dimensions: Width: 9', Length: 9'
Depth of Excavation: 10.5'
Depth of Utilities: 2' – 10.5'

TP9 was excavated in the middle of the Washington Square South and Washington Square East intersection, its northeast corner 6' from the east Washington Square East curb line and 5' from the West Fourth Street north curb line. The entire area was dense with existing water, gas, and electric utilities. Clean fill predominated to 2' bgs, overlaying a 7.5YR 4/2 sandy layer dense with angular pebbles, concrete fragments, and disarticulated Belgian block cobbles to 3' bgs. This layer may represent a variety of materials redeposited after a series of impacts to a previous cobble road surface. Below this was 7.5YR 4/3 sandy mixed fill to the base of excavation, surrounding numerous existing utilities to 10.5' bgs.

Test Pit 10

Dimensions: Width: 6.5', Length: 20.5'
Depth of Excavation: 4.1'
Depth of Utilities: 2' – 4.1'

TP10 was excavated along the north Washington Square South curb, its east side 5.5' east of the west LaGuardia Place curb line. It contained a dense network of existing utilities from 2' bgs to its floor at 4.1' bgs, surrounded by a variety of clean sandy fill soils. No archaeologically sensitive materials were exposed.

Test Pit 11

Dimensions: Width: 7', Length: 7'
Depth of Excavation: 2.8'
Depth of Utilities: 1.5' – 2.8'

TP11 was excavated alongside the north Washington Square South curb line between LaGuardia Place and Washington Square East. TP11 was laid out as a square, but only the center portion was fully excavated to 2.8' bgs to identify the depth and location of an existing gas utility. Consistent fill soil with fragmented brick, concrete, and cobble inclusions was found surrounding utilities throughout the test pit.

Test Pit 12

Dimensions: Width: 7.5', Length: 7.5'
Depth of Excavation: 3.3'
Depth of Utilities: 2.9' – 3.3'

TP12 was excavated alongside the north Washington Square South curb line, its east side beginning at station 7+75' just west of the intersection with Washington Square Est. TP12 was laid out as a square, but only the center was fully excavated to 3.3' bgs to identify the depth and

location of an existing gas utility. Consistent fill soil with fragmented brick, concrete and cobble inclusions was found surrounding utilities throughout the test pit.

Test Pit 14

Dimensions: Width: 10', Length: 10'
Depth of Excavation: 5.5'
Depth of Utilities: 3.15' – 5.5'

TP14 was excavated at the southwest portion of the Washington Square South and LaGuardia Place intersection, its southeast corner 1.5' from the south curb and 4' from the west LaGuardia Place curb line, to locate an existing gas utility. Excavation revealed clean fill and mixed redeposited fill soil with fragmented brick, concrete, and cobble inclusions with 1970s bottle class noted from 1.3 to 5.5' bgs.

Test Pit 26

Dimensions: Width: 11', Length: 15'
Depth of Excavation: 4.1'
Depth of Utilities: 1' – 4.1'

TP26 was excavated around an existing concrete utility vault at the intersection of Washington Square South and Washington Square East, 6.5' north of the south curb line. Two different sandy fill soil deposits were found surrounding the utility vault, a reddish 7.5YR 4/4 loamy sand around the north side and a 2.5Y 5/4 loamy sand around the south side.

Test Pit 36

Dimensions: Width: 6', Length: 15'
Depth of Excavation: 7.5'
Depth of Utilities: 2' – 4.5'

TP36 was excavated on Washington Square South between LaGuardia Place and Washington Square East, its east side beginning just past station 8+00' along the south curb. TP36 was excavated to locate an existing gas utility, along with TPs 37 – 39. Documented within TP36 were three layers of clean fill soil with fragmented brick, concrete and cobble inclusions in the center stratum from 2' to 4' bgs.

Test Pit 37

Dimensions: Width: 15.9', Length: 6.25'
Depth of Excavation: 7.9'
Depth of Utilities: 2' – 7.5'

TP37 was excavated on Washington Square South between LaGuardia Place and Washington Square East, its east side beginning at station 8+30' along the south curb. TP37 was excavated to locate an existing gas utility, along with TP36, TP38, and TP39. Documented within TP37 were four layers of clean fill soil surrounding several levels of previous utility excavations and old wood sheeting from previous utility installs.

Test Pit 38

Dimensions: Width: 15', Length: 6.16'
Depth of Excavation: 6'
Depth of Utilities: 1.5' – 5'

TP38 was excavated on Washington Square South between LaGuardia Place and Washington Square East, its east side beginning at station 8+60' along the south curb. TP38 was excavated to locate an existing gas utility, along with TP36, TP37, and TP39. Documented within TP38 were four layers of clean fill soil surrounding several levels of previous utility excavations and old wood sheeting from previous utility installs, like the strata noted further east.

Test Pit 39

Dimensions: Width: 15', Length: 6'
Depth of Excavation: 5.8'
Depth of Utilities: 2' – 4.5'

TP39 was excavated on Washington Square South between LaGuardia Place and Washington Square East, its east side beginning at station 8+95' along the south curb. TP39 was excavated to locate an existing gas utility, along with TP36 – 38. Documented within TP39 were five layers of clean fill soil surrounding several levels of previous utility excavations and old wood sheeting from previous utility installs.

Test Pit 41

Dimensions: Width: 7.42', Length: 7.5'
Depth of Excavation: 7'
Depth of Utilities: 2' – 6'

TP41 was excavated at the northwest corner of Washington Square East and Washington Square South, after abandoning TP40 because of space constrictions to locate an existing water main. Its east wall began at station 7+52.75'. The test pit was dense with existing utilities, and all documented soil within was three strata of clean loamy sand fill.

Test Pit 43

Dimensions: Width: 6', Length: 8'
Depth of Excavation: 8.5'
Depth of Utilities: 5' – 6.5'

TP 43 was excavated west of the intersection of Washington Square South and Washington Square East, its east side beginning at station 7+76' at 14.5' north of the south curb. Documented within were four strata of clean fill soil overlying and surrounding an existing 20" utility pipe.

Test Pit 71

Dimensions: Width: 7', Length: 7.9'
Depth of Excavation: 7.6'
Depth of Utilities: N/A

TP71 was excavated at the southeast corner of the Washington Square South and LaGuardia Place intersection. The majority of TP71 overlapped with the former location of TR17. Consistent 7.5YR 4/3 loamy fill soil with pebbles, cobbles, fragmented brick, and asphalt inclusions was found throughout the test pit.

Test Pit 80

Dimensions: Width: 8', Length: 6'
Depth of Excavation: 6'
Depth of Utilities: 1.9' – 2.5'

TP80 was excavated at the northwest intersection of Washington Square South and LaGuardia Place, its west side at 10+30.8' and 6' from the north curb. The majority of TP80 overlapped with the former location of TR15. All soil documented was loamy sand fill soil with fragmented brick, pebbles and cobble inclusions.

Test Pit 81

Dimensions: Width: 6.3', Length: 7.4'
Depth of Excavation: 6.1'
Depth of Utilities: 4' – 6.1'

TP81 was excavated at the northwest intersection of Washington Square South and Washington Square East, its east side beginning at station 7+76'. TP81 overlapped with the locations of backfilled TP12 and TP43. All documented soil was 7.5YR 4/3 loamy sand fill with pebbles and small cobble inclusions above and surrounding existing utilities.

Test Pit 82

Dimensions: Width: 4.7', Length: 9.3'
Depth of Excavation: 6.5'
Depth of Utilities: 3.7' – 6'

TP82 was excavated within the intersection of Washington Square South and LaGuardia Place, its west wall beginning at station 10+07'. TP82 overlapped with the location of backfilled TR25. All documented soil was 10YR 4/2 loamy sand with fragmented brick, pebbles and small cobble inclusions surrounding existing utilities.

Test Pit 100

Dimensions: Width: 8', Length: 8'
Depth of Excavation: 6'
Depth of Utilities: 3.3' – 6'

TP100 was excavated north of the Washington Square South curb at the intersection of Washington Square South and LaGuardia Place, its east wall at station 9+97', overlapping with the former location of TR15 in the southeast corner. The easternmost 6.4' of the test pit contained 7.5YR 4/3 loamy sand from below the sidewalk to its base of excavation at 6' bgs. The westernmost 1.6' of the test pit contained 7.5YR 2.5/1 loamy sand with brick fragments from

below the sidewalk to its base of excavation at 6' bgs. This material was not associated with any identifiable intact features or diagnostic materials.

Summary of Washington Square South Trenches: TR3, 8, 9, 12, 15, 15/16 CNX, 17, 25, 63, 65, 66, 73, 74, 75, 76, 103 S14-S23

Trench 3

Number of Sections: 1
Dimensions: Width: 7', Length: 45'
Depth of Excavation: 2.5' (below sidewalk), 4.5'
Depth of Utilities: 1' – 4.5'

TR3 was excavated at the northwest corner of the Washington Square South and Washington Square East intersection, extending 25' east – west across the sidewalk in a 2.5'-wide excavation and turning southeast to end 12' from the south curb. Excavation in the sidewalk terminated at 2.5' bgs atop an extensive row of concrete encased ducts, while excavation of the street bed and intersection revealed four sets of utility banks surrounded by two clean fill sand strata. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 8

Number of Sections: 1
Dimensions: Width: 8.5', Length: 38'
Depth of Excavation: 9.75'
Depth of Utilities: 1.75' – 9'

TR8 was excavated at the south side of Washington Square South just east of LaGuardia Place, its east side beginning at station 9+32', .9' from the south curb. TR8 exposed a series of existing utilities along the south side of Washington Square South from 1.75' to 9' bgs, surrounded by two strata of sandy fill. A third soil stratum ran along the southern 1' of TR8, a darker 10YR 4/2 sandy loam that was not associated with utilities but did not contain artifacts or inclusions.

Trench 9

Number of Sections: 3
Dimensions: Width: 8', Length: 50.5'
Depth of Excavation: 10'
Depth of Utilities: 1.5' – 7'

TR9 was excavated at the east side of the intersection of Washington Square South and LaGuardia Place, the east side of its first section beginning at station 9+64', its north side 8' from the north curb. TR9 continued 21' west before turning 6' south. Its second section continued southwest an additional 13.5', and its third section ended 10' further south. TR9 S1 was excavated to 4.5' bgs through five strata of clean sandy fills; TR9 S2 was excavated to 10' bgs through one stratum of clean sandy fill; TR9 S3 was excavated to 5.2' bgs through two strata of clean fill with concrete fragment inclusions. A dense network of utilities filled all three sections of TR9 from 1.5' to 7'

bgs, with most fills found representing new added clean fill or redeposited soils around previous utility work.

Trench 12

Number of Sections: 2
Dimensions: Width: 5.3' – 9.4', Length: 17'
Depth of Excavation: 7'
Depth of Utilities: 1.7' – 5.5'

TR12 was opened as the westward extension of TR8 on Washington Square South, its east side beginning at station 9+53' and 3.7' from the south curb, and it continued west for 17' in two sections. Numerous utilities were exposed in TR12 to near the base of excavation, surrounded by and underlaid by clean sandy fill strata.

Trench 15

Number of Sections: 6
Dimensions: Width: 5' – 11', Length: 65'
Depth of Excavation: 4.1' (6.2' in TR15 S1)
Depth of Utilities: 2.1' – 4.5'

TR15 was opened at the northwest part of the intersection of Washington Square South and LaGuardia Place, initially as a 11' by 26' area with its northwest corner beginning at station 10+50' at 1.4' south of the north curb. TR15 was expanded east in 5' wide (north-south) segments, running north into the north Washington Square South sidewalk in S3-4, turning back southeast to run parallel to the north curb in the street bed in S5, and turning south for 14.3' to reach the northwest corner of TR8. While TR15 S1 terminated at 6.2' bgs, TR15 S2-6 were shallower, reaching only to 4.1' bgs.

While utilities were less densely packed in this area compared to the south side of Washington Square South and its intersections with LaGuardia and Washington Square East, soils revealed in the street bed continued to include a mix of deposits of clean sandy fill soils that seemed to correspond to installation and backfilling of several existing utility lines. The only material with any notable inclusions was a 10YR 4/2 sandy matrix from 1.7' to 2.5' bgs in TR15 S2 that included undiagnostic brick fragments with concrete and pebbles. Clean fill sand underlaid this stratum. Soils below the sidewalk in TR15 S3-4 were slightly lighter in color but were also clean fill strata without inclusions.

Trench 15/16 Connection

Number of Sections: 1
Dimensions: Width: 4.8', Length: 25'
Depth of Excavation: 5.5'
Depth of Utilities: 1.9' – 3'

TR15/16 CNX ran north-south on Washington Square South at the northwest part of its intersection with LaGuardia Place, connecting TR15 S2 to the north with TR16. TR15/16 CNX excavation revealed 10YR 5/6 sand directly under the road base to 1.6' bgs.

Feature 9, a mortared brick structure, appeared below this at 1.6' bgs, beginning 13.9' south of the north Washington Square South curb and continuing south for 5'. North of Feature 9 was a 7.5YR 4/2 sand matrix with pebbles, concrete fragment, and brick fragment inclusions as well as several stoneware pipe fragments. Concrete inclusions suggest this stratum had been previously impacted or was redeposited here. South of Feature 9 was 7.5YR 4/2 sand clean fill without inclusions surrounding a network of existing utilities.

Trench 17

Number of Sections: 1
Dimensions: Width: 5.3', Length: 15.5'
Depth of Excavation: 6'
Depth of Utilities: 2.2' – 5.5'

TR17 was opened at the southeast corner of the intersection of LaGuardia Place and Washington Square South. TR17 was oriented southwest by northeast and was dense with utilities throughout its extent. Three distinct clean sandy fills surrounded three sets of utilities in the trench. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 25

Number of Sections: 19
Dimensions: Width: 3', Length: 470'
Depth of Excavation: 2.7' – 3.7' (4.5' in TR25 S19)
Depth of Utilities: 1.7' – 3'

TR25 began just west of Washington Square South's intersection with Washington Square East at station 7+75', in the center of the road 9' from the south curb line. TR25 continued west 470' in 19 25'-long sections generally running parallel to the south curb. This trench was excavated to relatively shallow depths, generally terminating at 2.7' to 3.7' bgs but extending to 4.5' bgs in TR25 S19.

Few utilities were found within TR25, but soils within the trench were clean fills ranging from 2.5Y 4/3 to 10YR 4/2 sands that have been associated with utility trench fill throughout Project street excavation. Pockets of 7.5YR 4/2 loamy sand with pebbles, brick fragments, concrete fragments, and scrap wood from previous excavation trench shoring in TR25 S1-2 from 1.6' to 3.7' bgs, lightening to 10YR 4/2 loamy sand in TR25 S5-6, were the only notable strata with inclusions. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 63

Number of Sections: 1
Dimensions: Width: 8.5', Length: 16.5'
Depth of Excavation: 5'
Depth of Utilities: 1' – 5'

TR63 was excavated at the southwest Washington Square South and LaGuardia Place intersection 8.5' from the south curb to expose an existing manhole and utility box. Excavation revealed two clean fill strata on the east and west side of the box, each surrounding existing utilities.

Trench 65

Number of Sections: 1
Dimensions: Width: 5', Length: 18.8'
Depth of Excavation: 7'
Depth of Utilities: 1.7' – 5.5'

TR65 was opened extending northeast from TP71 on the southeast side of the intersection of Washington Square South and LaGuardia Place. Its southeast corner was 8.5' from the south curb line at station 9+59'. While most of this trench overlapped the previously backfilled TR12, the areas where it extended past this footprint exposed more clean modern fill soil and a continuation of a dense network of utilities. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 66

Number of Sections: 1
Dimensions: Width: 3.1', Length: 8.4'
Depth of Excavation: 3.5'
Depth of Utilities: N/A

TR66 was opened along the east LaGuardia Place sidewalk at the southeast intersection of Washington Square South and LaGuardia Place. TR66 abutted the southwest side of TP71 and overlapped with the previously backfilled TR17. Excavation to 3.5' bgs revealed only gravel and modern fill. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 73

Number of Sections: 14
Dimensions: Width: 5' – 7', Length: 329'
Depth of Excavation: 6'
Depth of Utilities: 1.25' – 5.5'

TR73 was excavated on the north side of Washington Square South, its west wall beginning at station 13+04' between Thompson Street and Sullivan Street 6.5' from the north curb. TR73 S2 was formed by an extension north to run 5' into the sidewalk. The main body of TR73 ran east in 12 additional 25'-long sections, parallel to the north curb, terminating at the east side of the Washington Square South and LaGuardia Place intersection.

TR73 followed several large utility line east down Washington Square South, the main lines laying at 3.2' and 4.2' bgs, separated by thin wooden shoring planks that appear to have been left in place following previously excavation work to install these lines. Another shallow utility duct bank was documented in the TR73 S2 extension north alongside the modern curb line at 1.25' bgs. Multiple clean fill soils were documented throughout TR73 corresponding to the various utility installation

episodes. In TR73 S13, an intact wine flask and intact beer bottle with TPQs of 1905 and 1938, respectively, were recovered from 7.5YR 4/3 loamy sand fill associated with the southernmost large east-west utility main, indicating early- to mid-twentieth century utility construction. TR73 overlapped the locations of previously backfilled TR15, TR15/16 CNX, and TP80.

Trench 74

Number of Sections: 4
Dimensions: Width: 6.5, Length: 80'
Depth of Excavation: 10'
Depth of Utilities: 1.5' – 6'

TR74 ran south on Thompson Street from its origin at the south side of TR73 S5 on Washington Square South. The trench turned slightly southwest in its second section to run south 6.5' from, and parallel to, the Thompson Street east curb. The trench uncovered several shallow utilities and followed two existing utility lines running south at 3' bgs and 5' bgs. All soil around these lines was a 7.5YR 4/3 loamy sand with pebbles and small cobble inclusions that extended to 10' bgs. TR74 S1 extended to 10' bgs, but TR74 S2-4 terminated at 7' bgs. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 75

Number of Sections: 2
Dimensions: Width: 4.3', Length: 58.5'
Depth of Excavation: 5.5'
Depth of Utilities: 2.7' – 4'

TR75 was excavated on Washington Square South between LaGuardia Place and Thompson Street, its initial east wall at station 10+79.5' along the south curb. TR75 S1 included a 4.7' extension into the south sidewalk, while the remaining portion of the trench ran north and turned 90 degrees east, then 90 degrees north again, to reach the north Washington Square South curb and continue 5.3' into the north sidewalk. TR75 S1 revealed coarse sands under the sidewalk and 7.5YR 4/3 loamy sand below the street bed. TR75 S2 revealed the same loamy sand fill below the street bed. The north sidewalk excavation revealed 2.5Y 4/2 loamy sand above a continuation of the 7.5YR 4/3 loamy sand found in the street. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 76

Number of Sections: 1
Dimensions: Width: 6', Length: 20.9'
Depth of Excavation: 6.25'
Depth of Utilities: N/A

TR76 was opened in the intersection of Washington Square South and LaGuardia Place, oriented northwest to southeast. The trench overlapped the locations of backfilled TR9, TR25, and TR73 and primary exposed Project backfill soils and remnants of previously identified clean fill strata. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 103, Sections 14-23

Number of Sections: 10 (of 31 total for TR103)

Dimensions: Width: 15', Length: 251'

Depth of Excavation: 8' – 13.75'

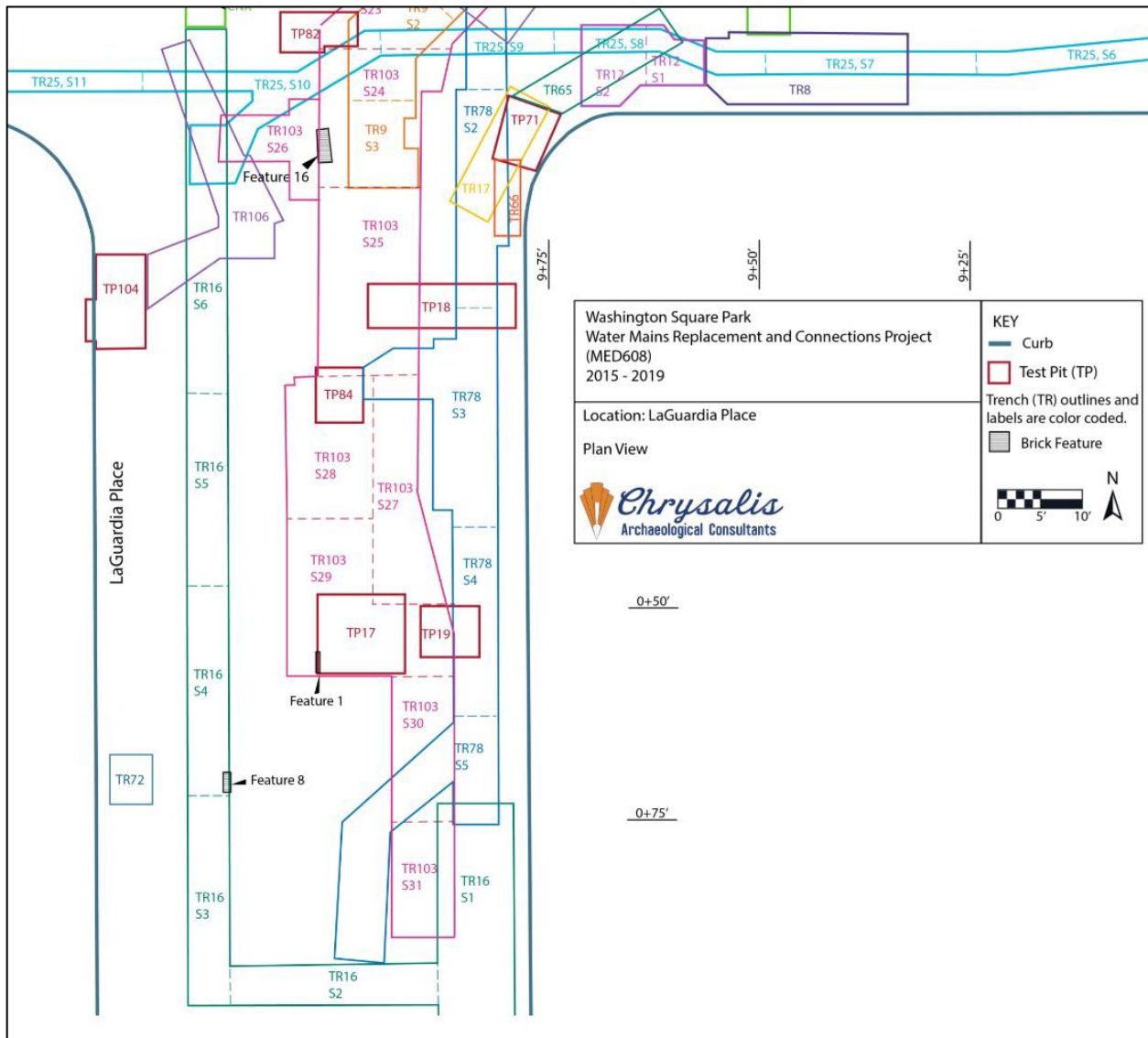
Depth of Utilities: 1.4' – 7.5' bgs

TR103 began east of the West Fourth Street and Washington Square East intersection and extended into this section at TR103S14, as West Fourth Street transitions into Washington Square South. See V.8 West Fourth Street for TR103 S1-S13. TR103 S14 occupied most of the north half of the Washington Square South roadway beginning at its intersection with Washington Square East, extending to 7' from the north curb. TR103 S16-S18 extended north to reach the north curb line, while further east the trench again ran parallel to and 7' from the north curb. Beginning at S23, the trench turned south to run south down LaGuardia Place.

TR103 S14-23 crossed numerous test pits and five trenches that had been previously backfilled. Besides modern backfill from these areas, excavation revealed 10YR 4/4 loamy sand clean fill underlying the modern road base to 2' bgs above 7.5YR 4/3 – 4/4 loamy sand fill with brick fragment, pebble, and cobble inclusions to the base of excavation between 8' and 13.75' bgs. Numerous utilities were exposed, especially in higher concentration in TR103 S14-S15 and TR103 S21-S23 at Washington Square South's intersections with Washington Square East and LaGuardia Place.

V.7 LAGUARDIA PLACE

Excavations at LaGuardia Place extended 100' south of Washington Square South and focused mostly on sections of the east and west sides of the street without curb to curb excavation (Map 15). LaGuardia Place excavations included five test pits (TP17, 18, 19, 84, 104) and five trenches (TR16, 72, 78, 103 S24-S31, 106, 108). Three features were identified in this area: Feature 1, a brick structure segment in TP17; Feature 8, a possible brick vault section in TR16 S4; and Feature 16, a brick structure segment possibly related to utilities in TR103 S24.



Map 15: Digitized Field Map, LaGuardia Place.

Summary of LaGuardia Place Test Pits: TP17, 18, 19, 84, 104

Test Pit 17

Dimensions: Width: 10.5', Length: 9.5'
Depth of Excavation: 9.6'
Depth of Utilities: 4.5' – 8'

TP17 was excavated 41' south of the southeast Washington Square South and LaGuardia Place intersection curb radius, its east side 14.5' from the east LaGuardia Place curb. Several large utilities occupied the test pit surrounded by 7.5YR 4/3 loamy sand and 7.5YR 6/3 silty sand fills to 8' bgs. From 8' to 8.5' bgs, 5Y 4/3 sand appeared that contained some brick fragments. From 8.5' to the base of excavation at 9.6' bgs, 7.5YR 4/3 sand appeared that contained a high concentration of brick fragments, whole bricks measuring 8" by 4" by 2.5", disarticulated schist blocks of approximately 1' by 1' size, mortar fragments with possible plaster or mortar facing, and few 1"-thick marble facing fragments. This lowest stratum was likely either remnant of or sourced from building demolition.

Feature 1 appeared at the southwest corner of TP17, a 3' wide remnant of intact brick and mortar wall from 8.8' to 9.6' bgs. This was visible in west profile and not within the test pit footprint. It could not be determined if Feature 1 was an in situ wall segment or a large fragment of partially razed wall that has been deposited into the demo-laden fill at this depth. See Features: Non-Burial discussion below for more information.

Test Pit 18

Dimensions: Width: 17', Length: 5.5'
Depth of Excavation: 5.6'
Depth of Utilities: N/A

TP18 was excavated on the southeast side of the Washington Square South and LaGuardia Place intersection, its east side beginning 1.5' from the east LaGuardia Place curb. Fill soil encountered throughout the test pit, with pebbles and small brick fragment inclusions within the eastern 8' of the test pit.

Test Pit 19

Dimensions: Width: 6', Length: 7'
Depth of Excavation: 4'
Depth of Utilities: 4'

TP19 was excavated on the east side of LaGuardia Place, its east side 6' from the east curb line and beginning 42.5' from the Washington Square South and LaGuardia Place southeast curb radius. Excavation revealed a 7.5YR 4/3 loamy sand fill soil with fragmented brick, concrete and cobble inclusions throughout. TP19 terminated at a wood-encased north-south utility in the west half of the test pit floor.

Test Pit 84

Dimensions: Width: 5.5', Length: 5.3'
Depth of Excavation: 5.5'
Depth of Utilities: 5' – 5.5'

TP84 was opened near the center of LaGuardia Place, its east wall 19.75' from the east LaGuardia Place curb and its north wall at station 0+21.5'. Soils documented were a 10YR 4/3 loamy sand modern fill to 4.8' bgs atop 10YR 5/6 sandy fill around a metal utility line.

Test Pit 104

Dimensions: Width: 6.7', Length: 8'
Depth of Excavation: 5.5'
Depth of Utilities: 4.5' – 5.5'

TP104 was excavated on the west side of LaGuardia Place just south of the Washington Square South and LaGuardia Place southwest curb radius, abutting the west curb line. A 5' section on the test pit's west side was extended .7' west into the sidewalk. Excavation identified two north – south utilities in the test pit center at 4.5' bgs, surrounded and overlaid by clean fill soil.

Summary of LaGuardia Place Trenches: TR16, 72, 78, 103 S24-S31, 106, 108

Trench 16

Number of Sections: 6
Dimensions: Width: 5' – 9', Length: 161.5'
Depth of Excavation: 6.2'
Depth of Utilities: 1.7' – 4'

TR16 S1 began as a 9' by 27' north-south excavation area at the east side of LaGuardia Place, its north side beginning at station 0+72.5' and its east side 1.9' from the east curb. Utilities crossed this area from 2.5' to 4' bgs within four sandy fill strata. TR16 S2 extended 25' west from this initial portion of the trench in a 5' wide north-south run. TR16 S2 excavation revealed numerous additional utilities running north-south from 1.7' to 2.8' bgs surrounded by loamy sand fill, as well as 7.5YR 4/2 loamy sand historic fill below this with a higher density of brick inclusions as well as blue transfer-printed ceramic and possible white granite hotel ware from 1.4' (where not impacted by utilities) to 5.3' bgs. The south profile contained disturbed whole bricks and mortar fragments that could represent demolition of a previously intact structure at these depths.

TR16 S3 turned 90 degrees to run north up LaGuardia Place for TR16 S3-6, TR16's west side 11' from the west curb. The shallower portions of the trench held utilities to 3' bgs here, but soil below and outside of these utility disturbances appeared to be historic fill ranging from 7.5YR 4/2 to 4/6 loamy sand with some brick and cobble inclusions from 2.8' to the trench floor from 3.8' to 4' bgs. Feature 8 appeared at 2.3' bgs in the east wall of TR16 S4, a previously disturbed single course of brick and mortar, possibly forming a barrel vault arch segment from station 0+71.25' to 0+68.25'. Two 4" pipes ran east-west through the vaulted brick. A 10YR 4/6 loamy sand matrix lay below the vaulted brick, which yielded grey salt-glazed stoneware, thick window glass, and

white granite ceramics. See Features: Non-Burial section below for more information about Feature 8.

Historic fill strata tapered off in TR16 S5, present from 3.4' to base of excavation at 4' bgs. Multiple utilities filled the final section of TR16, surrounded by clean fill soils to the base of excavation at 4' bgs.

Trench 72

Number of Sections: 1
Dimensions: Width: 6', Length: 5'
Depth of Excavation: 4'
Depth of Utilities: 1' – 4'

TR72 was opened around an existing brick and mortar manhole on the west side of the LaGuardia Place street bed, its south was at station 0+72'. The brick manhole had a cement floor at 3.5' bgs and had been previously partially disassembled for existing utility connections. It was surrounded and partially filled by 10YR 4/3 loamy sand fill. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 78

Number of Sections: 5
Dimensions: Width: 5' – 7.65', Length: 96.5'
Depth of Excavation: 5.2' – 6.5'
Depth of Utilities: N/A

TR78 began 4.7' from the Washington Square South north curb and ran south parallel to LaGuardia Place's east curb for 96.5' in five sections. TR78 S1 almost entirely overlapped the locations of previously backfilled TR9, TR23, TR75 and TR76. Portions of TR78 S2 overlapped previously backfilled TR17, TR66, TP18, and TP71. In previously unexcavated areas the 7.5YR 4/3 loamy sand fill noted through this east side of LaGuardia Place was encountered to the base of excavation, 5.5' (to 6.5' in TR78 S2). No archaeological features, artifacts, or otherwise archaeologically sensitive materials were exposed.

Trench 103, Sections 24-31

Number of Sections: 8 (of 31 total for TR103)
Dimensions: Width: 15', Length: 107'
Depth of Excavation: 4.5' – '
Depth of Utilities: 1.4' – 7.5' bgs

TR103 began on West Fourth Street east of Washington Square East and ran west through the street's transition to Washington Square South before turning south onto LaGuardia Place. TR103 S24-S31 ran 107' south down the east half of LaGuardia Place, 8.5' to 12' from the east curb. TR103 S24-S31 were irregularly shaped rather than 25' sections, as generally smaller areas were opened, excavated, then backfilled or covered with road plates for days or weeks until utility work could be completed in the area.

Soils exposed in TR103 S24-S31 were generally consistent with those exposed in TR103 across West Fourth Street and Washington Square South: clean sandy fill directly below the road base atop slightly redder 7.5YR 4/2 – 4/4 loamy sand fill with pebbles, cobbles, and brick fragments to the base of excavation. Trench depth in this area varies from 4.5' bgs to 11' bgs. Utilities remained relatively dense across the excavated area, extending from 1.4' to 7.5' bgs. A potential broken human long bone was recovered from TR103 S29 from 7.5YR 4/2 loamy sand fill. Excavation was halted and the area examined for any additional remains, but no other bones were identified. Upon examination in the lab, this proved to animal bone rather than human remains. Feature 16 appeared in TR103 S24, a damaged brick structure that likely served as a utility box or encasement, from 2.5' to 4.5' bgs. See Features: Non-Burial for further discussion of this feature.

Trench 106

Number of Sections: 1
Dimensions: Width: 6.7', Length: 28'
Depth of Excavation: 5.5' – 8.5'
Depth of Utilities: N/A

TR106 was excavated at the west side of the Washington Square South and LaGuardia Place intersection to connect TR25 to TP104. Outside of areas previously excavated for TR25, soil exposed was all 7.5YR 4/2 loamy sand fill with well-sorted cobble, pebble, and brick fragment inclusions to the base of excavation, varying from 5.5' to 8.5' bgs. No archaeological features, artifacts, or otherwise archaeologically sensitive materials were exposed.

Trench 108

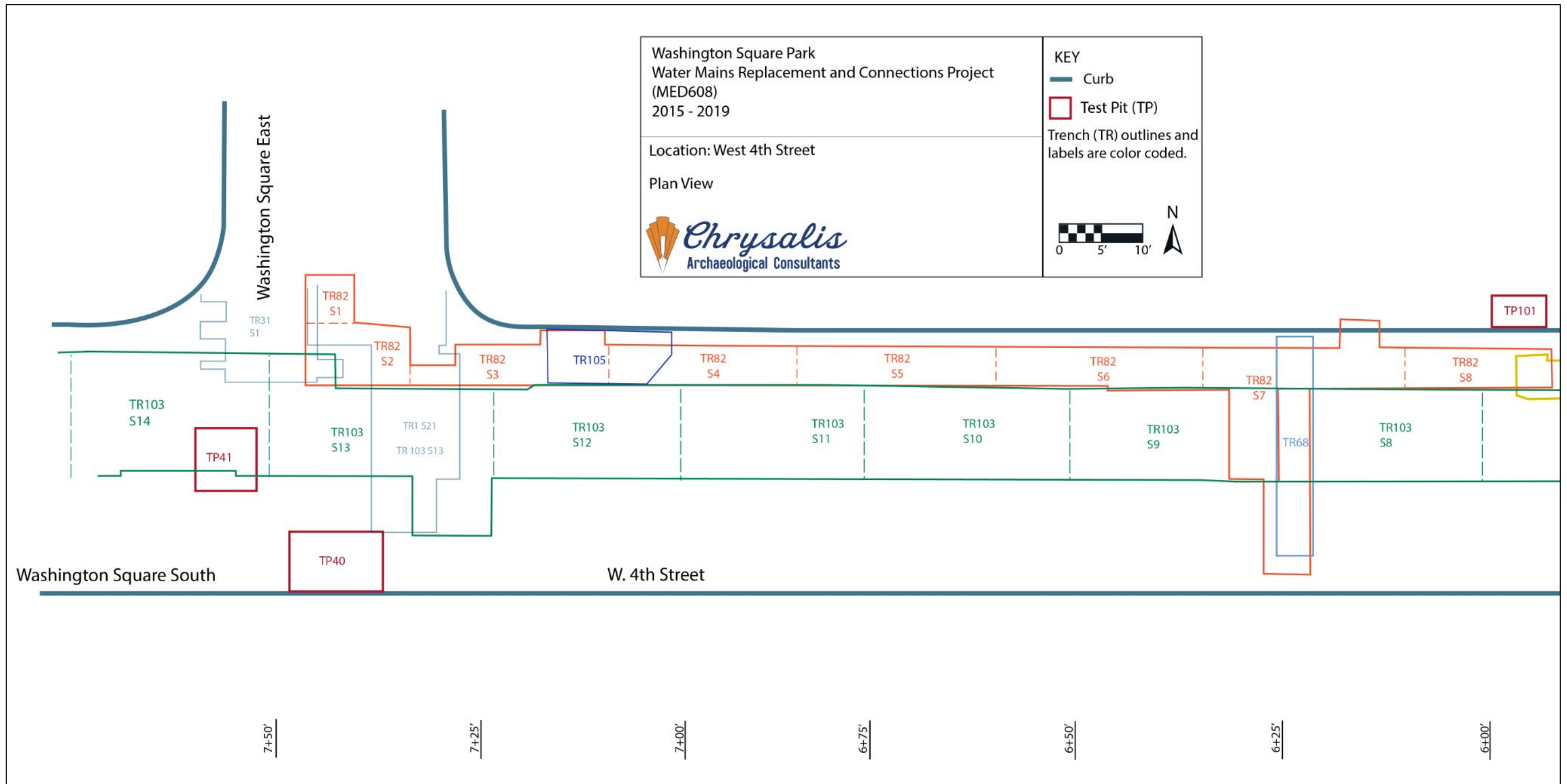
Number of Sections: 1
Dimensions: Width: 4', Length: 10'
Depth of Excavation: 3'
Depth of Utilities: N/A

TR108 was excavated into the north Washington Square South sidewalk, turning northwest from the curb for 10'. This trench was excavated over a weekend without notifying archaeological personnel and was assessed on the following work day. All soil exposed below the sidewalk was 10YR 4/3 loamy sand with pebble and cobble inclusions, typical of fill soil exposed across this part of the Project area. No archaeological features, artifacts, or otherwise archaeologically sensitive materials were evident.

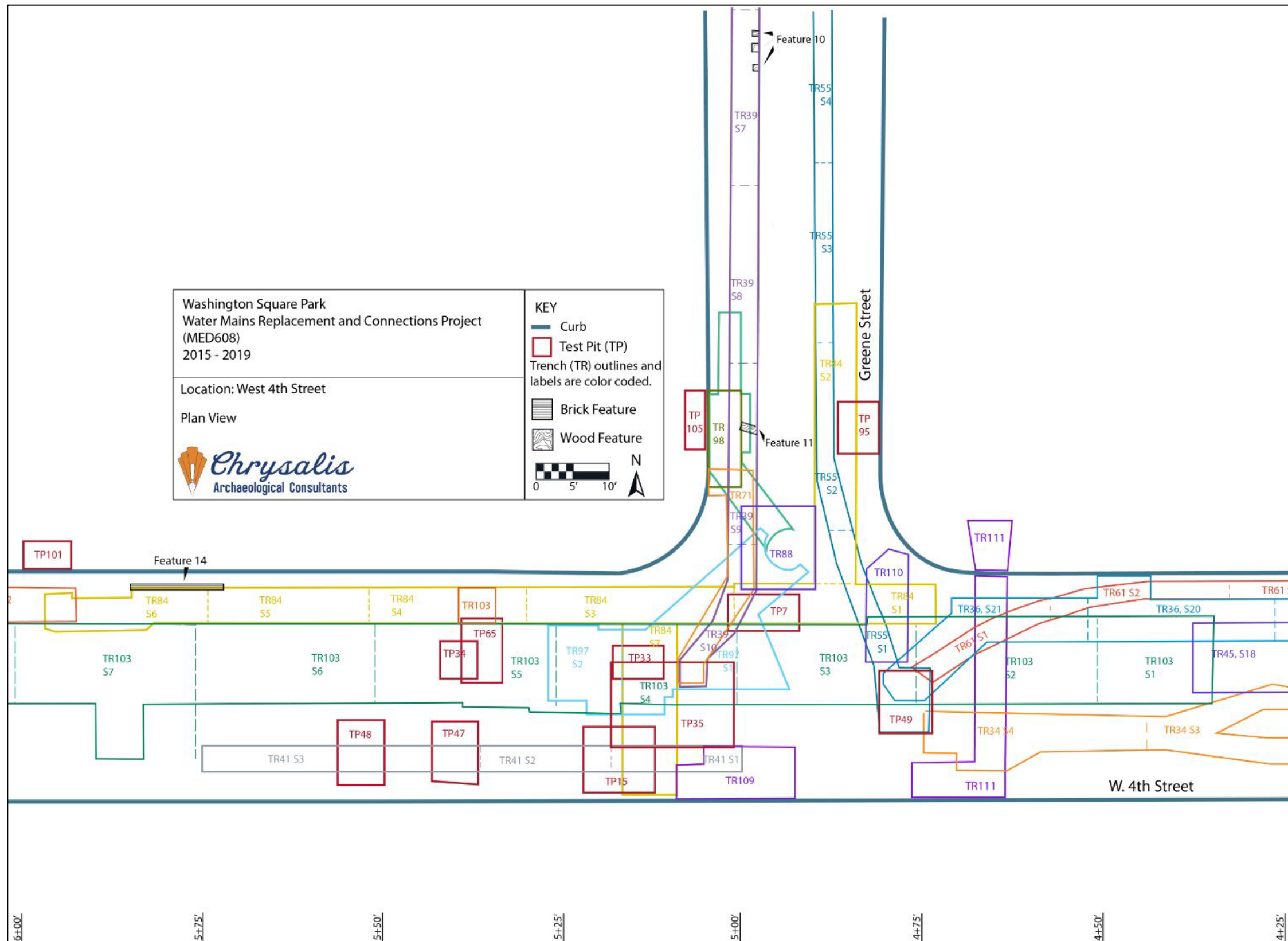
V.8 WEST FOURTH STREET – WASHINGTON SQUARE EAST TO BROADWAY

Excavation on West Fourth Street extended from where the street begins at its transition from Washington Square South, at Washington Square East to Broadway 725' to the east. Excavation between Washington Square East and Greene covered the north side of West Fourth Street. Excavation from Greene Street to Mercer Street covered the north side of West Fourth Street and part of the south and central street bed in the center of the area. Excavation from Mercer Street to Broadway covered the north side of West Fourth Street. Additional excavation covered in this section included extensions of trenching north over the center and west side of Greene Street and north over the west side of Mercer Street.

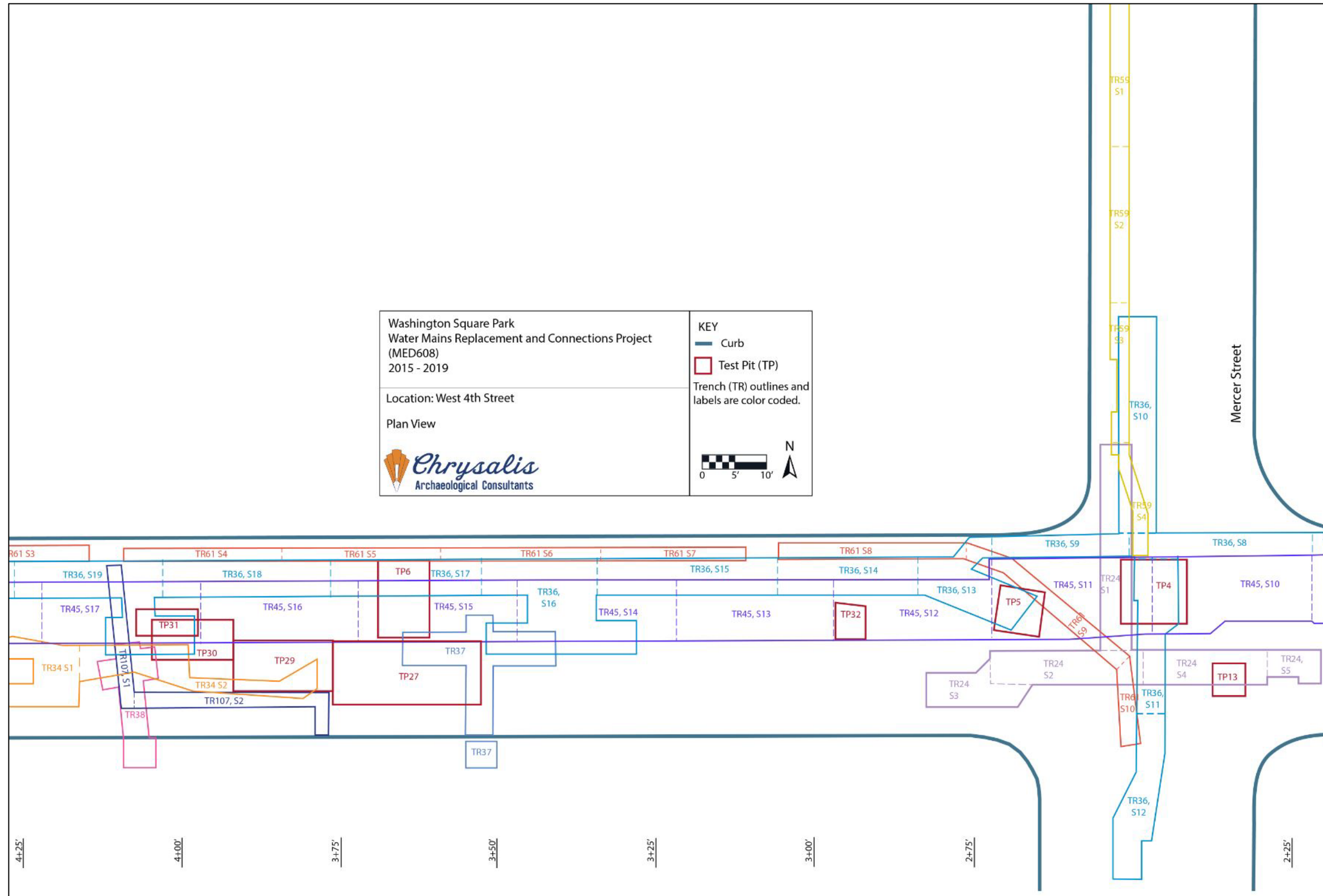
Excavation across this area included 26 test pits (TP1, 2, 3, 4, 5, 6, 7, 13, 15, 27, 29, 30, 31, 32, 33, 34, 35, 40, 47, 48, 49, 52, 65, 95, 101) and 27 trenches (TR24, 34, 36, 37, 38, 39, 41, 45, 55, 59, 61, 67, 68, 71, 82, 84, 88, 92, 95, 97, 98, 103 S1-S13, 105, 107, 109, 110, 111). Three features were encountered in this area. Feature 10 was a series of three wooden boards in the east profile of TR39 S8. Feature 11 was a single wooden board in the east profile of TR39 S9. Feature 14 was a brick structure remnant, possibly a portion of a basement or utility vault, in the north profile of TR84 S6.



Map 16: Digitized Field Map, West Fourth Street, segment 1 of 4.



Map 17: Digitized Field Map, West Fourth Street, segment 2 of 4.



Map 18: Digitized Field Map, West Fourth Street, segment 3 of 4.

Washington Square Park
 Water Mains Replacement and Connections Project
 (MED608)
 2015 - 2019

Location: West 4th Street

Plan View

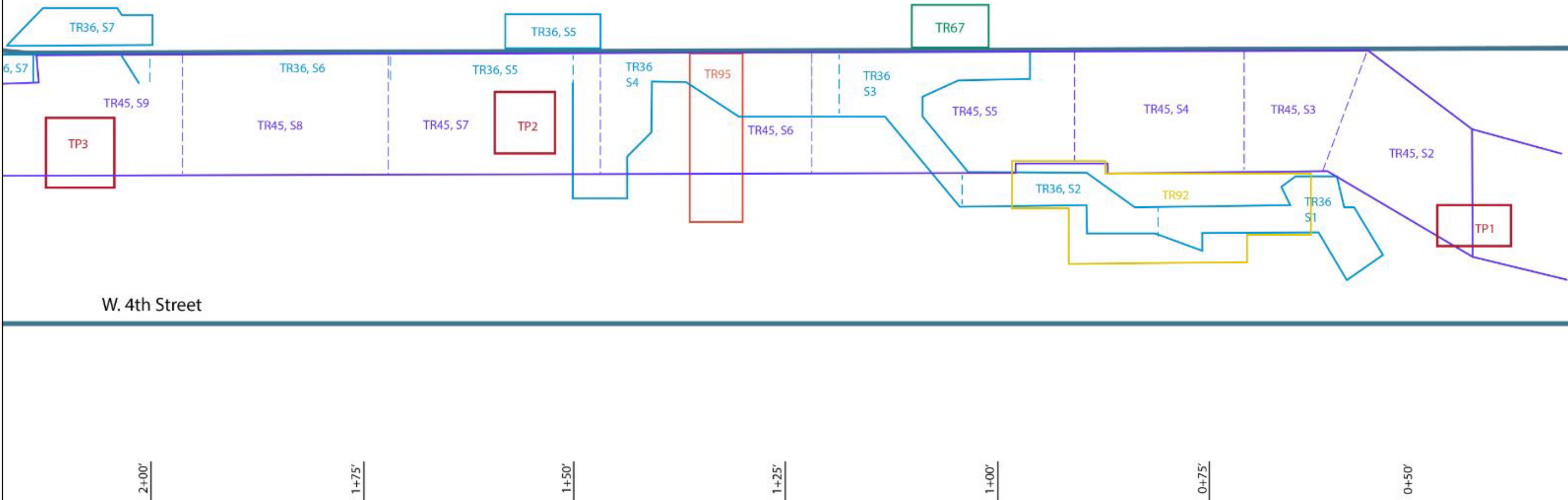


KEY

— Curb

□ Test Pit (TP)

Trench (TR) outlines and labels are color coded.



Map 19: Digitized Field Map, West Fourth Street, segment 4 of 4.

Summary of West Fourth Street Test Pits: TP1, 2, 3, 4, 5, 6, 7, 13, 15, 27, 29, 30, 31, 32, 33, 34, 35, 40, 47, 48, 49, 52, 65, 95, 101

Test Pit 1

Dimensions: Width: 5', Length: 11'
Depth of Excavation: 4.5'
Depth of Utilities: 2' – 4.5'

TP1 was excavated 10' from the south West Fourth Street curb and 9' west of the southwest curb radius at the intersection with Broadway. TP1 was excavated to locate and expose an existing twentieth century water main, identified in the center of the test pit at 4.5' bgs. All surrounding soil exposed was 10YR 6/1 sandy clean fill.

Test Pit 2

Dimensions: Width: 7', Length: 7'
Depth of Excavation: 3'
Depth of Utilities: 1.9' – 3'

TP2 was excavated at the north side of West Fourth Street 5' from the north curb and 58.5' from the northeast curb radius at the intersection with Mercer Street. TP2 was excavated to expose existing utility ducts, located at 2' bgs and surrounded by 7.5YR 4/4 silty sand fill with concrete fragments, brick fragments, and pebble inclusions.

Test Pit 3

Dimensions: Width: 8', Length: 8'
Depth of Excavation: 3'
Depth of Utilities: 2' – 3'

TP3 was excavated just east of the West Fourth Street and Mercer Street intersection, its north wall 8' from the north curb, to locate existing utilities running east-west down West Fourth Street. Silty sand fill soil with fragmented brick, concrete and pebble inclusions was found surrounding existing utilities.

Test Pit 4

Dimensions: Width: 10', Length: 10.5'
Depth of Excavation: 11'
Depth of Utilities: 3.5' – 11'

TP4 was excavated within the West Fourth Street and Mercer Street intersection to locate existing utilities along West Fourth Street. A dense network of utilities lay within fill soil to 5' bgs atop a brick and mortar sewer was exposed at 9.5' bgs. A consistent 7.5YR 4/3 silty sand fill soil with fragmented brick, concrete and cobble inclusions lay around the utilities and sewer throughout.

Test Pit 5

Dimensions: Width: 7', Length: 7'
Depth of Excavation: 3.9'
Depth of Utilities: 2.8' – 3.9'

TP5 was excavated at the northwest intersection of West Fourth Street and Mercer Street at a slightly northwest to southeast angle, its northwest corner 8' from the north West Fourth Street curb. A light clean sand and a 10YR 4/3 silty sand fill with fragmented brick, concrete and cobble inclusions were found, surrounding one large set of concrete-encased utility pipes.

Test Pit 6

Dimensions: Width: 8', Length: 12'
Depth of Excavation: 3.2'
Depth of Utilities: 3' – 3.2'

TP6 was excavated along the north side of West Fourth Street, its west wall at station 3+65' and its north wall 4' from the north curb. 7.5YR 4/3 sand fill with fragmented brick, concrete and cobble inclusions was found atop concrete encased utilities.

Test Pit 7

Dimensions: Width: 8', Length: 10'
Depth of Excavation: 2.9'
Depth of Utilities: 2' – 2.9'

TP7 was excavated at the north-center portion of the intersection of West Fourth Street and Greene Street, its north side 4' from the line of the West Fourth Street curb. 7.5YR 4/4 sand fill with fragmented brick, concrete and cobble inclusions was found throughout surrounding existing utilities.

Test Pit 13

Dimensions: Width: 5', Length: 5'
Depth of Excavation: 4'
Depth of Utilities: 2' – 4'

TP13 was excavated at the southwest corner of West Fourth Street and Mercer Street, 6' from the line of the south West Fourth Street curb. Excavation to 4' bgs revealed 7.5YR 4/2 sandy clean fill around utilities throughout the test pit.

Test Pit 15

Dimensions: Width: 9', Length: 10'
Depth of Excavation: 5.2'
Depth of Utilities: 2.5' – 5.2'

TP15 was excavated at the southwest portion of the intersection of West Fourth Street and Greene Street, its south wall 1.5' from the south West Fourth Street curb, to locate an existing gas main. Excavation revealed a dense network of utilities occupying most of the test pit footprint surrounded

by a clean sandy fill near the north wall and fill soil with fragmented brick, concrete and cobble inclusions close to the curb.

Test Pit 27

Dimensions: Width: 13', Length: 23.5'
Depth of Excavation: 5'
Depth of Utilities: 1' – 5'

TP27 was excavated on the south side of West Fourth Street between Greene and Mercer Streets to locate an existing electric utility box, its south wall 5' from the south curb. Excavation revealed a dense network of utilities surrounding the existing electric box, with two clean fill soil matrices surrounding the north and south sides of the box from 1' to the base of excavation 5' bgs.

Test Pit 29

Dimensions: Width: 13', Length: 15.5'
Depth of Excavation: 9.4'
Depth of Utilities: 3' to 9.4'

TP29 was excavated immediately to the west of TP27 to expose and remove a 7' by 13' electric utility box adjacent to the one identified in TP27. Utilities running to both boxes filled most of the test pit, with three associated sandy fill strata. After the test pit was excavated to 5.5' bgs, the existing utility box was destroyed and removed with jackhammers to its base at 9.4' bgs.

Test Pit 30

Dimensions: Width: 13', Length: 6.25'
Depth of Excavation: 7'
Depth of Utilities: 1.4' – 3'

TP30 was excavated extending from the northwest corner of TP29 to electric manhole and utility box. TP30 was excavated over a weekend without notification and without a monitor present but was inspected the following day. The soil profiles showed clean sandy road base atop 7.5YR 4/4 clean loamy sand fill adjacent to the existing utility box exposed in TP29 to 7' bgs.

Test Pit 31

Dimensions: Width: 9.75', Length: 4'
Depth of Excavation: 5.3'
Depth of Utilities: 1.4' – 5.3'

TP31 was excavated at the northwest corner of TP30 to identify utilities exposed in the corner of TP30. Excavation exposed several sets of concrete-encased ducts and an east-west water main in the north profile. Soils exposed matches the clean fills noted in TP30 associated with utility work.

Test Pit 32

Dimensions: Width: 5.25', Length: 5.75'
Depth of Excavation: 6.4'
Depth of Utilities: 2.1' – 6.4'

TP32 was excavated west of the West Fourth Street and Mercer Street intersection to identify existing utilities in the center of the roadway. Excavation exposed a dense network of utilities from 2.1' bgs to the base of excavation at 6.4' bgs within three strata of associated clean sandy fills.

Test Pit 33

Dimensions: Width: 10', Length: 10.5'
Depth of Excavation: 5.4'
Depth of Utilities: 1.6' – 5.4'

TP33 was excavated at the west side of the West Fourth Street and Greene Street intersection, its east wall beginning at station 5+11' and its north wall 10.3' from the north West Fourth Street curb. Excavation exposed a dense network of utilities from 1.6' to the base of excavation at 5.4' bgs surrounded by three strata of sandy utility fills with few with fragmented brick, concrete and cobble inclusions.

Test Pit 34

Dimensions: Width: 5', Length: 5'
Depth of Excavation: 5'
Depth of Utilities: 2' – 5'

TP34 was excavated west of the West Fourth Street and Greene Street intersection, its east wall at station 5+37' and its north wall 9.6' from the north West Fourth Street curb. Excavation exposed an existing watermain covering most of the test pit footprint beginning at 4.5' bgs, surrounded by 7.5YR 4/2 sandy loam fill with few pebbles and scrap wood inclusions, possibly from trench shoring from the main's installation.

Test Pit 35

Dimensions: Width: 17.2', Length: 12'
Depth of Excavation: 5'
Depth of Utilities: 1' – 5'

TP35 was excavated at the southwest side of the West Fourth Street and Greene Street intersection to locate an existing manhole box. After the concrete manhole was exposed to its base from 1' to 5' bgs, it was removed by jackhammer. All surrounding soil was 2.5Y 5/6 sandy clean fill.

Test Pit 40

Dimensions: Width: 7.8', Length: 10'
Depth of Excavation: 9.1'
Depth of Utilities: 1.7' – 7.5'

TP40 was excavated abutting the south West Fourth Street curb at the intersection with Washington Square East, southwest of TR1 S21. Two fill strata were revealed surrounding several utilities, 10YR 6/4 clean sand to 5' bgs in the north half of the test pit and 7.5YR 4/2 sand with some brick fragments in the south half of the test pit and underlying the clean sand in the north half of the test pit to 9.2 bgs.

Test Pit 47

Dimensions: Width: 6.3', Length: 8.8'
Depth of Excavation: 8.5'
Depth of Utilities: Beginning at 2.3' BGS

TP47 was excavated west of the West Fourth Street and Greene Street intersection, its east wall at station 5+36.8 and its south wall 2.2' from the south curb. Several utilities crossed the area, surrounded by clean sandy fill to 4.5' bgs. TP47 was excavated from 4.5' to 8.5' bgs to fix a gas leak overnight on an emergency 24-hour permit. Excavation took place without a monitor present and was inspected the following workday. Fill to 8.5' bgs produced two pull tab aluminum cans that were noted and discarded.

Test Pit 48

Dimensions: Width: 6.3', Length: 8.8'
Depth of Excavation: 7.7'
Depth of Utilities: N/A

TP48 was excavated west of the West Fourth Street and Greene Street intersection, its east wall at station 5+49.6 and its south wall 2.2' from the south curb. TP47 was excavated to fix a gas leak overnight on an emergency 24-hour permit. Excavation took place without a monitor present and was backfilled overnight before it could be inspected. Crew on site noted its final depth was 7.7' bgs to expose the leaking gas main.

Test Pit 49

Dimensions: Width: 6.9', Length: 12.8'
Depth of Excavation: 6'
Depth of Utilities: 1.7' – 5.5'

TP49 was excavated at the southeast portion of the West Fourth Street and Greene Street intersection, its east wall at station 4+74.8' and its south wall 7.2' from the south curb. Excavation exposed densely packed utilities surrounded by two clean sandy fill strata.

Test Pit 52

Dimensions: Width: 6', Length: 7.3'
Depth of Excavation: 3.5'
Depth of Utilities: N/A

TP52 was excavated 235.4' to 242.7' north of Fourth Avenue's north curb, alongside the west Greene Street curb, outside what was considered the archaeologically sensitive APE. Nevertheless, the test pit was assessed for any unusual soil or material of concern. All soil exposed was 10YR 4/3 loamy sand fill with small brick fragments and pebbles.

Test Pit 65

Dimensions: Width: 5.3', Length: 2.5'
Depth of Excavation: 4.15'
Depth of Utilities: N/A

TP65 was excavated at the west side of the intersection of West Fourth Street and Greene Street, its northeast corner at station 5+33.6' and 6.4' from the north curb line. Excavation exposed only 10YR 4/6 and 7.5YR 4/2 loamy sand fills with no inclusions and backfill soil from TP34.

Test Pit 95

Dimensions: Width: 5.5', Length: 6.5'
Depth of Excavation: 5.6'
Depth of Utilities: N/A

TP95 was excavated alongside the east Greene Street curb 19' north of the north West Fourth Street curb line. It exposed 7.5YR 4/3 loamy sand with pebble and cobble inclusions to its base of excavation at 5.6' bgs, except for its west side, which overlapped the backfilled TR84 and consisted of new clean fill.

Test Pit 101

Dimensions: Width: 6.5', Length: 11.2'
Depth of Excavation: 6'
Depth of Utilities: N/A

TP101 was excavated across the north curb of West Fourth Street, extending 4.2' north of the curb and 4' south of the curb, abutting TR103 S7 to the south. TP101 encountered clean fill from TR103's backfill as well as 7.5YR 4/2 loamy sand with fragmented brick, concrete and cobble inclusions throughout, soil typical of fill across the area.

Summary of West Fourth Street Trenches: TR24, 34, 36, 37, 38, 39, 41, 45, 55, 59, 61, 67, 68, 71, 82, 84, 88, 92, 95, 97, 98, 103 S1-S13, 105, 107, 109, 110, 111

Trench 24

Number of Sections: 5
Dimensions: Width: 5', Length: 70'
Depth of Excavation: 4.2'
Depth of Utilities: N/A

TR24 was initially opened on Mercer Street north of West Fourth Street outside of the archaeologically sensitive Project area. As excavation moved south to West Fourth Street, monitoring began. TR24 S1 ran north-south, while TR24 S2-5 extended east and west from this central portion. Excavation revealed 10YR 4/2 loamy sand fill with some brick fragments and cobble inclusions in TR24 S1, 10YR 6/3 coarse sand in the southern portion of TR24 S1 and in TR24 S3, and 7.5YR 4/3 loamy sand with some brick fragment inclusions in TR24 S2 and TR24 S4-5. No archaeologically significant materials were uncovered in this trench.

Trench 34

Number of Sections: 4
Dimensions: Width: 4.7', Length: 97.3'
Depth of Excavation: 4.5' (8.2' in TR34 S4)
Depth of Utilities: 1.4' – 6.5'

TR34 was opened on West Fourth Street between Greene Street and Mercer Street, its furthest east point at station 3+77.5' and extending to station 4+74.8', generally 5' from the West Fourth Street south curb. TR34 S1 began as a small trench later expanded 38.5' east in TR34 S2 and west in TR34 S3-5. A dense network of utilities was uncovered surrounded with five strata apparently corresponding to various utilities and their installation episodes. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 36

Number of Sections: 21
Dimensions: Width: 3.5' – 9', Length: 426.5'
Depth of Excavation: 5' – 6.5'
Depth of Utilities: N/A

TR36 was opened on West Fourth Street between Mercer Street and Broadway, its furthest east point at station 0+54' and extending to station 4+80.5 in 21 25'-long sections. TR36 S1 began as a small trench on the southwest corner of the West Fourth Street intersection with Broadway, outside the archaeologically sensitive Project area, and was monitored when it continued west into the sensitive area at West Fourth Street west of Broadway.

TR36 S1-3 ran northwest from the southwest portion of the West Fourth Street intersection to abut the north West Fourth Street curb. TR36 abutted the north curb in a 3.5' wide trench for most of S5-9. This area revealed 7.5YR 4/2 loamy sand fill with some brick fragment and pebble and cobble inclusions to 5' bgs below the street bed. TR36 S5 included a 4.2' extension north of the curb, revealing lighter 2.5Y 4/3 loamy sand with some brick fragments and pebble and cobble inclusions below the sidewalk to 5.3' bgs. TR36 S7 also included a 4' extension north of the curb, but here the soil below the street and sidewalk was consistent 7.5YR 4/2 loamy sand.

At the West Fourth Street intersection with Mercer Street, TR36 S10 extended 34' north into Mercer Street. TR36 S11-12 extended 50' south through the intersection and into Mercer Street. The same 7.5YR 4/2 loamy sand fill with some brick fragments and pebble and cobble was noted associated with various crossing utilities in these areas to 6.5' bgs.

TR36 S13-20 run west in a 6' wide trench, parallel to and 4' from the north West Fourth Street curb. These areas continued to contain 7.5YR 4/2 loamy sand to 5' bgs. TR36 S21 turned 45 degrees southwest to end the trench in 7.5YR 4/3 loamy. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 37

Number of Sections: 1
Dimensions: Width: 20', Length: 18.6'
Depth of Excavation: 3.2'
Depth of Utilities: N/A

TR37 was excavated in a large cross shape on the south side of West Fourth Street between Mercer and Greene Streets, beginning in the south sidewalk and extending 18.6' north with 10' east and west extensions. All soil documented was 10YR 4/4 loamy sand modern fill with pebble and cobble inclusions to 3.2' bgs.

Trench 38

Number of Sections: 1
Dimensions: Width: 6', Length: 20'
Depth of Excavation: 4'
Depth of Utilities: N/A

TR38 was excavated beginning 5' from the south West Fourth Street sidewalk and extending 15' into the street, its east wall at station 4+05'. This was a highly disturbed area of West Fourth Street between Greene and Mercer Streets, and the footprint of TR38 was almost entirely within areas formerly excavated and backfilled for TR34, TR36, and TP30. All soil outside of modern backfill was 7.5YR 4/2 loamy sand clean fill. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 39

Number of Sections: 10
Dimensions: Width: 3.8', Length: 220'
Depth of Excavation: 2.8' – 3.8'
Depth of Utilities: 1' – 3.8'

TR39 was excavated to follow an existing utility main running from the southwest Waverly Place and Greene Street intersection south to the northwest Greene Street and West Fourth Street intersection. TR39 covered this extent of most of Greene Street in nine 25'-long sections and one final 20'-long section. TR39 S1-6 lay outside the archaeologically sensitive portion of the APE; these areas were mapped and assessed for any unusual stratigraphy or materials and were monitored more closely from S7-10 as the trench entered the archaeologically sensitive area. The trench exhibited 7.5YR 4/3 clean sandy fill surrounding the existing north – south main across most of its extent from TR39 S1-S10. TR39 S10 included 10YR 4/6 loamy sand atop the 7.5YR 4/3 sand fill.

Two features were noted in TR39. Feature 10, a series of three east – west oriented squared timber boards extending into the east trench wall, appeared in TR39 S7. The three timbers were aligned together facing east – west and appeared from 3.2' to 3.4' bgs across a 4.8' north – south span 3.7' from TR39 S6. No artifacts were found associated with Feature 10, and it was surrounded by the same 7.5YR 4/3 sand fill as the rest of the trench section. Feature 11, a single east – west oriented squared timber board, appeared extending from the east TR39 S9 wall at 3.3' bgs. Two artifacts

were found associated with Feature 11 in the 7.5YR 4/3 sandy fill surrounding it: an intact glass bottle marked “C. ELLIS & CO. PHILAD^A” and an iron spike. The board was removed after documentation to allow trenching to continue. These artifacts may be related to shoring or construction work for existing nearby utilities or support for former road structures. See Features: Non-Burial for more information,

Trench 41

Number of Sections: 3
Dimensions: Width: 3.5' – 4', Length: 75'
Depth of Excavation: 5.2'
Depth of Utilities: 1.5' – 5'

TR41 was opened at the intersection of Greene Street and West Fourth Street, its southeast corner at station 5+00', 3.8 north of the south curb. TR41 continued 75' west in three 25'-long sections, eventually overlapping the locations of previously backfilled TP42 and TP48. Several clean fill strata were documented across the three trench sections associated with various existing utilities. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 45

Number of Sections: 18
Dimensions: Width: 9.3' – 10.75', Length: 417'
Depth of Excavation: 9.5' – 14'
Depth of Utilities: 2' – 7'

TR45 was opened at the West Fourth Street and Broadway intersection, at station 0+21' and extended 19' west before turning 45 degrees northwest to run alongside the north West Fourth Street curb for 17 additional sections. Section widths ranged from 18' to 31' in S1-S5 before based on the amount of trench opened at a time, before being standardized to 25' arbitrary divisions thereafter.

TR45 was densely packed with east – west oriented utilities across its extent. Soils encountered in TR45 S1-S5 were 10YR 4/2 loamy sand to 4' bgs, 10YR 5/3 sand to 10.5' bgs, and 7.5YR 4/3 loamy sand with some small cobble and pebble inclusions to 14' bgs. TR45 S6-S18 exposed 7.5YR 4/3 loamy sand with small brick fragments, pebbles, cobbles, and modern refuse to maximum depths between 9.5' and 11.5' bgs.

Trench 55

Number of Sections: 5
Dimensions: Width: 2.2 – 7', Length: 117'
Depth of Excavation: 3' (4.1' in TR55 S5)
Depth of Utilities: N/A

TR55 began at the east side of the West Fourth Street and Greene Street intersection in TR55 S1 before running north parallel to and 7' from the east Greene Street curb in TR55 S2-5. TR55 S5 was outside of the archaeologically sensitive area but was monitored to its conclusion at an existing utility box 4.1' bgs. TR55 S1-4 were only excavated to 3' bgs and revealed two strata of clean

modern fill with plastic and refuse at the intersection, with 7.5YR 4/3 loamy sand north of the intersection within Greene Street. Utilities were not uncovered in the narrow 2.2' trench portion that ran north up Greene Street, but it is likely the loamy sand fill found in this area was associated with street filling and/or backfilling around existing utilities that run up the street, as noted in TR39 to the west.

Trench 59

Number of Sections: 4
Dimensions: Width: 3', Length: 94'
Depth of Excavation: 3'
Depth of Utilities: N/A

TR59 began on the west side of Mercer Street 3' from the west curb, running south toward West Fourth Street and TR36 and TR45. TR59 was relatively thin and shallow, and it exposed 10YR 4/3 loamy sand fill typical of matrices found surrounding existing utilities in the Project area across its entire extent.

Trench 61

Number of Sections: 10
Dimensions: Width: 2.1' – 3.7', Length: 227.5'
Depth of Excavation: 2' (3' in TR61 S10, 4.2' in TR61 S1)
Depth of Utilities: 1.5' – 2'

TR61 began at the eastern portion of the West Fourth Street and Greene Street intersection and ran east in 10 25'-long sections, first running parallel to the north curb before turning southeast at the intersection with Mercer Street. TR61 S1's southwest corner began at station 4+76.5' and ran northeast, with TR61 S3 running east 1.7' from the north curb. Excavation for the majority of TR61 was relatively shallow, terminating at 2' bgs in sandy loam clean fill. TR61 S1 extended to 4.2' bgs, revealing 7.5YR 4/3 loamy sand fill typical of area fills, and TR61 S10 extended to 3' bgs at the southern West Fourth Street and Mercer Street intersection, revealing the same matrix at its lower depths. TR61 terminated at station 2+49', and no archaeologically sensitive material, features, or artifacts were exposed.

Trench 67

Number of Sections: 1
Dimensions: Width: 6', Length: 9'
Depth of Excavation: 4.6'
Depth of Utilities: N/A

TR67 was excavated into the north West Fourth Street sidewalk, its east wall beginning at station 1+06'. Exposed was 7.5YR 4/3 loamy sand with brick fragments, concrete fragments, and pebble inclusions to the base of excavation.

Trench 68

Number of Sections: 1
Dimensions: Width: 4.25', Length: 26.25'
Depth of Excavation: 4'
Depth of Utilities: N/A

TR68 was located on West Fourth Street between Washington Square East and Greene Street, running north – south across nearly the entire street bed with its east side at station 6+21.75'. Excavation to 4' bgs revealed two fill strata below the road base: 10YR 4/2 sand to 1.8' bgs and 10 YR 5/4 sand to the base of excavation. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 71

Number of Sections: 1
Dimensions: Width: 3.5', Length: 29'
Depth of Excavation: 2.6'
Depth of Utilities: N/A

TR71 was opened at the west Greene Street curb just north of the West Fourth Street and Greene Street intersection. It was east before turning south into the intersection and further southwest, crossing the previously backfilled TR39, TP 7, and TP 35. Most soil exposed was backfill from these trenches, but just west of these in the west trench profile was bedding for the road base atop 7.5YR 4/3 loamy sand with some pebble inclusions from 1.7' to 2.6' bgs at the base of excavation.

Trench 82

Number of Sections: 8
Dimensions: Width: 5' – 13', Length: 553'
Depth of Excavation: 6'
Depth of Utilities: 2' – 6'

TR82 began at the north-center of the Washington Square East and West Fourth Street intersection and continued east parallel to, and 2' from, the north West Fourth Street curb. TR82 S1 began at station 0+40' and continued east for 553' to station 5+93'. All soils revealed across the main east-west TR82 run were a variety of clean sandy fills associated with existing utilities. TR82 S7 extended 23' south into the center of the street bed, revealing a more mottled 5Y 4/4 and 7.5YR 4/4 loamy sand fill with concrete fragments than slightly darker fill further north, also associated with existing utilities. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 84

Number of Sections: 7
Dimensions: Width: 5' – 8', Length: 92'
Depth of Excavation: 6.5'
Depth of Utilities: 1' – 6'

TR84 was opened at the northeast Washington Square South and Greene Street intersection, its northeast corner at station 4+73'. It continued west to station 5+65', revealing a mix of clean fills surrounding existing utilities. TR84 included two extensions from its main east-west trench. TR84 S2 extended 44' north of TR84 S1 up Greene Street. This area pebble- and gravel-laden clean fills to 6' bgs. TR84 S7 extended 25.5' south of TR84 S3 nearly to the south Washington Square South curb, exposing clean fill sand and a 10YR 4/3 and 10YR 6/3 loamy sand fill with elevated amounts of concrete fragment inclusions compared to the surrounding area.

Excavation in TR84 S6 revealed Feature 14, an intact segment of mortared brick wall in the north trench profile. Feature 14 appeared from station 5+66.5' to 5+85', an 18.5' long stretch that began within clean fill and terminated at a concrete manhole box. The top of the brick wall appeared at 3.25' bgs and had been impacted by an east-west metal pipe running above it to the manhole and a north-south set of concrete-encased lines that ran above it 5' from the manhole. At least seven courses were extant below these impacts, and the feature wall continued deeper below the trench floor at 6' bgs. Feature 14 most likely represented part of a brick vault that extended below the sidewalk, or it was potentially related to encasing older utilities in the area. See Features: Non-Burial for more information.

Trench 88

Number of Sections: 1
Dimensions: Width: 10.3', Length: 12'
Depth of Excavation: 14'
Depth of Utilities: 1' – 2.5'

TR88 was opened at the West Fourth Street and Greene Street intersection to provide access to a manhole for new utility connections. Existing utilities were shallow, but fill exposed was a consistent 7.5YR 5/3 loamy sand to the base of excavation at 14' bgs. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 92

Number of Sections: 1
Dimensions: Width: 10.5, Length: 35.2'
Depth of Excavation: 5.5'
Depth of Utilities: N/A

TR92 was excavated on the south side of West Fourth Street, its east wall beginning at station 0+61' and continuing 35.2' west. TR92 was situated almost entirely over the previously backfilled TR36 and TR45 and contained only a small area of previously unexcavated 7.5YR 4/3 loamy sand fill. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 95

Number of Sections: 1
Dimensions: Width: 6.7', Length: 28'
Depth of Excavation: 4'
Depth of Utilities: 1.4' – 4'

TR95 was excavated West Fourth Street between Broadway and Mercer Street, extending 8' past the north curb with its east side at station 1+30'. This trench overlapped the previously backfilled TR36 and TR45. A small amount of previously unexcavated 7.5YR 4/3 loamy sand fill was exposed below the street and sidewalk. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 97

Number of Sections: 2
Dimensions: Width: 8.5' – 11.8', Length: 42.5'
Depth of Excavation: 13'
Depth of Utilities: N/A

TR97 was excavated at the northwest part of West Fourth Street's intersection with Greene Street, its east side at station 4+91.3' and running southwest in two sections to station 5+16.8'. This trench overlapped several previously backfilled excavations, including TR39, TR84, TP 7, TP33, and TP35. It contained only 7.5YR 4/3 loamy sand fill in areas not previously impacted by Project work. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 98

Number of Sections: 1
Dimensions: Width: 6.3', Length: 24'
Depth of Excavation: 3.5'
Depth of Utilities: N/A

TR98 was excavated at the west side of Greene Street north of West Fourth Street alongside the east curb, beginning 35.75' north of the West Fourth Street north curb and continuing south for 24'. The majority of this trench footprint was previously excavated and backfilled as TR39 and TR71, but new material was exposed at its west side. 10YR 4/3 loamy sand with high gravel content was exposed to the base of excavation, suggesting fill or utility installation backfill across the area.

Trench 103, Sections 1-13

Number of Sections: 13 (of 31 total for TR 103)
Dimensions: Width: 11' – 15', Length: 350'
Depth of Excavation: 13.75'
Depth of Utilities: 2.75' – 6'/11' (varies)

TR103 was opened on the north side of West Fourth Street east of Greene Street, its northeast corner at station 4+26' and 6' from the north curb. The trench ran west down West Fourth Street for 13 25'-long sections, and it continued west after the road's transition to Washington Square South (see V.6 Washington Square South for S14-S31). TR103 crossed numerous previously backfilled Project test pits and trenches across its extent, but its terminal depth ranging from 11' to 13' bgs generally extended deeper than the backfilled trenches that occupied to same areas.

In TR103 S1-S4, areas previously unaffected by project excavation showed 10YR 4/6 clean sand underlying the road base to 1.6' bgs, followed by 7.5YR 4/3 loamy sand with some brick

fragments, pebbles, and cobble inclusions to the base of excavation from 11' to 13' bgs. This was fill typical of West Fourth Street surrounding utilities. TR103 S5-S13 showed similar soils to a maximum depth of 10' bgs. TR103 S5 and S9 showed small areas of 7.5YR 4/2 loamy sand with brick fragments, pebbles, and cobbles to 4' bgs also typical of area fill. Utility crossings varied between shallower electric and telecom lines and a trunk water main to at least 6' bgs and deeper water or sewer lines appearing around 11' bgs.

Trench 105

Number of Sections: 1
Dimensions: Width: 7', Length: 18.5'
Depth of Excavation: 5.75'
Depth of Utilities: N/A

TR105 was excavated along the north West Fourth Street curb line just east of its intersection with Washington Square East, its west wall at station 7+20.25'. The majority of TR105 overlapped the formerly backfilled TR82. Where soil previously undisturbed by Project work was excavated, TR105 revealed 7.5YR 4/3 loamy sand fill with brick fragment, cobble, and pebble inclusions typical of soil documented across the West Fourth Street roadway. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 107

Number of Sections: 2
Dimensions: Width: 2.2', Length: 51.6'
Depth of Excavation: 2.5'
Depth of Utilities: N/A

TR107 began in the middle of the West Fourth Street roadway east of the Greene Street intersection, its west wall at station 4+11.7' and running south to 4.8' from the south curb before turning 90 degrees east for TR107 S2. TR107 S1 was entirely within the footprint of previously excavated and backfilled TR34, TR36, TR38, TR45, and TP29. TR107 S2 exposed 10YR 4/2 loamy sand and 7.5YR 4/3 loamy sand fills to its base at the relatively shallow depth of 2.5' bgs. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 109

Number of Sections: 1
Dimensions: Width: 7.5', Length: 16.4'
Depth of Excavation: 4.5'
Depth of Utilities: N/A

TR109 was opened along the south West Fourth Street curb at its intersection with Greene Street, its west wall at station 5+09.2'. TR109 overlapped the formerly backfilled TR84, TR41, and TP35. All soil exposed was 10YR 6/2 sand associated with existing utility work. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 110

Number of Sections: 1
Dimensions: Width: 5.5', Length: 14.5'
Depth of Excavation: 9'
Depth of Utilities: N/A

TR110 was excavated at the northeast portion of the West Fourth Street and Greene Street intersection, abutting and existing catch basin to the northwest. Most of this trench overlapped the backfilled TR55 and TR84, and where it extended deeper it encountered only 5YR 3/4 silty clay loam without inclusions. This material was not seen elsewhere in the area, although it is unclear if this material represented fill added to the street area or natural soil. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

Trench 111

Number of Sections: 1
Dimensions: Width: 4.5' – 13', Length: 38.5'
Depth of Excavation: 5'
Depth of Utilities: N/A

TR111 was excavated spanning West Fourth Street north to south and extending 8' into the north curb line just east of the Greene Street intersection. TR111's footprint was mostly occupied by the previously excavated and backfilled TR34, TR36, TR61, and TR103. Excavation outside of these areas to 5' bgs uncovered only 10YR 5/6 loamy sand clean fill associated with utility fill in other parts of the Project area. No archaeologically sensitive material, features, or artifacts were exposed in this trench.

FEATURES: NON-BURIAL

Sixteen features were documented over the course of the Project. Of these, ten features were not related to buried human remains. Each of these ten features represent previously disturbed remnants of former structures or utility excavation work across the existing street beds, identified within disturbed soil contexts (Table 03). Feature 15 was initially recorded as a feature but was determined to be a modern concrete utility construction element without archaeological significance.

Table 03: Feature Log – Non-Burial Features in Bold

FEATURE NUMBER	DESCRIPTION	LOCATION
1	Segment of mortared brick wall visible in west profile	TP 17 – LaGuardia Pl.
2	Stone-faced brick barrel-style burial vault	TR1, S3/4 – Washington Sq. East
3	Stone-faced brick barrel-style burial vault. Same style as, and contiguous with, Feature 2	TR1, S4 – Washington Sq. East
4	Open burial	TR1, S7 – Washington Sq. East
5	Open burial	TR1, S8 – Washington Sq. East
6	Open burial	TR1, S8 – Washington Sq. East
7	Builder’s trench	TR5, S23 – Washington Sq. North
8	Brick barrel vault	TR16, S4 – LaGuardia Pl.
9	Mortared brick structure, possibly utility-related	TR15/16 CNX – Washington Sq. South/LaGuardia Pl.
10	Three wood boards, oriented east – west, in TR39 floor	TR39, S7 – Greene St.
11	Wood board in TR39 floor and east profile	TR39, S9 – Greene St.
12	Brick arch observed in north profile	TR64, S1 – Waverly Pl.
13	Disarticulated/disturbed human skeletal elements	TP73 – Washington Sq. North
14	Articulated brick structure, possible sidewalk vault	TR84, S6 – W. Fourth St.
15	Concrete slab – determined to be archaeologically insignificant utility element	TR103, S17 – Washington Sq. South
16	Mortared brick structure, possibly utility-related	TR103, S24 – LaGuardia Pl.

Feature 1

Feature 1 was a very highly damaged remnant of a mortared brick wall located in the center of LaGuardia Place. It was exposed in TP17, a 10.5' by 9.5' square that was excavated to 9.6' bgs, exposing a 5YR 4/3 sandy fill containing a large number of whole bricks or brick fragments around a large 36" main. The density of brick inclusions suggested this fill may have been sourced from or included materials added by demolition of brick structures.

Beginning at 8.5' bgs, the density of brick fragments in the fill soil increased. Four whole disarticulated bricks measuring 8" by 4" by 2.5" were noted. Schist block fragments, mortar fragments with evidence of plaster facing, and a few marble or similar fine grain facing stone fragments also appeared within the same matrix (Table 04). At 8.8' bgs Feature 1 was identified in the west TP17 profile, its southern extent beginning 26' west of the east LaGuardia curb and 41' south of the southeast Washington Square South and LaGuardia Place intersection curb radius. The extant portion of the structure extended to 3' north from the southwest corner of the test pit, remaining in the west profile wall (Image 01). The bricks and mortar forming the structure were jagged and showed evidence of being damaged in the past. The surrounding soil matrix of brick and stone fragments suggested the demolition of earlier structures in the vicinity of LaGuardia Place.

It could not be determined if Feature 1 was an in situ wall segment or a large, dislodged fragment of partially razed wall that had been deposited into the demo-laden fill at this depth. Documentation was difficult, as the test pit walls were not completely shored and construction crew did not recommend the monitor enter the area. As Feature 1 was completely within the west TP17 profile and below any planned shoring elements, it was not impacted by Project activities. Wooden test pit shoring walls were installed above the area, and the feature area was reburied under clean fill after documentation when the test pit was backfilled.



Image 01: Feature 1 in TP17 west profile, below shoring timbers.

Table 04: Stratigraphy in TP17 West Profile around Feature 1.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1.1'	N/A	Asphalt and concrete	Road surface and road base
II	1.1' – 2'	7.5YR 5/6	Sand	Clean fill sand underlying road base
III	2' – 5.6'	7.5YR 4/3	Sand	Fill with some concrete and small brick fragment inclusions
IV	5.6' – 8'	7.5YR 6/3	Silty sand	Fill with few pebbles and small brick fragment inclusions
V	8' – 8.5'	7.5YR 4/3	Sand	Fill with few brick fragment inclusions
VI	8.5' – 9.6'	7.5YR 4/3	Sand	Possible demolition debris/historic fill with razed structure debris around Feature 1. Large brick fragments, whole bricks, disarticulated ~1' schist fragments, mortar fragments, few marble/fine-grain facing material fragments.

Feature 7

Feature 7 was identified in TR5 S22-S23 at Washington Square North and appeared to have been shoring for a former trench exposed at .9'bgs. This feature consisted of two parallel wooden board walls separated by 6' of fill soil that was identical to the surrounding 2.5Y 5/4 sand matrix, but contained inclusions of non-diagnostic bricks and brick fragments (Image 02) (Table 05). It was determined that this wooden shoring was left behind from an earlier trenching episode, likely modern construction. The cause for inclusion of bricks within the fill between the wooden walls was unclear but may have been related to disassembly of brick utility encasements in the path of the work these wooden shoring walls were erected for. Project excavation exposed these walls during backhoe excavation, which removed them in the footprint of TR5 but left them intact in profile walls.



Image 02: Feature 7 in TR5 S23 east profile.

Table 05: Stratigraphy in TR5 S22 East Profile around Feature 7.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1.4'	N/A	Asphalt and concrete	Road surface and road base
II	1.4' – 5.4'	2.5Y 4/4	Sand	Clean fill south of Feature 7
III	1.4' – 5.4'	2.5Y 5/4	Sand	Fill between Feature 7 wooden boards, few bricks and brick fragments
IV	1.4' – 5.4'	2.5Y 5/4	Sand	Clean fill north of Feature 7

Feature 8

Feature 8 was a single course of arched that likely represented a brick barrel vault remnant or arched utility within the east wall of TR16 S4 that had been previously disturbed by utility installations and backfilling episodes. Feature 8 appeared at 2.3' bgs in the east wall of TR16 S4, 36' from the east LaGuardia Place curb and located south-north from Project station 0+71.25' to 0+68.25' (Image 03). Two 4" pipes ran east-west through the vaulted brick, likely a later utility installation that impacted the structure by running through it for the sake of convenience to its planned route. A 10YR 4/6 loamy sand matrix lay below the vaulted brick, from 2.75' to 3.9' bgs, which yielded grey salt-glazed stoneware, thick window glass, and white granite ceramics (Table 06). This material terminated at the trench floor.

No intact north or south ends of Feature 8 were evident in TR16 S4's east profile, further indicating the structure this feature was part of was heavily impacted by past work to create, maintain, or add utilities to the roadway. Without more intact elements, it cannot be determined if Feature 8 represented an element of a building, utility, or brick base for some other structure type. Although the arched shape and single brick course was similar to brick sewers noted across the Project area, its depth at 2.3' bgs would be quite shallow for most early modern utilities of this type. As the feature lay in the trench wall beyond Project impact, it was documented and left in place.



Image 03: Feature 8 in TR16 S4 east profile; east-west crossing utilities previously cut from trench.

Table 06: Stratigraphy in TR16 S4 East Profile around Feature 8.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1.08'	N/A	Asphalt and concrete	Road surface and road base
II	1.08' – 1.75'	10YR 5/6	Loamy sand	Clean fill sand underlying road base
III	1.75' – 2.4'	10YR 4/3	Loamy sand	Modern fill with discarded plastic and refuse wrappers
IV	2.4' – 2.75'	7.5YR 4/6	Sand	Surrounding Feature 8. Dense with brick fragments and mortar-like substance
V	2.75' – 3.91'	10YR 4/6	Sandy loam	Similar to Strat IV but without brick inclusions. Contains grey salt-glazed ceramic fragment, thick bottle glass, white granite ceramic.

Feature 9

Feature 9, a segments of mortared brick, was identified in TR15/16 CNX at 1.6' bgs, beginning 13.9' south of the north Washington Square South curb and continuing south/southeast across a 5' area into the east trench wall. Soil north of Feature 9 was a 7.5YR 4/2 sand matrix with pebbles and concrete and brick fragment inclusions as well as several stoneware utility pipe fragments. Concrete inclusions suggest this stratum had been previously impacted or was redeposited here. South of Feature 9 was 7.5YR 4/2 sand clean fill without inclusions surrounding a network of existing utilities (Table 07).

The Feature 9 bricks were mortared with a light-colored white/blue-grey concrete mortar with fine grain structure that appeared modern due to its consistency and lack of large inclusions. The feature had been previously impacted and did not have clearly faced terminal walls. Twentieth century hollow bricks typical of utility encasements found broken in the around surrounding the extant mortared brick, along with the feature's shallow depth below modern surface, may indicate the damaged brick structure encountered was utility related. The brick was removed from the trench center after documentation to allow utility extensions to continue.



Image 04: Feature 9 in east TR15/16 CNX profile.

Table 07: Stratigraphy in TR15/16 CNX around Feature 9.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1.3'	N/A	Asphalt and concrete	Road surface and road base
II	1.3' – 1.6'	10YR 5/6	Sand	Clean fill sand underlying road base
III	1.6' – 3.7'	10YR 4/2	Sand	Fill with concrete fragments, brick fragments, stoneware utility pipe fragments, angular pebbles
IV	2.5' – 3.7'	7.5YR 4/2	Sand	Clean fill present from 4.8' to 8.8' South and 14.2' to 25' South in trench

Features 10 and 11

Feature 10 refers to three east – west oriented boards exposed in the floor of Trench TR39 S7 along Greene Street between Washington Place and West Fourth Street. The three squared boards were aligned together, the north and south board .8' wide and appearing at 3.2' bgs and the center board 1' wide at 3.4' bgs (Image 05). Feature 10 spanned a 4.8' north – south portion of the trench, beginning 3.7' from TR39 S6 to the north. All soil uncovered in the trench was 7.5YR 4/3 clean sand without inclusions, interrupted by existing utilities (Table 08). No artifacts were found in association with the timbers.

Further south in TR39 S9 Feature 11, another squared board, was exposed protruding 2' into the trench from the east wall at 3.3' bgs (Image 06). An intact glass bottle and iron spike were found in the 7.5YR 4/3 sandy fill surrounding Feature 11 (Table 09). The bottle was embossed “C. ELLIS & CO PHILAD^A”. Charles Ellis operated a pharmaceutical company as “Charles Ellis and Co.” in Philadelphia from 1832 to 1875, providing an earliest date of 1832 for initial deposition of this bottle, although the fill context it was found within appeared to be a matrix that had been disturbed by utility installations or redeposited as utility fill (Philadelphia College of Pharmacy and Science 1922). The Feature 11 board was removed after documentation to allow trenching to continue.

Features 10 and 11 were located approximately 30' apart, but they may have both been related to shoring or construction work for existing nearby utilities or support for former road structures.



Image 05: Feature 10 wooden boards in TR39 S7 east profile.



Image 06: Feature 11 in TR39 S9 plan view and east profile.

Table 08: Stratigraphy in TR39 S7 around Feature 10.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1.2'	N/A	Belgian block and concrete	Belgian block cobble road surface and concrete road base
II	1.2' – 3.5'	7.5YR 4/3	Sand	Clean fill without inclusions

Table 09: Stratigraphy in TR39 S9 around Feature 11.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1.2'	N/A	Belgian block and concrete	Belgian block cobble road surface and concrete road base
II	1.2' – 3.5'	7.5YR 4/3	Sand	Clean fill, one iron spike and one embossed glass bottle retained

Feature 12

Feature 12 was a mortared, single course of bricks forming an arch in the north trench wall of TR64 S1. Feature 12 began at 3.35' bgs below a pocket of 10YR 5/1 loamy sand fill devoid of inclusions and continued to the trench floor. The feature was not faced in a formal south terminus but exhibited jagged bricks that were likely previously impacted by the installation of a water main running east – west just south of Feature 12 (Image 07). The east and west ends of the feature were not evident, as they extended below the trench floor. 10YR 5/1 loamy sand extended around the exposed extent of Feature 12 (Table 10). An empty void lay below the arched brick.

Feature 12 may have been a previously impacted barrel vault, an abandoned and partially destroyed brick sewer, or a similar structure that was previously impacted by installation of the water main to the south and possibly other street utility work, covered with 10YR 5/1 loamy sand clean fill. The 6' east-west apparent structure width is similar to extant brick sewer sections elsewhere in the Project area, but the north-south orientation across Waverly Street this would imply might be oversized for a sewer at this location. No diagnostic materials or intact soil strata were evident in the exposed area around the feature, and the area was backfilled without impact to the feature in the north trench wall after documentation and Project utility replacements.



Image 07: Feature 12 as exposed in the TR64 S1 north profile. Existing water main south of feature partially cut and removed.

Table 10: Stratigraphy in TR64 S1 around Feature 12.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – .4'	N/A	Asphalt	Asphalt pavement
II	.4' – 5.8'	10YR 5/1	Loamy sand	Sandy fill overlying and surrounding Feature 12
III	.4' – 5.8'	2.5Y 5/3	Loamy sand	Sandy fill west of Feature 12

Feature 14

Feature 14 was an 18.5' long section of a mortared brick structure oriented east – west in the north profile of TR84 S6, 2.5' south of the north West Fourth Street curb between Washington Square South and Greene Street. Feature 14 appeared from station 5+66.5' to 5+85', an 18.5' long stretch that began within clean fill at its east side and terminated at a concrete manhole box at its western side.

The top of the brick structure appeared at 3.25' bgs and had been impacted by two existing utilities: an east-west metal pipe running directly atop it to the manhole to the west, and a north-south set of concrete-encased lines that ran above it 5' from the manhole (Image 08). Two other metal pipes had once extended south from the southern exposed face of Feature 14 but had been previously cut (Image 09). At least seven brick courses were extant below the intact utilities running above Feature 14, and the feature bricks continued deeper below the trench floor at 6' bgs. The top extant four courses of Feature 14 were stepped back two courses from the south face, possibly previously removed here to make room for the east – west extant utility crossing the area, or possibly the feature was built to accommodate this utility. All soil overlying and surrounding the south face and exposed extent of Feature 14 was 10YR 3/2 loamy sand fill without inclusions (Table 11). This material maybe have been added fill for street formation or utility work backfill and was devoid of diagnostic elements.

Feature 14 most likely represented part of a brick utility vault below the sidewalk, or a basement vault belonging to a former building at the north side of West Fourth Street. Its west terminus directly at an active concrete manhole perhaps suggest the brick was constructed for utility encasement purposes, unless the manhole was added later atop a defunct brick basement structure. This feature was backfilled in place after documentation and utility installations.



Image 08: Feature 14 in TR84 S6 north profile, with east – west extant utility partially removed to allow room to clean the area.



Image 09: Feature 14's eastern end in TR84 S6 north profile, with two previously cut utility pipes in its south face.

Table 11: Stratigraphy in TR84 S6 around Feature 14.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1'	N/A	Asphalt and concrete	Asphalt pavement and concrete road base
II	1' – 1.8'	10YR 4/1 and 5/3	Sandy loam	Sandy bedding for concrete road base
III	1.8' – 6'	10YR 3/2	Loamy sand	Loamy sand fill without inclusions. Overlaid and surrounded Feature 14

Feature 15

Feature 15 was initially recorded as a concrete feature appearing in TR103 between S17 and S18, but it was determined to be a modern concrete utility encasement element without archaeological significance.

Feature 16

Feature 16 was a mortared brick structure identified in the west wall of TR103 S24 in the center of LaGuardia Place, beginning 1.5' south of Washington Square South curb. The mortared brick area extended 6' south to end in a roughly faced edge 2.5' from the the southwest corner of TR103 S24. It consisted of six courses of brick extending 2' deep from its top extant course at 2.5' bgs. The base of TR103 S24 excavation in this area at 4.5' bgs did not expose the base of Feature 16. The feature extended 1.5' out from the west profile on its north end and 2.5' from the west profile on its south end (Image 10).

Utilities extended northeast and south from Feature 16 in 4" metal lines at 2.5' bgs. The south side of the feature had been previously impacted and showed broken brick and fragmented white/blue-grey mortar that appeared similar to modern concrete. The top courses of the feature's bricks also appeared to be previously impacted and did not form a flat plane.

Soil surrounding Feature 16 was typical of stratigraphy exposed across this portion of TR103 and the surrounding Washington Square South and LaGuardia Place roadways: sandy fill underlying the concrete road base, with 7.5YR 4/4 loamy sand fill with pebbles, cobbles, and brick fragments from 1.5' bgs to the base of excavation in this area at 4.5' bgs (Table 12). Loose brick content was elevated around the feature. When TR103 S26 was excavated west of TR103 S24 and Feature 16, no additional areas of mortared brick was noted. However, loose brick and brick fragment content was high, and the surrounding soil had a more reddish 2.5YR 4/2 color possibly from inclusion of pulverized brick material.

Feature 16 was likely a brick utility box or encasement structure constructed to support utilities installed in the area sometime around the mid twentieth century. This interpretation is based on the feature's shallow depth at 2.5' below the modern road surface, its apparently modern mortar between the bricks, the consistency of surrounding fill with that seen across the larger roadway, and the presence of existing utility pipes extending from the feature. The feature appeared to have been previously disturbed, possibly during maintenance or other work related to local utilities.



Image 10: Feature 16 in TR103 S24 west trench wall.

Table 12: Stratigraphy in TR103 S24 around Feature 16.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – 1'	N/A	Asphalt and concrete	Asphalt pavement and concrete road base
II	1' – 1.5'	10YR 4/4	Sandy loam	Sandy bedding for concrete road base
III	1.5' – 4.5'	7.5YR 4/4	Loamy sand	Loamy sand fill with pebbles, cobbles, and loose bricks and brick fragment inclusions. Overlaid and surrounded Feature 16

FEATURES: BURIAL

Of the sixteen archaeological features documented during Project work, six were related to buried human remains. These six features included two brick barrel-style burial vaults, three open burials of partial human remains, and one area of disturbed or disarticulated human remains (Table 13).

Table 13: Feature Log – Burial Features in Bold.

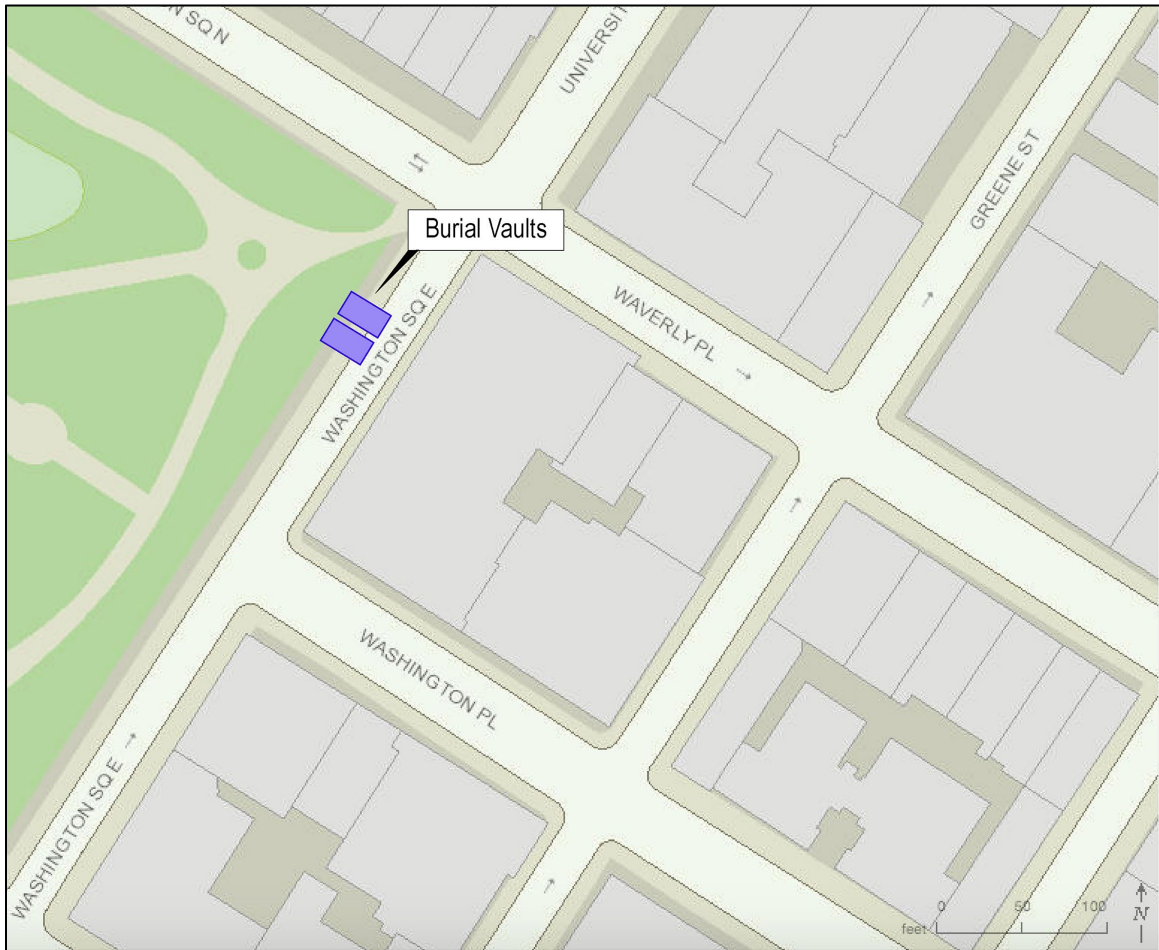
FEATURE NUMBER	DESCRIPTION	LOCATION
1	Segment of mortared brick wall visible in west profile	TP 17 – LaGuardia Pl.
2	Stone-faced brick barrel-style burial vault	TR1, S3/4 – Washington Sq. East
3	Stone-faced brick barrel-style burial vault. Same style as, and contiguous with, Feature 2	TR1, S4 – Washington Sq. East
4	Open burial	TR1, S7 – Washington Sq. East
5	Open burial	TR1, S8 – Washington Sq. East
6	Open burial	TR1, S8 – Washington Sq. East
7	Builder’s trench	TR5, S23 – Washington Sq. North
8	Brick barrel vault	TR16, S4 – LaGuardia Pl.
9	Mortared brick structure, possibly utility-related	TR15/16 CNX – Washington Sq. South/LaGuardia Pl.
10	Three timbers, oriented east - west in TR39 floor	TR39, S7 – Greene St.
11	Timber in TR39 floor	TR39, S9 – Greene St.
12	Brick arch observed in north profile	TR64, S1 – Waverly Pl.
13	Disarticulated/disturbed human skeletal elements	TP73 – Washington Sq. North
14	Articulated brick structure, possible sidewalk vault	TR84, S6 – W. Fourth St.
15	<i>Concrete slab – determined to be archaeologically insignificant utility element</i>	<i>TR103, S17 – Washington Sq. South</i>
16	Mortared brick structure, possibly utility-related	TR103, S24 – LaGuardia Pl.

Features 2-3: Burial Vaults

Two burial vaults were exposed within the street bed of Washington Square East between Washington Square North and Washington Square South, opposite the northeast corner of Washington Square Park (Map 20, see also Map 04 in Section V.1 above). Feature 2 was the northern vault and Feature 3 the southern, depicted on Map 04 only as their eastern, access sides

were exposed in TR1. The vault interiors were further explored after exposure of these eastern sides through breaks in their brick roofs.

The vaults were both constructed in the same manner and size, with mortared brownstone walls and brick arched roofs. They each measured 15' north to south by 27' east to west with an approximate interior height of 9' – 10' at the center point of the east-west vaulted ceiling. Both had wooden doors at their west sides secured with metal hinges and a box-style lock that opened to a set of three descending steps (Image 11).



Map 20: Area map showing the location of Burial Vaults 1 and 2.



Image 11: Feature 2/Burial Vault 1 facing west, with patch on the roof of the vault.



Image 12: Disarticulated skeletal remains at the northeast corner of Burial Vault 1.

Feature 2/Burial Vault 1 was the northernmost of the vaults and, based on limited interior photography and exploration, contained the remains of an estimated 11 individuals. The majority of the skeletal remains were in a disarticulated pile in the northeast corner of the vault (Image 12). Collection of remains in this corner was most likely the result of disturbance after the vault was no longer in use, post-1826 based on documentary evidence (see below).

Burial Vault 1 retained evidence of having been previously breached. The roof along the northern side contained a patched area beneath which lay a pile of broken brick on the floor of the vault. According to a *New York Times* account, in the summer of 1965 workers from the Consolidated Edison Company of New York (ConEd) breached a burial vault while excavating for utility lines in this area (Montgomery 1965). This patch is likely related to that encounter.

Feature 3/Burial Vault 2 was located immediately south of Burial Vault 1 and was of identical construction. Numerous wooden coffins were located within the vault, largely intact, though some had collapsed due to the weight of stacking and perhaps other environmental conditions. Limited digital photography also revealed potential disarticulated skeletal remains in the western portion of the vault to the south of the door. There appeared to be water leakage along the door of the vault at its western end, as images revealed the door appeared to be “wet” with drip or seepage lines running along the steps (Images 13 and 14).



Image 13: Feature 3/Burial Vault 2 facing west, showing stacked coffins.



Image 14: Detail of door of Burial Vault 2 showing water seepage, facing west.

Limited visual assessment through photography into Burial Vault 2 indicated a minimum of 32 coffins, some with coffin plates. There were a minimum of 10 coffin plates based on digital photographs.

Per the direction of the LPC, there was no entrance into either of the burial vaults. All measurements, counts and images of the interior were taken through small openings created by the removal of one stone where the wall of the vault met the arched roof at each vault's east side.

Digital photography of the interior of Burial Vault 2 revealed one legible coffin plate inscription which read: "William Stitt; died ____ 1826; Aged 47 years". A search of historic newspapers and directories located William Stitt, an accountant residing at Broad and Stone Street, and his obituary dated September 29, 1826 (*Evening Post* September 29, 1826) (Image 15). No other coffin plates were able to be read from the digital photographs. DDC conducted 3D scanning of the two vaults through the existing opening from November-December 2015. Unfortunately, various constraints (e.g. not being able to set the scanner on a tripod) did not allow for enough clarity to identify any of the inscriptions on the coffin plates within the vaults.

DIED,
This morning, Mr. William Stitt, aged 47 years. His friends and acquaintances are respectfully invited to attend his funeral to-morrow afternoon at 4 o'clock, from his late residence, corner of Broad and Stone street.

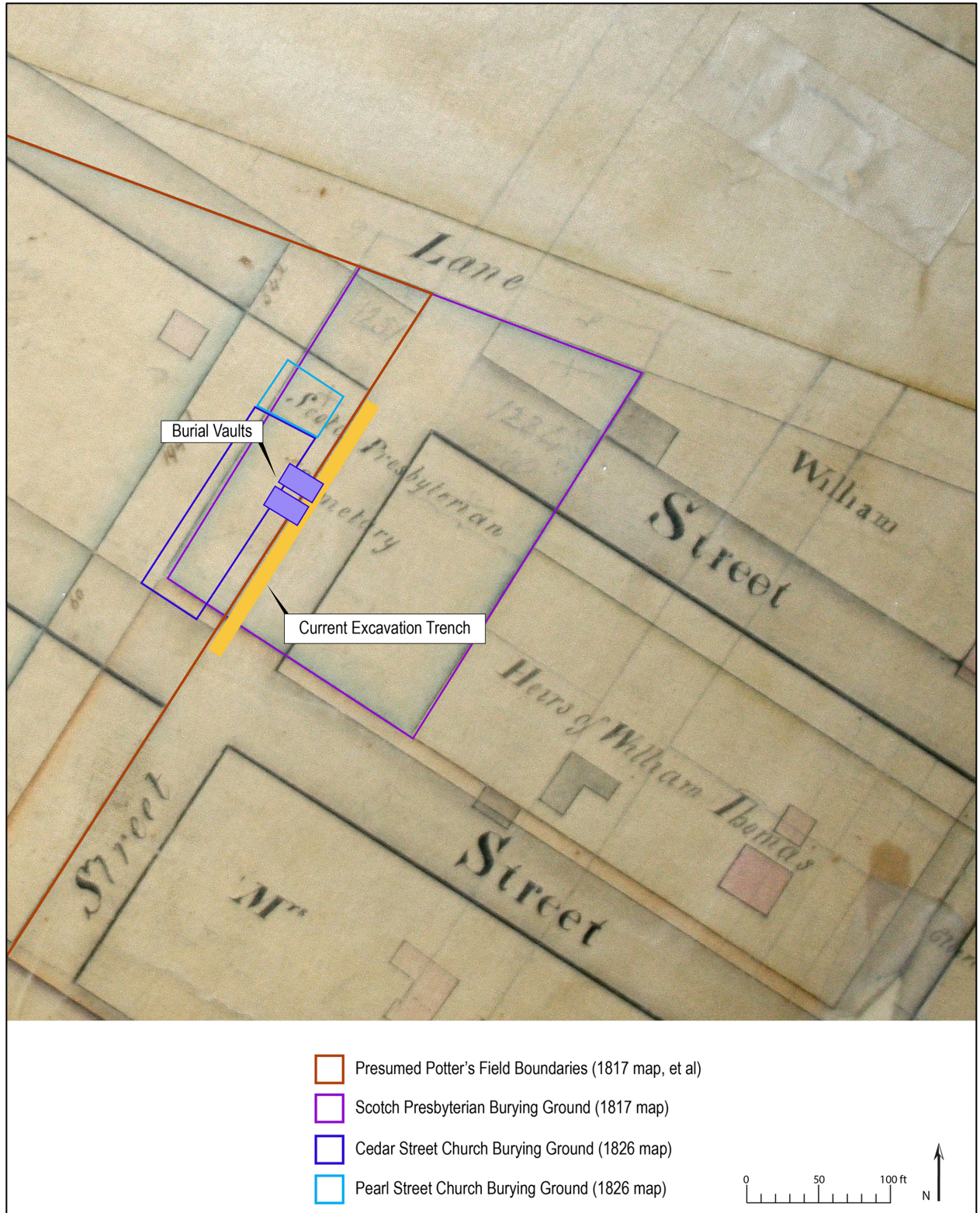
Image 15: Obituary notice for William Stitt (*Evening Post* 1826).

Features 2-3 Burial Vaults: Historic Provenance

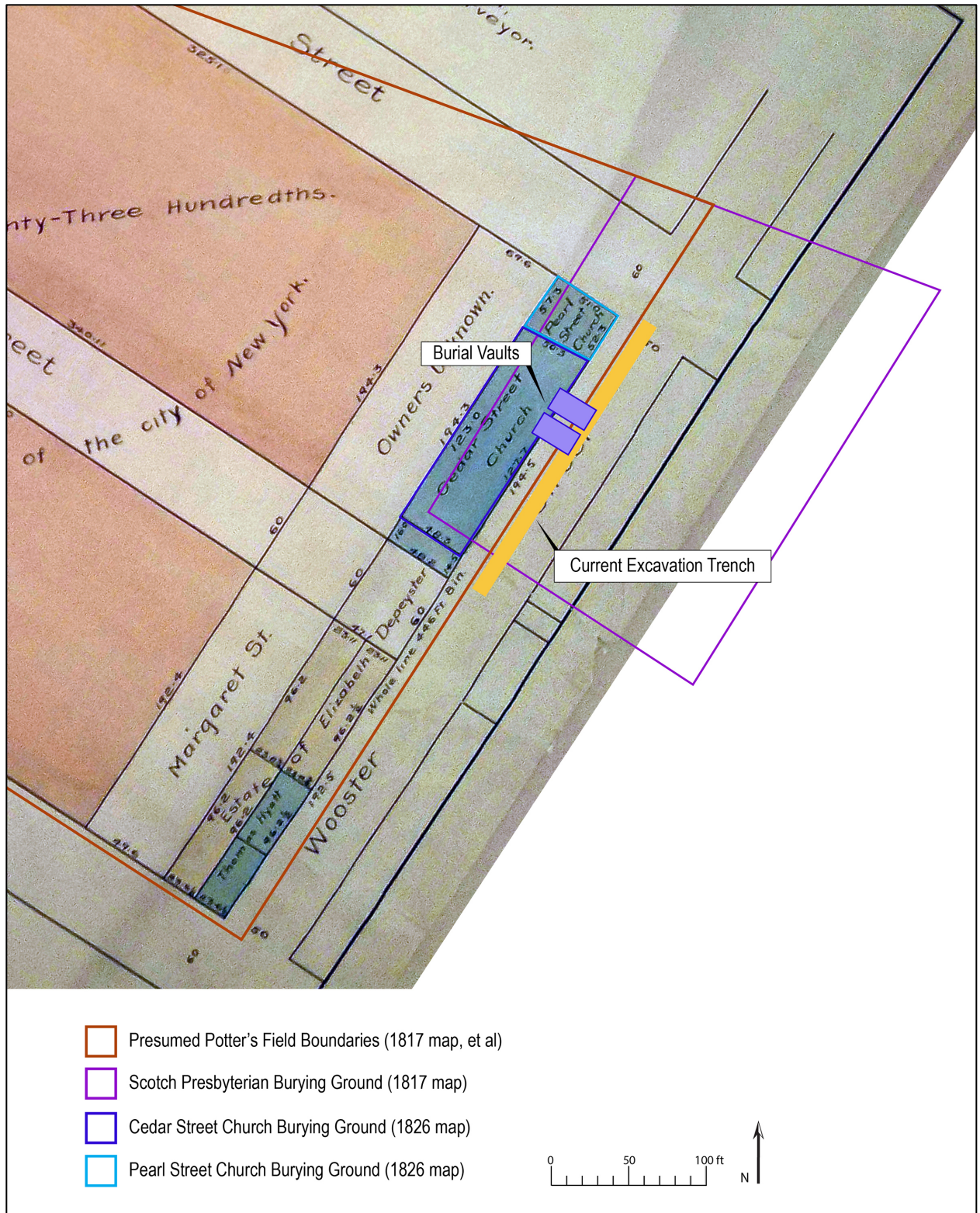
Following discovery of the vaults, they were mapped to determine their location relative to the potter's field and church cemeteries that were present in the Washington Square Park area from the late eighteenth century through the first quarter of the nineteenth century. Overlay of the burial vault location on available maps indicates that the vaults were part of the Scotch Presbyterian Church burying ground.

An 1817 survey entitled *Map showing the Property affected by the Continuation of 4th, 5th and 6th Streets at right angles with Broadway* depicts various private properties in the Washington Square Park area, as well as streets that were never laid (Doughty 1817) (Map 21). The Scotch Presbyterian Church burying ground was located in the northeast portion of what is today Washington Square Park, as well as extending further north and east into areas that are presently paved roadway or commercially and residentially developed blocks.

An 1826 map entitled *Map of the Contemplated Washington Parade* shows the portion of the burying grounds that were within an area to be developed as the Parade Ground. At this time, the area that had been labeled as belonging to the Scotch Presbyterian Church in 1817 had been split. A small portion to the north is labeled Pearl Street Church and the majority of the area is labeled Cedar Street Church. This map also depicts several streets, including Margaret Street, that were never laid (Geismar 2005) (Map 22).



Map 21: Selection from Doughty 1817 map with Project overlays from TR1 excavation in November 2015.



Map 22: Selection from 1826 *Map of the Contemplated Washington Parade* (via Geismar 2005) with Project overlays from TR1 excavation in November 2015.

Though limited to the proposed boundaries for the Parade Ground, this map is useful in that it provided measurements for the proposed development. Table 14 is a comparison of the proposed measurements of the Parade Ground with present-day measurements of Washington Square Park as based upon NYCity Map. Though there are some slight discrepancies in the measurements from NYCity Map, current NYC tax records note the dimensions of Washington Square Park as 950.51' by 446.67', near identical to the proposed Parade Ground measurements (NYC Department of Finance 2015). Correspondence of the 1826 Parade Ground map with the actual limits of Washington Square Park mean the land depicted as Pearl Street and Cedar Street Church properties in 1826 occupied the same area depicted in 1817 and mapped during Project excavation work in 2015.

Table 14: Proposed Parade Ground vs. present-day Washington Square Park dimensions.

MAPPED UNIT AREA	1826 MAP MEASUREMENT	WSP PRESENT DAY MEASUREMENT
Washington Square North curb to curb		976'
Washington Square North park	951' 5"	952'
Washington Square East curb to curb		478'
Washington Square East park	446' 8"	450'
Width of Wooster Street (now WSE)	50'	40' (park to building line)
Width of Sixth Street (now WSN)	60'	50' (park to building line)

Map 23 overlays the boundaries of the burying grounds from the 1817 and 1826 maps in relation to the documented Features 2 and 3 burial vaults. This locates the burial vaults within the Scotch Presbyterian Cemetery on the 1817 map and the Cedar Street Church property on the 1826 map. Based on this documentary research, the Cedar Street Church and the Scotch Presbyterian Church grounds cover the same area at their western side.



Map 23: Location of Features 2-3 burial vaults in relation to historic burial grounds.

Feature 2-3 Burial Vaults: Scotch Presbyterian Church

The Scotch Presbyterian Church was formed in the autumn of 1756 by a small group of parishioners who seceded from the First Presbyterian Church within the City of New York. This break was due to dissatisfaction with the subject of psalmody, which caused a division within the Presbyterian Church (Greenleaf 1846). The Scotch Presbyterian Church operated under the Associate Presbytery of Pennsylvania and was officially known as “First Associate Presbyterian Church” (Scotch Presbyterian Church 2006). This new congregation initially met in private homes until they moved to a modest building on Little Queen Street (Cedar Street⁴), two blocks north of Wall Street, in 1761. This building was replaced with a more formal stone building in 1768 (Wylie 1906, Scotch Presbyterian Church 2006).

The Cedar Street Church (1768-1836) of the Scotch Presbyterians was located on Cedar Street between Broadway and Nassau Street. A stone was placed in the church with the motto of the Church of Scotland: “The bush burned with fire, and the bush was not consumed” inscribed in Hebrew across the top. This stone has been moved with the Church to each of its four locations, including the present location on 96th Street and Central Park West (Image 16) (Scotch Presbyterian Church 2006).

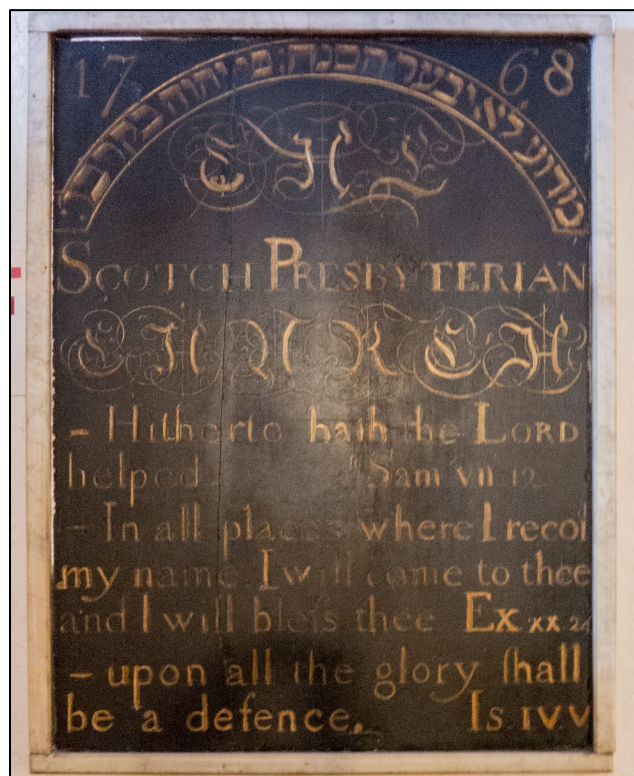


Image 16: Stone plaque from the original Cedar Street Church, now located at the Second Presbyterian Church at 96th Street and Central Park West.

It should be noted that there was another Presbyterian Church in nineteenth century New York City on Cedar Street, located between Nassau Street and William Street and founded in 1808. This

⁴ Little Queen Street was renamed Cedar Street in 1793.

is not the same congregation as, or part of, the Scotch Presbyterian Church. The history of this second Cedar Street Church traces to the present day Fifth Avenue Presbyterian Church (Jessup 1908).

As of 1782, the Scotch Presbyterian/Cedar Street Church was officially known as “The First Associate Reformed Church in New York” (Greenleaf 1846). At some point in its history, the Scotch Presbyterian/Cedar Street Church formed a collegiate charge with the Pearl Street Church. The Pearl Street Church, organized in 1797, was located on Pearl Street, then Magazine Street, between Elm and Broadway. However, the union of the churches was not permanent and was suspended in 1804 (Greenleaf 1846).

In 1836 the Scotch Presbyterian Church sold its property on Cedar Street and moved to the corner of Crosby Street and Grand Street, where they resided until 1853. In 1853 the Church again moved, this time to Fourteenth Street, a short distance east of Sixth Avenue. They remained in that location until 1893 when they purchased their current property at 96th Street and Central Park West (Table 15) (Wylie 1906).

Table 15: Timeline of relevant events in the Scotch Presbyterian Church history.⁵

YEAR	CHURCH LOCATION	ADDITIONAL INFORMATION
1756	Cedar Street, Between Nassau and Broadway	Scotch Presbyterian Church is formed after a division within the Presbyterian Church. Formally called the First Associate Presbyterian Church.
1782	Cedar Street, Between Nassau and Broadway	Officially the First Associate Reformed Church in New York
1817	Cedar Street, Between Nassau and Broadway	1817 map by Doughty denotes land in the NE corner of what is to be WSP as Scotch Presbyterian Burial Ground
1822	Cedar Street, Between Nassau and Broadway	Joined the Presbyterian Church in the United States
1825	Cedar Street, Between Nassau and Broadway	Church authorizes vaults be built in the “out of town” burial grounds
1826	Cedar Street, Between Nassau and Broadway	Smith 1826 map denotes burial grounds within the park
1827	Cedar Street, Between Nassau and Broadway	City takes a portion of Church burial grounds for the “Washington Parade Ground”
1836	Corner of Crosby and Grand Streets	Church moves to the corner of Crosby and Grand Streets
1853	14th Street	Church moves to 14th Street, a short distance from 6th Avenue
1893	96th Street and Central Park West	Church moves to 96th Street and Central Park West
1917	96th Street and Central Park West	Scotch Presbyterian Church changes its name to Second Presbyterian Church

Like many churches of the era, the Scotch Presbyterian/Cedar Street Church maintained a burial ground adjoining its original location. When the Church found its adjoining burying grounds and

⁵ (American Guild of Organists 2015, American Scenic and Preservation Company 1917, Doughty 1817, Greenleaf 1846, Smith 1826, Wylie 1906).

vaults were approaching capacity, it purchased land for additional burials in 1793 and in 1796. The exact locations of these properties are not specified in the Church's extant Minutes of the Board of Trustees, but reference is made to fencing and managing burying grounds near Corlear's Hook (east of the Project area at the East River), at Division Street, and a location in the Eight Ward between 1796 and 1813 (Second Presbyterian Church Records 2002, Scotch Presbyterian Church 2006). The Eight Ward location, noted as early as 1805, likely referred to the church burial ground located at the northeast portion of the Project area based on references to its fronting the Parade Ground. The Eight Ward's nineteenth century boundaries were formed by Christopher Street, Seventh and Eight Avenues, and Bowery (Longworth 1817).

As noted above, the 1817 Doughty map denotes land in the northeast corner of what was to become Washington Square Park as the "Scotch Presbyterian Cemetery" (Doughty 1817). George B. Smith's 1826 *Map of the Contemplated Washington Parade* denotes the same location as belonging to the Cedar Street Church (aka the Scotch Presbyterian Church) and the northernmost part as the Pearl Street Church (Smith 1826). Map overlays place the Features 2 and 3 burial vaults uncovered within the portion that was appointed to the Cedar Street portion of these properties.

Minutes of the Board of Trustees of the Scotch Presbyterian Church confirm that the City began planning to open a street, likely Wooster Street that would become Washington Square East, through their "burying ground out of town" as early as July 1824. Notably, the Minutes of the Board of Trustees indicate that in April 1825, the Church authorized building two burial vaults at the "out of town" burial ground threatened by the construction of the new street (Second Presbyterian Church Records: April 1825). Based on this timing, it is possible the vaults may have been constructed in part to house those disinterred for the creation of the street through the burying ground.

The City's plan for enlargement of the Parade Ground to eventually form Washington Square Park again impacted the Church's out of town burying ground in December 1826. The Board sent members to petition to "the common council of the City to reconsider their resolution to take the burying ground of the Church in order to enlarge the Military Parade Ground".

The Minutes of the Common Council of New York recorded that a 29 January 1827 petition from the Scotch Presbyterian Church regarding the lands at Washington Square was referred to the Committee of Lands and Places. The petition states that the Church had been put to "great trouble and expense" relative to the opening of Wooster Street and that "more than one half of their ground Viz^t 50 by 131 feet was taken for the opening of that street." It suggests the sum awarded them was not sufficient to defray the expense to fence the remainder of their burying ground and that they had "incurred considerable additional expense in disinterring the remains interred in the ground required for Wooster street and placing them in the ground now required for Washington Square", an area also encompassing the Features 2-3 vaults (City of New York 1917). Taking additional land for the Parade Ground would place "unpleasant necessity, and additional expense of again disinterring the remains which lay there, and it would be exceedingly distressful to the friends of the deceased" on the Church (City of New York 1917). The Common Council rejected the Church's petition, stating the opening of the street "was a necessary improvement and loudly called for by the regular progress and increase of population in that part of the City, and could not be delayed any longer" (City of New York 1917).

The disinterments in advance of Wooster Street's ca. 1824 construction that the Board members referred to were likely the excavation of parishioners buried in graves on site, not removal from vaults, as the only burial vaults recorded at the out of town burying ground were built in 1825. The Minutes of the Board of Trustees include regular updated fees for interment at the Church's multiple cemetery sites, with charges based on age of the deceased and the method of interment, either a grave dug in the ground or interment in vaults. In 1792, the Church enacted an order that burial in ground lots was offered only for parishioners, while vaults were referred to as "public" (Second Presbyterian Church Records: January 1792).

Following the Church's failed petition to the Common Council to refrain from expanding into their Eight Ward cemetery, the City paid the Church \$4,850 in 1827 for use of an unspecified portion of their lands for the Parade Ground. The Church appointed a committee to oversee proper transition of the land, but they did not record what actions they may have taken toward moving or securing existing burials (Second Presbyterian Church Records 2002). The Church retained some lands at the "Washington Parade Ground" and "Wooster Street", part of which they leased to the Pearl Street Church in May of 1829. As of 1832, the Pearl Street Church had fenced the area and continued to use "two and a half lots" of land as a burying ground while the Cedar Street Church had sold or leased its remaining holdings (Second Presbyterian Church Records 2002).

Pearl Street Church

Although map overlays indicate the Feature 2 and 3 burial vaults lay within the area designated by 1826 as belonging to the (Scotch Presbyterian) Cedar Street Church, the area directly to the north was labelled as part of the Pearl Street Church and is relevant to the usage history of this land. The Pearl Street Church was organized in 1797, located on Pearl Street (then known as Magazine Street) between Elm and Broadway. The Pearl Street Church operated in union with the Scotch Presbyterian Church's location nearby on Cedar Street shortly after its founding until 1804 (Greenleaf 1846).

The Pearl Street Church building was destroyed by a fire in 1837 but was rebuilt on the same site (Greenleaf 1846). In the winter of 1852/1853 a church committee concluded that the Central Presbyterian Church on Broome Street and the Second Associate Reform Church on Pearl Street would merge and relocate uptown, where the majority of parishioners then lived. In 1854 the Madison Square Presbyterian Church opened at the corner of East 24th Street and Madison Avenue (Parkhurst 1906). In 1906 a new church, known as the "Parkhurst Church", was built across the street. In 1918 another merger took place uniting First Presbyterian, University Place Presbyterian, and Madison Square Presbyterian. Now known as The First Presbyterian Church in the City of New York, they are located on Fifth Avenue at Twelfth Street.

While the Pearl Street Church apparently did not develop structures on the future Washington Square Park East land indicated on the 1826 map as just north of Feature 2 and 3, it appears to have utilized this land for parishioner burials like the Scotch Presbyterian/Cedar Street Church.

The close land usage was apparently borne from the two churches' late eighteenth to early nineteenth century institutional agreement.

Summary of Feature 2-3 Findings and Research

The Features 2-3 burial vaults appear to house the remains of Scotch Presbyterian Church parishioners, interred sometime between 1793, the earliest date the Scotch Presbyterian Church records indicate the church purchased unspecified lands for burying grounds, and 1827, the year the church petitioned the Common Council to abandon its plans to develop the land for and roads surrounding the Parade Ground. It is likely the vaults were constructed 1825 based on Minutes of the Board of the Scotch Presbyterian Church, generally coinciding with disinterments for the laying of Wooster Street through the Church's "out of town" cemetery and limiting the interment window to likely 1825-1827. It is possible interments in these vaults continued after the Parade Ground and Washington Square Park began to take shape, although the Scotch Presbyterian Church appears to have sold or let all its lands in the area by 1832, and by 1835 the area is labeled on City maps as belonging to New York University (see Tanner 1835). The one visible coffin plate in Burial Vault 2 belonged to William Stitt, who died in 1826, within the proposed date range for the vaults' usage.

As the Scotch Presbyterian Church petition to the Common Council indicates, development of the area for Wooster Street (now Washington Square East) required disinterment of parishioner burials. It is possible some of the remains noted within the burial vaults, especially those lacking coffins, might be those of parishioners who the church disinterred from the surrounding area and reinterred locally. The clerk for the Scotch Presbyterian Church's current congregation, the Second Presbyterian Church, indicated the church does not hold records for those interred in the church's early "out of town" burying ground (Appendix F). Some of information is undoubtedly held on the coffin plates extant within the vaults.

Feature 4: Burial 1

Archaeological monitoring identified skeletal remains on November 11, 2015 buried beneath an existing concrete utility duct bank in TR1 S7, 71' south of the previously exposed Feature 3 burial vault's south wall. Feature 4 occupied an area from 3.2' to 5.5' east of the Washington Square East west curb. The remains were not within a coffin and were identified beginning at 4.95' bgs within 10YR 5/4 loamy sand fill (Images 17 and 18). This same fill surrounded the overlying utility duct across the entire trench in this section (Table 16). The remains were oriented north – south, lying supine with the skull to the south. Tree root action and the weight of the existing overlying utility appeared to have disturbed the articulation of the buried remains.

Table 16: Stratigraphy in TR1 S7 surrounding Feature 4.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – .7'	N/A	Asphalt and concrete	Road surface and road base
II	.7' – 1.4'	7.5YR 4/3	Loamy sand	Clean fill
III	1.4' – 5.7'	10YR 5/4	Loamy sand	Clean fill surrounding duct bank and Feature 4 remains.
IV	5.7' – 8.6'	7.5YR 4/4	Clayey loamy sand	Clean sandy soil

Upon discovery, the approved Human Remains Discovery protocols were enacted, and Chrysalis' forensic anthropologist came to site to make a preliminary assessment of the skeletal remains. Concurrently, the Project notified LPC and the City of New York - Office of the Medical Examiner (OME). The OME, Bradley Adams, stated that their office had no concerns regarding the discovery and that the project may proceed. As Feature 4/Burial 1 lay exposed and disturbed within the opened utility trench and could not be protected, the Project requested removal of these remains. On November 24, 2015, Jurek-Park Slope Funeral Homes, Inc. (Jurek) was issued Disinterment Permit Number 000065 for the Project, allowing Chrysalis and its forensic team to excavate the remains for removal to laboratory facilities for analysis before reinterment.

Disinterment of Feature 4/Burial 1 occurred over a two-day period from December 3-4, 2015. Excavation was difficult due to the location of the burial less than 6" beneath concrete encased telephone ducts (Image 19). Preliminary field assessment identified this as a fully articulated adult skeleton. During excavation, the only artifacts collected were two nail fragments. These might indicate the former presence of a coffin or containment of some kind for this burial, but no wood material was extant, nor were any garments or grave goods.

Forensic analysis identified Burial 1 as belonging to an adult female, with 131 recovered bones and 20 teeth in poor to good preservation condition. There was a great deal of bone loss, especially of ribs and pelvis, indicating past disturbance of Burial 1. Dentition and long bone growth indicated the individual was approximately 25 to 30 years old at time of death and had a height of approximately 5' 1" to 5' 3". Ancestry characteristics assessment suggested this person was of Caucasian ancestry (see Appendix D – Human Remains Report).

While the lack of complete anatomy suggests these remains were previously disturbed, the high percentage of the skeletal system recovered compared to Burials 2-6 (see below) suggests Feature 4 represented primary deposition of these remains. This individual was perhaps encountered in passing during previous ConEd utility duct installation above but left in place relatively undisturbed.

Previous excavations in Washington Square Park have uncovered a variety of burial conditions. 1890 construction of the Memorial Arch uncovered human remains associated with gravestones and coffins approximately 10' bgs (Geismar 2004, NYT 1890). Excavation in 2009 revealed 10 burials laying supine and lacking any north-south cardinal regularity, some within wood coffins remnants but at least two apparently lacking evidence of coffins. Burials ranged from 3' bgs to 11.2' bgs, perhaps indicating potential for stacked burials, and lacked grave goods. Also recovered were disturbed and scattered human remains as well as a "bone cache" that could have been a result of mass burial, reburial, or previous disturbance (Geismar 2009). 2012 excavations recovered an elaborately carved headstone (Geismar 2012).

Burial 1's disposition was similar to the supine remains lacking wooden coffin evidence identified a potter's field burials in the southern and central portion of Washington Square Park in 2009. Burial 1's location was near the Scotch Presbyterian Church burial ground southern boundary, according to 1817 and 1826 maps (Map 24). It is possible this individual's location lay just outside the Church burial ground boundaries. If so, she was likely interred within the larger surrounding

potter's field sometime between 1797 and 1826. If the burial lay within the Church burial ground lot, it would suggest the woman may have been a parishioner interred between 1793 and 1826, as the Church reserved burial plots for its congregation. It is not known if in-ground burials at the Scotch Presbyterian Church lands included coffins, and remains identified in photographs within the Church vaults included both coffins and coffin-less individuals.



Image 17: Feature 4/Burial 1 as exposed beneath existing utility duct in TR1 S7, facing west.



Image 18: Detail of skull at south side of Feature 4/Burial 1, facing west in TR1 S7.



Image 19: Excavation of Burial 1 in TR1 S7 below existing utility ducts, facing southwest.

Feature 5: Burials 2 and 3

Feature 5 refers to remains identified as belonging to two individuals in the west wall of TR1 S8, below the west Washington Square East curb line. Feature 5 began 89' south of the south wall of Feature 3, the southernmost burial vault previously identified in TR1. Burial 2, the first set of remains identified, was a disturbed burial lying at 5.9' bgs found on November 13, 2015. The remains were oriented north – south in a supine position with the skull at the south end. Preliminary documentation noted that at least two of the long bones were disarticulated and out of position, indicating prior disturbance (Image 20). Soil surrounding Feature 5 was 7.5YR 4/4 clayey loamy sand, a matrix that filled the entire trench below 5' bgs (Table 17). Three nail fragments were initially collected from this matrix immediately surrounding Burial 2.

Upon discovery, the approved Human Remains Discovery protocols were enacted, and Chrysalis' forensic anthropologist came to site to make a preliminary assessment of the skeletal remains. The Project notified LPC and the OME. The OME stated that their office had no concerns with this burial or Feature 4/Burial 1, identified two days earlier. As Feature 5/Burial 2 again lay exposed and disturbed within the opened trench and could not be protected, the Project requested removal of these remains. Chrysalis and its forensic team excavated the identified remains under the existing Disinterment Permit. Burial 2 was disinterred on December 5, 2015.

Soil around Burial 2 was compressed and more dense with clay content than the two overlying fill strata, so several of the skeletal elements, including the skull, were removed within blocks of soil. Excavation indicated that this individual was interred within a coffin, based on the presence of a fine lens of wood material surrounding the extant portion of the remains within the 7.5YR 4/4 clayey loamy sand matrix.

Table 17: Stratigraphy in TR1 S8 surrounding Feature 5.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – .9'	N/A	Asphalt and concrete	Road surface and road base
II	.9' – 2'	10YR 4/2	Loamy sand	Clean fill with ~5% pebble inclusions
III	2' – 5'	10YR 5/4	Clayey loamy sand	Clean fill with elevated clay content surrounding utility ducts
IV	5' – 12'	7.5YR 4/4	Clayey loamy sand	Clean sandy soil with elevated clay content, surrounds Feature 5

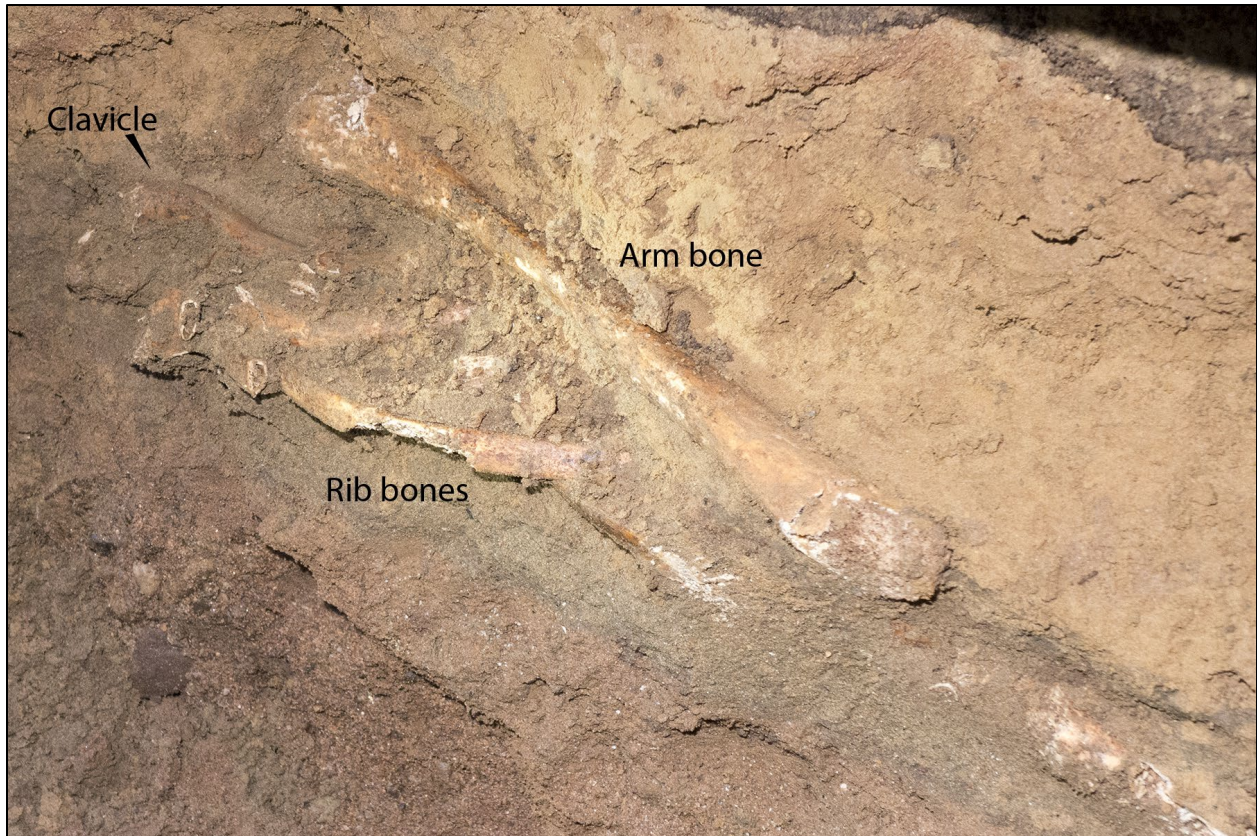


Image 20: Burial 2, facing southwest I TR1 S8, displaying placement of clavicle, rib bones and disarticulated arm bone.

Forensic analysis of the recovered Burial 2 skeletal elements indicated this individual was a child of approximately 12.5 years of age at their time of death. Only about 25% of skeletal elements were present, exhibiting poor to good preservation condition and evidence of post-mortem damage. Burial 2 consisted of 48 bones and 25 teeth. The cranium was removed within a dense block of soil and could not be completely freed from this without impacting bone preservation due to the dense matrix and post-mortem damage that had partially crushed the skull. Dentition showed evidence of multiple periods of stress - infectious disease and/or poor nutrition - during ages 1 to 4 years. Identification of sex or ancestry was not possible given the amount of bone material missing and preservation condition of the recovered material (see Appendix D – Human Remains Report).

Burial 3 was identified immediately after excavation and removal of Burial 2, when the area surrounding Burial 2 was examined for any additional human remains. Burial 3 was a single skeletal element was observed in the cleaned TR1 S8 west profile, appearing at 5' bgs, .9' shallower than Burial 2 (Image 21). This element was identified as belonging to a different individual based on its shallower depth and larger size than the remains recovered as Burial 2. Due to the location of Burial 3, beyond and below wooden shoring for TR1 and in the west profile beyond areas to be excavated for the Project, further examination of the area was limited. Burial 3 was considered an additional individual identified associated with Burial 2, represented by a single humerus that was disinterred along with Burial 2 remains.

Burial 2 was determined to be an interment within a coffin, since decomposed, that had been disturbed after deposition but partially left in place. Overlying utility work or construction of Wooster Street/Washington Square East may have been the source of this disturbance. Burial 3 was too fragmented to make determinations, other than that it, along with Burial 2, lay on the edge of the southern boundary of the Scotch Presbyterian Church burying grounds.

Like Burial 1 located nearby, the position of these remains indicates they may have belonged to individuals from the Scotch Presbyterian Church congregation interred after 1793 or individuals buried in the larger surrounding potter's field between 1797 and 1826. The mapped Church burial ground boundaries are not well defined enough to determine the remains intended place of interment (Map 24). Other burials further west in Washington Square Park have included wooden coffin fragments, and the area also has recorded scattered and disturbed remains potentially similar to Burial 3. Method of interment is not a clear indicator here of which burial grounds these remains were deposited into. While Burial 2's poor dentition may be an indicator of an indigent upbringing and more likely a potter's field interment, there is no comparative evidence to indicate if this was also a trait of Scotch Presbyterian parishioners.



Image 21: Burial 3, represented by a single skeletal element in TR1 S8's west profile.

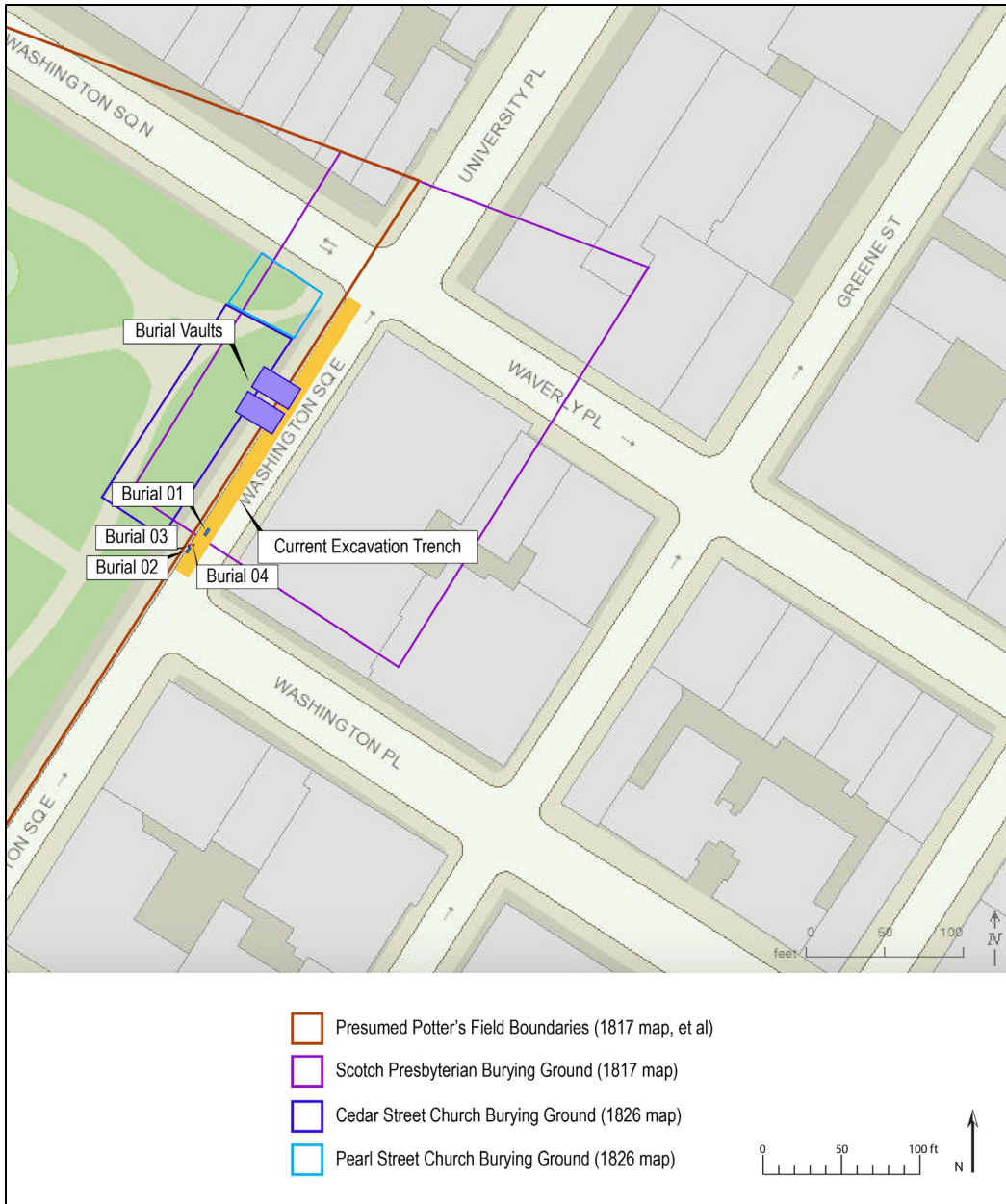
Feature 6: Burial 4

Burial 4 was a fourth individual identified in TR1 S8's west trench profile. Burial 4 was identified December 7, 2015 beginning 85' south of the south wall of Burial Vault 2, and 8' south of Burial 1, found further north in TR1. Burial 4 was discovered when several skeletal remains were dislodged from the west trench wall during mechanical excavation to remove concrete duct

encasements from TR1 S8 (Image 22). Based on an examination of the sidewall stratigraphy, their original provenience was at approximately 4' to 4.5' bgs within the 10YR 5/4 loamy sand found surrounding the concrete utility duct across this part of TR1. Like Features 4 and 5, Feature 6 was located within or just outside the southern mapped historic boundaries of the Scotch Presbyterian Church burying grounds (Map 24).



Image 22: Feature 6/Burial 4 disarticulated human skeletal remains as recovered from west TR1 S8 wall.



Map 24: Burials encountered in TR1 in November/December 2015. Burials 3 and 4 are not to scale.

When the Feature 6/Burial 4 remains were identified, Chrysalis staff followed the Human Remains Protocol. All appropriate parties were notified, and the Burial 4 skeletal remains were handled and examined under the existing DOH permit issued to the project in November 2015. These remains were displaced and disturbed from their original context within the trench wall. Upon completion of the documentation and removal of the fragmented remains, the Project was allowed to proceed in this area. All recovered remains were those disturbed by halted mechanical excavation; no additional skeletal remains were identified in situ.

Forensic analysis of the Feature 6/Burial 4 remains identified two individuals. One was an adult female represented by a left radius, ulna, and humerus. The humerus size suggested age over 23 years. The second individual represented was an infant, indicated by the presence of two cranial fragments that represent a single frontal infant cranial bone. Due to the disturbance to these remains, it is not clear if these two individuals were interred together or simply in close proximity.

Despite a similar age, sex, and Feature 6/Burial 4's location 8' south of Burial 1, Burial 4 does not represent a disturbed element of the more complete burial identified to the north, as Burial 1 already had a left humerus, radius, and ulna accounted for. It is likely Feature 6/Burial 4 represents another set of interments from the Scotch Presbyterian Church or nearby potter's field that was previously disarticulated and damaged by installation of existing ConEd concrete utility ducts along the west side of Washington Square East to 4.5' bgs. Method of interment without an apparent coffin has been noted further west in the Washington Square Park potter's field, but it remains unknown what burial methods were practiced for burial plots in ground at the Church cemetery.

Feature 13: Burial 5

Excavation for TP73 on Washington Square North between Fifth Avenue and University Place exposed Feature 13, disarticulated skeletal remains identified in the southeast portion of the test pit and labelled as Burial 5 on April 12, 2017. An apparent cranium and femur were found at 9.5' bgs, in excavation within and below wooden shoring walls for the test pit (Images 23 and 24). Burial 5 was found in a stratum of 2.5Y 4/4 olive brown loamy sand that lay in the southeast portion of TP73 between 6.25' to 9.5' bgs, from 11' south of the north curb to 15.2' south of the curb. This stratum and the skeletal remains within were located beneath existing utilities, along the east wall of TP73 in a small area measuring 3.2' by .8' (Table 18).

Table 18: Stratigraphy in TP73 surrounding Feature 13.

STRATUM	DEPTH	MUNSELL	TEXTURE	DESCRIPTION
I	0 – .4'	N/A	Asphalt	Road surface
II	.4' – 4'	10YR 6/2	Loamy sand	Backfill from TR58
III	4' – 11.5'	10YR 4/3	Loamy sand	Sandy fill with pebbles, wood fragments, brick fragments
IV	6.25' – 9.5'	2.5Y 4/4	Loamy sand	Fill associated with Feature 13

Upon discovery of Burial 5, the Human Remains Protocol was followed. The appropriate parties were notified, and the skeletal elements were removed under the existing, extended DOH permit issued to the project based on their disturbance from their position in the trench wall (extended in December 2015 to December 2017).

The location of the skeletal remains was in close proximity to the unshored lower area of the test pit wall. It was determined that the elements would need to be removed prior to the installation of shoring to prevent damage. Following documentation, the bones were removed from the test pit. Hand-excavation was undertaken in the southeast section of TP73, and soils surrounding Feature 13 were screened through ¼" mesh to recover any additional human bone fragments or other materials. No in situ or intact additional skeletal elements were recovered, though some small

human bone fragments were recovered. Also recovered from within and around the remains were nineteenth and twentieth century artifacts including glass fragments and rusted nails. The presence of twentieth century materials suggests that the remains were previously disturbed.

Upon completion of the documentation and removal of the fragmented remains, the project was allowed to proceed in this area.



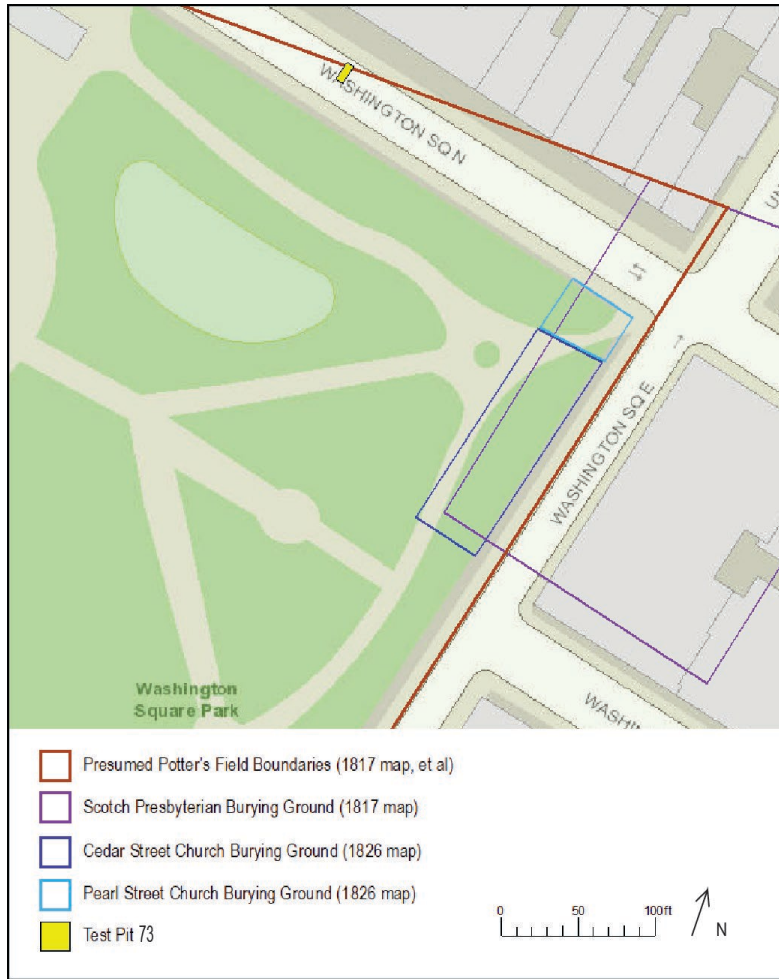
Image 23: Feature 13/Burial 6 skeletal remains along east wall of TP 73, facing east.



Image 24: Feature 13/Burial 6 as discovered in the southeast TP73 wall.

Forensic analysis of Feature 13/Burial 6 indicated the 10 bones recovered represented at least 4 individuals. Included was a cranium of an adult female aged approximately 26 years, and a right femur and tibia of an individual over age 19 of a height between 5'6" and 5'7". Different coloration of these remains suggests divergent burial conditions, implying they belonged to two different individuals. Lack of more complete anatomy per individual prohibited ancestry analysis (See Appendix D – Human Remains Report).

Feature 13 appeared to be a previously impacted area of buried human remains within the historic potter's field boundaries. Although hand excavation and screening did not recover further in situ or intact remains, it is possible that additional skeletal remains are located within the immediate area of Feature 13, particularly towards the east, beyond the wall of the test pit. Based on historic maps, TP73 was located within the potter's field northern boundary, and a bulk of the larger potter's field area lies to the east of the test pit, increasing the likelihood of encountering more remains in that direction (Map 25). Project excavation exposed an existing east – west oriented sewer south of Feature 13 at a similar depth at Burial 6, as well as numerous overlying utilities crossing the street area. Likely installation of the sewer or other utilities in the area previously impacted individuals buried in the area, and their disarticulated remains appeared as Feature 13 after impact or redeposition from these previous disturbances.



Map 25: Location of TP73 relative to historic burial ground boundaries.

VI. LABORATORY RESULTS

Between October 2015 and December 2018, materials were collected from 37 Project contexts (Appendix E – Field Documentation, Appendix G – Artifact Inventory). No materials collected represented finds from intact archaeological contexts. All materials collected were scattered finds from fill matrices, disturbed features, or project backfill. These items were useful in general in assessing the nature of fill episodes and utility excavations, such as identifying modern fill by the presence of plastic or twentieth century glass.

After these collected objects were recorded and documented in the field, they were brought to the Chrysalis laboratory to be cleaned and processed. After the cleaning process, the artifacts were deemed to not have significant cultural relevancy and were culled. No artifacts will be sent to the repository.

Human remains recovered during the course of the Project were removed from site under approval from the OME and under Disinterment Permit Number 000065. Remains were transferred to the Chrysalis laboratory for cleaning, analysis, and storage prior to reinterment. In total, 194 human bones and 50 teeth were collected, representing remains from a minimum number of eight individuals. Six of these individuals were adults, one was a child of about 12.5 years, and one was an infant. Burial 1, a woman aged 25 to 30 years, had characteristics that suggested Caucasian ancestry; the other remains collected were too incomplete or in too poor preservation condition to make ancestry assessments. The child of 12.5 years had dentition that suggested periods of nutritional stress during their first four years of life. See Appendix D – Human Remains Report for a full post-processing report of recovered human remains.

Following analysis, Chrysalis placed the remains in acid-free tissue paper and placed them in archival boxes until they can be returned to the City for re-interment. As communicated in Human Remains Discovery and Proposed Disinterment Memorandum 01, it is recommended that the remains uncovered as part of this project be reinterred with remains recovered from recent Parks projects in Washington Square Park. NYC Parks and NYC DDC reinterment plan for these and other human remains disinterred as part of recent Washington Square Park work was approved by NYC LPC in SRA #19-37103 on June 4, 2019. DDC and WSP-PB will coordinate with both LPC and Parks regarding this matter. To support this, on 21 July 2019 Jurek Park Funeral Home – the authorized human remains courier under the Project Disinterment Permit – transferred one archival box of human remains from 2009 Washington Square Park field testing from Thomas Amorosi, Ph.D., RPA to Chrysalis Archaeology for eventual reinterment with this Project's remains (Geismar 2009) (Appendix F).

Upon enactment of the approved reburial, Chrysalis, in coordination with the Funeral Director, will transport all human remains to the city agency or Funeral home in charge of the reburial.

VII. CONCLUSIONS

PROJECT SUMMARY

The Project APE lay within an area of historical importance in Manhattan. The Project area was used as farmland for most of the late seventeenth and eighteenth centuries, bordered by the Minetta Creek at the west side of modern Washington Square Park. The future park area became a large potter's field in 1797, while Greenwich Village was still relatively sparsely populated. As the City population grew and residences expanded further north, the potter's field began conversion into a parade ground by 1826. The area transitioned into a fully landscaped park by the mid nineteenth century. Historical maps indicate that at some point during the area's 1797 to 1826 usage as a potter's field - at least by 1817 - churches like the Scotch Presbyterian Church utilized specific portions of the burial area for interring their parishioners.

Given the area's historical importance and the potential for encountering human remains, LPC determined that archaeological monitoring should occur. Project excavation began in 2015, and archaeological monitoring took place for over three years. During this time, 104 test pits and 111 trenches were excavated through mechanical trenching and hand excavation. Sixteen archaeological features were identified, including two burial vaults and four areas of buried human remains that were disinterred for forensic analysis.

RESULTS SUMMARY

Project excavations, although encompassing a large area around modern day Washington Square Park, were almost completely limited to the modern street bed. The roadways surrounding the northeast, east, and southeast portions of Washington Square Park as well as the roadways in parts of University Place, Waverly Place, Washington Place, Fifth Avenue, Greene Street, Thompson Street, LaGuardia Place, and West Fourth Street from the Park to Broadway exhibited evidence of extensive prior disturbance and landfilling. Existing water, gas, electric, sewer, and telecommunications utility lines were uncovered in nearly every project excavation from just below the modern concrete road base at around 1' bgs to at least 5' bgs. Manholes and utility boxes these lines fed into were present to depths from 5' to 9.4' bgs, depending on the amount and type of utilities running to them. Brick sewers encountered appeared as shallow as 5' bgs to as deep as 9.5' bgs and extended to at least 17' bgs.

Soil matrices encountered were almost exclusively clean coarse sand or loamy sand fills. Large portions of each roadway excavated were filled with 10YR 4/3 – 4/2 or 7.5YR 4/3 – 4/2 loamy sand fill with small brick and concrete fragments and pebble inclusions. These small inclusions suggest this soil was processed fill or repeatedly redeposited fill soil. Shallower utilities tended to be backfilled with light color clean sands mostly devoid of inclusions, likely more modern clean fill soils added to more recent utility modifications.

There were few areas that appeared to contain undisturbed fills, but clay content appeared to be a signifier for older fill episodes in the Project area. Clay content was noted only in TR1 S7-9 at the northwest portion of Washington Square East, TR6 S5 at University Place, and TR110 at the West Fourth Street and Greene Street intersection below 5' bgs. Clay mixed with loamy sand surrounded

the Features 5 and 6 burials, perhaps indicating clay content was included in soils when the Minetta Creek and farmland that once covered the project area was leveled prior to the creation of the potter's field in 1797. However, burials were not limited soil with clay content – apparently disturbed burials appeared within loamy sand fill in Washington Square North (Feature 13/Burial 6).

As indicated in previous area research, extensive landfilling evident across the Project area appeared to have covered or destroyed any potential prehistoric archaeological resources that may have lay within the APE to the depths excavated by the Project.

MITIGATION AND NATIONAL REGISTER ELIGIBILITY

In general, archaeological monitoring falls under the guidelines of Section 106 of the National Historic Preservation Act of 1966, as amended, and outlined in the National Park Service's National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation. One of the main purposes of this Phase IB activity is to determine whether potentially significant buried cultural resource remains were present within the project area, and, if so, to provide recommendations as to how best to survey and/or mitigate for those resources.

Significant archaeological materials uncovered during the Project were limited to human remains identified during excavation: Features 2-6 and 13. Buried remains from Features 4-6 and 13 were documented, assessed, and removed before the Project could proceed. Features 2-3 burial vaults were documented in place, the interiors assessed through photography, and the constituent communities contacted after investigation into the Scotch Presbyterian Church. Mitigation involved reburying these vaults after documentation and mapping and re-routing planned Project utilities around the resources to leave them intact.

National Register Criteria for Evaluation breaks down evaluation into four categories:

Criteria for Evaluation:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- a. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- b. That are associated with the lives of significant persons in or past; or
- c. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. That have yielded or may be likely to yield, information important in history or prehistory.

The Project areas surrounding Washington Square Park (Washington Square North, East, and South) are within the Greenwich Village Historic District. The Greenwich Village Historic District's local and national significance is derived from its unique local mix of nineteenth century architecture (Federal, Greek Revival, Gothic Revival, Italianate), its association with significant people (Henry James, Mark Twain, Edgar Allen Poe, Ann Charlotte Lynch, and many others), and its association with significant historic events (potter's field, Parade Ground, NYC's first labor march, 1915 women's suffrage march) (NYC LPC 1969, Spencer-Ralph 1979).

The recovered burials along Washington Square North and Washington Square East contribute to the established National Register characteristics of the park's as part of the Greenwich Village Historic District in that they represent individuals interred either as part of the park's late eighteenth and early nineteenth century potter's field (Feature 13, possibly Features 4-6) or as part of Scotch Presbyterian Church usage of the pre-park landscape (Features 2-3, possibly Features 4-). The presence of these remains indicates previously undisturbed portions of the park area – including areas directly below existing utilities – are significant for their likelihood to yield important historical information about persons interred in the grounds.

No materials that meet National Register significance criteria were identified as part of Project work in the portions of the project outside of Washington Square North and East, including excavation within the NoHo Historic District (West Fourth Street from Mercer Street to Broadway). The few architectural features encountered were highly disturbed and damaged architectural remnants surrounded by later fill materials, and they could not be definitively identified or associated with a particular use period, individuals, or significant events.

One of the goals of the current NYC DDC project is to rebury the human remains recovered during this project. At the request of the NYC LPC, the NYC Parks and NYC DDC worked together to come up with a plan that would allow for the collective reinterment of all the various human remains recovered from the general Washington Square Park-area excavations that have occurred in the twenty-first century. The plan was approved by NYC LPC in SRA #19-37103 on June 4, 2019. NYC Parks is constructing a vessel that will be used to house the various remains recovered, and they will be reinterred within Washington Square Park itself in a yet-to-be determined location. NYC DDC has contracted for a memorial paving stone to be created and installed in the sidewalk of Washington Square Park indicating the re-burial. This stone will include a brief history of what transpired in the park in terms of its previous incarnation as a cemetery.

VIII. RECOMMENDATIONS

Based on the findings from archaeological monitoring, the streets within the Project area surrounding the east half of Washington Square Park show evidence of extensive disturbance to at least 5' below the modern road surface. The streets surrounding the park do not warrant further archaeological excavation or field monitoring unless work is performed on the 225' of the west curb area of Washington Square East between Washington Square North and Washington Place, the vicinity of Burial Vaults 1-2 and Burials 1-5 that appeared to extend further west below the west sidewalk. Monitoring would also be recommended should work occur in the area immediately east of Burial 6 in the center of Washington Square North, 250' west of the west Washington Square East curb line. Burial 6 indicated mixed, disturbed human remains may continue east beyond current Project excavation limits in a matrix located 6.25' to 9.5' below the road surface.

No further archaeological testing or monitoring is suggested, unless Project work is to occur within the limits of Washington Square Park or its sidewalks due to the high probability of disturbing human remains from the potter's field.

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Appendix A:
Monitoring Plan Unanticipated Discoveries Human Remains



To: New York State Office of Parks, Recreation and Historic Preservation
City of New York - Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP – Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A., and Christopher Ricciardi, Ph.D., R.P.A.

Re: Phase IB Archaeological Monitoring Plan, Unanticipated Discoveries Plan and Human Remains Protocol for the Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608)

Date: October 3, 2015

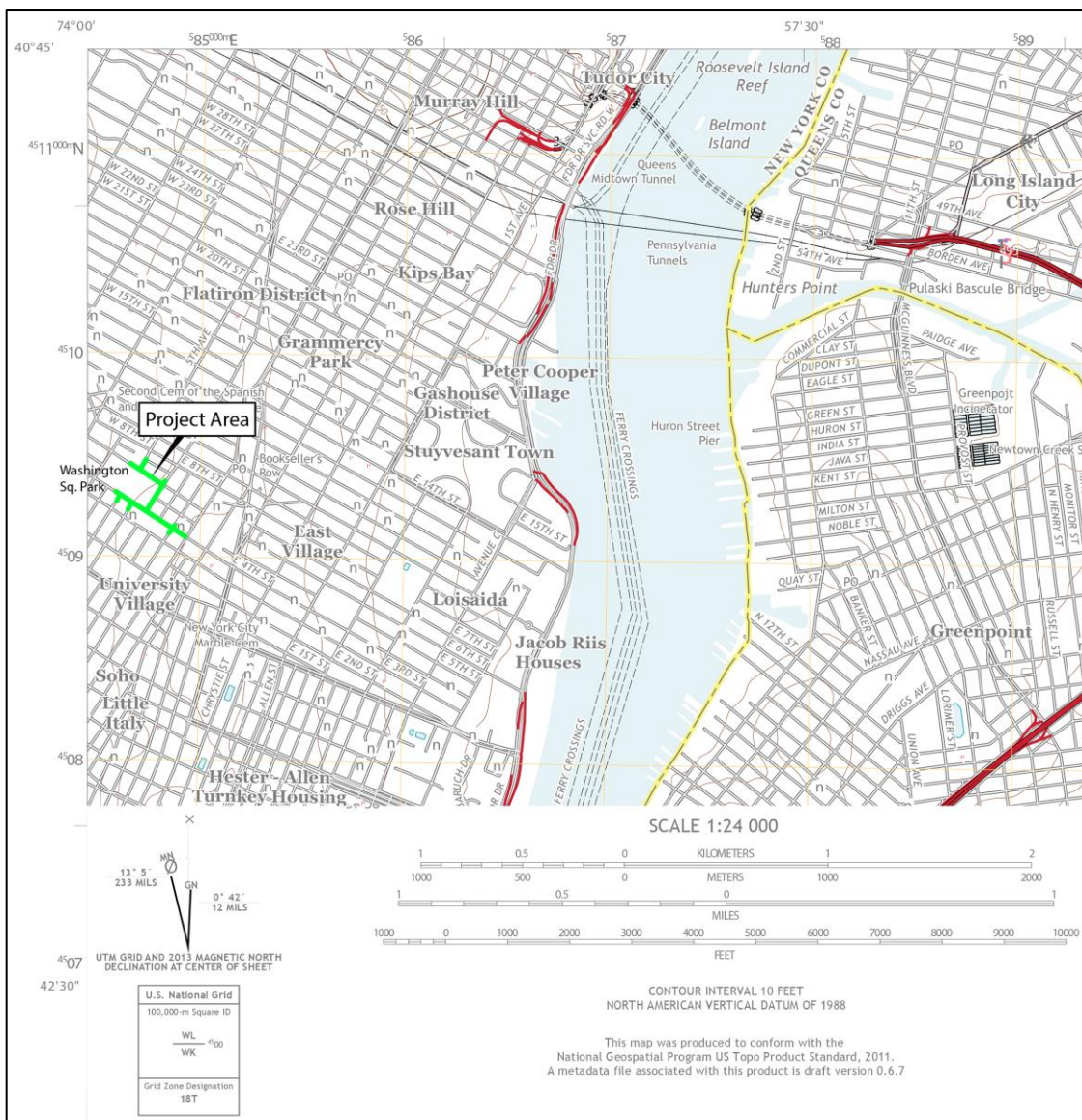
INTRODUCTION

WSP – Parsons Brinckerhoff (WSP-PB) is serving as the engineering contractor for the Washington Square Park – Water Main Replacement and Connection Project (MED608) being undertaken by the City of New York – Department of Design and Construction (NYC DDC). Work will occur within the street beds and curbs surrounding the eastern half of Washington Square Park, New York, New York including: Washington Square South between Thompson Street and Washington Square East, Washington Square North between Fifth Avenue and University Place, Washington Square East between Washington Square Park North and Washington Square South/West Fourth Street, and West Fourth Street between Washington Square East and Broadway. Additional excavation will occur within the intersections of Washington Square Park North and Fifth Avenue, Washington Square North/Waverly Place and University Place, Washington Square South and Thompson Street, Washington Square South and LaGuardia Place, West Fourth Street and Greene Street, and West Fourth Street and Mercer Street (Maps 01 and 02).

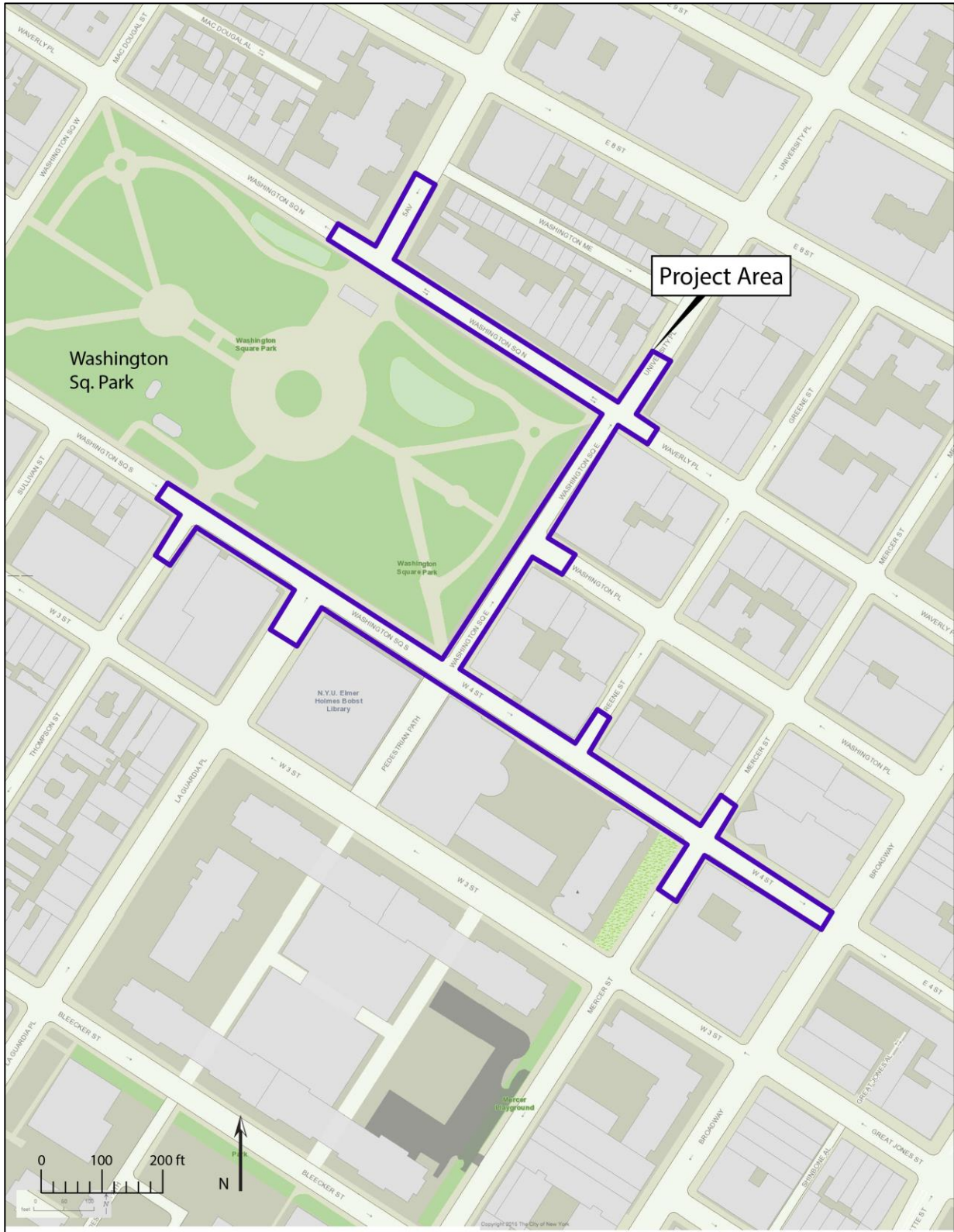
Chrysalis Archaeological Consultants, Inc. (Chrysalis) has been retained as the archaeological contractor for the Phase IB Cultural Resource Management/Archaeological investigation as part of the overall project.

This document consists of three components: the Archaeological Monitoring Plan and Protocol, the Unanticipated Discoveries Plan, and the Human Remains Protocol for the project. The NYC DDC established the overall project area, as defined above. The Area of Potential Effect (APE) is defined by the construction footprint, previously discovered cultural resources including human remains, and consultation with NYC DDC and the regulatory agency.

This plan is provided to the City of New York – Landmarks Preservation Commission (NYC LPC) and the NYC DDC for review, approval and implementation. It describes the procedures and tasks to be performed as part of the Cultural Resources portion of the project and what is to occur in the event that archaeological and/or human remains are exposed when the project archaeologist is not on site.



Map 01: USGS – Brooklyn Quadrangle, 2013



Map 02: Project area map (NYCityMap 2015).

The purpose of the overall cultural resources project guided by this Archaeological Monitoring Plan, Unanticipated Discoveries Plan and Human Remains Protocol is to: 1) determine whether the project area contains significant cultural resources (i.e. National Register Eligibility, etc.) and/or human remains; 2) develop a historical and archaeological context(s) for the interpretation and evaluation of any potential cultural or archaeological resources that are or may be present within the Area of Potential Effect (APE); 3) recover potentially significant buried cultural resources; 4) detail protocols to be followed in the event that either fragmentary or *in situ* human remains are discovered; 5) outline the lines of communication and protocols that will be employed throughout the process; 6) detail what steps will be taken in the event that significant unanticipated archaeological remains, including, but not limited to human remains, are uncovered; 7) outline the laboratory process to be followed, if required; and 8) provide all necessary services related to the cultural resource process during the overall project.

The archaeological tasks required as part of the Phase IB project include:

1. Preparation and development of an Archaeological Monitoring Plan, Unanticipated Discoveries Plan, and a Human Remains Discovery Plan and Protocol based on the current Scope of Work provided by WSP-PB and NYC DDC.
2. Outline procedures and protocols to be followed by the project if significant material or human remains are exposed during the course of the project, including in areas where archaeological monitoring is not required. Note - the Human Remains Protocol Plan pertains to any and all areas where human remains may be exposed;
3. Conduct Archaeological Monitoring and/or Testing of the project area based on the archaeological sensitivity; conduct laboratory analysis of any material remains recovered (i.e. cleaning, cataloging, and creation of a database of the remains); and conduct recordation and analysis of any human skeletal remains discovered throughout the project.
4. Produce a draft and final report of the results.
5. Based on the results of what is uncovered in the field, develop either Phase II or Phase III Mitigation Plans, if needed.
6. Provide all additional related cultural resource management services that may arise, including participation in project delivery team meetings and consultation with review agencies and interested parties.

PROJECT DESCRIPTION

The main objective of the Project is to abandon the existing water main services within the project area and install new services. This will be possible by performing major work as described below:

- Upgrade existing 36” dia. Trunk Water main pipes with new 48” dia. Steel TWM and its appurtenances.
- Upgrade existing 12” dia. Distribution Water main pipes to 20” dia. Distribution Water mains, such as on Washington Square South between Thompson Street and LaGuardia Place; Washington Square East and Washington Square North.
- New Trunk Water main line will be Tied-In at the following locations:
 - At LaGuardia Place (south of Washington Square. South)
 - Just West of Broadway (prior to 36” x 48” round-about on West 4th Street)
 - At 5th Avenue (North of Washington Square North)

In addition to water main work, other related work within the Project’s scope includes installation of new catch basins and chute connections; sewer manholes, limited 15” ESVP sewer installation / cured in place pipe sewer lining at 5th Avenue, Con Edison gas relocation work, relocation of other private utilities, and new installations that may not be specified in the Contract. Work also includes installation of some traffic and streetlights, curb and sidewalk restoration, concrete base & asphalt roadway restoration, green bicycle pavement overlay, and street signage and striping.

CULTURAL RESOURCE REGULATIONS

For cultural resources and structures, the National Historic Preservation Act (NHPA) and the Advisory Council on Historic Preservation (ACHP) define, under ‘Section 106 Regulations’, that federal agencies (and other governmental agencies using federal funds) must consider the effects of their actions on any properties listed on, or determined eligible for listing on, the National Register for Historic Places (NR). Likewise, the State Historic Preservation Act (SHPA) and the (New York) City Environmental Quality Review Act (CEQRA) require that agencies must consider the effects of their actions on any properties listed on, or determined eligible for listing on, the State and City Register for Historic Places.

The proposed work will be conducted in accordance with the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation’s “Protection of Historic and Cultural Properties” (36 CFR 800). The investigation will also be conducted pursuant to NYC LPC and NY SHPO guidelines for such projects (New York Archaeological Council [NYAC 1994; 2000; 2002]). The cultural resources specialists who will perform this work will satisfy the qualifications specified in 36 CFR 61, Appendix A as well as those outlined in the Landmarks Preservation Commission Guidelines for Archaeological Work in New York City (2002).

SUMMARY OF ARCHAEOLOGICAL SENSITIVITY

Washington Square Park is a known historic cemetery, the boundaries of which are not clearly defined. The following areas are deemed to be archaeologically sensitive and will require archaeological monitoring:

- Washington Square South between Thompson Street and Washington Square East,
- Washington Square North between Fifth Avenue and University Place,
- Washington Square East between Washington Square Park North and Washington Square South/West Fourth Street
- West Fourth Street between Washington Square East and Greene Street
- Intersection of Washington Square Park North and Fifth Avenue
- Intersection of Washington Square North/Waverly Place and University Place
- Intersection of Washington Square South and Thompson Street
- Intersection of Washington Square South and LaGuardia Place

PHASE IB ARCHAEOLOGICAL PLAN PROTOCOLS

Phase IB fieldwork is designed to ascertain the presence/absence, type, and extent of archaeological resources within a site. Its ultimate goal is to determine whether significant (i.e., National Register [NR] eligible) resources that could be adversely affected by project construction are extant within the APE.

The following sets forth the plan for Phase IB archaeological monitoring and investigation for the Washington Square Park Water Mains Replacement Project. It describes additional mitigation measures that will be undertaken should archaeological resources be encountered during the archaeological investigations, including artifact analysis such as laboratory work, written reports, and further documentary research, if necessary.

ARCHAEOLOGICAL MONITORING

Archaeological monitoring is defined as “the observation of construction excavation activities by an archaeologist in order to identify, recover, protect and/or document archaeological information or materials” (NYAC 2002:2).

All monitoring activities will be in compliance with NYC LPC’s Guidelines for Archaeological Work in New York City (LPC 2002) and NYAC’s Guidelines for the Use of Archaeological Monitoring (NYAC 2002). The archaeologist(s) will maintain drawings, photographs, and descriptions of all encountered resources as well as an up-to date log of all monitoring activities, including the date, time, and duration of all monitoring episodes, accompanied with a description of the activity being monitored.

Archaeological Monitoring will occur in each of the sections listed above once the concrete and/or asphalt roadbed surfaces are removed. Removal of the concrete and/or asphalt surfaces does not require archaeological monitoring. Monitoring will occur until the final construction depths are reached in all archaeologically sensitive areas and/or if the archaeological monitor determines the excavation area to have reached sterile soil (with regard to potential archaeological deposits and resources).

An archaeological monitor is required for each excavation area as noted. If excavations requiring archaeological monitoring are occurring simultaneously in more than one area at a time, additional archaeological monitors will be required to ensure that each excavation area is monitored in accordance with the protocols. The project will provide at least 24 hours' notice prior to the beginning of excavation work in any areas that require archaeological monitoring so that the adequate resources can be provided.

In the event that archaeological deposits are encountered, the archaeologist(s) will be permitted to temporarily halt excavation to examine the soil and potential resource(s) in the trench more closely. The archaeologist will be permitted to halt excavation for a period of up to 24 hours to allow time for photography, drawing of plan views and profiles, screening of removed soil for artifacts, removal of soil samples, hand excavation, and any other actions deemed necessary to determine the nature, extent, and potential significance of the discovery. The archaeologist will determine the level of documentation for each discovery.

If more than 24 hours is required to document a deposit, then the archaeologist will notify and consult with the WSP-PB Resident Engineer (RE) of the additional time needed. Additional documentary research may be also necessary in order to further understand the potential significance of deposits.

If work stoppages occur, the construction contractor may relocate to an area or task where archaeological monitoring is not required. However, if excavation is to occur in another potentially sensitive area, the archaeological team will provide additional staff, within a minimum mutually agreed upon notification period for staffing changes, to monitor this additional area while work documenting the cultural resource occurs.

If the resources encountered are deemed significant, it will be necessary to consult with NYC LPC.

If the resources encountered do not appear potentially significant, the on-site professional archaeologist will notify the appropriate construction personnel, and construction may resume.

GENERAL METHODOLOGY

During all excavation, the construction contractor will provide assistance to the archaeological team, as needed. This may include, but is not limited to, pumping water from excavation areas, providing additional shoring to trenches, meeting all OSHA regulations, and machine excavation of non-sensitive levels to further reveal resource(s). Construction personnel will allow the archaeologist access to the excavation area at a maximum of 60-minute intervals, as requested, to enter and observe soils and stratigraphy within the excavation area.

If excavation depths extend below 1.5 meters (5 feet), archaeologists will observe the excavation from the street level and request specific soil deposits be temporarily piled beside the excavation in order to closely examine them. It may be necessary to temporarily halt excavation to enter the construction excavation area in order to observe the deeper deposits.

In the event that archaeological deposits are encountered, professional standards for excavation, screening, recording of features and stratigraphy, labeling, mapping, photographing, and cataloging will be applied. If intact deposits are identified below 1.5 meters (5 feet), all health and safety concerns will be addressed prior to the archaeologists entering the confined space to examine the deposits.

Documentation of archaeological deposits may require soil sampling or the hand excavation of features, cultural layers or test units. Screening of soils from the excavation will be based upon the judgment of the archaeologist. Soils will be screened through ¼ inch-mesh screen and excavated by natural strata or in pre-determined controlled levels. Soils from both the trenches and units will be described using the Munsell color system and standard texture classifications. All artifacts recovered during screening will be retained, with the exception of bulk materials such as concrete rubble, brick, large metal objects, ash coal, cinders, and slag. In the case of such materials, a sample will be described from each provenience and the remainder will be quantified and discarded in the field. Recovered artifacts will be bagged according to their unique provenience and transported to the laboratory for processing and analysis. An artifact catalog, recording the depth and location of each recovered artifact, will be created. Soil profiles, cultural features, etc. will be described, photographed in digital format and illustrated by measured drawings in metric or Engineers scale in plan and vertical perspective, as appropriate.

If NRHP-eligible archaeological sites are identified during construction monitoring all work will cease in the area of the discovery until NR eligibility evaluation (Phase II) and, if necessary, mitigation through data recovery (Phase III) is completed. A scope of work for the potential Phase II and/or III work will be developed in consultation with NYC LPC and NYC DDC and implemented prior to further construction to retrieve significant information before all or part of the site is impacted by construction. Preparation of a scope of work for potential Phase II and/or Phase III investigation may cause a delay in construction, given the requirement for agency review and approval prior to initiating those tasks.

The project will provide a protected area within the project site or field office to temporarily store equipment and/or material remains recovered from the excavation trenches. Materials remains may require temporary storage prior to transportation to Chrysalis' laboratory facility.

IF SIGNIFICANT ARCHAEOLOGICAL DEPOSITS ARE FOUND

If archaeological resources are encountered that the on-site archaeologist determines to be potentially significant, e.g. appearing to meet eligibility criteria for listing on the National Register of Historic Places (NR-eligible), the archaeologist will notify all project shareholders, including, but not limited to, WSP-PB, NYC DDC and NYC LPC.

NYC LPC and NYC DDC will be consulted to determine if further archaeological field-testing and/or mitigation is necessary. If no additional testing is required, the archaeologist will notify the construction contractor/manager that work may resume once documentation of the resource(s) has been completed. The specific time required for the documentation effort will be coordinated with the project team. The construction contractor should plan, schedule, and execute their work in a manner such that work stoppages will not result in a total shutdown of any construction work.

LARGE SCALE DISCOVERIES

In the event of a significant large-scale discovery, defined as a significant discovery containing a large volume of burials, materials and/or features that will require additional archaeological excavation for data recovery, all project shareholders including WSP-PB, NYCS DDC, and NYC LPC, will be consulted to develop a path forward meeting the needs of the potential discovery. Following this consultation it may be recommended that additional archaeological measures and resources be employed. This may include, but is not limited to, additional staffing, specialist consultants and expanded archaeological testing/excavation such as Phase II data recovery.

The ability to bring in a larger or additional archaeological staff and additional resources would allow for a more expeditious approach toward the recovery and documentation of any large-scale discoveries.

In the event of a large-scale discovery the following procedures will be followed:

1. Upon discovery, Chrysalis will halt excavation and notify WSP-PB, who will, in turn, notify NYC DDC. Chrysalis will notify NYC LPC.
2. A meeting will be held to discuss how to best address the discovery. If NYC LPC determines that extensive excavation and recovery are required (i.e. Phase II or Phase III Mitigation), Chrysalis will create a SOW for the specific tasks outlined at the meeting, to include time and budget, within ten business days. The SOW will be provided to WSP-PB and NYC DDC for approval.
3. Upon written approval from WSP-PB, Chrysalis will bring in the additional resources required to complete the specific task(s).
4. Once the agreed upon tasks of the SOW are completed, any additional resources and services will no longer be required unless further along in the project additional large-scale discoveries are made.

HUMAN REMAINS

Special consideration and care is required if human remains are uncovered. Any action related to the discovery of human remains is subject to the statute law as defined in the *Rules of the City of New York*, Title 24 - Department of Mental Health and Hygiene, specifically Title 24, Title V, Article 205. In addition, the NYC LPC regulations regarding human remains and the New York Archaeological Council's (NYAC) policy on the discovery of human remains and items of cultural patrimony as defined by Section 3001 of the Native American Graves Protection and Repatriation Act (NAGPRA) will be taken into consideration – providing they do not conflict with the City of New York statute regulations. The protocols to be implemented in the event that human remains are discovered are more fully detailed in the human remains section of this document but are briefly summarized below.

ARTIFACT ANALYSIS AND CURATION

All artifacts will be cleaned, catalogued and stored in archival safe materials. Pre-contact and historic artifacts will be analyzed in terms of material type, form, function, and temporal attributes (e.g., Noël Hume 1969, South 1977, Miller 1991). Detailed analysis will include the identification of the Terminus Post Quem (TPQ) of artifacts for each context and generation of mean beginning and end dates for assemblages. This information will be used to establish context and to determine whether such assemblages represent primary or secondary deposits.

Any artifact collection removed from the project site will be the property of the project site owner, in accordance with NYC LPC guidelines. It is the responsibility of NYC DDC to arrange for the long-term curation of the collection in an appropriate facility. The New York City Archaeological Repository (NYCAR) will accept significant and representative materials recovered from the site for curation. Any significant deposits that will be curated at the NYCAR will be prepared in accordance with NYC LPC's curation guidelines (in process) and the standards of the receiving repository. The artifacts will be returned to the project for transmittal to the long-term curation facility upon completion of the laboratory analysis and with the submission of the final report. There may be archaeological materials and deposits recovered that the NYCAR will not accept for curation. These materials will be returned to NYC DDC. It is the responsibility of NYC DDC to arrange for their storage, curation with another facility or final disposition. The archaeological team will prepare any materials not being delivered to the NYCAR for long-term storage according to current archaeological standards.

REPORT RESULTS

A report documenting the results of the monitoring, analysis, any other background and/or documentary research, and field efforts will be prepared according to NYC LPC standards. In addition, the report will include recommendations regarding the potential National Register eligibility of any artifact deposits and/or features and recommendations for additional investigation or mitigation, as necessary. A digital, preliminary draft report will be submitted to WSP-PB and NYC DDC for initial review. Upon approval, the formal draft report will be submitted in printed form to NYC LPC. Upon the approval of NYC LPC, two printed copies will be provided to NYC LPC for their records. Digital copies will be provided to all other parties unless printed copies are requested.

ARCHAEOLOGICAL AWARENESS ORIENTATION

Due to the sensitivity and nature of the site, construction personnel will be relied upon to work with the archaeological team in the identification of archaeological resources and deposits as well as human remains. There will also be areas that are not subject to archaeological monitoring but may still contain archaeological materials or human remains.

Chrysalis will provide an Archaeological Awareness Orientation for all project and construction personnel. This orientation will include historic and archaeological background of the area and the site as well as information regarding the types of resources that may be encountered during this project and how to recognize those resources. This orientation must occur prior to the commencement of any construction excavation activities to ensure the construction contractor understands the nature of the archaeological significance of the area and the procedures of this combined Archaeological Monitoring Plan, Unanticipated Discoveries Plan, and Human Remains Protocol.

UNANTICIPATED DISCOVERIES PLAN

The Unanticipated Discoveries Plan is to be used as a guide for construction personnel during portions of the project that do not require archaeological monitoring. Unanticipated Discoveries are defined as any cultural resources, including human remains, found during construction in any portion of the project site not monitored by the archaeologist. Cultural resource discoveries that require immediate reporting and notification to the archaeological team and the construction coordinator include, but are not limited to, human remains and recognizable, potentially significant concentrations of artifacts, features, or other evidence of human occupation. All project team members and construction foremen should be made aware of this plan.

The WSP-PB RE will coordinate with the professional archaeologist for implementation of the Unanticipated Discoveries Plan. The WSP-PB RE will obtain, review, and file on site this Unanticipated Discoveries Plan. The WSP-PB RE will initiate implementation of the Unanticipated Discoveries Plan by sponsoring an awareness session with the archaeologist, on-site construction management personnel, equipment operators, and laborers.

Cultural resource discoveries that require reporting and notification to the WSP-PB RE include (but are not limited to):

1. Any human remains including coffins, burial vaults or other evidence of burials.
2. Any recognizable, potential concentrations of artifacts, features, faunal material or other evidence of human occupation.
3. Building or other structural foundations. These may be constructed of wood, stone or brick. It is possible that artifact deposits exist within these features. Foundation walls may be intact, but often only sections of a wall are uncovered and/or remain.

In the event that previously unanticipated archaeological resources are found during construction in any portion of the project site, the following procedures will be followed:

1. If an unanticipated discovery of artifacts or historic structural remains, as defined above, occurs during construction, all work will immediately stop in the area of the find to protect the integrity of the find. Work may not resume in the area of the find until the archaeologist and the WSP-PB RE has granted clearance.
2. The construction foreman will immediately notify the designated on-site WSP-PB RE of the find. The WSP-PB RE will instruct the construction foreman to flag and fence off the area of the discovery to ensure safety and avoidance of impacts.
3. The WSP-PB RE will immediately notify NYC DDC and the archaeologist of the find. The notification will include the specific location of the discovery within the disturbed area of the project site and the nature of the discovery. The WSP-PB RE will identify the location and date of the discovery on the project plans.

4. The archaeologist will coordinate an on-site archaeological consultation to evaluate the find. A reasonable amount of time must be given to the archaeologist to not only arrange to return to site (generally within 24 hours) but to complete the assessment of the discovery (generally within 24 of arriving on site). These timeframes may vary based on the nature of the discovery (i.e. size, complexity, etc.).
5. The archaeologist will conduct an on-site assessment of the find. If necessary, the archaeologist will coordinate with the WSP-PB RE to direct the contractor to flag or fence off the archaeological discovery location and direct the contractor to continue work in another portion of the project area. The contractor will not restart work in the area of the identified archaeological resource until WSP-PB RE has granted clearance, after receiving word from the archaeologist that the archaeological resource has been fully examined.
6. The archaeologist will then promptly notify the WSP-PB RE and NYC DDC of the preliminary significance, if any, of the find.

If the discovery is determined to lack potential significance by the archaeologist, the WSP-PB RE will grant clearance to the contractor to resume work.

If the unanticipated find is determined to be potentially significant, the following procedures will be followed:

1. The archaeologist will promptly notify WSP-PB, NYC DDC, and NYC LPC of the find. This notification will explain why the archaeologist believes the resource to be significant and define a SOW for further evaluating the significance of the resource and project effects on it. All work to evaluate significance will be confined to the area of potential effect.
2. The archaeologist will conduct a more detailed assessment of the material remains significance and the potential effect of construction.
3. The archaeologist will document the find in accordance with the guidelines presented in the Archaeological Plan/Protocol.
4. WSP-PB will notify other parties, as directed by NYC LPC, or as indicated by City/State law.
5. If the find is determined to be significant, and continuing construction may damage more of the resource, then the archaeologist, WSP-PB and NYC DDC will consult with LPC, and project shareholders regarding further mitigation and appropriate measures for recovery and/or appropriate measures for site treatment. These measures may include:

- Formal archaeological evaluation of the site
 - Visits to the site by NYC LPC and other parties
 - Preparation of a mitigation plan for approval by NYC LPC
 - Implementation of the mitigation plan
 - Approval to resume construction following completion of the fieldwork component of the mitigation plan
6. If the find is determined to be isolated or completely disturbed by previous construction activities, the archaeologist will consult with the WSP-PB RE, NYC DDC, and NYC LPC and will request approval to resume construction, subject to any further mitigation that may be required by NYC LPC.
7. The WSP-PB RE will notify the Construction Contractor of clearance to resume work.

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6th Precinct
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212.741.4811

HUMAN REMAINS PROTOCOL

Special consideration and care is required if human remains are uncovered. Any action related to the discovery of human remains is subject to the statute law as defined in the *Rules of the City of New York*, Title 24 - Department of Mental Health and Hygiene, specifically Title 24, Title V, Article 205. In addition, the NYC LPC regulations regarding human remains and the New York Archaeological Council's (NYAC) policy on the discovery of human remains and items of cultural patrimony as defined by Section 3001 of the Native American Graves Protection and Repatriation Act (NAGPRA) will be taken into consideration – providing they do not conflict with the City of New York statute regulations.

Washington Square Park is a known historic cemetery where human remains have been exposed during previous construction works. In consideration of the site history, this Human Remains Protocol has been drafted to provide a clear process for all project participants to follow in the event that human remains are exposed.

The project has the potential to expose partial or fragmented human skeletal remains, intact or *in situ* human skeletal remains or burials, and burials contained within coffins and/or burial vaults. This Protocol is applicable to all instances when potential human remains are exposed, both when the archaeological team is on site and when the archaeological team is not on site.

As per New York City law (Title 24, Title V, Section 205.1 (a)) a burial is defined as a “means (of) interment of human remains in the ground or in a tomb, vault, crypt, cell or mausoleum, and includes any other usual means of final disposal of human remains other than cremation” (Rules of the City of New York 2015). For the purposes of this project and as per New York City law (Title 24, Title V, Section 205.1 (c)), human remains are defined as “any part of the dead body of a human being but does not include human ashes recovered after cremation” (Rules of the City of New York 2015). This includes any bone fragments, a single bone or tooth, partial skeleton, etc.

As per New York City law (Title 24, Title V, Section 205.7) a permit must be obtained for the disinterment of any human remains. A funeral director must obtain this permit. No human remains may be removed from the ground, from the area where they are first exposed, until this permit has been obtained. No construction work can occur in this area while the permit is being obtained and until the archaeologist, in consultation with LPC, gives clearance for work to proceed.

In any area that human remains are discovered, the WSP-PB RE and/or the on-site Construction Foreman or Supervisor will flag or fence off the area of the discovery, taking all practical measures to protect the discovery from damage and disturbance.

The Construction Contractor should plan to move to another location if human remains are exposed, as work will need to be temporarily halted in the area of the remains. If the contractor moves to an area that requires archaeological monitoring, additional archaeological personnel will be required on site.

Initial Protocol

- If suspected human remains are exposed, the archaeologist in conjunction with the WSP-PB RE and/or the on-site Construction Foreman or Supervisor will immediately halt all work in the area of the discovery.
- If suspected human remains are exposed in an area that has not been previously identified for archaeological monitoring, i.e. if the archaeologist is not on site, the WSP-PB RE and/or the on-site Construction Foreman or Supervisor will immediately halt all work in the area of the discovery and notify the archaeologist. The archaeologist will return to site within 24 hours of notification. The WSP-PB RE and/or the on-site Construction Foreman or Supervisor will cover and protect the discovery from any further disturbance.
- The archaeologist (once on site) will enter the construction area to inspect the discovery. Chrysalis' Forensic Anthropologist may be called to site to make a determination if the skeletal remains are human or not.
- If the identified skeletal material is not human, the archaeologist will inform the WSP-PB RE and/or the on-site Construction Foreman or Supervisor that work may continue.
- If the skeletal material is human, the archaeologist will inform the WSP-PB RE and/or the on-site Construction Foreman or Supervisor that work must cease in the area, and the full remainder of the human remains protocol will be implemented.

Human Remains Protocol

At all times, human remains must be treated with the utmost dignity and respect. The following procedures will be followed once it is confirmed that human remains have been exposed:

1. The WSP-PB RE will notify the NYC DDC. The archaeologist will notify NYC LPC.
2. The WSP-PB RE will immediately notify the New York City Police Department (NYPD) and the archaeologist will notify the Medical Examiner's office (OME) of the find. The project will cooperate with the OME and NYPD, providing access to the site if required.
3. Once the NYPD and OME have determined they have no concerns regarding the discovery¹, the WSP-PB RE will direct the archaeological team to proceed with an initial assessment of the remains, including if the remains represent an intact burial, multiple burials, or partial skeleton or fragmentary skeletal remains, and the potential effect of construction.
4. Chrysalis will draft a Memorandum to LPC detailing the discovery, including recommendations as to how to proceed.

¹ NYC Department of Health requires that this be obtained in writing.

5. It is the preference of LPC that human remains, particularly *i*Due to the nature and location of the project, it is assumed that removal of the human remains will be necessary. Permits from the City of New York Department of Health and Mental Hygiene (DOH) are necessary for the disinterment and disposition of any human remains. Permits are required for intact burials, partial burials, and fragmentary remains.
6. Only a funeral director can obtain the permits from DOH. Chrysalis will contact and coordinate with the Funeral Director to obtain all necessary permits².
7. The WSP-PB RE will notify any parties, including next of kin, if known, as directed by the NYC LPC or as indicated by City/State law.
8. Once the proper permits have been obtained, the archaeological team will proceed as appropriate depending on the context of the discovery and based on consultation with LPC.

Protocol for Fragmentary Human Remains

If the exposed skeletal remains are determined to be fragmentary and do not represent a partial or intact skeleton, the following procedures will be implemented:

1. Chrysalis will begin a detailed archaeological assessment of the discovery. This may include photography, scaled drawings and eventual removal of the remains. Only the archaeologist or Forensic Anthropologist may excavate identified human remains.
2. Once this is completed and the fragmentary remains have been removed, the archaeologist will further investigate the area to assess if any additional remains are present.
3. If no further human remains are present, the archaeologist will notify the WSP-PB RE and/or the on-site Construction Foreman of Supervisor that work may continue.

² The permit requires that the descendant of the deceased or descendant organization be identified. The majority of the area was a Potter's Field and the City of New York will be named as the descendant organization. However, there is the potential to encounter burials associated with the historic church cemetery in the northeast portion of the park area. Additional research may be required to identify the descendant organization prior to obtaining the permit.

Protocol for Partial Burials or Intact and in situ Human Remains

If it is determined that intact interments are present and may be disturbed by continuing construction, the archaeologist will consult with the NYC LPC and the project regarding additional measures to avoid or mitigate further damage. The following protocol will be followed:

1. Chrysalis' Forensic Anthropologist will further assess the burial and begin documentation. Only the archaeologist or Forensic Anthropologist may excavate human remains that have been identified.
2. Chrysalis will consult with NYC LPC and the project regarding potential additional mitigation measures;
3. Chrysalis will prepare and submit a mitigation plan for the disinterment, documentation and analysis of the human remains. This will be submitted to NYC LPC for approval.
4. Any disinterment will be conducted by and/or under the supervision of the Forensic Anthropologist following the procedures detailed in the mitigation plan.
5. Depending on the scale of the discovery, additional archaeological personnel may be required to assist with archaeological tasks on site.
6. If any burials are to remain *in situ*, the project will assist as necessary in ensuring they are protected.

Once an area has been documented and cleared of human remains that are to be disinterred or any burials to remain *in situ* are appropriately protected, the archaeologist and the WSP-PB RE will inform the project that construction may resume.

All human remains will be brought to the Chrysalis' laboratory facility in Brooklyn, NY. Final disposition of the remains following conclusion of the project will be arranged with the project.

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REFERENCES

City of New York

2015 Rules of the City of New York.

City of New York – Landmarks Preservation Commission.

2002 Guidelines for Archaeological Work in New York City. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

New York Archaeological Council.

1994 Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State. Report on file with the New York State Office of Parks, Recreation and Historic Preservation. Albany, New York.

2000 Cultural Resource Standards Handbook: Guidance for Understanding and Applying the New York Standards for Cultural Resource Investigations. Report on file with the New York State Office of Parks, Recreation and Historic Preservation. Albany, New York.

2002 Guidelines for the Use of Archaeological Monitoring as an Alternative to Other Field Techniques. Report on file with the New York State Office of Parks, Recreation and Historic Preservation. Albany, New York.

New York State Office of Parks, Recreation and Historic Preservation.

2013 Guidelines for The Discovery of Human Remains on Archaeological Sites. New York State Office of Parks, Recreation and Historic Preservation. Albany, New York.

Appendix A:
The City of New York – Landmarks Preservation Commission
Human Remains Protocol

**The City of New York -
Landmarks Preservation Commission**

Human Remains Discovery Protocol*

7.0 Burials and Human Remains

Human remains should be treated with great care and respect. Human remains are encountered as primary burials or as fragmentary remains. Primary burials are burials which have not been disturbed since interment or which have been only potentially disturbed. They may contain remains of coffins, complete skeletons, and artifacts associated with the burial such as shroud pins, buttons, or jewelry. Disarticulated bones, and fragments of bones, are considered to be fragmentary remains. Whenever proposed work will occur in an area, such as the African Burial Ground or in a cemetery, where human remains are likely to be encountered, the LPC should be contacted as early as possible in the planning stages so that an appropriate project specific protocol governing the work can be developed. Projects requiring Federal or State review must contact the OPHRP. They should also be contacted for questions about the Native American Graves Protection and Repatriation Act (NAGPRA).

7.1 Preservation of Primary Burials in Place

As a general policy, the LPC recommends that primary burials be left in place and that projects be redesigned to avoid disturbing them. The project must be planned in a manner that attempts to avoid disturbing primary burials. In the Scope of Work, the archaeologist must document the location of known graves, whether marked or unmarked, using such references as the plans of the cemetery, historic descriptions, photos, and other sources. In cases where documentation does not exist, remote sensing technology may be warranted.

7.2 Professional Archaeological Oversight

Professional archaeological staff must be present for all phases of excavation in an area that may contain human remains. Areas with potential for graves must be hand excavated by the archaeological staff; all construction work within an area that may contain human remains should be at least monitored.

7.3 Use of a Physical Anthropologist

A physical anthropologist must be available to come to the field as needed to identify and appropriately treat any human remains that may be encountered as defined in the Scope of Work. This individual should have a graduate degree in a relevant field and significant research experience with human remains found in archaeological contexts. The LPC maintains a list of physical anthropologists and will provide it upon request. The LPC will review the qualifications of any individual who is not on the list to ensure that he/she has sufficient experience. Note, that there are some individuals who may be both a qualified archaeologist and a physical anthropologist. In this instance, only one such professional is needed for the project. In all others, at least two professionals, the archaeologist and the physical anthropologist will be needed. The Scope of Work must describe the type and extent of physical anthropological study. It must also define the reporting obligations of the archaeologist and the physical anthropologist. The physical anthropologist should submit a scope for analysis to the LPC after fragmentary human

remains have been found. This analysis should, when possible, identify the minimum number of individuals these bones may represent, sex, age, cause of death, pathology, etc. The Commission recommends that these remains be reinterred in consultation with descendent communities and interested parties.

7.4 Disposition of Human Remains

The projects' Scope of Work must include the applicant's protocol for temporary and permanent disposition of human remains found in the course of the project. The protocol should designate how and where remains will be temporarily stored, what the consultation process with descendent communities and interested parties will be, plans for curation, and for permanent disposition (e.g., reburial on or off the site). Applicants should note that LPC will need to review and approve any proposal to put an exterior marker or memorial in a designated historic district, scenic landmark, or individual landmark.

7.5 Memorandum of Agreement

The Scope of Work should also include an MOA between the contractor and the archaeologist(s) which outlines the rights and obligations of each party in regard to stopping the excavation, completing the fieldwork in a timely manner, making changes in the construction work, maintaining workplace safety, and notification.

7.6 Unanticipated discovery of human remains

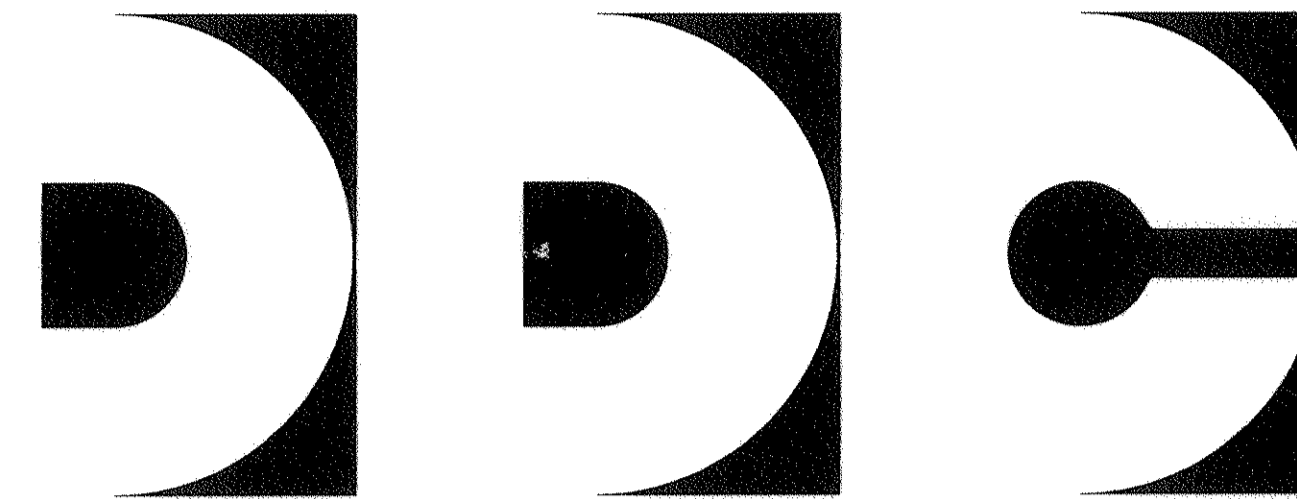
When human remains are unexpectedly found in the City, the New York Police Department ("NYPD") and Medical Examiner's Office ("ME") must be contacted immediately. They will determine the appropriate action. If the human remains are found on a project which has been reviewed by the LPC, the LPC must be notified as well as the NYPD and ME.

*Taken from:

City of New York – Landmarks Preservation Commission.

2002 Landmarks Preservation Commission Guidelines for Archaeological Work in New York City. City of New York – Landmarks Preservation Commission. New York, New York.

Appendix B:
Project Plans



**NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION**

DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

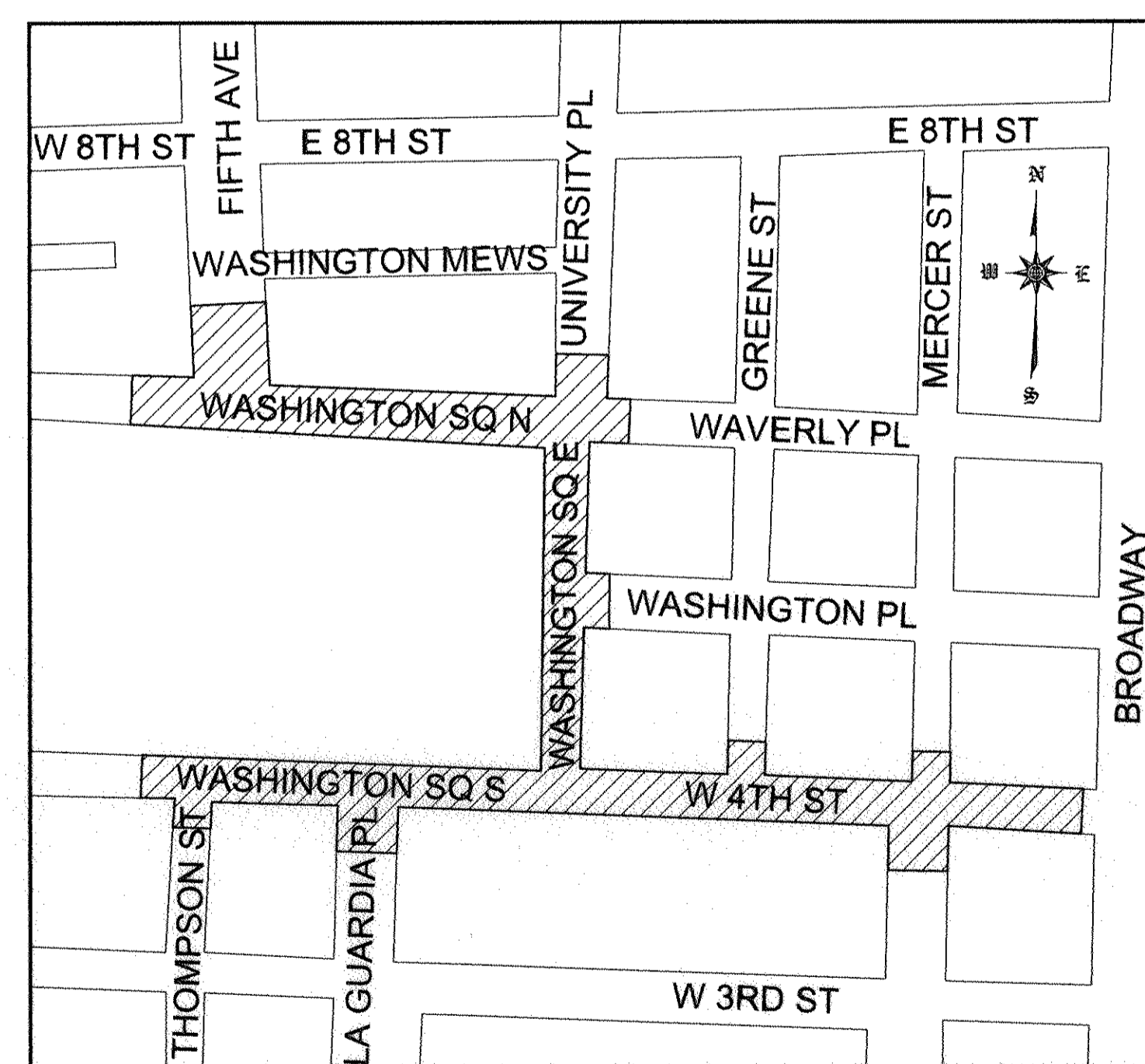
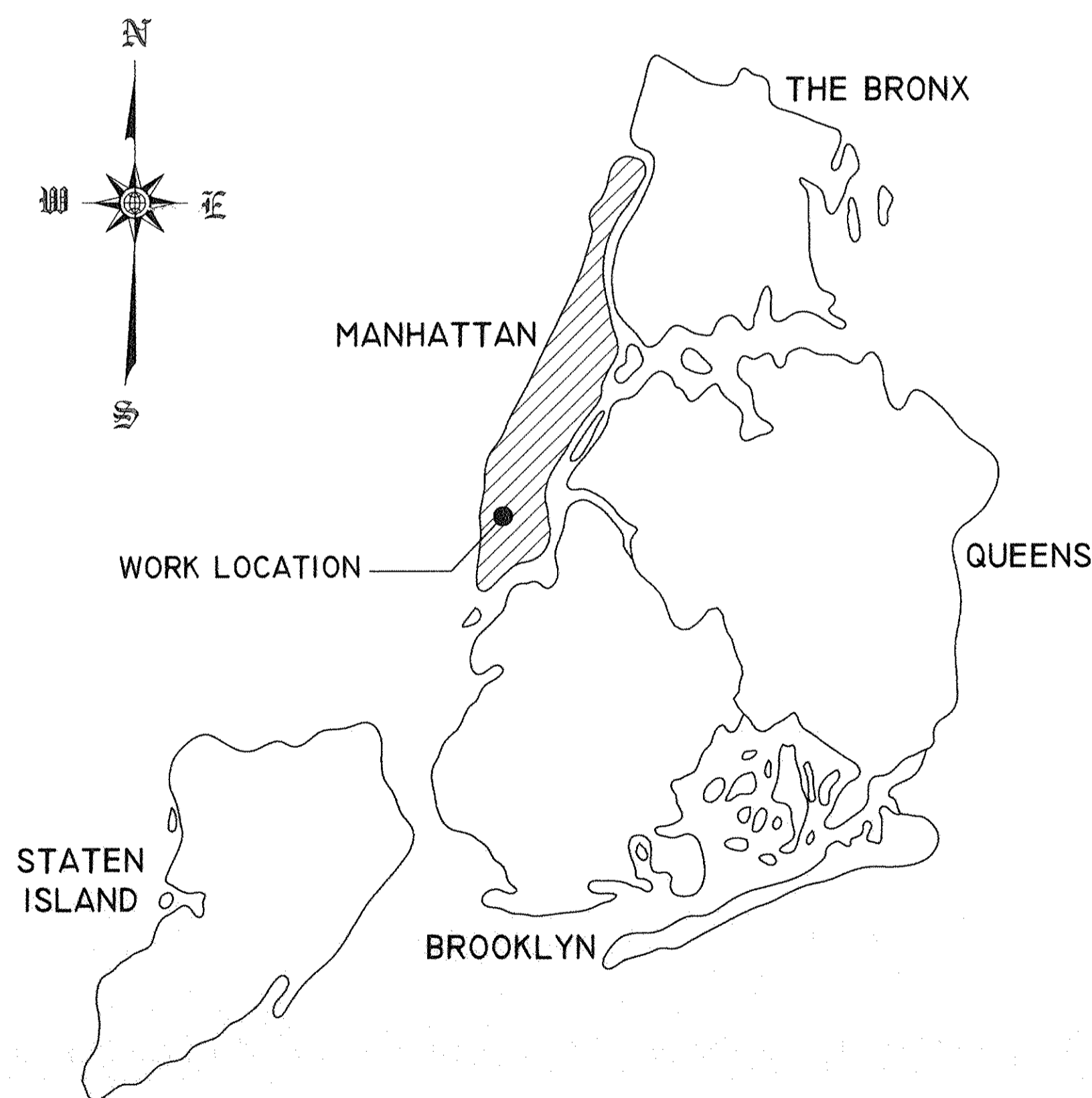
PROJECT ID: MED 608

**WATER MAIN CONNECTION AT
WASHINGTON SQUARE PARK**

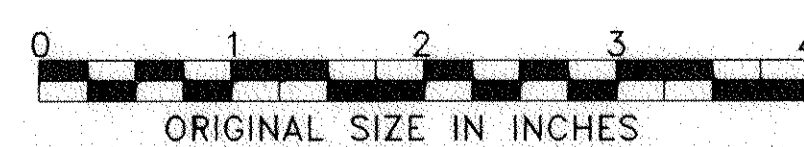
INCLUDING SEWER, WATER MAIN, STREET LIGHTING, AND TRAFFIC
WORK TOGETHER WITH ALL WORK INCIDENTAL THERETO

BOROUGH OF MANHATTAN
CITY OF NEW YORK

LIST OF DRAWINGS		
SHEET NO.	DWG. NO.	DESCRIPTION
1	T1	TITLE SHEET
2	K1	KEP MAP & LIST OF STANDARD DRAWINGS
3	L1	LEGENDS
4-5	G1-G2	GENERAL NOTES
6	TA1	NEW YORK CITY TRANSIT GENERAL NOTES
7-10	U1-U4	UTILITY PLANS & PROFILES
11	D1	UTILITY DETAILS
12-13	MT1-MT2	MAINTENANCE & PROTECTION OF TRAFFIC
14-17	SL1-SL4	STREET LIGHTING PLANS
18	TS1	TRAFFIC SIGNAL PLAN
19-21	1-3	CATHODIC PROTECTION SYSTEM PLAN
22-24	1-3	CATHODIC PROTECTION SYSTEM DETAILS
DRAWINGS FOR REFERENCE ONLY		
	1-3	RECORD OF BORINGS
	1	NEW YORK CITY TRANSIT AS-BUILTS
	CE1-CE5	SECTION U - CON EDISON
	ECS1	SECTION U - EMPIRE CITY SUBWAY
	1-2	EP-7
	1	FDNY UTILITY BASE MAPS
	13	NYC DPR SIDEWALK CONSTRUCTION PLANS & DETAILS



LOCATION PLAN
N.T.S.
COMMUNITY BOARD NO. 2



E. MacFarlane 8/27/14
ERIC MACFARLANE, P.E.
DEPUTY COMMISSIONER DATE

Yun Poy 8/28/14
YUN POY (DINO) NG, P.E.
ASSOCIATE COMMISSIONER DATE

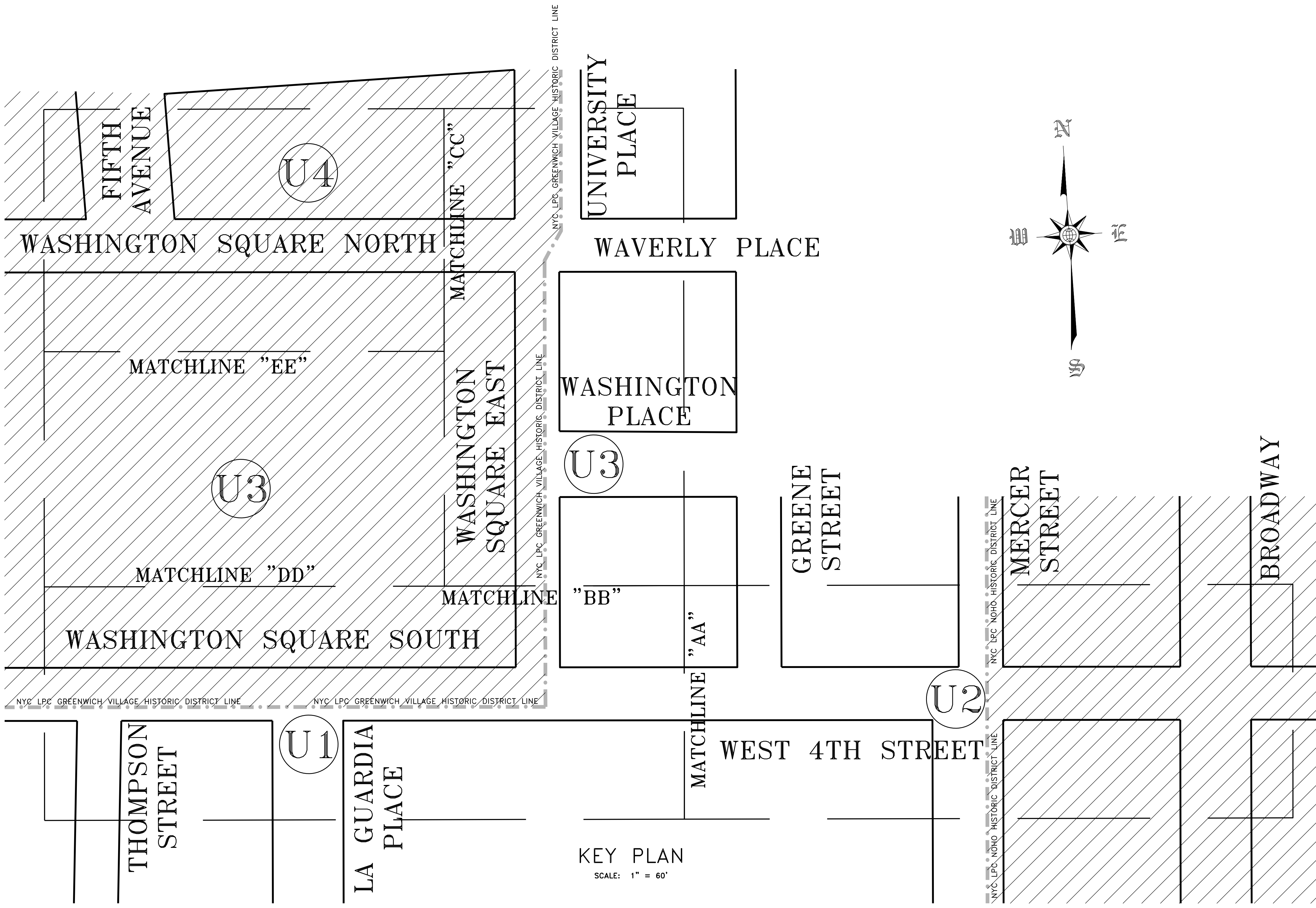
Gurdip S. Saini 8/27/14
GURDIP SAINI, P.E.
ASSISTANT COMMISSIONER DATE

Purnima Dharia 8/27/14
PURNIMA DHARIA, P.E.
DEPUTY ASSISTANT COMMISSIONER DATE

M. Khalil Eliger 8/27/14
M. GEORGE FRANZ, P.E.
DIRECTOR DATE

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				
PROJECT ID: MED608		DATE: 7/25/14	SHEET 1 OF 24	T1

PROJECT ID MED608 WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK, BOROUGH OF MANHATTAN



KEY PLAN
SCALE: 1" = 60'

LEGEND
 HISTORIC DISTRICT AREA

LIST OF STANDARD DRAWINGS

NOTE: THE LATEST REVISIONS OF THE APPLICABLE REFERENCED STANDARDS FOR NYCDOT AND NYCDEP SHALL BE CONSIDERED AS PART OF THESE DOCUMENTS.

H-1010	STEEL FACED CURB/STEEL FACING, TYPE "D"	HIGHWAYS
H-1011	SIDEWALK PEDESTRIAN RAMPS	HIGHWAYS
H-1012	TIMBER CURB	HIGHWAYS
H-1013	ILLUMINATED TIMBER BARRICADE	HIGHWAYS
H-1014	TEMPORARY PEDESTRIAN STEEL BARRICADE	HIGHWAYS
H-1031	TYPICAL PAVEMENT KEY	HIGHWAYS
H-1032	TYPICAL NEW PAVEMENT IN UNPAVED WING AREA	HIGHWAYS
H-1034	TYPICAL CONSTRUCTION JOINTS FOR CONCRETE BASE FOR PAVEMENT	HIGHWAYS
H-1040	TRANSVERSE CONSTRUCTION JOINTS FOR CONCRETE BASE	HIGHWAYS
H-1045	CONCRETE SIDEWALK	HIGHWAYS
H-1049	PLASTIC BARREL	HIGHWAYS
H-1050	REINFORCED CONCRETE PAVEMENT	HIGHWAYS
H-1053	DETAILS FOR CONSTRUCTING AREAS OF ADJUSTMENT AND TRANSITION SECTIONS	HIGHWAYS
H-1054	LIMITS OF MEASUREMENT FOR PAYMENT OF TEMPORARY ASPHALT PAVEMENT	HIGHWAYS
H-1056	TYPICAL GRANITE CURB	HIGHWAYS
H-1057	TEMPORARY STORAGE AREA	HIGHWAYS
MS-1000	NYC / COMPARISON OF DATUM PLANES	HIGHWAYS
MS-1001	SIDEWALK PAYMENT LIMITS	HIGHWAYS
MS-1003	TYPICAL ROADWAY CROSS-SECTION/RESURFACING	HIGHWAYS
MS-1004	CATCH BASIN ADJUSTMENT - TYPE 2	HIGHWAYS
MS-1005	ADJUSTMENT AT CATCH BASINS	HIGHWAYS
TWM-1	TYPICAL PAVEMENT MARKING WORD MESSAGES	TRAFFIC
TIN-1	TYPICAL PAVEMENT MARKING INSTALLATION	TRAFFIC
TCW-1	TYPICAL PAVEMENT MARKING PEDESTRIAN CROSSWALK AND STRIPPING	TRAFFIC
M608-3R2	SIDEWALK CURB RAMP DETAILS	HIGHWAYS
M608-5	DETECTABLE WARNING DEVICE DETAILS	HIGHWAYS
10240-A-Z	VALVE BOX SKIRT, CAST IRON	B.W.S.
10241-A-Z	HYDRANT VALVE BOX, CAST IRON	B.W.S.
11576-A-Z	FOUNDATIONS FOR VALVE BOXES	B.W.S.
13547-B-Z	WIDE FLANGE MANHOLE HEAD AND COVER	B.W.S.
18583-Z	LARGE MANHOLE FRAME AND COVER, 36" DIA.	B.W.S.
19840-A-X	STANDARD REGULATOR CHAMBERS	B.W.S.
19841-Z-B	STANDARD METHOD OF RECONSTRUCTING CATCH BASIN CONNECTIONS	B.W.S.
20731-Z-C	STANDARD METHOD OF CONNECTIONS BETWEEN STEEL AND C.I. PIPE	B.W.S.
22809-Z	HYDRANT DRAIN BASE	B.W.S.
26438-Z-A	STANDARD SYMBOLS	B.W.S.
31050-Z	STANDARD METHODS FOR HYDRANT DRAINAGE	B.W.S.
33317-Y	STANDARD CHAMBER FOR 20" CONNECTION VALVES	B.W.S.
34006-Y	MASONRY FOR ACCESS MANHOLES ON 30" TO 72" STEEL MAINS	B.W.S.
35310-C-Y	JOINTS FOR STEEL WATER MAINS	B.W.S.
38226-Y-A	STANDARD FABRICATED CONNECTIONS FOR STEEL MAINS	B.W.S.
40868-Z	SUPPORTS FOR WATER MAINS OVER PIPE CROSSING	B.W.S.
42063-Y	SHALLOW CROSSING FOR WATER MAINS, 24" DIAMETER AND SMALLER	B.W.S.
44015-A-X	STANDARD CHAMBER FOR 36" BUTTERFLY LINE VALVE ON STEEL MAIN CONNECTION VALVE ON STEEL MAIN	B.W.S.
44292-B-Z	GRAVEL OR BROKEN STONE BEDDING AND FILTER FABRIC INSTALLATION FOR DUCTILE CAST IRON PIPES	B.W.S.
44387-Z-B	RODDING ALL SPECIAL CASTINGS, LEAD AND MECHANICAL JOINTS ON LOW PRESSURE WATER MAINS, PUSH-ON JOINT PIPE	B.W.S.
44588-A-X	STANDARD CHAMBER FOR 48" BUTTERFLY LINE VALVE ON STEEL MAIN	B.W.S.
45161-A-Z	STANDARD STEEL HYDRANT FENDERS	B.W.S.
45700-W	STANDARD SUPPORTS FOR WATER MAINS INSTALLED AT SUBWAYS AND IN EXTREMELY YIELDING SOIL	B.W.S.
46006-X	STANDARD BLOW-OFFS, DETAILS OF VALVE AND BLOW-OFF MANHOLES	B.W.S.
46104-W	INSULATED FLANGE JOINTS	B.W.S.
46105-W	STANDARD CHAMBER FOR INTERMEDIATE INSULATED FLANGE JOINTS FOR 36" TO 72" STEEL AND CONCRETE PIPE	B.W.S.
46464-Z	METHOD FOR PROTECTING D.I. WATER MAINS WITH SHALLOW (LESS THAN 24") COVER	B.W.S.
48829-Z	EXPANSION JOINT FOR 30", 36" AND 48" DIA. BUTTERFLY VALVES	B.W.S.
51172-W	STANDARD CHAMBER FOR 24" BUTTERFLY CONNECTION VALVE ON STEEL MAIN	B.W.S.
WM0401	PAVEMENT EXCAVATION LIMITS FOR PERMANENT RESTORATION STREETS NOT PROTECTED BY N.Y.C. ADM. CODE 19.144 WATER MAINS 20" AND LESS IN DIAMETER	B.W.S.
WM0402	PAVEMENT EXCAVATION LIMITS FOR PERMANENT RESTORATION STREETS PROTECTED BY N.Y.C. ADM. CODE 19.144, WATER MAINS 20" AND LESS IN DIAMETER	B.W.S.
WM0403	PAVEMENT EXCAVATION LIMITS FOR PERMANENT RESTORATION WATER MAINS 24" AND LARGER IN DIAMETER	B.W.S.

NOTE: ALL ELEVATIONS REFER TO THE BOROUGH OF MANHATTAN DATUM, WHICH IS 2,750 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY.

TOPOGRAPHIC SURVEY PREPARED BY: MJ ENGINEERING AND LAND SURVEYING, P.C. 1533 CRESCENT ROAD CLIFTON PARK, NY 12065 LICENSED LAND SURVEYOR	DESIGNED: A.B. DRAWN: A.B. CHECKED: M.K.	SCALE AS SHOWN CADD FILE: MED608-K1	MIKHAIL KLIGER P.E. ENGINEER-IN-CHARGE GEORGE FRANZ P.E. DIRECTOR	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	KEY MAP & LIST OF STANDARD DRAWINGS	WATER MAIN CONNECTION IN WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN PROJECT ID: MED608	DATE: 7/25/14 SHEET 2 OF 24	APPR'D: [Signature] K1
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1. GENERAL

- 1.01 ELEVATION 0.0 IS 2.750 FEET ABOVE THE MEAN SEA LEVEL AS ESTABLISHED BY THE U.S.C.&G SURVEY AT SANDY HOOK, NEW JERSEY.
- 1.02 BLOCK INTERIOR ANGLES, BLOCK LENGTHS AND LEGAL GRADES WERE OBTAINED FROM THE FINAL MAPS OF THE BOROUGH OF MANHATTAN.
- 1.03 EXISTING UNDERGROUND AND OVERHEAD UTILITIES AS SHOWN HERE HAVE BEEN DETERMINED BY STANDARD SURVEYING METHODS AND AVAILABLE RECORDS. NEITHER THE EXACT LOCATION NOR THE INFORMATION OF THESE EXISTING UTILITIES IS GUARANTEED TO BE COMPLETE OR CORRECT.
- 1.04 BUS ROUTES AFFECTED BY THE PROJECT WILL OR MAY REQUIRE COORDINATION. ARRANGEMENTS FOR BUS DIVERSIONS SHALL BE MADE THROUGH:
 - 1. MS. SARAH WYSS
DIRECTOR, SHORT RANGE BUS SERVICE PLANNING
MTA NEW YORK CITY TRANSIT
2 BROADWAY, ROOM A17.50
NEW YORK, NY 10004
Sarah.Wyss@NYCT.com
- 1.05 ALL COMMUNICATIONS AND COORDINATION MEETINGS RELATIVE TO THIS PROJECT BETWEEN THE CONTRACTOR AND ANY AGENCY, UTILITY COMPANY OR ORGANIZATION WILL BE CONDUCTED AND/OR APPROVED BY THE ENGINEER.
- 1.06 (NO TEXT)
- 1.07 (NO TEXT)
- 1.08 ALL SHEETING PLACED UNDER THIS CONTRACT, NO MATTER UNDER WHICH ITEMS, SHALL BE REMOVED, AND THE COST SHALL BE DEEMED INCLUDED IN THE PRICES BID FOR ALL SCHEDULED ITEMS.
- 1.09 THE FOLLOWING SHALL PERTAIN TO ALL ITEMS HAVING BACKFILL: "THE BACKFILLING SHALL COMPLY WITH SUBSECTION 4.11.3 OF THE STANDARD SPECIFICATIONS, AND THE COST THEREOF SHALL BE DEEMED INCLUDED IN THE PRICES BID FOR ALL RELATED ITEMS."
- 1.10 ALL HYDRANTS, LIGHT POLES, TREES OR OTHER FIXED OBJECTS THAT ARE TO BE CONSTRUCTED, PLANTED, RESET, OR RELOCATED AS A RESULT OF THE PROJECT SHALL BE CONSTRUCTED OR PLANTED SO AS TO PROVIDE AT LEAST ONE AND ONE HALF (1 1/2) FOOT CLEAR DISTANCE FROM THE FACE OF THE CURB TO THE FACE OF THE OBJECT.
- 1.11 (NO TEXT)
- 1.12 THE CONTRACTOR SHALL CONTACT MS. KRISTEN HARTNETT, FORENSIC ANTHROPOLOGIST, OFFICE OF THE CHIEF MEDICAL EXAMINER (OCME), AT (212) 447-2763 AT LEAST ONE WEEK PRIOR TO THE START OF ANY EXCAVATION OPERATIONS. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE OCME DURING EXCAVATION FOR THE PURPOSE OF DOCUMENTATION AND OBSERVATION. IF DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL ASSIST THE OCME WITH CAREFUL REMOVAL AND TRANSPORT OF DEBRIS OR REMAINS. PAYMENT FOR THIS WORK SHALL BE MADE UNDER ITEM HW-908-ME ALLOWANCE FOR EXTRA WORK DUE TO OFFICE OF THE MEDICAL EXAMINER DISCOVERIES.

2. GRADING WORK

- 2.01 REMOVAL OF ALL SHRUBBERY, DEBRIS, FENCES, AND OTHER ENCROACHMENTS FOUND ON AND WITHIN THE CITY'S RIGHT OF WAY WHICH INTERFERE WITH THE NEW WORK ARE DEEMED INCLUDED IN THE PRICES BID FOR ALL SCHEDULED ITEMS, UNLESS OTHERWISE NOTED ON THE PLANS.

3. CURB WORK

- 3.01 (NO TEXT)
- 3.02 ALL NEW STEEL FACED CONCRETE CURB AND/OR GRANITE CURB WITH RADIUS GREATER THAN 100 FEET WILL BE PAID FOR AS STRAIGHT CURB. ALL NEW STEEL FACED CONCRETE CURB AND/OR GRANITE CURB WITH RADIUS LESS THAN OR EQUAL TO 100 FEET WILL BE PAID FOR AS CORNER CURB.
- 3.03 ALL NEW CORNERS ARE TO BE STEEL FACED CONCRETE CURB AND TURNED TO A 12 FT. RADIUS, UNLESS OTHERWISE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. ALL CORNER STEEL FACING IS TO BE SHOP FABRICATED.
- 3.04 WHEN NEW CURBING IS TO BE EXTENDED INTO CROSS STREETS, IT SHALL BE STEEL FACED CONCRETE CURB, UNLESS OTHERWISE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. WHERE CURB BEYOND THE CORNER IS NOT STEEL FACED CONCRETE CURB, STEEL CURB IS TO BE EXTENDED TO CLEAR PEDESTRIAN RAMPS AND/OR TO THE NEW CATCH BASINS AS CONSTRUCTED, CLEAR OF THE PEDESTRIAN CROSSWALK AS DIRECTED BY THE ENGINEER, THE COST OF THE ADDITIONAL TANGENT LENGTH OF STEEL FACED CONCRETE CURB WILL BE PAID FOR UNDER ITEM NO. 4.09 AE.
- 3.05 WHERE NEW CURBING IS REQUIRED ADJACENT TO EXISTING CONCRETE SIDEWALK, WHICH IS NOT TO BE REPLACED, A CONCRETE SAW-CUT SHALL BE MADE ALONG A LINE PARALLEL TO AND TWO (2) FEET BACK FROM THE NEW CURB. THE COST OF THE SAW-CUT IS INCLUDED IN THE PRICES BID FOR THE CURB ITEMS.
- 3.06 (NO TEXT)
- 3.07 TOP OF CURB ELEVATIONS AT CORNER PEDESTRIAN RAMPS SHALL BE ESTABLISHED IN CONJUNCTION WITH ROADWAY PAVEMENT CONSTRUCTION SO AS TO PROVIDE POSITIVE SURFACE DRAINAGE FROM THE APEX TOWARDS THE CATCH BASINS, WHERE APPLICABLE.

4. SIDEWALK WORK

- 4.01 SIDEWALK PEDESTRIAN RAMPS WITH EMBEDDED PREFORMED DETECTABLE WARNING UNITS ARE TO BE INSTALLED AT ALL CORNERS, UNLESS OTHERWISE DIRECTED. THE COST FOR INSTALLATION OF PEDESTRIAN RAMPS SHALL BE PAID FOR UNDER THE SIDEWALK AND CURB ITEMS, AS APPLICABLE. THE COST FOR THE EMBEDDED PREFORMED DETECTABLE WARNING UNITS SHALL BE PAID UNDER ITEM # 4.13 DE.
- 4.02 THE LOCATION AND THE EXTENT OF NEW SIDEWALK TO BE CONSTRUCTED IS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- 4.03 THE CONTRACTOR IS HEREBY ADVISED THAT UNDER-SIDEWALK BUILDING VAULTS ARE PRESENT IN THE SIDEWALK AREA WITHIN THE PROJECT LIMITS.
- 4.04 PRIOR TO ANY SIDEWALK EXCAVATION, THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE EXISTENCE OF UNDER-SIDEWALK VAULTS.
- 4.05 THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE TO THE UNDER-SIDEWALK BUILDING VAULTS AND/OR ITS CONTENTS AND/OR OCCUPANTS DUE TO HIS FAILURE TO VERIFY THE PRE-EXISTING VAULT CONDITION.
- 4.06 VAULT INFORMATION MAY BE AVAILABLE FROM THE FOLLOWING SOURCES:
 - A. NEW YORK CITY DEPARTMENT OF BUILDINGS
 - B. MS. PENNY A. JACKSON
FOIL / RECORDS ACCESS
OFFICE OF LITIGATION SERVICES AND RECORDS MANAGEMENT
NYC DEPARTMENT OF TRANSPORTATION
55 WATER STREET, 6TH FLOOR
NEW YORK, NY 10041
 - C. NEW YORK CITY DEPARTMENT OF FINANCE
- 4.07 THE CONTRACTOR SHALL RESET/ADJUST ANCHORAGE FOR SECURITY GATES WITHIN SIDEWALK AREAS, AS NECESSARY OR AS DIRECTED BY THE ENGINEER. COST OF THIS WORK SHALL BE DEEMED INCLUDED IN PRICES BID FOR SIDEWALK WORK.
- 4.08 (NO TEXT)

5. DRAINAGE WORK

- 5.01 ALL PROPOSED DRAINAGE WORK SHALL BE DONE IN CONFORMANCE WITH THE LATEST STANDARDS OF THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION (N.Y.C.D.E.P.) BUREAU OF SEWERS.
- 5.02 ALL EXISTING SEWER MANHOLES WITHIN THE CONTRACT LIMITS SHALL BE ADJUSTED, AS NECESSARY, SO THAT THEY WILL BE FLUSH WITH THE FINISHED GRADES AFTER COMPLETION OF THE WORK. ANY MANHOLES WHICH HAVE DAMAGED, WORN OR NON-STANDARD FRAMES AND COVERS SHALL BE PROVIDED WITH NEW TWENTY-SEVEN (27) INCH CASTINGS IN ACCORDANCE WITH THE LATEST STANDARDS OF N.Y.C.D.E.P. BUREAU OF SEWERS.
- 5.03 ANY DAMAGE TO EXISTING SEWERS, MANHOLES, BASINS AND CONNECTIONS CAUSED BY THE CONTRACTOR'S WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AT NO COST TO THE CITY.
- 5.04 WHERE THE HEIGHT OF AN EXISTING MANHOLE PERMITS MORE THAN ONE BASIN CONNECTION TO BE MADE ON THE SAME WALL, SPECIAL PRECAUTION SHALL BE TAKEN TO PROTECT THE STRUCTURAL INTEGRITY OF THE MANHOLE. THE MINIMUM CLEARANCE BETWEEN THE OUTSIDE WALLS OF ANY TWO BASIN CONNECTIONS OR BETWEEN A BASIN CONNECTION AND SEWER, VERTICALLY OR HORIZONTALLY, SHALL BE 12 INCHES.
- 5.05 THE COST OF RAISING OR LOWERING CITY OWNED MANHOLE, BASIN, AND INLET HEADS TO PROPOSED GRADES WILL BE DEEMED INCLUDED IN THE PRICES BID FOR ALL THE SCHEDULED ITEMS WHEN THE VERTICAL UPWARD MOVEMENT OF ALL HEADS IS TWENTY FOUR (24) INCHES OR LESS, WHEN THE VERTICAL DOWNWARD MOVEMENT OF MANHOLE HEADS IS SIX (6) INCHES OR LESS, AND WHEN THE VERTICAL DOWNWARD MOVEMENT OF BASIN HEADS IS THREE (3) INCHES OR LESS, UNLESS OTHERWISE PROVIDED OR DIRECTED. AND WHERE THE ADJUSTMENT IS WITHIN THE BRICK WORK LIMIT. WHEN THE EXISTING STRUCTURE CONSISTS OF A BRICK CHIMNEY OR A CONCRETE ROOF SLAB OR BRICK ON CONCRETE WALLS, THE MAXIMUM ALLOWABLE HEIGHT OF BRICK, AFTER ADJUSTMENT, SHALL BE TWENTY-FOUR (24) INCHES. ALL OTHER ADJUSTMENTS WILL BE PAID FOR UNDER THE APPROPRIATE MANHOLE, BASIN, OR INLET MODIFICATION ITEMS.
- 5.06 ALL EXISTING SEWERS, MANHOLES, BASINS, AND CONNECTIONS WITHIN THE LIMITS OF THIS CONTRACT AND CONTIGUOUS THERETO ARE TO BE REPAIRED, IF DAMAGED.
- 5.07 ALL EXISTING BASINS AND CONNECTIONS WITHIN THE LIMITS OF THIS CONTRACT AND CONTIGUOUS THERETO ARE TO BE CLEANED, FLUSHED AND OTHERWISE MADE OPERABLE TO THE SATISFACTION OF THE ENGINEER. WHERE THE EXISTING BASIN CONNECTIONS ARE FOUND TO BE DAMAGED OR IN DETERIORATING CONDITION THEY SHOULD BE REPLACED WITH NEW 12" DIAMETER DUCTILE IRON PIPE IN ACCORDANCE WITH THE N.Y.C.D.E.P. BUREAU OF SEWERS STANDARDS (ITEM NO. 52.11D12).
- 5.08 CATCH BASINS SHALL NOT, UNDER ANY CIRCUMSTANCES, BE CONNECTED TO A SANITARY SEWER. CATCH BASINS SHALL NOT BE LOCATED WITHIN PEDESTRIAN CROSSWALKS.
- 5.09 ALL NEW CATCH BASIN CONNECTIONS SHALL BE MADE TO EXISTING SEWERS AT MANHOLES, WITH 12" DIAMETER DUCTILE IRON PIPE, CLASS 56, WITH INTERNALLY LOCKED "PUSH-ON" JOINTS LAID ON 6" OF BROKEN STONE FOR THE ENTIRE WIDTH OF THE TRENCH AND FOR ONE-HALF THE PIPE DIAMETER. THE BROKEN STONE SHALL BE HARD, UN-WEATHERED STONE, UNIFORMLY GRADED FROM 1/4" TO 3/4" IN DIAMETER. IT SHALL CONFORM TO COMMERCIAL 1/4" TO 3/4" STONE. ALL NEW CATCH BASINS SHALL HAVE A HOOD ON THE OUTLET PIPE.
- 5.10 ALL CATCH BASINS SHALL BE TYPE 1 UNLESS OTHERWISE INDICATED ON THE DRAWINGS. ALL CATCH BASIN SHALL BE INSTALLED 8" BELOW TOP OF CURB.
- 5.11 SLOPE ON ALL NEW CATCH BASIN CONNECTIONS SHALL BE A MINIMUM OF 1/2% AND A MAXIMUM OF 4%, PROVIDED THE TOTAL DROP BETWEEN BASIN AND BASIN/ MANHOLE SHALL BE AT LEAST SIX (6) INCHES.

- 5.12 WHERE THE CONTRACT DRAWINGS SPECIFY A NEW CATCH BASIN IN THE SAME LOCATION AS THE EXISTING CATCH BASIN AND THE CONTRACTOR ELECTS, FOR HIS OWN CONVENIENCE, TO RELOCATE THE NEW CATCH BASIN ADJACENT TO THE PRE-EXISTING LOCATION WHILE MAINTAINING BASIN AND PIPE CONNECTION, THE CONTRACTOR SHALL PERFORM ALL WORK ASSOCIATED WITH ABANDONING THE EXISTING BASIN, AS PER SECTION 5.21 OF THE STANDARD SEWER SPECIFICATIONS, AND THE COST OF THIS WORK SHALL BE INCLUDED IN THE COST BID FOR NEW BASINS, AND MANHOLES UNLESS OTHERWISE NOTED ON THE PLANS.
- 5.13 ALL EXISTING SEWER HOUSE CONNECTIONS SHOULD BE CONTINUOUSLY MAINTAINED DURING ALL STAGES OF CONSTRUCTION. IF ANY HOUSE CONNECTION MUST BE DISCONNECTED FOR CONSTRUCTION PURPOSES, FLOW MUST BE MAINTAINED BY FLUMING OR OTHER SUITABLE MEANS AS DIRECTED BY THE ENGINEER AND IN SUCH A MANNER THAT NO BACK-UPS OCCUR. ANY AND ALL EXISTING SEWERS, HOUSE CONNECTIONS OR OTHER SEWER APPURTENANCES WHICH ARE TO REMAIN, AND WHICH MUST BE DISTURBED FOR CONSTRUCTION PURPOSES, SHALL BE RESTORED TO THEIR PRESENT CONDITION AFTER COMPLETION OF THE WORK, AND ANY DAMAGE DONE AS A RESULT OF THE WORK SHALL BE REPAIRED AT NO COST TO THE CITY.
- 5.14 CATCH BASINS IN THE PROJECT AREA SHALL BE MAINTAINED OPERABLE AT ALL TIMES. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO AVOID CLOGGING CATCH BASINS WITH DEBRIS DURING THE CONTRACTOR'S OPERATIONS. IF, AS A RESULT OF CONSTRUCTION, A FLOODING CONDITION OCCURS OR IN THE EVENT THE CONTRACTOR'S OPERATIONS DAMAGE OR BLOCK THE DRAINAGE SYSTEM, THE CONTRACTOR SHALL AT HIS/HER OWN EXPENSE IMMEDIATELY REPAIR OR RESTORE THE DRAINAGE SYSTEM AS DIRECTED BY THE ENGINEER AT NO EXTRA COST TO THE CITY.
- 5.15 ALL SOIL DENSITY TESTING, CONSISTING OF BOTH PROCTOR ANALYSIS OF SOIL SAMPLES AND IN-PLACE SOIL DENSITY TESTS, TO BE PERFORMED DURING THE BACKFILLING OF SEWER TRENCHES SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTIONS 4.06.3 AND 4.06.4 OF THE STANDARD SEWER SPECIFICATIONS. THE COST OF THIS WORK SHALL BE DEEMED INCLUDED IN THE UNIT PRICES BID FOR LAYING THE VARIOUS SEWER PIPES. NO SEPARATE OR ADDITIONAL PAYMENT WILL BE MADE FOR THIS WORK.
- 5.16 PRIOR TO FABRICATION OF NEW TYPE 3 CATCH BASIN WITH CURB PIECE, CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWING OF ITS DETAILS TO THE ENGINEER FOR REVIEW AND APPROVAL. SHOP DRAWING SHALL NOTE ALL THE REQUIRED CONFIGURATION OF THE TYPE 3 CATCH BASIN WITH THE CURB PIECE, INCLUDING BUT NOT LIMITED TO, REINFORCEMENT DETAILS, LOCATION OF CURB, LOCATION AND ANGLE OF BASIN CONNECTS RELATION TO THE BASIN, CURB AND SIDEWALK, SETTING OF FRAMES, GRATES AND COVERS, ETC.

6. WATER MAIN WORK

- W1 BEFORE COMMENCING WORK, THE CONTRACTOR SHALL NOTIFY ALL INVOLVED AGENCIES.
 - W2 THE DRAWINGS SHOWING PROPOSED WATER MAINS AND APPURTENANCES TO BE LAID ARE DIAGRAMMATICAL ONLY. WATER MAINS SHALL BE LAID ANYWHERE BETWEEN BUILDING LINES AS SHOWN ON THE DRAWINGS AND/OR AS DIRECTED BY THE ENGINEER. THE EXACT LOCATION AT WHICH THE WATER MAIN SHALL BE LAID, AND THE VALVES, HYDRANTS AND OTHER APPURTENANCES, ETC., WILL BE DETERMINED BY THE ENGINEER AS THE WORK PROGRESSES. HOWEVER, THE EXACT LOCATION OF THE NEW WATER MAIN SHALL BE IN CONFORMANCE WITH NOTES NUMBERED S2B & S2C ON THIS SHEET, REGARDING EXISTING SEWERS.
 - W3 PROPOSED ALIGNMENT OF TRUNK MAINS ARE BASED UPON THE BEST SUBSURFACE INFORMATION AVAILABLE. THIS INFORMATION IS NOT HOWEVER, GUARANTEED, AND THE EXACT LOCATION OF THE MAIN MAY BE VARIED FROM THAT SHOWN.
 - W4 THE CONTRACTOR IS TO VERIFY BY TEST PITS, ELEVATIONS OF SEWER CROSSINGS AND OTHER SUBSURFACE OBSTRUCTIONS TO DETERMINE THE EXACT GEOMETRY OF THE NEW WATER MAIN CONSTRUCTION.
 - W5 ELEVATIONS SHOWN HEREIN REFER TO THE DATUM ELEVATION AS INDICATED ON THE DRAWING.
 - W6 FROST: THE ATTENTION OF THE CONTRACTOR IS CALLED TO THE FACT THAT WORK MAY BE REQUIRED DURING THE PERIOD FROM DECEMBER 15TH TO MARCH 15TH, THE ENGINEER RESERVES THE RIGHT, HOWEVER, TO DISCONTINUE WORK AT ANY TIME BETWEEN THIS PERIOD IF, IN HIS OPINION, WEATHER OR FROST CONDITIONS ARE SUCH THAT SATISFACTORY WORK OR BACKFILL CANNOT BE PERFORMED. WATER SUPPLY SHUTDOWNS OF DISTRIBUTION MAINS WILL NOT BE PERMITTED UNLESS THE 9 AM TEMPERATURE IS AT LEAST 27 DEGREES F AND RISING. NO ALLOWANCE OTHER THAN AN EXTENSION OF THE TIME WILL BE ALLOWED THE CONTRACTOR BECAUSE OF SUCH DISCONTINUANCE.
 - W7 ALL EXCAVATION SHALL BE DONE BY HAND WITHIN ONE FOOT OF EXISTING SEWERS, HOUSE CONNECTION DRAINS AND OTHER UTILITIES.
 - W8 THE STEEL PIPE SHALL COMPLY WITH STANDARD B.W.S. SPECIFICATIONS ENTITLED "SPECIFICATION FOR FURNISHING, DELIVERING AND LAYING STEEL PIPE AND APPURTENANCES," LATEST REVISION. THE STEEL PIPE SHALL HAVE MINIMUM YIELD POINT OF 30,000 PSI AND THICKNESS AS INDICATED IN THE TABLE BELOW.
- NOTE: APPLICABLE PIPE WALL THICKNESS SHALL BE DETERMINED BY THE HEIGHT OF COVER FROM THE TOP OF PIPE TO THE EXISTING STREET SURFACE OR TO THE LEGAL GRADE ELEVATION, WHICHEVER IS HIGHER.

DIAMETER OF PIPE IN INCHES	COVER, IN FEET	PIPE WALL THICKNESS, IN INCHES, REQUIRED FOR THE FOLLOWING STEEL YIELD POINTS, SEE NOTE ON LOADING CONDITIONS BELOW				
		45 KSI	42 KSI	40 KSI	38 KSI	30 KSI
30 & 36	2.5 TO 3.0	3/8				
	3.0 TO 7.0	3/8				
	7.0 TO 11.0	3/8			1/2	
	11.0 TO 13.0	3/8	1/2			
48	2.5 TO 3.0	1/2				
	3.0 TO 7.0	1/2				
	7.0 TO 11.0	1/2			5/8	
	11.0 TO 13.0	5/8				
60	2.5 TO 3.0	5/8				
	3.0 TO 7.0	1/2	5/8			
	7.0 TO 11.0	5/8			3/4	
	11.0 TO 13.0	3/4				7/8
72	2.5 TO 3.0	5/8	3/4			
	3.0 TO 7.0	5/8		3/4		
	7.0 TO 11.0	3/4			7/8	
	11.0 TO 13.0	7/8				1

THE ABOVE REQUIREMENTS ARE BASED ON EARTH BACKFILL OF 100 LBS./CU. FT. AND H20 WHEEL LOAD OF 20,000 LBS. (16,000 LBS. PLUS 50% IMPACT). FOR SOIL WEIGHTS OVER 100 LBS./CU. FT. THE PIPE WALL THICKNESS SHALL BE CHECKED AND REVISED, IF NECESSARY, TO SUIT ACTUAL LOADING CONDITIONS. WHERE THE COVER EXCEEDS THAT SHOWN IN THE ABOVE TABLE, DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

NO EXTRA PAYMENT WILL BE MADE TO THE CONTRACTOR WHERE PIPE WALL THICKNESS, DUE TO DESIGN CALCULATIONS, EXCEEDS THAT SPECIFIED IN BID ITEMS.

W9 THE DUCTILE IRON PIPE SHALL COMPLY WITH B.W.S. "SPECIFICATIONS FOR DUCTILE IRON PIPE WITH PUSH-ON JOINTS AND DUCTILE-IRON FITTINGS WITH MECHANICAL JOINTS," LATEST REVISION.

W10 ALL DUCTILE IRON WATER MAINS, 20-INCH DIA. AND LESS, UNDER THIS CONTRACT SHALL HAVE RESTRAINED JOINTS, MANUFACTURED BY U.S. PIPE COMPANY OR APPROVED EQUAL.

W11 THE CONTRACTOR SHALL LOCATE ALL EXISTING WATER MAIN VALVE BOX HEADS, AND SHALL INDICATE THEM IN THE FIELD TO THE SATISFACTION OF THE ENGINEER. FURTHERMORE, THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT HE WILL BE RESPONSIBLE FOR THE REPLACEMENT AND RESETTING OF ALL VALVE BOXES WHICH ARE DAMAGED OR DISTURBED AS A RESULT OF HIS OPERATIONS.

W12 THE CONTRACTOR IS TO USE AN APPROVED SHEETING METHOD DURING THE WATER MAIN CONSTRUCTION. SHOULD THE CONTRACTOR UTILIZE THE TRENCH BOXES OR STEEL PLATE/PANEL SHEETING SYSTEM, APPROVAL IS CONTINGENT UPON THE CONTRACTOR'S SUBMITTAL OF A DETAILED PROCEDURE FOR THE INSTALLATION OF THE SYSTEM, WHICH INCLUDES METHODS FOR THE ACCOMMODATION OF UNDERGROUND UTILITY SERVICES, BOTH CITY AND PRIVATELY OWNED.

W13 THE CONTRACTOR SHALL SUBMIT FOR REVIEW SHEETING AND BRACING DESIGN, PREPARED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF NEW YORK AT NO ADDITIONAL COST TO THE CITY. WHERE SHEETING IS TO BE PLACED IN THE VICINITY OF TRANSIT AUTHORITY FACILITIES, IT SHALL BE DESIGNED AND PLACED ACCORDING TO THE T.A. REQUIREMENTS. DRAWINGS AND CONSTRUCTION PROCEDURES INCLUDING AUGERING OF SOLDIER BEAMS, IF REQUIRED, SHALL BE SUBMITTED TO THE ENGINEER AND TRANSIT AUTHORITY FOR APPROVAL BEFORE CONSTRUCTION. NO EXTRA PAYMENT WILL BE MADE TO THE CONTRACTOR FOR ANY ADDITIONAL COSTS NEEDED TO COMPLY WITH T.A. REQUIREMENTS BUT COSTS WILL BE DEEMED TO BE INCLUDED IN THE BID ITEM FOR TIGHT SHEETING.

W14 ALL FITTINGS SUPPLIED BY THE CONTRACTOR SHALL BE MECHANICAL-JOINT OR RESTRAINED JOINT FITTINGS, AS SPECIFIED OR ORDERED.

W15 BELL-JOINT CLAMPS SHALL BE FURNISHED AND INSTALLED ON LEAD JOINTS, AS ORDERED BY THE ENGINEER.

W16 (NO TEXT)

W17 WHERE HYDRANTS ARE DENOTED BY "R", THE EXISTING HYDRANTS SHALL BE REMOVED.

W18 HYDRANTS ON THE TRUNK MAIN SHALL BE PAINTED RED. (SEE DEP STANDARD SPECIFICATIONS "SETTING HYDRANTS", LATEST REVISION).

W19 WHERE A HYDRANT TO BE RELOCATED OR RESET IS NOT A BREAKAWAY TYPE, IT SHALL BE REPLACED WITH A BREAKAWAY TYPE HYDRANT WHICH WILL BE FURNISHED BY THE CONTRACTOR AND SHALL BE PAID FOR TO THE CONTRACTOR UNDER THE APPROPRIATE BID ITEMS.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

TOPOGRAPHIC SURVEY PREPARED BY:	DESIGNED _____ A.B. _____
LICENSED LAND SURVEYOR	DRAWN _____ A.B. _____
	CHECKED _____ M.K. _____

SCALE AS SHOWN
CADD FILE: MED608-G1-2

MIKHAIL KLIGER ENGINEER-IN-CHARGE	P.E.
GEORGE FRANZ DIRECTOR	P.E.

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

GENERAL NOTES

WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK			
BOROUGH OF MANHATTAN			
PROJECT ID: MED608	DATE: 7/25/14	SHEET 4 OF 24	G1/G2

- W20 ALL HYDRANT VALVE BOXES AND MAIN LINE VALVE BOXES ARE TO BE ADJUSTED TO NEW GRADE.
- W21 OPEN ENDS OF ALL ABANDONED MAINS SHALL BE PLUGGED WITH CONCRETE FOR A MINIMUM LENGTH OF THREE FEET.
- W22 ALL CHAMBERS ON MAINS THAT ARE ABANDONED SHALL BE BACKFILLED WITH APPROVED MATERIAL.
- W23 THE LOCATIONS OF EXISTING HYDRANTS TO BE REMOVED AND NEW HYDRANT FENDERS TO BE INSTALLED WHICH ARE NOT SHOWN ON THE DRAWINGS ARE TO BE AS DIRECTED BY THE ENGINEER.
- W24 ALL FIRE HYDRANTS INSTALLED WITHIN THE HISTORIC / LANDMARK DISTRICT SHALL BE OF THE A. P. SMITH DESIGN. (SEE N.Y.C.D.E.P. STANDARD DRAWING 43250-Z). FIRE HYDRANT FENDERS WITHIN THE HISTORIC / LANDMARK DISTRICT SHALL RECEIVE DECORATIVE CAPS (SEE N.Y.C.D.E.P. STANDARD DRAWING 49500-Z).
- W25 WHERE DEPTH OF COVER ON NEW 20-INCH AND SMALLER MAINS IS LESS THAN 2'-0", STANDARD DRAWING 42063-Y SHALL BE USED. WHERE DEPTH OF COVER ON NEW 30-INCH AND LARGER WATER MAINS IS LESS THAN 2'-6", STANDARD DRAWING 46464-Z SHALL BE USED. ALL COSTS FOR FURNISHING AND INSTALLING THE SHALLOW COVER PROTECTION AS SHOWN ON THE ABOVE STANDARD DRAWINGS SHALL BE PAID FOR TO THE CONTRACTOR UNDER THE APPROPRIATE BID ITEMS. THE CONTRACTOR SHALL BE PAID FOR THE FLANGED STEEL PIPE REQUIRED ACCORDING TO STANDARD DRAWING NO. 42063-Y UNDER THE ITEM NUMBER 60.25PSO FOR PLATE STEEL OUTLETS.
- W26 ALL CHAMBERS FOR REGULATORS AND BUTTERFLY VALVES SHALL BE CAST IN PLACE. PRECAST CHAMBERS WILL NOT BE ACCEPTED. ALSO, AT LOCATIONS WHERE HEIGHT RESTRICTIONS (I.E. OVERPASSES, ETC.) EXIST, PRECAST STRUCTURES WILL NOT BE ACCEPTED.
- W27 FACTORY INSTALLED SAFETY BARS SHALL BE PLACED IN TRUNK MAINS WHERE THERE IS A VERTICAL OFFSET WITH MORE THAN THREE (3) FEET DIFFERENCE IN ELEVATION. SAFETY BARS SHALL CONSIST OF #8 REINFORCING STEEL BARS PLACED VERTICALLY IN THE CENTER OF THE PIPE AND WELDED AT EACH END (TOP & BOTTOM). SPACING SHALL BE TWO (2) FEET ON CENTERS WITH A MINIMUM OF THREE BARS PER LOCATION. A BAR SHALL ALWAYS BE PLACED AT THE HIGHER END OF THE VERTICAL OFFSET. THE BARS SHALL BE COATED THE SAME AS THE PIPE INTERIOR. THE CONTRACTOR SHALL SUBMIT A DETAILED DRAWING OF THE PROPOSED LAYOUT FOR APPROVAL.

WATER MAIN WORK AFFECTING SEWERS

- S1 WATER MAINS LAID WITHIN THE INFLUENCE LINE OF SEWER TRENCHES SHALL HAVE RESTRAINED JOINTS.
- S2 WITHIN ONE FT. OF EXISTING SEWERS, HOUSE CONNECTIONS, DRAINS, AND OTHER UTILITIES, ALL EXCAVATION SHALL BE DONE BY HAND.
- A. SEWER ELEVATIONS AT WATER MAIN CROSSING SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF THE WORK.
- B. FOR WATER MAINS CROSSING EXISTING SEWERS:
- THE MINIMUM CLEARANCE BETWEEN THE TOP OF AN EXISTING SEWER AND THE OUTSIDE BOTTOM OF THE TRUNK MAIN (PIPE WALL THICKNESS TO BE TAKEN INTO CONSIDERATION) SHALL BE 12 INCHES. IN ORDER TO MAINTAIN THE PROPER CLEARANCE, THE FOLLOWING ALTERNATIVES SHALL BE CONSIDERED AND APPLIED, AS DIRECTED BY THE ENGINEER:
1. THE USE OF BEVELED CONNECTION IN LIEU OF BENDS SHALL BE INVESTIGATED IF THE DEGREE OF INTERFERENCE IS OF A MINOR NATURE; OTHERWISE, BENDS AND/OR REDUCERS SHALL BE USED.
 2. THE COVER ON THE PIPE MAY BE REDUCED TO TWO AND ONE HALF (2.5) FT.
 3. IF A 12-INCH MINIMUM CLEARANCE CANNOT BE MAINTAINED, THE WATER MAIN SHALL BE SUPPORTED BY A PIER OF APPROVED DESIGN ON EACH SIDE OF THE SEWER. THE PIPE SHALL THEN BE DESIGNED TO ACT AS A BEAM BETWEEN THESE SUPPORTS. THE CLEARANCE SPACE IS TO BE FILLED WITH LAYERS OF APPROVED MATERIAL TO AVOID EXCESSIVE BEARING PRESSURE ON THE PIPE. IN NO CASE, HOWEVER, SHALL THIS CLEARANCE BE LESS THAN 6".
 4. IF BROKEN STONE BEDDING IS USED FOR WATER MAIN, SAID BEDDING SHALL BE DISCONTINUOUS, IF REQUIRED, OVER THE SEWER WITHIN A DISTANCE OF 12' AWAY EACH SIDE OF THE CROSSING SEWER.
- C. FOR WATER MAINS INSTALLED PARALLEL TO EXISTING SEWERS.
- ALL HORIZONTAL CLEARANCE BETWEEN NEW WATER MAIN INSTALLED PARALLEL TO EXISTING SEWERS ARE TO CONFORM TO THE FOLLOWING:
- a) HORIZONTAL CLEARANCE BETWEEN OUTSIDE OF NEW WATER MAINS AND CENTERLINE OF SEWER SHALL NOT BE LESS THAN 6 FEET PLUS ONE HALF SEWER DIAMETER WHERE DEPTH TO BOTTOM OF SEWER CRADLE IS LESS THAN 10 FEET.
 - b) WHERE DEPTH IS 10 FEET OR MORE TO BOTTOM OF SEWER CRADLE, THE HORIZONTAL CLEARANCE SHALL BE INCREASED BY 1 FOOT FOR EACH ADDITIONAL 5 FEET OF DEPTH OVER THE 10 FEET, OR PORTION THEREOF.
- S3 AT BLOW-OFF CONNECTIONS, A MINIMUM CLEARANCE OF 1'-6" SHALL BE MAINTAINED BETWEEN THE BOTTOM OF THE TRUNK MAIN AND THE TOP THE EXISTING SEWER CONNECTED INTO.
- S4 ALL EXISTING SEWER HOUSE CONNECTIONS SHALL BE CONTINUOUSLY MAINTAINED DURING CONSTRUCTION OF THE WATER MAINS. IF ANY HOUSE CONNECTION MUST BE DISCONNECTED FOR CONSTRUCTION PURPOSES, FLOW MUST BE MAINTAINED BY FLUMING OR OTHER SUITABLE MEANS, AS DIRECTED BY THE ENGINEER AND IN SUCH A MANNER THAT NO-BACK-UPS OCCUR. ANY AND ALL EXISTING SEWERS, HOUSE CONNECTIONS OR OTHER SEWER APPURTENANCES WHICH ARE TO BE REMAIN, AND WHICH MUST BE DISTURBED FOR CONSTRUCTION PURPOSES, SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AFTER COMPLETION OF THE WORK. DAMAGES DONE AS A RESULT OF THE WORK SHALL BE REPAIRED AT NO COST TO THE CITY.

SPECIAL NOTES

WATER MAIN SHUT DOWN REQUIREMENTS:

1. TRUNK MAIN (20" AND LARGER) SHUTDOWN REQUESTS SHOULD BE ADDRESSED TO THE BWSO-DISTRIBUTION ENGINEER. IN WRITING OR EMAIL. BY THE DDC TRUNK MAIN COORDINATOR. ROUGHLY A MONTH PRIOR TO THE REQUEST DATE TO PERMIT TIME TO MEET & DISCUSS. PLAN AND COORDINATE, AND INSPECT/TEST APPURTENANCES REQUIRED IN THE SHUTDOWN. TRUNK MAIN SHUTDOWNS SHOULD NOT BE PLANNED FOR SUMMER MONTHS AND WILL BE DEPENDENT UPON OTHER CONSTRUCTION AND /OR MAINTENANCE ACTIVITIES OCCURRING THE DISTRIBUTION GRADIENT.
2. NO CUTTING AND CAPPING OF WATER MAINS FOR EXTENDED PERIODS WITHOUT APPROVAL FROM THE BWSO-DISTRIBUTION ENGINEER.
3. NO SHUT DOWN OF TRUNK WATER MAINS WILL BE PERMITTED FROM MAY 1ST TO OCTOBER 1ST.

MISCELLANEOUS

DURING THE COURSE OF CONSTRUCTION, IF ANY INTERFERENCE OCCURS WITH LAMP POSTS, PARKING METERS, MAIL BOXES, SIGNAL POSTS, ETC., IT SHALL BE REMOVED AND STORED AND REINSTALLED WITH THE APPROVAL/PERMISSION OF THE AFFECTED AGENCIES/DEPARTMENTS. NO ADDITIONAL PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR THIS WORK, BUT COSTS SHALL BE DEEMED INCLUDED IN THE VARIOUS BID ITEMS FOR THIS CONTRACT.

7. TRAFFIC WORK

- 7.01 "REGULATORY" AND/OR "NO PARKING-CONSTRUCTION" SIGNS USED DURING THE CONSTRUCTION PERIOD ARE TO BE FURNISHED BY THE CONTRACTOR, AS REQUIRED. THE CONTRACTOR SHALL INSTALL THESE SIGNS WHERE DIRECTED BY THE ENGINEER, AND, WHEN NO LONGER REQUIRED, SHALL CAREFULLY REMOVE THESE SIGNS AND DELIVER THEM TO THE BUREAU OF TRAFFIC. THESE SIGNS WILL BE MEASURED FOR PAYMENT UNDER ITEM 6.25 RS. THE COST OF SAID REMOVING AND DELIVERING SHALL BE DEEMED INCLUDED IN THE PRICE BID FOR ITEM 6.25 RS. A CREDIT OF \$50 WILL BE TAKEN FOR EACH SIGN NOT SO DELIVERED. RELOCATION OF SIGNS SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL PAYMENT.
- 7.02 THE ENGINEER SHALL NOTIFY THE BUREAU OF TRAFFIC OPERATION, HIGHWAY CONTROL DIVISION (718-433-3184) TO VERIFY ALL THERMOPLASTIC PAVEMENT MARKINGS DETAIL DRAWINGS SEVEN (7) CALENDAR DAYS PRIOR TO THE START OF WORK ON PAVEMENT MARKINGS.
- 7.03 THE CONTRACTOR SHALL NOTIFY NYCDOT 48 HOURS PRIOR TO THE START OF WORK TO HAVE PARKING METERS AND/OR MUNI-METERS REMOVED. CONTRACTOR SHALL CONTACT MR. JOHN PREMUS, ADMINISTRATIVE TRANSPORTATION COORDINATOR, NYC DEPARTMENT OF TRANSPORTATION, DIVISION OF TRAFFIC OPERATIONS, 58-50 57TH ROAD, 2ND FLOOR, MASPEH, NY 11378, PHONE NUMBER (718) 894-1835, FAX NUMBER (718) 894-8397, E-MAIL jpremus@ddc1.nyc.gov. THE FOLLOWING INFORMATION MUST BE GIVEN TO NYCDOT. (1) PARKING/MUNI METER NUMBERS, (2) LOCATION OF METERS, AND (3) DATE WHEN METERS CAN BE RE-INSTALLED.
- 7.04 ALL REGULATORY AND WARNING TRAFFIC SIGNS SHALL CONFORM WITH THE NEW YORK CITY BUREAU OF TRAFFIC OPERATIONS STANDARD DRAWINGS AND THEIR STANDARD SIGN LIST.
- 7.05 FOR ADDITIONAL NOTES ON MAINTENANCE OF TRAFFIC SEE THE MAINTENANCE AND PROTECTION OF TRAFFIC DRAWINGS FOR THIS CONTRACT.
- 7.06 (NO TEXT)

8. FIRE ALARM WORK

- 8.01 THE CONTRACTOR SHALL NOTIFY THE FIRE DEPARTMENT'S BUREAU OF FIRE COMMUNICATIONS, TELEPHONE (718) 624-4194 OR (718) 624-3752, AT LEAST ONE (1) MONTH IN ADVANCE OF STARTING CONSTRUCTION AND TO MAKE AN APPOINTMENT TO PICK UP FDNY BASE MAPS AT 87 UNION STREET, BROOKLYN, N.Y. 11231.
- 8.02 ALL EXISTING FIRE DEPARTMENT COMMUNICATION FACILITIES SHALL BE PROTECTED AND PROVISIONS MADE FOR THEIR CONTINUOUS OPERATION DURING CONSTRUCTION. ALL ALARM BOXES AND POSTS MUST REMAIN ACCESSIBLE. IF, DUE TO THE CONTRACTOR'S OPERATION, FIRE ALARM SERVICES INADVERTENTLY INTERRUPTED OR FIRE COMMUNICATION SYSTEM EQUIPMENT OR FACILITIES ARE DAMAGED, THE CONTRACTOR WILL BE HELD RESPONSIBLE AND SHALL REPLACE THEM AT HIS/HER OWN EXPENSE AND IN ACCORDANCE WITH FIRE DEPARTMENT REQUIREMENTS.
- 8.03 TO REQUEST STREET MARKOUTS OF FIRE COMMUNICATIONS UNDERGROUND FACILITIES, THE CONTRACTOR MUST CONTACT PLANT OPERATIONS ENGINEERING AT (718) 624-4194 OR (718) 624-3752 AT LEAST ONE (1) MONTH PRIOR TO COMMENCEMENT OF WORK.
- 8.04 ALL FIRE DEPARTMENT WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST REGULATIONS, SPECIFICATIONS AND STANDARDS OF THE NEW YORK CITY FIRE DEPARTMENT, UNDER THE DIRECTION OF THE FIRE DEPARTMENT ENGINEER AND THE SUPERVISION OF THE RESIDENT ENGINEER.

- 8.05 THE CONTRACTOR SHALL BE REQUIRED TO FURNISH AND INSTALL ALL NECESSARY FIRE DEPARTMENT FACILITIES, CONDUITS, CABLES, ETC., UNDER THE APPROPRIATELY SCHEDULED ITEMS. ANY OBSTRUCTION ENCOUNTERED IN PULLING THE CABLE SHALL BE CLEARED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. THE F.D.N.Y. COMMUNICATIONS ELECTRICIANS WILL PERFORM THE LIVE SPlicing OPERATIONS IN MANHOLES AND MAKE ALL TRANSFERS OF ALARM BOXES AND/OR AERIAL CABLES.
- 8.06 THE CONTRACTOR MUST CONTACT EMPIRE CITY SUBWAY OR VERIZON FOR ANY POINT OF ENTRIES (P.O.E.'S) INTO THEIR MANHOLES AND OBTAIN WALL MARKOUTS BY THEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL P.O.E. AND ECS/VERIZON INSPECTIONS.
- 8.07 ANY REQUIRED FIRE ALARM POST, SUBBASE AND HARDWARE, WIRE TERMINAL BOXES AND FIRE ALARM CABLES MUST BE PURCHASED AND PICKED UP FROM THE FIRE DEPARTMENT STOREHOUSE, 87 UNION STREET, BROOKLYN, N.Y. 11231-1416. PRIOR TO BIDDING, THE CONTRACTOR SHALL CONTACT THE BUREAU OF FIRE COMMUNICATIONS AT (718) 624-4194 OR (718) 624-3752 FOR THE LATEST MATERIAL COST OF FIRE COMMUNICATIONS ITEMS. THE CONTRACTOR SHALL ALSO NOTIFY THE FIRE DEPARTMENT'S BUREAU OF FIRE COMMUNICATIONS, TELEPHONE (718) 624-4194 OR (718) 624-3752, AT LEAST FORTY-EIGHT (48) HOURS IN ADVANCE TO ARRANGE FOR PICKUP OF MATERIALS PURCHASED FROM THE FIRE DEPARTMENT. PICK UP HOURS ARE BETWEEN 08:30AM AND 12:30PM.
- 8.08 THE ELECTRICAL SUBCONTRACTOR MUST MAKE AN APPOINTMENT WITH THE BUREAU OF FIRE COMMUNICATIONS TO ATTEND A BRIEF TUTORIAL ON TERMINATING FIRE ALARM CABLES TO TERMINAL BOXES.
- 8.09 OLD DEACTIVATED FIRE ALARM POSTS AND UNUSED CABLE REELS SHALL BE RETURNED TO THE FIRE DEPARTMENT STOREHOUSE BY THE CONTRACTOR AFTER MAKING AN APPOINTMENT WITH THE NEW YORK CITY FIRE DEPARTMENT COMMUNICATIONS ENGINEERING OFFICE.
- 8.10 AT THE CLOSE OF ANY PROJECT INVOLVING CONSTRUCTION OR ALTERATIONS TO FIRE ALARM FACILITIES, ONE HARD COPY AND ONE ELECTRONIC COPY (PDF FORMAT) OF PROPOSED UTILITY PLAN SHEETS AND/OR SKETCHES OF "AS-BUILT" CHANGES MUST BE PROVIDED TO THE BUREAU OF COMMUNICATIONS ENGINEERING OFFICE AT 87 UNION STREET, BROOKLYN, NY 11231.

9. OTHER UTILITIES WORK

- 9.01 THE CONTRACTOR IS ALERTED TO THE RULES AND REGULATIONS OF INDUSTRIAL CODE RULE 53 AND IS DIRECTED TO COMPLY. THE CITY SHALL NOT BE LIABLE FOR ANY COSTS INCURRED BY THE CONTRACTOR AS A RESULT OF THE COMPLIANCE, NON-COMPLIANCE, OR IMPROPER COMPLIANCE BY THE FRANCHISED OPERATORS OF UNDERGROUND FACILITIES, WITH SUB-PART 53-3 OF RULE 53 OF THE INDUSTRIAL CODE.
- 9.02 CON EDISON, NATIONAL GRID, CABLEVISION, TIME WARNER, AT&T, RCN, EMPIRE CITY SUBWAY, AND/OR VERIZON FACILITIES ARE LOCATED WITHIN THE PROJECT LIMITS. AS A RESULT OF THIS PROJECT, THESE PRIVATE UTILITIES WILL BE REQUIRED TO PROTECT, REMOVE, REPLACE OR RELOCATE SOME OR ALL OF THEIR FACILITIES. THIS WORK WILL BE PERFORMED BY THEM OR THEIR AGENTS AT THEIR EXPENSE. CONTRACTOR TO COORDINATE ACTIVITIES WITH THEM.
- 9.03 ALL UTILITY POLES WILL BE REMOVED AND/OR RELOCATED BY OTHERS.
- 9.04 THE ENGINEER WILL CONTACT THE SPECIAL PROJECT UNIT COMMUNICATIONS DIVISION OF THE POLICE DEPARTMENT (212-374-5900) IF ANY RELOCATION OR DISCONNECTION OF POLICE DEPARTMENT FACILITIES IS REQUIRED.

10. PAVEMENT WORK

- 10.01 ALL HEADERS ABUTTING NEW PAVEMENT SHALL BE REMOVED WHERE DIRECTED BY THE ENGINEER; THE PRICE OF WHICH SHALL BE INCLUDED IN THE PRICE BID FOR EXCAVATION.
- 10.02 (NO TEXT)
- 10.03 FINISHED ROADWAY PAVEMENT AT THE APEX OF ALL CORNERS SHALL BE CONSTRUCTED TO ELEVATIONS SO AS TO PROVIDE POSITIVE SURFACE DRAINAGE FROM THE APEX TOWARDS THE CATCH BASINS, WHERE APPLICABLE.

11. LANDSCAPING WORK

- 11.01 REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.
- 11.02 THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE PERFORMED BY QUALIFIED ARBORISTS.
- 11.03 NO TREE SHALL BE REMOVED BY THE CONTRACTOR UNLESS HE IS SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER. EVERY CONSCIONABLE EFFORT IS TO BE MADE TO SAVE TREES BY THE USE OF: THE CURB DETAIL AT EXISTING TREES, BY SLIGHT MODIFICATION IN CURB ALIGNMENT, OR BY OTHER METHODS SO ORDERED BY THE ENGINEER, IN ACCORDANCE WITH ACCEPTABLE ENGINEERING PRACTICES.
- 11.04 (NO TEXT)
- 11.05 (NO TEXT)
- 11.06 THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G. GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE TREE CONSULTANT.
- 11.07 THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, TRASH RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT.

12. BUS STOP SHELTER WORK

- 12.01 (NO TEXT)
- 12.02 (NO TEXT)
- 12.03 (NO TEXT)
- 12.04 (NO TEXT)
- 12.05 (NO TEXT)
- 12.06 THE CONTRACTOR IS HEREBY REQUIRED TO NOTIFY, IN WRITING, THE NEW YORK CITY DEPARTMENT OF TRANSPORTATION, OFFICE OF FRANCHISES, CONCESSIONS AND CONSENTS AT 55 WATER ST., 9TH FLOOR, NEW YORK, NY 10041 (212-339-8550), THIRTY (30) DAYS PRIOR TO THE COMMENCEMENT OF ANY CONTRACT WORK AT OR IN THE VICINITY OF ANY EXISTING OR PROPOSED BUS STOP SHELTER LOCATION.
- 12.07 THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN WORKING AT AND/OR IN THE VICINITY OF EXISTING BUS STOP SHELTERS. ANY DAMAGE TO EXISTING BUS STOP SHELTERS, INCLUDING ALL ELECTRICAL SERVICE LINES, CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AT NO COST TO THE CITY.
- 12.08 (NO TEXT)

13. STREET LIGHTING WORK

- 13.01 THE CONTRACTOR SHALL FURNISH, INSTALL, AND REMOVE ALL NECESSARY STREET LIGHTING EQUIPMENT PRIOR TO NEW PAVING.
- 13.02 NEW INSTALLATION SHALL BE ENERGIZED BEFORE THE REMOVAL OF EXISTING POLES.
- 13.03 THE CONTRACTOR SHALL NOTIFY NYC DEPARTMENT OF TRANSPORTATION THE BUREAU OF TRAFFIC OPERATIONS, AT LEAST 72 HOURS PRIOR TO THE START OF WORK: (718) 786-5822.
- 13.04 ANY DAMAGE TO THE EXISTING STREET LIGHTING EQUIPMENT, AS A RESULT OF THE CONTRACTORS WORK AND/OR WORK FORCE, SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE CITY.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				
<p style="margin: 0;">WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN</p>				
PROJECT ID: MED608		DATE: 7/25/14	SHEET 5 OF 24	G2 / G2

TOPOGRAPHIC SURVEY PREPARED BY:	DESIGNED _____ A.B.	SCALE AS SHOWN	MIKHAIL KLUGER P.E. ENGINEER-IN-CHARGE	<p>CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN</p>	<p>GENERAL NOTES</p>
LICENSED LAND SURVEYOR	DRAWN _____ A.B.	CADD FILE: MED608-G1-2	GEORGE FRANZ P.E. DIRECTOR		

14. NYC TRANSIT GENERAL NOTES

14.00 CONTRACTOR IS CAUTIONED THAT UNDERGROUND T.A. FACILITIES EXIST IN (LOCATION). VARIOUS TRANSIT AUTHORITY STRUCTURES EXTEND TO, OR NEAR TO, THE STREET SURFACE. THESE FACILITIES MAY INCLUDE VENTILATION STRUCTURES, ENTRANCES, EMERGENCY EXITS, VAULTS, CONDUITS, DUCTS, COLUMN FOUNDATIONS, ETC., DURING THE CONSTRUCTION. THESE FACILITIES SHALL BE SUPPORTED AND PROTECTED BY THE CONTRACTOR AS DIRECTED BY THE T.A. ENGINEER. COST OF THIS WORK IS TO BE INCLUDED IN THE PRICES BID FOR ALL THE SCHEDULED CONTRACT ITEMS.

NO DIRECT PAYMENT WILL BE MADE FOR COSTS INCURRED IN COMPLYING WITH THE FOLLOWING PROVISIONS, UNLESS OTHERWISE PROVIDED. SAID COST WILL BE DEEMED TO HAVE BEEN INCLUDED IN THE PRICES BID FOR ALL THE SCHEDULED CONTRACT ITEMS.

14.01 THE TRANSIT AUTHORITY RESERVES THE RIGHT TO PLACE INSPECTORS, FLAGMEN OR OTHER PERSONNEL IN THE SUBWAY STRUCTURES DURING CONSTRUCTION OF THE PROJECT LINKED BY A TELEPHONE SYSTEM, IF DEEMED NECESSARY, TO OBSERVE THE EFFECTS OF THE CONSTRUCTION ON THE TRANSIT FACILITIES. IT IS EXPECTED THAT SUCH PERSONNEL WILL BE NECESSARY WHEN THE CONSTRUCTION COMES WITHIN TWENTY-FIVE FEET OF THE SUBWAY STRUCTURE. HOWEVER, THE TRANSIT AUTHORITY FURTHER RESERVES THE RIGHT TO PLACE SUCH PERSONNEL WHENEVER, IN ITS OPINION, THE PROJECT CONDITIONS WARRANT SUCH PLACEMENT, REGARDLESS OF DISTANCE. THE COST OF SUCH PERSONNEL, TELEPHONE INSTALLATION AND ANY RE-ROUTES, DIVERSIONS OF SERVICE, WORK TRAINS, ETC., MADE NECESSARY BY THE PROJECT, WILL BE PAID FOR BY THE CITY DIRECTLY TO THE TRANSIT AUTHORITY, AT NO COST TO THE CONTRACTOR. IT IS AGREED THAT THE FURNISHING OF ANY TRANSIT AUTHORITY PERSONNEL SHALL NOT RELIEVE THE CONTRACTOR FROM ANY LIABILITY OF PAYMENT FOR DAMAGE CAUSED BY HIS OPERATIONS.

14.02 ALL ROCK EXCAVATION ADJACENT TO THE TRANSIT STRUCTURE IS TO BE CHANNEL DRILLED TWO FEET BELOW SUBGRADE.

14.03 IF TOP OF ROCK IS FOUND BELOW SUBWAY STRUCTURE, THE SUBWAY STRUCTURE MUST BE UNDERPINNED IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.

14.04 IF ROCK IS SOFT OR SEAMY, LATERAL SUPPORTS MUST BE PROVIDED BELOW THE SUBWAY STRUCTURE IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.

14.05 BLASTING WILL BE PERMITTED ONLY WITH LIGHT CHARGES SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND IN ACCORDANCE WITH THE REGULATIONS OF THE FIRE DEPARTMENT. THE CONTRACTOR SHALL PROVIDE A DETAILED MONITORING PLAN, PROVIDING FOR MEASUREMENTS OF BOTH PARTICLE VELOCITY AND DISPLACEMENTS AT CRITICAL LOCATIONS OF THE NYCT STRUCTURE. THE MONITORING PLAN SHALL INCLUDE THRESHOLD AND UPSET LEVELS OF BOTH PARTICLE VELOCITY AND SETTLEMENT TOGETHER WITH AN ACTION PLAN FOR THEIR IMPLEMENTATION. THE CONTRACTOR SHALL SECURE AN APPROVED SEISMOLOGIST TO INSTALL AND OPERATE SUITABLE VELOCITY GAUGES TO CONTINUOUSLY MONITOR PARTICLE VELOCITY AND AN INDEPENDENT LICENSED SURVEYOR TO MONITOR DISPLACEMENTS. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE BLASTING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.

14.06 BEFORE PLACING CONCRETE, THE SUBGRADE OF THE FOUNDATIONS IN THE VICINITY OF THE SUBWAY STRUCTURE IS TO BE INSPECTED AND APPROVED BY NYCT'S ENGINEER.

14.07 IF ANY PORTION OF THE SUBWAY STRUCTURE OR FINISH IS DAMAGED, AS A RESULT OF THE CONTRACTOR'S OPERATIONS, IT SHALL BE REPAIRED OR REPLACED WITH THE SAME MATERIALS IN PLACE, SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND AT THE EXPENSE OF THE CONTRACTOR.

14.08 EXCAVATION EMBANKMENTS ARE TO BE SHORED AND BRACED. DRAWINGS INDICATING A SUGGESTED METHOD OF CONSTRUCTION ARE TO BE SUBMITTED TO NYCT FOR APPROVAL IN CONJUNCTION WITH THE PROJECT'S CONTRACT DRAWINGS. IN CASE OF EXCAVATION UNDERMINING THE SUBWAY STRUCTURE, UNDERPINNING MAY BE REQUIRED. DRAWINGS FOR UNDERPINNING ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.

14.09 TEMPORARY SHORING MAY BE PLACED IN DIRECT CONTACT WITH NYCT STRUCTURES ONLY IF THE NYCT STRUCTURE IS SHOWN TO BE ABLE TO SUPPORT ALL ANTICIPATED LOADS THAT CAN BE TRANSFERRED THROUGH THE TEMPORARY STRUCTURES WITHOUT DAMAGING THE EXISTING STRUCTURE. AT THE COMPLETION OF THE PROJECT, THESE TEMPORARY SHORING AND BRACING SYSTEMS ARE TO BE REMOVED AS APPROVED BY NYCT.

14.10 WHEN PILES ARE TO BE DRIVEN ADJACENT TO THE SUBWAY STRUCTURE, BORING DATA, PILE LAYOUTS, SPECIFICATIONS AND INSTALLATION PROCEDURES ARE TO BE SUBMITTED TO NYCT FOR APPROVAL. VELOCITY METERS ARE TO BE INSTALLED IN THE SUBWAY TUNNEL AT CRITICAL LOCATIONS TO MONITOR INDUCED VIBRATIONS. INDUCED DISPLACEMENTS ALONG THE TUNNEL STRUCTURE AND TRACK INVERT ARE TO BE MONITORED DURING DRIVING. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE DRIVING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.

14.11 NO PILES ARE PERMITTED TO BE INSTALLED BY ANY METHOD WITHIN THREE FEET OF SUBWAY STRUCTURE, MEASURED FROM THE EDGE OF THE PILE OR CASING TO THE WALL. CLOSED-END PILES WILL NOT BE PERMITTED TO BE DRIVEN WITHIN TEN FEET OF THE SUBWAY STRUCTURE.

14.12 ALL PILES ARE TO BE PLACED WITHIN A PREAUGERED CASED HOLE TO THE INFLUENCE LINE. THE CASING SHALL BE CLEANED WITHOUT DISTURBING THE SOIL OUTSIDE THE CASING AND THE PILE TO BE PLACED WITHIN THE CASING FOR INSTALLATION. THE PILES MAY THEN BE DRIVEN BEYOND THE INFLUENCE LINE WITHIN THE CASING.

14.13 THE INFLUENCE LINE SHALL START AT THE BOTTOM OF THE SUBWAY STRUCTURE AND EXTEND AT A 1:1 SLOPE. FOR PILES INSTALLED WITHIN TEN FEET OF THE SUBWAY STRUCTURE, THE CASING SHALL BE EXTENDED UP TO THE BOTTOM OF THE SUBWAY STRUCTURE.

14.14 AT THE COMPLETION OF PILE INSTALLATION, THE SPACE BETWEEN THE PILE AND THE CASING IS TO BE FILLED WITH EITHER CLEAN SAND OR GROUT. IF THE CASING IS TO BE REMOVED, THE FILLING MUST BE COMPLETED PRIOR TO REMOVAL OF THE CASING.

14.15 ALL PILES ARE TO BE DRIVEN A MINIMUM OF TEN FEET BELOW THE INTERSECTION OF THE PILE CENTER LINE AND THE INFLUENCE LINE OF THE SUBWAY STRUCTURE.

14.16 THE USE OF "DOWN-THE-HOLE -HAMMERS" FOR INSTALLATION OF PILES THROUGH OVERBURDEN AND FILL WILL BE PERMITTED ONLY TO REMOVE BOULDERS. IT WILL NOT BE PERMITTED AS A MATTER OF COURSE TO ADVANCE THE HOLE. THEIR USE TO CONSTRUCT ROCK SOCKETS WILL NOT BE ALLOWED WITHIN 5 FEET OF THE NYCT STRUCTURE.

14.17 VIBRATORY HAMMERS WILL NOT BE PERMITTED WITHIN 75 FEET OF SUBWAY STRUCTURES. HOERAMS WILL NOT BE PERMITTED WITHIN 25 FEET OF SUBWAY STRUCTURES.

14.18 DYNAMIC COMPACTION METHODS USING DROPPED HEAVY WEIGHTS CANNOT BE CONDUCTED WITHIN 1000 FEET OF ANY NYCT STRUCTURE UNLESS IT IS SHOWN THAT INDUCED SETTLEMENTS AND VIBRATIONS WILL NOT DAMAGE THESE STRUCTURES. A SUITABLE MONITORING PLAN INCLUDING SETTLEMENT AND VIBRATION MEASUREMENTS MUST BE APPROVED BY NYCT'S ENGINEER FOR ALL SUCH OPERATIONS WITHIN THESE DISTANCES.

14.19 THERE SHALL BE NO MACHINE EXCAVATION WITHIN 3 FEET OF NYCT STRUCTURES, POWER DUCT LINES, OR ANY OTHER FACILITIES UNTIL THEY HAVE BEEN CAREFULLY EXPOSED BY HAND EXCAVATION.

14.20 ALL DEWATERING OPERATIONS CONDUCTED WITHIN 500 FEET OF THE NYCT STRUCTURE MUST BE PERFORMED IN ACCORDANCE WITH DRAWINGS AND PROCEDURES SUBMITTED TO NYCT FOR APPROVAL. THE DISTANCE FROM THE STRUCTURE TO THE DEWATERING OPERATION CAN BE REDUCED PROVIDED THAT SOIL CONDITIONS AT THE SITE INDICATE THAT THE RADIUS OF INFLUENCE OF THE DEWATERING IS LESS THAN 500 FEET. FOR DEWATERING WITHIN THE RADIUS OF INFLUENCE, THE DEWATERING PROGRAM MUST BE SHOWN TO HAVE NEGLIGIBLE INFLUENCE ON SETTLEMENTS OF THE NYCT STRUCTURE.

14.21 SUBWAY ENTRANCES (VENTILATORS, ETC.) ARE TO BE UNDERPINNED OR SHORED AND BRACED IF DIRECTED BY NYCT'S ENGINEER.

14.22 NYCT, AT ITS DISCRETION, RESERVES THE RIGHT TO REQUIRE THE PROJECT TO CLOSE OR MAINTAIN AND PROTECT EXISTING SUBWAY ENTRANCES, VENTILATORS, ETC. ADJACENT TO THE PROJECT DURING CONSTRUCTION. SUCH CONSTRUCTION MAY INCLUDE UNDERPINNING, SHORING, BRACING AND ERECTION OF SUITABLE BARRICADES AND/OR CANOPIES AND SHIELDS. SUCH PROTECTION SHALL BE IN ACCORDANCE WITH DRAWINGS SUBMITTED TO NYCT FOR APPROVAL.

14.23 IF SHIELDS ARE TO BE INSTALLED TO PROTECT NYCT FACILITIES AND/OR THE PUBLIC, PLANS SHOWING THE LOCATION, TYPE AND METHOD OF ATTACHMENT TO THE TRANSIT STRUCTURE MUST BE SUBMITTED TO NYCT FOR APPROVAL.

14.24 ALL LUMBER AND PLYWOOD USED FOR PROTECTION OF SUBWAY FACILITIES MUST BE FIRE RETARDANT.

14.25 SUBWAY EMERGENCY EXITS MUST BE KEPT CLEAR AT ALL TIMES.

14.26 IN EXCAVATING OVER OR NEAR THE SUBWAY ROOF, SPECIAL CARE SHALL BE EXERCISED SO THAT THE THIN CONCRETE PROTECTION OF THE SUBWAY WATERPROOFING IS NOT DAMAGED.

14.27 BURNING OF, WELDING TO OR DRILLING THROUGH EXISTING STEEL STRUCTURES WILL NOT BE PERMITTED EXCEPT AS SHOWN ON DRAWINGS APPROVED BY NYCT.

14.28 HORIZONTAL AND VERTICAL CONTROL SURVEY DATA OF THE EXISTING NYCT STRUCTURE IS TO BE TAKEN BY A LICENSED LAND SURVEYOR TO MONITOR ANY MOVEMENTS THAT OCCUR DURING CONSTRUCTION AND TO SHOW THAT THE INDUCED MOVEMENTS ARE WITHIN ALLOWABLES PROVIDED AND APPROVED BY NYCT'S ENGINEER. IF ANY MOVEMENTS EXCEED ALLOWABLES, REMEDIATION AS APPROVED BY NYCT SHALL BE PERFORMED.

14.29 BUS ROUTES AFFECTED BY THE PROJECT WILL OR MAY REQUIRE BUS DIVERSIONS. THESE ARRANGEMENTS SHALL BE MADE THROUGH:

MS. SARAH WYSS
DIRECTOR, SHORT RANGE BUS SERVICE PLANNING
MTA NEW YORK CITY TRANSIT
2 BROADWAY, ROOM A17.50
NEW YORK, NY 10004
Sarah.Wyss@NYCT.com

WHEN IMPACTING ANY BUS STOP, SPECIAL OPERATIONS MUST BE NOTIFIED TWO WEEKS IN ADVANCE.

14.30 DUCT LINES MUST BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. ANY INTERFERENCE WITH DUCT LINES SHOULD BE REPORTED TO NYCT INSPECTOR. WHEN A DUCT LINE CONTAINING CABLES IS TO BE REMOVED, OR WHEN MASONRY ADJACENT THERETO IS TO BE REMOVED, PENETRATED, OR DRILLED, THE WORK SHALL BE DONE WITH HAND LABOR ENTIRELY, USING HAMMER AND CHISEL. JACKHAMMERS, BULL POINTS OR OTHER POWER EQUIPMENT SHALL NOT BE USED.

14.31 WHERE MANHOLES ARE ENCOUNTERED:

- a) THEY SHALL BE PROTECTED AND RAISED OR LOWERED AS REQUIRED, TO MATCH THE NEW STREET GRADE.
- b) IF MANHOLE COVERS ARE RAISED OR LOWERED, PROTECT CABLES IN MANHOLE BY WOOD SHEETING OF 2" NOMINAL THICKNESS.
- c) PRIOR TO THE START OF CONSTRUCTION OPERATIONS AFFECTING MANHOLES AND DUCT LINES, SEVEN DAYS NOTICE MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., MANAGER, DEPARTMENT OF MAINTENANCE OF WAY, 130 LIVINGSTON STREET, ROOM 8044D, BROOKLYN, NY 11201 AT (718) 694-1358.

14.32 CONSTRUCTION WORK DONE NEAR VENT GRATINGS AND HATCHES SHALL BE AS FOLLOWS:

- a) UNLESS APPROVED BY THE NYCT'S ENGINEER, ALL VENT GRATINGS AND HATCHES SHOULD REMAIN OUTSIDE THE CONSTRUCTION SITE, SEPARATED BY A CONSTRUCTION FENCE. PROTECTIVE SHIELDS MUST BE PROVIDED OVER VENT GRATINGS AS REQUIRED BY NYCT'S ENGINEER.
- b) NO BUILDING MATERIAL, VEHICLES OR CONSTRUCTION EQUIPMENT IS TO BE STORED OR RUN OVER VENT, GRATINGS, HATCHES OR EMERGENCY EXITS.
- c) DETAILS OF SIDEWALK RECONSTRUCTION AROUND VENT GRATINGS, HATCHES AND EMERGENCY EXITS ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.

14.33 TRACTORS, CRANES, EXCAVATORS, ETC. USED IN THE VICINITY OF THE ELEVATED STRUCTURES SHALL BE ISOLATED FROM THE GROUND. SINCE THE ELEVATED STRUCTURE IS USED AS A NEGATIVE RETURN PATH, WITH A CONSEQUENTIAL POTENTIAL BETWEEN IT AND THE GROUND, ANY CONTACT BETWEEN THE STRUCTURE AND GROUNDED EQUIPMENT COULD RESULT IN BURNING OF THE STEEL.

14.34 TEMPORARY CONSTRUCTION SHEDS, BARRICADES OR PLYWOOD PARTITIONS MUST BE A MINIMUM OF 5'-0" FROM EDGE OF FINISHED PLATFORM.

14.35 STATION AREAS OR STAIRWAY/CLOSINGS: THE GENERAL REQUIREMENTS FOR STATION AREAS OR STAIRWAY/CLOSINGS ARE AS FOLLOWS:

- a) ONLY ONE STAIRWAY AT EACH STATION WILL BE PERMITTED TO BE CLOSED AT THE SAME TIME. APPROVALS FOR CLOSING ANY STAIRWAY MUST BE OBTAINED FROM THE DIVISION OF STATION OPERATIONS AT LEAST THREE WEEKS IN ADVANCE.
- b) MR. ASHOK PATEL, DIRECTOR, OFFICE OF STATION PROGRAMS: TELEPHONE (718) 694-1695 OF THE DIVISION OF STATIONS MUST BE NOTIFIED ONE WEEK PRIOR TO THE ACTUAL CLOSING AND REOPENING OF THE ENTRANCE.
- c) AMPLE SIGNAGE MUST BE SUPPLIED AND POSTED AT LEAST ONE WEEK IN ADVANCE, ADVISING THE PUBLIC OF THE PROPOSED SUBWAY STAIR CLOSING.
- d) THE STREET ENTRANCE STAIRWAY SHOULD NOT BE CLOSED UNLESS MANPOWER AND MATERIALS ARE AVAILABLE TO COMMENCE WORK ON DATES PERMITTED.
- e) ONCE THE CLOSING IS EFFECTED, CONSTRUCTION SIGNS MUST BE PLACED AT APPROPRIATE LOCATIONS ON THE BARRICADES AT THE STREET AND MEZZANINE LEVELS, STATING THE CONTRACTOR'S NAME, 24 HOUR EMERGENCY TELEPHONE NUMBER, CONTRACT NUMBER, THE DURATION OF THE CLOSING, DIRECTION TO AN ALTERNATE ENTRANCE/EXIT, AND AN APOLOGY FOR THE INCONVENIENCE TO OUR CUSTOMERS.
- f) EXISTING STATION SIGNAGE MUST BE ADJUSTED TO REFLECT ANY CHANGES IN ACCESS/EGRESS.
- g) BARRICADES ARE TO BE PAINTED AND KEPT GRAFFITI FREE AT ALL TIMES. THE CONTRACTOR MUST MAINTAIN THE BARRICADED AREA CLEAN OF ALL DEBRIS.
- h) ALL MATERIALS ARE TO BE PROPERLY STORED AND SECURED AWAY FROM PASSENGER TRAFFIC.
- i) THE CONTRACTOR MUST REMOVE ALL WASTE MATERIAL AND BARRICADES FROM ALL STATION AREAS WHEN CONSTRUCTION IS COMPLETED.
- j) INSPECTION OF THE AREA UNDER CONSTRUCTION BY AUTHORIZED STATION DEPARTMENT EMPLOYEES SHALL NOT BE INHIBITED.
- k) IF STREET LIGHTS ON THE SIDEWALKS ARE AFFECTED, TEMPORARY LIGHTS SHALL BE PROVIDED.

14.36 IF NEW CONCRETE CONSTRUCTION IS JOINED TO EXISTING CONCRETE, DOWELS AND KEYWAYS ARE TO BE USED IN ACCORDANCE WITH NYCT STANDARDS.

14.37 IF THE PROJECT INVOLVES CONSTRUCTION OR ALTERATION OF A SUBWAY FACILITY ON PRIVATE PROPERTY, THE PROPERTY OWNERS WILL BE REQUIRED TO ENTER INTO AN AGREEMENT WITH NYCT PERTAINING TO ALL WORK AFFECTING THE TRANSIT FACILITIES AND CLEARLY DEFINING LIMITS AND RESPONSIBILITY FOR MAINTENANCE AND LIABILITY.

14.38 WHEREVER A NEW SIDEWALK IS BEING PLACED ADJACENT TO NYCT STRUCTURES THE FOLLOWING WILL BE REQUIRED:

- a) THE TOP OF THE NEW SIDEWALK SHALL BE FLUSH WITH THE SUBWAY VENT GRATINGS, HATCHES AND EMERGENCY EXITS.
- b) THE SLOPE OF THE NEW SIDEWALK SHALL BE SUCH THAT THE DRAINAGE BE AWAY FROM THESE STRUCTURES.
- c) A 1/2" PREMOLDED FILLER SHALL BE INSTALLED BETWEEN THE NEW SIDEWALK AND NYCT STRUCTURE.
- d) WHERE SIDEWALK ELEVATIONS ARE BEING CHANGED DETAILS OF PROPOSED WORK AROUND NYCT STRUCTURES ARE TO BE SUBMITTED FOR APPROVAL.

14.39 BEFORE THE START OF ANY WORK, THE CONTRACTOR SHALL MAKE AN EXAMINATION, IN THE PRESENCE OF NYCT'S ENGINEER, OF THE INTERIOR AND EXTERIOR OF NYCT SUBWAY OR OTHER STRUCTURE ADJACENT TO THE PROPOSED WORK. THE PERSON OR PERSONS AUTHORIZED BY THE CONTRACTOR TO MAKE THESE EXAMINATIONS SHALL BE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL TAKE ALL PHOTOGRAPHS AS MAY BE NECESSARY OR ORDERED TO INDICATE THE EXISTING CONDITION OF NYCT STRUCTURE. ONE COPY OF EACH PHOTOGRAPH, EIGHT INCHES BY TEN INCHES IN SIZE, AND THE NEGATIVE IS TO BE SUBMITTED TO MR. JOHN MALVASIO, MANAGER, DEPARTMENT OF MAINTENANCE-OF-WAY, 130 LIVINGSTON STREET, BROOKLYN, NEW YORK, TELEPHONE (718) 694-1358 BEFORE THE START OF CONSTRUCTION.

14.40 ALL ARCHITECTURAL DETAILS (TOKEN BOOTHS, RAILINGS, DOORS, ETC.) ARE TO CONFORM TO THE LATEST NYCT STANDARDS. THESE STANDARDS ARE AVAILABLE AT NYCT.

14.41 STANDARD NYCT INSURANCE CLAUSES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS. PROOF THAT THE NECESSARY INSURANCE IS IN EFFECT WILL BE REQUIRED BEFORE WORK CAN COMMENCE.

14.42 AT THE CLOSE OF ANY PROJECT INVOLVING CONSTRUCTION OR ALTERATIONS TO TRANSIT FACILITIES, ONE SET OF VELLUMS OR MYLARS, FIVE SETS OF 35MM MICROFILM, AND ELECTRONIC COPIES COMPLYING TO MICROSTATION.DGN FORMAT OF "APPROVED AS-BUILTS" MUST BE PROVIDED TO NYCT FOR ITS RECORDS. FOR DETAILS OF SPECIFIC REQUIREMENTS CONTACT NYCT OUTSIDE PROJECTS.

14.43 AT LEAST SEVEN WORKING DAYS PRIOR TO THE START OF CONSTRUCTION OPERATIONS, NOTIFICATION MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., MANAGER, DEPARTMENT OF MAINTENANCE-OF-WAY, AT (718) 694-1358. THE CONTRACTOR TO PROVIDE TEMPORARY QUARTERS NEAR THE JOB SITE FOR NYCT INSPECTORS CONTAINING A DESK AND TELEPHONE.

Project Coordination Guide				
8th St - NYU Station / Broadway Line / BMT / Manhattan				
Contract	Project Title	Design Manager/ Tel No.	Constr. Manager/ Tel No.	Resid. Engineer/ Tel No.
ST01-1615	Stations Help Point: Phase 2	D. Wesley/ (646)252-3061	S. Davoodi/ (646)252-2504	
ST04-7247 A36124	Station Access - ADA Induction Loops: 642 Bths	D. Devoti/ (646)252-6785	M.V. Mathew/ (646)395-9997	S. Stuart/ (646)252-3577
MW17-5969 W32679	Comm Cable/ Eqpt ATM: B Div 253 Stn OPTION	K. Asamoah/ (646)252-4064	V. Cavataio/ (212)883-7457	S. Jamoona/ (212)883-7461

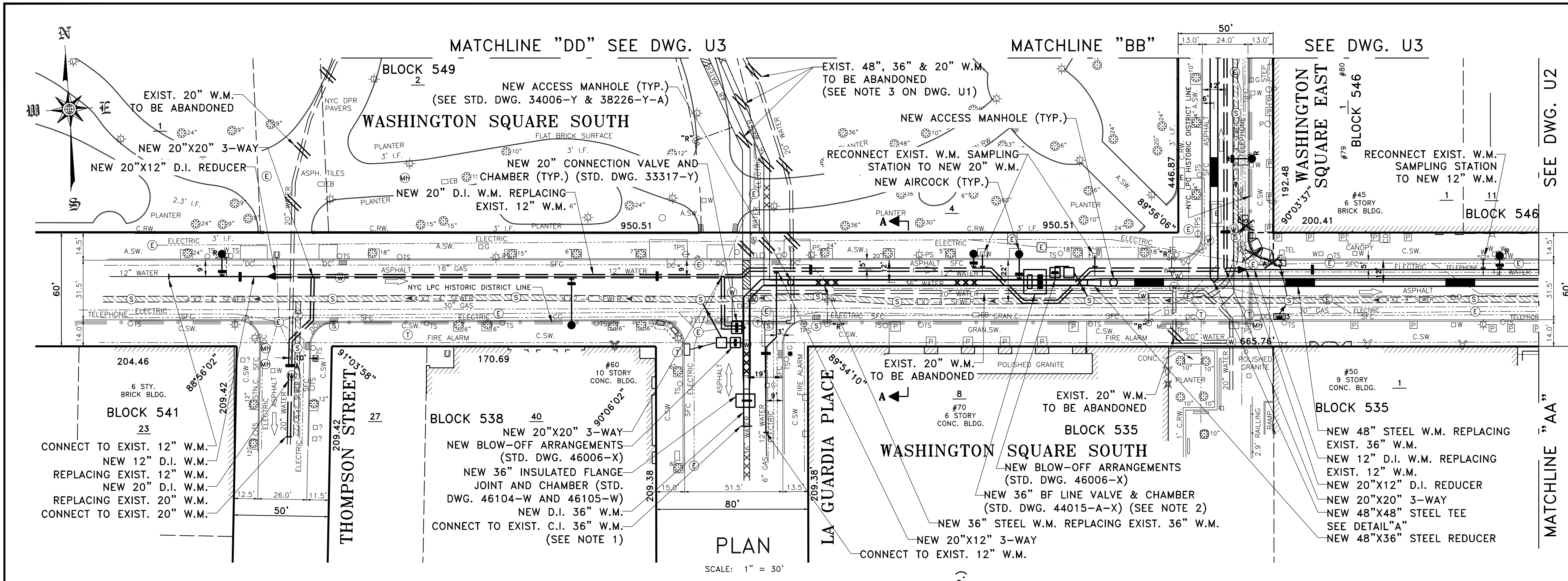
NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				

TOPOGRAPHIC SURVEY PREPARED BY:	DESIGNED <u>A.B.</u>	SCALE AS SHOWN	MIKHAIL KLIGER ENGINEER-IN-CHARGE
LICENSED LAND SURVEYOR	DRAWN <u>A.B.</u>	CADD FILE <u>MED608-TA1</u>	GEORGE FRANZ DIRECTOR
	CHECKED <u>M.K.</u>		

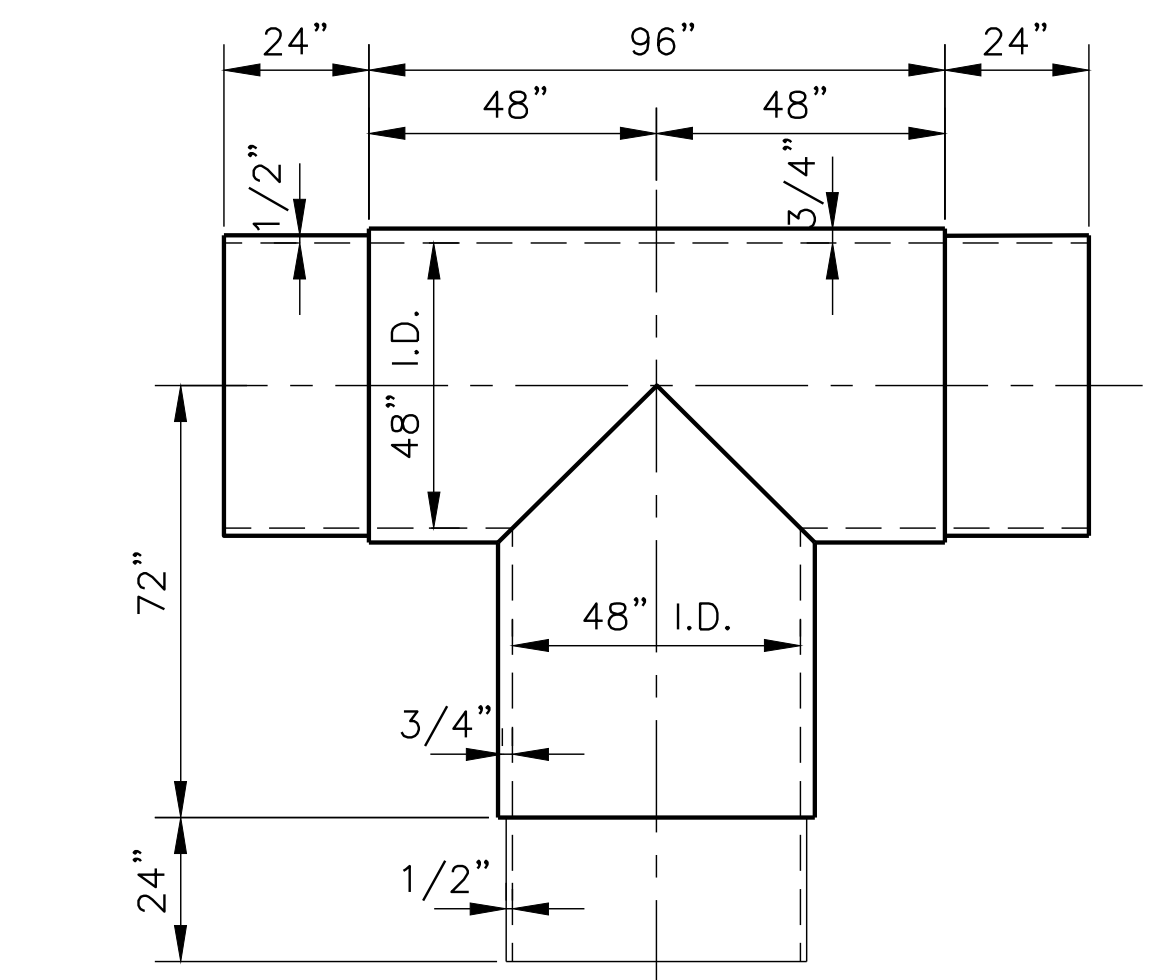
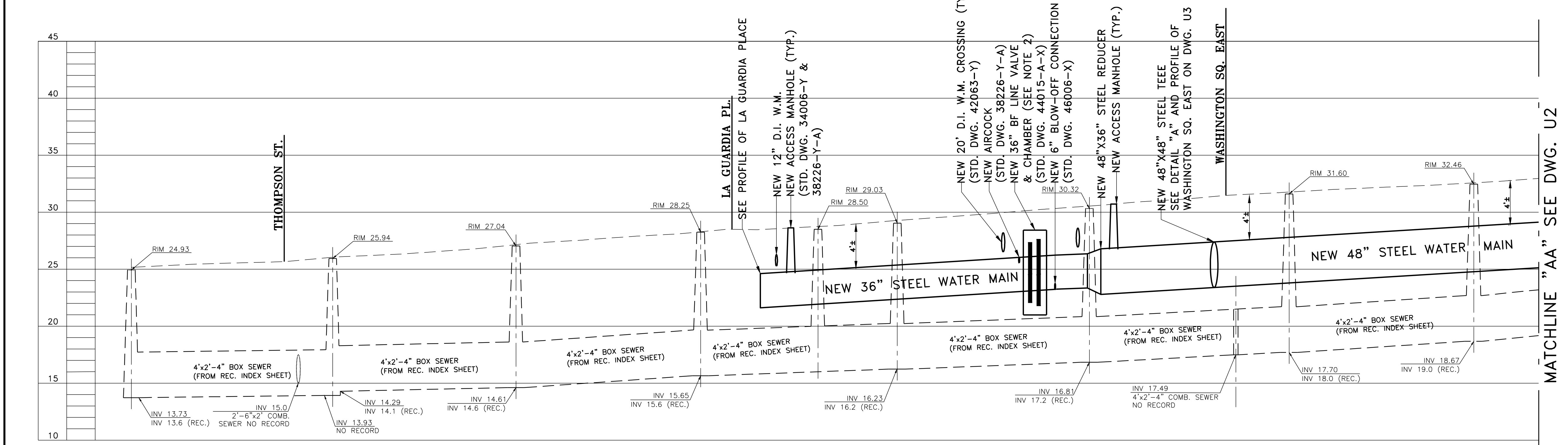
CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

NEW YORK CITY TRANSIT GENERAL NOTES

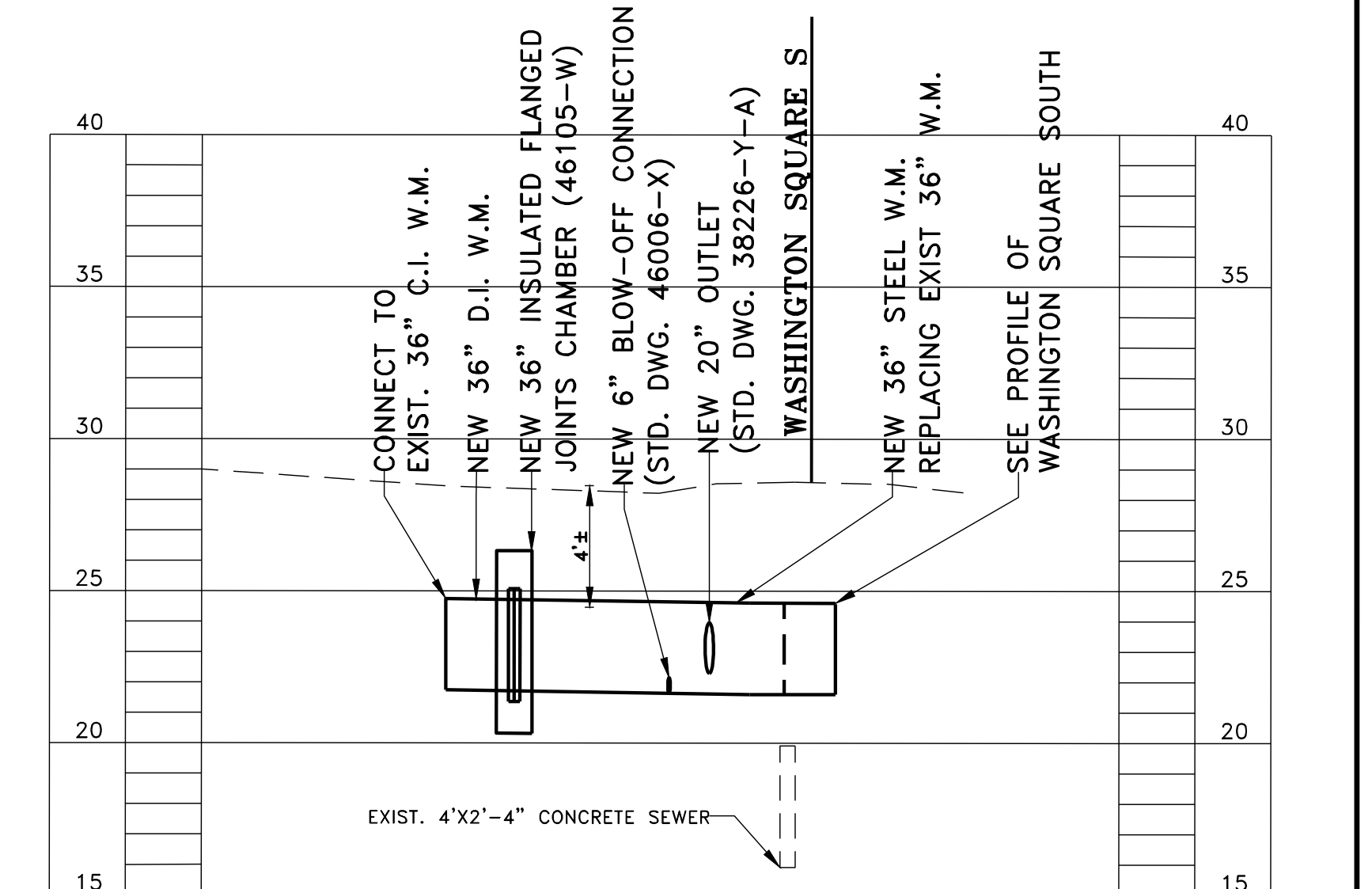
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN			
PROJECT ID: MED608	DATE: 7/25/14	SHEET 6 OF 24	TA1



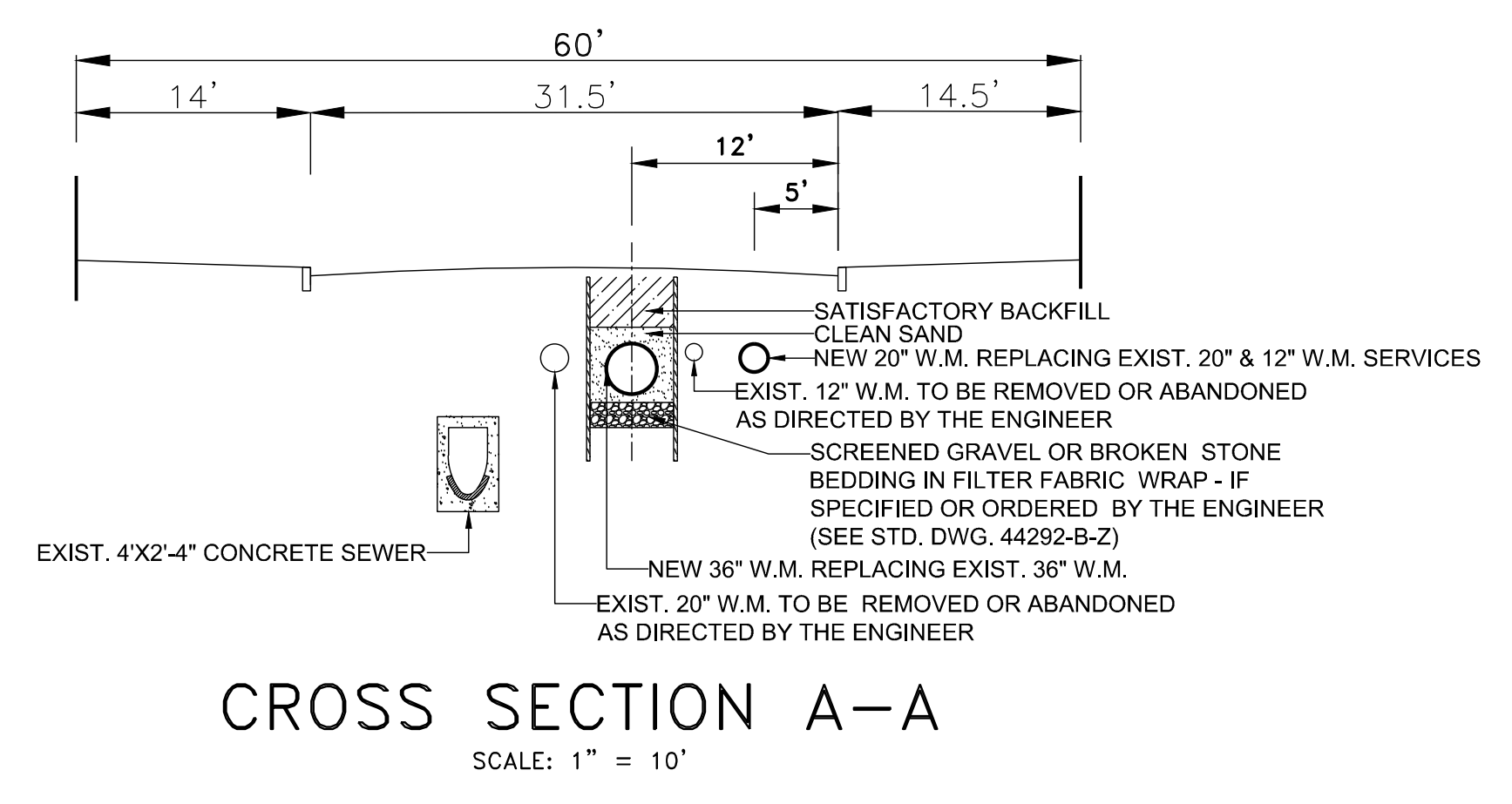
- NOTES**
- CONNECT NEW 36" & 48" DUCTILE IRON FLANGE PIPE TO EXISTING 36" & 48" CAST IRON WATER MAIN. THE CONTRACTOR SHALL VERIFY O.D. OF EXISTING C.I. PIPE AT TIE IN POINT AND PROVIDE APPROPRIATE SLEEVE AS APPROVED BY THE ENGINEER UNDER ITEM 60.13M5S36 (FURNISHING AND DELIVERING 36-INCH DUCTILE IRON MECHANICAL JOINT SLEEVES), AND 60.13M5S48 (FURNISHING AND DELIVERING 48-INCH DUCTILE IRON MECHANICAL JOINT SLEEVES).
 - THE EXPANSION JOINT SHOWN ON STANDARD DRAWING NO. 44015-A-X AND NO. 44588-X, "STANDARD CHAMBER FOR BUTTERFLY LINE VALVE ON STEEL MAIN", SHALL BE REPLACED WITH A BOLTED SPLIT SLEEVE TYPE RESTRAINED COUPLING. THE COSTS FOR FURNISHING, DELIVERING AND INSTALLING THE COUPLING SHALL BE DEEMED INCLUDED UNDER THE ITEM: 60.27RSC36 "FURNISHING, DELIVERING AND INSTALLING 36-INCH DIAMETER BOLTED, SPLIT SLEEVE-TYPE RESTRAINED COUPLING" OR 60.27RSC48 "FURNISHING, DELIVERING AND INSTALLING 48-INCH DIAMETER BOLTED, SPLIT SLEEVE-TYPE RESTRAINED COUPLING", RESPECTIVELY.
 - THE EXISTING 48" & 36" WATER MAIN WHERE ABANDONED, SHALL BE FILLED WITH SLURRY SAND MIX. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT HIS PROCEDURES FOR FILLING UP THE ABANDONED PIPES FOR APPROVAL. PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR FILLING THE WATER MAIN WITH SLURRY SAND MIX, UNDER THE ITEM # 72.11HF, HYDRAULIC FILL FOR ABANDONED SEWERS AND WATER MAINS. THE CONTRACTOR SHALL BE ADVISED THAT NYC DPR HAS RESTRICTED ACCESS TO WASHINGTON SQUARE PARK. THE CONTRACTOR SHALL NOTIFY NYC DPR IF ADDITIONAL WORK IN THE PARK IS REQUIRED TO FILL THESE ABANDONED WATER MAINS. NO BULKHEADS SHALL BE CONSTRUCTED INSIDE THE PARK. NYC DPR HAS LIMITED ADDITIONAL WORK IN LANDSCAPED AREAS ONLY.
 - ALL ABANDONED WATER CASTINGS WITHIN PROJECT LIMITS MUST BE REMOVED UNDER THIS PROJECT. NO ADDITIONAL PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR THIS WORK.
 - THE CONTRACTOR SHALL USE SPECIALLY DESIGNED TIGHT SHEETING FOR LAYING THE NEW 36" D.I. W.M. AT FIFTH AVENUE. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS AND A DETAILED SHOP DRAWING SHOWING HIS PROCEDURE FOR PLACING AND SUPPORTING THE SHEETING TO THE ENGINEER FOR APPROVAL.



NOTE: SHOP DRAWINGS SHOWING DIMENSIONS AND WELD DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE FABRICATION.
DETAIL 'A'
 48" X 48" STEEL TEE PLAIN END
 SCALE: 3/8"=1'-0"



UTILITY PROFILE ALONG LA GUARDIA PL.
 SCALE: VERT: 1" = 5'
 HORIZ: 1" = 30'



CROSS SECTION A-A
 SCALE: 1" = 10'

UTILITY PROFILE ALONG WASHINGTON SQ. SOUTH / WEST 4TH STREET

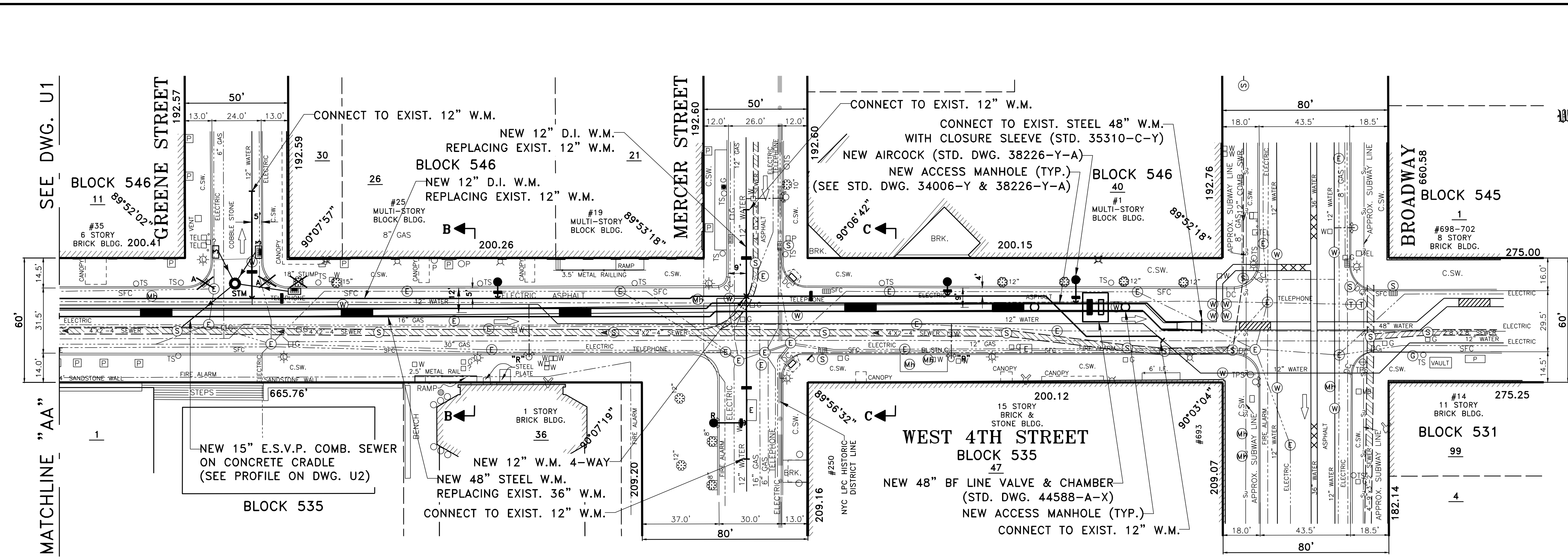
HISTORICAL AND LANDMARK AREA NOTES

- THE CONTRACTOR IS NOTIFIED THAT THE AREA, AS SHOWN ON THE PLAN FALLS WITHIN A DESIGNATED HISTORICAL AND/OR LANDMARK AREA.
- THE CONTRACTOR SHALL MAKE ALL NECESSARY PREPARATIONS TO SAFEGUARD THE EXISTING PINK GRANITE SLABS AND GRANITE CURBS. IF ANY OF THE PINK GRANITE SLABS OR 12" WIDE GRANITE CURBS BECOME MISSING OR DAMAGED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING THE GRANITE SLAB AND GRANITE CURB TO MATCH THE EXISTING AT NO ADDITIONAL COST TO THE CITY.
 - SIDEWALK AREAS ADJACENT TO WASHINGTON SQUARE PARK SHALL BE REPLACE-IN-KIND NYC DPR ASPHALT HEXAGONAL PAVERS AND GRANITE CURB. ASPHALT HEXAGONAL PAVERS IS PAYABLE UNDER ITEMS 6.60 A ASPHALT BLOCK PAVERS RELAI OR 6.60 B FURNISH AND INSTALL ASPHALT BLOCK PAVERS; 4.04 BP CONCRETE FOR PAVERS; 4.14 W WELDED STEEL WIRE FABRIC; AND 6.67 SUBBASE COURSE, SELECT GRANULAR MATERIAL. REFER TO NYC DPR SIDEWALK CONSTRUCTION PLANS FOR DETAILS.

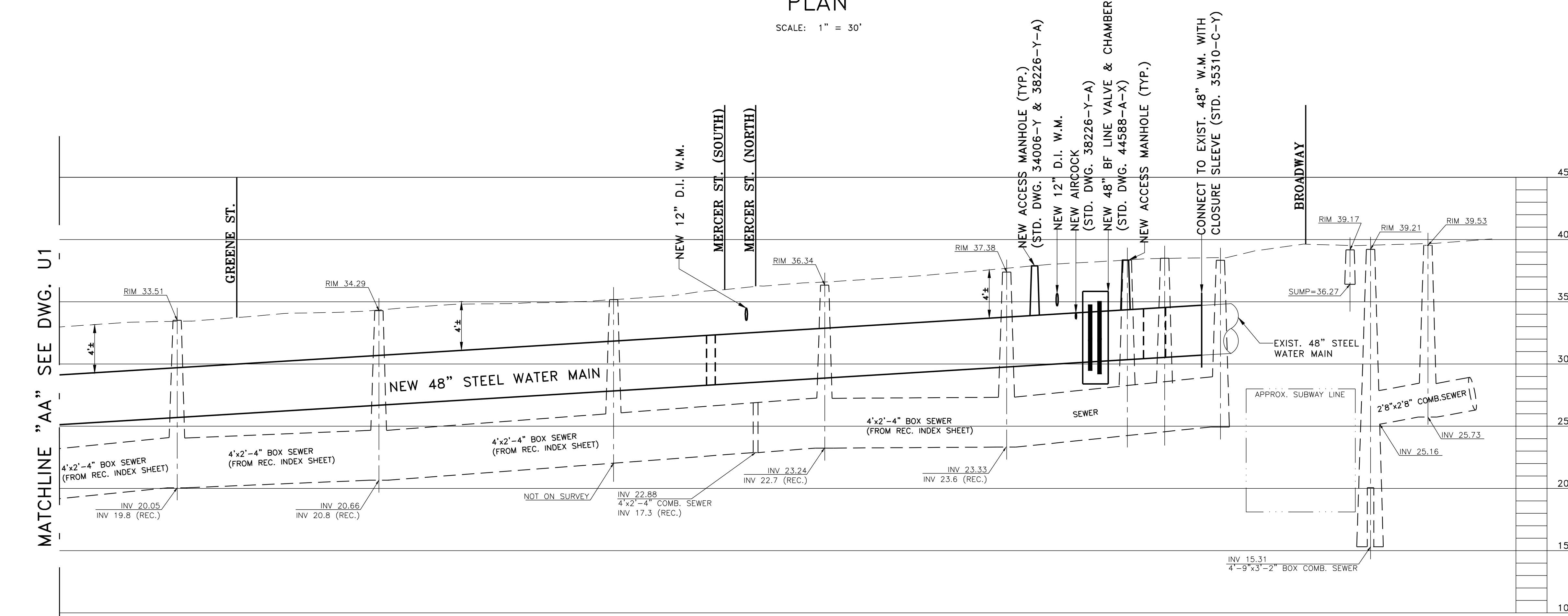
LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND SUBSTRUCTURES HAVE BEEN DETERMINED FROM RECORD INFORMATION, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP.
 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 IN: JUNE, 2009

NOTE: HORIZONTAL COORDINATES BASED ON THE BOROUGH OF MANHATTAN COORDINATE SYSTEM. THE BOROUGH MONUMENT AT THE SW CORNER OF THE INTERSECTION OF THOMPSON ST AND WEST 3RD ST WAS USED TO TIE INTO THE BOROUGH OF MANHATTAN COORDINATE SYSTEM.
 NOTE: ALL ELEVATIONS REFER TO THE BOROUGH OF MANHATTAN DATUM, WHICH IS 2.750 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY.

TOPOGRAPHIC SURVEY PREPARED BY: MJ ENGINEERING AND LAND SURVEYING, P.C. 1333 CRESCENT ROAD CLIFTON PARK, NY 12065 LICENSED LAND SURVEYOR		DESIGNED: A.B. DRAWN: A.B. CHECKED: M.K.	SCALE AS SHOWN	MIKHAIL KLIGER ENGINEER-IN-CHARGE GEORGE FRANZ DIRECTOR	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	UTILITY PLAN & PROFILE	WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN	PROJECT ID: MED608 DATE: 7/25/14 SHEET 7 OF 24	U1 U4
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PLAN
SCALE: 1" = 30'



UTILITY PROFILE ALONG WEST 4TH STREET

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

NOTES

1. THE COBBLESTONE ROADWAY AT GREENE STREET WILL BE REPLACE-IN-KIND. THE COBBLESTONE TRENCH RESTORATION IS PAYABLE UNDER ITEMS 6.04 BC INSTALL GRANITE BLOCK PAVEMENT; 6.04 BA GRANITE BLOCK CLEANED; 6.04 BB FURNISH NEW GRANITE BLOCK PAVERS; AND 4.04 H CONCRETE BASE FOR PAVEMENT VARIABLE THICKNESS FOR TRENCH RESTORATION. IF THE ENGINEER DEEM THE EXISTING GRANITE BLOCK PAVERS TO BE IN GOOD CONDITION, THE CONTRACTOR SHALL REUSE AND CLEAN THE GRANITE BLOCK PAVERS, FREE OF ANY CHIPS, CRACKS, ASPHALT, TAR OR OTHER DAMAGE. OTHERWISE, THE CONTRACTOR FURNISH NEW GRANITE BLOCK PAVERS.
2. THE CONTRACTOR IS NOTIFIED THAT THE AREA, AS SHOWN ON THE PLAN FALLS WITHIN A DESIGNATED HISTORICAL AND/OR LANDMARK AREA.

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.

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 IN: JUNE 2009

NOTE: HORIZONTAL COORDINATES BASED ON THE BOROUGH OF MANHATTAN COORDINATE SYSTEM. THE BOROUGH MONUMENT AT THE SW CORNER OF THE INTERSECTION OF THOMPSON ST AND WEST 3RD ST WAS USED TO TIE INTO THE BOROUGH OF MANHATTAN COORDINATE SYSTEM.
NOTE: ALL ELEVATIONS REFER TO THE BOROUGH OF MANHATTAN DATUM, WHICH IS 2.750 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY.

TOPOGRAPHIC SURVEY PREPARED BY:
MJ ENGINEERING AND LAND SURVEYING, P.C.
1533 CRESCENT ROAD
CLIFTON PARK, NY 12065
LICENSED LAND SURVEYOR

DESIGNED: A.B.
DRAWN: A.B.
CHECKED: M.K.

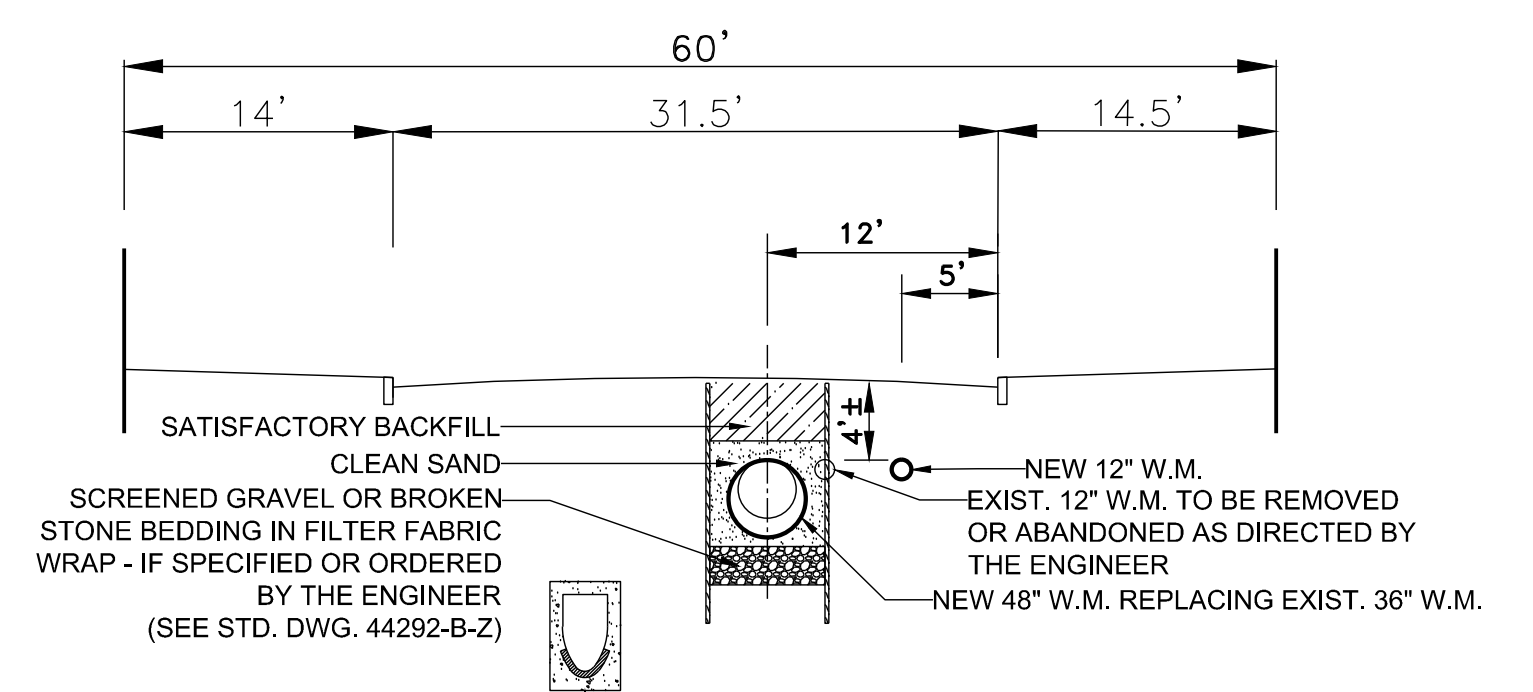
SCALE
AS SHOWN

MIKHAIL KLIGER P.E.
ENGINEER-IN-CHARGE
GEORGE FRANZ P.E.
DIRECTOR

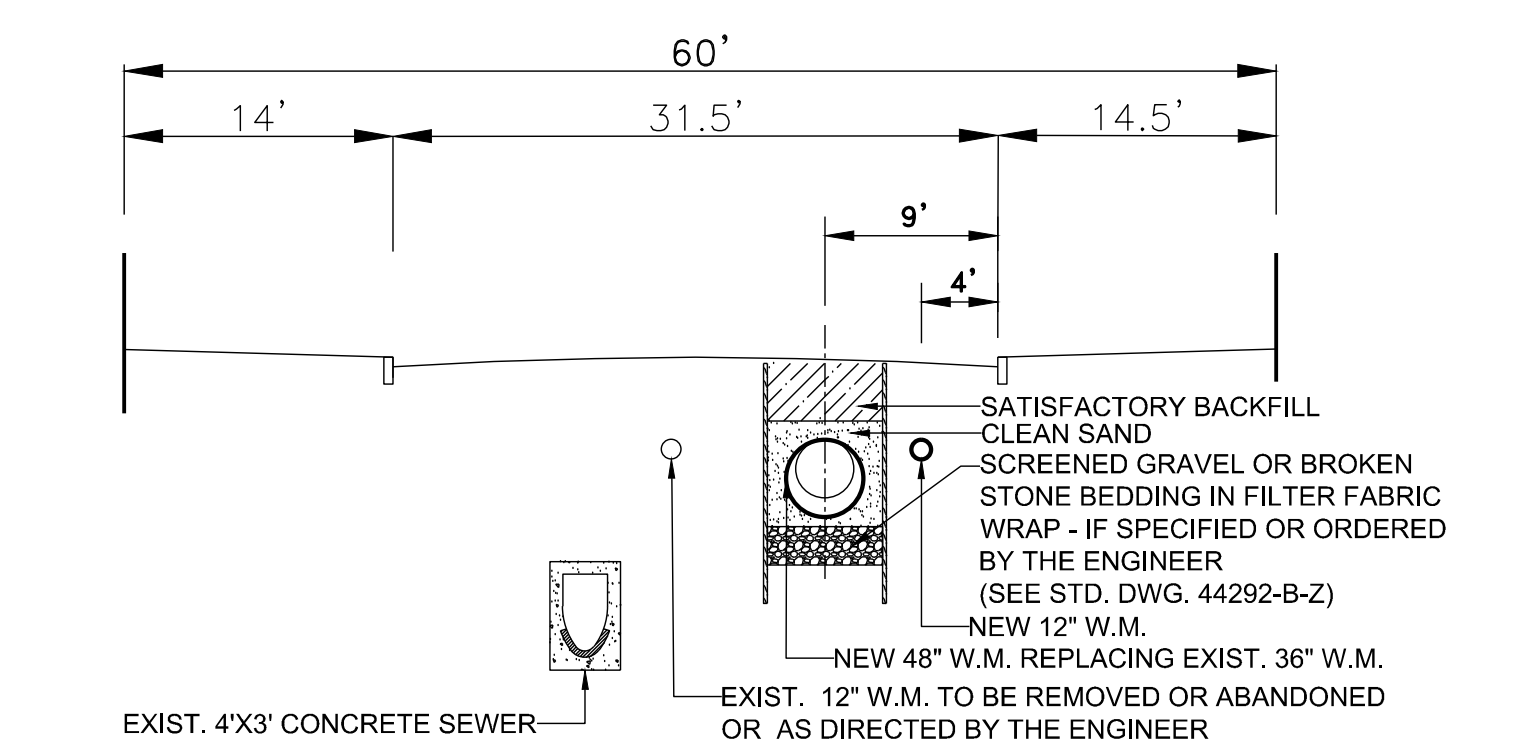
CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

UTILITY PLAN & PROFILE

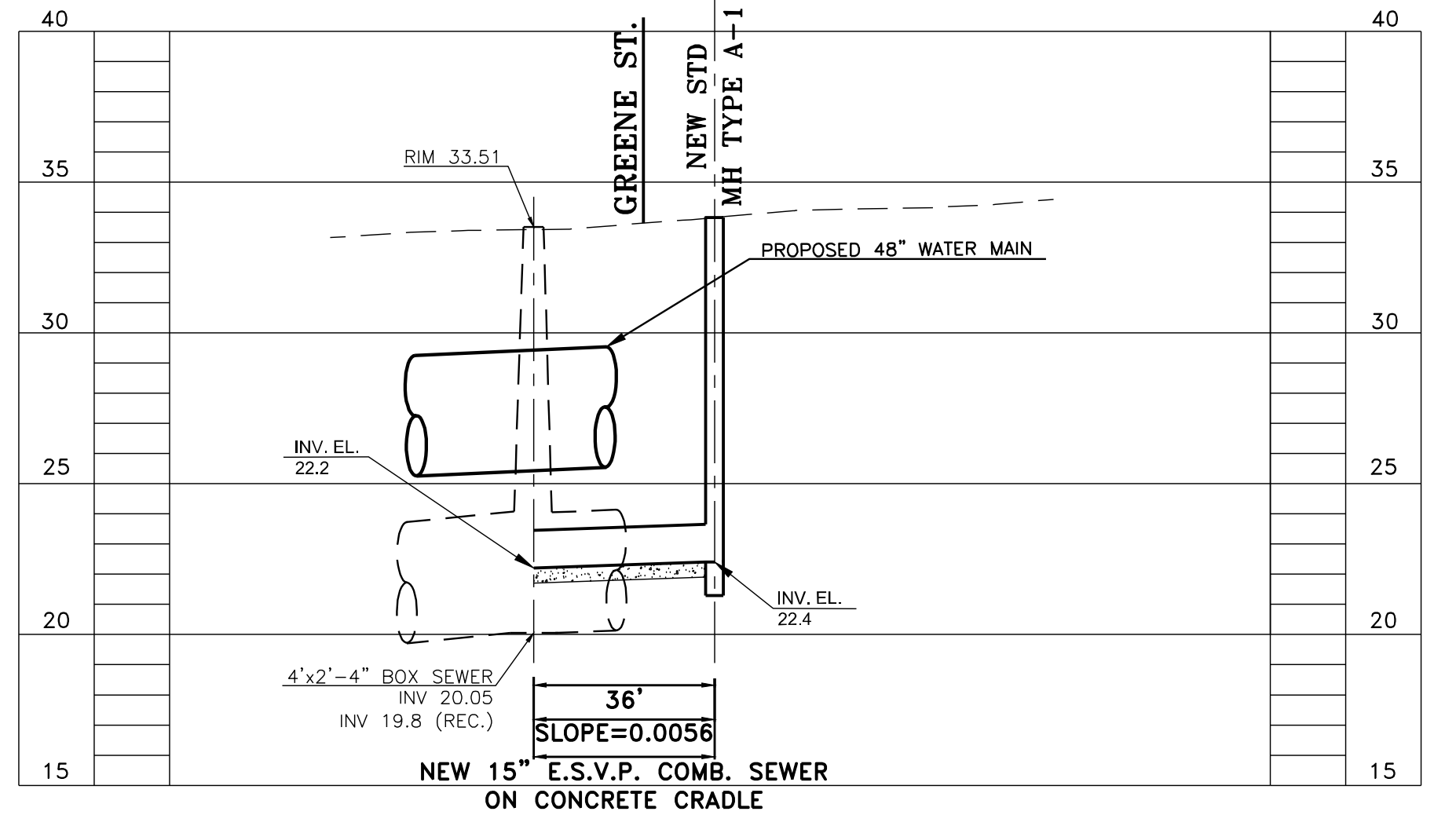
NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN				
PROJECT ID:	MED608	DATE:	7/25/14	SHEET 8 OF 24 U2



CROSS SECTION B-B
SCALE: 1" = 10'



CROSS SECTION C-C
SCALE: 1" = 10'

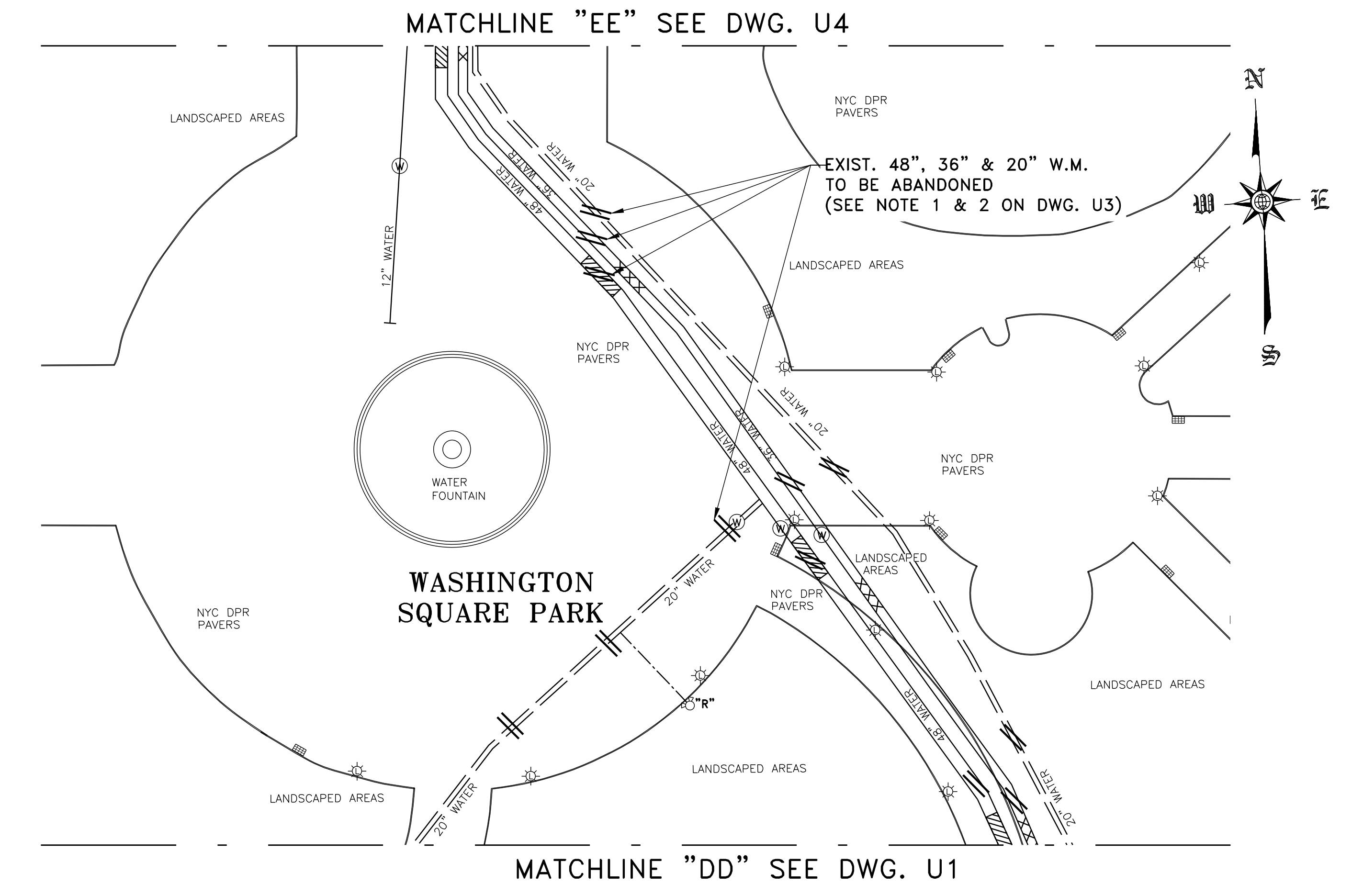
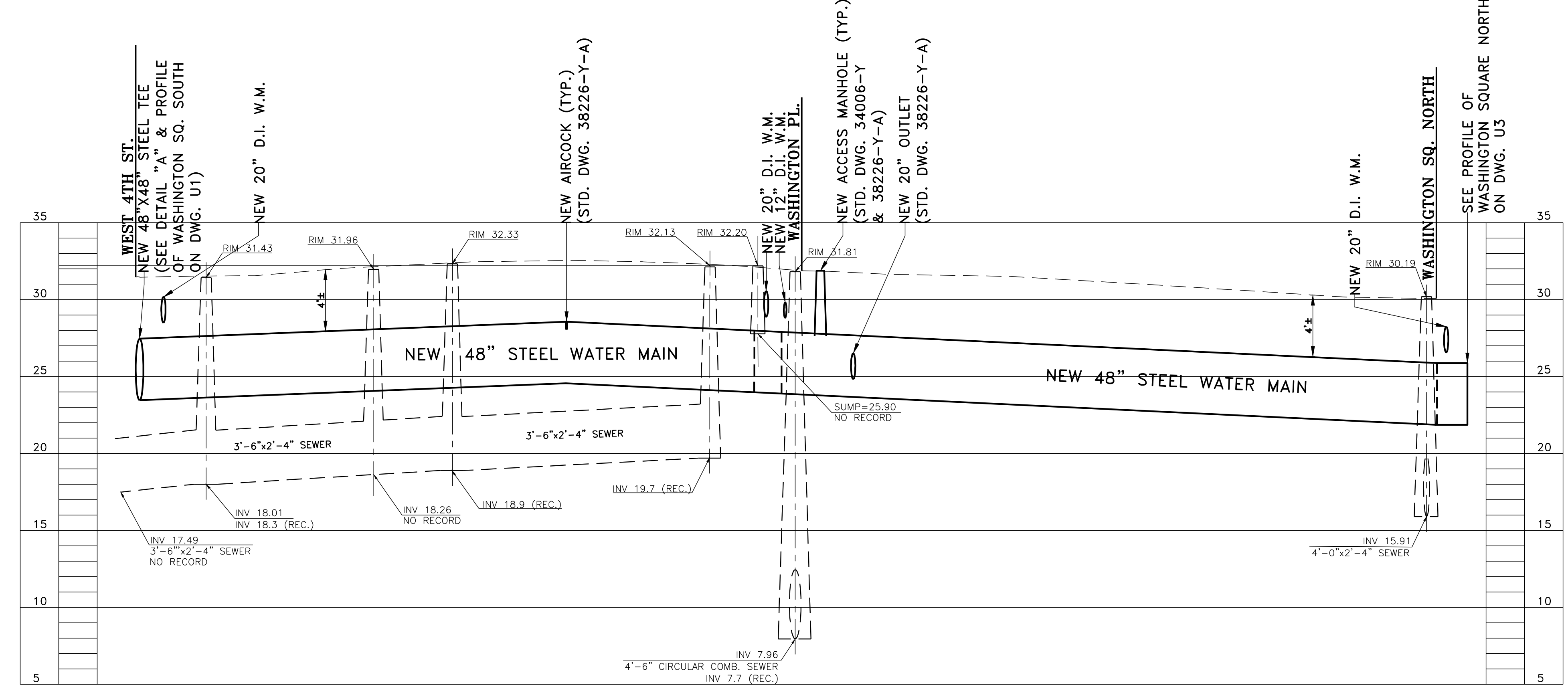
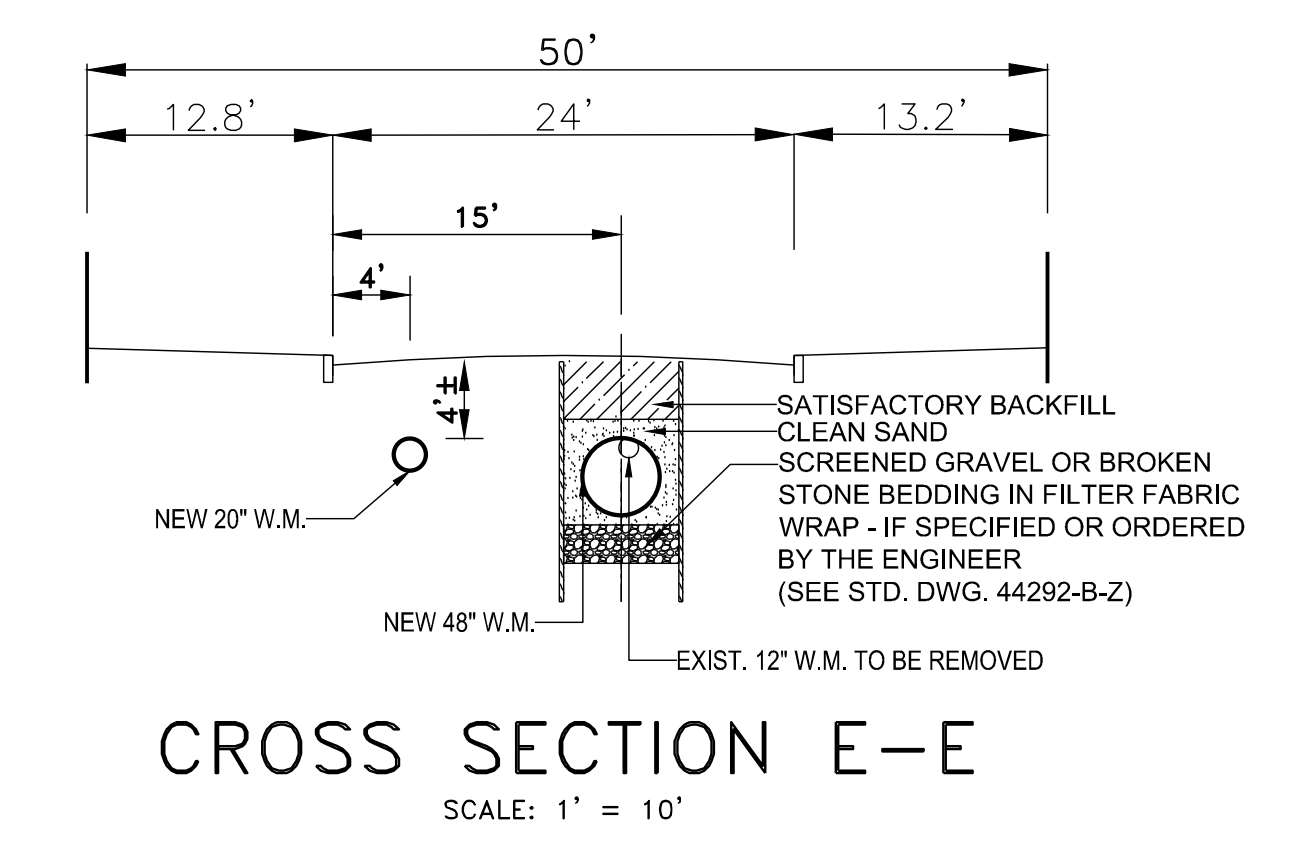
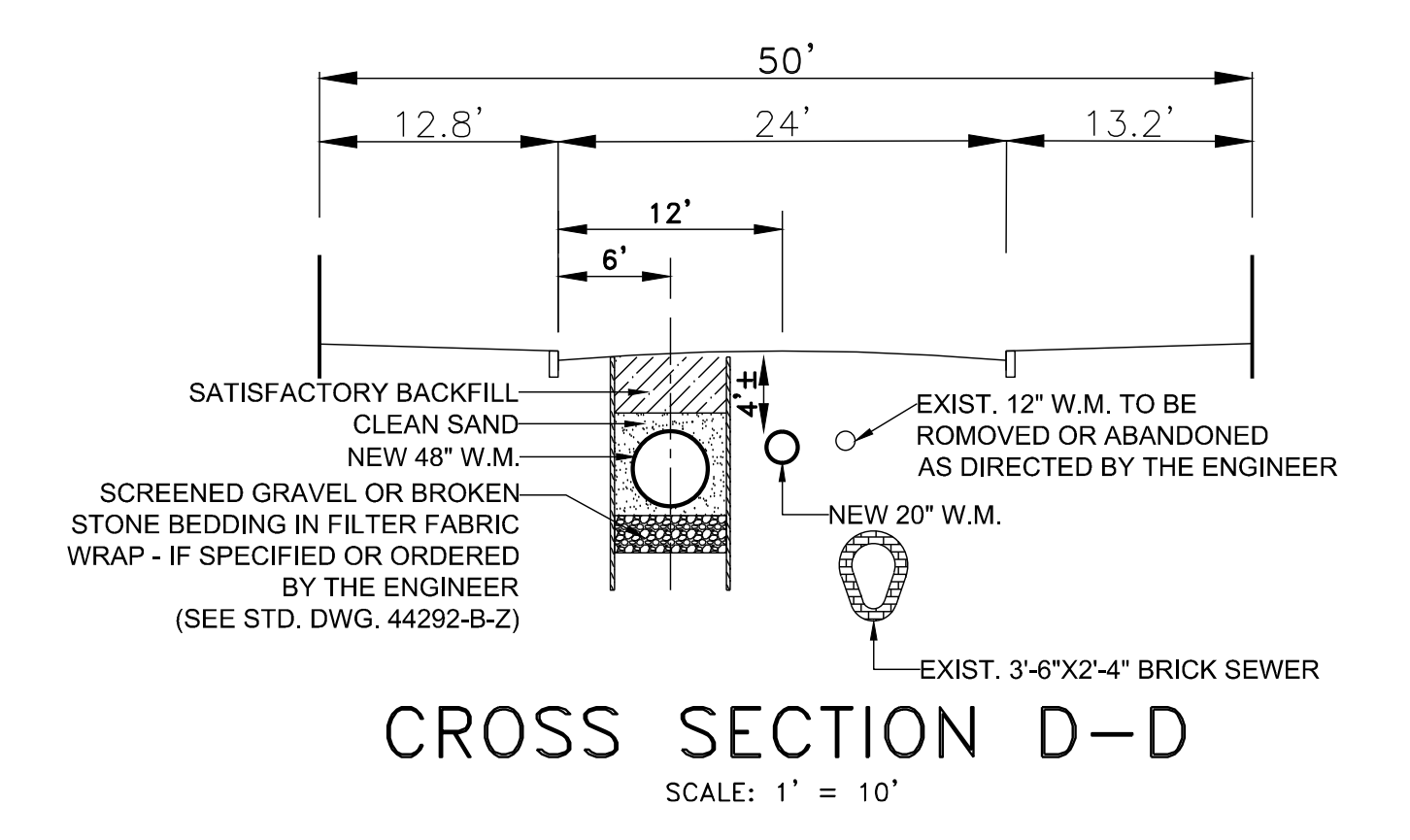
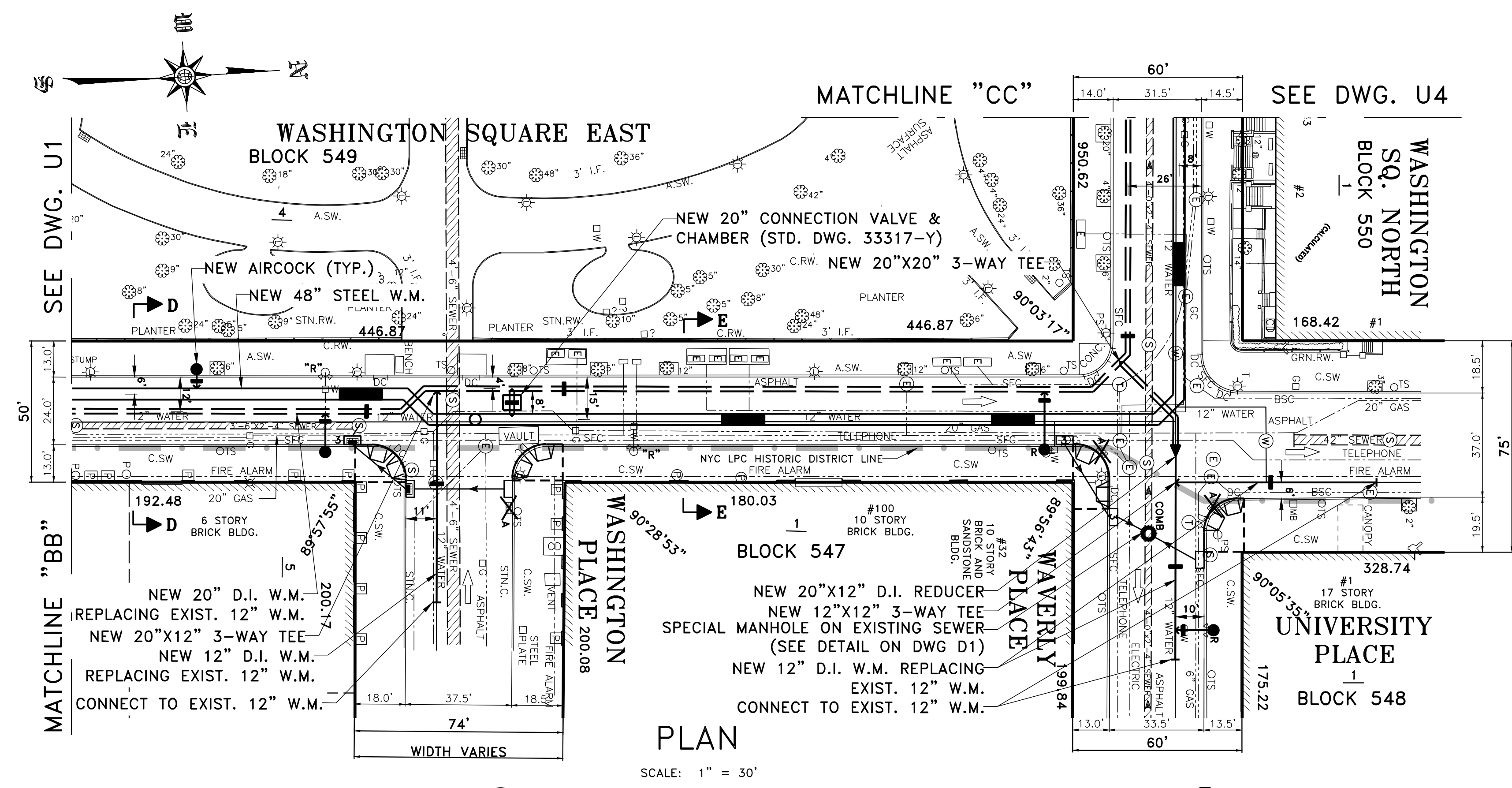


PROFILE OF PROPOSED SEWER AT WEST 4TH STREET & GREENE STREET

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

TRANSIT AUTHORITY NOTES

1. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHOULD SUBMIT FOR NYC TRANSIT APPROVAL DETAILED DRAWINGS WITH A P.E. STAMP FOR ALL THE WORK NEAR T.A. STRUCTURE.
2. SHEETING AND BRACING DESIGN FOR WATER MAIN PREPARED BY A P.E. ENGINEER SHALL BE SUBMITTED FOR APPROVAL BY NYC TRANSIT - OUTSIDE PROJECTS.
3. THE CONTRACTOR IS ADVISED THAT THERE SHALL BE NO MACHINE EXCAVATION WITHIN 3' (THREE FEET) OF NEW YORK CITY TRANSIT STRUCTURE, POWER DUCT LINES OR ANY OTHER FACILITIES UNTIL THEY HAVE BEEN CAREFULLY EXPOSED BY HAND EXCAVATION. ANY DAMAGE TO SUBWAY STRUCTURE DURING CONSTRUCTION WILL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE CITY AND TO THE SATISFACTION OF THE TRANSIT AUTHORITY INSPECTOR.



UTILITY PROFILE ALONG WASHINGTON SQ. EAST

NOTES

1. THE EXACT LOCATION AND DEPTH OF THE WATER MAINS WITHIN WASHINGTON SQUARE PARK MAY DIFFER FROM THAT SHOWN ON THE DRAWINGS. THE WATER MAINS MAY VARY FOUR (4) FEET OR MORE. THE CONTRACTOR SHALL SURVEY THE LOCATION AND DEPTH OF THE 36" & 48" WATER MAINS TO BE ABANDONED IN THE WASHINGTON SQUARE PARK AREA. PAYMENT SHALL BE DEEMED INCLUDED IN THE VARIOUS BID ITEMS OF THE CONTRACT. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THIS WORK.
2. THE EXISTING 48" & 36" WATER MAIN WHERE ABANDONED, SHALL BE FILLED WITH SLURRY SAND MIX. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT HIS PROCEDURES FOR FILLING UP THE ABANDONED PIPES FOR APPROVAL. THE CONTRACTOR SHALL BE ADVISED THAT NYC DPR HAS RESTRICTED ACCESS TO WASHINGTON SQUARE PARK; ANY WORK REQUIRED SHALL BE LIMITED IN LANDSCAPED AREAS ONLY. THE CONTRACTOR SHALL COORDINATE WITH NYC DPR TO FILL THESE ABANDONED WATER MAINS. ALL WORK PERFORMED FOR THE ABANDONING OF THESE WATER MAINS INCLUDING REPLANTING SHRUBS, SODDING, ETC. SHALL BE DEEMED INCLUDED UNDER THE ITEM # 72.11HF, HYDRAULIC FILL FOR ABANDONED SEWERS AND WATER MAINS.

HISTORICAL AND LANDMARK AREA NOTES

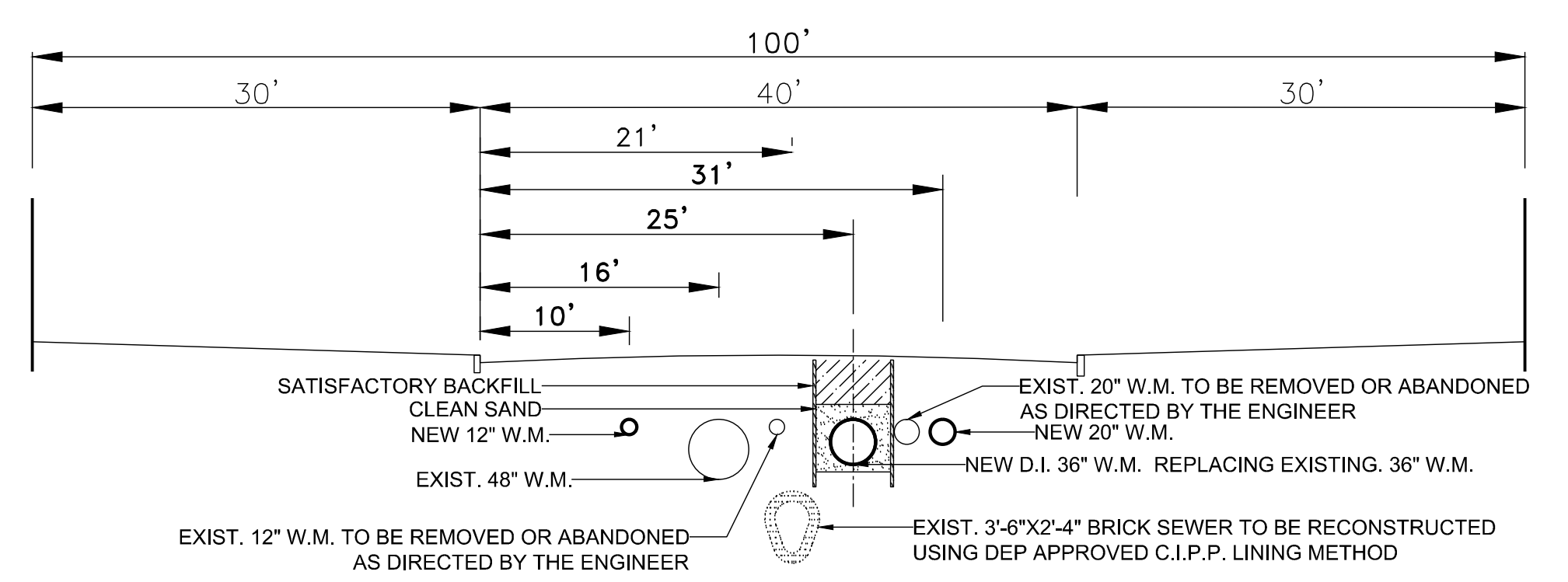
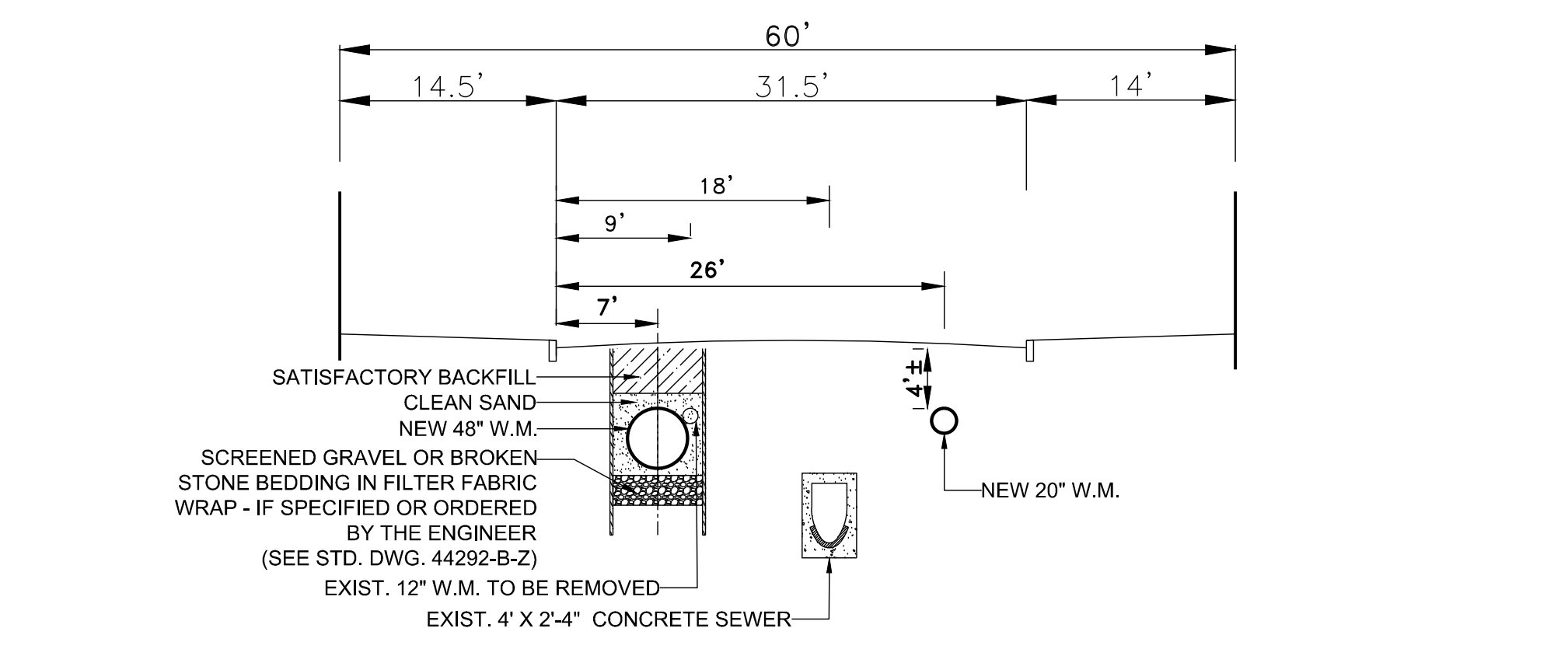
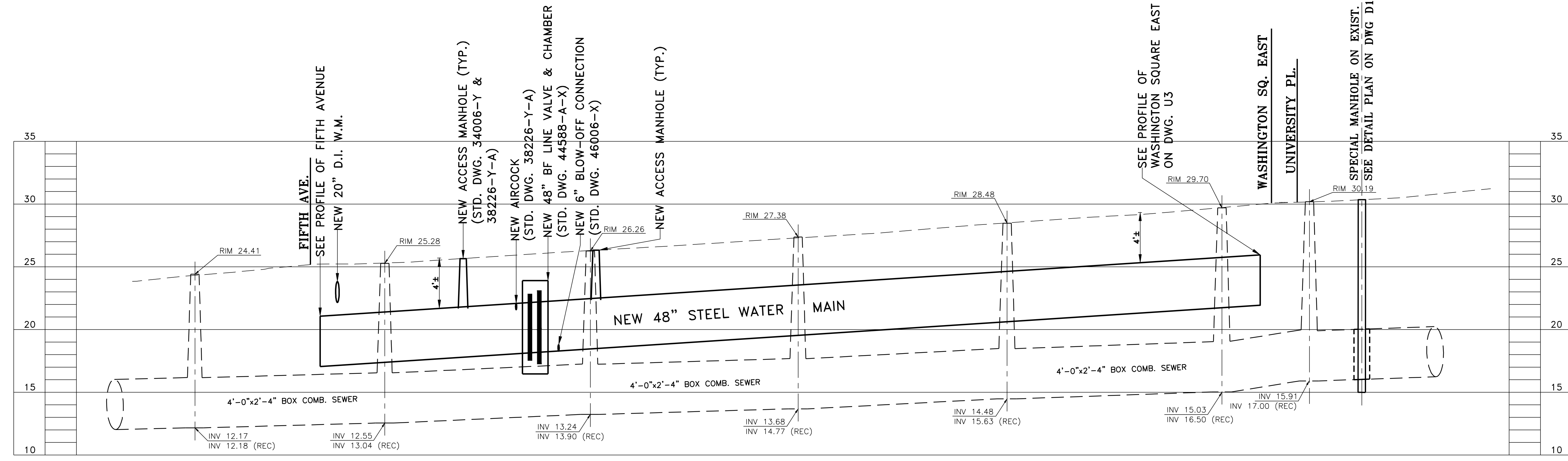
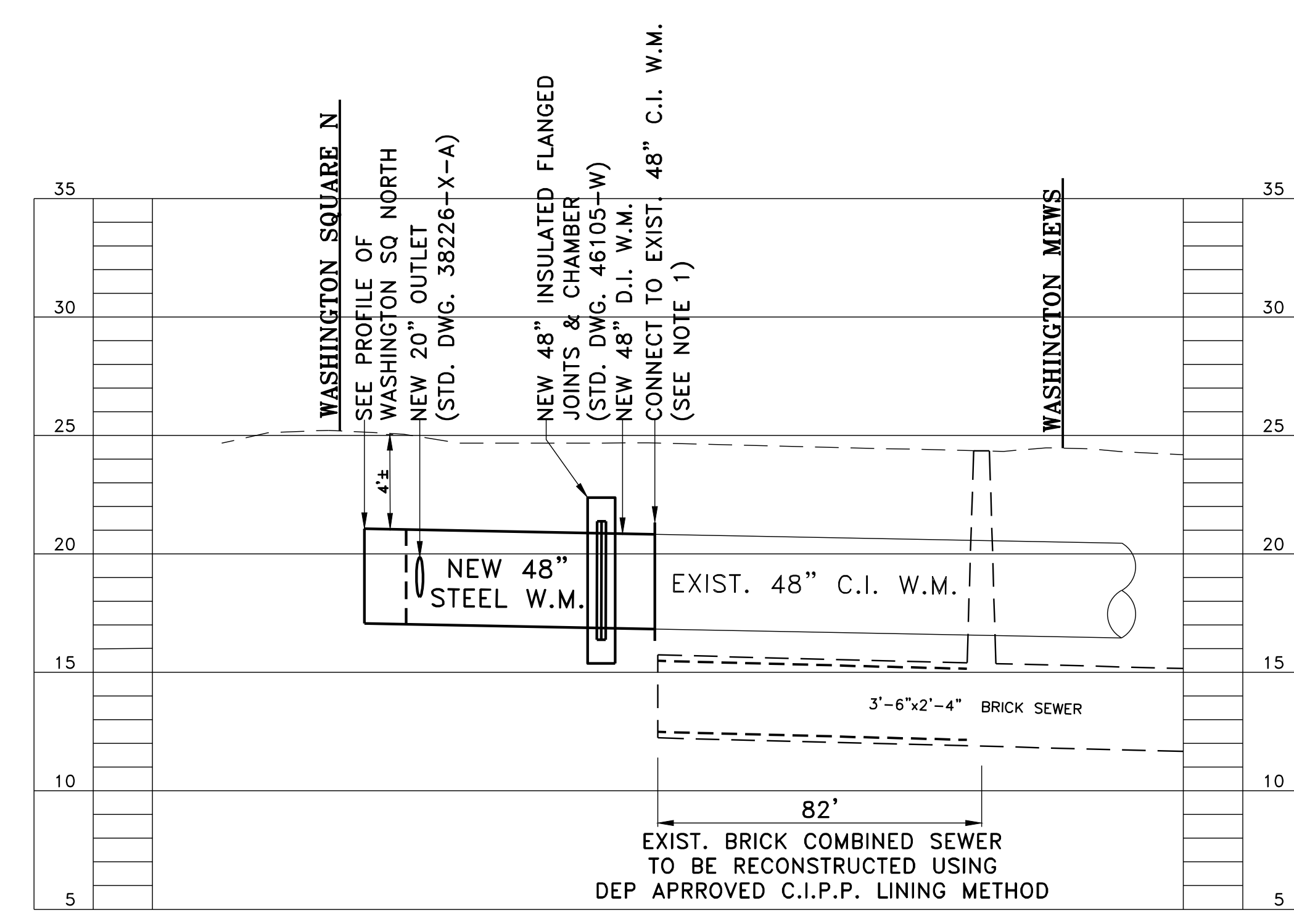
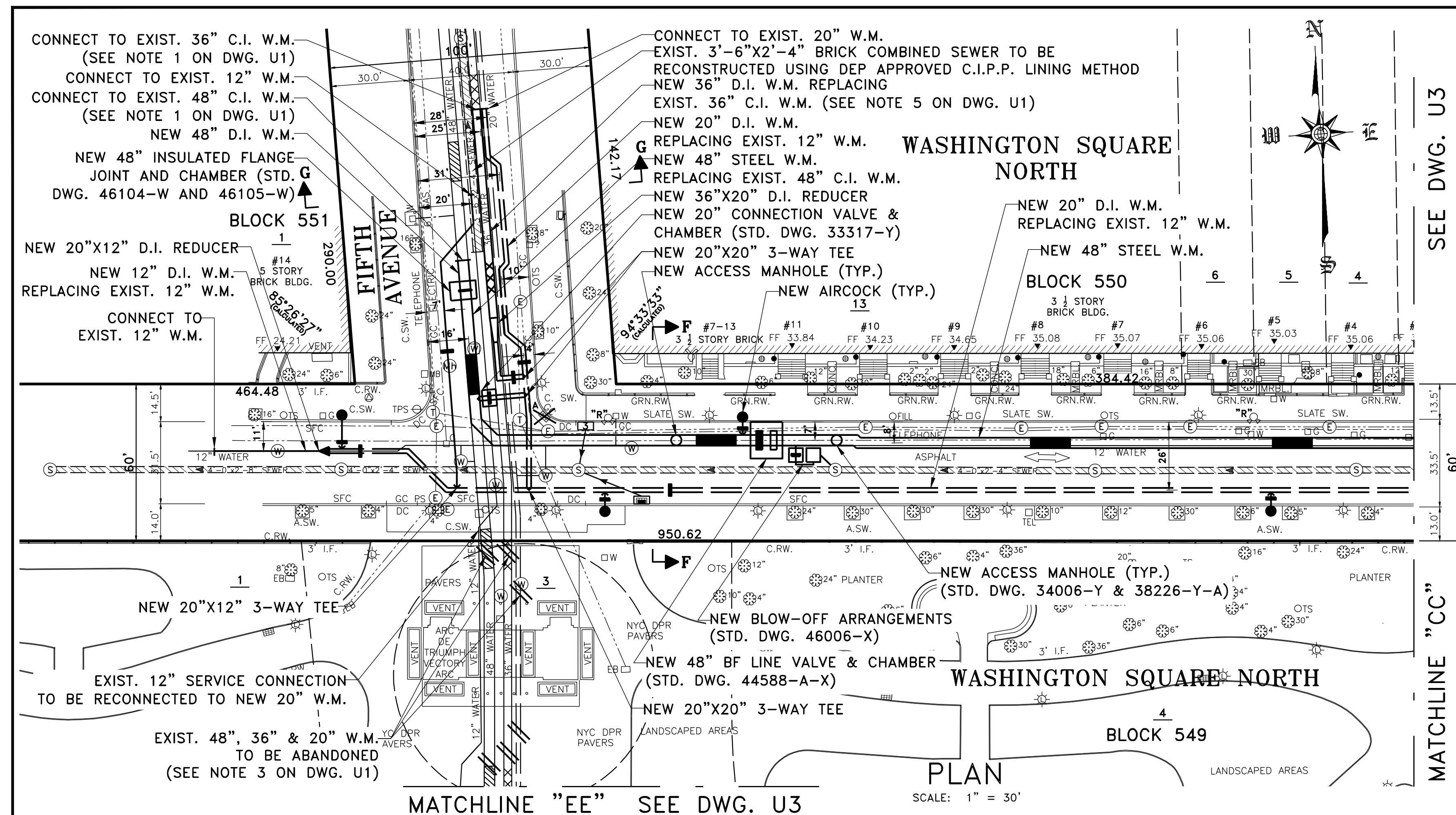
THE CONTRACTOR IS NOTIFIED THAT THE AREA, AS SHOWN ON THE PLAN FALLS WITHIN A DESIGNATED HISTORICAL AND/OR LANDMARK AREA.

1. SIDEWALK AREAS ADJACENT TO WASHINGTON SQUARE PARK SHALL BE REPLACE-IN-KIND NYC DPR ASPHALT HEXAGONAL PAVERS AND GRANITE CURB. ASPHALT HEXAGONAL PAVERS IS PAYABLE UNDER ITEMS 6.60 A ASPHALT BLOCK PAVERS RELAID OR 6.60 B FURNISH AND INSTALL ASPHALT BLOCK PAVERS; 4.04 BP CONCRETE FOR PAVERS; 4.14 W WELDED STEEL WIRE FABRIC; AND 6.67 SUBBASE COURSE, SELECT GRANULAR MATERIAL. REFER TO NYC DPR SIDEWALK CONSTRUCTION PLANS FOR DETAILS.

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.
 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 IN: JUNE 2009

NOTE: HORIZONTAL COORDINATES BASED ON THE BOROUGH OF MANHATTAN COORDINATE SYSTEM. THE BOROUGH MONUMENT AT THE SW CORNER OF THE INTERSECTION OF THOMPSON ST AND WEST 3RD ST WAS USED TO TIE INTO THE BOROUGH OF MANHATTAN COORDINATE SYSTEM.
 NOTE: ALL ELEVATIONS REFER TO THE BOROUGH OF MANHATTAN DATUM, WHICH IS 2.750 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY.

TOPOGRAPHIC SURVEY PREPARED BY: MJ ENGINEERING AND LAND SURVEYING, P.C. 1533 CRESCENT ROAD CLIFTON PARK, NY 12065 LICENSED LAND SURVEYOR	DESIGNED <u>A.B.</u> DRAWN <u>A.B.</u> CHECKED <u>M.K.</u>	SCALE AS SHOWN	MIKHAIL KLIGER P.E. ENGINEER-IN-CHARGE GEORGE FRANZ P.E. DIRECTOR	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	UTILITY PLAN & PROFILE	<table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTIONS</th> <th>BY</th> <th>APPR'D</th> </tr> <tr> <td colspan="5" style="text-align: center;">REVISIONS</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	DESCRIPTIONS	BY	APPR'D	REVISIONS									
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REVISIONS																					
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN																					
PROJECT ID: MED608	DATE: 7/25/14	SHEET 9 OF 24	U3	U4																	



HISTORICAL AND LANDMARK AREA NOTES

THE CONTRACTOR IS NOTIFIED THAT THE AREA, AS SHOWN ON THE PLAN FALLS WITHIN A DESIGNATED HISTORICAL AND/OR LANDMARK AREA.

- THE CONTRACTOR SHALL MAKE ALL NECESSARY PREPARATIONS TO SAFEGUARD THE EXISTING BLUESTONE SLABS AND GRANITE CURBS AT NORTHERN SIDEWALK OF WASHINGTON SQUARE NORTH. IF ANY OF THE BLUESTONE SLABS OR GRANITE CURBS BECOME MISSING OR DAMAGED OUTSIDE THE SCOPE OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING THE BLUESTONE SLAB AND GRANITE CURB TO MATCH THE EXISTING AT NO ADDITIONAL COST TO THE CITY.
- SIDEWALK AREAS ADJACENT TO WASHINGTON SQUARE PARK SHALL BE REPLACE-IN-KIND NYC DPR ASPHALT HEXAGONAL PAVERS AND GRANITE CURB. ASPHALT HEXAGONAL PAVERS IS PAYABLE UNDER ITEMS 6.60 A ASPHALT BLOCK PAVERS RELAID OR 6.60 B FURNISH AND INSTALL ASPHALT BLOCK PAVERS; 4.04 BP CONCRETE FOR PAVERS; 4.14 W WELDED STEEL WIRE FABRIC; AND 6.67 SUBBASE COURSE, SELECT GRANULAR MATERIAL. REFER TO NYC DPR SIDEWALK CONSTRUCTION PLANS FOR DETAILS.

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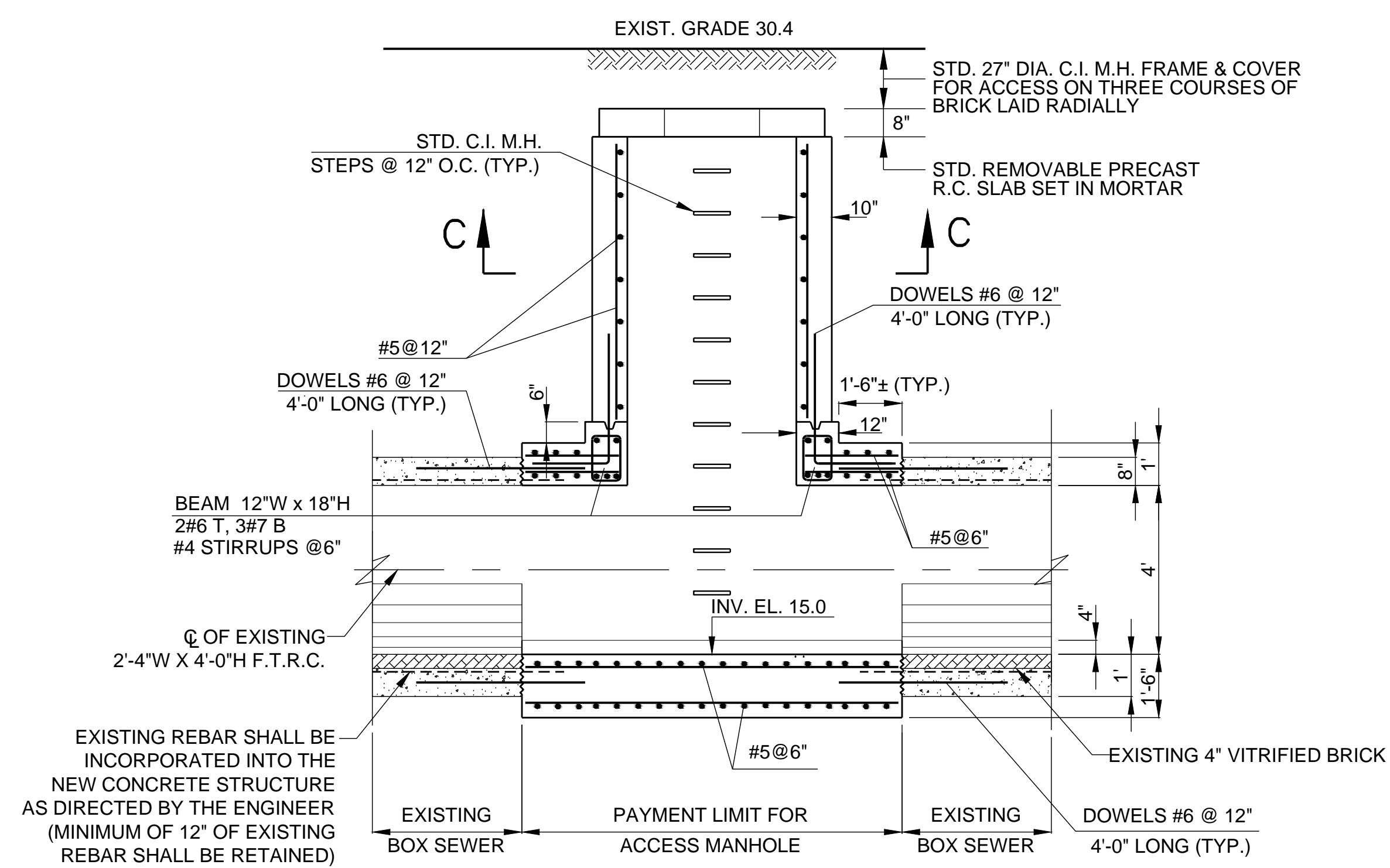
"ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S BLUE INKED OR EMBOSSED SEAL SHALL BE CONSIDERED TO BE A TRUE VALID COPY"

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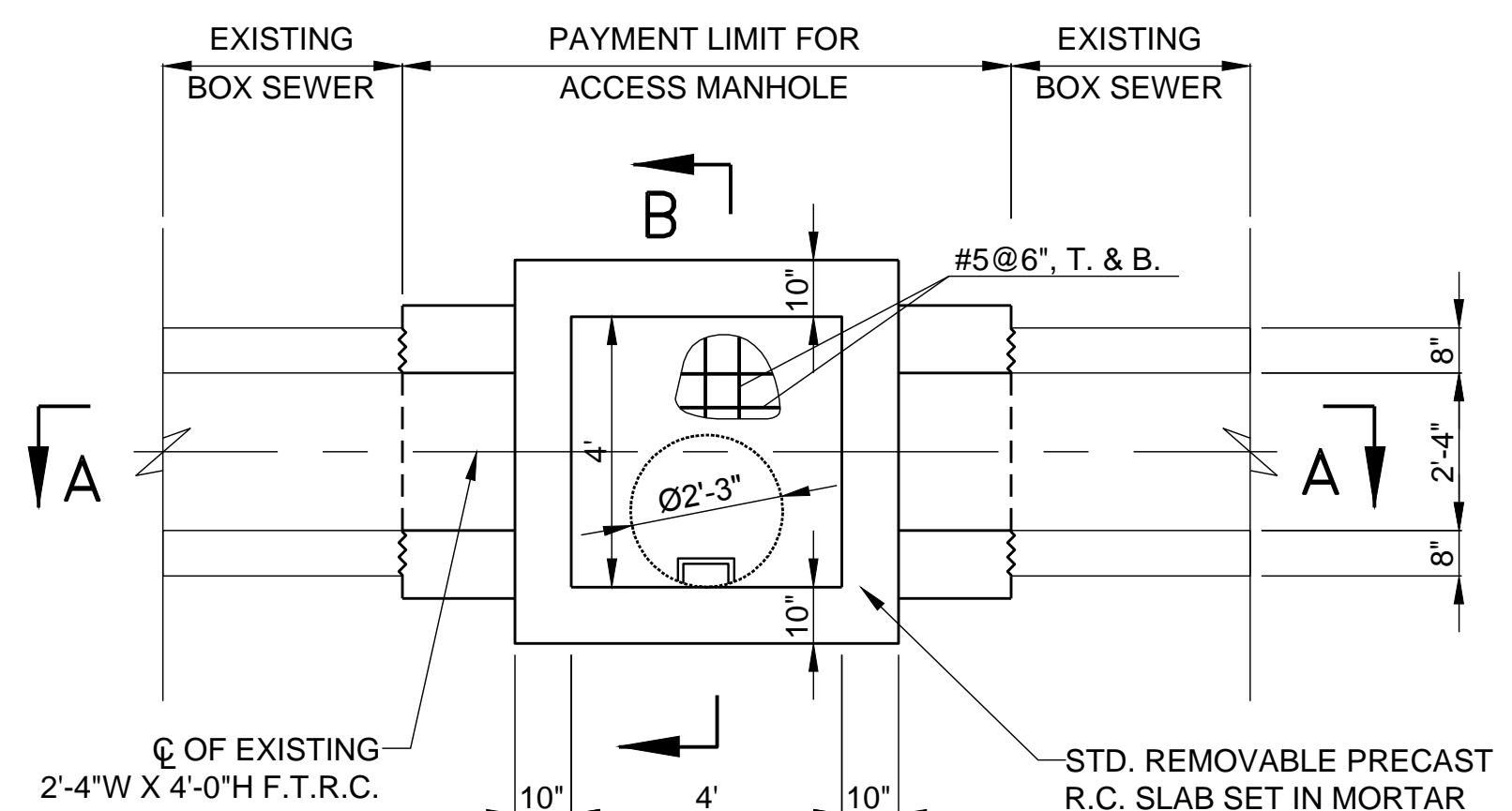
FIELD SURVEY WAS COMPLETED IN: JUNE, 2009

NOTE: HORIZONTAL COORDINATES BASED ON THE BOROUGH OF MANHATTAN COORDINATE SYSTEM. THE BOROUGH MONUMENT AT THE SW CORNER OF THE INTERSECTION OF THOMPSON ST AND WEST 3RD ST WAS USED TO TIE INTO THE BOROUGH OF MANHATTAN COORDINATE SYSTEM.
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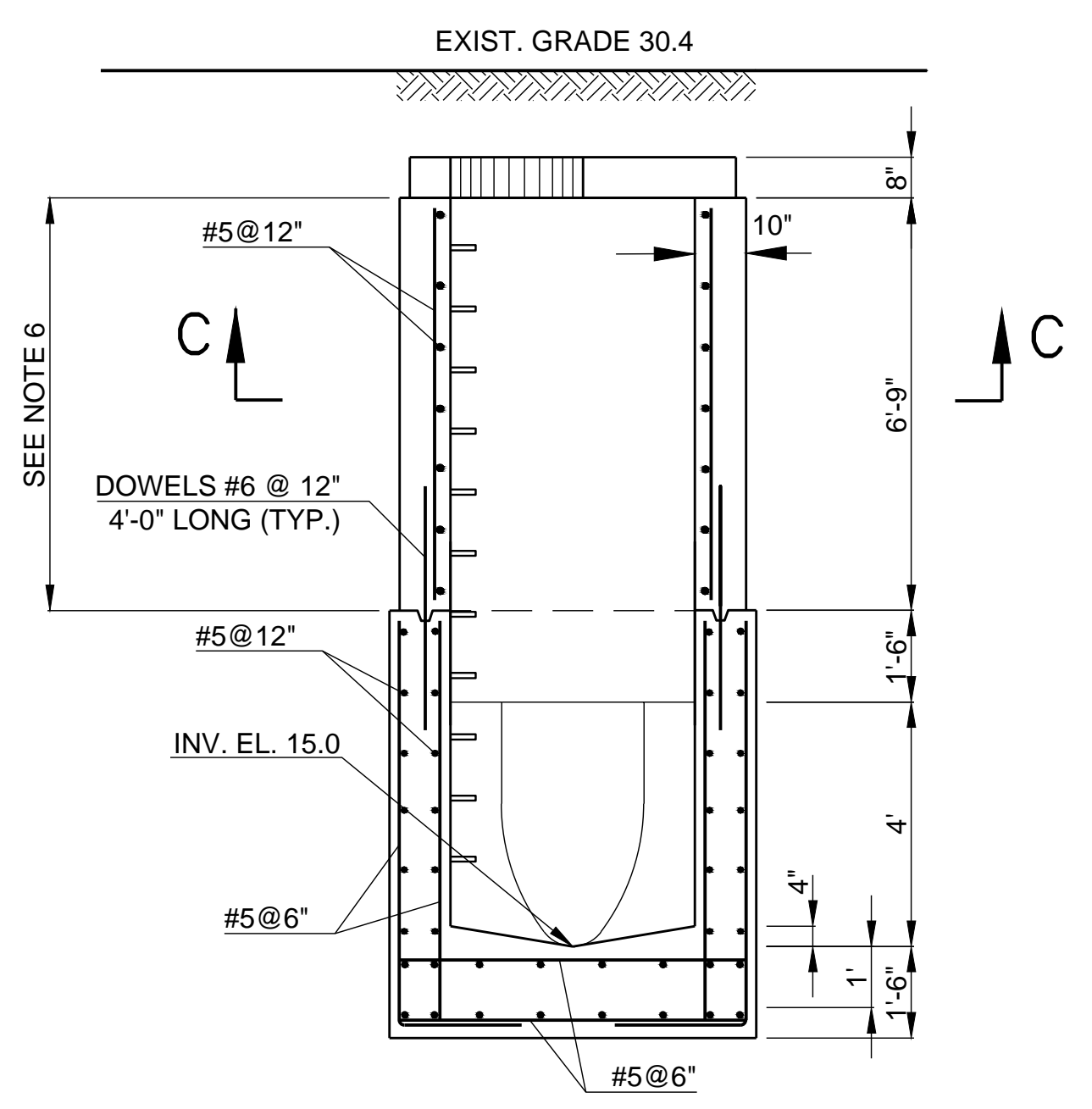
TOPOGRAPHIC SURVEY PREPARED BY: MJ ENGINEERING AND LAND SURVEYING, P.C. 1533 CRESCENT ROAD CLIFTON PARK, NY 12065 LICENSED LAND SURVEYOR	DESIGNED: A.B. DRAWN: A.B. CHECKED: M.K.	SCALE AS SHOWN	MIKHAIL KLIGER P.E. ENGINEER-IN-CHARGE GEORGE FRANZ P.E. DIRECTOR	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	UTILITY PLAN & PROFILE	<table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTIONS</th> <th>BY</th> <th>APPR'D</th> </tr> <tr> <td colspan="5" style="text-align: center;">REVISIONS</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	DESCRIPTIONS	BY	APPR'D	REVISIONS									
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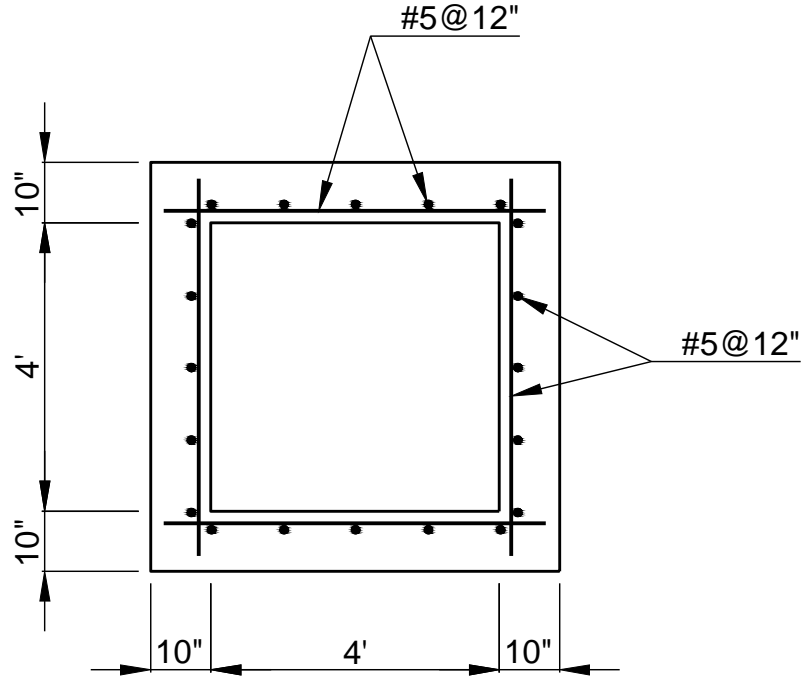
SECTION A-A



ACCESS MANHOLE PLAN



SECTION B-B

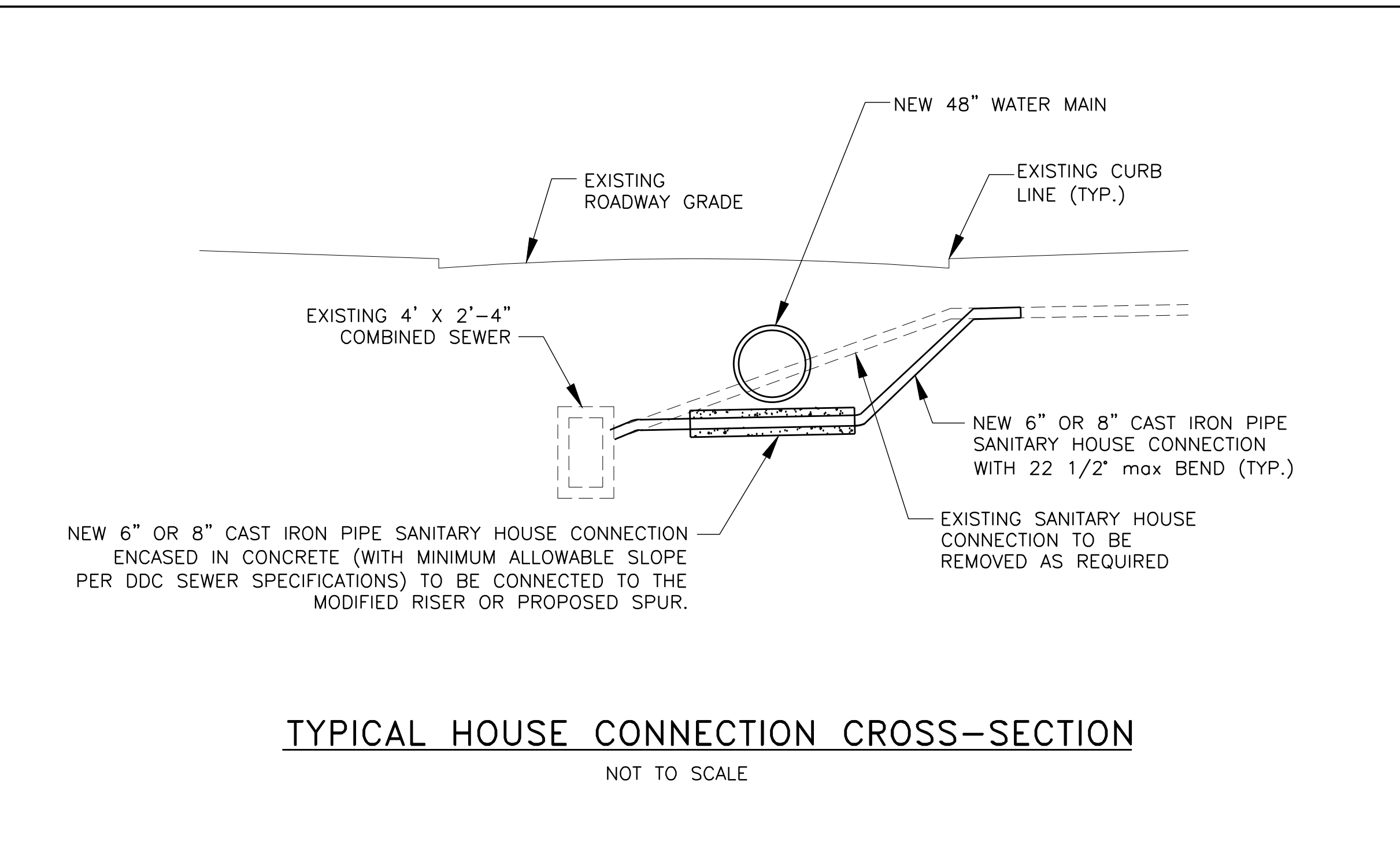


SECTION C-C

- NOTES:**
1. STEEL REINFORCING BARS SHALL BE GRADE 60.
 2. CONCRETE SHALL BE CLASS 40.
 3. ALL LONGITUDINAL REBARS #5@12".
 4. CONCRETE COVER OF REBARS 2" CLEAR UNLESS OTHERWISE INDICATED.
 5. THE COST OF BOX SEWER SECTION WITHIN PAYMENT LIMIT FOR ACCESS MANHOLE AS SHOWN SHALL BE INCLUDED IN THE PRICE BID FOR CONTRACT ITEM # 51.21L000000E, "SPECIAL MANHOLE ON EXISTING SEWER".
 6. THE CONTRACTOR MAY ELECT TO CONSTRUCT THE TOP PORTION OF THE SPECIAL MANHOLE AS PRECAST. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY THE ENGINEER, AND PROVIDE CONNECTION DETAIL BETWEEN POURED-IN-PLACE STRUCTURE AND PRECAST ALTERNATE. NO ADDITIONAL PAYMENT FOR THIS WORK.
 7. THE SHAPES, DEVIATIONS AND STRUCTURES OF THE EXISTING SEWER ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THEM IN THE FIELD AND DO ALL WORK NECESSARY TO CONSTRUCT THE APRON BASED ON THE ABOVE DESIGN. THE COST OF ALL NECESSARY WORK ENCOUNTERED SHALL BE INCLUDED IN THE PRICE BID FOR CONTRACT ITEM # 51.21L000000E, "SPECIAL MANHOLE ON EXISTING SEWER".

SPECIAL MANHOLE ON EXISTING SEWER DETAIL

SCALE: 3/8" = 1'-0"



TYPICAL HOUSE CONNECTION CROSS-SECTION

NOT TO SCALE

TOPOGRAPHIC SURVEY PREPARED BY:	DESIGNED: A.B.	SCALE AS SHOWN	MIKHAIL KLIGER P.E.
LICENSED LAND SURVEYOR	DRAWN: A.B.	CADD FILE: MED608-D1	ENGINEER-IN-CHARGE
	CHECKED: M.K.		GEORGE FRANZ P.E.
			DIRECTOR

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

UTILITY DETAILS

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN				
PROJECT ID: MED608		DATE: 7/25/14	SHEET 11 OF 24	D1

**GENERAL NOTES
APPLICABLE TO ALL STAGES**

- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF TRANSPORTATION'S OFFICE OF CONSTRUCTION MITIGATION AND CONTROL (TELEPHONE NO. 1-212-839-9621) AND THE DIVISION OF TRAFFIC OPERATIONS (TELEPHONE NO. 1-718-433-3370) AT LEAST 20 DAYS BEFORE THE START OF CONSTRUCTION TO SCHEDULE A PRE-CONSTRUCTION MEETING.
- PRIOR TO ANY WORK PERMITS BEING ISSUED, A PRE-CONSTRUCTION MEETING WILL BE HELD TWENTY (20) DAYS IN ADVANCE BY CONSTRUCTION DIVISION. AT THAT TIME, THE CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE TO THE ENGINEER. ARRANGEMENTS FOR THE MEETING WILL BE COORDINATED BY THE OCMC-STREETS.
- CONSTRUCTION SEQUENCE: UNLESS OTHERWISE DIRECTED OR APPROVED BY THE ENGINEER, THE CONSTRUCTION SHALL BE COMPLETED IN THE FOLLOWING SEQUENCE:
REMOVAL OF TROLLEY TRACKS
INSTALLATION OF WATER MAINS
CONSTRUCTION/REPLACEMENT OF SEWERS
INSTALLATION OF CATCH BASINS AND BASIN CONNECTIONS
CONSTRUCTION OF NEW CURBS
CONSTRUCTION OF NEW SIDEWALKS
CONSTRUCTION OF ROADWAY PAVEMENT
THE CONTRACTOR WILL BE PERMITTED TO MODIFY, ADJUST AND/OR COMBINE STAGES SUBJECT TO THE APPROVAL OF THE ENGINEER.
- SUBSEQUENT STAGES MUST COMMENCE WITHIN SEVEN (7) CALENDAR DAYS OF THE COMPLETION OF THE PREVIOUS STAGE WITHIN EACH BLOCK, UNLESS OTHERWISE APPROVED BY THE CITY.
- AFTER A SATISFACTORY START OF THE WORK AT ONE LOCATION, AS APPROVED BY THE ENGINEER, THE CONTRACTOR MAY BE PERMITTED TO ESTABLISH MULTIPLE WORK AREAS AS AND WHERE APPROVED BY THE ENGINEER.
- FOR ANY WORK PROCEEDING THROUGH AN INTERSECTION, THE CONTRACTOR MAY CLOSE ONE (1) CROSSWALK AT A TIME WHILE DIVERTING PEDESTRIANS TO OTHER AVAILABLE CROSSWALKS OR AS OTHERWISE DIRECTED BY THE ENGINEER. PEDESTRIANS SHALL BE PROTECTED FROM ALL EXCAVATION AREAS THROUGH THE USE OF AN APPROVED BARRIER, FENCING OR OTHER TEMPORARY DEVICE, AND IN A MANNER APPROVED BY THE ENGINEER. STEEL PLATES IN PEDESTRIAN WALKWAYS SHALL BE EPOXY COATED, WITH FINISH THAT ADHERES TO METAL. THIS NON-SLIP COATING SHALL HAVE RESISTANCE TO FIRE, GASOLINE, OIL, ACIDS, ALKALIS AND ASPHALTIC SOLVENTS. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT THE TYPE OF EPOXY COATING ON STEEL PLATE TO THE ENGINEER FOR APPROVAL (NO SEPARATE PAYMENT).
- TO PERMIT ADEQUATE VISIBILITY AT INTERSECTION AREAS ALL BARRICADES SHALL BE PLACED SO AS NOT TO HINDER PEDESTRIAN OR VEHICULAR SIGHT LINES. SIMILARLY, NO SHEETING SHALL EXTEND HIGHER THAN 24" ABOVE PAVEMENT LEVEL WITHIN 60' OF AN INTERSECTION.
- EXCAVATIONS SHALL BE COMPLETELY ENCLOSED WITH TIMBER CURBS LIGHTED BARRICADES AND TEMPORARY FENCE UNLESS OTHERWISE SHOWN HEREIN OR DIRECTED BY THE ENGINEER. ALL BOUNDARIES BETWEEN CONSTRUCTION WORK AREAS AND PEDESTRIAN ROUTES ALONG SIDEWALKS SHALL BE CLEARLY AND CONTINUOUSLY DELINEATED WITH PEDESTRIAN STEEL BARRICADES AS SHOWN ON THE MAINTENANCE AND PROTECTION PLANS AND AS APPROVED OR DIRECTED BY THE ENGINEER.
- PEDESTRIAN CROSSINGS OVER EXCAVATIONS, WHEN REQUIRED, SHALL BE CONSTRUCTED WITH STEEL PLATES LINED WITH TEMPORARY FENCE ATTACHED ON BOTH SIDES, (NO DIRECT PAYMENT).
- THE CONTRACTOR SHALL WORK IN ONE-HALF THE WIDTH OF INTERSECTING STREETS AT A TIME AND MAINTAIN THE OTHER HALF OPEN FOR VEHICULAR TRAFFIC UNLESS OTHERWISE INDICATED HEREIN, OR DIRECTED OR APPROVED BY THE ENGINEER.
- ALL INTERSECTIONS SHALL BE OPEN TO TRAFFIC AFTER WORKING HOURS.
- CONTRACTOR SHALL PROVIDE, PLACE, AND REMOVE STEEL PLATES TO MAINTAIN TRAFFIC OVER EXCAVATIONS AS REQUIRED. THERE WILL BE NO SEPARATE PAYMENT FOR PROVIDING, PLACING AND REMOVING STEEL PLATES OVER EXCAVATIONS TO MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC. COST SHALL BE DEEMED INCLUDED IN THE PRICES BID FOR ALL SCHEDULED ITEMS.
- MAINTENANCE OF PEDESTRIAN ACCESS TO ALL ABUTTING PROPERTIES, ENTRANCES, AND EXITS FROM DWELLINGS, EMERGENCY EXITS AND PEDESTRIAN USAGE OF CROSSWALK AND SIDEWALK AREAS BOTH NEW AND EXISTING SHALL BE CONTINUOUS AT ALL TIMES.
- CONTRACTOR SHALL PROVIDE ACCESS FOR EMERGENCY TRAFFIC AT ALL TIMES UPON DEMAND. THE CONTRACTOR SHALL BE REQUIRED TO MOVE AND RESTORE BARRICADES AS ORDERED BY THE ENGINEER FOR EMERGENCY ACCESS AT NO DIRECT PAYMENT.
- THE CONTRACTOR MUST PROVIDE ACCESS TO SCHOOL FOR SCHOOL BUSES AS DIRECTED BY ENGINEER.
- THE CONTRACTOR SHALL SUPPLY, INSTALL, RELOCATE AND MAINTAIN SIGNS AND OTHER APPROVED DEVICES FOR WARNING, CONTROLLING, ROUTING, DIRECTING AND DETOURING TRAFFIC AS INDICATED AND AS DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE EXACT LOCATION, SIZE, WORDING AND DETAILS OF THE SIGN, PLANTS AND MOUNTINGS, AND OTHER DEVICES SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
- ALL SIGNS AND BARRICADES SHALL CONFORM TO STANDARDS SPECIFIED IN THE NATIONAL "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" (EXCEPT WHERE OTHERWISE REQUIRED HEREIN) WHERE APPLICABLE AND APPROVED BY THE ENGINEER.

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO COOPERATE WITH OTHER CONTRACTORS WHO HAVE AN ON-GOING STREET IMPROVEMENT CONSTRUCTION IN THE AREA AND/OR WITHIN THE PROJECT LIMITS AND SHALL SO ACCORDINGLY ARRANGE HIS OWN SCHEDULE OF CONSTRUCTION IN SUCH A TIME FRAME AS NOT TO DISRUPT OR INTERFERE WITH THE WORKABILITY OF EITHER MAINTENANCE OF TRAFFIC PLAN.
- NO DEVIATION OR DEPARTURE FROM THESE STIPULATIONS WILL BE PERMITTED WITHOUT THE PRIOR WRITTEN APPROVAL FROM THE OCMC-STREETS. REQUEST FOR SUCH MODIFICATIONS SHALL BE SUBMITTED TO THE OFFICE OF CONSTRUCTION MITIGATION AND CONTROL-STREETS N.Y.C.D.O.T. A MINIMUM OF TWENTY (20) DAYS IN ADVANCE FOR CONSIDERATION.
- THE CONTRACTOR SHALL PROVIDE STORAGE AREAS OFF THE JOB SITE AS REQUIRED. (NO SEPARATE PAYMENT). SEE MAINTENANCE OF TRAFFIC CONSTRUCTION SIGNS, LEGEND, ETC. FOR MAINTENANCE OF TRAFFIC DEVICES REQUIRED AT THESE STORAGE AREAS.
- (NO TEXT)
- AS THE WORK PROGRESSES, TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE RELOCATED AND THE CONTRACTOR SHOULD REMOVE OR COVER ALL UNUSED SIGNS OR SIGNS NOT APPLICABLE FOR CURRENT OPERATIONS.
- FOR ADDITIONAL INFORMATION SEE: "SPECIAL PROVISIONS" OF THE SPECIFICATIONS; GENERAL NOTES, HIGHWAY NOTES, AND UTILITY NOTES, CONTAINED IN EVERY CONTRACT.
- THE CONTRACTOR IS REQUIRED TO MAINTAIN EXISTING BICYCLE FACILITIES WITH A SMOOTH RIDING SURFACE AND FREE OF DEBRIS OR OTHER IMPEDIMENTS, AT ALL TIMES. IF THIS IS NOT POSSIBLE A TEMPORARY BICYCLE DETOUR PLAN SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO D.O.T./D.C.M.C. FOR APPROVAL.
- FOR ANY CHANGES IN PARKING REGULATIONS DURING THE CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL, MAINTAIN AND RELOCATE THE EXISTING SIGNS, IN ACCORDANCE WITH N.Y.C. - D.O.T. STIPULATIONS OF ADVANCED NOTICE.

**REMOVAL OF TROLLEY TRACKS
INSTALLATION OF WATER MAINS 20' OR GREATER
CONSTRUCTION/REPLACEMENT OF SEWERS**

- THE CONTRACTOR SHALL INITIALIZE THE CONSTRUCTION OF NEW WORK AREA OF ONLY ONE (1) BLOCK BEFORE BEING PERMITTED TO CONTINUE TO OCCUPY A MAXIMUM LENGTH "WORK AREA" OF 3 BLOCKS WHERE BLOCK LENGTH IS 200 FT. AND ONE BLOCK WHERE BLOCK LENGTH IS 700 FT. OR LARGER.
- CONTRACTOR SHALL ESTABLISH WORK AREA WIDTHS AND MAINTAIN TRAFFIC LANES ADJACENT TO EACH WORK AS INDICATED IN TYPICAL PLANS.
- THE CONTRACTOR SHALL PLACE CONSTRUCTION SIGNS, TIMBER CURBS, BARRELS AND/OR OTHER TRAFFIC CONTROL DEVICES TO DELINEATE WORK AREAS AND VEHICULAR TRAFFIC LANES AS SHOWN IN TYPICAL PLANS AND SECTIONS. INSTALL AND MAINTAIN NO PARKING SIGNS CONTINUOUSLY FOR THE LENGTH OF THE WORK AREA.
- TRENCHES WITHOUT SHEETING: BACKFILL TRENCH AND PLACE TEMPORARY PAVEMENT OF 4" ASPHALTIC CONCRETE MIXTURE TO MEET EXISTING PAVEMENT, OR PROVIDE STEEL PLATES, AS APPROVED BY THE ENGINEER, TO COMPLETELY COVER THE TRENCH. NO OPEN TRENCH SHALL BE PERMITTED AT THE END OF ANY WORK DAY.
TRENCHES WITH SHEETING: SHEETED TRENCHES MAY REMAIN OPEN AT THE END OF A WORK DAY EXCEPT AS DIRECTED AT INTERSECTIONS WHERE STEEL PLATING SHALL BE REQUIRED FOR MAINTENANCE OF VEHICULAR AND PEDESTRIAN TRAFFIC FENCING SHALL BE PLACED AND MAINTAINED AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL CONSTRUCT SEWERS OR WATER MAINS WITHIN INTERSECTIONS BY BRIDGING OVER OR PLACING STEEL PLATES OR OTHER APPROVED MEANS OVER TRENCH AREAS TO MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC AS REQUIRED HEREIN, OR AS DIRECTED OR APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL, ON DEMAND, INTERRUPT ITS OPERATIONS AND PROVIDE STEEL PLATES OVER OPEN TRENCHES TO PROVIDE ACCESS TO PROPERTIES AS DIRECTED BY THE ENGINEER AT NO SEPARATE PAYMENT.
- UPON COMPLETION OF WORK AT EACH LOCATION, INCLUDING TEMPORARY RESTORATION OF PAVEMENT TO THE SATISFACTION OF THE ENGINEER, REMOVE LIGHTED BARRICADES, TIMBER CURBS, TEMPORARY FENCING, AND CONSTRUCTION SIGNS AND RESTORE, REOPEN AND RETURN THE FULL WIDTH OF THE ROADWAY TO PUBLIC SERVICE.
- "WORK AREAS" SHALL BE CONSIDERED AS BEING FLOATING SEGMENTS AND THE ADVANCEMENT OF THE "WORK AREAS" SHALL BE PROGRESSED ONLY A DISTANCE EQUAL TO THAT PORTION OF TRENCH BACKFILLED AND RESTORED WITH 4" ASPHALTIC MIXTURE, TO BE RETURNED TO SERVICE EACH DAY.

**INSTALLATION OF WATER MAINS
LESS THAN 20' IN DIAMETER**

- PLACE CONSTRUCTION SIGNS, BARRICADES, BARRELS AND/OR OTHER TRAFFIC CONTROL DEVICES TO DELINEATE A WORK AREA AS SHOWN IN TYPICAL PLANS AND SECTIONS.
- AS THE WORK ADVANCES, THE CONTRACTOR SHALL RELOCATE AND ADJUST BARRICADES, BARRELS AND SIGNS.
- BACKFILL ALL TRENCHES AND PLACE TEMPORARY PAVEMENT OF 4" BINDER MIXTURE TO MEET EXISTING PAVEMENT OR COVER WITH STEEL PLATES AS APPROVED BY THE ENGINEER. NO OPEN TRENCH SHALL BE PERMITTED AT THE END OF ANY WORKING DAY. UPON COMPLETION OF EACH DAY'S WORK REMOVE ALL M.P.T. DEVICES FROM THE SITE AND REOPEN THE FULL WIDTH OF ROADWAY TO TRAFFIC. THERE WILL BE NO DIRECT PAYMENT FOR THE REMOVAL AND REINSTALLATION OF M.P.T. DEVICES AT THE SAME LOCATION.
- THE CONTRACTOR SHALL NOT ADVANCE THE LIMITS OF THE WORK AREA UNTIL SUCH TIME AS THE TEMPORARY PAVEMENT RESTORATION IS COMPLETED AND APPROVED BY THE ENGINEER. THE WORK AREA CAN BE ADVANCED A MAXIMUM DISTANCE EQUAL TO THE LENGTH OF ROADWAY RESTORED AND RETURNED TO PUBLIC SERVICE EACH DAY.
- FOR ANY SIDEWALK CONNECTIONS (HYDRANTS, HOUSE CONNECTIONS, ETC.) THE CONTRACTOR SHALL MAINTAIN A FIVE (5) FEET CLEAR SIDEWALK FOR PEDESTRIAN ACCESS.
- THE CONTRACTOR SHALL EMPLOY AND ASSIGN FLAGMEN AT LOCATIONS SPECIFIED BY THE ENGINEER TO ASSIST IN CONTROLLING THE FLOW OF TRAFFIC (NO SEPARATE PAYMENT).

**CONSTRUCTION OF CATCH BASINS
AND BASIN CONNECTIONS**

- THE CONTRACTOR SHALL UTILIZE THE BARREL CONFIGURATION FOR BASIN EXCAVATION AND FOR THE BASIN CONNECTION PIPE AS INDICATED IN M.P.T. DETAIL FOR THIS STAGE.
- CATCH BASINS SHALL NOT BE CONSTRUCTED ON BOTH SIDES OF THE STREET SIMULTANEOUSLY.
- MAINTAIN ONE PEDESTRIAN CROSSING AT CORNERS AND MAINTAIN PEDESTRIAN TRAFFIC ON SIDEWALK AT ALL TIMES. A MINIMUM WIDTH OF FIVE (5) FEET OF SIDEWALK SHALL REMAIN CLEAR AT ALL TIMES.
- AT THE END OF EACH DAY'S WORK, THE CONTRACTOR SHALL BACKFILL ALL TRENCHES AND PLACE TEMPORARY PAVEMENT OF BINDER MIXTURE (NO SEPARATE PAYMENT) TO MEET EXISTING PAVEMENT, OR PROVIDE STEEL PLATES AS APPROVED BY THE ENGINEER TO COMPLETELY COVER THE TRENCH. PAYMENTS FOR STEEL PLATES ARE TO BE INCLUDED IN PRICES BID FOR ALL SCHEDULED ITEMS.

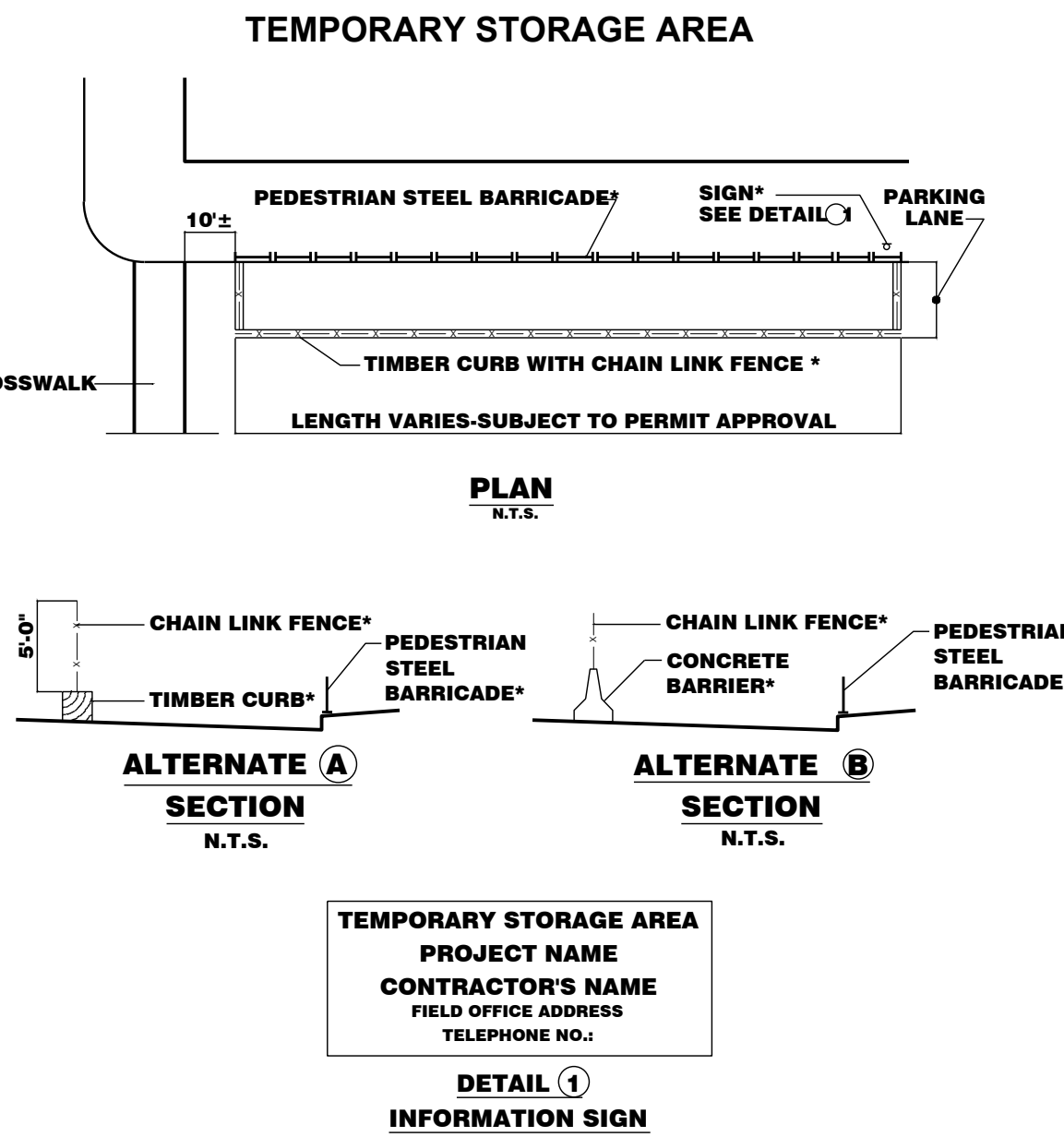
CONSTRUCTION OF ROADWAY PAVEMENT

- THE CONTRACTOR SHALL ESTABLISH A WORK ZONE AS SHOWN IN TYPICAL PLANS, FOR THE CONSTRUCTION OF ROADWAY PAVEMENT.
- MAINTAIN AT LEAST ONE PEDESTRIAN CROSSWALK AT EACH CORNER. PEDESTRIAN TRAFFIC SHALL BE DETOURED AROUND WORK ZONE.
- MAINTENANCE OF PEDESTRIAN ACCESS TO ALL ABUTTING PROPERTIES, ENTRANCES AND EXITS FROM DWELLINGS, AND PEDESTRIAN USAGE OF THE SIDEWALK AREAS, SHALL BE CONTINUOUS AT ALL TIMES.
- AFTER THE COMPLETION OF NEW PAVEMENT BASE AND CURING, RAMP AROUND MANHOLE HEADS WITH TEMPORARY ASPHALTIC MIXTURE. REMOVE BARRICADES, BARRELS AND OTHER TEMPORARY DEVICES AND OPEN THE ROADWAY FOR TRAFFIC, AS DIRECTED BY THE ENGINEER.
- AFTER COMPLETION OF PAVEMENT IN THE WORK AREA, THE CONTRACTOR SHALL REMOVE BARRICADES, BARRELS, FENCING AND CONSTRUCTION SIGNS. OPEN FULL ROADWAY TO TRAFFIC AS DIRECTED BY THE ENGINEER.

CONSTRUCTION OF NEW CURBS

- THE CONTRACTOR WILL BE PERMITTED TO OCCUPY ONE LANE OF THE ROADWAY IMMEDIATELY ADJACENT TO THE CURB LINE TO REMOVE EXISTING CURB AND CONSTRUCT NEW CURB AS APPROVED AND DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL INITIALIZE THE CONSTRUCTION OF NEW CURBS IN A WORK AREA OF 200 FEET ONLY. AFTER A SATISFACTORY START OF THE WORK, AS APPROVED AND DIRECTED BY THE ENGINEER, THE CONTRACTOR WILL BE PERMITTED TO EXTEND THE WORK AREA TO THE MAXIMUM LENGTH OF 600 FEET.
- PLACE PLASTIC BARRELS TO DELINEATE THE WORK AREA WIDTH AND PEDESTRIAN STEEL BARRICADES FOR THE PROTECTION OF PEDESTRIANS AS SHOWN IN TYPICAL PLANS AND AS DIRECTED BY THE ENGINEER.
- PLACE CONSTRUCTION SIGNS AS SHOWN IN TYPICAL PLANS AND AS REQUIRED BY THE ENGINEER.
- STRAIGHT CURB AND CORNER CURB SHALL NOT BE DISTURBED SIMULTANEOUSLY WITHIN THE SAME BLOCK.
- MAINTAIN PEDESTRIAN CROSSING AT CORNERS AT ALL TIMES BY RELOCATION OF CROSSWALKS TO AREA OF STRAIGHT CURB ADJACENT TO CORNERS UNDER CONSTRUCTION. ONLY ONE CORNER AT A TIME, PER INTERSECTION MAY BE CONSTRUCTED, EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER.
- MAINTENANCE OF PEDESTRIAN ACCESS TO ALL ABUTTING PROPERTIES, ENTRANCES AND EXITS FROM DWELLINGS, EMERGENCY EXIT AREAS SHALL BE CONTINUOUS AT ALL TIMES.
- UPON COMPLETION OF CURB WORK AT EACH LOCATION THE CONTRACTOR SHALL BACKFILL AROUND CURB AND PLACE 4" ASPHALTIC CONCRETE MIXTURE TO RESTORE STREET. RESTORE SIDEWALK WITH 2" ASPHALTIC CONCRETE MIXTURE AT CORNERS ONLY WHERE DIRECTED BY THE ENGINEER. MAINTAIN PEDESTRIAN TRAFFIC AT CROSSWALK AREAS.
- UPON COMPLETION OF EACH DAY'S WORK THE CONTRACTOR SHALL RELOCATE THE BARRELS AND BARRICADES ADJACENT TO THE CURB. THERE SHALL BE NO DIRECT PAYMENT FOR THE DAILY RELOCATION OF BARREL AND BARRICADES HEREUNDER.
- EACH DAY THE WORK AREA MAY BE ADVANCED A MAXIMUM DISTANCE EQUAL TO THE LENGTH OF CURB SUBSTANTIALLY COMPLETED ON THAT DAY, WHICH SHALL BE DEFINED AS INCLUDING TEMPORARY PAVEMENT RESTORATION, AS APPROVED BY THE ENGINEER.
- WORKING SIMULTANEOUSLY ON BOTH SIDES OF THE STREET WILL NOT BE PERMITTED.

COLOR CODE LEGEND	
CODE	DESCRIPTION
A	BLACK LEGEND AND BORDER ON AN ORANGE BACKGROUND
B	BLACK LEGEND AND BORDER ON A WHITE BACKGROUND
C	WHITE LEGEND AND BORDER ON A GREEN BACKGROUND
D	WHITE LEGEND AND BORDER ON A RED BACKGROUND
E	RED LEGEND AND BORDER ON A WHITE BACKGROUND
F	BLACK LEGEND AND BORDER ON A FLUORESCENT YELLOW GREEN BACKGROUND



- NOTES**
- NO DIRECT PAYMENTS FOR MAINTENANCE OF TRAFFIC CONTROL DEVICES.
 - PROVIDE TAPER AT APPROACH END TO CHANNELIZE TRAFFIC PER NYSDOT MUTED.
 - TIMBER CURB WITH CHAIN LINK FENCE TO BE USED FOR LONG TERM STORAGE.
 - FOR SHORT TERM STORAGE USE PLASTIC BARRELS WITH ORANGE FENCING.

LEGEND

	CONSTRUCTION WORK AREA
	FLASHING ARROW BOARD
	ONE WAY TRAFFIC (EXISTING)
	TWO-WAY TRAFFIC (EXISTING)
	NEW TRAFFIC DIRECTION DURING CONSTRUCTION
	LIGHTED TIMBER BARRICADE - ITEM #6.28AA
	TIMBER CURB - ITEM #6.26 (W/ ORANGE FENCING)
	FOR SEWER AND WATER MAINS TIMBER CURB WITH FENCE ITEMS #6.26 & 70.31FN
	PEDESTRIAN STEEL BARRICADE - ITEM #7.36
	PLASTIC BARRELS - ITEM #6.87
	TEMPORARY SIGN WITH TEXT - ITEM #6.25RS
	CONCRETE BARRIER - ITEM #6.28BA
	TEMPORARY CONCRETE BARRIER WITH FENCE - ITEM #6.59PF
	CROSSING GUARD - ITEM 6.52 CG

TEMPORARY TRAFFIC SIGNS TABLE					
NAME	SIGN	MUTCD CODE	COLOR CODE	SIZE	DESCRIPTION
(A)		W20-1	A	36"X36"	ROAD WORK AHEAD
(B)		W20-2	A	36"X36"	DETOUR AHEAD
(C1)		M4-9	A	30"X24"	DETOUR (WITH ARROW)
(C2)		M4-9L	A	30"X24"	DETOUR (WITH LEFT ARROW)
(C3)		M4-9R	A	30"X24"	DETOUR (WITH RIGHT ARROW)
(DL)		W1-4L	A	30"X30"	LARGE ARROW KEEP LEFT
(DR)		W1-4R	A	30"X30"	LARGE ARROW KEEP RIGHT
(E)		R11-2	B	48"X30"	ROAD CLOSED
(F)		R11-3a	B	60"X30"	ROAD CLOSED (EXCEPT LOCAL & EMERGENCY TRAFFIC)
(GL)		W1-6L	A	48"X24"	ONE WAY (ARROW POINTING LEFT)
(GR)		W1-6R	A	48"X24"	ONE WAY (ARROW POINTING RIGHT)
(K)		R9-11	B	24"X12"	SIDEWALK CLOSED, CROSS HERE (WITH ARROW)
(L)		R9-10	B	24"X12"	SIDEWALK CLOSED, USE OTHER SIDE (WITH ARROW)
(M)		R3-2	B	24"X24"	NO LEFT TURN
(N)		R3-1	B	24"X24"	NO RIGHT TURN
(O)		W6-3	A	30"X30"	END ROAD WORK
(P)		W6-3	A	30"X30"	TWO WAY TRAFFIC

TEMPORARY TRAFFIC SIGNS TABLE					
NAME	SIGN	MUTCD CODE	COLOR CODE	SIZE	DESCRIPTION
(Q)		W4-2L	A	36"X36"	LANE REDUCTION TRANSITION SIGN
(R)		R3-3	B	24"X24"	NO TURNS
(S)		W20-3	A	36"X36"	ROAD CLOSED AHEAD
(T)		M6-4	B	21"X15"	DOUBLE ARROW
(V)		M6-1	B	21"X15"	ARROW (LEFT OR RIGHT)
(W)		R3-5	B	30"X36"	RIGHT (LEFT) TURN ONLY
(X)		R9-9	B	24"X12"	SIDEWALK CLOSED, USE WALKWAY
(Y)		W20-5	A	36"X36"	LANE CLOSED AHEAD
(Z)		W20-7a	A	36"X36"	FLAGGER

NOTES:

- ALL SIGNS AS PER LATEST EDITION OF THE NATIONAL "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
- DIMENSIONS ARE SHOWN IN INCHES AND ARE SHOWN AS WIDTH x HEIGHT.
- THESE TABLES ARE FOR REFERENCE PURPOSES ONLY. FOR ADDITIONAL SIGNAGE NOT SHOWN ON THESE TABLES (REFER TO THE MUTCD).
- ALL SIGNS TO BE REFLECTORIZED.
- LETTERS ON SIGNS TO BE 9" HIGH.
- SIGN LOCATION TO BE DETERMINED BY THE ENGINEER.
- MOUNTING OF SIGNS TO BE AS DIRECTED AND APPROVED BY THE ENGINEER.

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK				
BOROUGH OF MANHATTAN				
PROJECT ID:	MED608	DATE:	7/25/14	SHEET 12 OF 24

TOPOGRAPHIC SURVEY PREPARED BY:

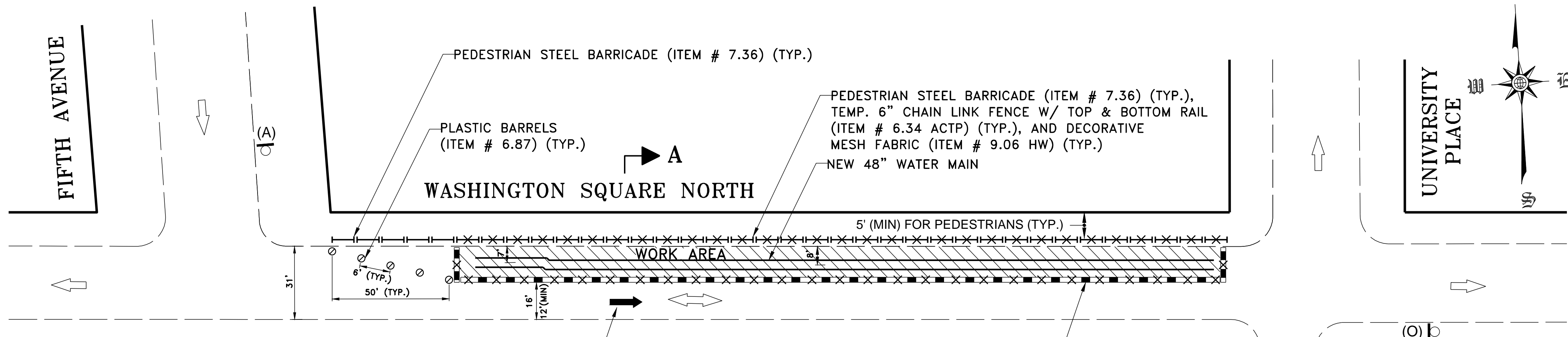
DESIGNED: A.B.
DRAWN: A.B.
CHECKED: M.K.

SCALE AS SHOWN
CADD FILE: MED608-MPT1

MIKHAIL KLIGER P.E. ENGINEER-IN-CHARGE
GEORGE FRANZ P.E. DIRECTOR

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

MAINTENANCE & PROTECTION OF TRAFFIC
GENERAL NOTES



2-WAY TRAFFIC MAY BE TEMPORARY CONVERTED TO 1-WAY TRAFFIC ONLY AT WASHINGTON SQUARE NORTH BETWEEN 5TH AVE AND UNIVERSITY PLACE.

ARC DE TRIUMPH VECTORY ARC

WASHINGTON SQUARE PARK

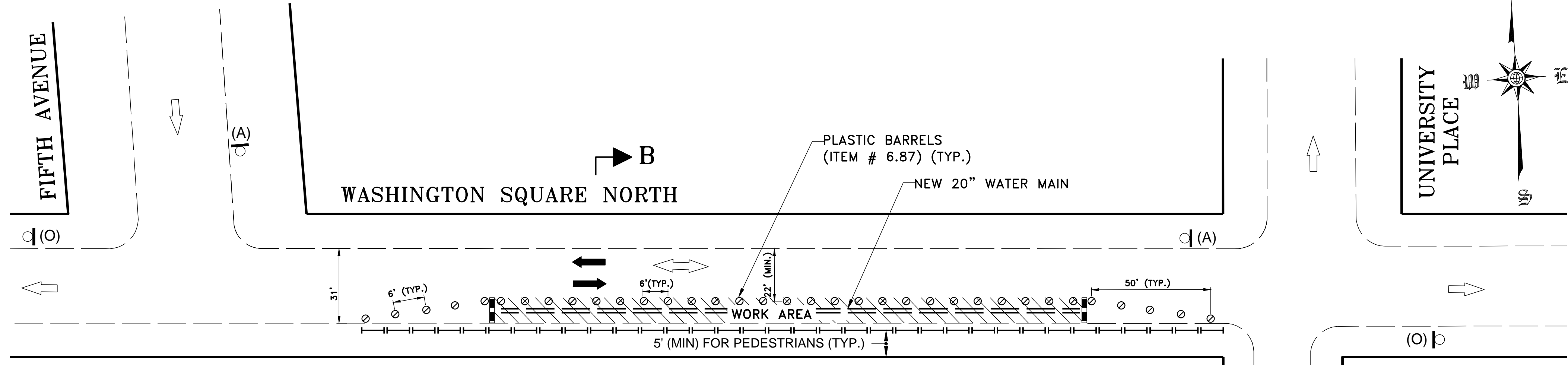
WASHINGTON SQUARE NORTH

WASHINGTON SQUARE EAST

UNIVERSITY PLACE

WAVERLY PLACE

TYPICAL INSTALLATION OF 36" AND 48" WATER MAIN
N.T.S.



WASHINGTON SQUARE PARK

WASHINGTON SQUARE NORTH

WASHINGTON SQUARE EAST

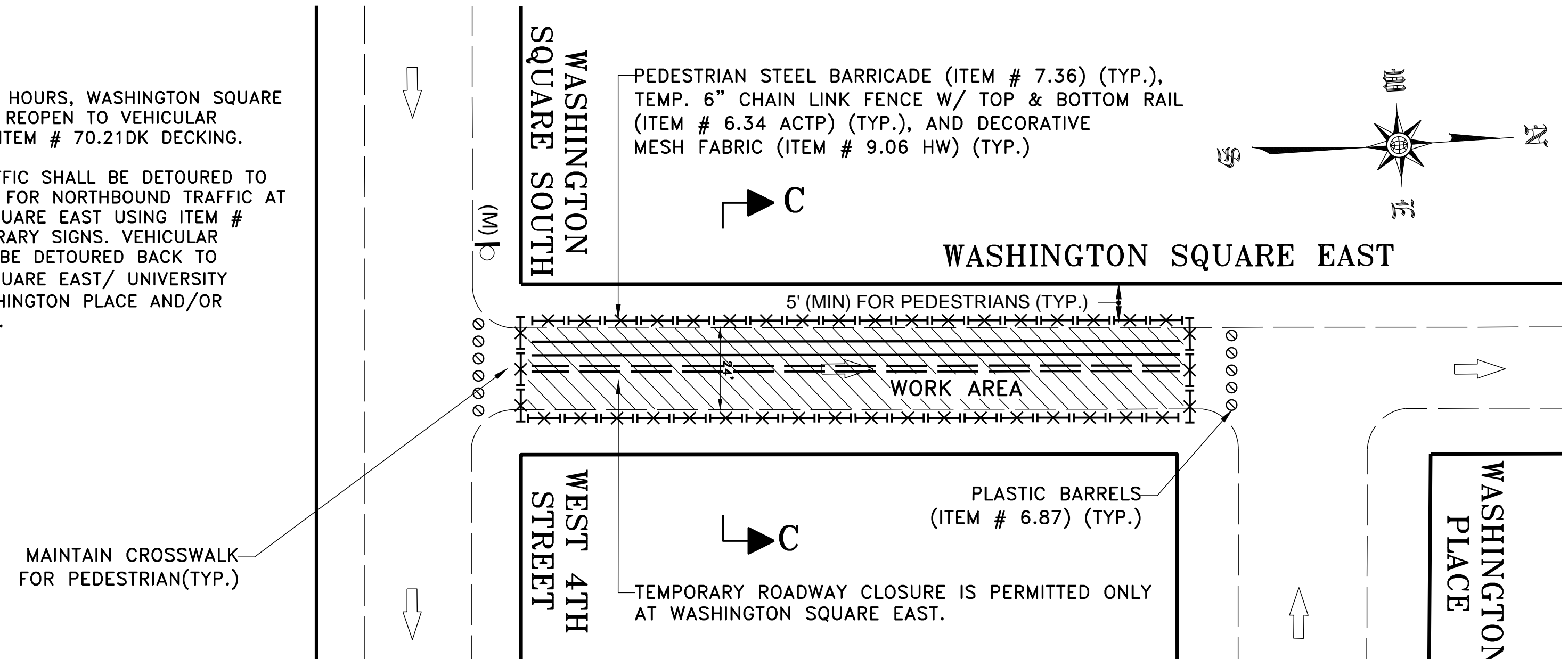
UNIVERSITY PLACE

WAVERLY PLACE

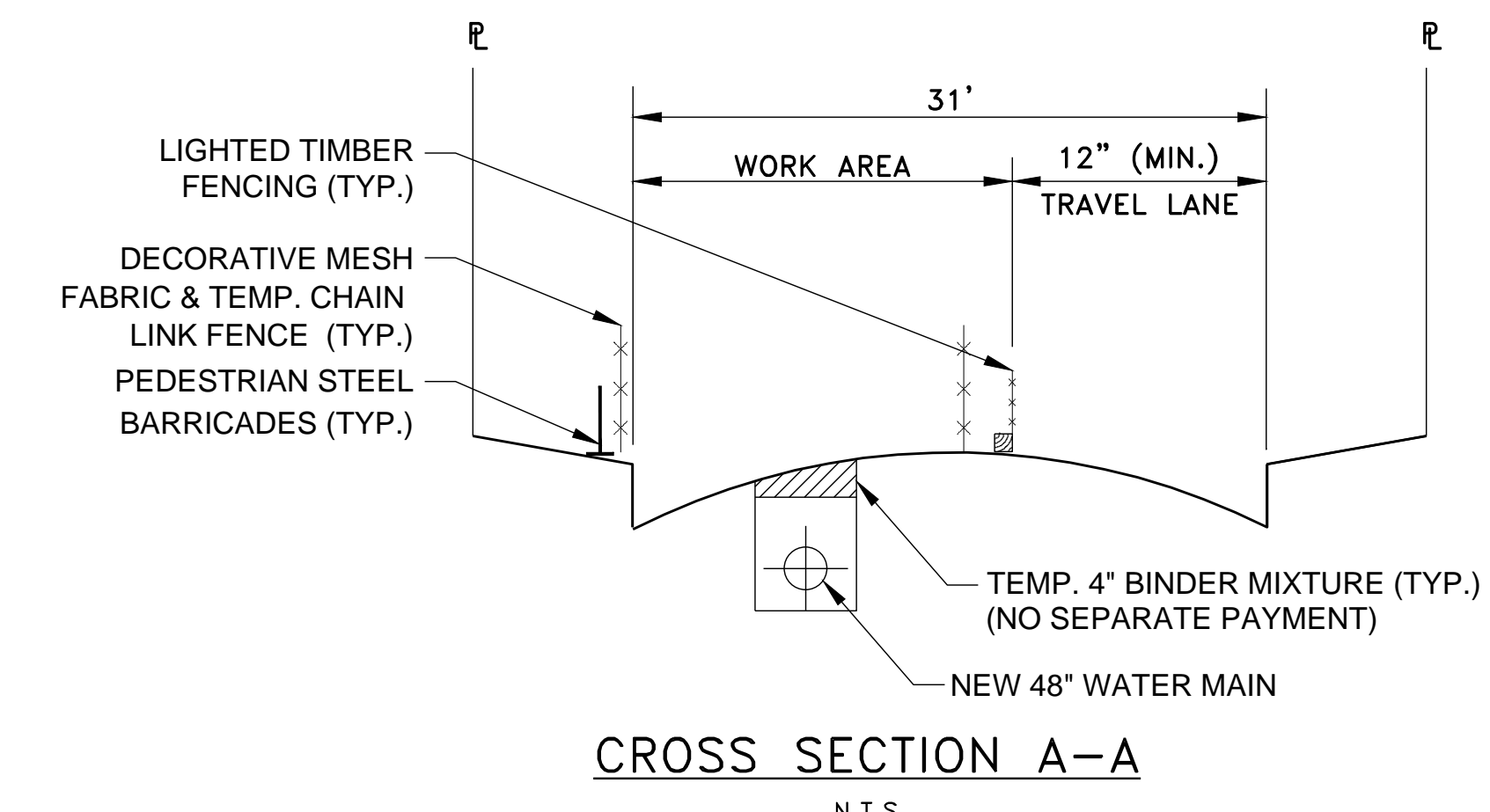
TYPICAL INSTALLATION OF 12" OR 20" WATER MAIN
N.T.S.

AFTER WORKING HOURS, WASHINGTON SQUARE EAST SHALL BE REOPEN TO VEHICULAR TRAFFIC USING ITEM # 70.21DK DECKING.

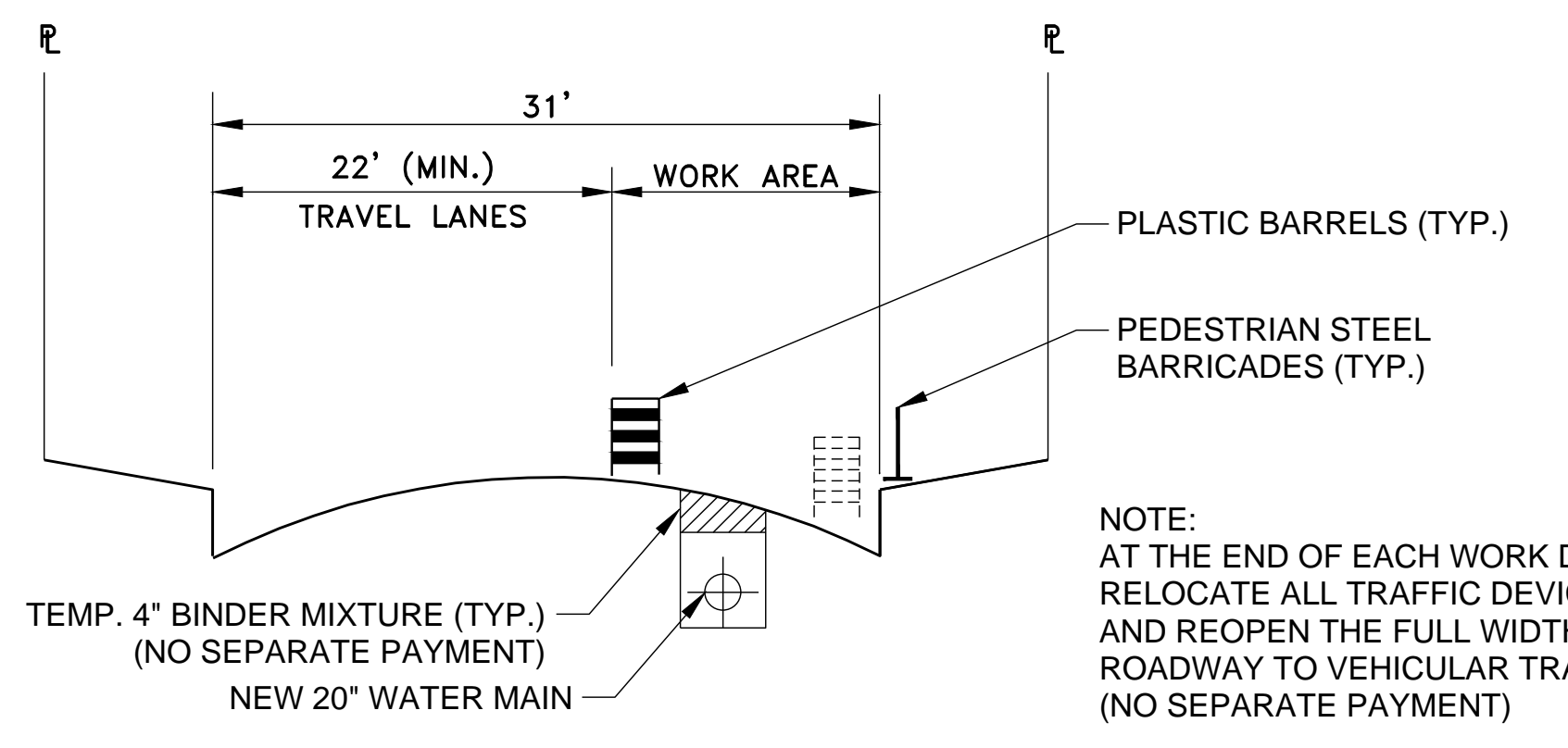
VEHICULAR TRAFFIC SHALL BE DETOURED TO GREENE STREET FOR NORTHBOUND TRAFFIC AT WASHINGTON SQUARE EAST USING ITEM # 6.25 RS TEMPORARY SIGNS. VEHICULAR TRAFFIC SHALL BE DETOURED BACK TO WASHINGTON SQUARE EAST/ UNIVERSITY PLACE VIA WASHINGTON PLACE AND/OR WAVERLY PLACE.



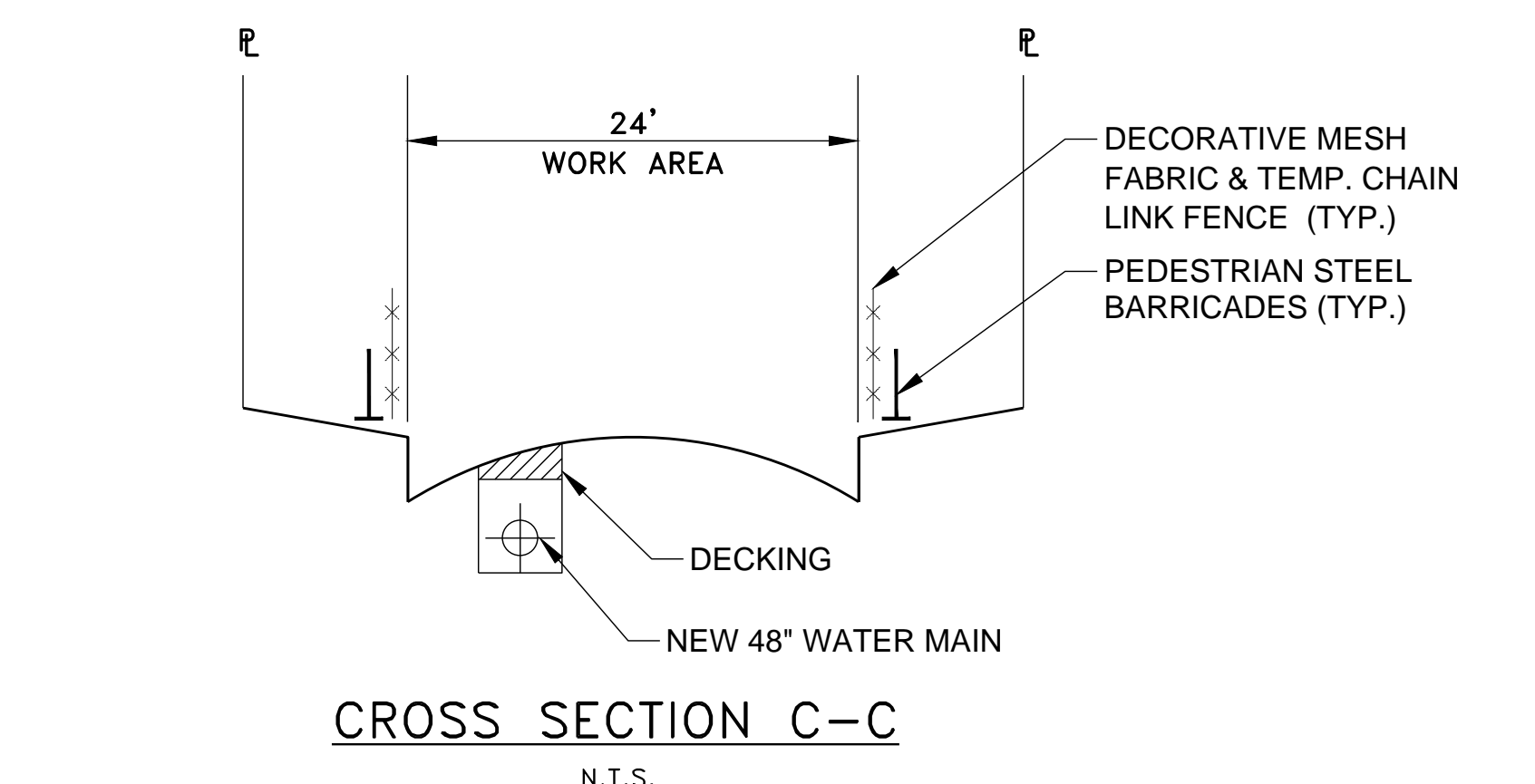
INSTALLATION OF 48" WATER MAIN AT WASHINGTON SQUARE EAST
N.T.S.



CROSS SECTION A-A
N.T.S.



CROSS SECTION B-B
N.T.S.



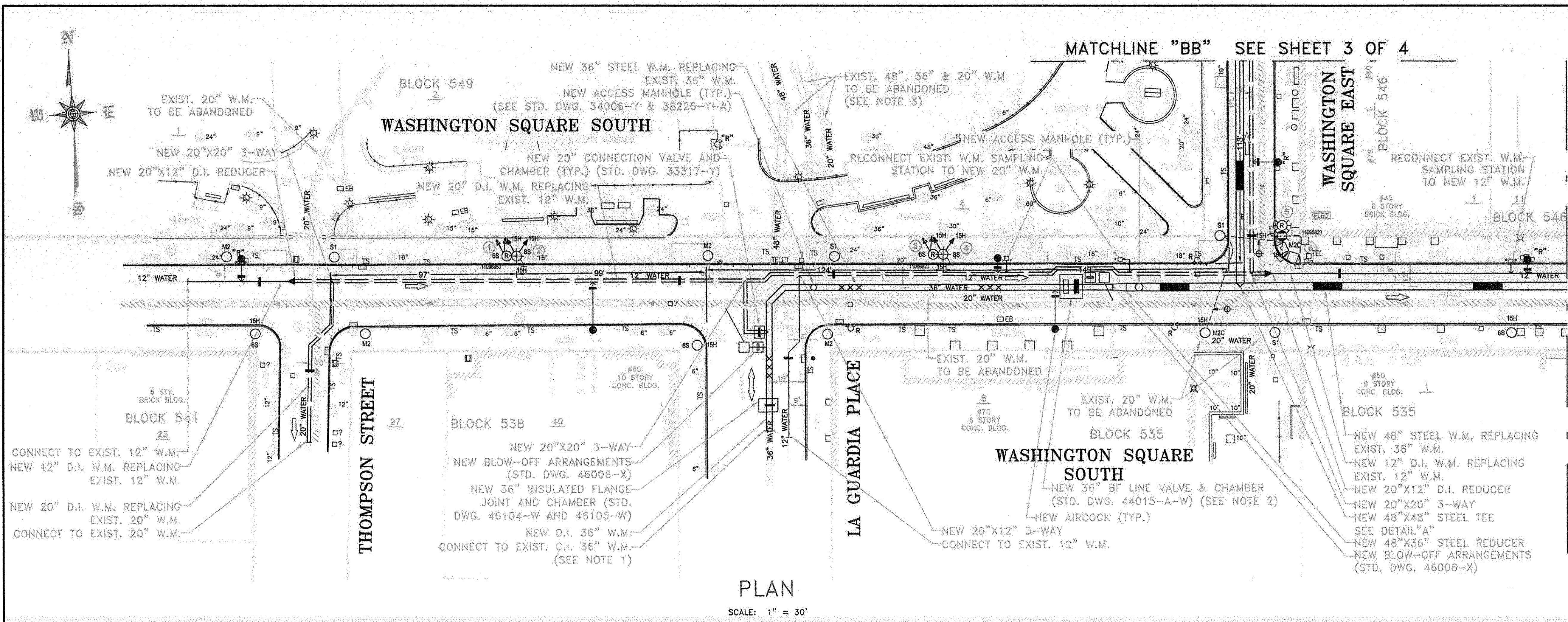
CROSS SECTION C-C
N.T.S.

NOTES

1. THE MAINTENANCE & PROTECTION OF TRAFFIC SCHEMES DEPICTED HERE ARE PRESENTED FOR REFERENCE ONLY AND ARE INTENDED TO PROVIDE A GENERAL GUIDE TO MAINTAINING SAFE AND ADEQUATE WORK ZONES ADJACENT TO ACTIVE VEHICULAR AND PEDESTRIAN TRAFFIC. ALL ASPECTS OF MAINTENANCE & PROTECTION OF TRAFFIC INCLUDING PHASING, SIGNAGE, DELINEATION AND TRAFFIC CONTROL DEVICES SHALL BE DEVELOPED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS, NYS DOT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND GENERALLY ACCEPTABLE CONSTRUCTION PRACTICES AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE COMMENCEMENT OF WORK.
2. NO DIRECT PAYMENT WILL BE MADE TO THE CONTRACTOR FOR FURNISHING, DELIVERING, PLACING AND REMOVING TEMPORARY ASPHALT CONCRETE PAVEMENT OVER WATERMAIN AND SEWER TRANCHES, AS SPECIFIED OR REQUIRED. THE COST OF SAID WORK SHALL BE DEEMED INCLUDED IN THE COST OF THE VARIOUS WATERMAIN AND SEWER INSTALLATION ITEMS.
3. MAINTAIN 12' HARD SURFACE FOR ALL EMERGENCY TRAFFIC AT ALL TIMES. WHERE ROADWAY WIDTH DOES NOT ALLOW FOR AN EMERGENCY LANE THE CONTRACTOR SHALL NOT EXCEED 100 LF SO THAT NYCD/EMS AND NYPD CAN HAVE ACCESS TO THE LOCAL RESIDENT BARRICADED BY THE WORK AREA.

NO.	DATE	DESCRIPTIONS	BY	APPR'D

TOPOGRAPHIC SURVEY PREPARED BY: LICENSED LAND SURVEYOR	DESIGNED: A.B. DRAWN: A.B. CHECKED: M.K.	SCALE AS SHOWN CADD FILE: MED608-MPT2	MIKHAIL KLIGER ENGINEER-IN-CHARGE GEORGE FRANZ DIRECTOR	P.E. P.E.	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	MAINTENANCE & PROTECTION OF TRAFFIC	WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN PROJECT ID: MED608	DATE: 7/25/14	SHEET 13 OF 24	MT2/MT3
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LEGEND:

- EXISTING LAMPPOST TO REMAIN.
- NON DOT POLE ○ EXISTING NON STANDARD DOT LAMPPOST. (SEE NOTE 6).
- ⊙ REMOVE EXISTING TYPE 6S OR 8S LAMPPOST WITH ARM, 150 WATT HPS COBRA HEAD LUMINAIRE AND P.E.C. REMOVE PORTION OF CONCRETE FOUNDATION.
- ⊙_B REMOVE EXISTING TRANSFORMER BASE. REMOVE PORTION OF CONCRETE FOUNDATION.
- ⊙_{NS} REMOVE NON STANDARD FLOODLIGHTS, STORE AND REINSTALL AT A LATER DATE. SEE NOTE 5.
- ⊙_{8S} FURNISH AND INSTALL A STANDARD TYPE ANCHOR BOLT FOUNDATION AS PER DWG E-3788. FURNISH AND INSTALL STEEL TRANSFORMER BASE, 25' FABRICATED STEEL SHAFT, 8' ARM, 150 WATT HPS COBRA HEAD LUMINAIRE WITH SOLID STATE BALLAST AND STRAY VOLTAGE INDICATOR AND P.E.C.
- ⊙_{8S} FURNISH AND INSTALL A STANDARD TYPE ANCHOR BOLT FOUNDATION AS PER DWG E-3788. FURNISH AND INSTALL STEEL TRANSFORMER BASE, 25' FABRICATED STEEL SHAFT, 8' ARM, 150 WATT HPS COBRA HEAD LUMINAIRE WITH SOLID STATE BALLAST AND STRAY VOLTAGE INDICATOR AND P.E.C. (SEE NOTE 5).
- ⊙_{M2C} REMOVE ALL STREET LIGHTING EQUIPMENT FROM EXISTING M2 TRAFFIC POLE.
- ⊙_{M2C} FURNISH AND INSTALL 6' SHAFT EXTENSION, TWO(2)-8' ARMS(90°), TWO(2)-150 WATT HPS COBRA HEAD LUMINAIRES WITH SOLID STATE BALLAST AND STRAY VOLTAGE INDICATOR AND P.E.C. ON EXISTING TRAFFIC M2 POLE. P.E.C. TO CONTROL BOTH LUMINAIRES.
- ← FURNISH AND INSTALL A TROUGH FOR INSTALLING TWO FLOODLIGHTS, TWO(2)-150 WATT HPS FLOODLIGHT LUMINAIRES ON STREET LIGHT POLE.
- [LED] FURNISH AND INSTALL FIRE ALARM LED LUMINAIRE.
- ↘ INDIVIDUAL SERVICE PROVIDED BY CON EDISON.
- ← Provide 2#10 SERVICE CABLES TO ENERGIZE STREET LIGHT.
- 6S INDICATES STREET LIGHT WITH SINGLE 6' ARM.
- 8S INDICATES STREET LIGHT WITH SINGLE 8' ARM.
- M2C INDICATES TRAFFIC POLE WITH STREET LIGHT.
- M2 INDICATES TRAFFIC POLE WITHOUT STREET LIGHT.
- S1 INDICATES PEDESTRIAN TYPE TRAFFIC POLE.
- 15H 150 WATT.
- 2H 250 WATT.
- 11096850 CON EDISON REGISTER NUMBER.
- NIR NOT IN REGISTER.
- ① KEY NUMBER/TYP./

NOTE:

1. ALL SHOP DRAWINGS SHALL BE SUBMITTED TO DEPARTMENT OF TRANSPORTATION, DIVISION OF STREET LIGHTING FOR REVIEW AND APPROVAL BEFORE INSTALLATION.
2. ALL EQUIPMENT IN THIS CONTRACT SHALL BE FURNISHED AND INSTALLED UNDER DEPARTMENT OF DESIGN AND CONSTRUCTION CONTRACT NUMBER MED-608.
3. ALL WORK SHALL BE PERFORMED IN ACCORDING WITH NEW YORK CITY DEPARTMENT OF TRANSPORTATION, DIVISION OF STREET LIGHTING STANDARD SPECIFICATION.
4. THE DIVISION OF STREET LIGHTING INSPECTION MUST BE NOTIFIED AT (718) 786-5822, 72 HOURS PRIOR TO THE START OF WORK.
5. EXISTING FLOODLIGHTS ON THE LAMPPOST ARE THE PROPERTY OF NEW YORK CITY DEPARTMENT OF PARKS AND RECREATION (DPR). NYC DEPARTMENT OF DESIGN AND CONSTRUCTION (DDC) TO NOTIFY NEW YORK CITY DPR PRIOR TO REMOVAL OF THESE FLOODLIGHTS.
6. NOTIFY BLOCK ASSOCIATION IF THE POLE IS TO BE REMOVED AND REPLACED. POLE IS NOT MAINTAINED BY NYC DOT.
7. CON EDISON TO TERMINATE SERVICE AT KEY #(s) 1, 3, 7, 9, 12, 14, 15, 17, 20, 22, 24, 26, 28 AND 30.
8. CON EDISON TO PROVIDE SERVICE CONFIRMATION AT KEY #(s) 2, 4, 8, 10, 11, 13, 16, 18, 19, 21, 23, 25, 27 AND 29.

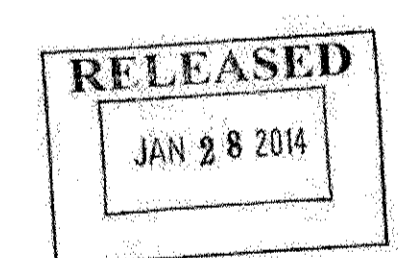
NOTES:

1. CONNECT NEW 36" & 48" DUCTILE IRON FLANGE PIPE TO EXISTING 36" & 48" CAST IRON WATER MAIN. CONTRACTOR TO VERIFY O.D. OF EXISTING C.I. PIPE AT TIE IN POINT AND PROVIDE APPROPRIATE SLEEVE AS APPROVED BY THE ENGINEER UNDER ITEM 60.13M5536 (FURNISHING AND DELIVERING 36-INCH DUCTILE IRON MECHANICAL JOINT SLEEVES), AND 60.13M5548 (FURNISHING AND DELIVERING 48-INCH DUCTILE IRON MECHANICAL JOINT SLEEVES).
2. THE EXPANSION JOINT SHOWN ON STANDARD DRAWING NO. 44015-A-X AND NO. 44588-X, "STANDARD CHAMBER FOR BUTTERFLY LINE VALVE ON STEEL MAIN", SHALL BE REPLACED WITH A BOLTED SPLIT SLEEVE TYPE RESTRAINED COUPLING. THE COSTS FOR FURNISHING, DELIVERING AND INSTALLING THE COUPLING SHALL BE DEEMED INCLUDED UNDER THE ITEM: 60.27RSC36 "FURNISHING, DELIVERING AND INSTALLING 36-INCH DIAMETER BOLTED, SPLIT SLEEVE-TYPE RESTRAINED COUPLING" OR 60.27RSC48 "FURNISHING, DELIVERING AND INSTALLING 48-INCH DIAMETER BOLTED, SPLIT SLEEVE-TYPE RESTRAINED COUPLING", RESPECTIVELY.
3. THE EXISTING 48" & 36" WATER MAIN WHERE ABANDONED, SHALL BE FILLED WITH SLURRY SAND MIX. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT HIS PROCEDURES FOR FILLING UP THE ABANDONED PIPES. PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR FILLING THE WATER MAIN WITH SLURRY SAND MIX, UNDER THE ITEM # 72.11HF, "HYDRAULIC FILL FOR ABANDONED SEWERS AND WATER MAINS." THE CONTRACTOR SHALL BE ADVISED THAT NO ACCESS WITHIN WASHINGTON SQUARE PARK.
4. THE CONTRACTOR SHALL NOTIFY NYCDOT TO RELOCATE NYC BIKE SHARE STATION AT WASHINGTON SQUARE EAST BETWEEN WAVERLY PLACE AND WASHINGTON PLACE BEFORE START OF CONSTRUCTION.
5. ALL ABANDONED WATER CASTINGS WITHIN PROJECT LIMITS MUST BE REMOVED UNDER THIS PROJECT. NO ADDITIONAL PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR THIS WORK.
6. THE CONTRACTOR SHALL USE SPECIALLY DESIGNED TIGHT SHEETING FOR LAYING THE NEW 36" D.I. W.M. AT FIFTH AVENUE. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS AND A DETAILED SHOP DRAWING SHOWING HIS PROCEDURE FOR PLACING AND SUPPORTING THE SHEETING TO THE ENGINEER FOR APPROVAL.

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.

"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 IN: JUNE , 2009

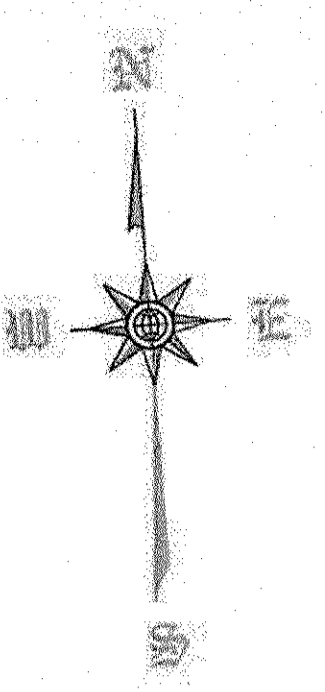
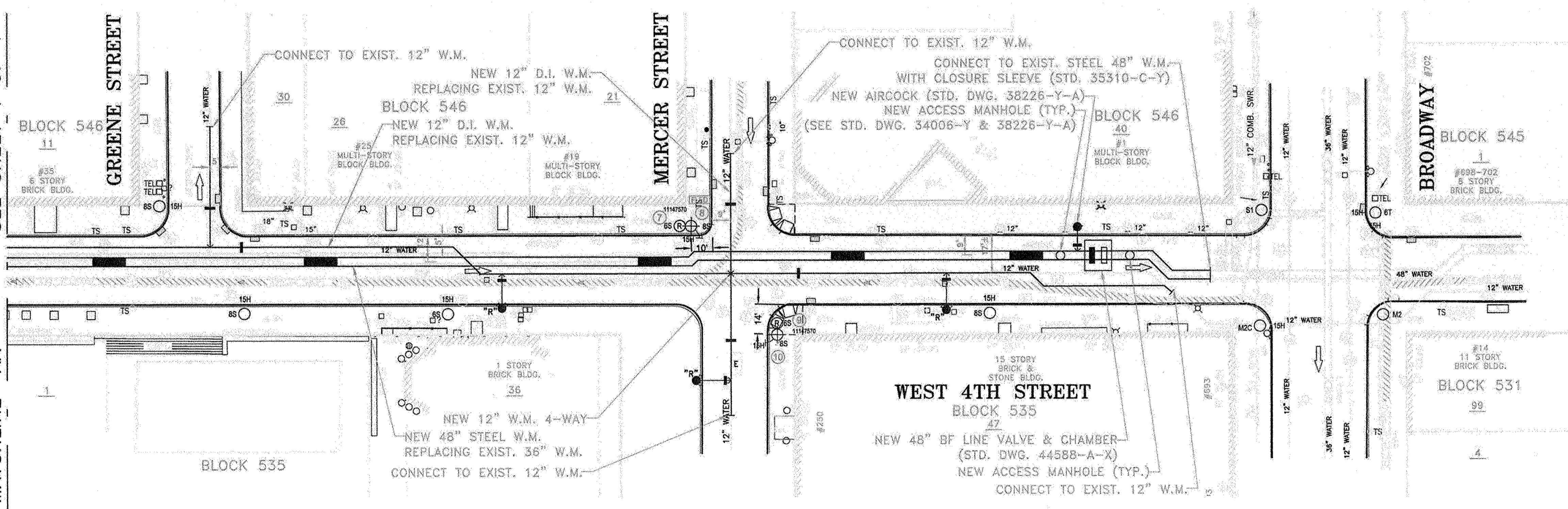


KEY NUMBER ON THIS SHEET: ① TO ⑥ .

NO.	DATE.	BY	DESCRIPTIONS	I.A.S.
REVISIONS				
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION DIVISION OF STREET LIGHTING				
CONTRACT NO: MED-608			JOB NO.	
WATER MAIN WORK AT WASHINGTON SQUARE PARK MANHATTAN				
PROJ. ENG.	SECT. ENG.	CHIEF	CONTROL NO.	
A. PATEL, P.E.	Y. ROC, P.E.	G. PATEL, P.E.		
DATE 01/08/2014	SCALE 1" = 30'	SHEET 1 OF 4	DRAWING NO. M31939	
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN				
PROJECT ID: MED608		DATE: 1/8/14	SHEET 14 OF 24	SL1/SL4

TOPOGRAPHIC SURVEY PREPARED BY:	DESIGNED _____	SCALE AS SHOWN	MIKHAIL KLIGER ENGINEER-IN-CHARGE P.E.	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	STREET LIGHTING PLAN
LICENSED LAND SURVEYOR	DRAWN _____	CADD FILE: MED608-SL1-SL4	GEORGE FRANZ DIRECTOR P.E.		

SEE SHEET 1 OF 4
MATCHLINE "AA"



SCALE: 1" = 30'

RECEIVED
JAN 28 2014

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.

"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"

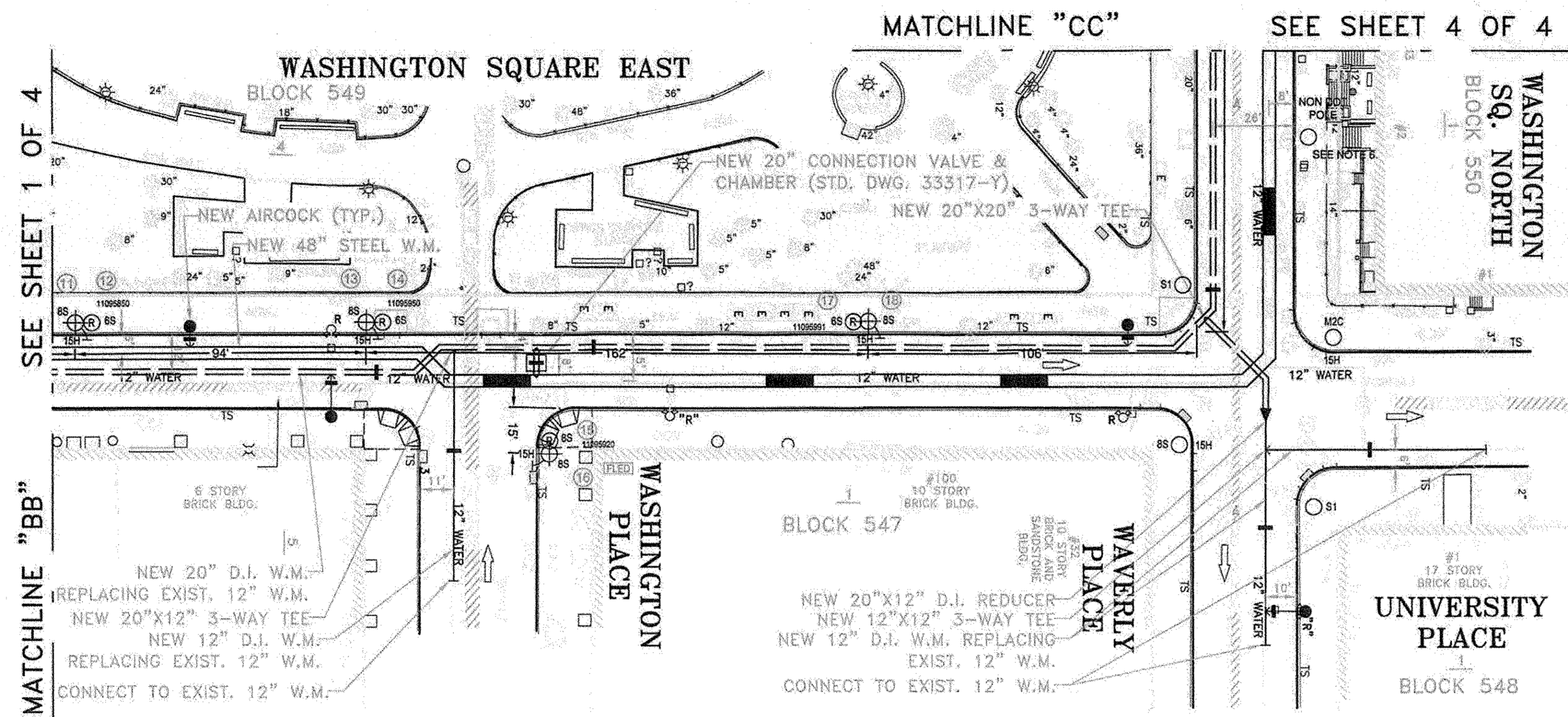
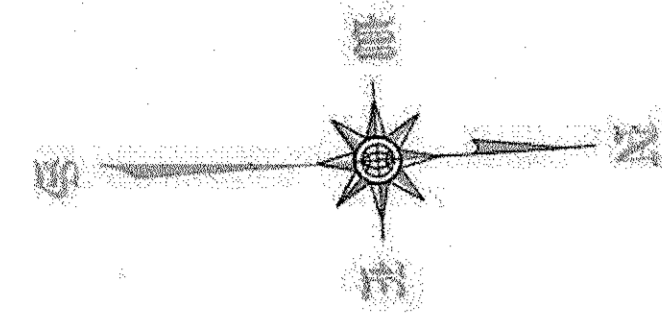
FIELD SURVEY WAS COMPLETED IN: JUNE 2009

NOTE: HORIZONTAL COORDINATES BASED ON THE BOROUGH OF MANHATTAN COORDINATE SYSTEM. THE BOROUGH MONUMENT AT THE SW CORNER OF THE INTERSECTION OF THOMPSON ST AND WEST 3RD ST WAS USED TO TIE INTO THE BOROUGH OF MANHATTAN COORDINATE SYSTEM.
NOTE: ALL ELEVATIONS REFER TO THE BOROUGH OF MANHATTAN DATUM, WHICH IS 2.750 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY.

KEY NUMBER ON THIS SHEET: ⑦ TO ⑩.

NO.	DATE.	BY	DESCRIPTIONS	I.A.S.
REVISIONS				
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION DIVISION OF STREET LIGHTING				
CONTRACT NO: MED-608			JOB NO.	
WATER MAIN WORK AT WASHINGTON SQUARE PARK MANHATTAN				
PROJ. ENG.	SECT. ENG.	CHIEF	CONTROL NO.	
A. PATEL, P.E.	Y. ROCY	A. PATEL		
DATE	SCALE:	SHEET	DRAWING NO.	
01/08/2014	1" = 30'	2 OF 4	M31939	
PROJECT ID: MED608			DATE: 1/8/14	SHEET 15 OF 24

TOPOGRAPHIC SURVEY PREPARED BY: LICENSED LAND SURVEYOR	DESIGNED _____ DRAWN _____ CHECKED _____	SCALE AS SHOWN CADD FILE: MED608-SL1-SL4	MIKHAIL KLIGER ENGINEER-IN-CHARGE GEORGE FRANZ DIRECTOR	P.E. P.E.	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	STREET LIGHTING PLAN	WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN
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PLAN
SCALE: 1" = 30'

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.

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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 IN: JUNE 2009

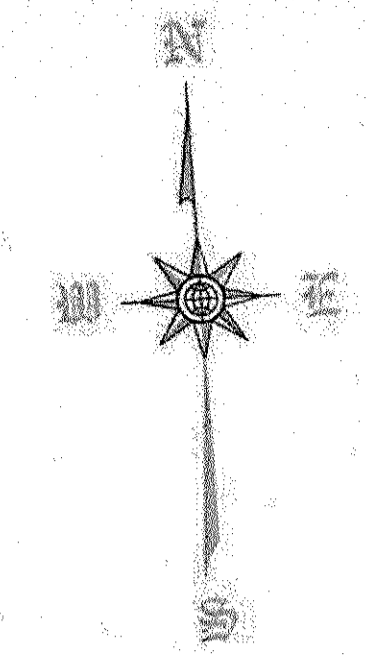
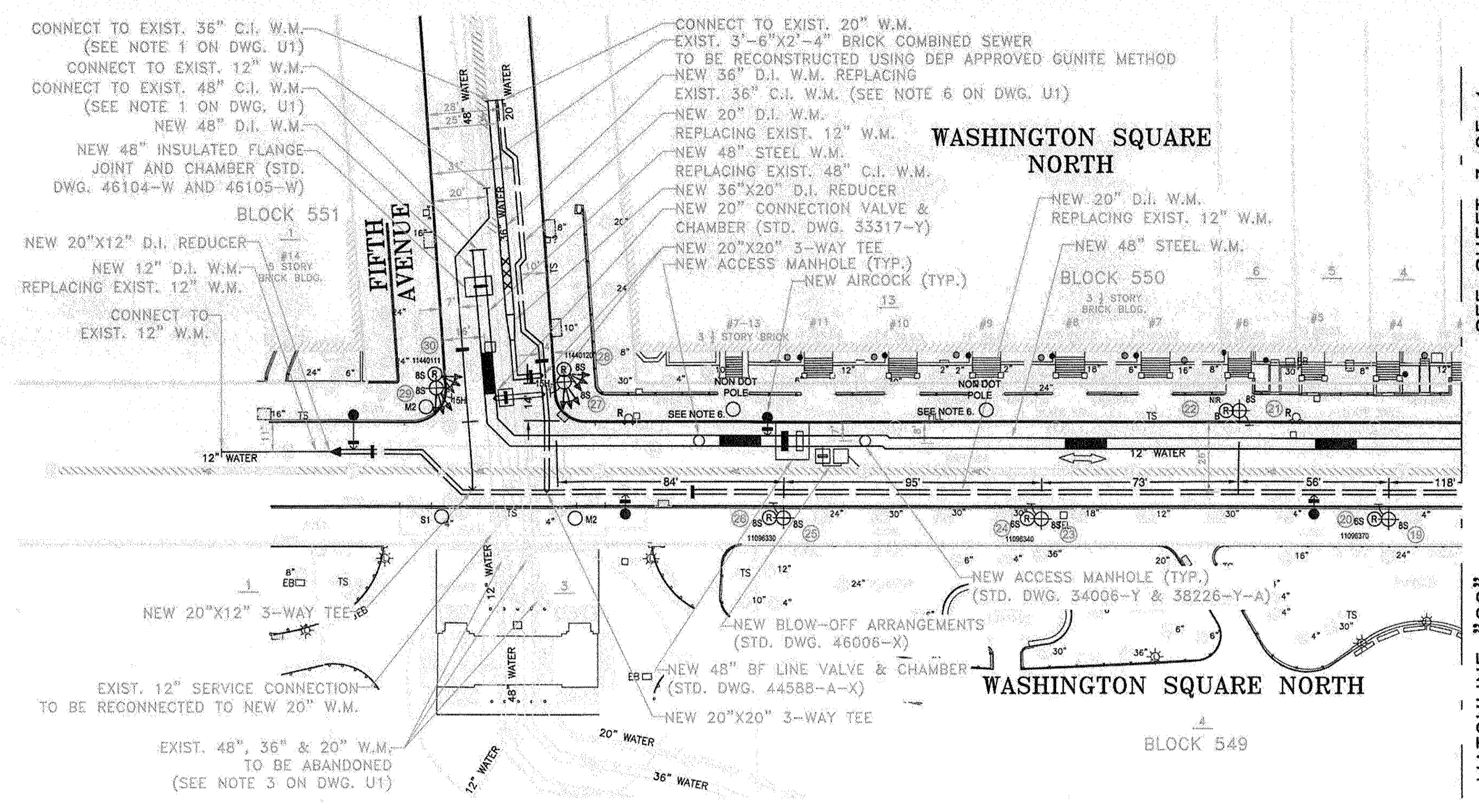
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NOTE: ALL ELEVATIONS REFER TO THE BOROUGH OF MANHATTAN DATUM, WHICH IS 2.750 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY.

RELEASED
JAN 28 2014

NO.	DATE.	BY	DESCRIPTIONS	I.A.S.
REVISIONS				
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION DIVISION OF STREET LIGHTING				
CONTRACT NO: MED-608			JOB NO.	
WATER MAIN WORK AT WASHINGTON SQUARE PARK MANHATTAN				
PROJ. ENG.	SECT. ENG.	CHIEF	CONTROL NO.	
A. PATEL, P.E.	Y. ROCY	A. PATEL, P.E.		
DATE 01/08/2014	SCALE: 1" = 30'	SHEET 3 OF 4	DRAWING NO. M31939	
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN				
PROJECT ID: MED608		DATE: 1/8/14	SHEET 16 OF 24	SL3/SL4

KEY NUMBER ON THIS SHEET: 11 TO 18.

TOPOGRAPHIC SURVEY PREPARED BY: LICENSED LAND SURVEYOR	DESIGNED _____ DRAWN _____ CHECKED _____	SCALE AS SHOWN CADD FILE: MED608-SL1-SL4	MIKHAIL KLIGER ENGINEER-IN-CHARGE GEORGE FRANZ DIRECTOR	P.E. P.E.	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	STREET LIGHTING PLAN	WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN
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SEE SHEET 3 OF 4
MATCHLINE "CC"

PLAN
SCALE: 1" = 30'

RELEASED
JAN 28 2014

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.

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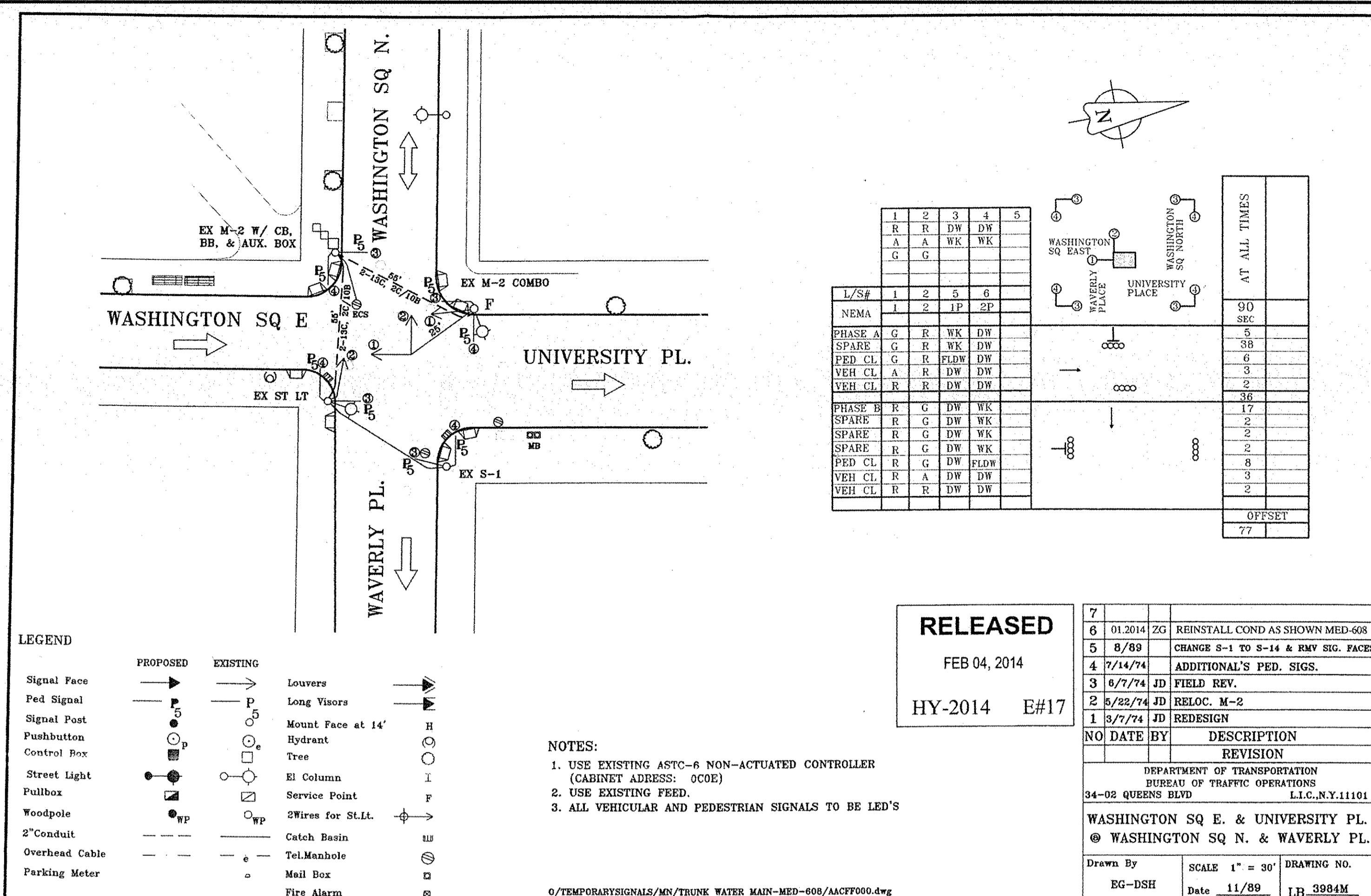
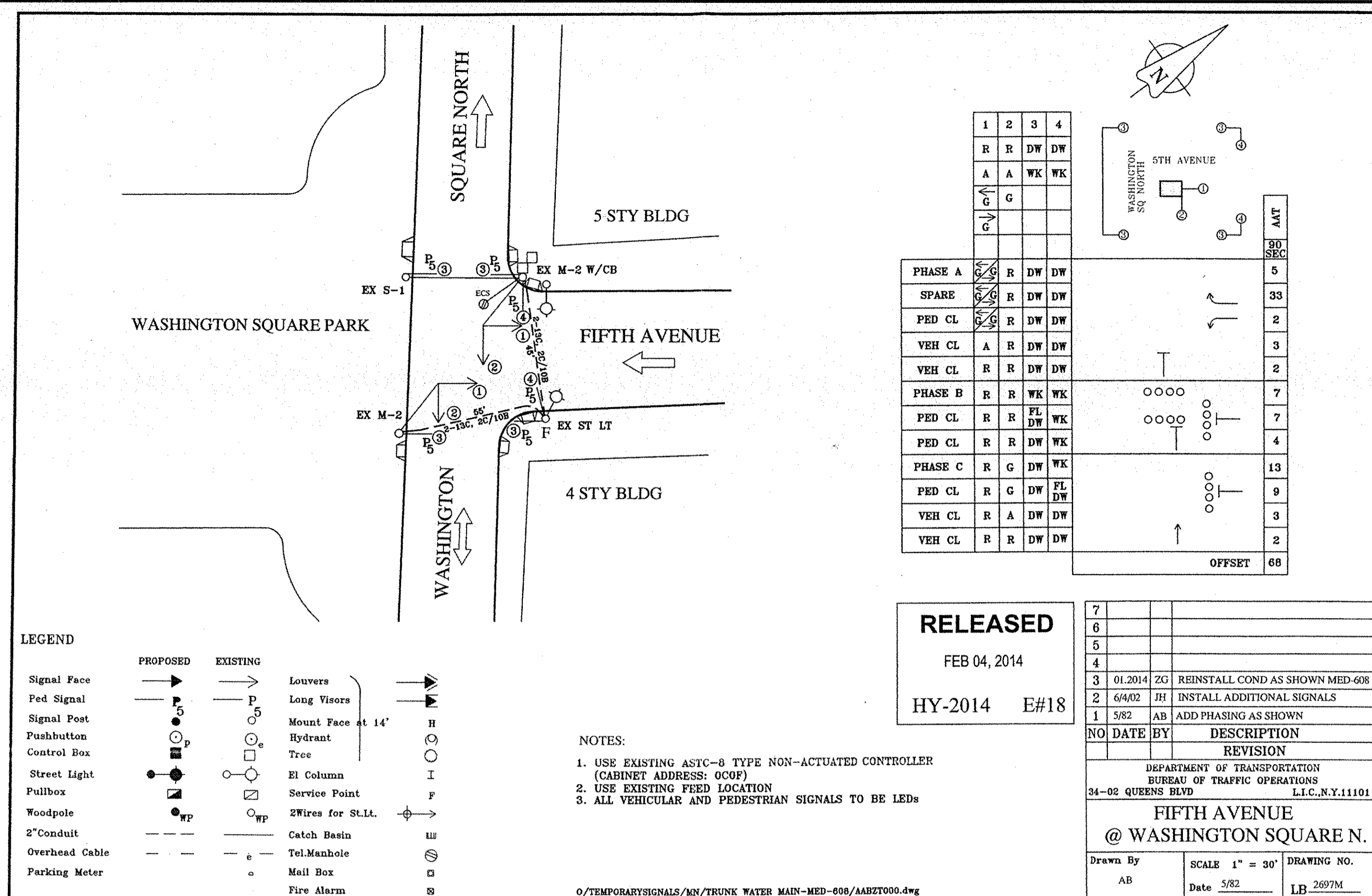
FIELD SURVEY WAS COMPLETED IN: JUNE, 2009

NOTE: HORIZONTAL COORDINATES BASED ON THE BOROUGH OF MANHATTAN COORDINATE SYSTEM. THE BOROUGH MONUMENT AT THE SW CORNER OF THE INTERSECTION OF THOMPSON ST AND WEST 3RD ST WAS USED TO TIE INTO THE BOROUGH OF MANHATTAN COORDINATE SYSTEM.
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KEY NUMBER ON THIS SHEET: 19 TO 30

TOPOGRAPHIC SURVEY PREPARED BY: LICENSED LAND SURVEYOR	DESIGNED _____ DRAWN _____ CHECKED _____	SCALE AS SHOWN CADD FILE: MED608-SL1-SL4	MIKHAIL KLIGER ENGINEER-IN-CHARGE GEORGE FRANZ DIRECTOR	P.E. P.E.	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	STREET LIGHTING PLAN	PROJECT ID: MED608	DATE: 1/8/14	SHEET 17 OF 24	SL4 SL4
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NO.	DATE	BY	DESCRIPTIONS	I.A.S.
REVISIONS				
CITY OF NEW YORK DEPARTMENT OF TRANSPORTATION DIVISION OF STREET LIGHTING				
CONTRACT NO: MED-608			JOB NO.	
WATER MAIN WORK AT WASHINGTON SQUARE PARK MANHATTAN				
PROJ. ENG.	SECT. ENG.	CHIEF	CONTROL NO.	
A. PATEL, P.E.	Y. ROC	G. PATEL, P.E.		
DATE 01/08/2014	SCALE: 1" = 30'	SHEET 4 OF 4	DRAWING NO. M31939	
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN				
PROJECT ID: MED608		DATE: 1/8/14	SHEET 17 OF 24	SL4 SL4



CABINET ADDRESS: 0C0F

LOAD SWITCHES ASSIGNMENT

L/S1	L/S2	L/S3	L/S4	L/S5	L/S6
R ₁	R ₂				
A ₁	A ₂				
G ₁ /G ₂	G ₂				
L/S9	L/S10				
DW ₁	DW ₂				
WK ₁	WK ₂				

FLASHING OUTPUT CONFIGURATION

FP1 = A FP5 = R
FP2 = R FP6 = R
FP3 = R
FP4 = R

CONFLICT MONITOR PROGRAMMING

a) DIODES CUT
2-10, 9-10

b) YELLOW DISABLE JUMPERS:
9 & 10

c) DIP SWITCHES ASSIGNMENT:

SW 1	CONFIG SW (FIXED)	SW 2
ON	X X X X X X X X X X	X X X X X X X X X X
OFF		

NOTES: NON-ACTUATED
CABINET TYPE: ASTC-8

CITY OF NEW YORK
BUREAU OF TRAFFIC OPERATIONS
34-02 Queens Blvd, Long Island City, NY 11101

5 AVENUE @ WASHINGTON SQUARE NORTH

Prep: JHK Eng Date 08/03/12
Appr: D Nguyen Date 2.18.12

CABINET ADDRESS: 0C0E

LOAD SWITCHES ASSIGNMENT

L/S1	L/S2	L/S3	L/S4	L/S5	L/S6
R ₁	R ₂			DW ₁	DW ₂
A ₁	A ₂				
G ₁	G ₂			WK ₁	WK ₂

FLASHING OUTPUT CONFIGURATION

FP1 = A
FP2 = R
FP3 = R
FP4 = R

CONFLICT MONITOR PROGRAMMING

a) DIODES CUT
1-13, 2-14

b) YELLOW DISABLE JUMPERS:
13 & 14 & 15 & 16

c) DIP SWITCHES ASSIGNMENT:

SW 1	CONFIG SW (FIXED)	SW 2
ON	X X X X X X X X X X	X X X X X X X X X X
OFF		

NOTES: NON-ACTUATED
CABINET TYPE: ASTC-6

CITY OF NEW YORK
BUREAU OF TRAFFIC OPERATIONS
34-02 Queens Blvd, Long Island City, NY 11101

UNIVERSITY PL. @ WASHINGTON SQUARE NORTH

Prep: JHK Eng Date 03/09/12
Appr: A Ibrahim Date 02-12-12

L/S #	1	2	3	4	5	6	7	8	AAT
NEMA	1	2	3	4	5	6	7	8	90 SEC
PHASE A	G/G	R	DW	DW					5
SPARE	G/G	R	DW	DW					33
PED CL	G/G	R	DW	DW					2
VEH CL	A	R	DW	DW					45
VEH CL	R	R	DW	DW					7
PHASE B	R	R	WK	WK					4
PED CL	R	R	WK	WK					18
PED CL	R	R	DW	WK					13
PHASE C	R	G	DW	WK					9
PED CL	R	G	DW	FLDW					3
VEH CL	R	A	DW	DW					2
VEH CL	R	R	DW	DW					27

CITY OF NEW YORK
BUREAU OF TRAFFIC OPERATIONS
34-02 Queens Blvd, Long Island City, NY 11101

5 AVENUE @ WASHINGTON SQUARE NORTH

Prep: JHK Eng Date 08/03/12
Appr: D Nguyen Date 2.18.12

L/S #	1	2	3	4	5	6	7	8	AAT
NEMA	1	2	3	4	5	6	7	8	90 SEC
PHASE A	G	R	WK	DW					5
SPARE	G	R	WK	DW					38
PED CL	G	R	FLDW	DW					6
VEH CL	A	R	DW	DW					3
VEH CL	R	R	DW	DW					2
PHASE B	R	G	DW	WK					54
SPARE	R	G	DW	WK					17
SPARE	R	G	DW	WK					2
SPARE	R	G	DW	WK					2
PED CL	R	G	DW	FLDW					2
VEH CL	R	A	DW	DW					8
VEH CL	R	R	DW	DW					3
VEH CL	R	R	DW	DW					2

CITY OF NEW YORK
BUREAU OF TRAFFIC OPERATIONS
34-02 Queens Blvd, Long Island City, NY 11101

UNIVERSITY PLACE @ WASHINGTON SQUARE NORTH

Prep: JHK Eng Date 03/09/12
Appr: A Ibrahim Date 02-12-12

TOPOGRAPHIC SURVEY PREPARED BY: _____

DESIGNED: _____

DRAWN: _____

CHECKED: _____

SCALE AS SHOWN

CADD FILE: MED608-TS1

MIKHAIL KLIGER
ENGINEER-IN-CHARGE

GEORGE FRANZ
DIRECTOR

P.E.

P.E.

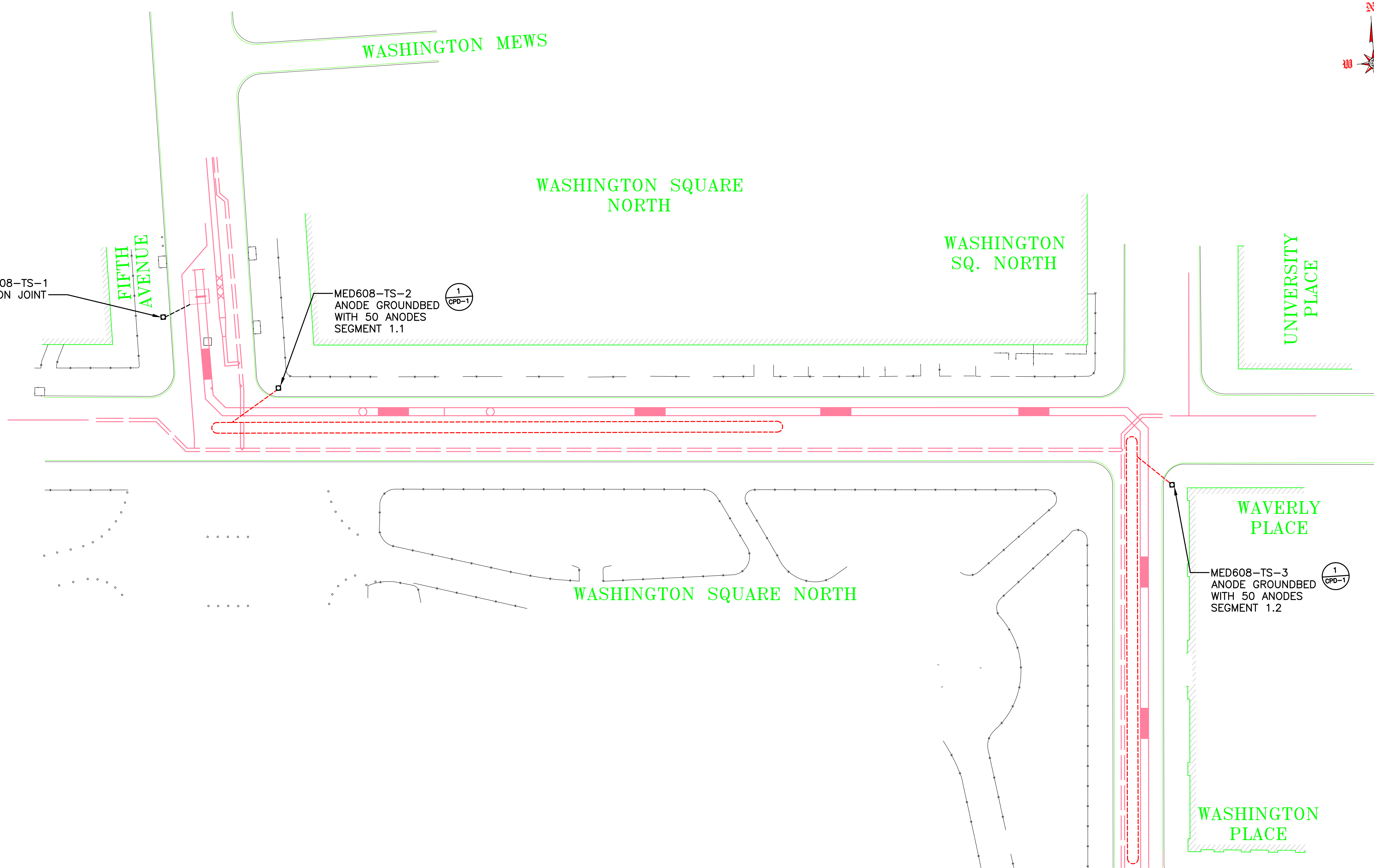
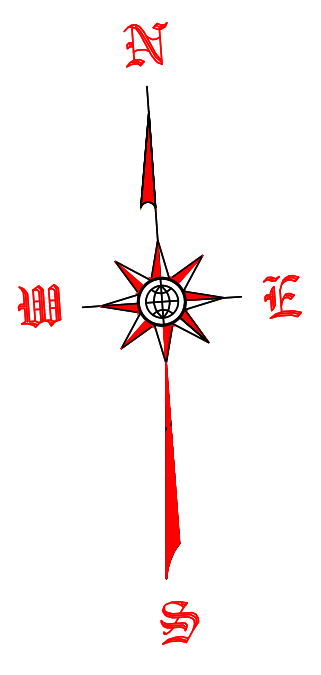
CITY OF NEW YORK
DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

TRAFFIC SIGNAL PLAN

NO.	DATE	DESCRIPTIONS	BY	APPR'D

WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK
BOROUGH OF MANHATTAN

PROJECT ID: MED608 DATE: 7/25/14 SHEET 18 OF 24 TS/TS1



CATHODIC PROTECTION PLAN
SEGMENTS 1.1 & 1.2
MED608-CP-1

MATCH LINE SEE MED608 CP-2

NO.	DATE	DESCRIPTIONS	BY	APPR'D

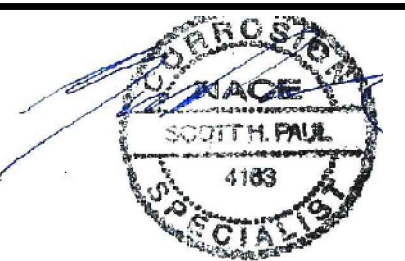
CATHODIC PROTECTION SYSTEM

PROJECT ID: MED608-CP-1 DATE: 05/08/2014 SHEET 19 OF 24 1/3



25 SOUTH STREET
HOPKINTON, MA 01748
(508) 435-0090
www.corrtech-inc.com

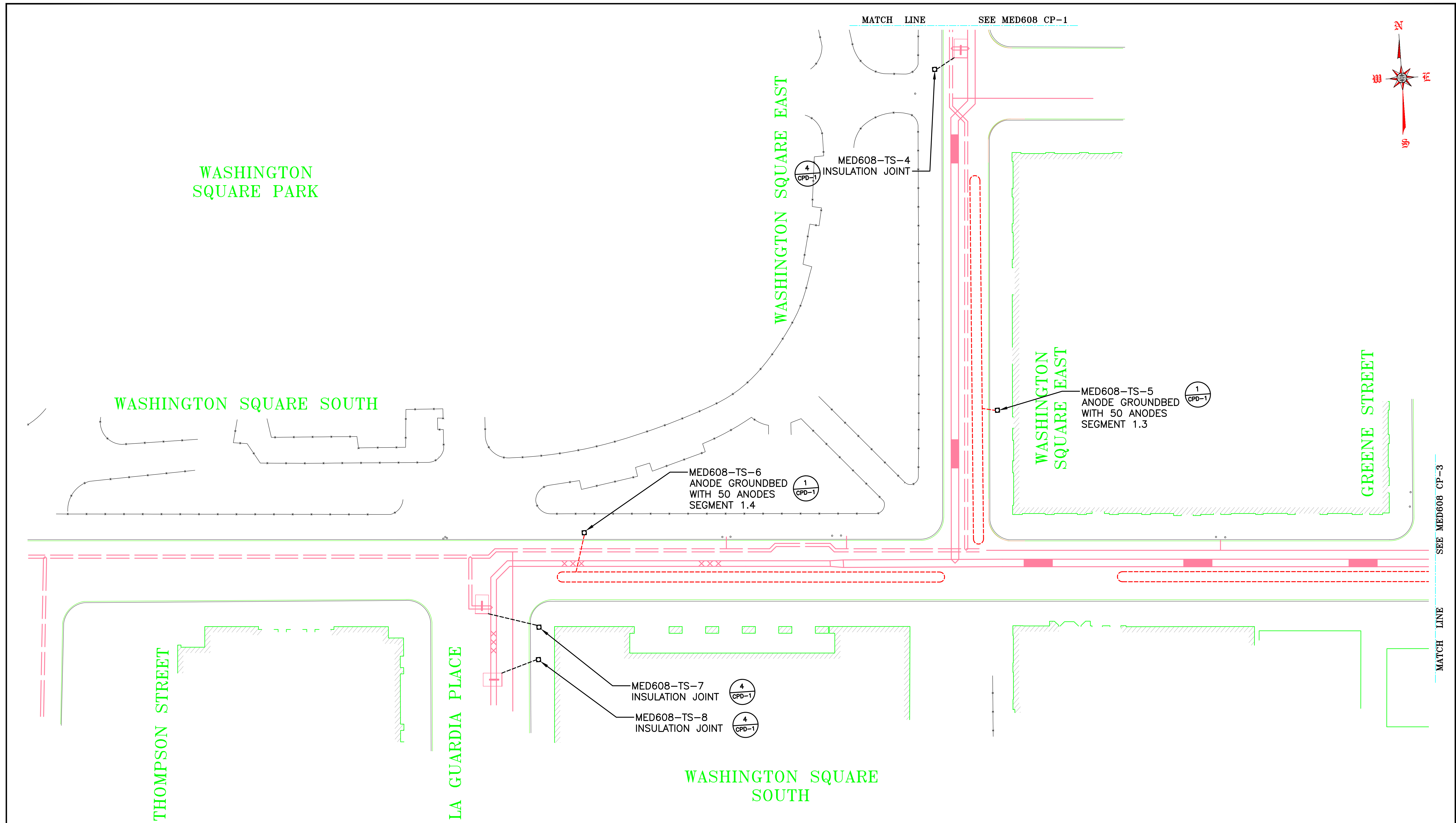
DESIGNED SCOTT PAUL
DRAWN JAMES B. DAVIS
CHECKED JAY PAUL



ENGINEER-IN-CHARGE
DIRECTOR

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

TRUNK MAIN FOR RECONSTRUCTION OF
 WASHINGTON SQUARE, PHASE I
 BOROUGHS OF MANHATTAN



CATHODIC PROTECTION PLAN
SEGMENTS 1.3 & 1.4
MED608-CP-2

NO.	DATE	DESCRIPTIONS REVISIONS	BY	APPR'D

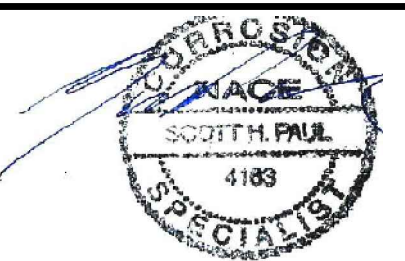
CATHODIC PROTECTION SYSTEM

PROJECT ID: MED608-CP-2 DATE: 05/08/2014 SHEET 20 OF 24 2/3



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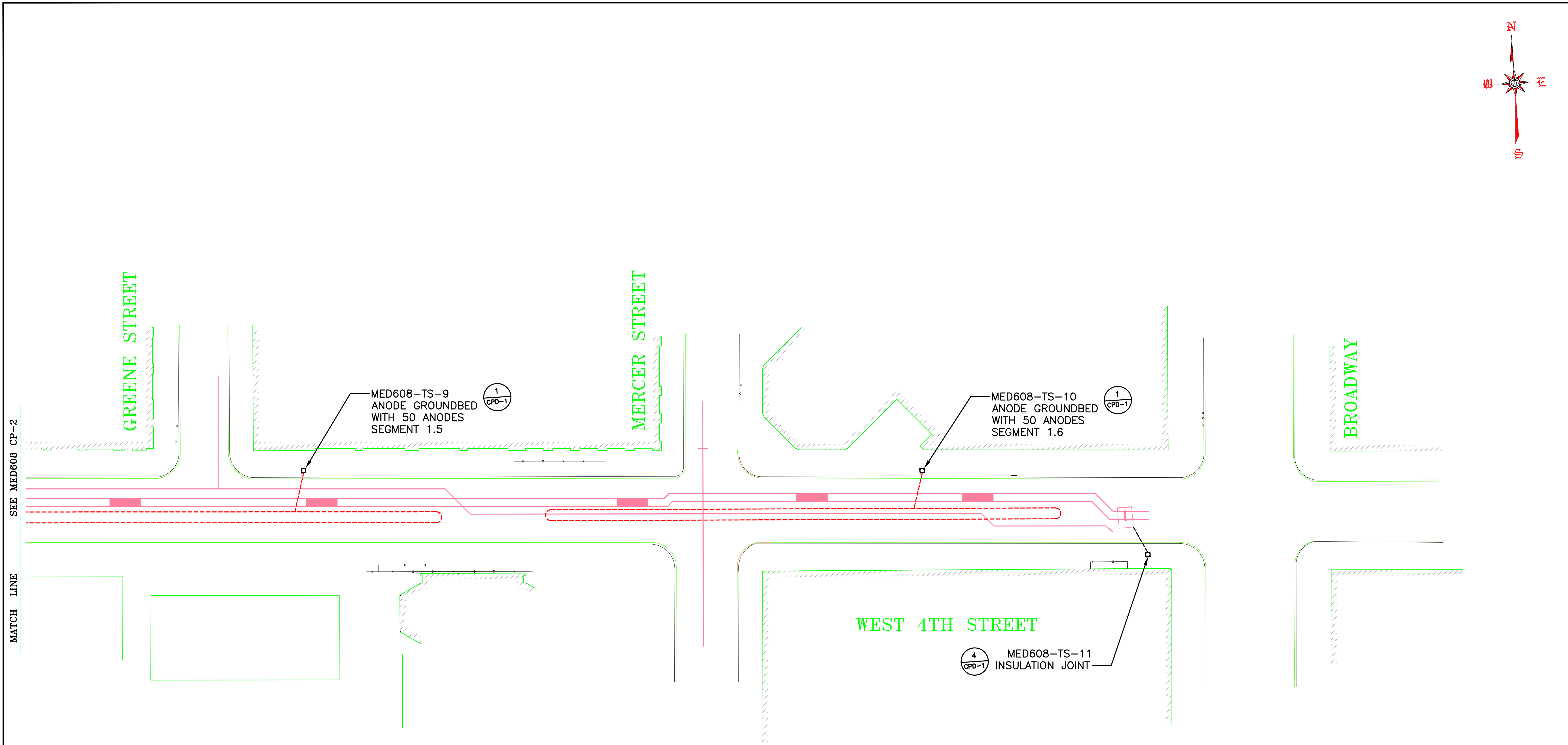
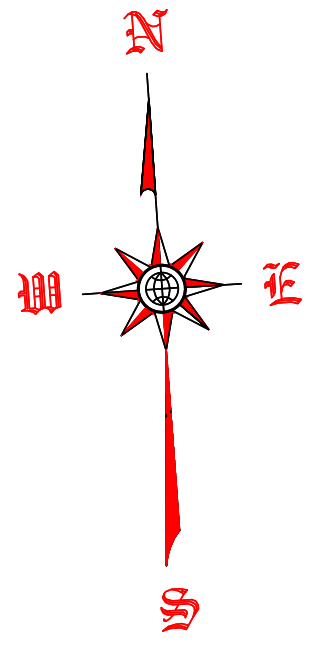
DESIGNED SCOTT PAUL
 DRAWN JAMES B. DAVIS
 CHECKED JAY PAUL



ENGINEER-IN-CHARGE
 DIRECTOR

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

TRUNK MAIN FOR RECONSTRUCTION OF
 WASHINGTON SQUARE, PHASE I
 BOROUGH OF MANHATTAN



CATHODIC PROTECTION PLAN
 SEGMENTS 1.5 & 1.6
 MED608-CP-3

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				

CORRTECH
 25 SOUTH STREET
 HOPKINTON, MA 01748
 (508) 435-0090
 www.corrtech-inc.com

DESIGNED SCOTT PAUL
 DRAWN JAMES B. DAVIS
 CHECKED JAY PAUL

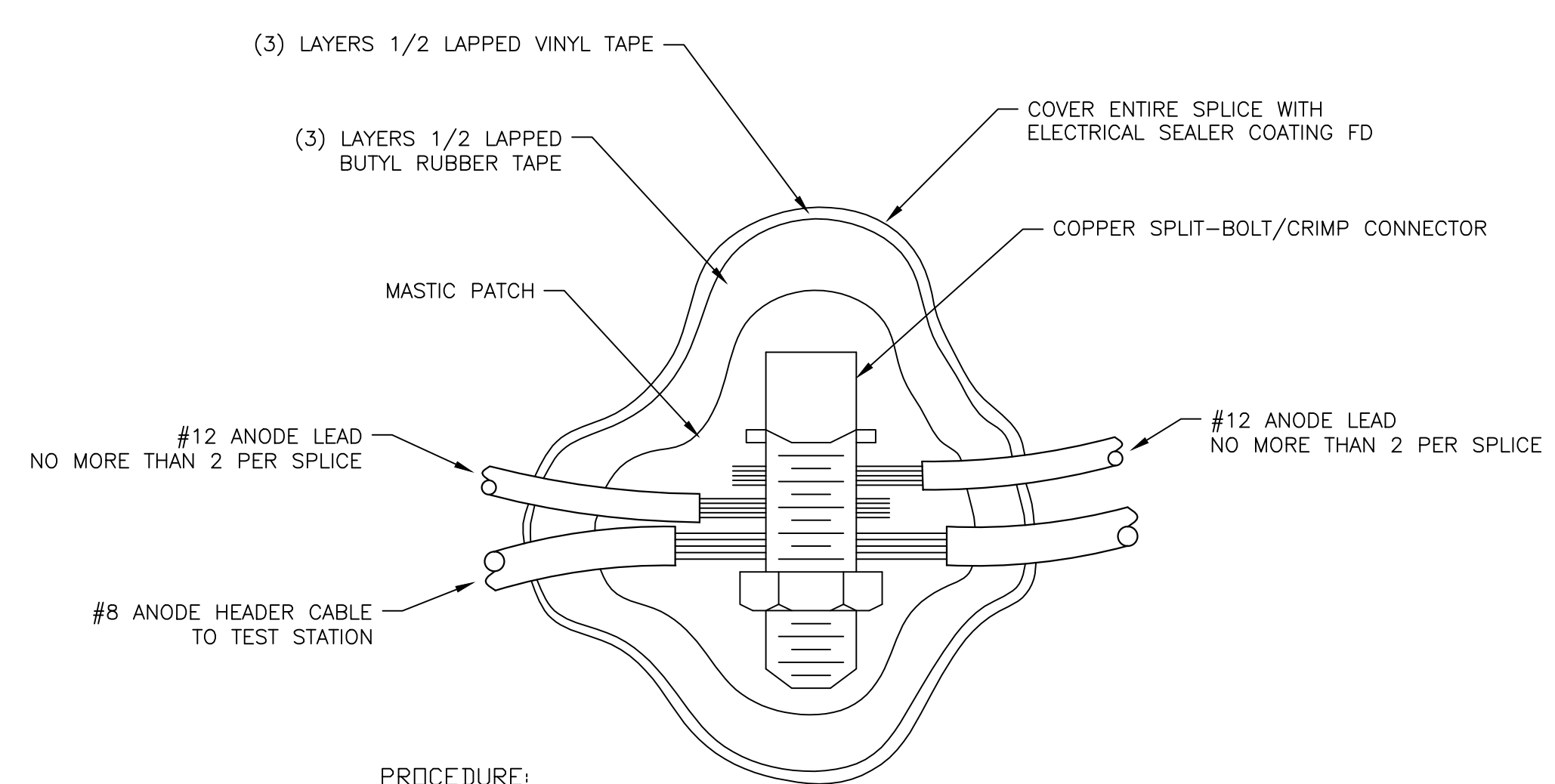
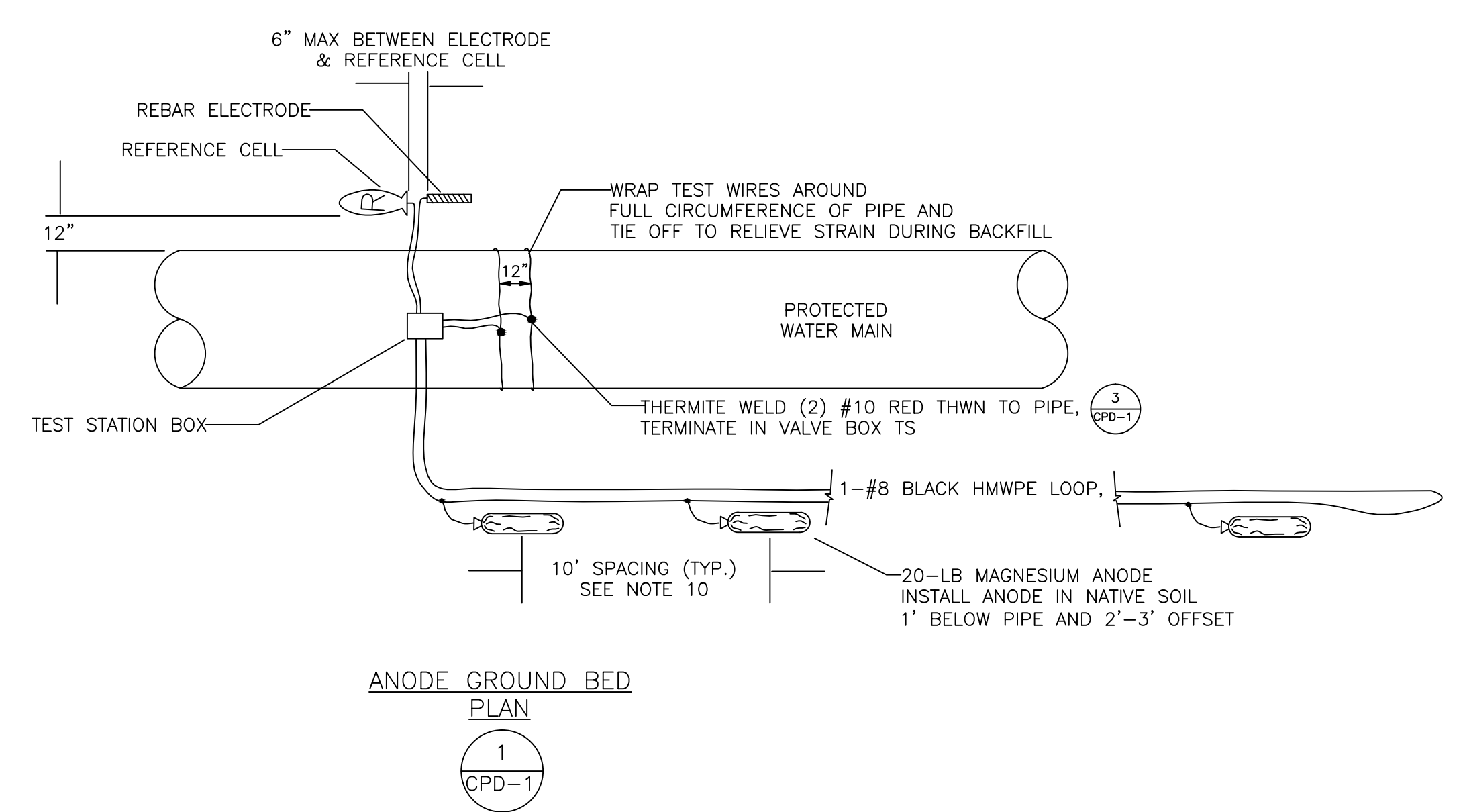
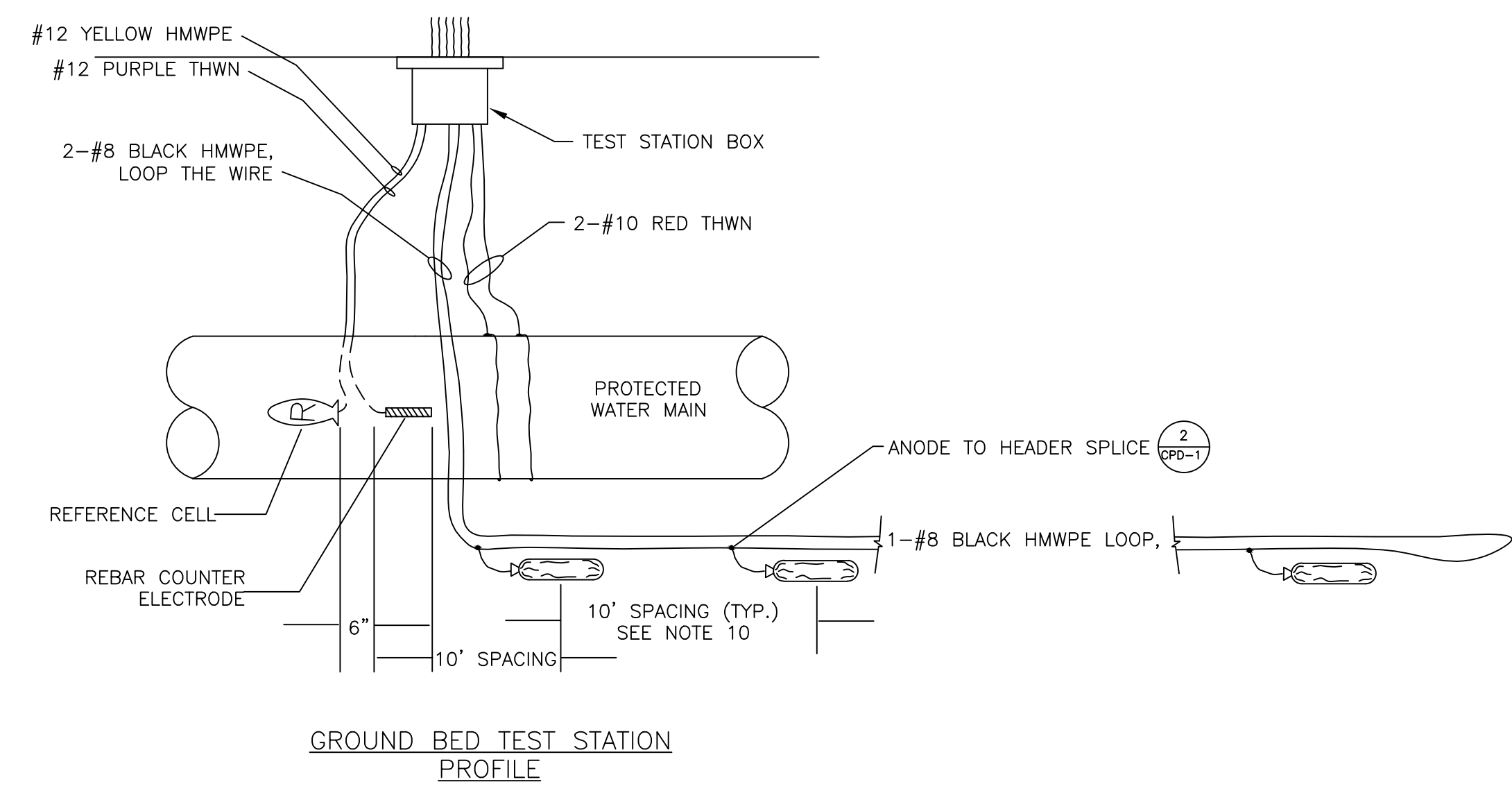
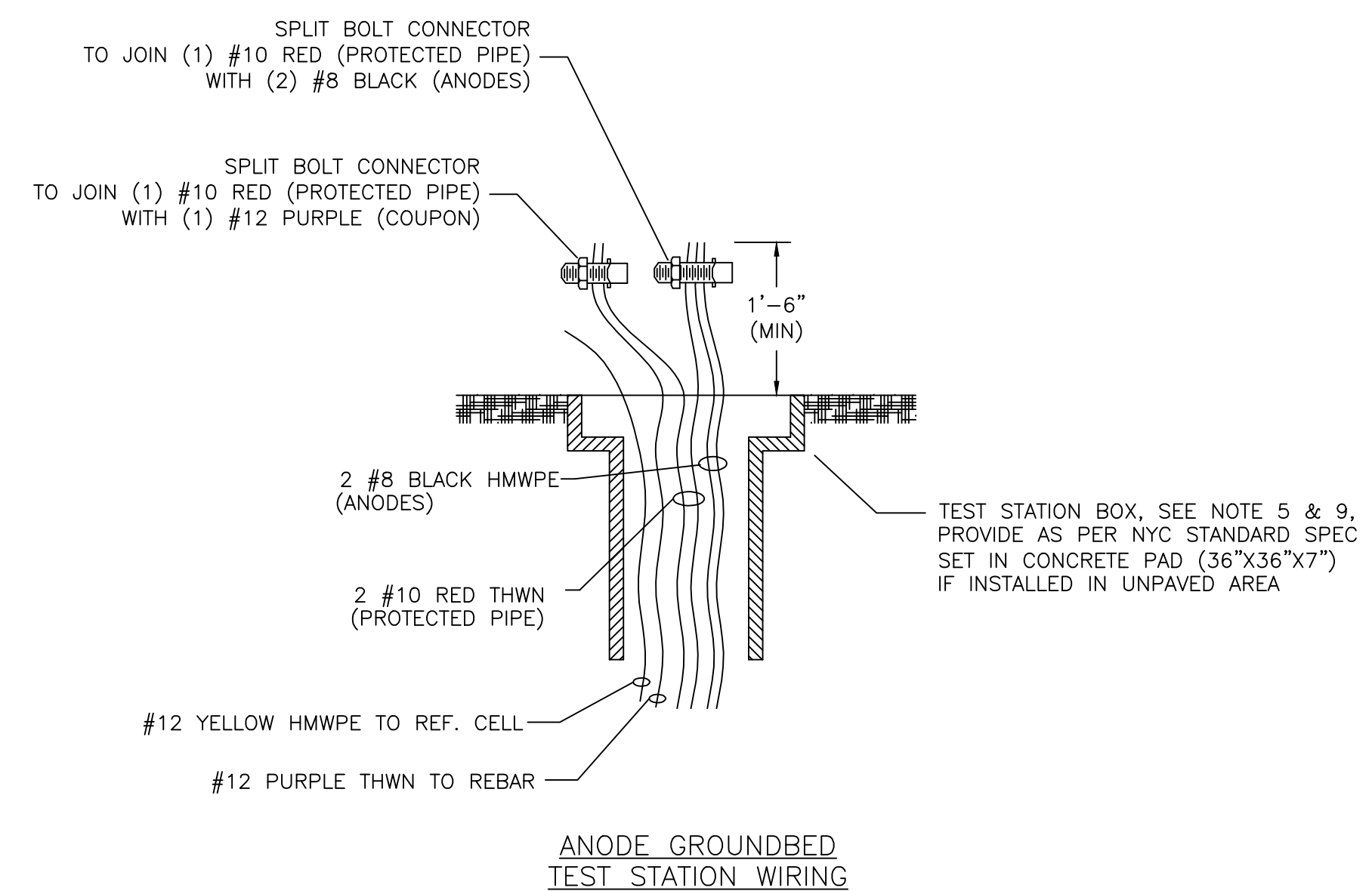
ENGINEER-IN-CHARGE
 DIRECTOR

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

TRUNK MAIN FOR RECONSTRUCTION OF
 WASHINGTON SQUARE, PHASE I
 BOROUGH OF MANHATTAN

CATHODIC PROTECTION SYSTEM

PROJECT ID: MED608-CP-3 DATE: 05/08/2014 SHEET 21 OF 24 3/3



PROCEDURE:

CUT BACK CABLE INSULATION TO SUITABLE LENGTH WITHOUT NICKING COPPER WIRE STRANDS

SAND CABLE INSULATION ALONG 3' FROM END OF THE WIRE

CONNECT WIRES WITH SPLIT-BOLT CONNECTOR OR C-CRIMP AND SECURE WITH PROPER TORQUE OR RECOMMENDED CRIMP PRESSURE

ENCAPSULATE THE WIRE CONNECTION WITH THE SQUARE MASTIC SPLICING PATCH, KNEADING THE MASTIC SEALANT SO THAT IT COVERS THE ENTIRE SPLICE AND BONDS COMPLETELY TO ITSELF TO FORM THE PRIMARY BARRIER TO WATER INGRESS

UNDER TENSION, WRAP 3M SCOTCH 130C RUBBER TAPE AROUND THE MASTIC PATCH, WITH 1/2" OVERLAP PROVIDE MINIMUM OF 3 LAYERS OF RUBBER TAPE

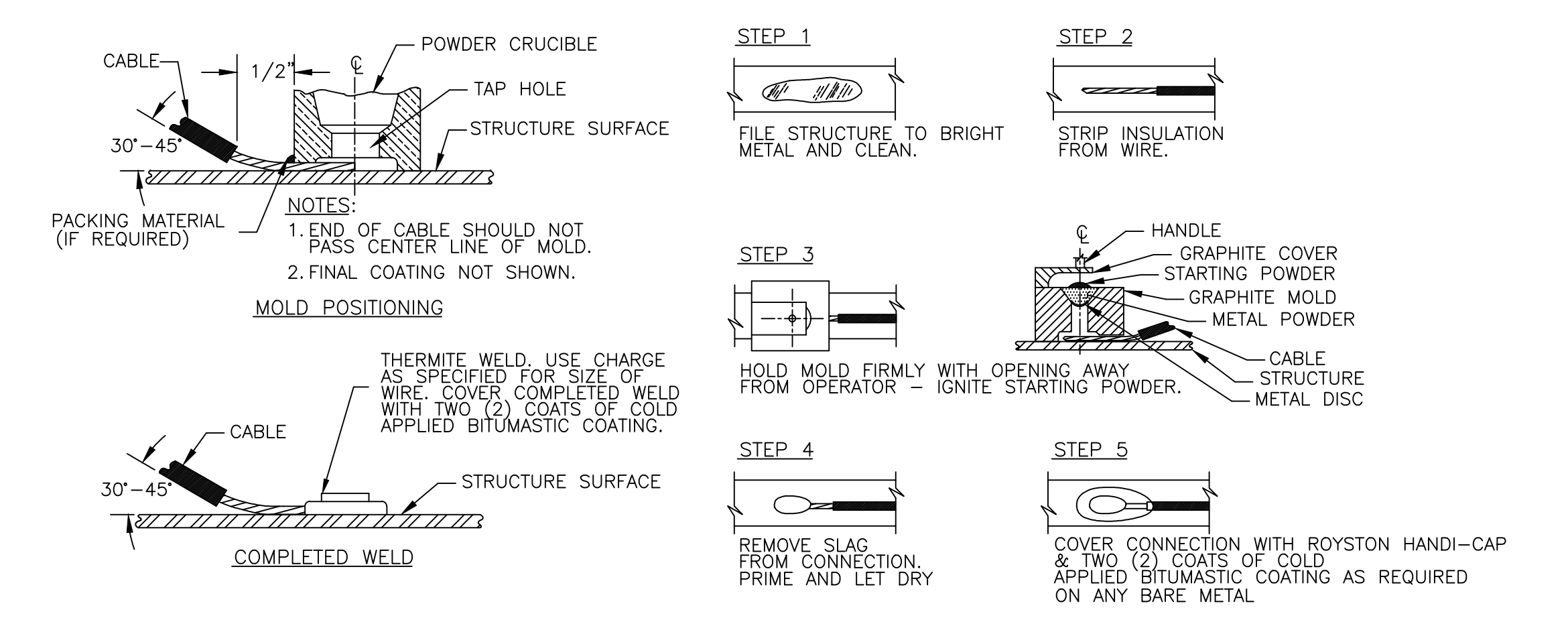
UNDER TENSION, WRAP VINYL TAPE AROUND RUBBER TAPE, WITH 1/2" OVERLAP PROVIDE MINIMUM OF 3 LAYERS OF VINYL TAPE

COAT ENTIRE SPLICE AND 1' OF WIRE CABLES ENTERING SPLICE WITH 3M SCOTCHKOTE ELECTRICAL COATING AND ALLOW TO DRY

ANODE TO HEADER CABLE SPLICE

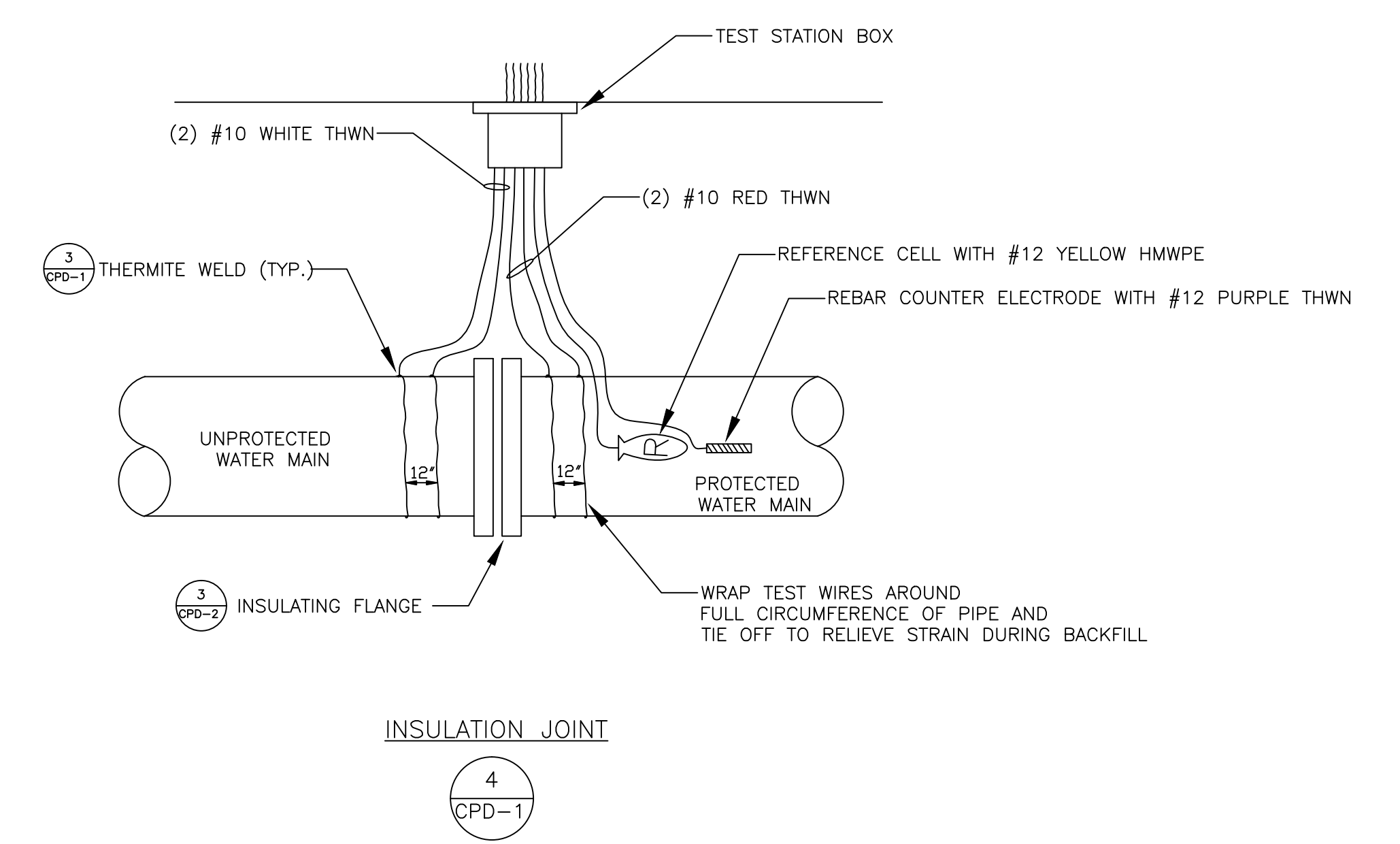
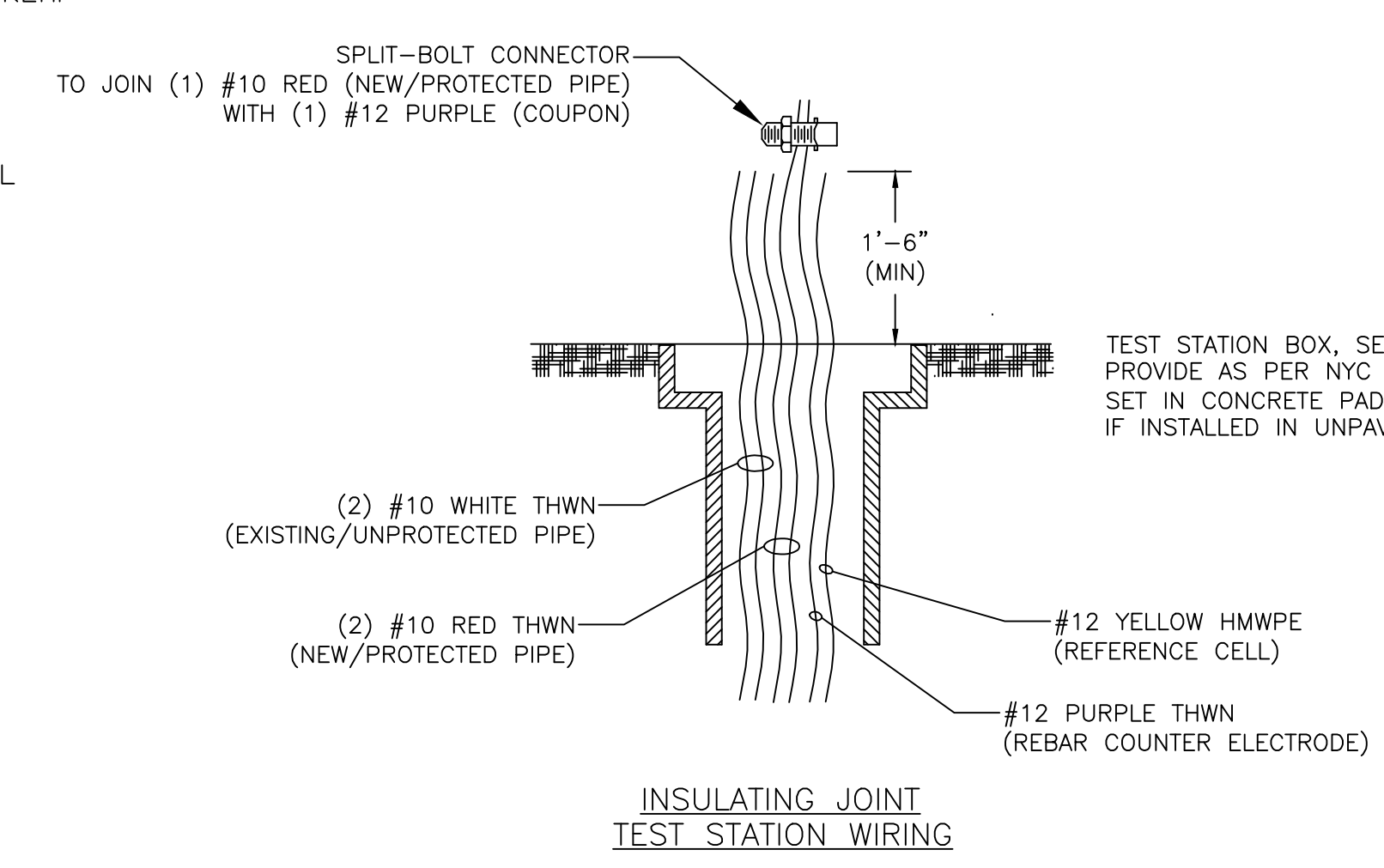
(2) CPD-1

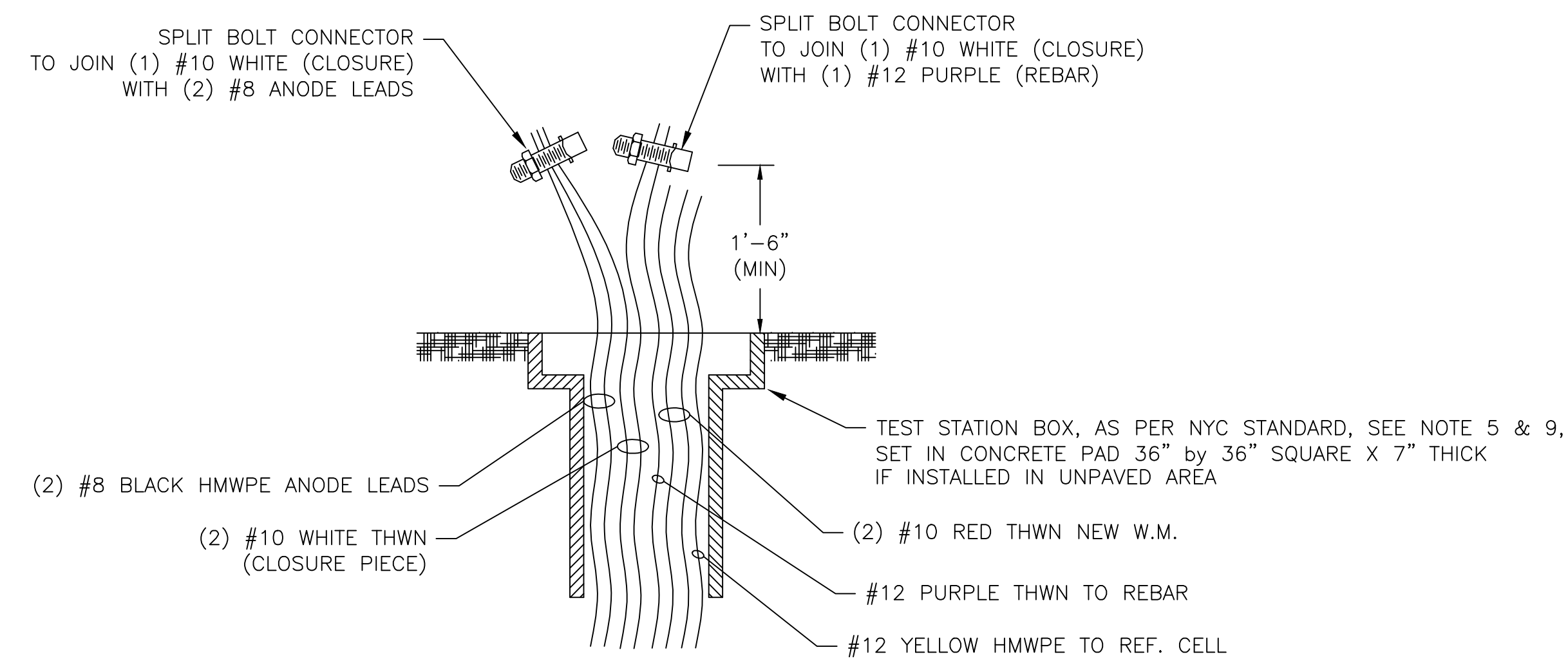
- NOTES:**
- IDENTIFY TEST STATION NUMBERS IN ACCORDANCE WITH THESE DESIGN DRAWINGS.
 - ALL BURIED STEEL SHALL BE TAPE COATED IN ACCORDANCE WITH PROJECT SPECIFICATION AND TESTED PRIOR TO BACKFILL.
 - ANODE LOCATIONS ARE GENERAL AND MAY BE RELOCATED TO SUIT FIELD CONDITIONS UPON APPROVAL OF THE ENGINEER.
 - NOTE THAT LOCATIONS OF OTHER UNDERGROUND UTILITIES ARE NOT DEPICTED ON THIS DRAWING. CONTRACTOR IS RESPONSIBLE FOR LOCATING THESE UTILITIES PRIOR TO COMMENCING WORK.
 - TEST STATION BOXES TO BE INSTALLED IN SIDEWALK AT CURB LINE. PROVIDE 1-INCH BY 2-INCH ACRYLIC LABEL ENGRAVED WITH LABELS ACCORDING TO TEST STATION NUMBERS ON DESIGN DRAWINGS WITH 1/4-INCH WHITE LETTERS ON A BLACK BACKGROUND THAT SHALL BE ZIP TIED TO THE TWO RED PIPE WIRES.
 - TEST STATIONS TO BE LOCATED IN FIELD. FINAL LOCATIONS TO BE SHOWN ON AS-BUILT PLANS.
 - TEST STATIONS TO BE PROVIDED BY CONTRACTOR.
 - FINAL LOCATIONS OF ALL ANODES, CADWELDS, REFERENCE ELECTRODES, AND COUNTER ELECTRODES TO BE SHOWN ON AS-BUILT PLANS.
 - ROUTE ALL WIRING FOR EACH TEST STATION IN A 3" SCHEDULE 40 PVC CONDUIT, FROM STEEL WATER MAIN TO TEST BOX.
 - GIVEN FIELD CONDITIONS, ANODE SPACING MAY BE REDUCED TO NO LESS THAN TWO FEET OR ANODES MAY BE PLACED ON EITHER SIDE OF MAIN.
 - ANODES TO BE BACKFILLED IN CLEAN, NATIVE SOIL; FREE OF DEBRIS, ROCKS, AND FLOW FILL.



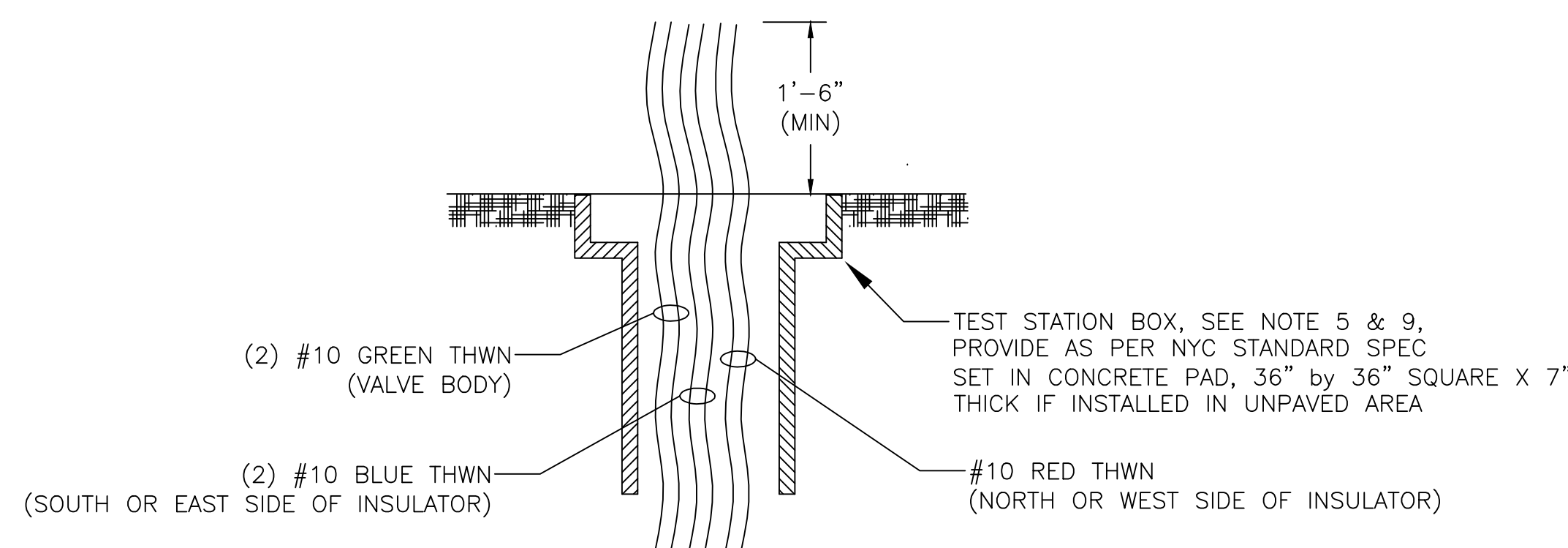
THERMITE WELD

(3) CPD-1

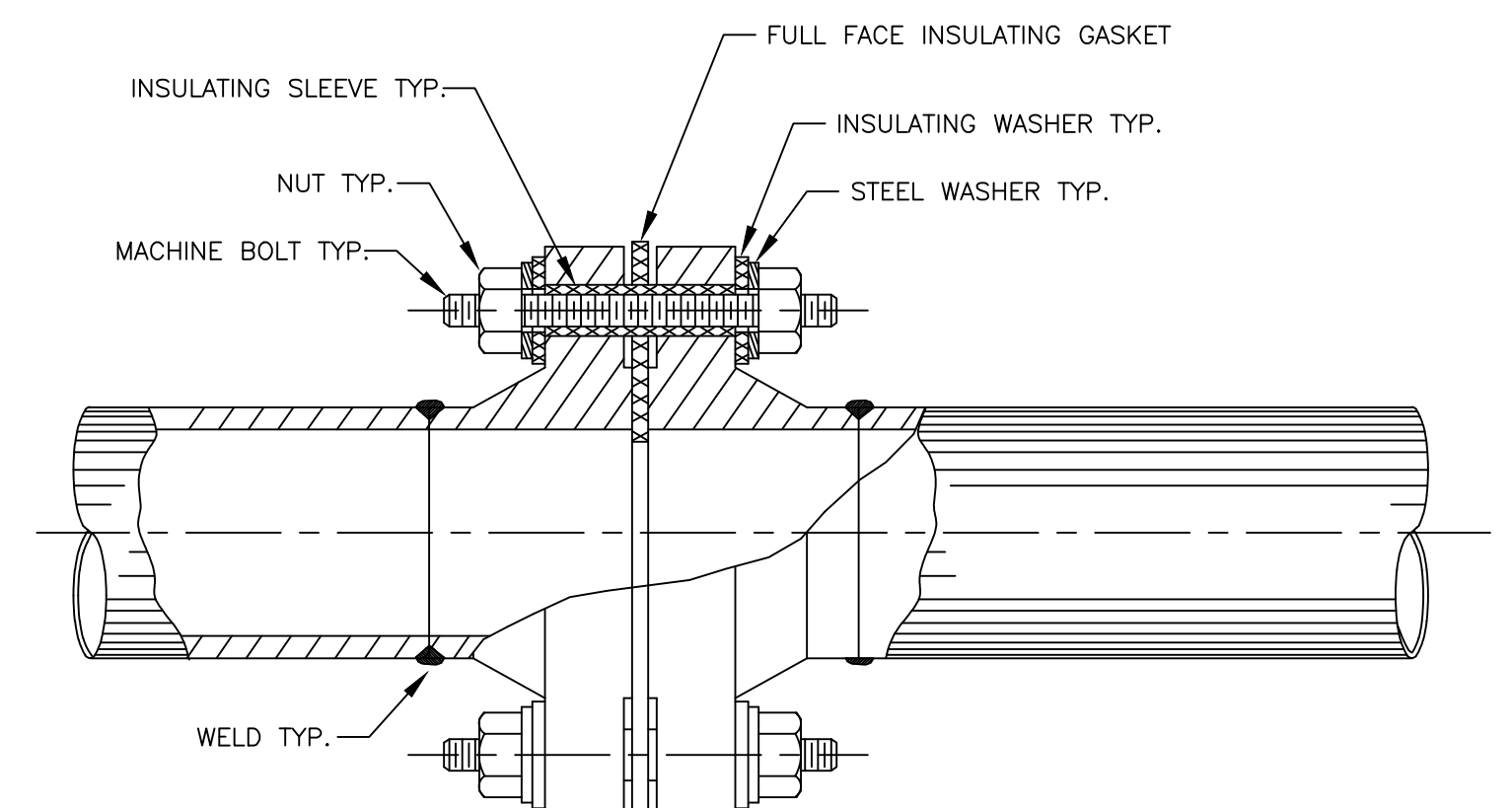




CLOSURE TEST STATION WIRING



BUTTERFLY VALVE TEST STATION WIRING



PROCEDURE:

THIS PROCEDURE APPLIES TO ALL BURIED INSULATING FLANGE ASSEMBLIES.

PROVIDE PROTECTIVE COVERING, NOT REQUIRED FOR INSULATORS IN VAULTS OF INSULATED FLANGE COMPONENTS AS FOLLOWS:

THE FLANGE AND GASKET AREA OF THE INSULATING FLANGES SHALL BE FIRST TAPED AROUND THE OUTER FLANGE EDGE WITH GRAY COLD APPLIED PEAL AND STICK TAPE.

ONCE IN PLACE OVER THE GAP OF FLANGE INTERFACE, PUNCH INSERT/EXIT HOLES IN THE FLANGE TAPE AT APPROXIMATELY 1" TO 2" INTERVALS.

TRIM THE CARTRIDGE TIP FOR DESIRED BEAD.

INSERT THE CARTRIDGE TIP THROUGH THE HOLE AND PUMP CAULK UNTIL COATING FLOWS OVER BOLTS/SLEEVES ON BOTH SIDES.

REPEAT PROCEDURE UNTIL THE SPACE BETWEEN THE FLANGES IS FILLED COMPLETELY WITH NO VOIDS.

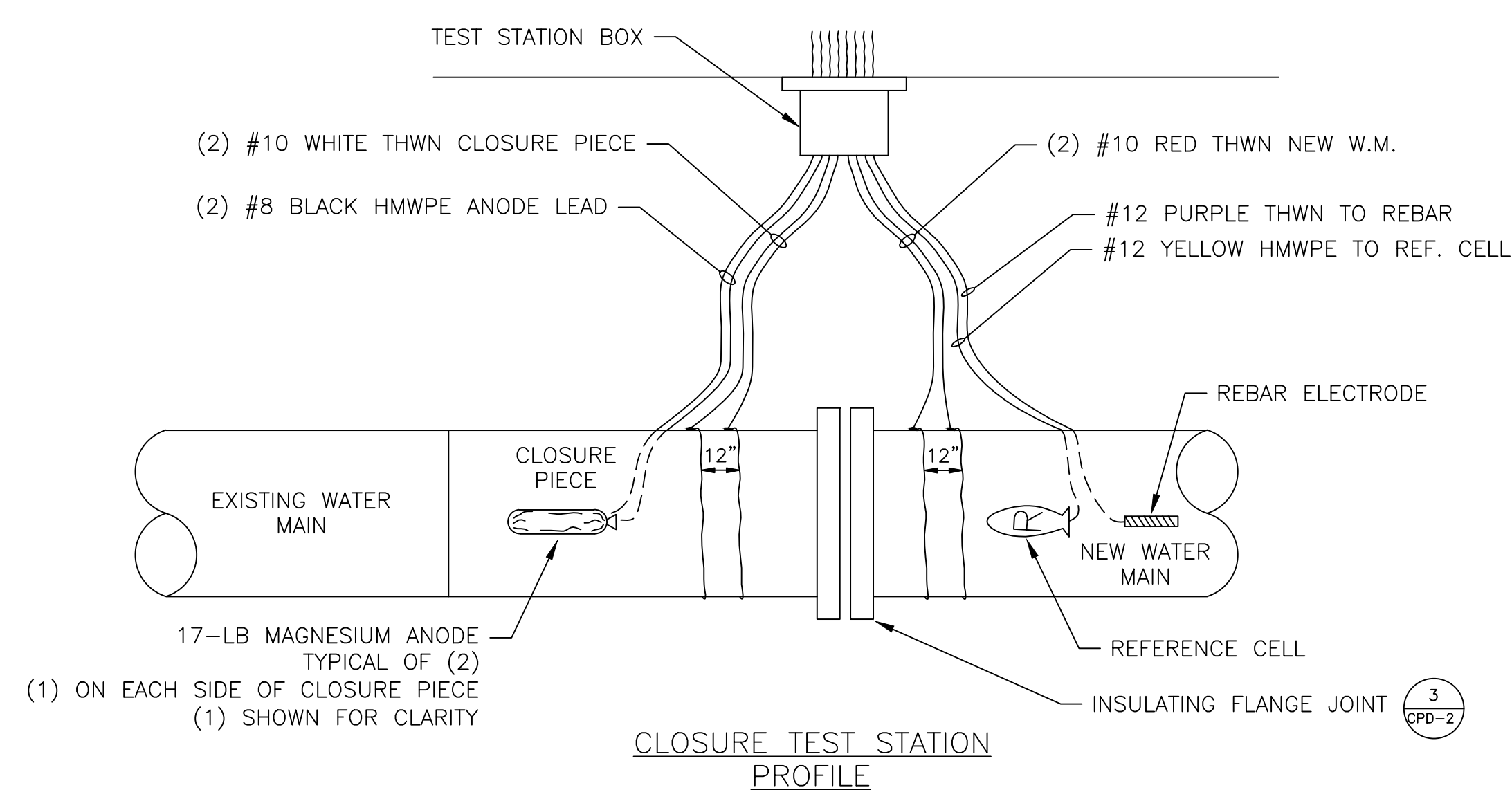
REMOVE FLANGE TAPE AND SMOOTH OUT CAULK MATERIAL.

COVER THE FLANGE EDGES WITH COLD APPLIED PEAL AND STICK TAPE TO SEAL FLANGE/GASKET MATERIAL DO NOT WRAP THE BOLTED AREA OF THE INSULATING FLANGE.

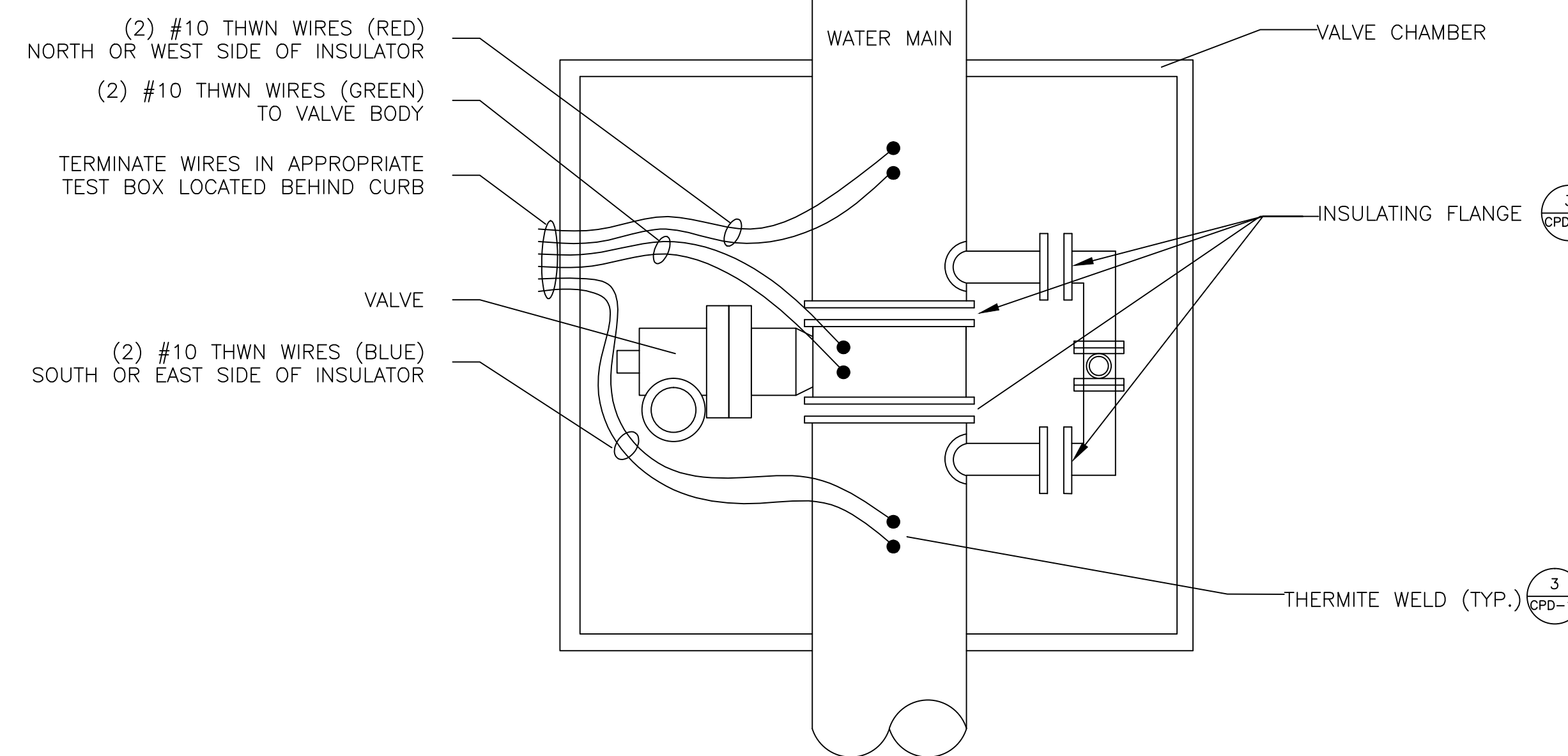
FILL SNAP ON BOLT COVER WITH CAULK AND SNAP ON TO EACH BOLT AND NUT ASSEMBLY.

INSULATING FLANGE JOINT

3
CPD-2

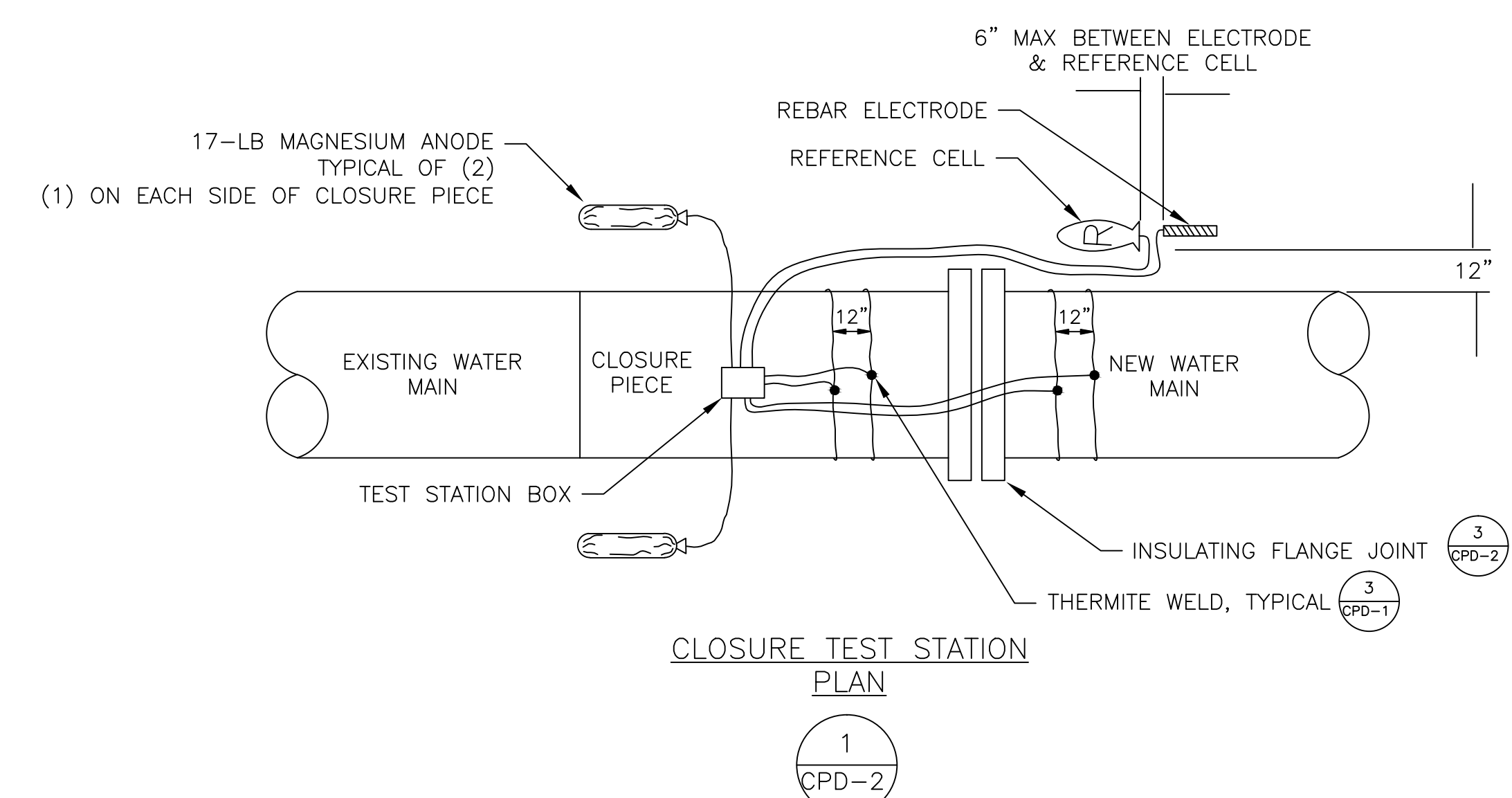


CLOSURE TEST STATION PROFILE



BUTTERFLY VALVE

2
CPD-2



CLOSURE TEST STATION PLAN

1
CPD-2



25 SOUTH STREET
HOPKINTON, MA 01748
(508) 435-0090
www.corrtech-inc.com

DESIGNED: SCOTT PAUL
DRAWN: JAMES B. DAVIS
CHECKED: JAY PAUL



ENGINEER-IN-CHARGE
DIRECTOR

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

TRUNK MAIN FOR RECONSTRUCTION OF
WASHINGTON PARK, PHASE I

BOROUGH OF MANHATTAN

CATHODIC PROTECTION SYSTEM DETAILS

PROJECT ID: MED608-CPD-2

DATE: 05/08/2014

SHEET 23 OF 24

2/3

PIPE SEGMENT BREAKDOWN:

Shaft No.	Drawing	Contract	Location	Pipe Diameters (in)	Pipe Length (ft)	Gnd beds	Anodes	Ref. Cells	Rebar
SEGMENT 1	MED608 - CP-1	MED608	5th Avenue and Washington Square	48" STEEL	1850	6	300	6	6
				36" STEEL	250				
				TOTAL 48-INCH DIA	1850				
				TOTAL 36-INCH DIA	250				
TOTAL						6	300	6	6

QUALITY CONTROL INSPECTION AND TESTING:

To ensure that the cathodic protection system is functioning properly, and that the criteria for protection as stated in NACE Recommended Practice SP0169 (latest revision) are met, field tests shall be performed by the NYC DDC NACE Corrosion Specialist in concert with and in support of the REI team. DEP-BWSO-CPQA shall be informed about the testing and, at its option, may visit the interim testing, however the responsible party for the contract i.e. DDC or DEP shall witness all final testing.

The anode to header cable splicing is a critical item and initial installation of anode and splices must be observed by the NYC DDC NACE Corrosion Specialist in concert with and in support of the REI team

During installation, testing shall be performed on each anode groundbed and isolated pipe section or group of sections of completed pipe over 2000 feet in length. An interim report for each section shall be submitted to the REI Team.

Insulating flange kits must be tested for effectiveness by the NYC DDC NACE Corrosion Specialist prior to backfill for buried insulating flange assemblies.

The complete cathodic protection system shall be tested prior to final restoration, and pipe-to-soil potential testing shall be repeated following final restoration.

The cathodic protection system shall not be considered complete until a Final Report and As-Built-Drawings have been prepared and submitted by the NYC DDC NACE Corrosion Specialist and accepted by DEP-BWSO-CPQA. The report shall be organized in an orderly chronological order.

PROJECT SPECIFIC SPECIFICATIONS:

The Pipe Installation Contractor shall utilize and follow the cathodic protection design and specification that have been developed for this piping network and indicated in the design package generated by the NY DDC.

The contractor shall work with a cathodic protection materials supplier who has been providing technical support in the NYC Boroughs for a minimum of 10-years to assist in system material requirements and procurement. The material supplier shall provide on-site manufacturer representation to the Contractor during the construction project.

The Contractor shall provide new materials and equipment unless otherwise specifically indicated and specified. New materials and equipment to be provided shall be essentially the standard catalogued products of a manufacturer regularly engaged in the manufacture of such products. Materials and equipment shall meet the applicable requirements of the Specification. All materials and equipment shall have evidence of UL approval when UL Standards exist.

The Contractor shall use magnesium anodes, installed along the water main as shown on the approved design drawings. The system shall include associated test stations, insulating joints and all wiring and connections.

All sections of the water main installed under this contract shall be isolated from the remainder of the distribution system at the contract limits by insulating flange joints or insulating couplings. The water main being installed shall be divided into isolated sections by insulating joints. Insulating joints shall be installed at butterfly valves, closure pieces, blow-offs and air cock connections.

The new water main shall be isolated from sleeves, conduits, reinforcing rods, casings and all other structures by physical means, or by the use of high strength dielectric materials. Test stations shall be placed at pipeline crossings, as required or approved by the Engineer.

Under NO circumstances shall the water main be shorted to a casing or steel reinforcing or other buried metallic structures not part of the cathodic protection system.

At locations where casings are required, the pipeline shall be isolated from the casing by installing approved insulating devices such as non-metallic spacers.

Eighteen inches of slack shall be left on each wire in each test station. In the event a wire is less than eighteen inches it shall be extended with a wire of the same color and same gage or lower gage with an insulated electrical connector approved by the Engineer. All test stations to be labeled as per note 5 on CPD-1.

Test station wiring shall be placed in PVC conduit at all roadway crossings.



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TRUNK MAIN FOR RECONSTRUCTION OF
WASHINGTON PARK, PHASE I
BOROUGH OF MANHATTAN

CATHODIC PROTECTION SYSTEM DETAILS

PROJECT ID: MED608-CPD-3 DATE: 05/08/2014 SHEET 24 OF 24 3/3

EXPLANATION OF TERMS

SOIL SIZES

Description Term	Pass Sieve No.	Retained Sieve No.	Size Range
Clay	200	(Note 1)	< .074 mm.
Silt		< .074 to .420 mm.	
Fine Sand (F)	40	200	.074 to .420 mm.
Medium Sand (M)	10	40	.420 to 2.00 mm.
Coarse Sand (C)	4	10	2.00 to 4.76 mm.
Gravel (Note 2)	-----	-----	4.76 mm. to 3"
Cobbles	-----	-----	3" to 12"
Boulders	-----	-----	>12"

NOTE: 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.

MODIFIED BURMISTER CLASSIFICATION FOR FINE GRAINED SOIL

Soil Classification	Field Identification	Plasticity Index
SILT	None	Zero
CLAYEY SILT	1/4 inch thread Crumbles into powder under mere pressure from handling	1 to 5
SILT AND CLAY	1/8 inch thread Crumbles into powder with some finger pressure	5 to 10
CLAY AND SILT	1/16 inch thread Crumbles with considerable finger pressure	10 to 20
SILTY CLAY	1/32 inch thread Break into pieces between finger and hard surface	20 to 40
CLAY	1/64 inch thread Cannot break between finger and hard surface	40 or more

GROUP SYMBOLS	UNIFIED SYSTEM	QUANTITATIVE ESTIMATE
	Typical Descriptions	Secondary Components Percentage Range
GW	Well-graded gravels, gravel - sand mixtures, less than 5% fines.	AND 35 - 50
GP	Poorly-graded gravels, gravel - sand mixtures, less than 5% fines.	SOME 20 - 35
GM	Silty gravels, gravel - sand - silt mixtures, more than 12% fines.	LITTLE 10 - 20
GC	Clayey gravels, gravel-sand-clay mixtures, more than 12% fines.	TRACE < 10
SW	Well-graded sands, gravelly sands, less than 5% fines.	
SP	Poorly-graded sands, gravelly sands, less than 5% fines.	
SM	Silty sands, sand - silt mixtures, more than 12% fines.	
SC	Clayey sands, sand - clay mixtures, more than 12% fines.	
ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.	
CL	Inorganic clays of low to medium plasticity, gravelly clay, sandy clay, silty clay, lean clay.	
OL	Organic silts and organic silty clays of low plasticity	
MH	Inorganic silt, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	
CH	Inorganic clays of high plasticity. Fat clays.	
OH	Organic clays of medium to high plasticity, organic silts.	
PT	Peat and other highly organic soils.	

ROCK CLASSIFICATION

Weathering:

Fresh - No visible sign of decomposition or discoloration. Rings under hammer impact

Slightly Weathered - Slight discoloration inwards from open fractures. Otherwise similar to Fresh

Weathered - Discolored throughout. Weaker minerals such as feldspar is decomposed. Strength is less than fresh rock but cores cannot be broken by hand or scraped by knife. Texture is preserved

Thoroughly Weathered - Most minerals are somewhat decomposed into soil but fabric and structure is preserved. Specimens can be broken by hand with effort, penetrated or shaved with knife.

Continuity

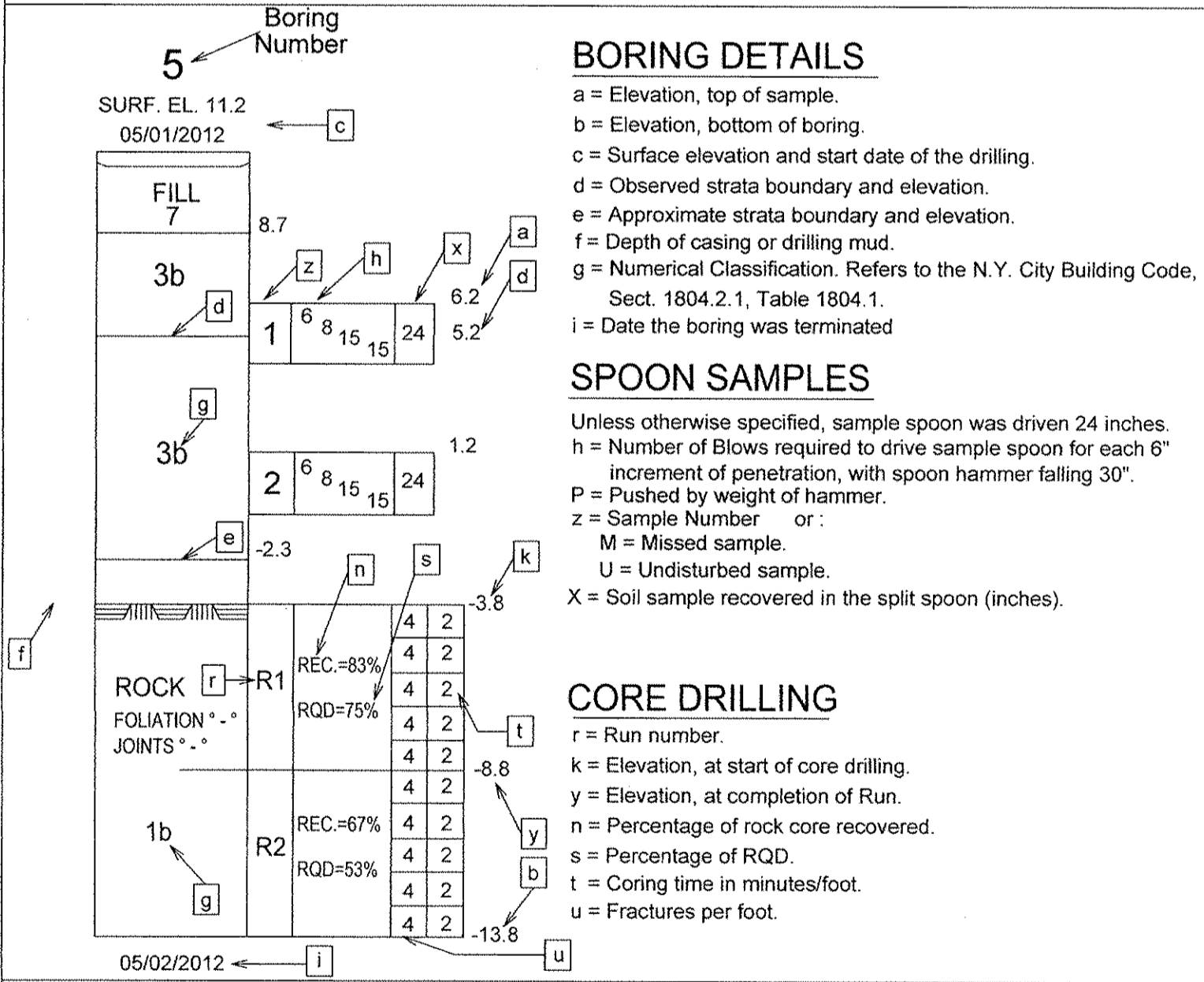
Sound > 8 inches

Slightly Fractured : 4 to 8 inches

Moderately Fractured : 1 to 4 inches

Extremely Fractured : <1 inch

BORING LEGEND



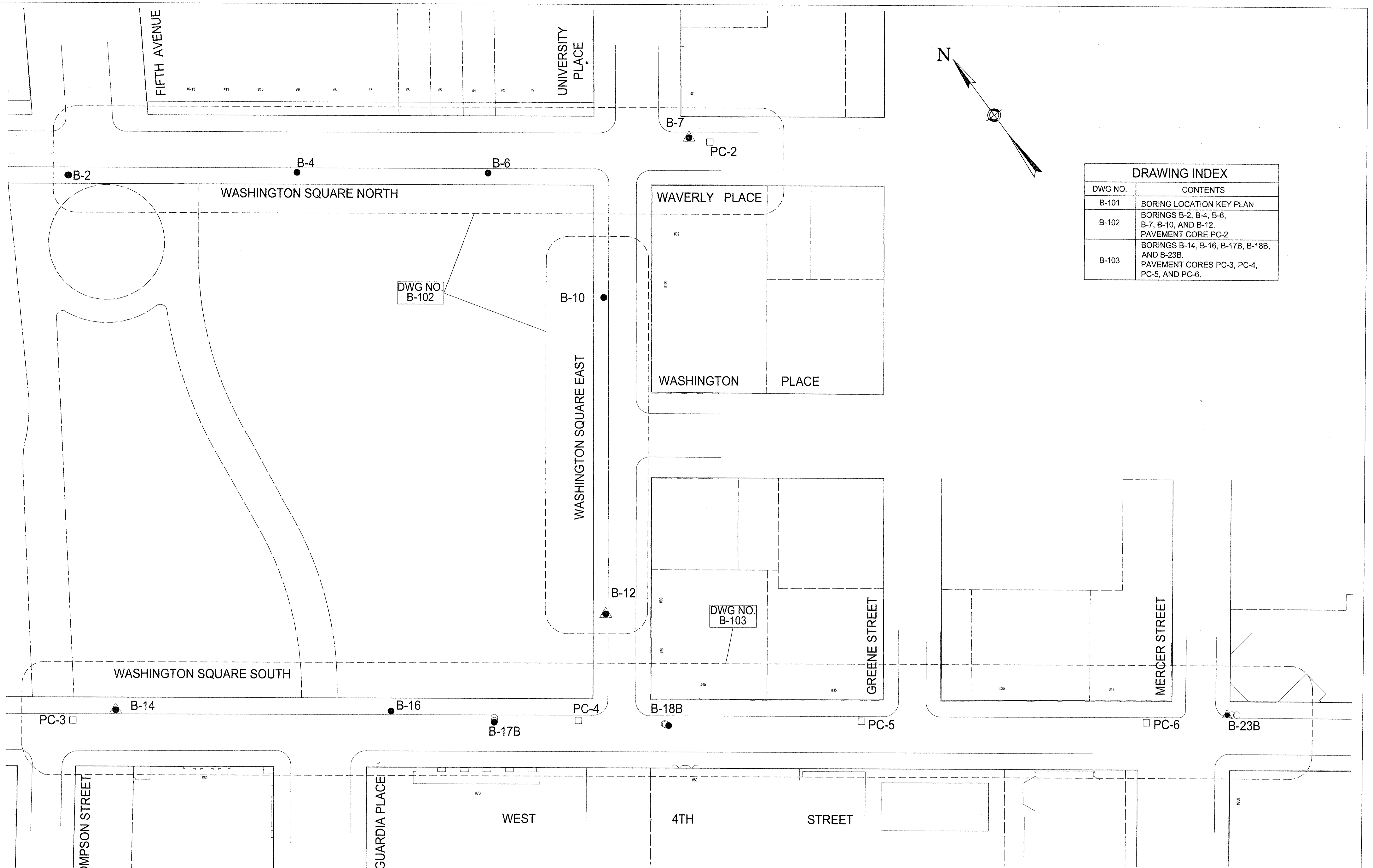
EQUIPMENT (Unless otherwise noted)

Type of spoon hammer	SEE NOTE 5	Size of Split spoon	2.0 inches.
Weight of casing hammer	140 lbs.	Size of Core Bit	N/A
Weight of spoon hammer	140 lbs.	Type of Core Barrel	N/A
Size of Casing	4.0 inches.		

DATUM NOTE: All Elevations refer to the Borough of MANHATTAN Datum, which is 2.75 Feet above Mean Sea Level at Sandy Hook as established by the U.S. Coast & Geodetic Survey.

S. EVEREST
SOIL AND ROCK ANALYSIS BY

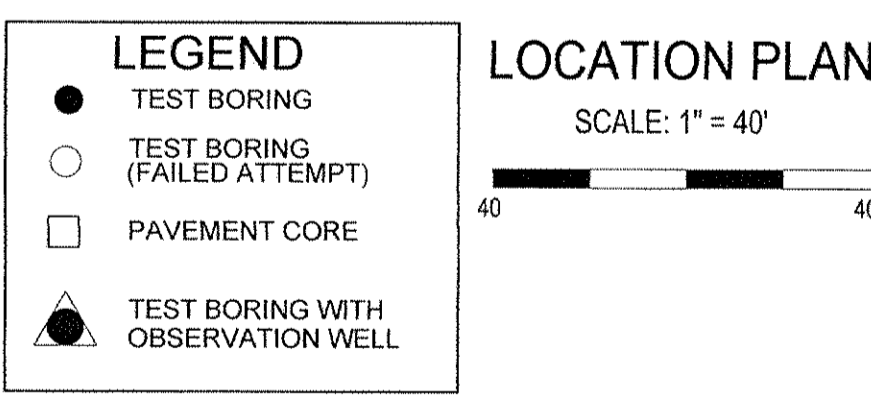
JEFFREY AU, PE
GEOTECHNICAL ENGINEER
YU-PARSONS BRINCKERHOFF, JV



DRAWING INDEX

DWG NO.	CONTENTS
B-101	BORING LOCATION KEY PLAN
B-102	BORINGS B-2, B-4, B-6, B-7, B-10, AND B-12. PAVEMENT CORE PC-2
B-103	BORINGS B-14, B-16, B-17B, B-18B, AND B-23B. PAVEMENT CORES PC-3, PC-4, PC-5, AND PC-6.

- GENERAL NOTES:**
- BORINGS B-1, B-3, B-5, B-8, B-9, B-11, B-13, B-15, B-19, B-20, B-21, B-22, AND PAVEMENT CORE PC-1 WERE NOT PERFORMED DURING THE FIELD INVESTIGATION DUE TO LOCATION INTERFERENCE WITH UNDERGROUND UTILITIES AND SIDEWALK VAULTS. BORINGS B-17B, B-18B, AND B-23B WERE PERFORMED TO 37' DEPTH AFTER 2 FAILED ATTEMPTS.
 - BASE PLAN TOPOGRAPHIC SURVEY WAS PROVIDED BY NYC DDC.
 - BORING LOCATIONS ARE BASED ON FIELD MEASUREMENTS FROM EXISTING SITE FEATURES.
 - SURFACE ELEVATIONS WERE ESTIMATED BASED ON TOPOGRAPHIC SURVEY.
 - SPT'S WERE PERFORMED USING SAFETY HAMMER (BORINGS B-2, B-7, B-12, B-17B, B-18B, AND B-23B) AND DONUT HAMMER (BORINGS B-4, B-6, B-10, B-14, AND B-16).



IMPORTANT NOTES

- The Boring Logs shown on this sheet are the result of inferences drawn by the engineers or scientific personnel during boring operations at the site, and from certain visual evidence such as: (1) samples of subsurface materials recovered during boring operations; (2) 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 (3) 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.
- 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.
- 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.
- The "water reading", shows the elevation of water in the boring holes at the times indicated. They may or may not indicate the elevations of perched water or true ground water table during boring operations or subsequently.
- The samples are described using the "Modified Burmister Soil Classification System" and Rock Classification, followed by Group Symbols from the "Unified Soil Classification" and a Numerical classification code as assigned per the New York City Building Code 1804.2.1.

JEAN M. JEAN-LOUIS
DIRECTOR
B.E.C.S.

MARK A. CANU
ASSOCIATE COMMISSIONER
DIVISION OF SAFETY AND SITE SUPPORT

**CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION**

**MED608
4031**

PREPARED FOR: **DIVISION OF SAFETY AND SITE SUPPORT**

BUREAU OF ENVIRONMENTAL AND GEOTECHNICAL SERVICES

CONSULTANT NAME: **YU-PARSONS BRINCKERHOFF, JV**
200 RIVERFRONT BOULEVARD
ELMWOOD PARK, NEW JERSEY 07407

CONTRACTOR NAME: **WARREN GEORGE, INC.**
FOOT OF JERSEY AVENUE
NEW JERSEY 07304

PROJECT NAME: **WATERMAIN CONNECTION AT WASHINGTON SQUARE PARK**
WASHINGTON SQUARE PARK
BOROUGH OF THE MANHATTAN

RECORD OF BORINGS

DATE: **OCTOBER 22, 2013**

PROJECT NO: **MED608**

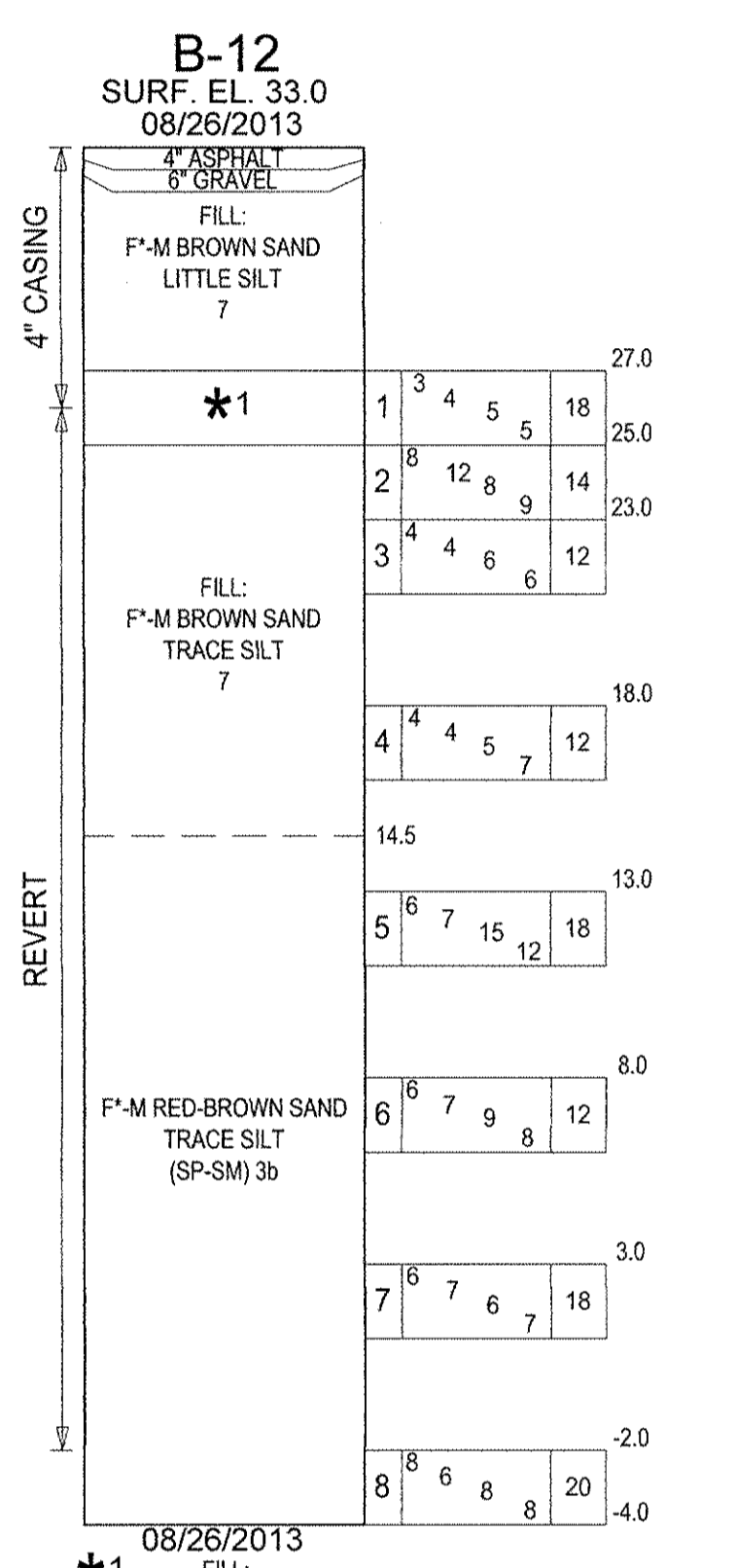
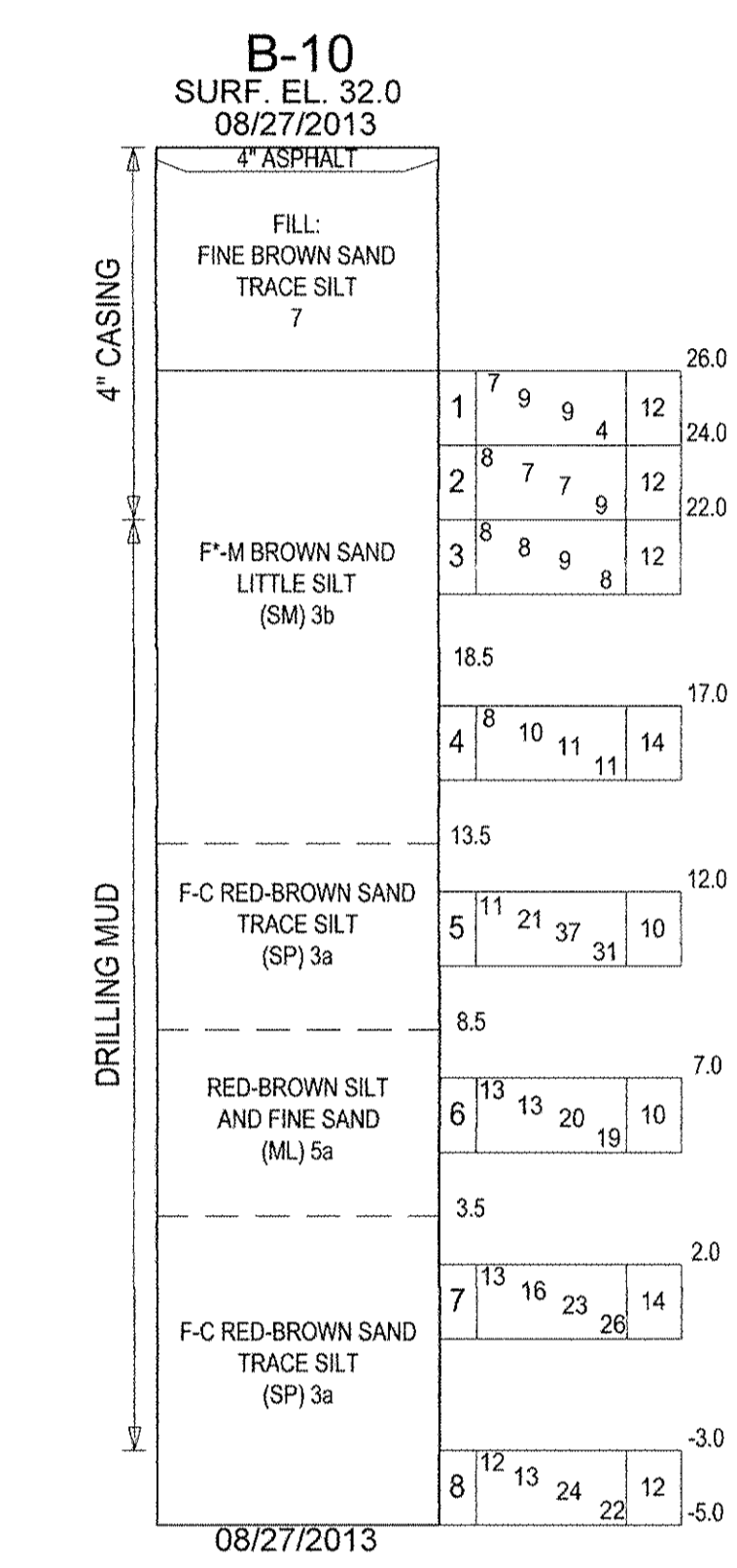
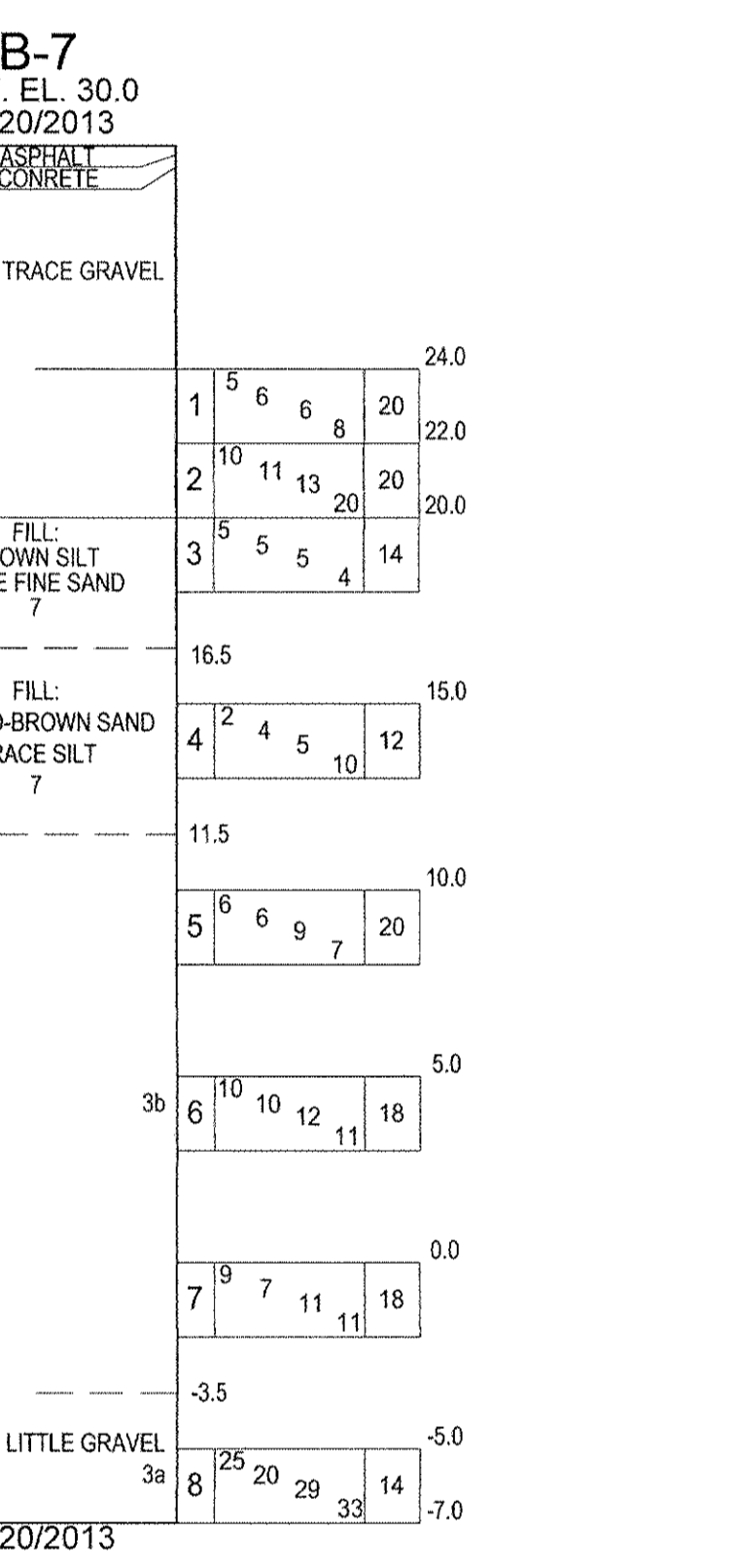
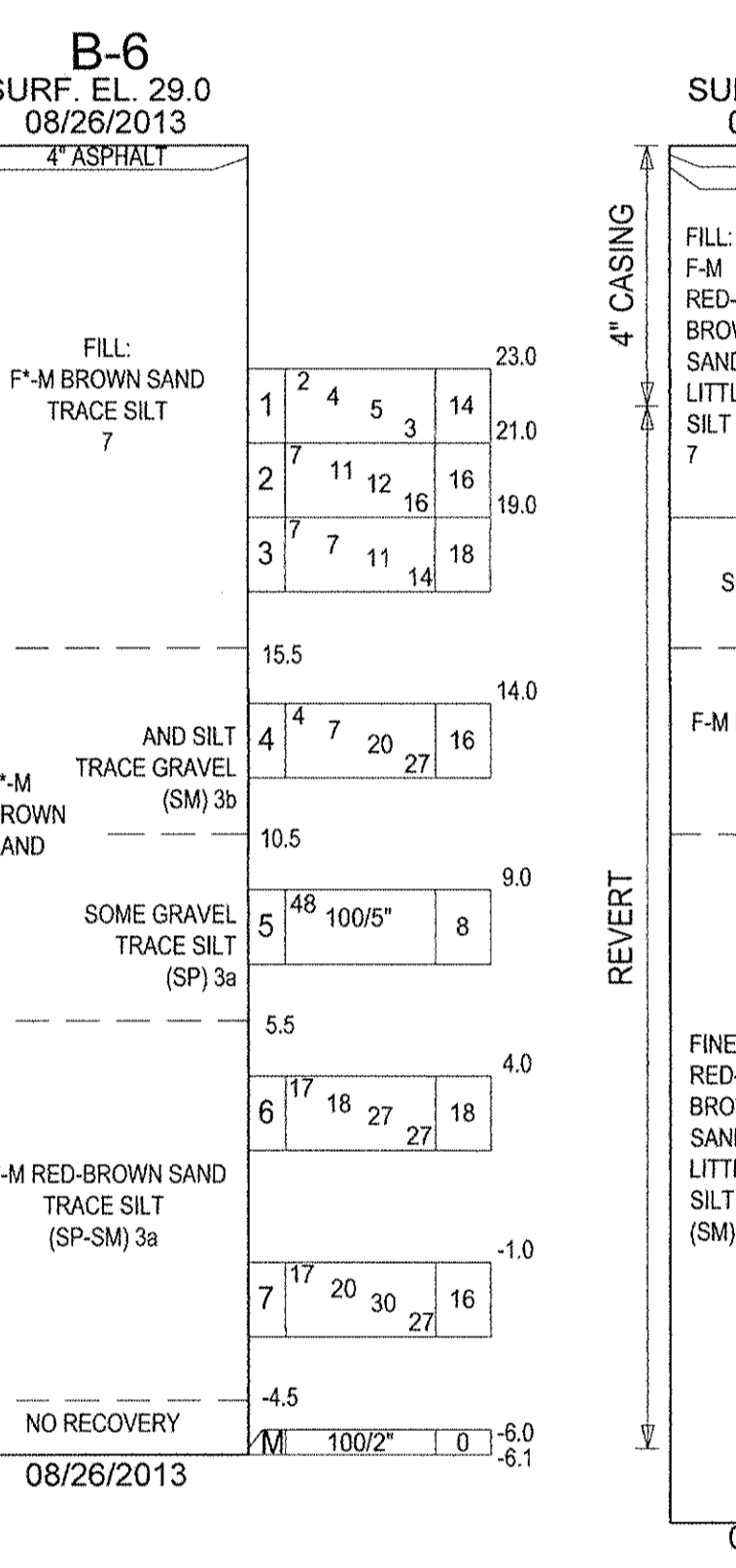
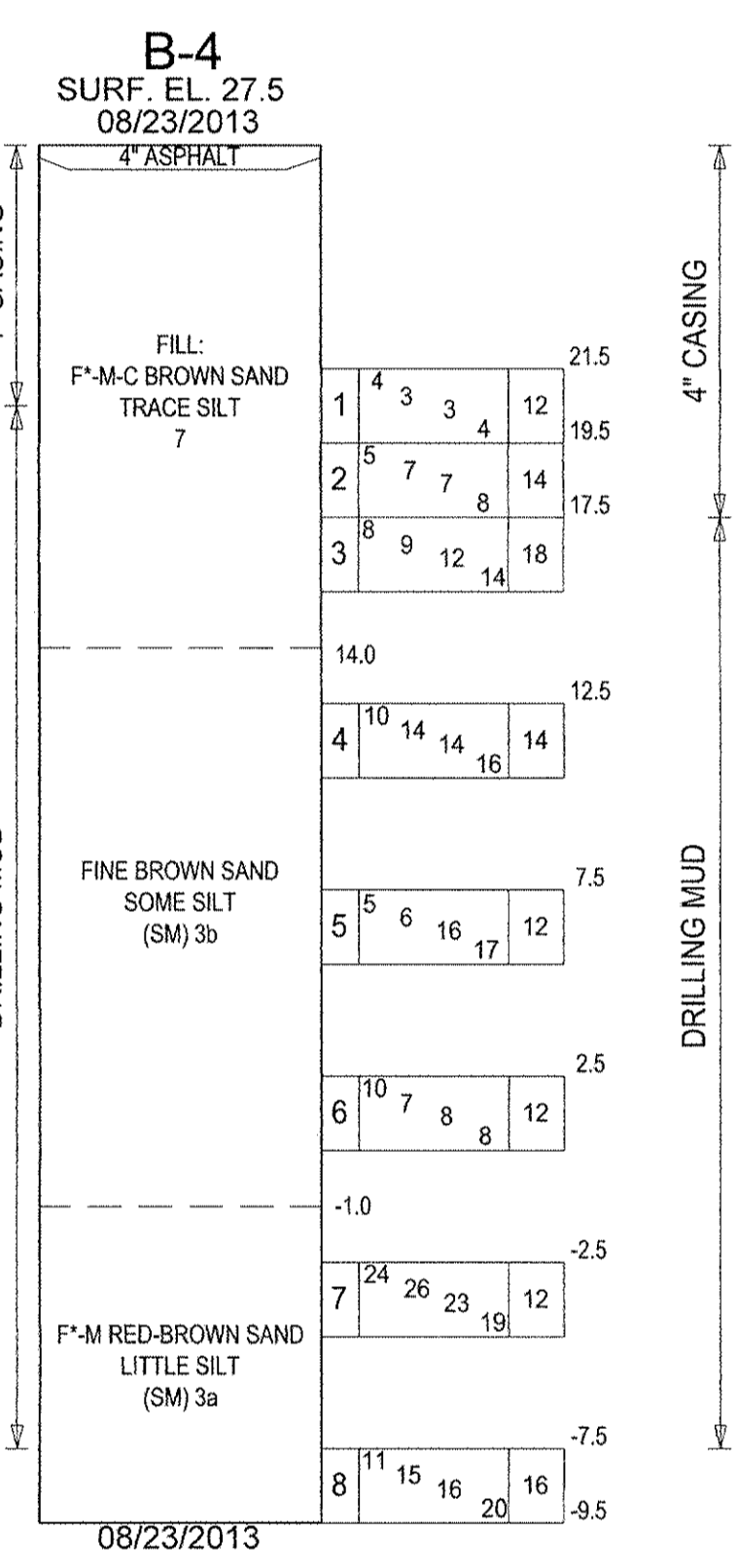
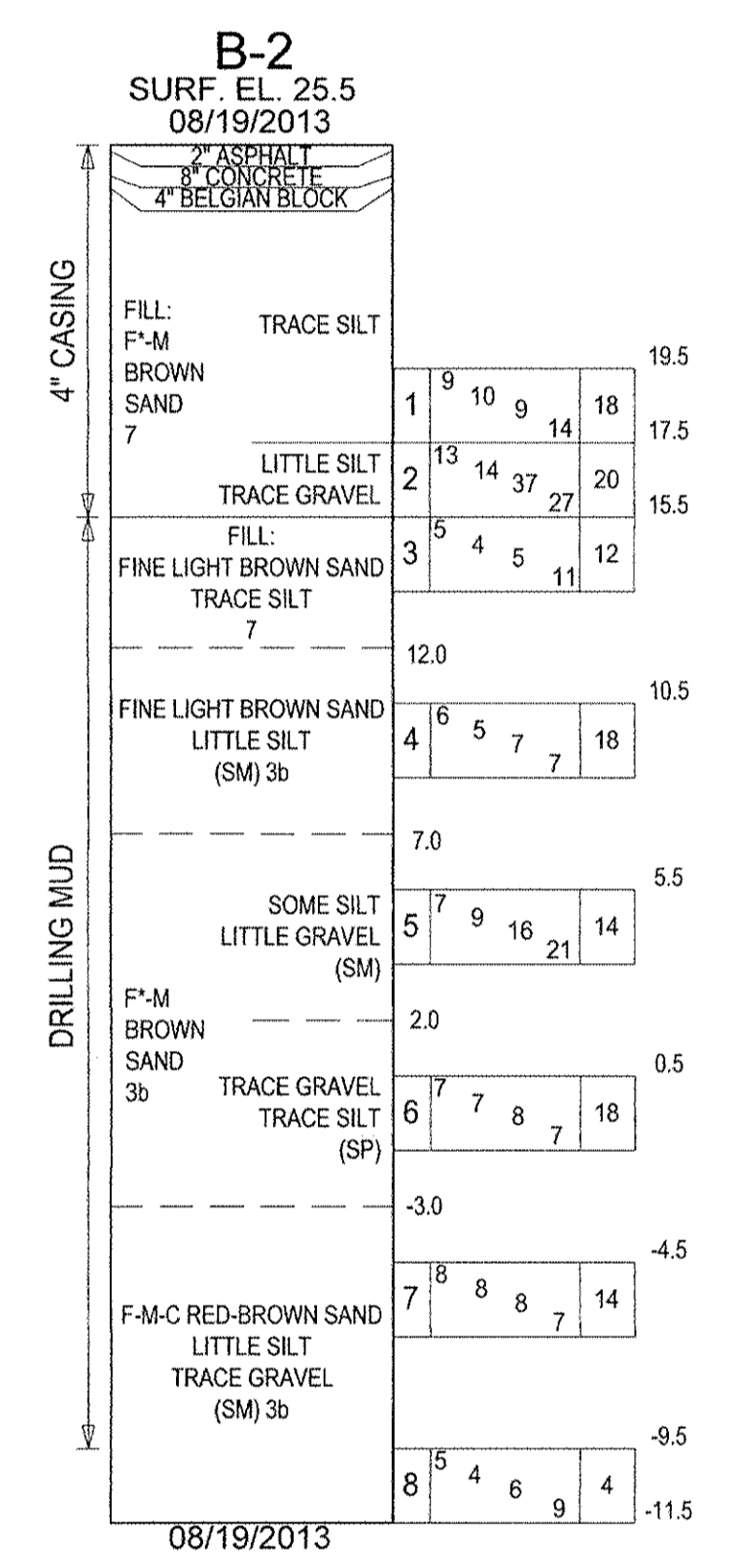
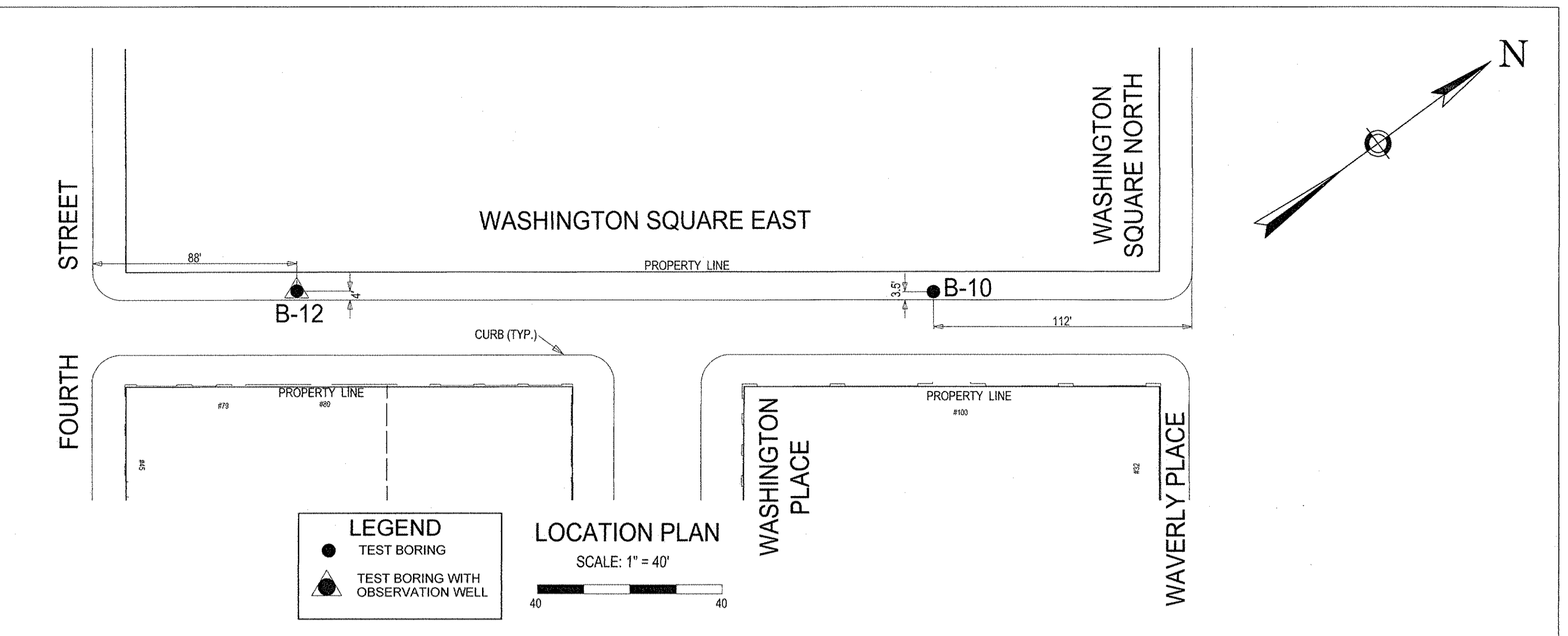
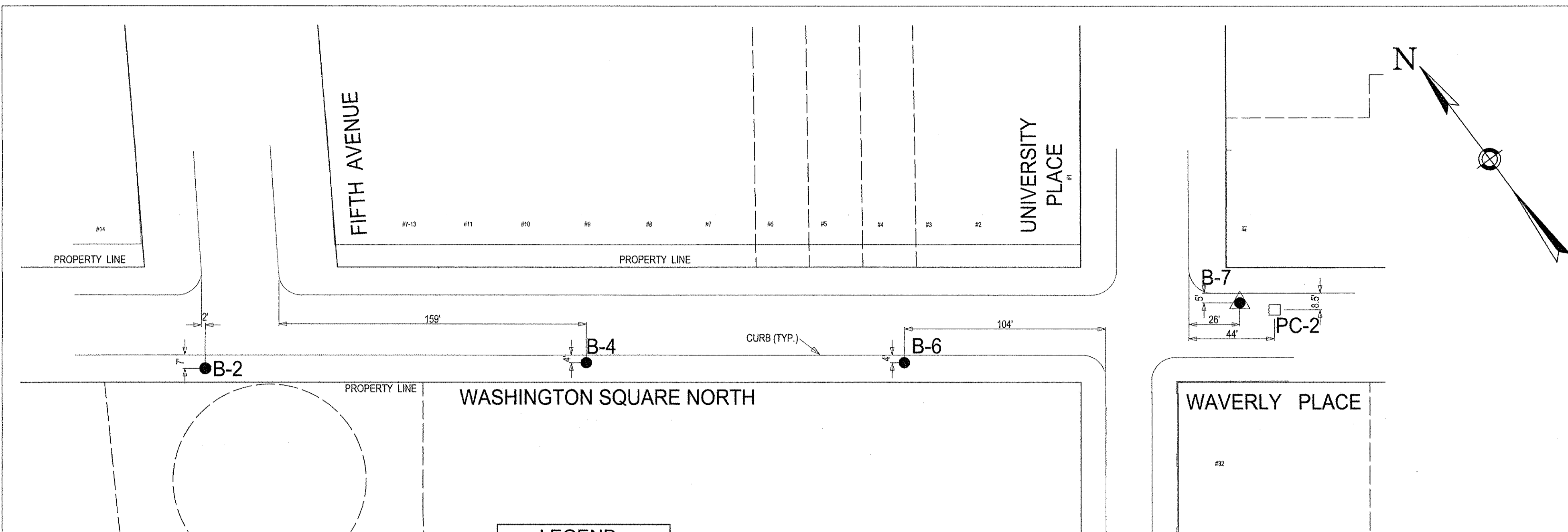
DRAWING BY: **ADAM MOUTAFIS**

CHK BY: **JEFFREY AU**

DWG No: **B-101.00**

CADD FILE No: **4031-ROB-01**

SHEET **1 OF 3**



PAVEMENT CORE DATA

P.C. NO	PC-2
ASPHALT	3"
CONCRETE	9"

LABORATORY ANALYSIS OF SOILS*

SIEVE ANALYSIS

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	pH
B-2	S-2	8-10	9.53	0.23	0.12	-	3.0	85.1	11.9	15.1	-	-	-
B-2	S-5	20-22	19.05	0.34	-	-	11.6	54.0	34.4	14.7	-	-	-
B-4	S-1	6-8	1.18	0.14	0.10	0.08	0	92.4	7.6	6.6	0.89	1.86	6.0
B-4	S-5	20-22	2.36	0.13	-	-	0	67.7	32.3	23.5	-	-	-
B-4	S-6	35-37	2.36	0.21	0.15	-	0	86.2	13.8	24.3	-	-	-
B-6	S-4	15-17	19.05	0.20	-	-	8.2	49.3	42.5	11.8	-	-	-
B-6	S-7	30-32	4.75	0.45	0.20	0.09	0	92.0	8.0	24.3	1.06	5.28	-
B-7	S-3	10-12	1.18	-	-	-	0	30.4	69.6	21.8	-	-	-
B-7	S-6	25-27	0.60	0.18	0.10	-	0	84.3	15.7	23.8	-	-	-
B-10	S-2	8-10	9.53	0.18	0.10	-	0.2	82.8	17.0	7.9	-	-	-
B-10	S-6	25-27	1.18	-	-	-	0	39.4	60.6	24.3	-	-	-
B-12	S-1	6-8	4.75	-	-	-	0	13.4	86.6	29.5	-	-	-
B-12	S-2	8-10	2.36	0.43	0.30	0.16	0	96.7	3.3	20.9	1.30	2.60	-
B-12	S-6	20-22	1.18	0.31	0.18	0.08	0	91.6	8.4	8.5	1.22	3.77	-

* PLEASE REFER TO DETAILED LABORATORY ANALYSIS DATA FOR ADDITIONAL INFORMATION REGARDING THE RESULTS PRESENTED HEREIN.

2"-DIA. WELLPOINT INSTALLED TO ELEVATION -5.0 GROUND WATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION
08/27/13	8:00 AM	30.9	2.1
08/28/13	7:20 AM	30.7	2.3
08/29/13	7:00 AM	30.7	2.3
08/30/13	12:00 PM	31.4	1.6
09/03/13	8:00 AM	31.7	1.3
09/09/13	1:15 PM	31.8	1.2
09/13/13	12:55 PM	31.7	1.3

- GENERAL NOTES:**
- BORINGS B-1, B-3, B-5, B-8, B-9, B-11, AND B-13, B-15, B-19, B-20, B-21, B-22 AND PAVEMENT CORE PC-1 WERE NOT PERFORMED DURING THE FIELD INVESTIGATION DUE TO LOCATION INTERFERENCE WITH UNDERGROUND UTILITIES AND SIDEWALK VAULTS.
 - SPTS WERE PERFORMED USING SAFETY HAMMER (BORINGS B-2, B-7, AND B-12) AND DONUT HAMMER (BORINGS B-4, B-6, AND B-10).

S. EVEREST SOIL AND ROCK ANALYSIS BY	JEFFREY AU, PE GEOTECHNICAL ENGINEER YU-PARSONS BRINKERHOFF, JV	<i>[Signature]</i> RICHARD G. MESEROLE SECTION CHIEF B.E.G.S.	<i>[Signature]</i> JEAN M. JEAN-LOUIS DIRECTOR B.E.G.S.	MARK A. CANU ASSOCIATE COMMISSIONER DIVISION OF SAFETY AND SITE SUPPORT
---	---	--	--	---

CITY OF NEW YORK DEPARTMENT OF DESIGN & CONSTRUCTION

PREPARED FOR: **DIVISION OF SAFETY AND SITE SUPPORT**

BUREAU OF ENVIRONMENTAL AND GEOTECHNICAL SERVICES

CONSULTANT NAME: **YU-PARSONS BRINKERHOFF, JV**
200 RIVERFRONT BOULEVARD
ELMWOOD PARK, NEW JERSEY 07407

CONTRACTOR NAME: **AQUIFER DRILLING & TESTING, INC.**
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

PROJECT NAME: **WATERMAIN CONNECTION AT WASHINGTON SQUARE PARK**
WASHINGTON SQUARE PARK
BOROUGH OF MANHATTAN

RECORD OF BORINGS

DATE: OCTOBER 22, 2013

PROJECT NO: MED608

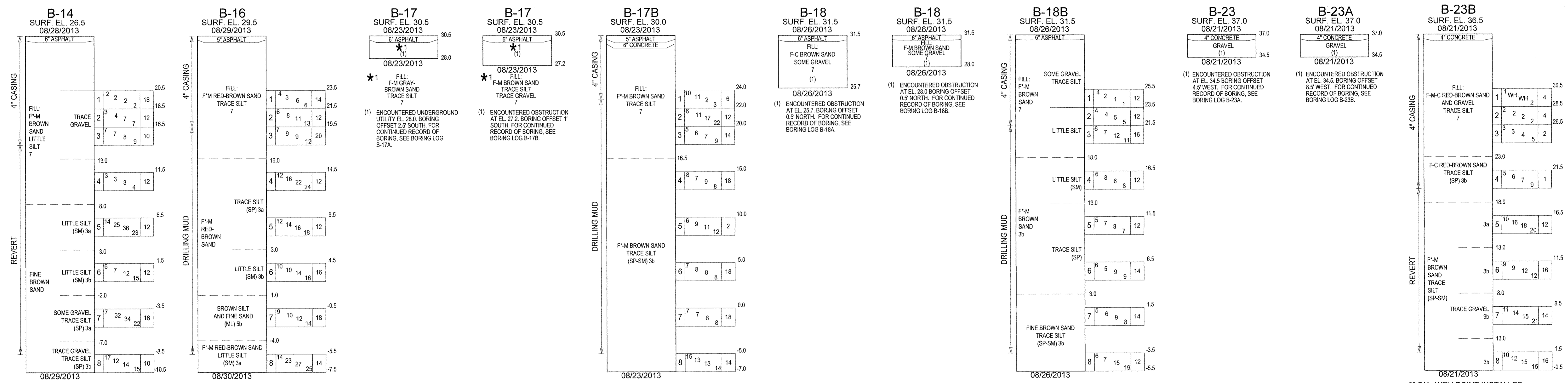
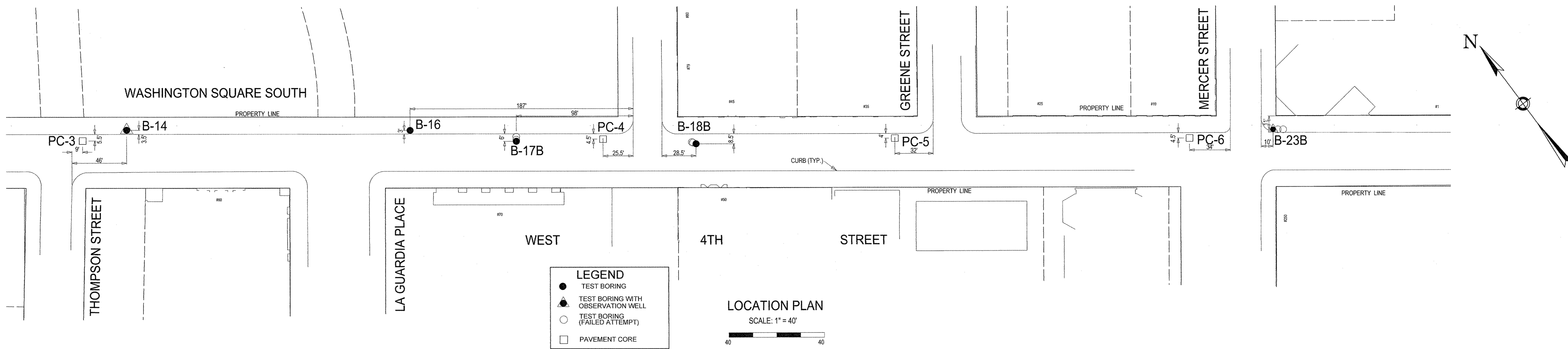
DRAWING BY: ADAM MOUTAFIS

CHK BY: JEFFREY AU

DWG No: **B-102.00**

CADD FILE No: 4031-ROB-01

SHEET 2 OF 3



2"-DIA. WELLPOINT INSTALLED TO ELEVATION 8.5
GROUND WATER OBSERVATIONS FOR WELLPOINT

DATE	TIME	DEPTH, FT	ELEVATION
08/30/13	12:00 PM	20.8	6.7
09/03/13	8:00 AM	21.8	5.7
09/09/13	1:30 PM	25.2	2.3
09/13/13	12:45 PM	21.8	5.7

LABORATORY ANALYSIS OF SOILS*

BORING NO.	SAMPLE NO.	DEPTH, ft	SIEVE ANALYSIS					% SAND	% SILT OR CLAY (<#200 SIEVE)	WC%	Cc	Cu	pH
			D100, mm	D60, mm	D30, mm	D10, mm	% GRAVEL (>#4 SIEVE)						
B-14	S-2	8-10	9.53	0.25	0.11	-	1.9	79.9	18.2	12.5	-	-	-
B-14	S-6	25-27	4.75	0.18	0.09	-	0	80.6	19.4	19.7	-	-	-
B-16	S-3	10-12	2.36	0.22	0.14	0.08	0	91.3	8.7	23.7	1.23	2.78	-
B-16	S-7	30-32	0.60	0.08	-	-	0	43.1	56.9	23.1	-	-	-
B-17B	S-2	8-10	2.36	0.34	0.22	0.16	0	98.4	1.60	7.6	0.87	2.10	-
B-17B	S-6	25-27	2.36	0.30	0.17	0.08	0	92.1	7.90	22.8	1.17	3.68	-
B-18B	S-2	8-10	1.18	0.21	0.13	-	0	88.2	11.80	29.8	-	-	6.4
B-18B	S-4	15-17	2.36	0.16	0.09	-	0	81.2	18.80	8.0	-	-	-
B-18B	S-7	30-32	1.18	0.24	0.17	0.09	0	92.9	7.10	22.9	1.36	2.55	-
B-23B	S-2	8-10	25.40	6.30	0.71	0.10	43.2	48.9	7.90	19.8	0.79	62.34	5.8
B-23B	S-5	20-22	4.75	0.34	0.18	0.08	0	91.4	8.60	19.8	1.16	4.17	-
B-23B	S-7	30-32	12.70	0.42	0.20	0.09	3.1	89.0	7.90	19.1	1.10	4.99	-

PAVEMENT CORE DATA

P.C. NO	PC-3	PC-4	PC-5	PC-6
ASPHALT	5"	4"	6"	9"
CONCRETE	6"	8"	5"	8"

- GENERAL NOTES:
- BORINGS B-13, B-15, B-19, B-20, B-21, AND B-22 WERE NOT PERFORMED DURING THE FIELD INVESTIGATION DUE TO LOCATION INTERFERENCE WITH UNDERGROUND UTILITIES AND SIDEWALK VAULTS. BORINGS B-17B, B-18B, AND B-23B WERE PERFORMED TO 37' DEPTH AFTER 2 FAILED ATTEMPTS.
 - SPT'S WERE PERFORMED USING SAFETY HAMMER (BORINGS B-17B, B-18B, AND B-23B) AND DONUT HAMMER (BORINGS B-14, AND B-16).

S. EVEREST
SOIL AND ROCK ANALYSIS BY

JEFFREY AU, PE
GEOTECHNICAL ENGINEER
YU-PARSONS BRINCKERHOFF, JV

RICHARD G. MESEROLE
SECTION CHIEF
B.E.G.S.

JEAN M. JEAN-LOUIS
DIRECTOR
B.E.G.S.

MARK A. CANU
ASSOCIATE COMMISSIONER
DIVISION OF SAFETY AND SITE SUPPORT

NO.	DATE	DESCRIPTIONS	APPR D

CITY OF NEW YORK
DEPARTMENT OF
DESIGN & CONSTRUCTION

PREPARED FOR: **DIVISION OF SAFETY AND SITE SUPPORT**
BUREAU OF ENVIRONMENTAL AND GEOTECHNICAL SERVICES

CONSULTANT NAME: **YU-PARSONS BRINCKERHOFF, JV**
200 RIVERFRONT BOULEVARD
ELMWOOD PARK, NEW JERSEY 07407

CONTRACTOR NAME: **AQUIFER DRILLING & TESTING, INC.**
75 EAST 2ND STREET
MINEOLA, NEW YORK 11501

PROJECT NAME: **WATERMAIN CONNECTION AT WASHINGTON SQUARE PARK**
WASHINGTON SQUARE PARK
BOROUGH OF MANHATTAN

RECORD OF BORINGS

SEAL & SIGNATURE: [Signature]

DATE: OCTOBER 22, 2013

PROJECT NO: MED608

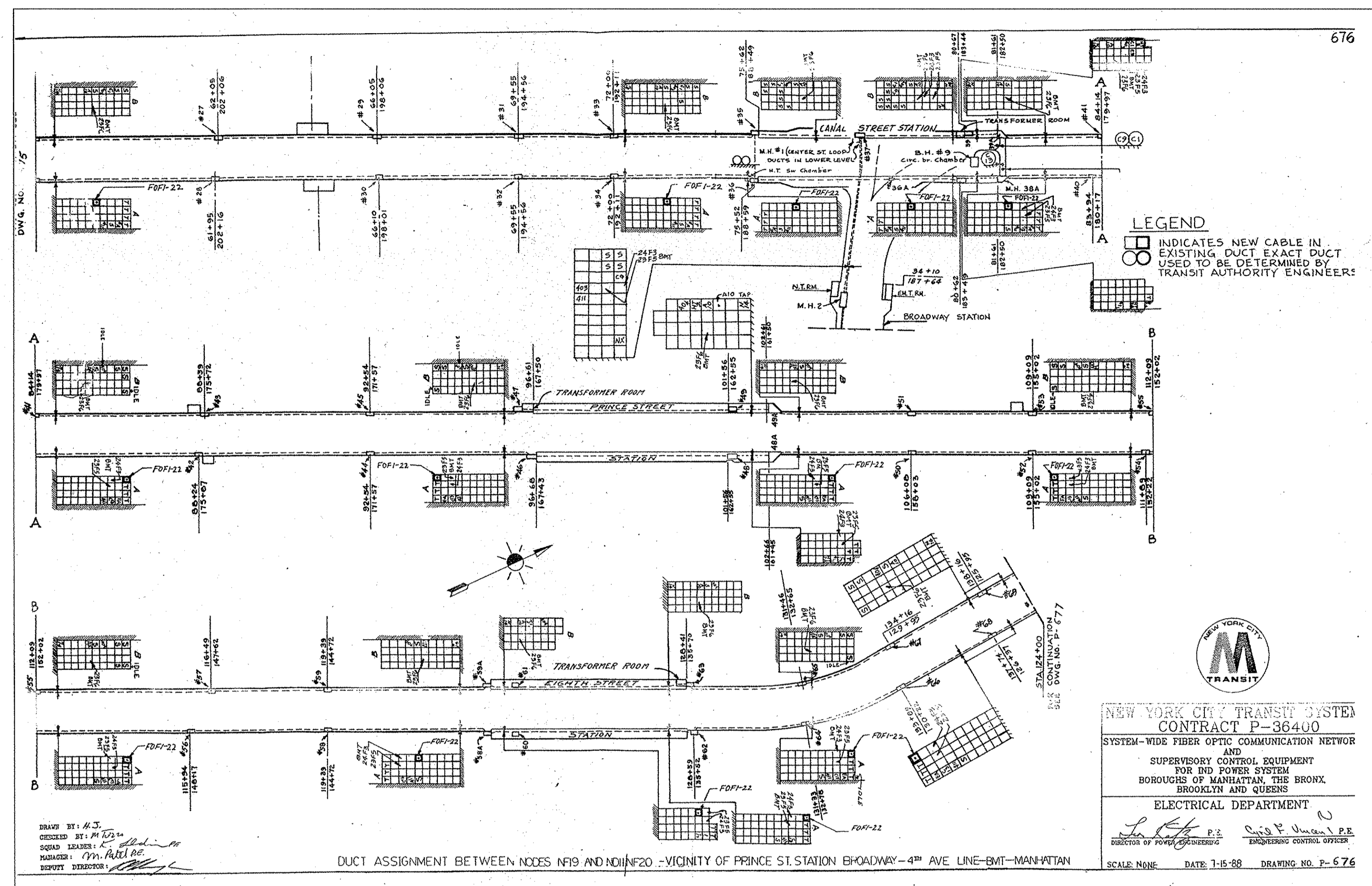
DRAWING BY: ADAM MOUTAFIS

CHK BY: JEFFREY AU

DWG No: **B-103.00**

CADD FILE No: 4031-ROB-01

SHEET 3 OF 3



Project Coordination Guide 8th St - NYU Station / Broadway Line / BMT / Manhattan				
Contract	Project Title	Design Manager/ Tel No.	Constr. Manager/ Tel No.	Resid. Engineer/ Tel No.
ST01-1615	Stations Help Point: Phase 2	D. Wesley/ (646)252-3061	S. Davoodi/ (646)252-2504	
ST04-7247 A36124	Station Access - ADA Induction Loops: 642 Bths	D. Devoti/ (646)252-6785	M.V. Mathew/ (646)395-9997	S. Stuart/ (646)252-3577
MW17-5969 W32679	Comm Cable/ Eqpt ATM: B Div 253 Stn OPTION	K. Asamoah/ (646)252-4064	V. Cavataio/ (212)883-7457	S. Jamoona/ (212)883-7461

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				

**WATER MAIN CONNECTION AT
WASHINGTON SQUARE PARK**
BOROUGH OF MANHATTAN

PROJECT ID: MED608 DATE: 7/25/14 SHEET REF OF REF 1/1

TOPOGRAPHIC SURVEY PREPARED BY: LICENSED LAND SURVEYOR	DESIGNED _____ DRAWN _____ CHECKED _____	SCALE AS SHOWN MED608-REF-NYCT-AS-BUILTS CADD FILE _____	MIKHAIL KLIGER P.E. ENGINEER-IN-CHARGE GEORGE FRANZ P.E. DIRECTOR	CITY OF NEW YORK DEPARTMENT OF DESIGN + CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	NEW YORK CITY TRANSIT AS-BUILTS
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GENERAL NOTES AND CONDITIONS

GENERAL

1. THE CONTRACTOR SHALL BE REQUIRED, WHEN WARRANTED BY FIELD CONDITIONS, AND AT LOCATIONS DESIGNATED BY THE RESIDENT OR BOROUGH ENGINEER, TO CHANGE THE VERTICAL OR HORIZONTAL ALIGNMENT OF WATER MAINS INCLUDING BUT NOT LIMITED TO ALL ADDITIONAL LABOR, FURNISHING, DELIVERING, AND LAYING OFFSET FITTINGS AND PIPES NECESSARY IN ORDER TO COMPLETE WATER MAIN INSTALLATION AND AVOID ELECTRIC, NON COST SHARING GAS AND STEAM INTERFERENCES IN THE PROJECT AREA. SUCH WORK SHALL BE PERFORMED AS DIRECTED BY THE RESIDENT ENGINEER AND IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND LATEST EDITION OF THE BUREAU OF WATER SUPPLY STANDARD SPECIFICATIONS. SUCH WORK SHALL BE PAID UNDER APPROPRIATE CITY CONTRACT BID ITEMS AS DETERMINED BY THE RESIDENT ENGINEER AND/OR SECTION "U" CET ITEMS.
2. THE FACILITY OPERATOR SHALL PROVIDE INSPECTORS AT THE WORK SITE TO MONITOR AND INSPECT METHODS OF WORK INCLUDING THE MAINTENANCE AND SUPPORT AND RELOCATION OF UTILITY FACILITIES, VERIFY QUANTITIES AND ITEMS OF UTILITY WORK, COORDINATE ALL PHASES OF THE FACILITY OPERATOR'S OPERATIONS, AND PROVIDE GUIDANCE WITH RESPECT TO BOTH UTILITY INTERFERENCE AND RELOCATION WORK. THE CITY RESIDENT ENGINEER SHALL CONSULT WITH THE FACILITY OPERATOR AND SHALL HAVE COMPLETE AUTHORITY FOR THE ADMINISTRATION OF ALL WORK UNDER THE CONSTRUCTION CONTRACT.
3. ALL PRIVATE UTILITY FACILITY WORK (SUPPORT, PROTECTION, REMOVAL) ASSOCIATED WITH THE NEW YORK CITY TRANSIT AUTHORITY PORTION OF THIS PROJECT SHALL BE PAID DIRECTLY BY THE TRANSIT AUTHORITY AND NOT THE PRIVATE UTILITY FACILITY OPERATOR.
4. ANY REQUESTS FOR ADDITIONAL AND/OR MODIFICATIONS TO THE MAINTENANCE AND PROTECTION OF TRAFFIC (MPT) PLAN, FOR THE PRIVATE UTILITIES, SHALL REQUIRE THE APPROVAL OF THE RESIDENT ENGINEER IN CONSULTATION WITH THE FACILITY OPERATOR. MODIFICATIONS REQUIRED TO PERFORM CET ITEMS, INCLUDED IN THE UTILITY SECTION "U" CET SCOPE OF WORK, BEYOND THOSE ESTABLISHED IN THE CONTRACT MPT PLAN IS DEEMED INCLUDED IN THE COSTS ASSOCIATED WITH THE APPLICABLE SECTION "U" CET ITEMS.
5. WHEN UTILITY FACILITIES LIE WITHIN OR AT THE LIMITS OF THE PROPOSED CITY TRENCH, THE CONTRACTOR SHALL MODIFY THE SHEETING METHOD, SUBJECT TO THE APPROVAL OF THE FACILITY OPERATOR AND THE RESIDENT ENGINEER. ALL WORK SHALL BE PERFORMED WITHOUT RISKING THE INTEGRITY OF THE UTILITY FACILITIES AND SHALL BE DONE IN CONSISTENT WITH CET 330E AND ALL SAFETY STANDARDS AS DIRECTED BY THE FACILITY OPERATOR.

APPLICABLE CODES AND STANDARDS

1. WHERE DOCUMENTS ARE REFERENCED IN THE GENERAL AND/OR DESIGN NOTES THEY SHALL BE THE LATEST EDITIONS, UNLESS OTHERWISE NOTED.
2. ALL UTILITY WORK PERFORMED BY THE CONTRACTOR SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF CON EDISON. CONTRACTOR SHALL REVIEW COPIES OF CON EDISON STANDARDS AS THEIR REQUIREMENTS MAY EXCEED/DIFFER FROM THOSE REQUIRED BY NYC, NYS OR OSHA. IN ALL CASES THE STRICTER REQUIREMENT SHALL CONTROL.
3. CHANGES/MODIFICATIONS TO CITY SEWERS, CATCH BASINS, CHUTE CONNECTIONS, AND WATER MAINS SHALL CONFORM TO NYDCDC SPECIFICATIONS AND AS SHOWN ON APPLICABLE SECTION "U" SPECIFICATIONS.
4. THE CONTRACTOR WILL ADHERE TO ALL CODE 753 REQUIREMENTS PRIOR TO PERFORMING ANY EXCAVATIONS.
5. IN AREAS WHERE CONGESTED UNDERGROUND INFRASTRUCTURES EXIST, THE CITY RESIDENT OR BOROUGH ENGINEER MAY WAIVE CITY STANDARD MINIMUM CLEARANCE REQUIREMENTS. WHEN CLEARANCES ARE LESS THAN 12 INCHES, A NEOPRENE/POLYETHYLENE SHIELD, FURNISHED BY THE FACILITY OPERATOR SHALL BE INSTALLED BY THE CONTRACTOR, AS DIRECTED BY THE RESIDENT ENGINEER IN CONSULTATION WITH THE FACILITY OPERATOR AND IS CONSIDERED PART OF ALL WORK ITEM SPECIFICATIONS. PAYMENT FOR THIS WORK SHALL BE DEEMED INCLUDED IN THE APPROPRIATE BID ITEM.
6. THE FOLLOWING SPECIFICATIONS ARE AVAILABLE FOR CONTRACTOR REVIEW WITH THE DDC:
 - A. CON EDISON STEAM SPECIFICATION 122, DATED, FEBRUARY 20, 2012
 - B. CON EDISON TRENCHING MANUAL REVISION 7, DATED, NOVEMBER 2009
 - C. CON EDISON GAS GENERAL SPECIFICATION NO. 117, DATED, NOVEMBER 6, 1992
 - D. GAS CONSTRUCTION SPECIFICATION NO. 900, DATED, MAY 31, 1993
 - E. CON EDISON CONSTRUCTION STANDARDS, SPECIFICATIONS AND DRAWINGS FOR EXCAVATING TRENCHES AND OPENINGS AND INSTALLING OUTSIDE PLANT ELECTRIC FACILITIES.

PROJECT DOCUMENTS

1. THIS SET OF UTILITY DRAWINGS TOGETHER WITH THE CONTRACT AND NOTED UTILITY SPECIFICATIONS, CONSTITUTES THE COMPLETE DOCUMENTATION BY WHICH ALL CONTRACT WORK SHALL FOLLOW.
2. THE FOLLOWING DOCUMENTS ARE AVAILABLE FOR REVIEW BY THE CONTRACTOR:
 - A. CON EDISON CONDUIT, GAS, AND STEAM PLATES.
 - B. DDC CONSTRUCTION DRAWINGS

ALL INFORMATION CONTAINED IN THESE DOCUMENTS IS SUBJECT TO FIELD VERIFICATION.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE PROPER SHORING AND BRACING DURING CONSTRUCTION WHENEVER AND WHEREVER NECESSARY, WHICH SHALL NOT BE REMOVED AS LONG AS REQUIRED FOR SAFETY AS DIRECTED BY THE RESIDENT ENGINEER.
4. IN THE EVENT THAT CERTAIN DETAILS OF CONSTRUCTION ARE NOT FULLY SHOWN OR NOTED ON DRAWINGS, CONSTRUCTION SHALL BE OF THE SAME TYPE AS FOR SIMILAR CONDITIONS THAT ARE SHOWN OR NOTED, SUBJECT TO THE APPROVAL OF THE FACILITY OPERATOR REPRESENTATIVE AND RESIDENT ENGINEER.

MATERIALS

1. ALL MATERIALS SUPPLIED BY THE FACILITY OPERATOR SHALL BE DELIVERED F.O.B. TO THE CONTRACTOR'S REQUESTED LOCATION, IT SHALL THEN BE THE CONTRACTOR'S RESPONSIBILITY AND EXPENSE TO DELIVER AND/OR DISTRIBUTE THE MATERIAL SUPPLIED BY THE FACILITY OPERATOR TO THE REQUIRED JOB LOCATION THEREAFTER.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY, TO INSPECT, UNLOAD AND VERIFY THE QUANTITIES OF FURNISHED SPECIALIZED MATERIAL TO BE INSTALLED BY HIM IMMEDIATELY UPON DELIVERY AND ADVISE THE FACILITY OPERATOR, THROUGH ITS AUTHORIZED REPRESENTATIVE, OF ALL DAMAGED MATERIAL. THE CONTRACTOR, AT NO ADDITIONAL EXPENSE TO THE CITY OR THE FACILITY OPERATOR, SHALL REPLACE ANY MATERIAL, WHICH IS DAMAGED OR LOST AFTER THE CONTRACTOR'S INSPECTION AND ACCEPTANCE. ALL ASSOCIATED COSTS ARE DEEMED INCLUDED IN THE APPLICABLE SECTION "U" BID ITEMS.
3. GENERAL BACKFILL AND BEDDING MATERIALS FOR EXCAVATION AROUND CON EDISON FACILITIES WILL BE DONE IN ACCORDANCE WITH EO-1180, EO-1181, EO-8085, AND THE APPROPRIATE FACILITY INSTALLATION SPECIFICATION. ALL OTHER BACKFILLING SHALL SATISFY NYCDOT METHODS STANDARDS. ALL COSTS ASSOCIATED SHALL BE INCLUDED IN THE APPLICABLE CET ITEMS AND/OR OTHER APPLICABLE CONTRACT BID ITEMS.

CONSTRUCTION SEQUENCE NOTES

THE FOLLOWING CONSTRUCTION SEQUENCING NOTES ARE ISSUED TO SUPPLEMENT THE CONTRACT DOCUMENTS INCLUDING BUT NOT LIMITED TO THE MAINTENANCE AND PROTECTION OF TRAFFIC PLANS AND SECTION "U" CET ITEM SPECIFICATIONS. THE NOTES PROVIDED BELOW SHALL BE USED IN CONJUNCTION WITH SAID CONTRACT DOCUMENTS TO ESTABLISH THE SEQUENTIAL ORDER OF INSTALLATION OF NEW UNDERGROUND ELECTRIC UTILITIES, NON COST SHARING GAS AND STEAM, AND THE CITY PLANNED WORK AS SPECIFIED WITHIN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT A WORK SCHEDULE THAT WILL INCLUDE THE UTILITY WORK TO CON EDISON FOR APPROVAL BY THE UTILITY FACILITY OPERATOR IN CONSULTATION WITH THE RESIDENT ENGINEER.

CONSTRUCTION SEQUENCING FOR PRIVATE UTILITY FACILITIES AND CITY WORK WITHIN THE ABOVE REFERENCED PROJECT

1. THE CONTRACTOR SHALL REMOVE THE EXISTING SURFACE AND BASE PAVEMENT FOR A WIDTH OF ROADWAY SPECIFIED IN THE MPT PLANS. CITY CONTRACT BID ITEMS, FOR THIS WORK, SHALL APPLY, AS ENCOUNTERED. THE CONTRACTOR SHALL REMOVE ABANDONED TROLLEY TRACKS, INCLUDING YOKES AND OTHER APPURTENANCES. THE CONTRACTOR SHALL INSTALL THE NEW FACILITIES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. CON EDISON REPRESENTATIVES, IN CONSULTATION WITH THE RESIDENT ENGINEER AND, IN COOPERATION WITH THE CONTRACTOR SHALL DETERMINE A SUITABLE LOCATION FOR THE INSTALLATION OF THE NEW PRIVATE UTILITY FACILITIES. ONCE THE LOCATIONS HAVE BEEN ESTABLISHED, THE CONTRACTOR WILL ASSUME FULL RESPONSIBILITY FOR THE LANES SELECTED AND WILL THEREBY GUARANTEE THAT THE NEW FACILITIES SHALL NOT OBSTRUCT THE PLANNED CITY CONTRACT WORK. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COMMUNICATE IN WRITING, FOR EACH UTILITY LANE SELECTED, WHERE IN HIS OPINION A LOCATION FOR THE INSTALLATION OF THE NEW UTILITY FACILITIES WILL OBSTRUCT THE PLANNED CITY WORK, SO THAT AN ALTERNATE APPROACH WILL BE EVALUATED TO MITIGATE THE IMPENDING INTERFERENCE(S).
3. THE CONSTRUCTION OF NEW UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND STAGED IN ACCORDANCE WITH THE MAINTENANCE AND PROTECTION OF TRAFFIC (MPT) PLANS.
4. THE CONTRACTOR SHALL REMOVE EXISTING OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO RETIRED AND ABANDONED EXISTING FACILITIES AND STRUCTURES, AS REQUIRED FOR INSTALLATION OF THE NEW UTILITY FACILITIES, CATCH BASINS, CHUTE CONNECTIONS, WATER MAINS, ETC. THE REMOVAL AND RELOCATION WORK SHALL BE COVERED UNDER APPROPRIATE CITY BID ITEMS AND/OR SECTION "U" CET ITEMS AND SHALL BE COORDINATED WITH CON EDISON REPRESENTATIVES, IN CONSULTATION WITH THE RESIDENT ENGINEER.
5. THE CONTRACTOR SHALL PERFORM MODIFICATIONS TO EXISTING UTILITY FACILITIES AND/OR STRUCTURES TO ACCOMMODATE THE NEW UTILITY FACILITIES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE FACILITY OPERATOR IN CONSULTATION WITH THE RESIDENT ENGINEER.
6. UPON COMPLETION OF THE INSTALLATION OF THE UTILITY WORK, THE CONTRACTOR SHALL BACKFILL, COMPACT AND INSTALL TEMPORARY PAVEMENT AT THE UTILITY TRENCH EXCAVATION LOCATION AS DIRECTED BY THE FACILITY OPERATOR IN CONSULTATION WITH THE RESIDENT ENGINEER.
7. WHERE APPROPRIATE, AND AS DIRECTED BY THE FACILITY OPERATOR IN CONSULTATION WITH THE RESIDENT ENGINEER, THE CONTRACTOR SHALL BE PERMITTED TO INSTALL THE CITY WATER MAINS, CATCH BASINS, CATCH BASIN CONNECTIONS, SEWERS, SEWER MANHOLES, AND OTHER CITY CONTRACT WORK ITEMS AND APPURTENANCES IN COORDINATION AND DURING THE MASS EXCAVATION OPERATION, ONLY IF THIS PHASING SERVES TO BENEFIT THE SEQUENCING OF THE PROJECT THAT WILL REDUCE THE OVERALL PROJECT TIME DURATION AND DOES NOT ADDITIONALLY BURDEN THE PRIVATE UTILITIES WITH UNANTICIPATED FINANCIAL EXPENSES, AND ONLY IF APPROVED BY THE PRIVATE FACILITY OPERATOR IN CONSULTATION WITH THE RESIDENT ENGINEER.
8. THE CONTRACTOR EXPLICITLY ASSUMES FULL RESPONSIBILITY AND ANY AND ALL ADDITIONAL COSTS INCURRED IF HE CHOOSES TO MODIFY THIS SEQUENCING PLAN WITHOUT THE CONSENT OF THE FACILITY OPERATOR IN CONSULTATION WITH THE RESIDENT ENGINEER.
9. ALTERNATE SEQUENCING IN PART OR TOTAL WILL BE CONSIDERED FOR APPROVAL, IF PROPOSED BY THE CONTRACTOR IN WRITING, TO THE FACILITY OPERATOR AND THE RESIDENT ENGINEER.
10. IN ANY EVENT DURING THE TRENCH EXCAVATION OPERATION, SHOULD THE CONTRACTOR ENCOUNTERED ROCK, THE CONTRACTOR SHALL STOP EXCAVATION AND IMMEDIATELY NOTIFY THE PRIVATE FACILITY OPERATOR AND THE RESIDENT ENGINEER.


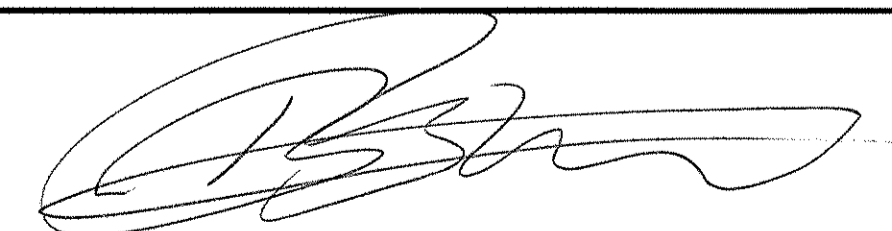
SPECIAL CONDITIONS

1. N/A.
2. SPECIALTY WORK WHICH SHALL BE PERFORMED BY OTHERS SHALL INCLUDE BUT IS NOT BE LIMITED TO:
 - A. PERFORM ALL CABLE WORK - INSTALLATION, REMOVAL, SPlicing, AND VERIFICATION OF LIVE/ DEAD FACILITIES AND/OR FAILURE REPLACEMENTS. BASED ON FACILITY PLATES AND TEST PIT INFORMATION, IT IS ESTIMATED THAT APPROXIMATELY 80 SECTIONS OF CABLES ARE TO BE INSTALLED, AND APPROXIMATELY 35 SPLICES/ JOINTS ARE REQUIRED TO BE COMPLETED.
 - B. PERFORM ALL INSTALLATION OF ALL TYPES OF GAS PIPING, CUTTING AND CAPPING GAS MAINS, LIVE GAS CONNECTIONS, SERVICE REPLACEMENTS, AND TESTING LIVE GAS MAINS, AS NEEDED, BASED ON FACILITY PLATES AND TEST PIT INFORMATION, IT IS ESTIMATED THAT APPROXIMATELY 1,465 FEET OF GAS MAINS WILL BE REPLACED.
 - C. PERFORM ALL LIVE STEAM WORK, FLANGE REMOVAL, SERVICE REPLACEMENTS, SLIP JOINTS, ANCHORS AND STEAM STRUCTURES AT VARIOUS LOCATIONS, AS REQUIRED. THERE ARE NO STEAM FACILITIES WITHIN THE PROJECT LIMITS.
 - D. PERFORM ALL ABATEMENT WORK AROUND THE EXISTING STEAM MAIN, INCLUDING REPLACEMENTS OF HOUSING, AS DIRECTED BY CON EDISON REPRESENTATIVES. THERE ARE NO STEAM FACILITIES WITHIN THE PROJECT LIMITS.
 - E. TRENCHING FOR STEAM WORK WILL BE COVERED BY APPLICABLE SECTION "U" CET ITEMS INCLUDING BUT NOT LIMITED CET 405 AND 406. TRENCHING FOR GAS WORK WILL BE COVERED UNDER ITEM 6.09 OF THE EP-7 SPECIFICATIONS.
 - F. DURING THE PERIOD FROM JUNE 1ST TO SEPTEMBER 15TH, SCHEDULING OF CON EDISON CABLE WORK WILL BE CONTINGENT UPON SYSTEM AND WEATHER CONDITIONS.
 - G. DURING THE PERIOD FROM OCTOBER 1ST TO APRIL 15TH, SCHEDULING OF CON EDISON GAS AND STEAM WORK WILL BE CONTINGENT UPON SYSTEM AND WEATHER CONDITIONS.
 - H. PERFORM ALL APPLICATION OF FIELD COATING AND WRAPPING ON OIL-O-STATIC FEEDER PIPES AT VARIOUS LOCATIONS, AS DIRECTED BY CON EDISON REPRESENTATIVES.

TABLE 1 : PROPOSED GAS RELOCATION WORK

Size of Main	Material Type	Proposed Footage (LF)	No. of 8 hr Crew Shifts Required
16"	STEEL (HP)	280	60
20"	STEEL	320	80
12"	PE	835	8
Sub-Totals			
Gas Main	LF	1,435	148
Trans. / Connect			
Service	Each	6	9
Grand Total 8 hour Crew Shifts			157

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				

SIGNED	DATE
  BRENTON BALFOUR	12/12/13 DECEMBER 2013

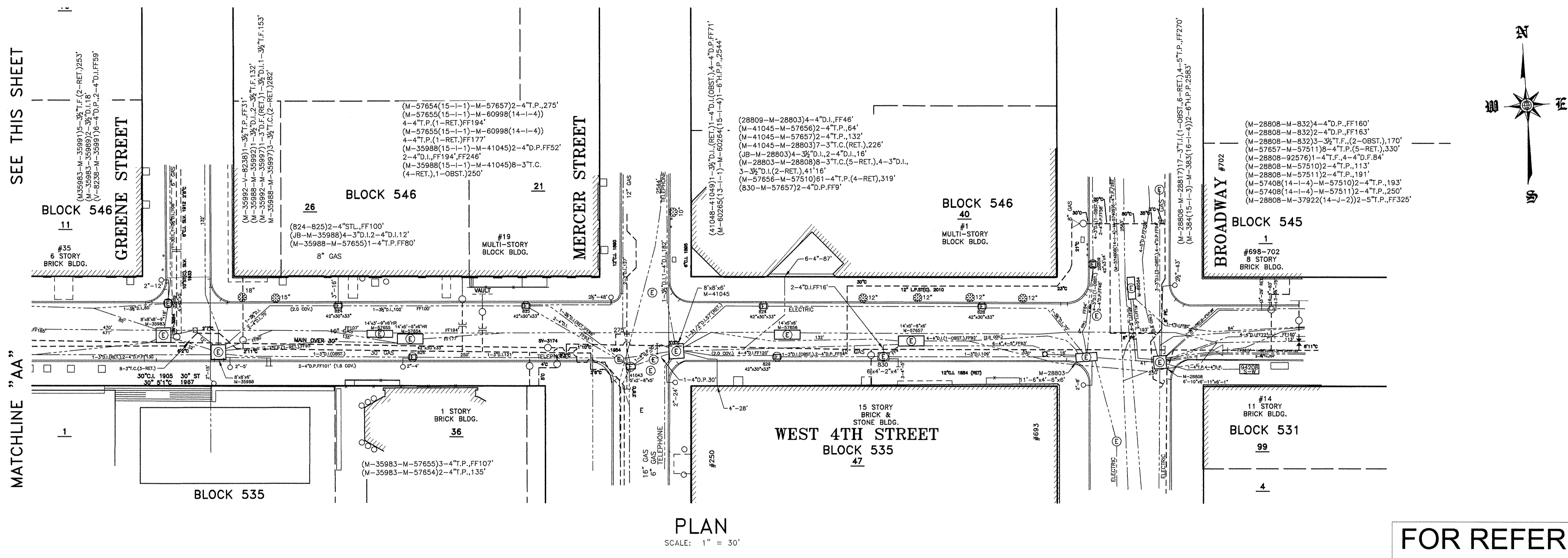
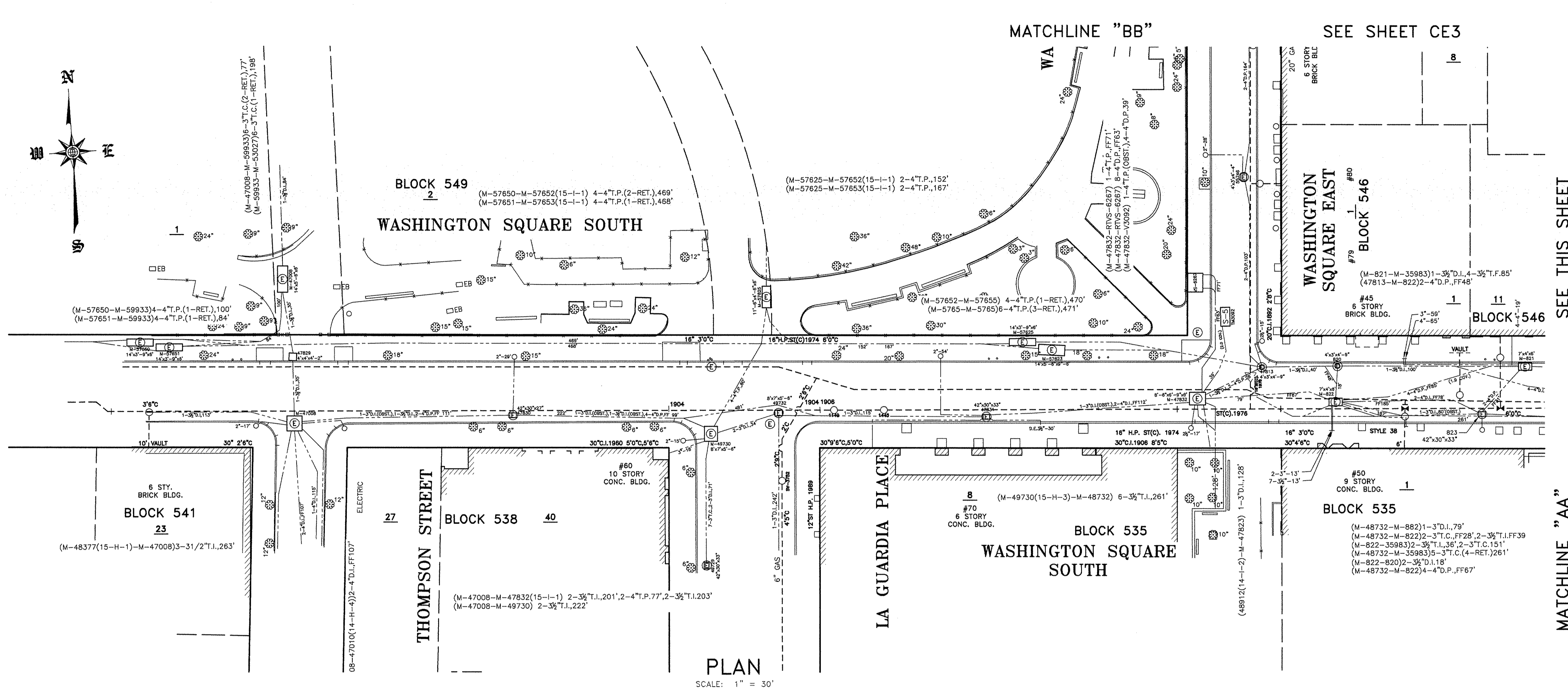
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DEPARTMENT OF DESIGN + CONSTRUCTION
DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

GENERAL NOTES AND CONDITIONS
MED 608

DRAWN BY _____ CADD FILE _____

WASHINGTON SQUARE PARK (PHASE I)
BOROUGH OF MANHATTAN

CAPITAL PROJECT NO. - MED 608 SHEET ___ OF ___



Consolidated Edison Co.
of New York, Inc.
4 Irving Place
New York, NY 10003

FINAL DESIGN PREPARED BY:	
ENGINEER-IN-CHARGE	DATE
DESIGN ENGINEER	DATE

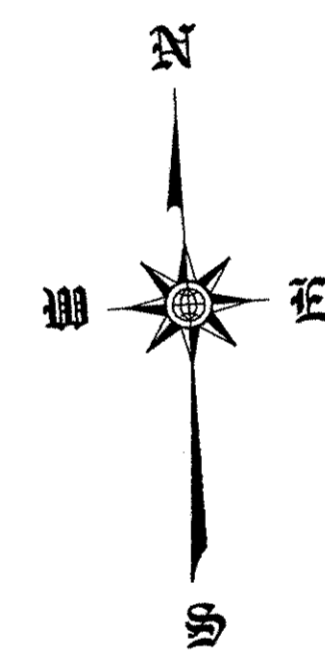
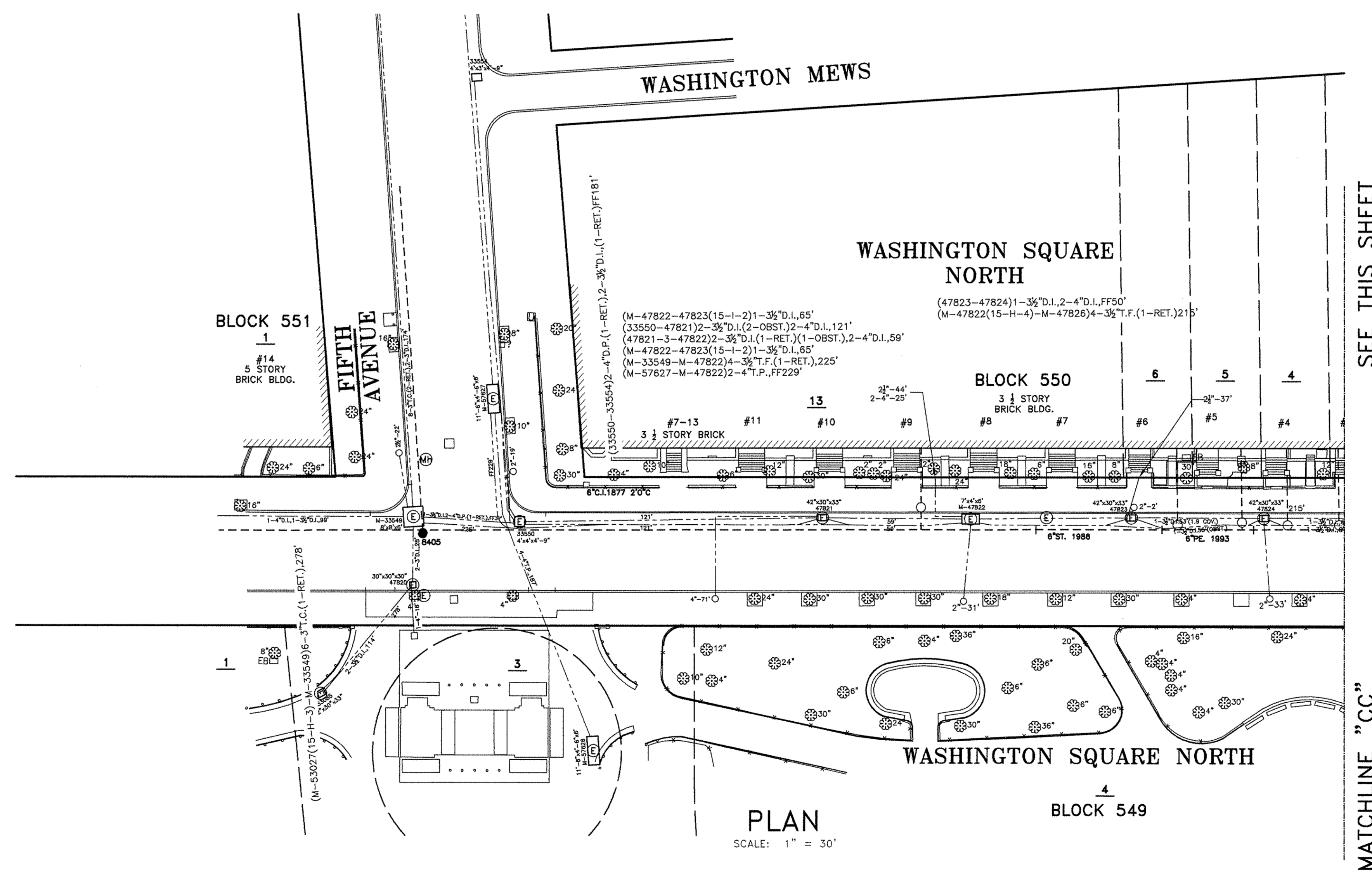
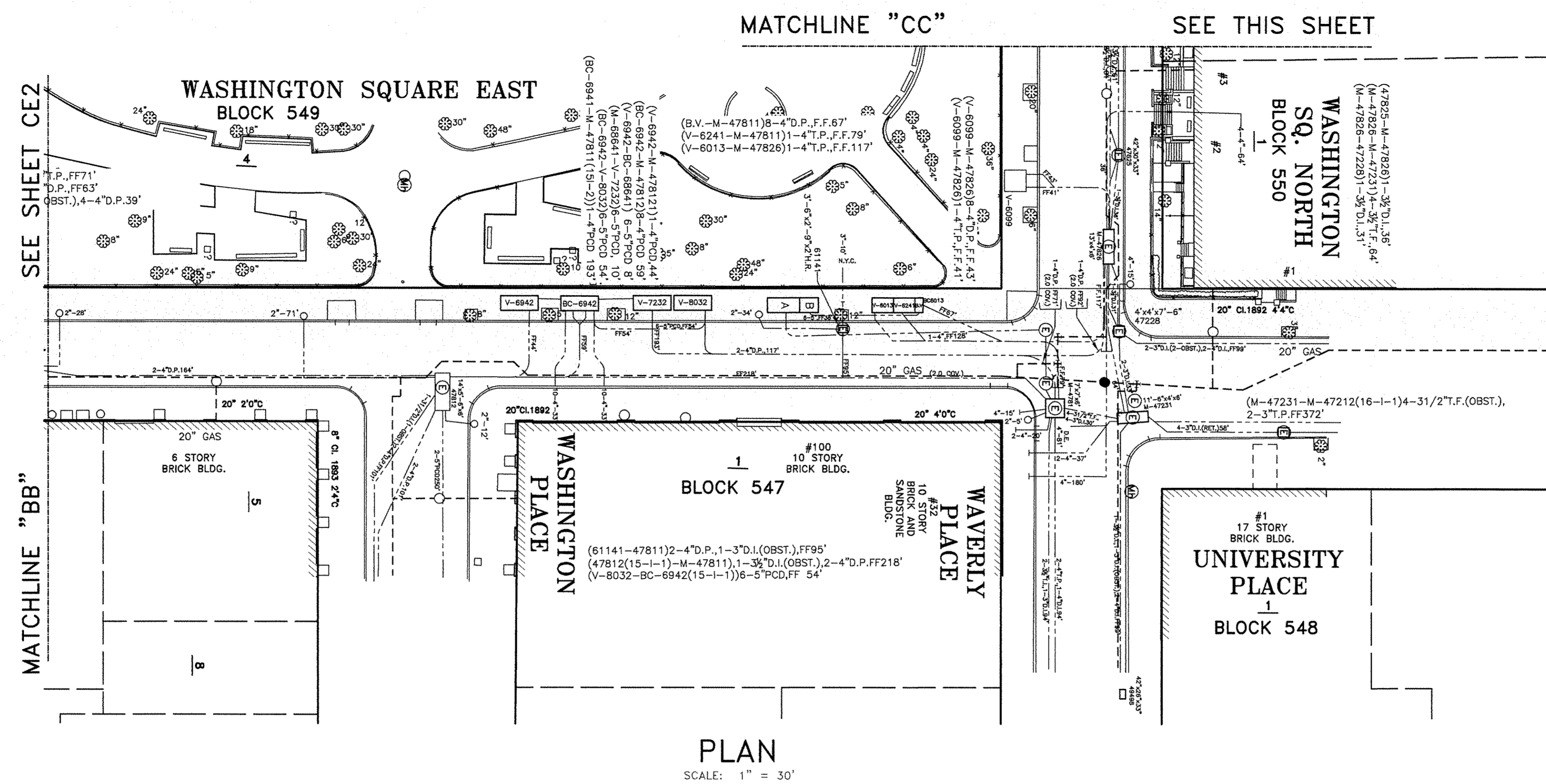
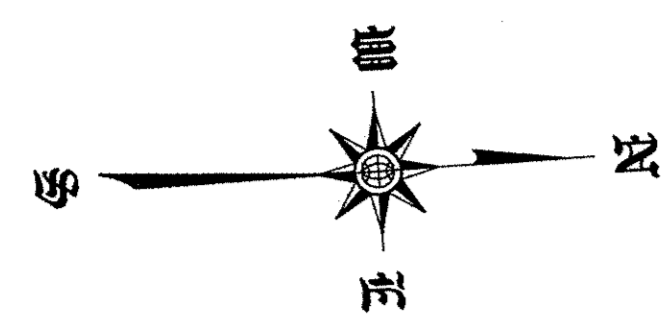
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DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

CON EDISON EXISTING SUBSURFACE
FACILITIES PLAN - 1

DRAWN BY _____ CADD FILE _____

WASHINGTON SQUARE PARK (PHASE I)
BOROUGH OF MANHATTAN

PROJECT ID. MED 608 SHEET OF CE2/CE5



FOR REFERENCE ONLY



Consolidated Edison Co.
of New York, Inc.
4 Irving Place
New York, NY 10003

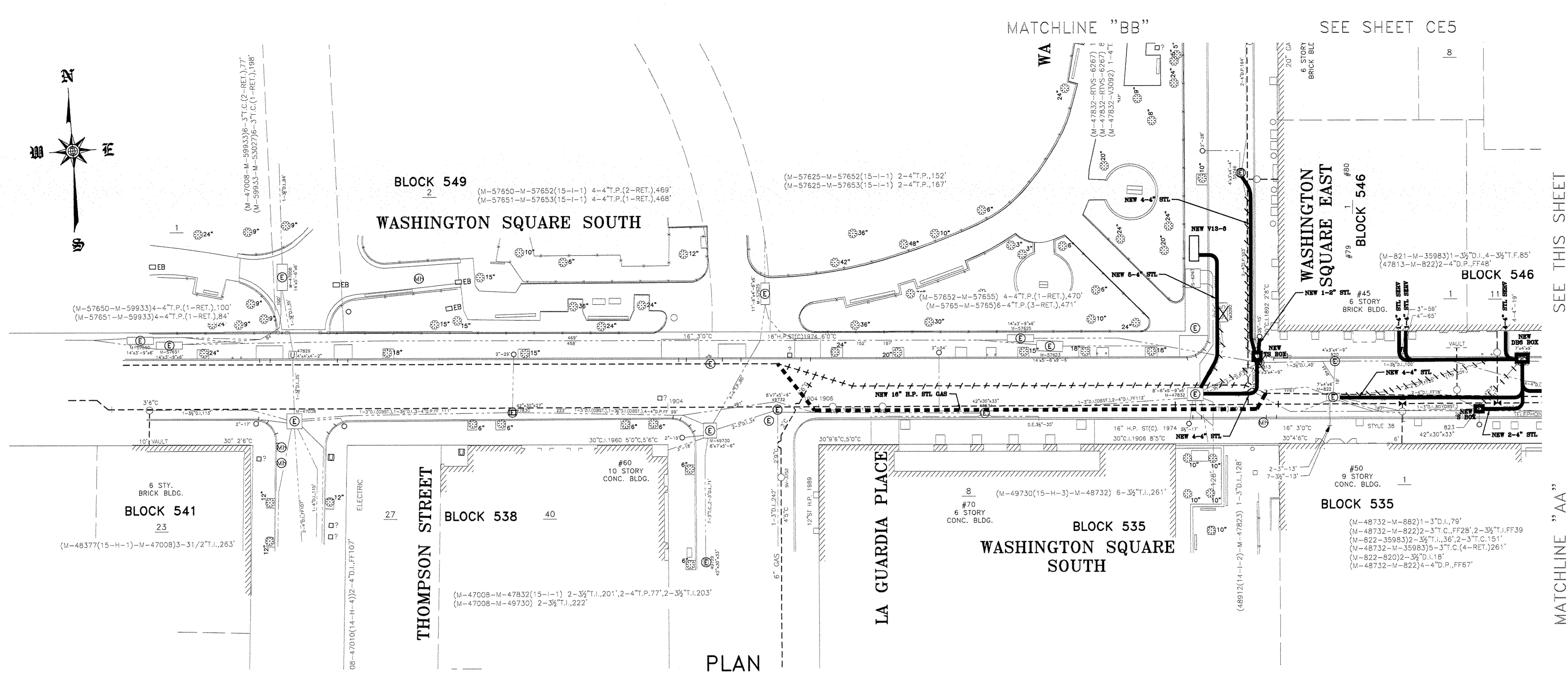
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ENGINEER-IN-CHARGE _____ DATE _____
DESIGN ENGINEER _____ DATE _____

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DIVISION OF INFRASTRUCTURE
BUREAU OF DESIGN

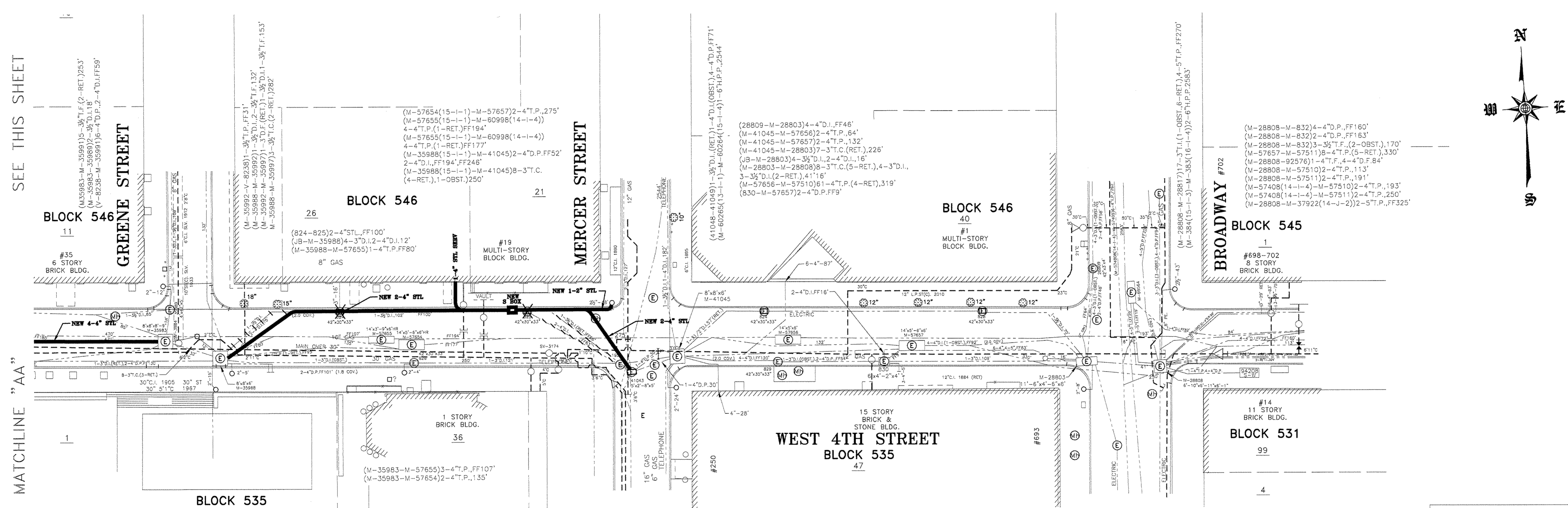
CON EDISON EXISTING SUBSURFACE
FACILITIES PLAN - 2
DRAWN BY _____ CADD FILE _____

WASHINGTON SQUARE PARK (PHASE I)
BOROUGH OF MANHATTAN
PROJECT ID. MED 608 SHEET OF _____

CE3
CE5




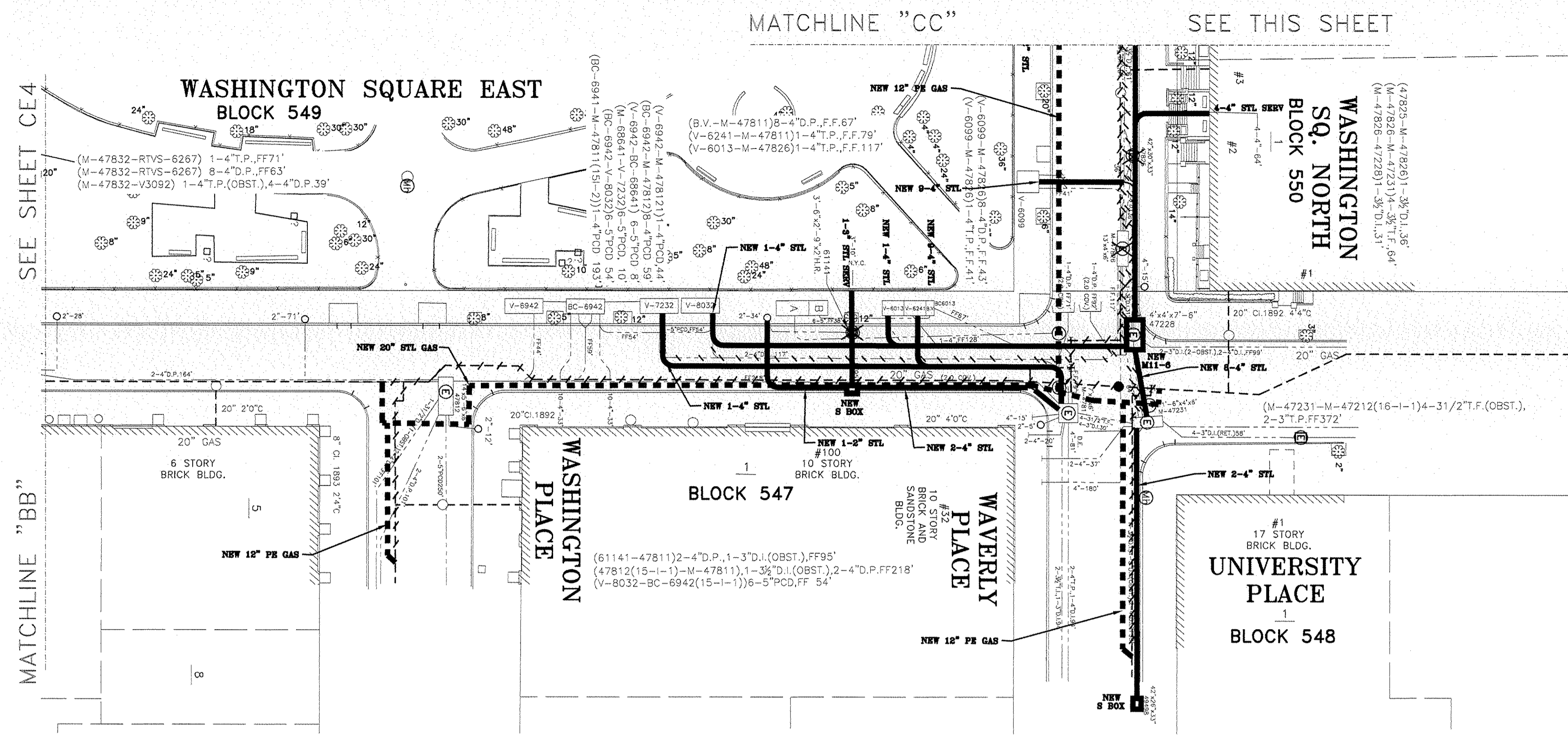
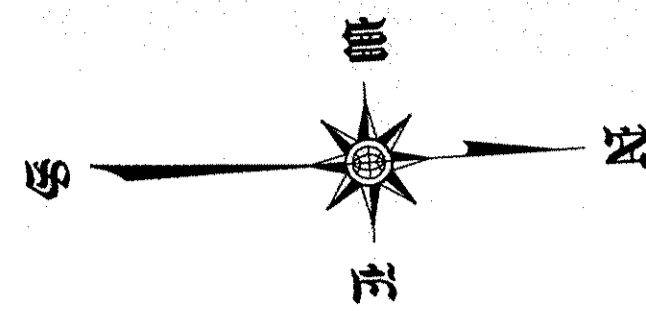
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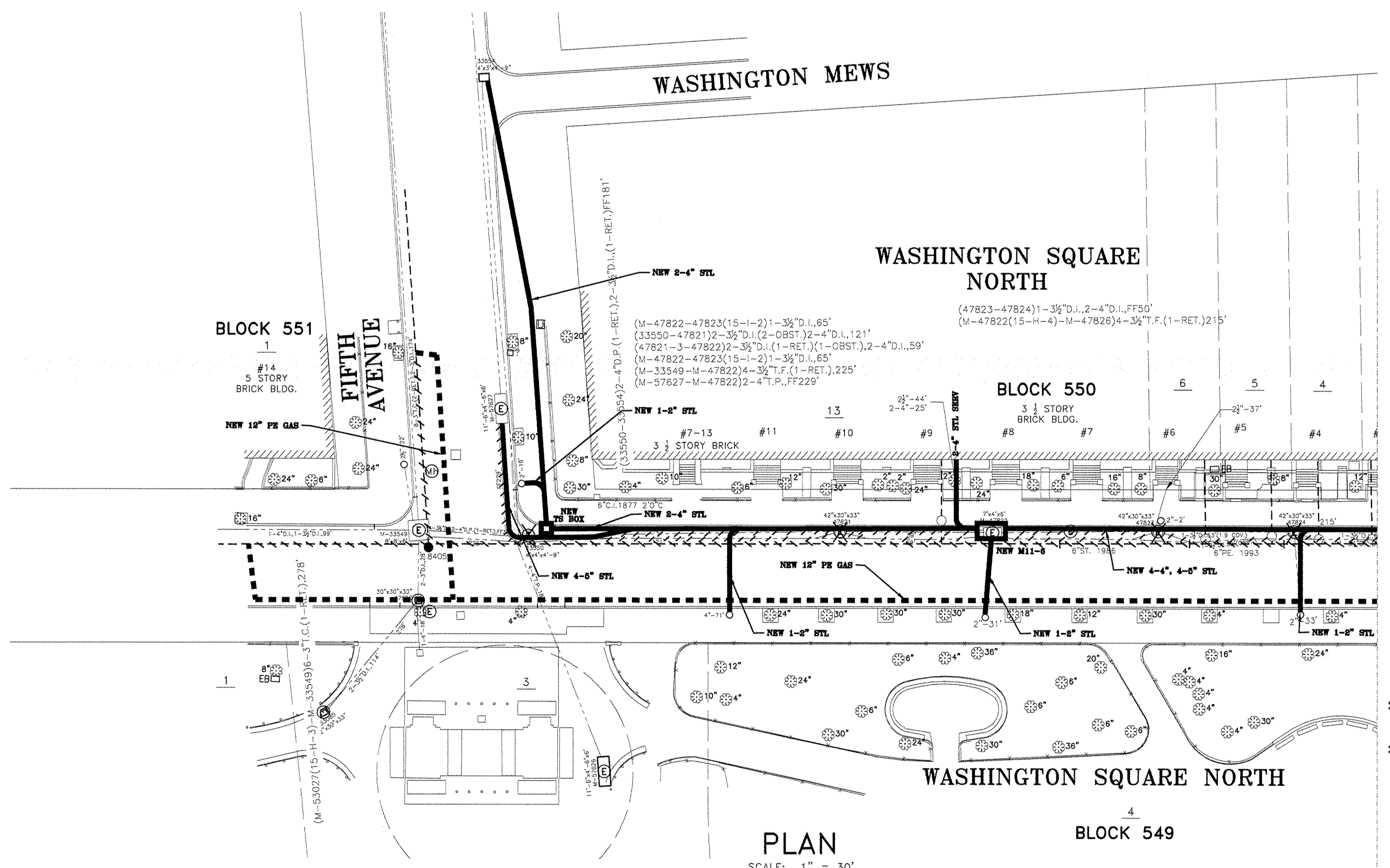
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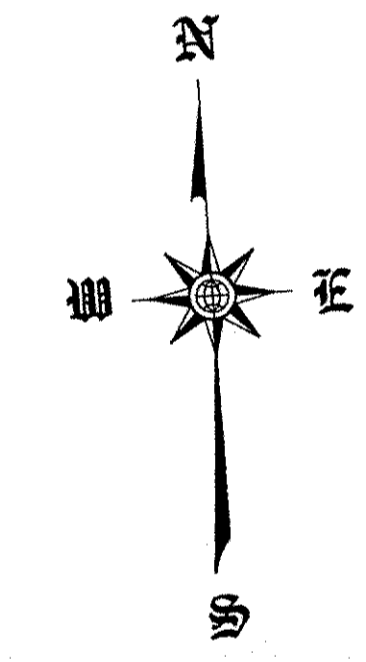
 Consolidated Edison Co. of New York, Inc. 4 Irving Place New York, NY 10003	FINAL DESIGN PREPARED BY: _____ ENGINEER-IN-CHARGE _____ DATE _____ DESIGN ENGINEER _____ DATE _____	CITY OF NEW YORK DEPARTMENT OF DESIGN AND CONSTRUCTION DIVISION OF INFRASTRUCTURE BUREAU OF DESIGN	CON EDISON PROPOSED SUBSURFACE FACILITIES PLAN - 1 DRAWN BY _____ CADD FILE _____	WASHINGTON SQUARE PARK (PHASE I) BOROUGH OF MANHATTAN PROJECT ID. MED 608 SHEET OF _____
				CE4 CES



PLAN
SCALE: 1" = 30'



PLAN
SCALE: 1" = 30'



FOR REFERENCE ONLY



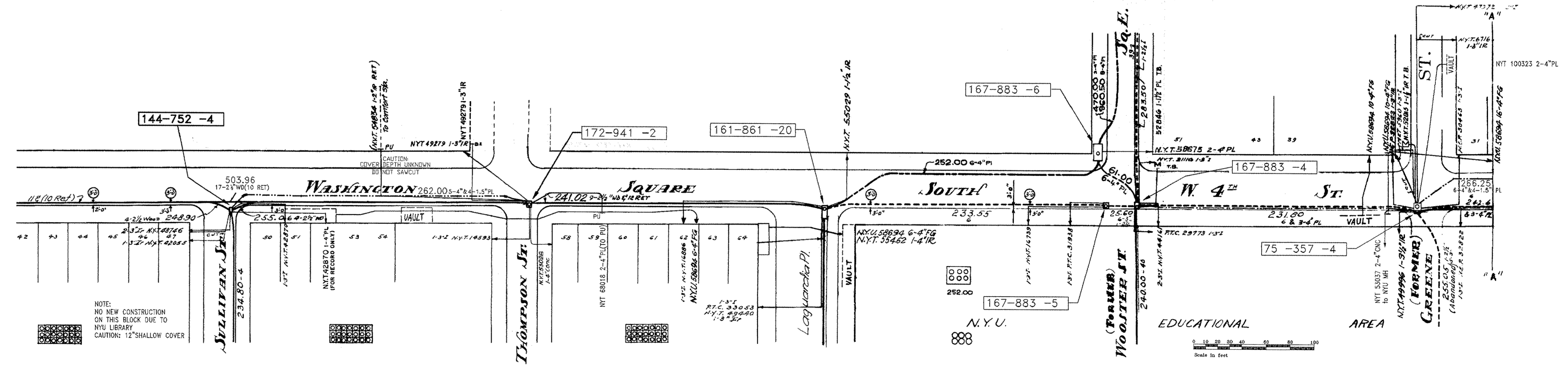
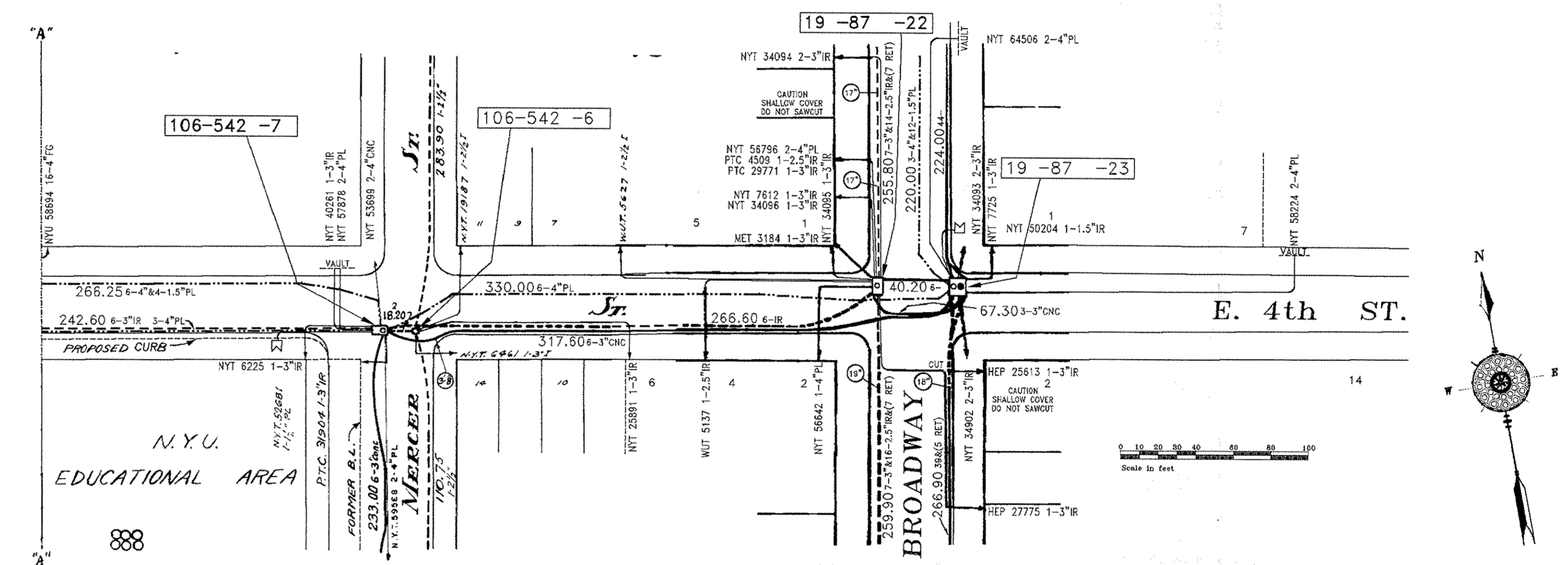
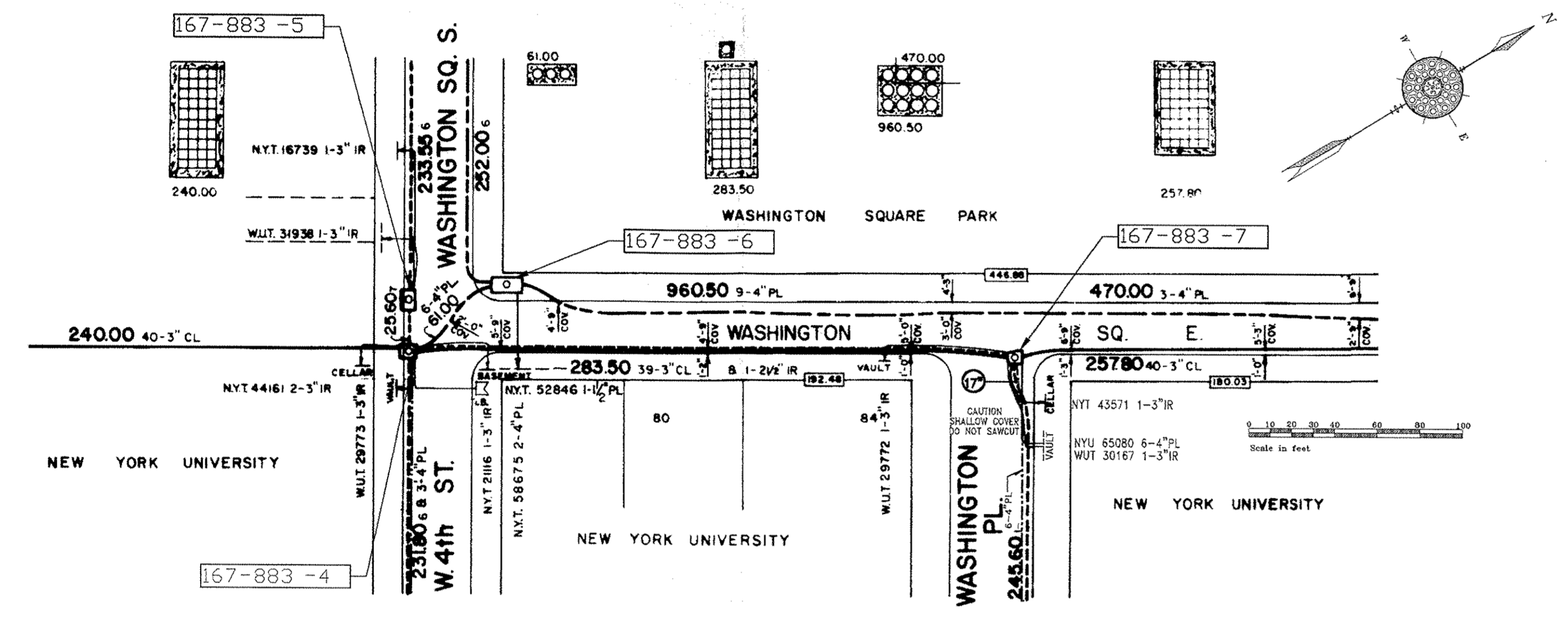
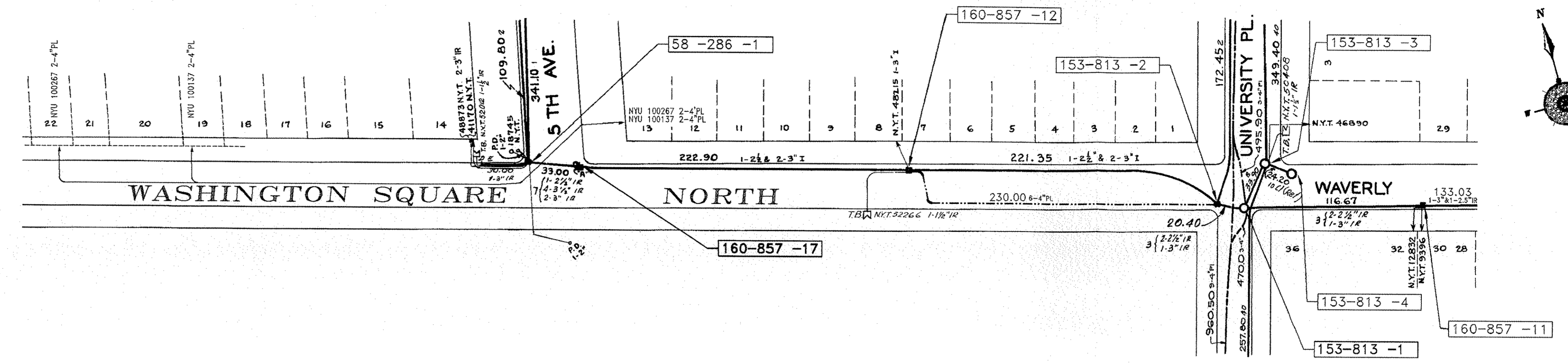
Consolidated Edison Co.
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4 Irving Place
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FINAL DESIGN PREPARED BY:
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DESIGN ENGINEER _____ DATE _____

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

CON EDISON PROPOSED SUBSURFACE
FACILITIES PLAN - 2
DRAWN BY _____ CADD FILE _____

WASHINGTON SQUARE PARK (PHASE I)
BOROUGH OF MANHATTAN
PROJECT ID. MED 608 SHEET OF CES/CE5



DESIGNED _____	SCALE AS SHOWN	ENGINEER-IN-CHARGE _____
DRAWN _____	CADD FILE _____	DIRECTOR _____
CHECKED _____		



EMPIRE CITY SUBWAY
EXISTING FACILITIES PLAN

NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				
WATER MAIN WORK AT WASHINGTON SQUARE PARK - PHASE 1 BOROUGH OF MANHATTAN				
PROJECT ID:	MED608	DATE:	12/10/13	SHEET OF _____

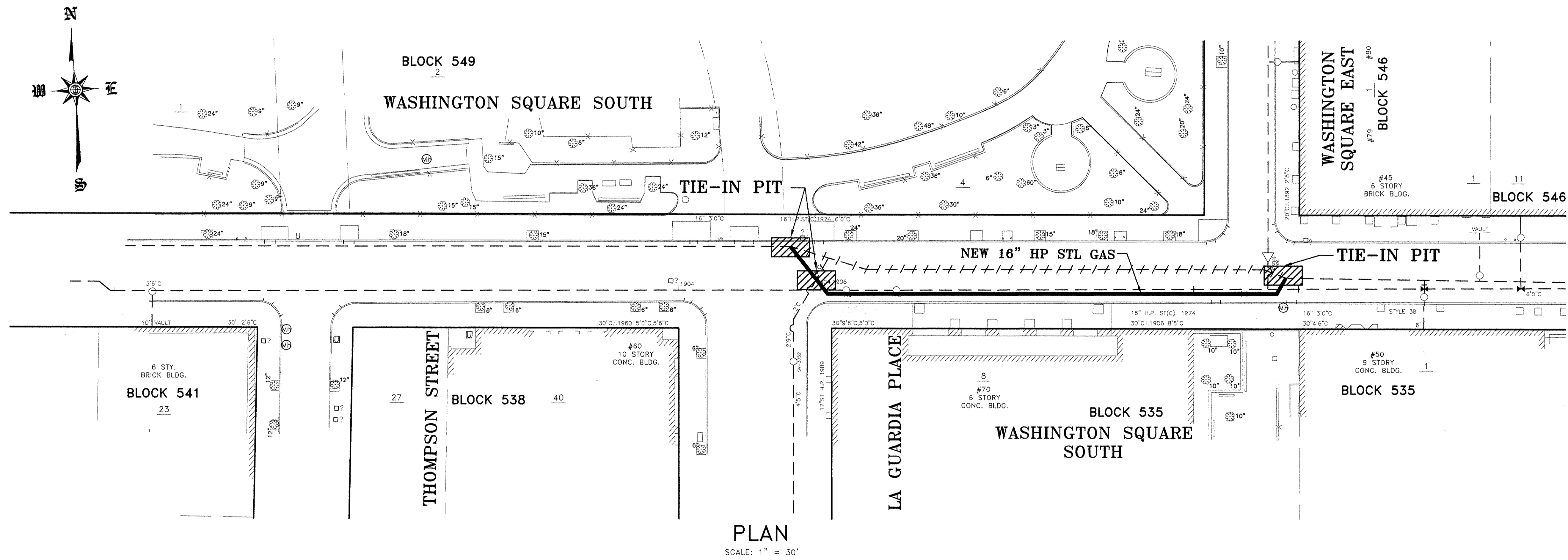
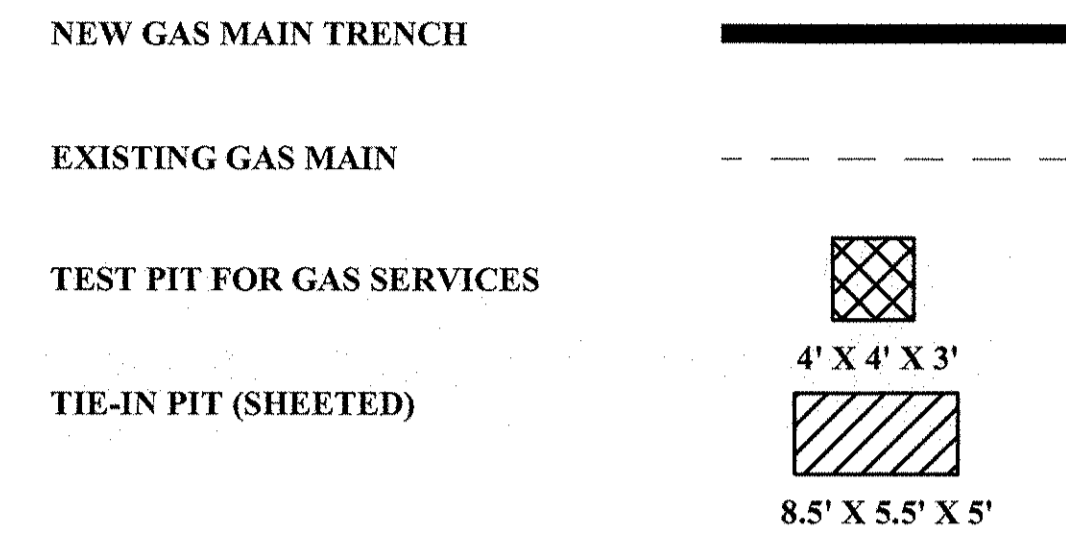
TABLE 1: PROPOSED GAS RELOCATION WORK

Size of Main	Material Type	Proposed Footage (LF)	No. of 8 hr Crew Shifts Required
16"	STEEL (HP)	280	60
20"	STEEL	320	80
12"	PE	835	8
Sub-Totals			
Gas Main	LF	1,435	148
Trans. / Connect			
Service	Each	6	9
Grand Total 8 hour Crew Shifts			157

TABLE 2: PROPOSED GAS TRENCHING WORK

SHEET	CAPITAL ITEMS	Trench Dimensions			Item 6.09 (CY)
		L	W	D	
EP7-1	INSTALL 16" HP STL MAIN WASHINGTON SQ. SOUTH BTW LA GUARDIA PLACE AND WASHINGTON SQ. EAST	280.00	3.33	4.83	166.80
EP7-2	INSTALL 20" LP STL MAIN WASHINGTON SQ. EAST BTW WASHINGTON PLACE AND WASHINGTON SQ. NORTH	320.00	3.67	5.17	224.88
EP7-2	INSTALL 12" LP PE MAIN WASHINGTON PLACE E/O WASHINGTON SQ. EAST	55.00	3.00	4.50	27.50
EP7-2	WAVERLY PLACE E/O WASHINGTON SQ. EAST	95.00	3.00	4.50	47.50
EP7-2	WASHINGTON SQ. NORTH BTW 5TH AVENUE AND WASHINGTON SQ. EAST	580.00	3.00	4.50	290.00
EP7-2	5TH AVENUE N/O WASHINGTON SQ. NORTH	105.00	3.00	4.50	52.50
	(A) Gas trench volume				809.17
	(B) Tie in pits volume				86.57
	(C) Test Pits for gas services				10.67
	(A)+(B)+(C)				906.41
	add 20%				181.28
	Total				1087.70
	say 1,090 CY				

LEGEND:



NO.	DATE	DESCRIPTIONS	BY	APPR'D
		REVISIONS		

WATER MAIN WORK AT WASHINGTON SQUARE PARK - PHASE 1
BOROUGH OF MANHATTAN

PROJECT ID: MED 608 DATE: SHEET OF -- APPR'D: EP7-2



DESIGNED _____
DRAWN _____
CHECKED _____

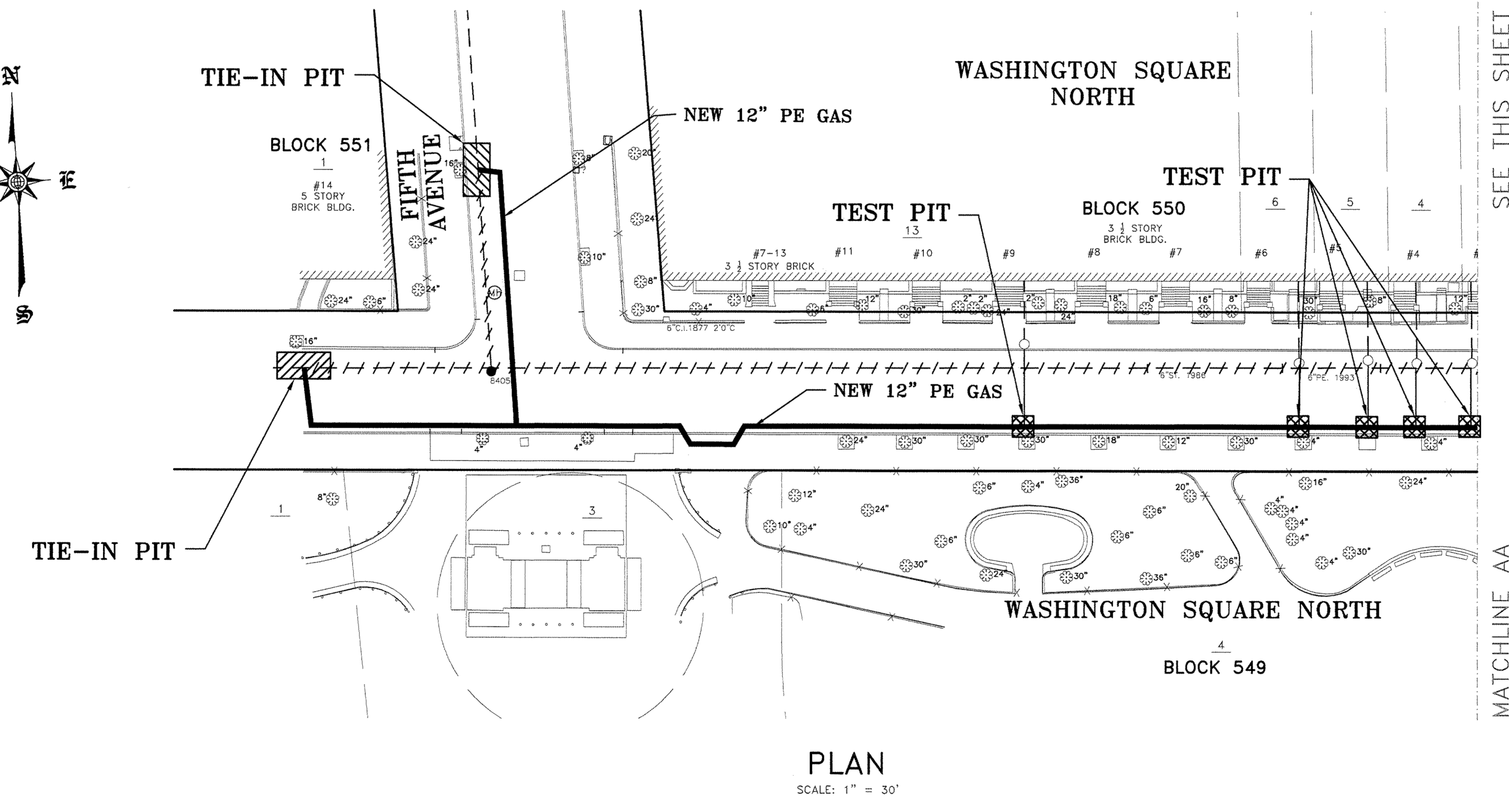
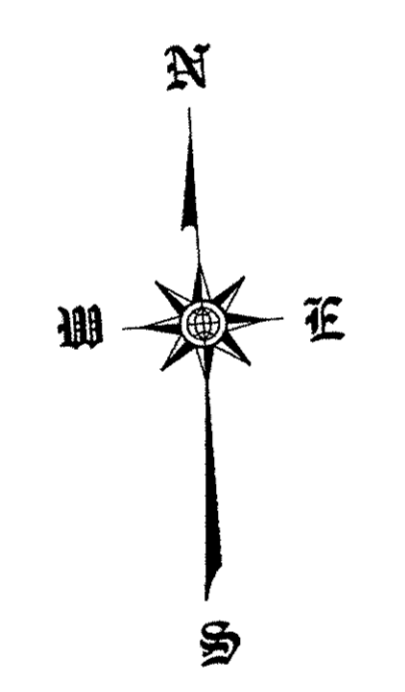
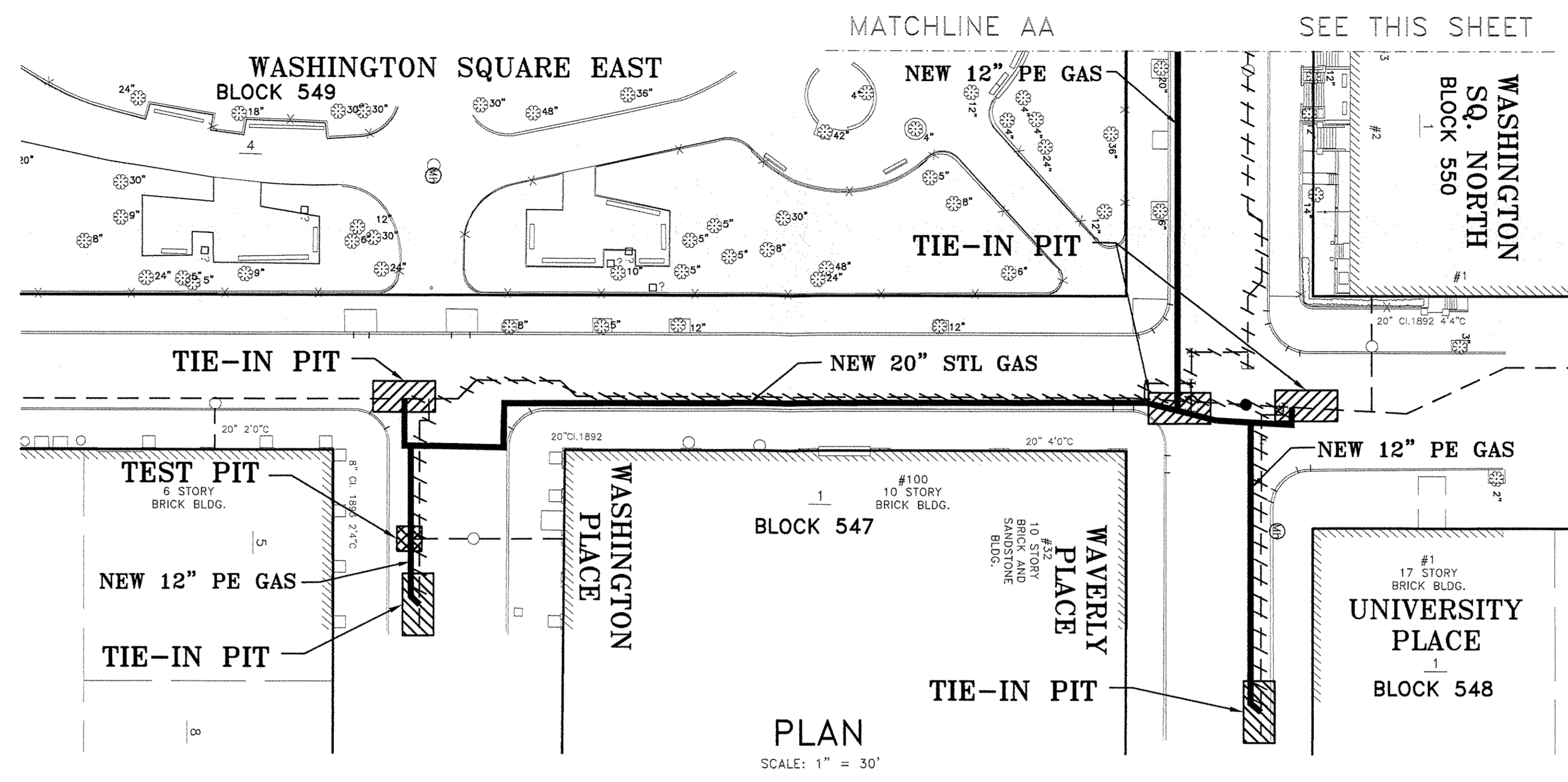
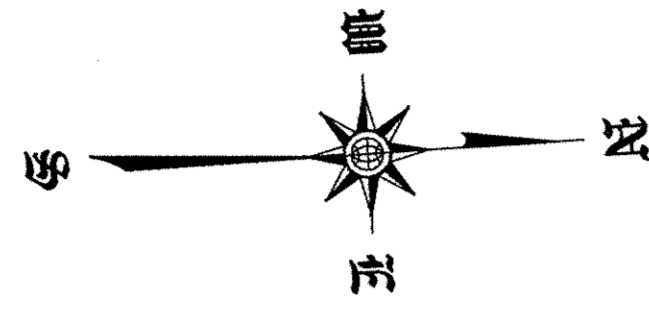
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ENGINEER-IN-CHARGE _____
DIRECTOR _____

CADD FILE _____

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

PROPOSED CON EDISON
GAS SPECIALTY CONTRACTOR WORK
(ITEM 6.09)



LEGEND:

- NEW GAS MAIN TRENCH
 - EXISTING GAS MAIN
 - TEST PIT FOR GAS SERVICES
 - TIE-IN PIT (SHEETED)
- 4' X 4' X 3'
8.5' X 5.5' X 5'

NO.	DATE	DESCRIPTIONS REVISIONS	BY	APPR'D

WATER MAIN WORK AT
WASHINGTON SQUARE PARK - PHASE 1
BOROUGH OF MANHATTAN

PROJECT ID: MED 608 DATE: SHEET OF -- EPT-2 / EPT-2

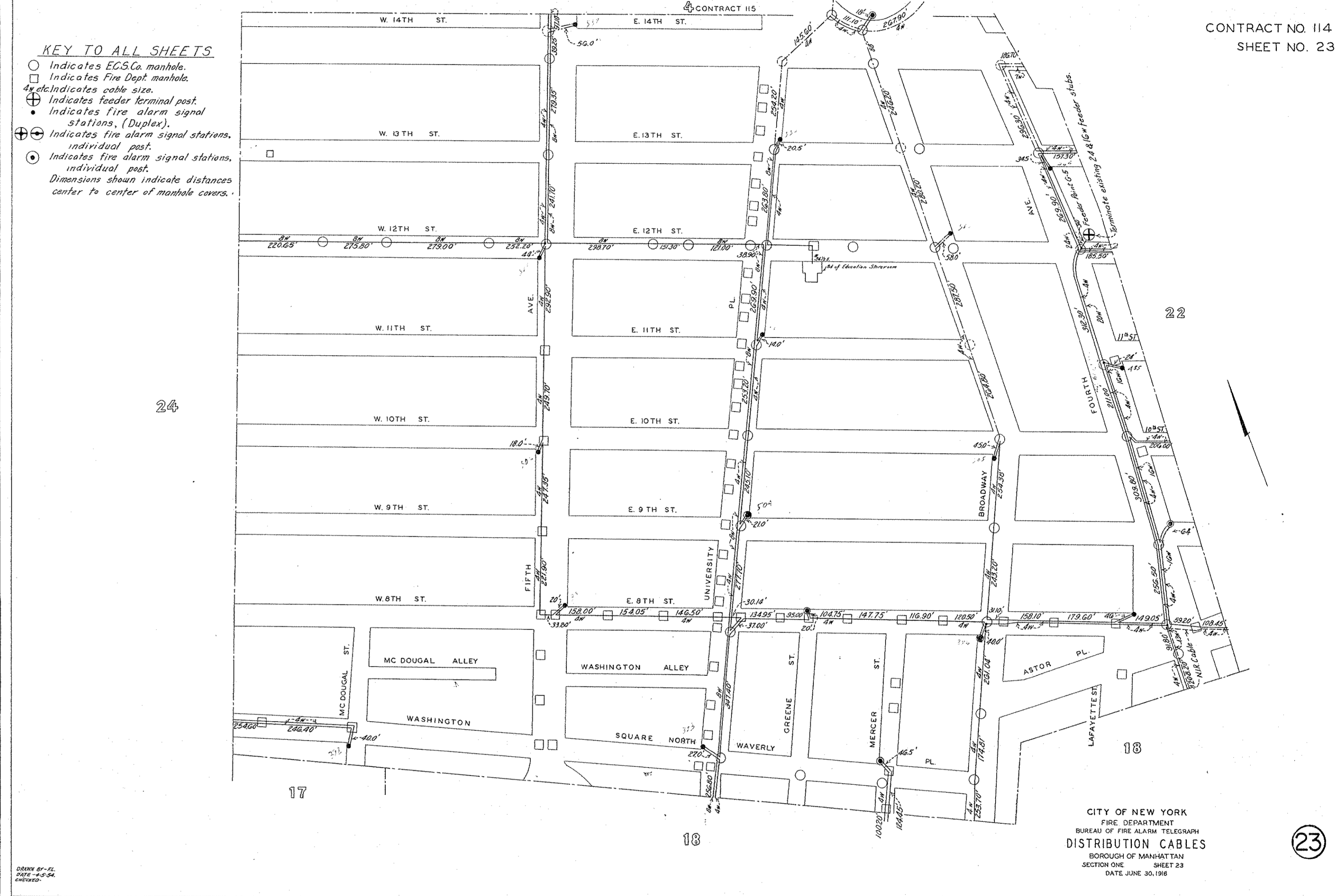
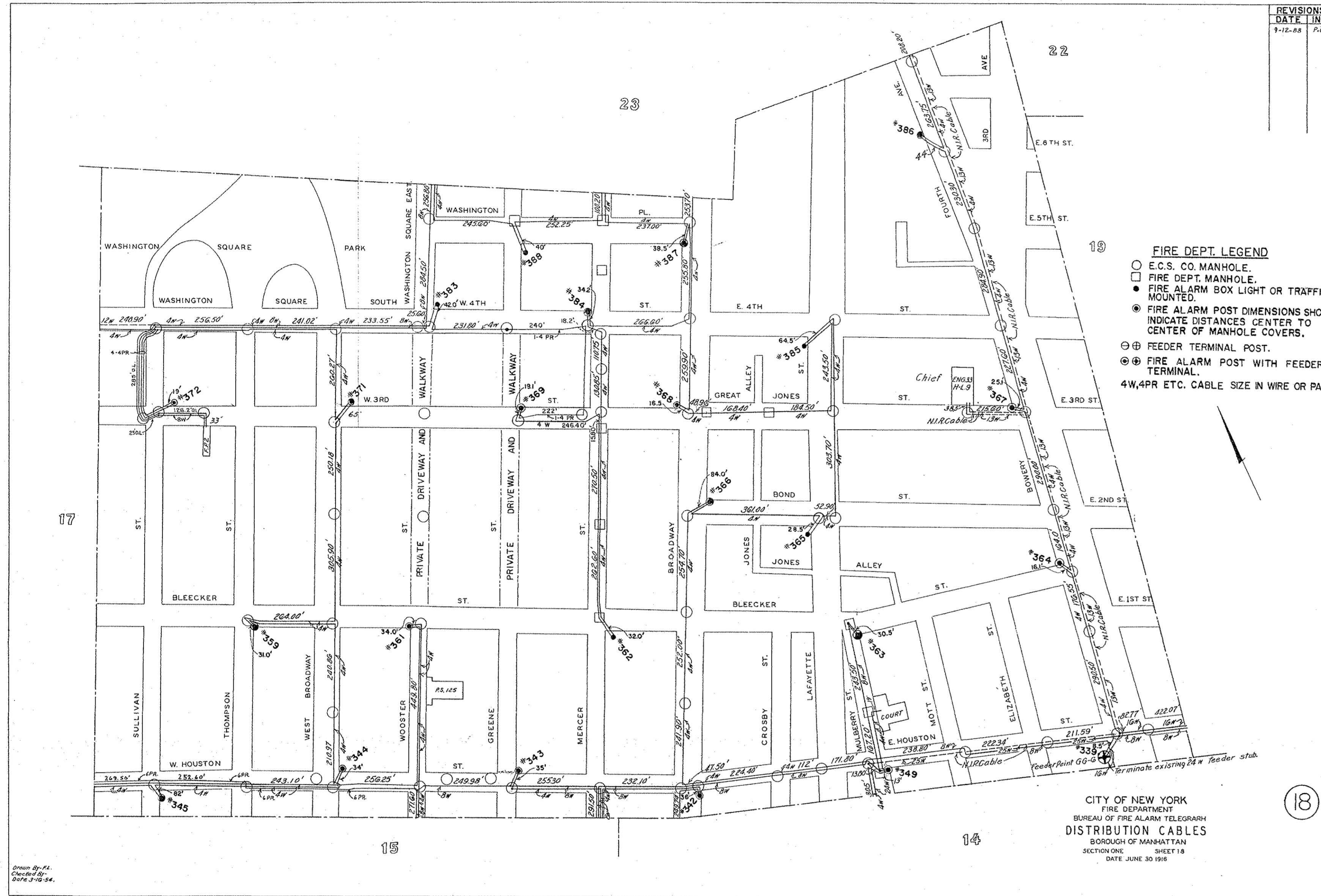


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SCALE AS SHOWN
CADD FILE _____

ENGINEER-IN-CHARGE _____
DIRECTOR _____

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

PROPOSED CON EDISON
GAS SPECIALTY CONTRACTOR WORK
(ITEM 6.09)



TOPOGRAPHIC SURVEY PREPARED BY:
 LICENSED LAND SURVEYOR

DESIGNED _____
 DRAWN _____
 CHECKED _____

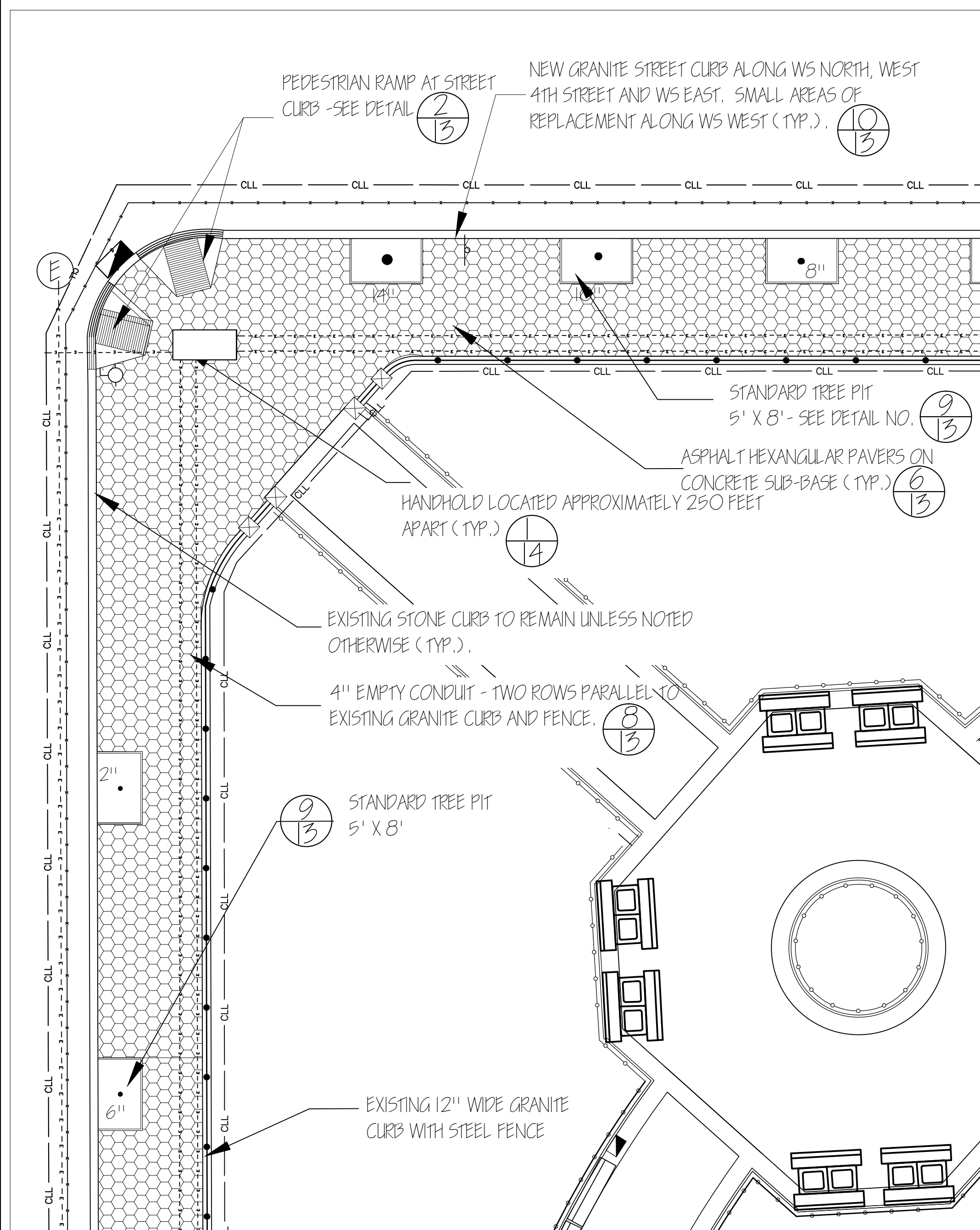
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 MED608-REF-FDNYBASEMAPS
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MIKHAIL KLIGER P.E.
 ENGINEER-IN-CHARGE
 GEORGE FRANZ P.E.
 DIRECTOR

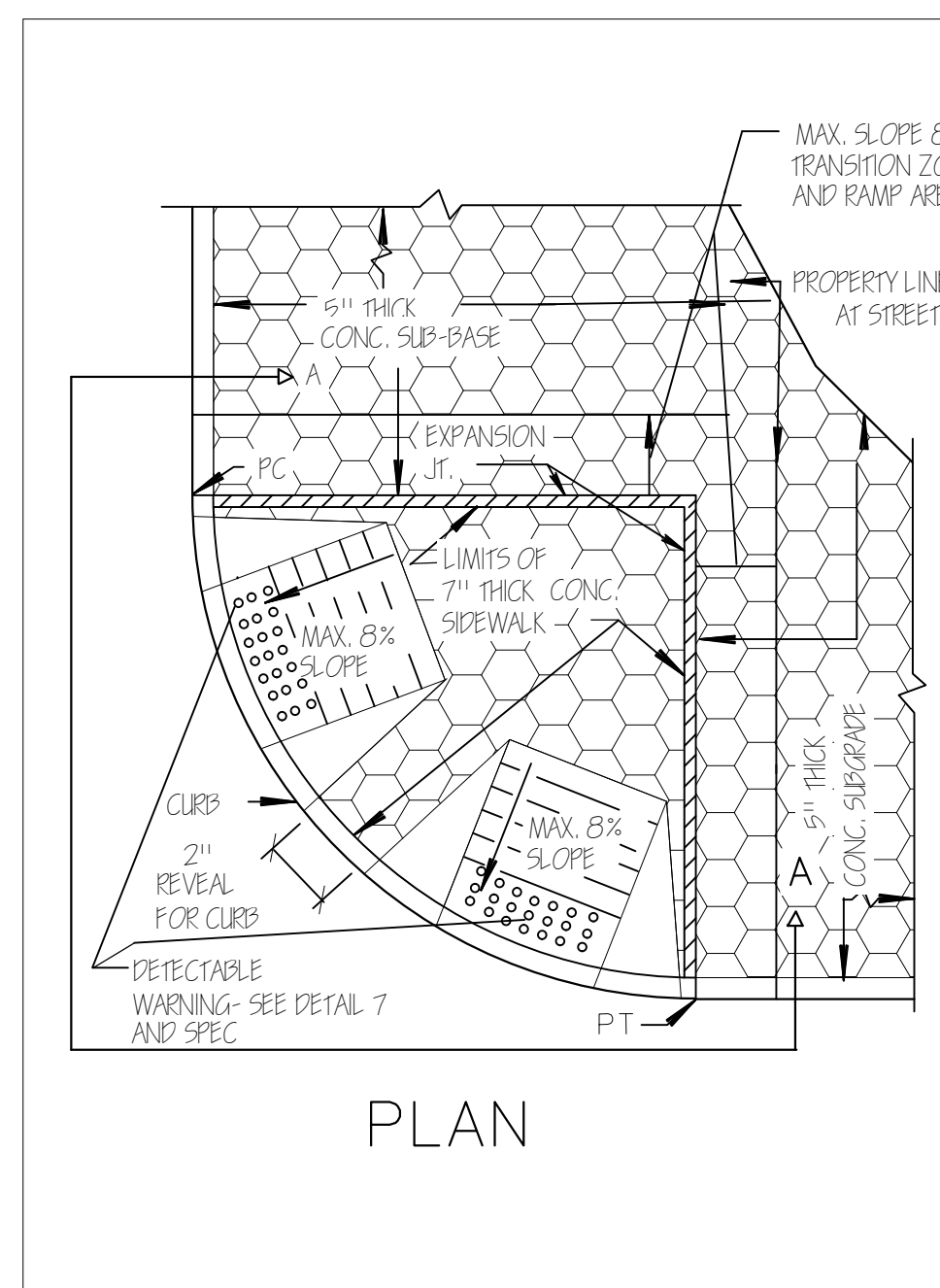
CITY OF NEW YORK
 DEPARTMENT OF DESIGN + CONSTRUCTION
 DIVISION OF INFRASTRUCTURE
 BUREAU OF DESIGN

FDNY FIRE ALARM BASE MAPS

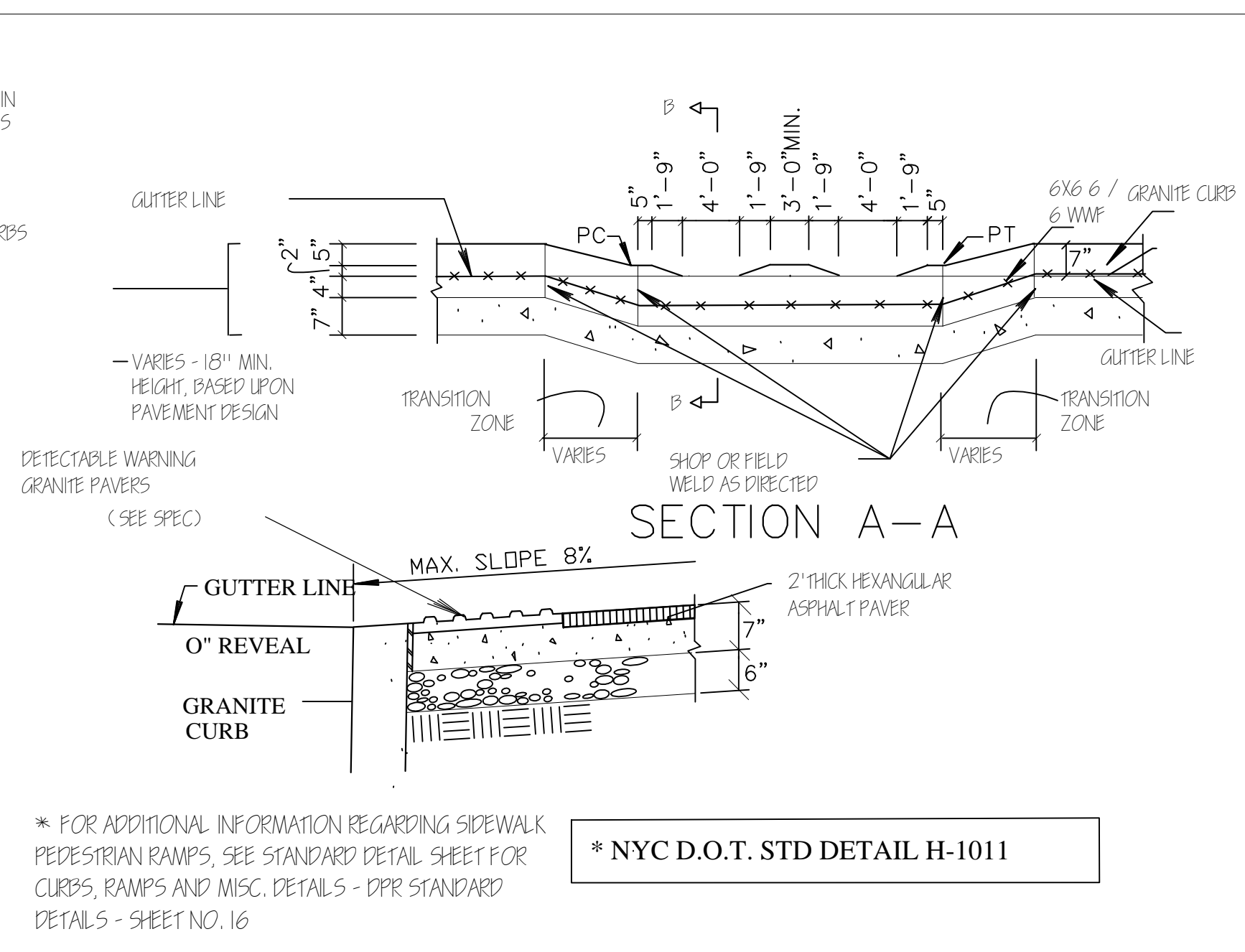
NO.	DATE	DESCRIPTIONS	BY	APPR'D
REVISIONS				
WATER MAIN CONNECTION AT WASHINGTON SQUARE PARK BOROUGH OF MANHATTAN				
PROJECT ID: MED608		DATE: 7/25/14	SHEET REF OF	1



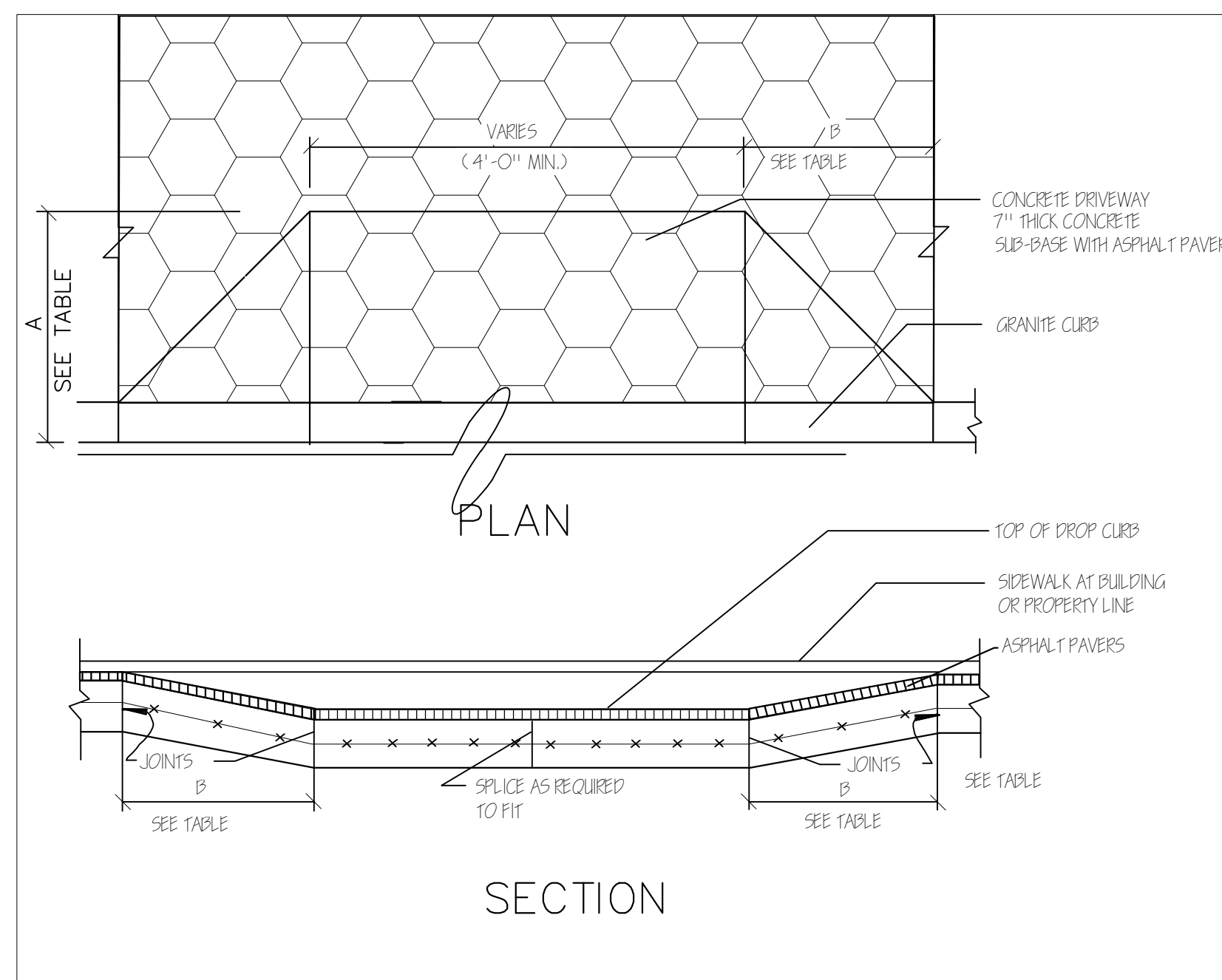
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13 REFERENCE PLAN
SCALE: 1" = 10' - 0"



2
13 D.O.T. GRANITE DROP CURB - SIDEWALK PEDESTRIAN RAMPS
N.T.S.

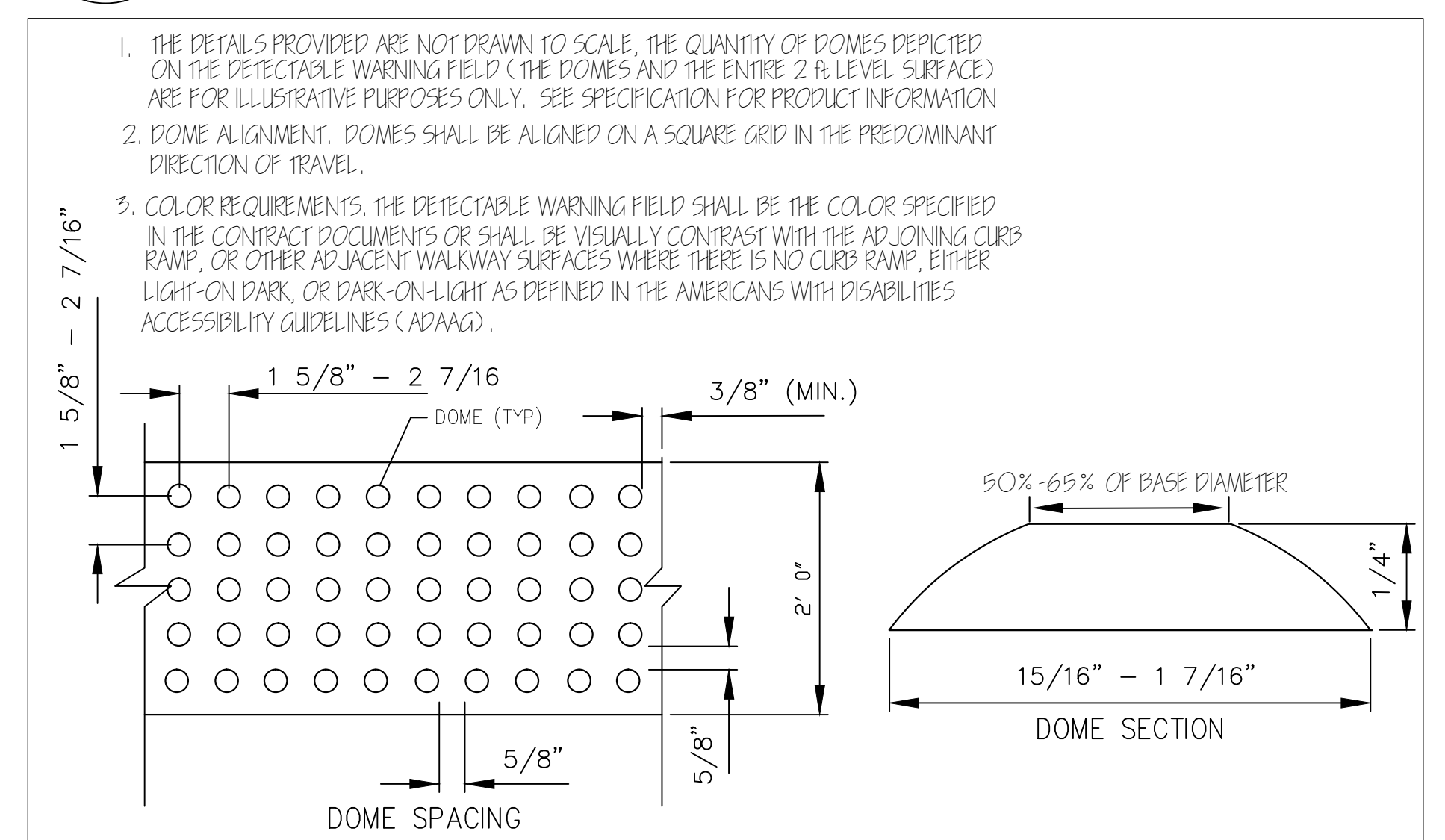


3
13 D.O.T. GRANITE DROP CURB - SIDEWALK VEHICULAR RAMP
N.T.S.

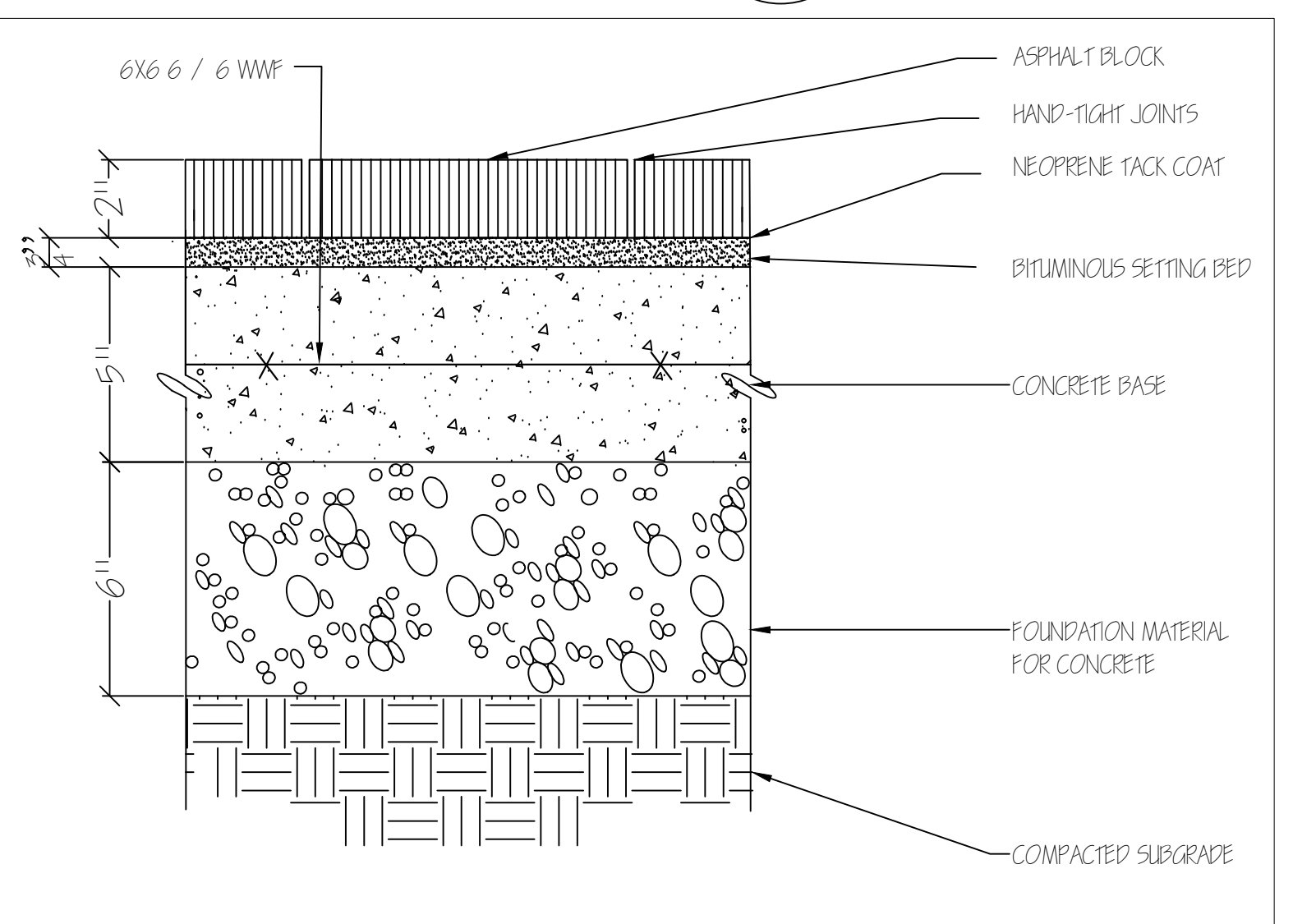


GUTTER REVEAL (INCHES)	A	B
4 1/2"	2' - 0"	1' - 6"
5"	2' - 3"	1' - 8"
5 1/2"	2' - 6"	1' - 11"
6"	2' - 9"	2' - 1"
6 1/2"	3' - 1"	2' - 4"
7"	3' - 4"	2' - 6"
7 1/2"	3' - 7"	2' - 9"
8"	3' - 11"	2' - 11"
8 1/2"	4' - 2"	3' - 2"
9"	4' - 6"	3' - 4"

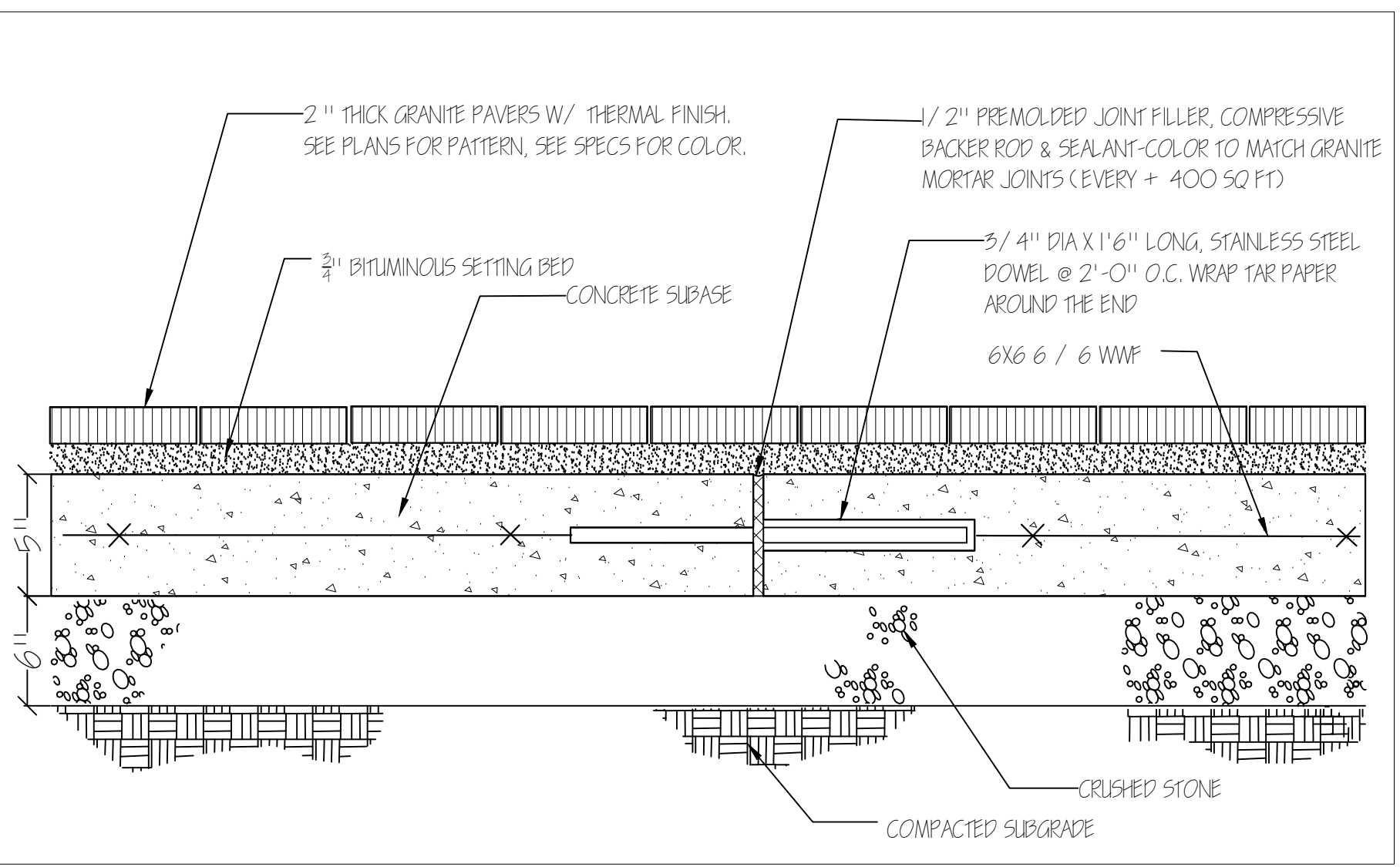
* NYC D.O.T. STD DETAIL H-1015



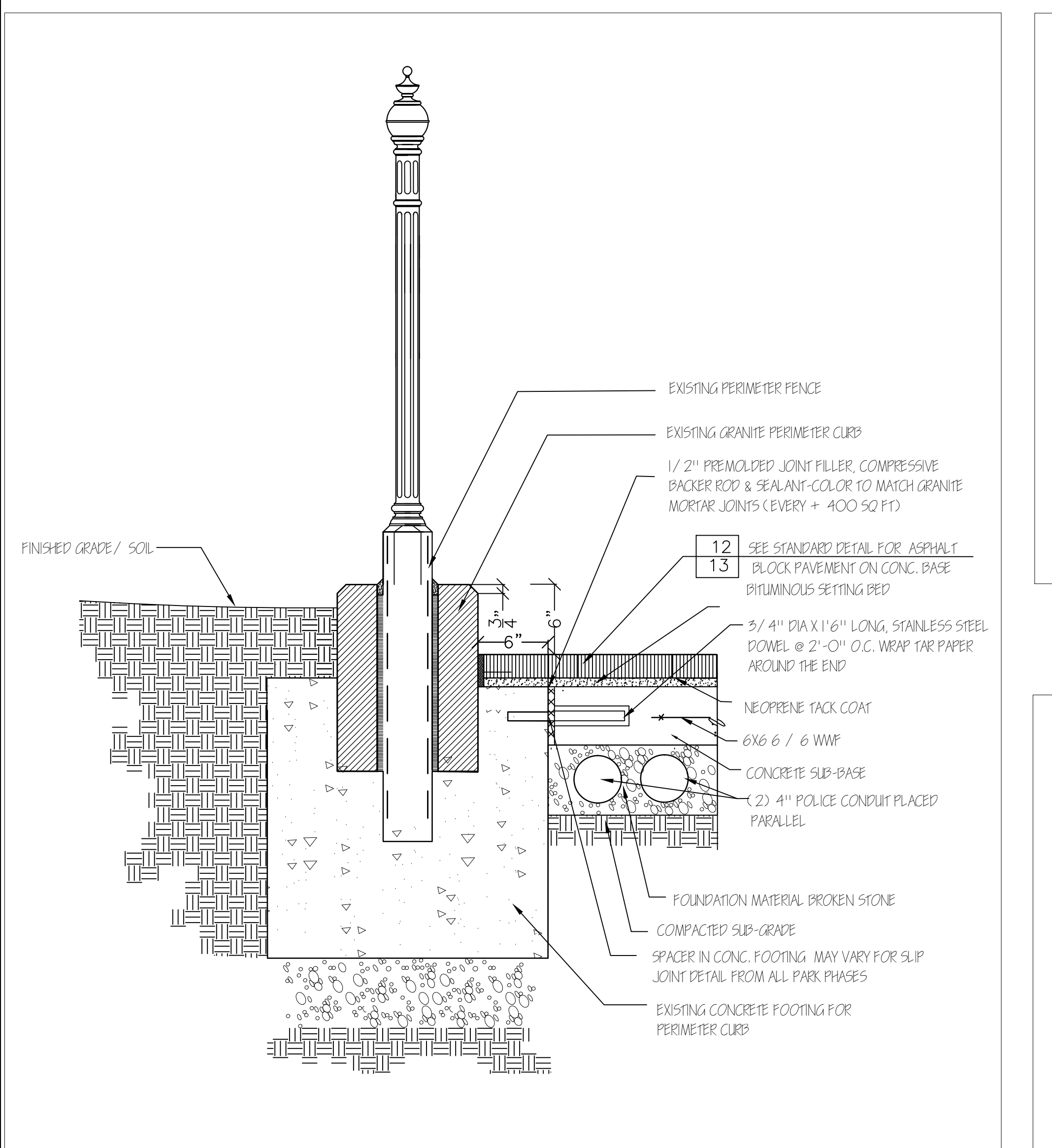
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13 DETECTABLE WARNING DETAILS
N.T.S.



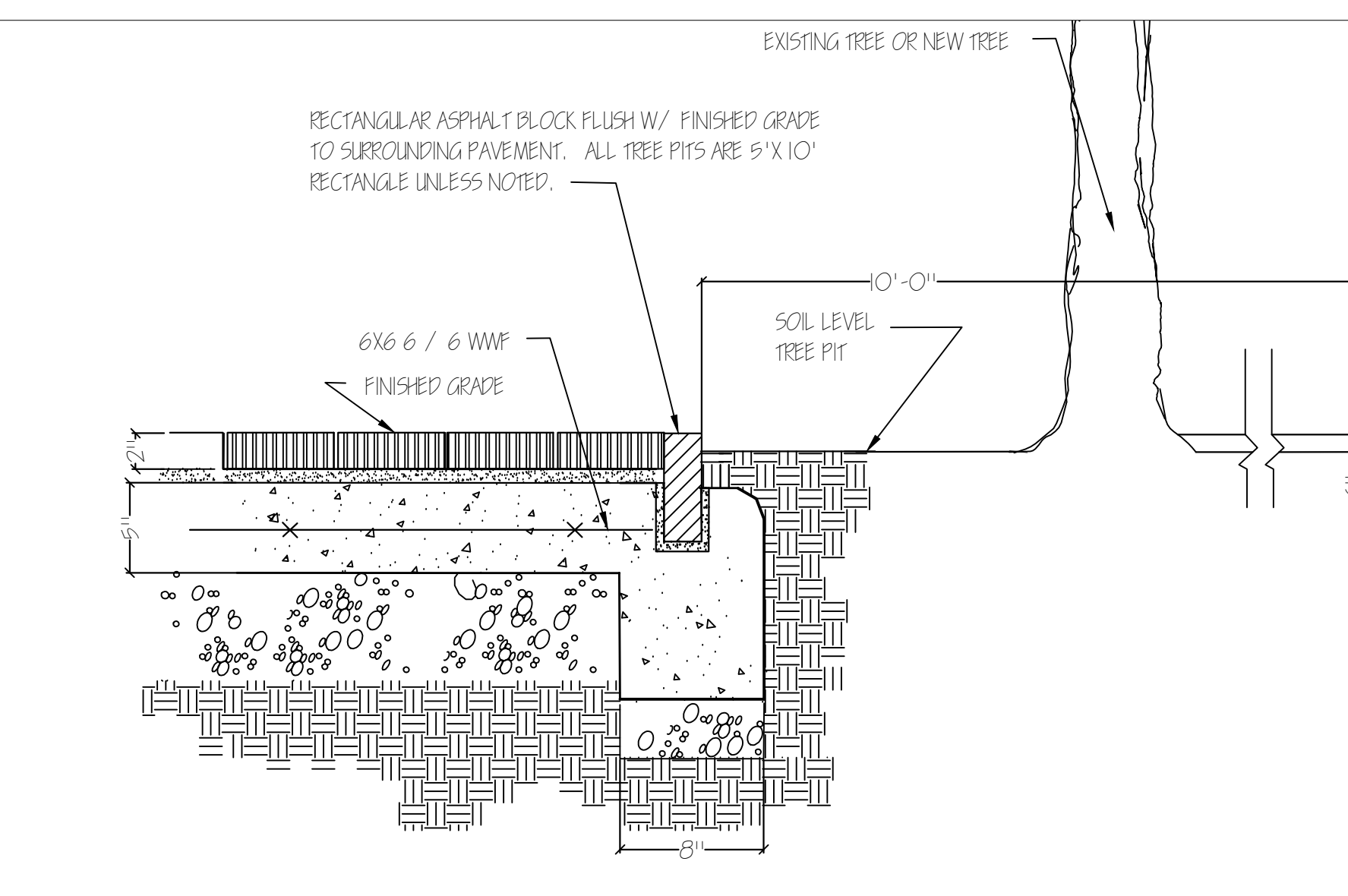
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13 ASPHALT BLOCK PAVER ON CONCRETE BASE
SCALE: 3/4" = 1' - 0"



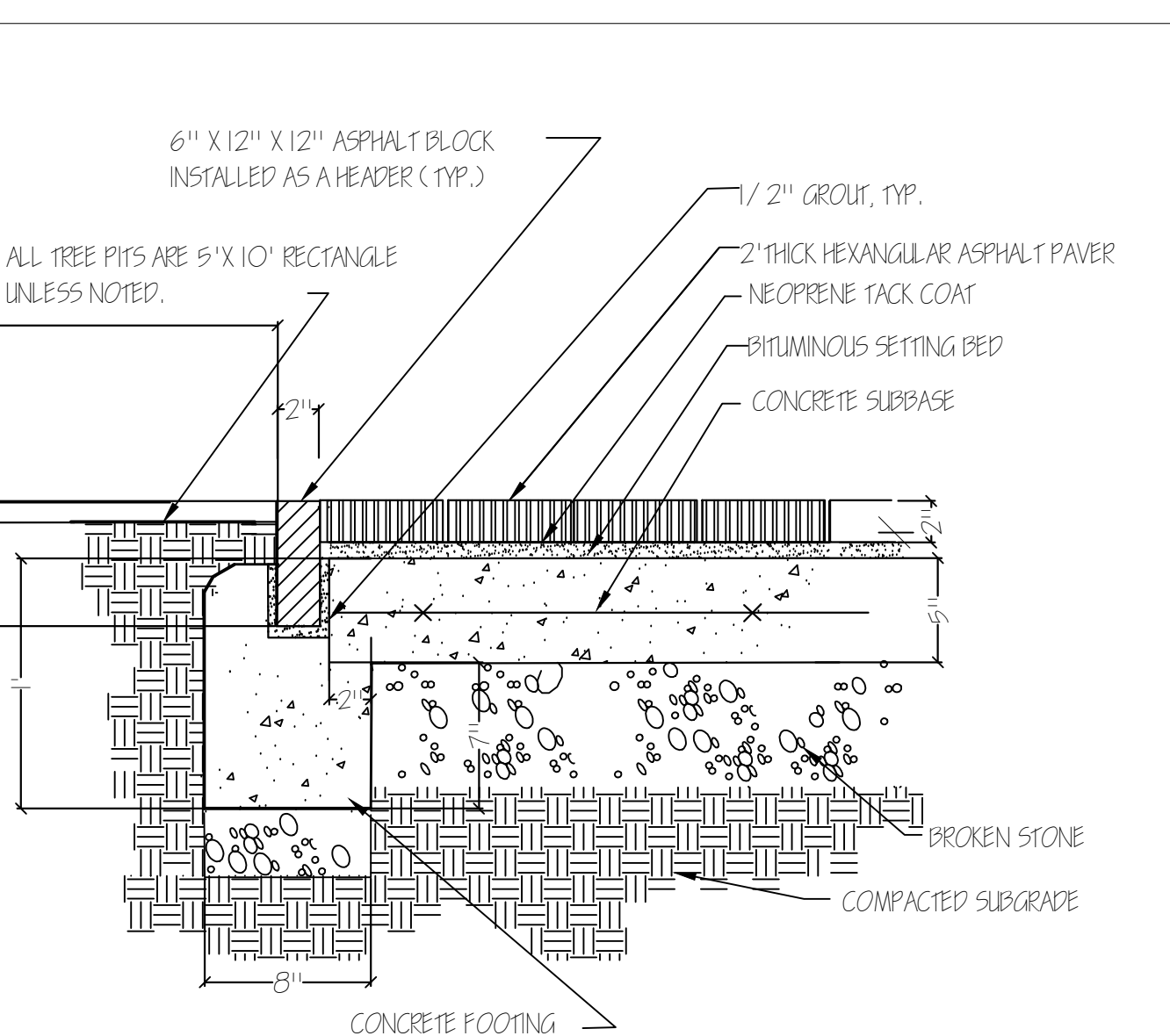
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13 SLIP JOINT SECTION
SCALE: 1 1/2" = 1' - 0"



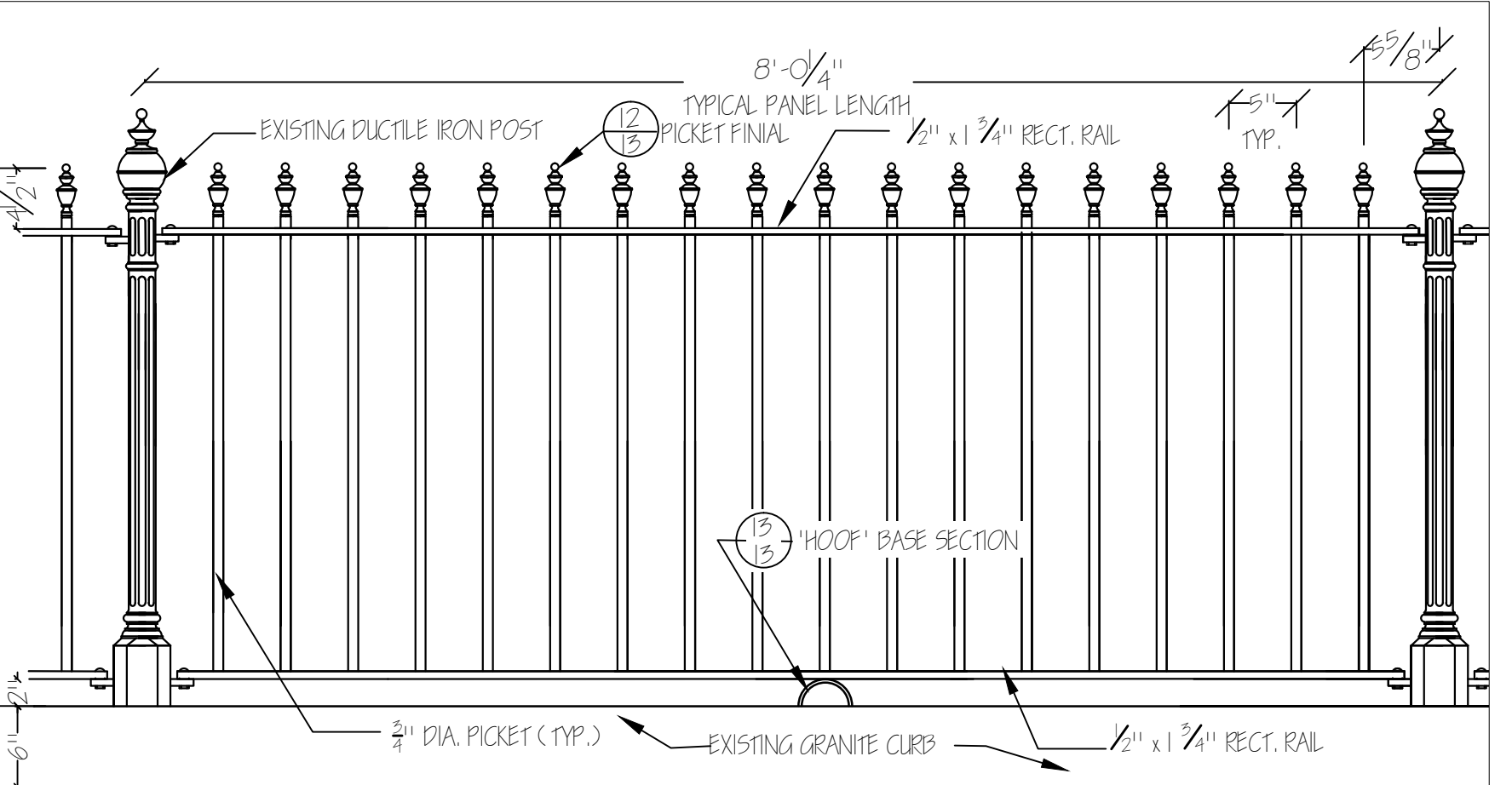
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13 4" CONDUIT BELOW NEW SIDEWALKS ADJACENT TO PERIMETER FENCE
SCALE: 1 1/2" = 1' - 0"



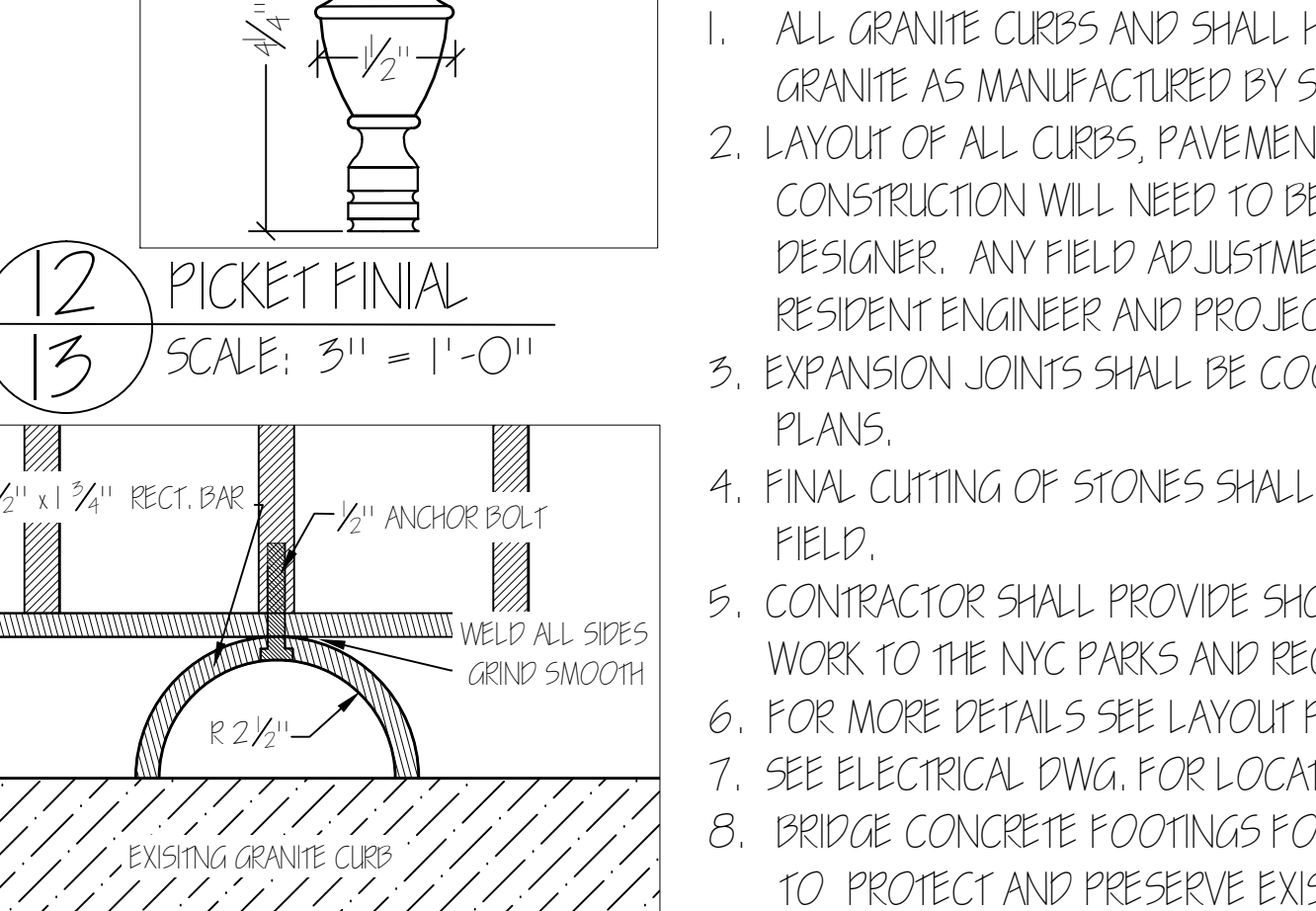
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13 5' X 10' TREE PIT WITH ASPHALT PAVER HEADER
SCALE: 1 1/2" = 1' - 0"



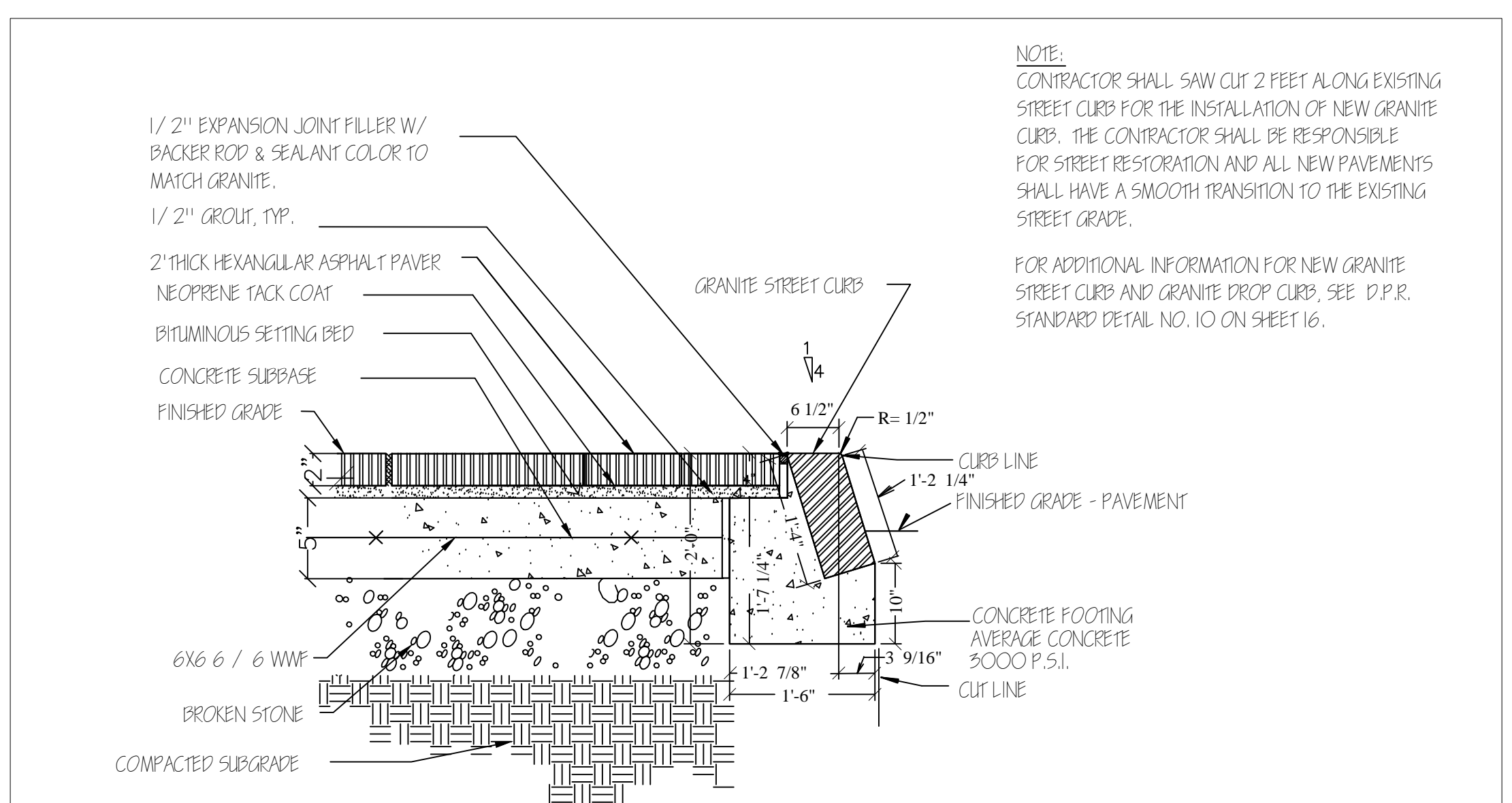
10
13 GRANITE STREET CURBS AND SIDEWALK DETAIL
SCALE: 1 1/2" = 1' - 0"



11
13 FENCE PANEL - ELEVATION
SCALE: 1" = 1' - 0"



13
13 'HOOP' BASE SECTION
SCALE: 3/4" = 1' - 0"



12
13 PICKET FINIAL
SCALE: 3/4" = 1' - 0"

GENERAL NOTES:

- ALL GRANITE CURBS AND SHALL HAVE A THERMAL FINISH AND TO BE "JET MIST" GRANITE AS MANUFACTURED BY STRUCTURAL STONE, L.L.C. OR APPROVED AS EQUAL.
- LAYOUT OF ALL CURBS, PAVEMENTS AND OTHER IMPROVEMENTS PRIOR TO CONSTRUCTION WILL NEED TO BE APPROVED BY THE RESIDENT ENGINEER AND DESIGNER. ANY FIELD ADJUSTMENT REQUIRED MUST BE APPROVED BY THE RESIDENT ENGINEER AND PROJECT DESIGNER.
- EXPANSION JOINTS SHALL BE COORDINATED AND INSTALLED AS INDICATED ON THE PLANS.
- FINAL CUTTING OF STONES SHALL BE DONE AS PER MEASUREMENTS TAKEN IN THE FIELD.
- CONTRACTOR SHALL PROVIDE SHOP DRWGS FOR NEW STONE WORK TO THE NYC PARKS AND RECREATION FOR APPROVAL.
- FOR MORE DETAILS SEE LAYOUT PLAN.
- SEE ELECTRICAL DWG. FOR LOCATIONS FOR HANDHOLES.
- BRIDGE CONCRETE FOOTINGS FOR ALL CURBS AS NECESSARY TO PROTECT AND PRESERVE EXISTING TREE ROOTS.
- STEEL PANEL FENCE AND DUCTILE IRON FINIAL SHALL MATCH EXISTING FENCING FABRICATED BY ALLEN ARCHITECTURAL IRONWORKS - SEE SPECIFICATIONS

MM/DD/YY	DEFAULT	DEFAULT
REV.	DATE	DESCRIPTION

CITY OF NEW YORK PARKS & RECREATION
OLMSTED CENTER
FLUSHING MEADOWS CORONA PARK
FLUSHING, NEW YORK 11368

PROJECT TITLE
RECONSTRUCTION OF PERIMETER SIDEWALKS IN WASHINGTON SQUARE PARK, LOCATED BETWEEN WAVERLY PLACE, WEST 4TH STREET, UNIVERSITY PLACE AND MACDOUGAL STREET, BOROUGH OF MANHATTAN

DRAWING TITLE
SITE DETAILS- MISCELLANEOUS

DESIGNED BY GEORGE VELLONAKIS, RLA	DRAWN BY GEORGE VELLONAKIS, RLA	CHECKED BY GEORGE BLOOMER, RLA
REVIEWED-TEAM LEADER DESMOND SPILLANE	FORESTRY RICK ZEIDLER	APPROVED-DIRECTOR
APPROVED DEPUTY CHIEF OF DESIGN NANCY PRINCE, RLA	APPROVED-CHIEF ENGINEER JOHN NATOLI, PE	CONTRACT NO.
BLOCK 549	SCALE AS SHOWN	DRAWING NO. L601
LOT 1	DATE 02/28/2014	SHEET No. 13 OF 15 SHEETS

Appendix C:
In Progress Field Memos



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A. and
Christopher Ricciardi, Ph.D., R.P.A.

Re: Human Remains Discovery and Proposed Disinterment Memorandum #01 as part of
Washington Square Park, New York, New York County, New York – Water Mains
Replacement and Connections Project (MED608) - Located at West 4th Street between
Broadway and LaGuardia Place, Washington Square East, and Washington Square North
between Fifth Avenue and University Place in Manhattan, New York

Date: November 16, 2015

INTRODUCTION

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York (Map 01).

An Archaeological Monitoring Plan, Unanticipated Discovery Plan and Human Remains Protocol, previously submitted to and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Chrysalis Archaeology 2015a).

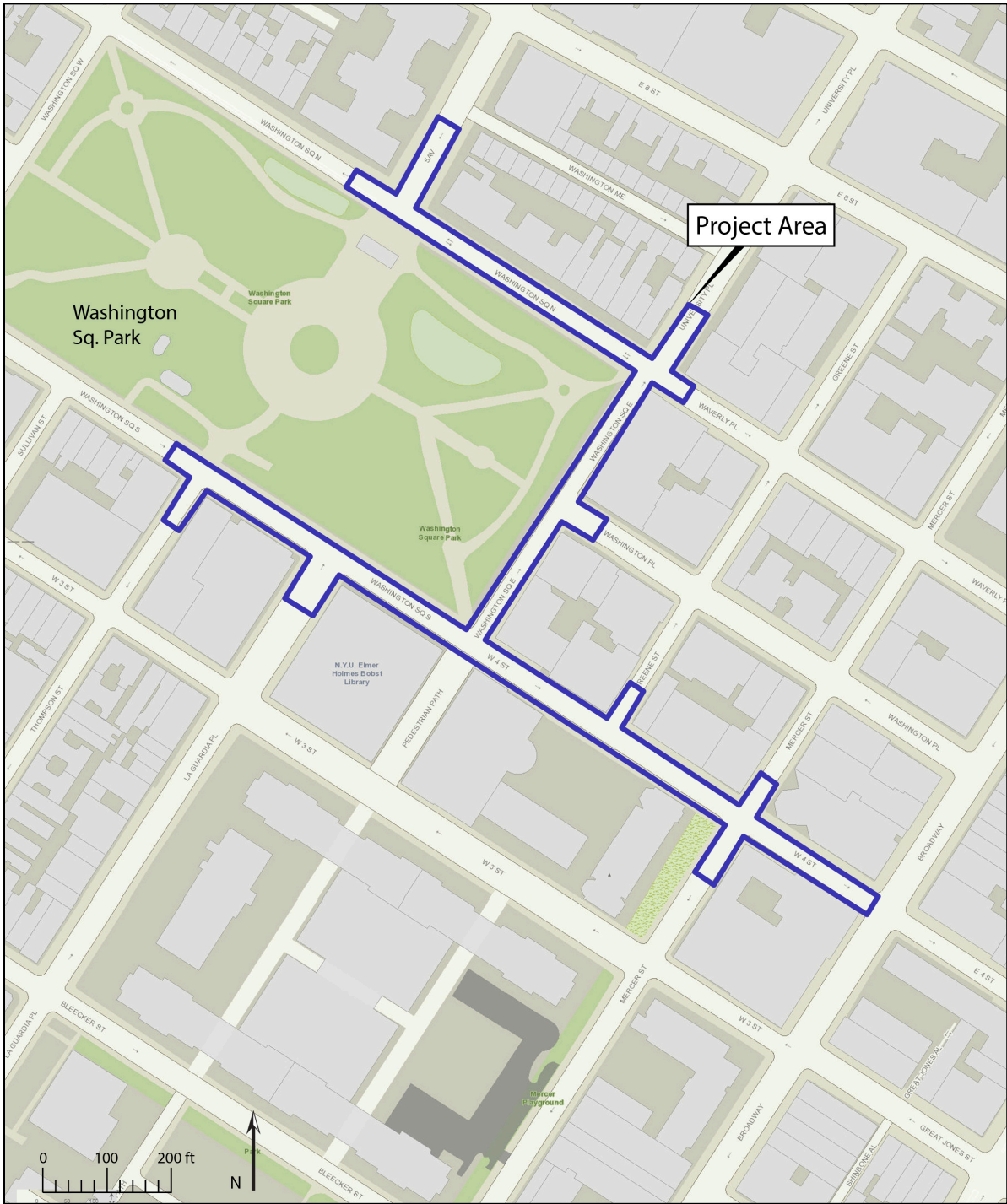
This Human Remains Discovery and Proposed Disinterment Memorandum #01 concerns two distinct sets of human skeletal remains uncovered.

On Wednesday, November 11, 2015 and Friday, November 13, 2015, archaeological monitoring of the excavation for a Consolidated Edison (ConEd) gas line exposed two distinct burials believed to be associated with the nineteenth century Potter's Field. The excavation is located within the street bed of Washington Square East, between Waverly Place and Washington Place (Map 02 and 03).

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Brooklyn, NY 11234-4322
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Brooklyn Laboratory
3604 Quentin Road
Brooklyn, NY 11234-4204
Phone: 718.758.4205

Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354



Map 01: Project Area Map.



Map 02: Location of skeletal remains within the project area and in association with previously uncovered burial vaults.



Map 03: Location of skeletal remains and burial vaults in relation to historic burial grounds.

Upon discovery the approved Human Remains Discovery protocols were enacted by the project. Chrysalis' Forensic Anthropologist came to site to make a preliminary assessment of the skeletal remains. Concurrently the project notified LPC and the City of New York - Office of the Medical Examiner (OME). The OME, Bradley Adams, stated that their office had no concerns regarding the discovery and that the project may proceed.

Both interments are in the direct path of the ongoing construction and the project cannot avoid further impact to these interments. Therefore, the project is requesting permission to disinter the remains.

DISCOVERIES

Burial 01

Burial 01 was located at 4.9' below ground surface (bgs) beneath previously installed concrete encased telecommunications ducts. As part of the current project the concrete encasement is being removed and the excavation will proceed to a depth of approximately 8' bgs. The *in situ* skeleton is situated less than 4" beneath the concrete encased ducts (Image 01). The exposed portion of the skeleton, which includes the skull and femur, is located at 170' – 175' south along the trench excavation and 3.2' east of the existing curb (Maps 02 and 03).

Preliminary in-field assessment has identified the skeleton as belonging to an adult female. The skeleton does not appear to have been interred within a coffin and was interred facing north. Tree roots and the weight of the existing utility have disturbed the burial (Images 02 and 03).



Image 01: Burial 02 located beneath existing telecommunications duct encased in concrete.

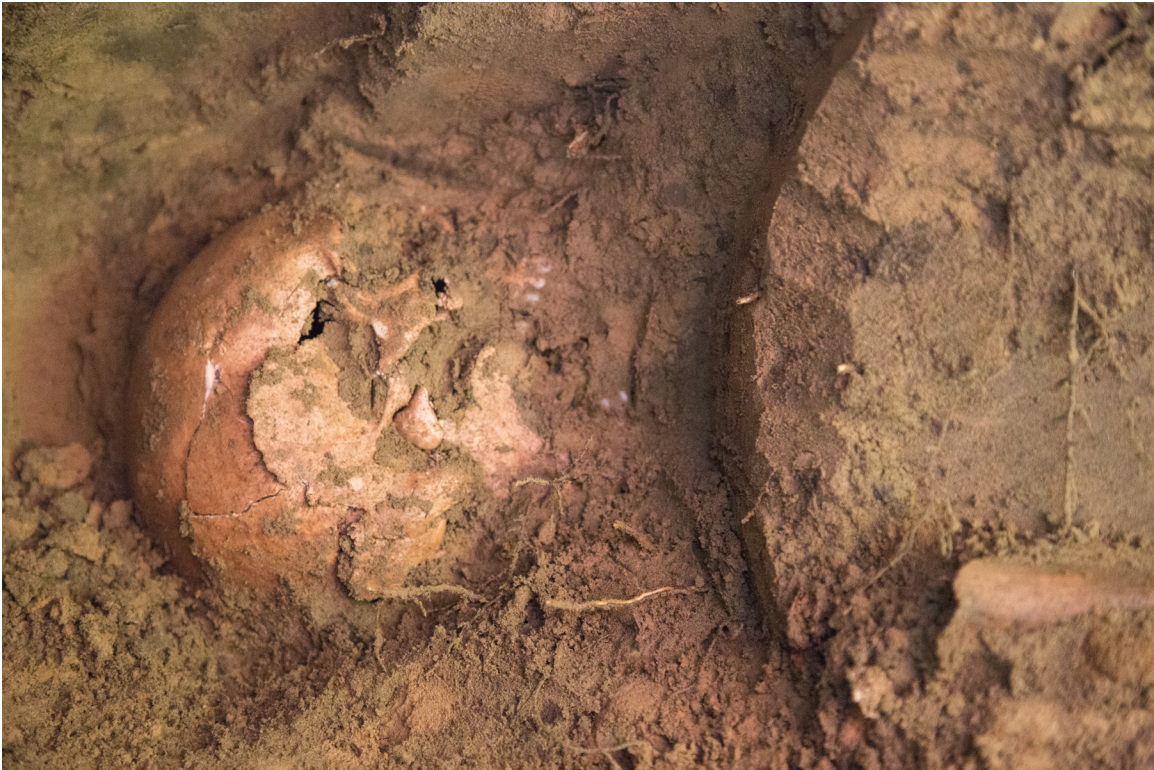


Image 02: Skull of Burial 01, note slightly dislodged cranial plate as result of weight of existing utility.



Image 03: Burial 01.

Burial 02

Burial 02 was located at 5.9' bgs and is adjacent to large ConEd ducts that were likely installed in the 1960s. The installation of these ducts previously impacted the burial. For safety purposes during excavation, wooden shoring boards are being driven into the ground along the trench walls and excavation in this portion of the trench is to extend to a depth of approximately 11' bgs. The skeletal remains lie immediately beneath the wooden shoring to be installed. Continued installation of the shoring would further impact the already impacted remains.

The exposed skeletal remains include a portion of the mandible, a pelvis fragment, radius and femur. All of the exposed remains clearly exhibit disturbance (Image 04). Initial investigation suggests the remainder of the skeleton is present beyond what is exposed. The skull of Burial 02 is located 15' south of the Burial 01 skull and located at approximately 186' to 190' south along the trench excavation (Maps 02 and 03).

Preliminary in-field assessment has identified the skeleton as belonging to a young person or child. The exposed portion of the mandible exhibits that the third molars had not yet erupted. There is evidence that the deceased was interred in a coffin as evidenced by the thin lens of decayed wood and associated nails. The deceased was interred facing north.



Image 04: Burial 02 clearly exhibiting disturbance.

HISTORIC PROVENANCE

Historic documents and maps indicate that the area of present-day Washington Square Park was a Potter's Field as well as the location of church burying grounds, including the Scotch Presbyterian Church at the northeast corner of the present-day park and street (Map 04).

Prior to the discovery of these two sets of skeletal remains, two burial vaults were exposed (Map 02 and Map 03). Overlays with historic maps clearly identify those as being located within the burial ground of either the Scotch Presbyterian Church or Cedar Street Church.

Two maps, dated 1817 and 1826 depict the boundaries of the formal church burying grounds with relation to the then proposed Wooster Street (now Washington Square East) (Maps 04 and 05). A 25 April 1825 entry in the Minutes of the Common Council notes identifying the property that would be required to extend Wooster Street from 4th Street to 8th Street indicating that the street had not yet been laid even though it is depicted on the 1817 map (City of New York - Minutes of the Common Council 1917, XVI:482). A resolution to regulate and pave that same section was presented on 18 February 1826 indicating that process of creating this section of Wooster Street was still ongoing (City of New York - Minutes of the Common Council 1917, XV:211).

The eastern two-thirds of what is today Washington Square Park was used as a Potter's Field from 1797 – 1825. The 1817 and 1826 maps, the only two maps depicting the Potter's Field that could be located at the present time, suggest differing boundaries for the Potter's Field. Additionally, historic map research by Geismar (2005) indicates that the eastern boundary of the Potter's Field extended east encroaching upon the church burial grounds. It has also been suggested that the true north to south and eastern boundaries of the Potter's Field are not definite (Geismar 2015).

Based on current research and information, mapping the two burials with reference to the boundaries of the burial grounds, as depicted on the 1817 and 1826 maps, places Burial 01 just outside the presumed eastern boundary of the Potter's Field as depicted on the 1817 map, and within the boundary of the Scotch Presbyterian Church burying ground. Burial 02 appears immediately east and alongside the boundary of the Potter's Field and outside the church burying grounds (Map 03).

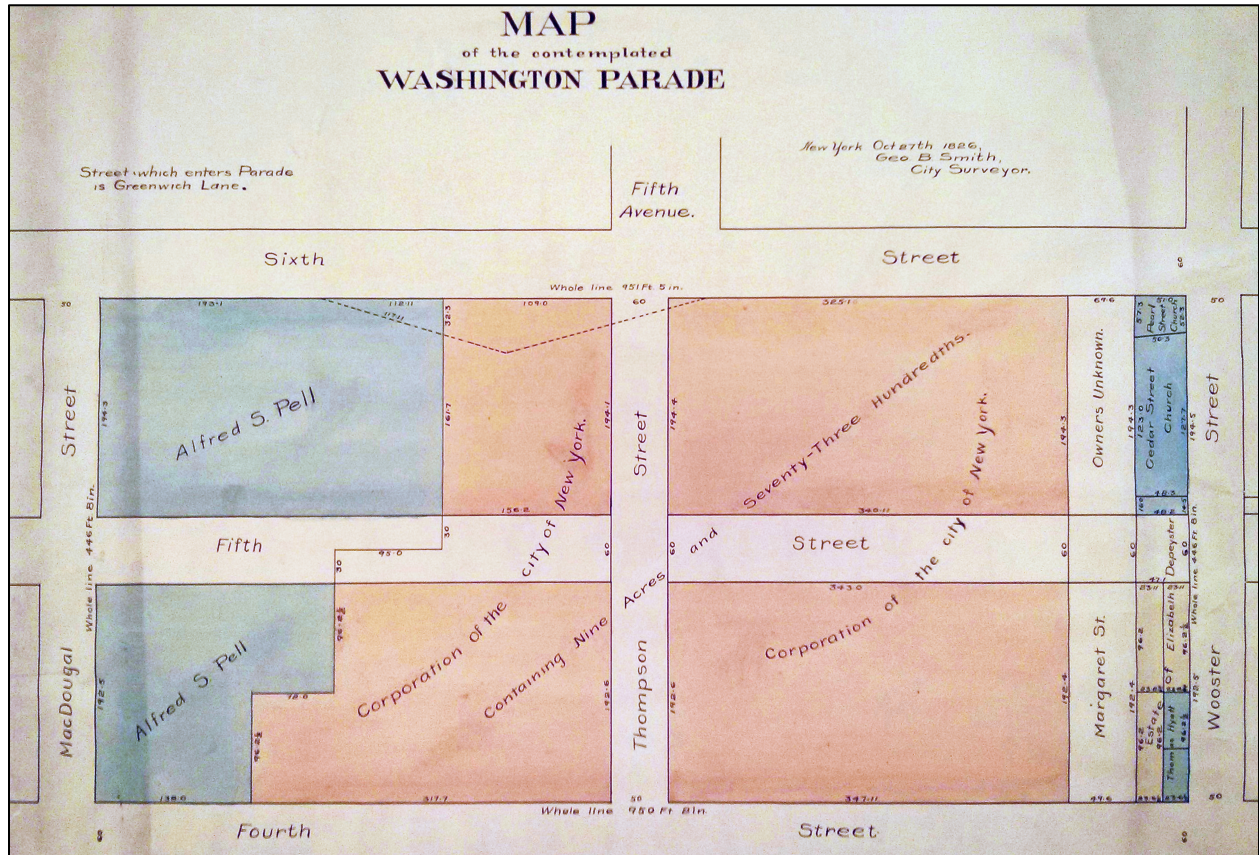
In assessing the accuracy of the two maps utilized, it is important to consider their purpose. The 1817 map entitled, *Map showing the Property affected by the Continuation of 4th, 5th and 6th Streets at right angles with Broadway*, depicts various private properties in the area as well as streets that were never laid (Map 04). The 1826 map entitled, *Map of the Contemplated Washington Parade*, limits its survey to the proposed boundaries for the Parade ground (Map 05). This map also depicts Margaret Street, which was never laid (Geismar 2005).

The disposition of the burials suggests that they were part of the Potter's Field. Burial 01 was interred facing north and without a coffin. This is similar to other Potter's Field burials discovered during the reconstruction of Washington Square Park (Geismar 2009). Burial 02 while interred in a coffin was also interred facing north. Traditionally Christian burials were interred facing east as seen in the burial vaults exposed during this project.

Based on the proximity of the Potter's Field and the disposition of the interments, both burials, Burial 01 and 02, were most likely associated with the Potter's Field. As such, the City of New York is identified as the descendant community of Burial 01 and Burial 02.



Map 04: Map showing the Property affected by the Continuation of 4th, 5th and 6th Streets at right angles with Broadway, 1817



Map 05: *Map of the Contemplated Washington Parade, 1826*

PROJECT PLANS

Both burials are in the direct path of the current construction. Burial 01 lies beneath existing telecommunication ducts that are going to remain in place. However to proceed with the proposed construction the concrete encasement must be removed. Removal of the concrete encasement will impact the skeletal remains located immediately below. Additionally the excavation required for the new utility installation is a minimum of 8' bgs, well beyond the depth of the skeletal remains. Earlier utility excavations, likely in the mid-twentieth century, had previously disturbed Burial 02. Currently Burial 02 lies directly beneath the wooden shoring necessary for the continued safety of the construction project. Continued installation of the shoring system would severely impact the skeletal remains. In addition, project plans calls for excavations to depths of 11' bgs in the area of Burial 02.

Due to the already compromised nature of the original interments and the requirements of the construction, the project requests approval to disinter both Burial 01 and 02 following the approved protocols outlined in the Human Remains Protocol for this project. As part of this protocol the project seeks a disinterment permit from the City of New York - Department of Health (DOH). Chrysalis will engage a Funeral Director as required by DOH regulations to obtain the disinterment permit. Once obtained, Chrysalis' Forensic anthropologist, Dr. Matthew Brown, will conduct the disinterment.

Following disinterment the remains will be removed to Chrysalis' laboratory facility in Brooklyn, New York. There the remains will be air dried, dry brushed, analyzed and documented. Following analysis the remains will be wrapped in acid-free tissue paper and placed in archival boxes until they are returned to the City for re-interment following the conclusion of this project.

It is recommended that the two burials uncovered as part of this current project be included with the remains from The City of New York – Department of Parks and Recreation (Parks) recent project as Parks plans to rebury the human remains recovered within Washington Square Park. DDC and WSP will coordinate with both LPC and Parks with regard to this matter. Upon finalization of reburial plans, Chrysalis, in coordination with the Funeral Director, will transport all human remains to the city agency or Funeral home in charge of the reburial.

REFERENCES

Anonymous

- 1817 Map showing the Property affected by the Continuation of 4th, 5th and 6th Streets at right angles with Broadway. Topographical Bureau, Manhattan Borough President's Office. New York, New York.

Chrysalis Archaeological Consultants, Inc.

- 2015a Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2015b In-Progress Field Memorandum for the Record #01 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2015c In-Progress Field Memorandum for the Record #02 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2015d In-Progress Field Memorandum for the Record #02 (Addendum) as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

City of New York - Minutes of the Common Council.

- 1917 Minutes of the Common Council of the City of New York 1784-1831. City of New York. New York, New York. (Includes Index Published 1930.)

Geismar, Joan

- 2005 Washington Square Park Phase IA Archaeological Assessment. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2009 Washington Square Park Greenwich Village, New York Phase 1 Construction Field Testing. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2012 Washington Square Park Greenwich Village, New York Phase 2 Construction Field Testing. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2013 Washington Square Park Greenwich Village, New York Phase 3 Construction Field Testing. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2015 Personnel Communication.

Smith, George B.

- 1826 Map of the Contemplated Washington Parade. New York Historical Society. New York, New York.



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A. and
Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #01 as part of Washington Square Park,
New York, New York County, New York – Water Mains Replacement and Connections
Project (MED608) - Located at W. 4th St between Broadway and LaGuardia Place,
Washington Square East, and Washington Square North between Fifth Avenue and
University Place in Manhattan, New York

Date: November 3, 2015

INTRODUCTION

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by the WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at W. 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York (Map 01).

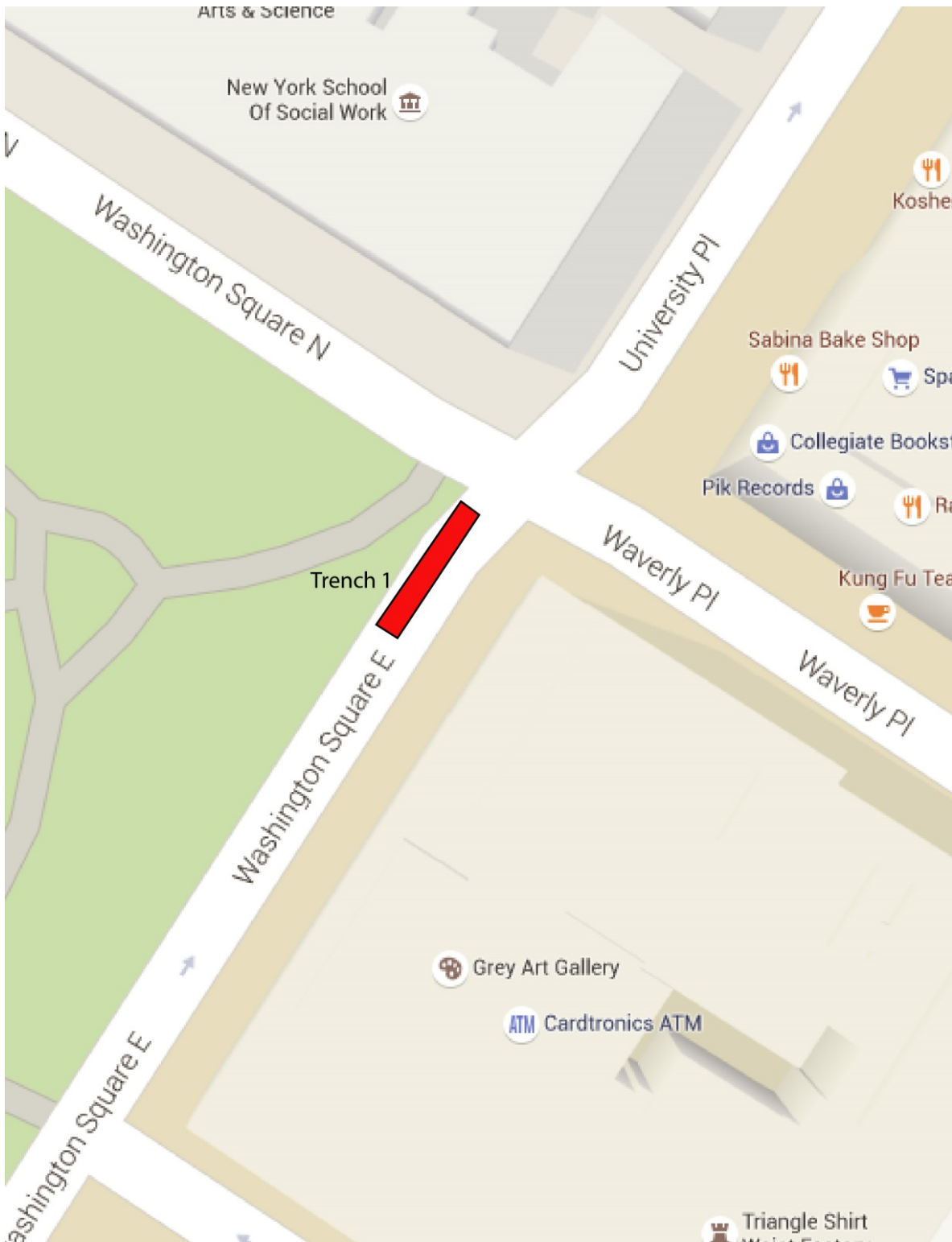
An Archaeological Monitoring Plan, Unanticipated Discoverers and Human Remains Protocol Plan previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project.

This In-Progress Field Memorandum for the Record #01 describes the discovery of the Burial Vault as part of monitoring for the Consolidated Edison gas line excavation (Map 01).

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Phone: 718.758.4205

Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354



Map 01: Approximate location of Consolidated Edison's Gas Line Trench.

On Tuesday, November 3, 2015 archaeological monitoring identified a burial vault just south of Waverly Place, along Washington Square East.

The arched brick roof of the vault was exposed at approximately 3.5' below surface. The rear wall of the vault, constructed of stone, was also exposed. A concrete duct bank runs along the top of the vault.

Two stones were removed to view inside the vault. At the far end of the vault a set of steps and a door were observed. The roof of the vault exhibits a patch where it had been previously opened – beneath this patch are a depression and a scatter of bricks (Image 01).

On the left side of the vault there appears to be an articulated skeleton present, surrounded by broken wood (presumably remnants of the coffin) (Image 02).

What appears to be a small pile of disarticulated bone was observed in the northeast corner of the vault.

The southeast corner of the vault contains a large pile of disarticulated bone. From the small view available and digital photographs that were taken there appears to be between 9 and 12 skulls present (Image 03).

The floor of the vault exhibits several wooden fragments of various sizes and what appears to be at least one coffin plate.

Based on conversations with the contractor – a portion of the vault roof needs to be removed for installation of a water line; and approximately 3' – 4' of the rear wall of the vault needs to be removed for installation of the gas line. Excavation for the gas line will extend to approximately 8' below surface.

Presently the contractor is removing the concrete duct that lies along the roof of the vault and clearing the area surrounding the vault structure so that it can be documented.

Chrysalis will coordinate with LPC tomorrow, Wednesday November 4, 2015. Chrysalis will also notify the Office of the Medical Examiner and begin enacting all approved protocols.

Following consultation with LPC, we will know the level of documentation required and a determination will be made if the skeletal remains will be documented in place, or documented and removed. If the remains are to be removed, Chrysalis will coordinate with the Funeral Director to obtain the necessary Department of Health permits as required by New York City law.

Once all parties agree to the path forward Chrysalis will gather the resources to continue to the documentation and potential removal of the skeletal remains if necessary. If skeleton remains are removed from the site they will be transported to Chrysalis' laboratory and arrangements will be made for re-interment following the conclusion of the project.



Image 01: Burial vault interior looking east.



Image 02: Possible articulated skeleton and pile of disarticulated human skeletal remains.



Image 03: Large pile of disarticulated human skeletal remains.

REFERENCES

Chrysalis Archaeological Consultants, Inc.

- 2015 Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A., Brittany Tillchock and
Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #02 as part of Washington Square Park,
New York, New York County, New York – Water Mains Replacement and Connections
Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place,
Washington Square East, and Washington Square North between Fifth Avenue and
University Place in Manhattan, New York

Date: November 9, 2015

INTRODUCTION

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by the WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at W. 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York.

An Archaeological Monitoring Plan, Unanticipated Discoveries Plan and Human remains Protocol Plan, previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Chrysalis Archaeology 2015a). Based on coordination between WSP-PB and LPC, the Archaeological Monitoring Plan included monitoring of the gas line excavation.

This In-Progress Field Memorandum for the Record #02 briefly outlines the summary of the research identifying the descendant Church associated with the burial vaults exposed on November 3rd and 4th 2015 and is a follow-up to the In-Progress Field Memorandum for the Record #01 submitted on November 3, 2015 (Chrysalis Archaeology 2015b).

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The burial vaults found at the northeast corner of Washington Square Park (Map 01), were once part of the burying ground of the Scotch Presbyterian Church. The Scotch Presbyterian Church was formed in the autumn of 1756. Due to dissatisfaction with the subject of psalmody, which caused a division within the Presbyterian Church (Greenleaf 1846:129), this Church functioned under the Associate Presbytery of Pennsylvania and was referred to as “The First Associate Reformed Church in New York” (Greenleaf 1846:204). The first Church was located on Cedar Street between Nassau and Broadway (Wylie 1906:14-15).

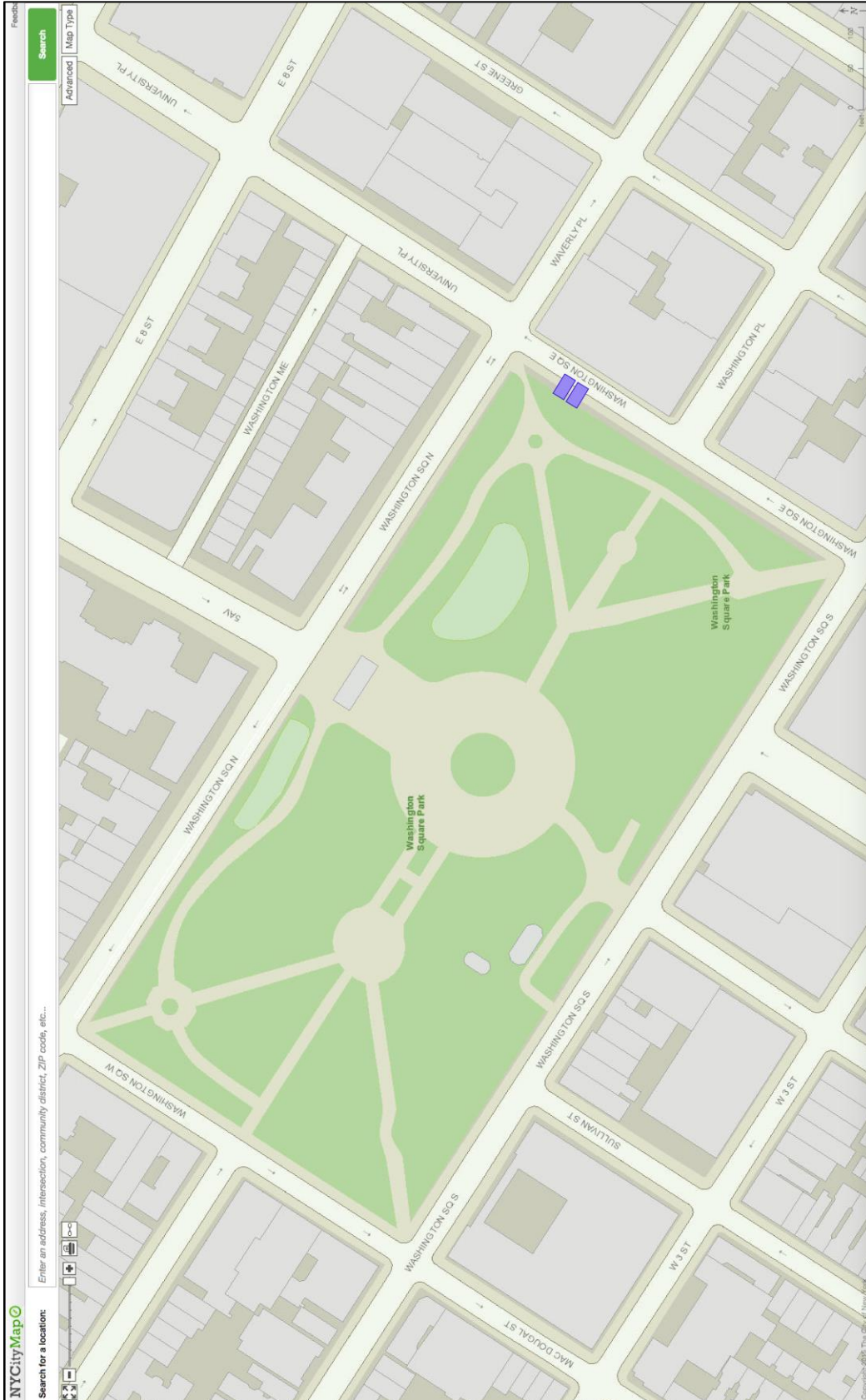
The Pearl Street Church became the second Associate Reformed Church, organized in 1797, located on Pearl Street (then Magazine Street) between Elm and Broadway. The two Churches formed a collegiate charge for a few years, but separated in 1804 (Greenleaf 1846:206). The Pearl Street Church was destroyed by a fire in 1837, but was rebuilt on the same site.

A historic survey presented in the report for the Washington Square Park project undertaken by the City of New York – Department of Parks and Recreation, notes the Church(es) vaults were associated with as the Cedar Street Church, founded in 1756, and the Pearl Street Church founded in 1797. These Churches merged in 1804 and subsequently separated (Geismar 2005).

The 1826 Map of the Contemplated Washington Parade Ground by Smith denotes two burial plots allotted to the Scotch Presbyterian Church. The Pearl Street Church was smaller in size and located within the northern section of today’s Washington Square Park while the larger, Cedar Street Church was located towards the southern end (Image 01 as referenced in Geismar 2005).

In 1836 the Church sold its former property and moved to the corner of Crosby Street and Grand Street, where they resided until 1853. In 1853 the Church again moved, this time to Fourteenth Street, a short distance east of Sixth Avenue. They remained in that location until 1893 when they purchased their current property at 96th Street and Central Park West (Wylie 1906:16-18).

The Presbyterian Church at 96th and Central Park West, known as the Second Presbyterian Church, is the descendant Church of the Scotch Presbyterian Church, the First Associate Reformed Church in New York.



Map 01: Area map noting location of Burial Vaults 1 and 2.

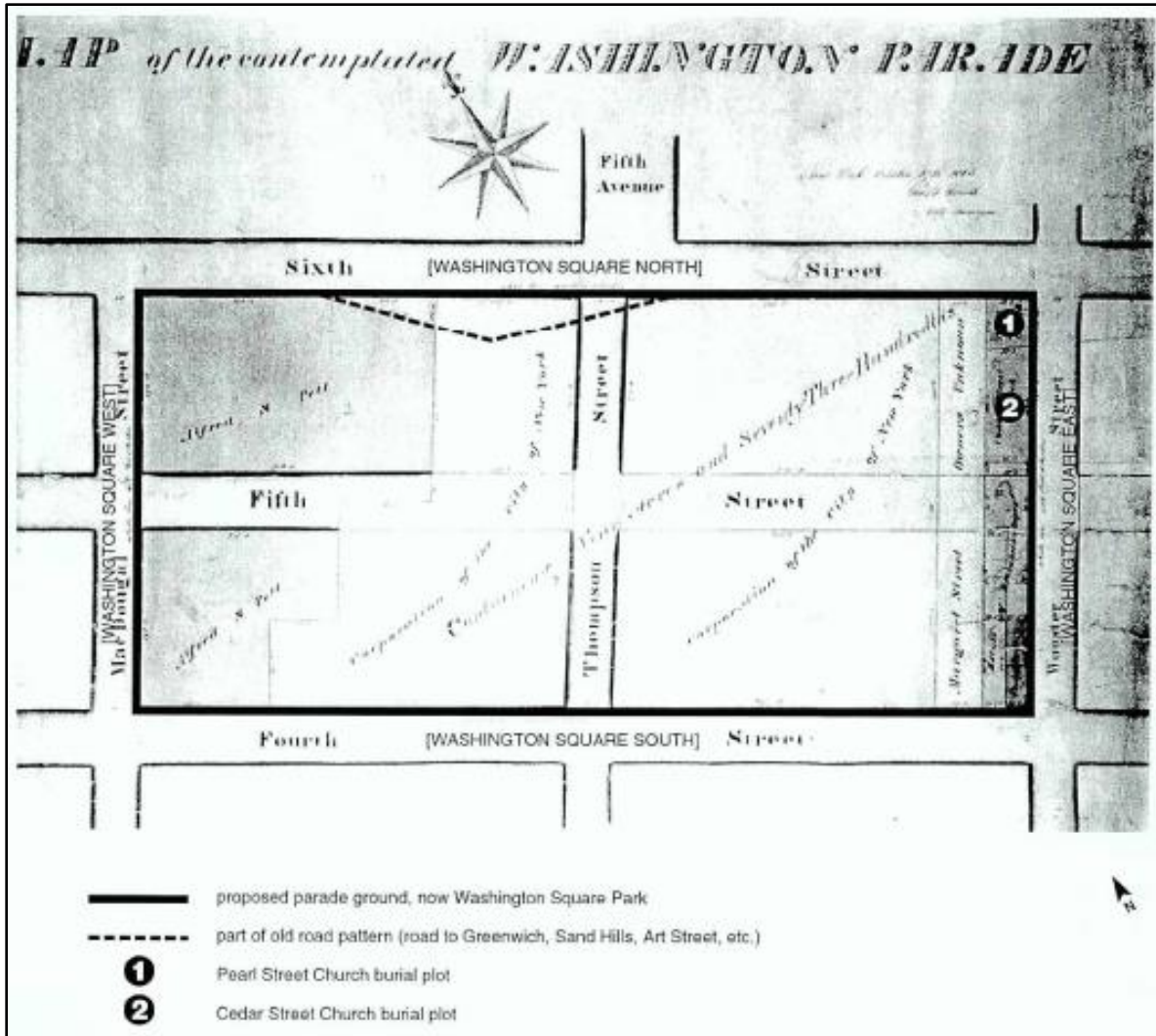


Image 01: Map of the Contemplated Washington Parade Ground, Smith 1826.
 (Referenced from Geismar 2005)

According to research thus far the Scotch Presbyterian Church does not have records from the time period (mid to late eighteenth and early nineteenth centuries) associated with the burial vaults.

It is a misfortune that the records of our Church Session long ago disappeared and we have no written record older than 50 years. We are fortunate, however, in having the minutes of the Board of Trustees since 1784, and from this we have been able to gather a good many facts. Generally, however, it has been necessary to secure our facts from outside history and from incidental references (Wylie 1906:12).

The Second Presbyterian Church does not have records dating back to the eighteenth and nineteenth centuries. A spokesperson for the Church stated that if anyone kept burial or death registers, Second Presbyterian Church does not know where they are located today (Inskeep 2000:178).

However, it should be noted that we have yet to communicate with the head archivist of the Church to determine if records have been uncovered since the publication of Inskeep's manuscript.

Further evidence of the ownership of the burial vaults can be found in the Minutes of the Common Council dated 29 January 1827 when a Petition of the Scotch Presbyterian Church regarding the lands at Washington Square was referred to the Committee of Lands and Places. The petition states that they, the petitioners have been put to "great trouble and expense" relative to the opening of Wooster Street (the original name of Washington Square East) and that "more than one half of their ground Viz^t 50 by 131 feet was taken for the opening of that street." The sum awarded them was not sufficient to defray the expense to fence the remainder of their burying ground and that they have "incurred considerable additional expense in disinterring the remains interred in the ground required for Wooster street and placing them in the ground now required for Washington square (Minutes of the Common Council XVI 1917:48-49)."

According to the petition the City was seeking remaining portions of their burying ground for the street and square and that doing so would place them with the "unpleasant necessity, and additional expense of again disinterring the remains which lay there, and it would be exceedingly distressful to the friends of the deceased" (Minutes of the Common Council XVI 1917:48-49).

The Common Council rejected their petition stating the opening of the street "was a necessary improvement and loudly called for by the regular progress and increase of population in that part of the City, and could not be delayed any longer" (Minutes of the Common Council XVI 1917:48-49).

Additional Note:

There was also a Cedar Street Presbyterian Church on Cedar between Nassau Street and William Street, founded 1808. This is now the Fifth Avenue Presbyterian Church. Although the name, general location, and time period are similar this Presbyterian Church was not the same congregation as the Scotch Presbyterian Church.

References:

City of New York – Common Council.

- 1917 *Minutes of the Common Council of the City of New York 1784-1831*.
The City of New York. New York, New York (1930 Reprint Edition).

Chrysalis Archaeological Consultants, Inc.

- 2015a Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015b In-Progress Field Memorandum for the Record #02 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

Geismar, Joan H.

- 2005 Washington Square Park Phase IA Archaeological Assessment. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

Greenleaf, Jonathan

- 1846 *A History of the Churches, of All Denominations, in the City of New York, from the First Settlement to the Year 1846*. E. French. New York, New York.

Inskeep, Carolee.

- 2000 *The Graveyard Shift: A Family Historian's Guide to New York City Cemeteries*. Ancestry. Provo, Utah.

Second Presbyterian Church.

- 2015 <http://www.nycago.org/Organs/NYC/html/SecondPres.html>.
Accessed 9 November 2015.

Smith, George B.

- 1826 Map of the Contemplated Washington Parade. Collection of the New York City Department of Parks and Recreation. Olmsted Center, Flushing, New York. Courtesy of Luther S. Harris.

Wylie, David G.

1906 *Our Jubilee: 150th anniversary of the Scotch Presbyterian Church, New York, 1756-1906.* Thomas Nelson and Sons. New York, New York.



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A., Brittany Tillchock and
Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #02 – Addendum 1

Date: November 10, 2015

As requested here is some of the additional information that we currently have regarding the burial ground and its relation to the present day park.

The measurements of Washington Square Park are essentially the same from the 1826 survey. Tax Records note the dimensions of Washington Square Park as 950.51' by 446.67' (NYC Tax Records 2015). Below is a table comparing measurements from the 1826 survey and present day. Present day measurements are taken from NYCity Map.

FEATURE	1826 MAP	PRESENT DAY
Washington Square North curb to curb		976'
Washington Square North park	951' 5"	952'
Washington Square East curb to curb		478'
Washington Square East park	446' 8"	450'
Width of Wooster Street (now WSE)	50'	40' (park to building line)
Width of Sixth Street (now WSN)	60'	50' (park to building line)

Below is an overlay of the 1826 map onto the NYCity Map depicting the location of the burial vaults. The property information from the 1826 map is limited to the boundaries of the proposed park. It is highly probable that the eastern boundary of the Cemetery expanded into Wooster

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Street and beyond. The overlay also clearly shows the burial vaults as being situated within the Cedar Street Church plot.

An 1817 survey on file with the Manhattan Boro President's office identifies the plot as belonging to the Scotch Presbyterian Church. We hope to obtain a clean high-resolution copy of that survey on Friday. This map will hopefully provide greater detail as to the original dimensions of the Scotch Presbyterian burial ground.

With regard to The Pearl Street Church, it appears that it became the Second Associate Reformed Church. The church was organized in 1797 and located on Pearl Street (then Magazine Street) between Elm and Broadway. The two Churches, Cedar Street and Pearl Street, formed a collegiate charge for a few years, but separated in 1804 (Greenleaf 1846:206).

The Pearl Street Church was destroyed by a fire in 1837, but was rebuilt on the same site. In the winter of 1852/1853 a committee was formed that concluded the Central Presbyterian Church on Broom Street and the Second Associate Reform Church (the Pearl Street Church) on Pearl Street would merge and relocate uptown, where the majority of parishioners now lived. In 1854 the Madison Square Presbyterian Church opened at the corner of East 24th Street and Madison Avenue (Parkhurst 1906). In 1906 a new church, referred to as the "Parkhurst Church" was built across the street from the original Madison Square Presbyterian Church, the previous location having been sold to Met Life for the expansion of office buildings. In 1918 another merge took place uniting First Presbyterian, University Place Presbyterian, and Madison Square Presbyterian. Now known as The First Presbyterian Church in the City of New York, located on Fifth Avenue at Twelfth Street.

We are still researching the churches and attempting to locate additional maps that show greater detail as to the full dimensions of the burial grounds in the area and their associations outside the boundaries of the park. Additionally we have located an 1833 map titled "Map Shewing the lands required for opening and widening Wooster Street from Waverly Place to Union Place" that we will look at later this week.



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A. and
Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #03 as part of Washington Square Park,
New York, New York County, New York – Water Mains Replacement and Connections
Project (MED608) - Located at W. 4th St between Broadway and LaGuardia Place,
Washington Square East, and Washington Square North between Fifth Avenue and
University Place in Manhattan, New York

Date: November 11, 2015

This In-Progress Field Memorandum for the Record #03 describes the discovery of the skeletal remains as part of monitoring for the ConEd Gas Line excavation on the afternoon of Wednesday November 11, 2015.

Archaeological monitoring identified a skeleton buried beneath the existing duct south of the previously discoveries Washington Square East (In-Progress Field Memorandum 01, 02 and 02 Addendum).

As the discovery was made on Veteran's Day, a Federal Holiday, all City offices were closed. Chrysalis will coordinate with LPC tomorrow, Thursday, November 12, 2015. Chrysalis will also notify the Office of the Medical Examiner and begin enacting all approved protocols.

The skeleton is not within a coffin and is located approximately 4.9' below ground surface. Tree roots and the weight of the existing utility have disturbed the burial. Chrysalis' forensic anthropologist will be on site tomorrow to make an initial assessment.

Following consultation with LPC and all parties we will know the level of documentation required and a determination will be made if the skeletal remains will be documented in place, or documented and removed. If the remains are to be removed, Chrysalis will coordinate with the

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Funeral Director to obtain the necessary Department of Health permits as required by New York City law.

Once all parties agree to the path forward Chrysalis will gather the resources to continue to documentation and potential removal of the skeletal remains if necessary. If skeleton remains are removed from the site they will be transported to Chrysalis' laboratory and arrangements will be made for re-interment following the conclusion of the project.



Image 01: Skeleton exposed beneath existing utilities along Washington Square East.



Image 02: Close up of skull from skeleton exposed beneath existing utilities along Washington Square East.

REFERENCES

Chrysalis Archaeological Consultants, Inc.

- 2015a Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015b In-Progress Field Memorandum for the Record #01 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015c In-Progress Field Memorandum for the Record #02 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015d In-Progress Field Memorandum for the Record #02 (Addendum) as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A., Lisa Geiger, M.A., R.P.A., and
Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #04 as part of Washington Square Park,
New York, New York County, New York – Water Mains Replacement and Connections
Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place,
Washington Square East, and Washington Square North between Fifth Avenue and
University Place in Manhattan, New York

Date: December 1, 2015

INTRODUCTION

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by the WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York (Map 01 and 02).

An Archaeological Monitoring Plan, previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Chrysalis Archaeology 2015a). Based on coordination with WSP-PB and DDC, archaeological monitoring of the initial test pits to locate existing utilities was conducted and to assess if potentially significant cultural remains and/or stratigraphic levels could be determined at this early stage in the project.

This In-Progress Field Memorandum for the Record #04 describes the results of excavation of 25 test pits across the project area between September 21, 2015 and October 9, 2015 (Map 03).

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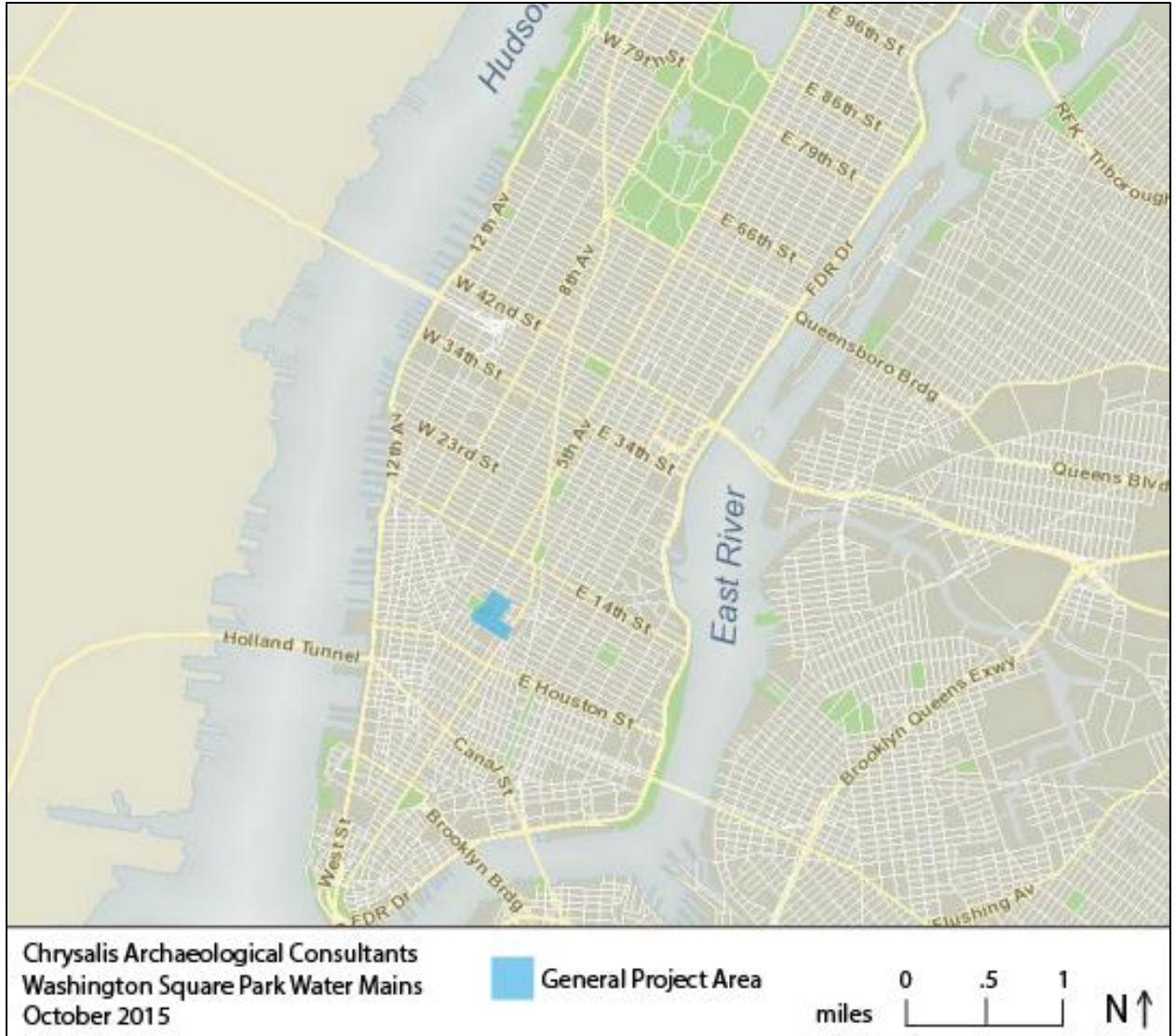
PROJECT DESCRIPTION

The goal of the Water Mains Replacement and Connections Project at Washington Square Park (the Project) project includes the abandonment of existing 20", 36", and 48" water mains in Washington Square Park by upgrading existing nearby 12" and 36" mains at Washington Square South between Thompson Street and LaGuardia Place, at Washington Square East, at West 4th Street between Broadway and Washington Square East, and Washington Square North between University Place and 5th Avenue. Additional work in these locations will include alterations to existing sewer services and installations of new catch basins and chute connections. Also included in the Project are Con Edison and other utility relocations, installation of street and traffic lights, and "new installation that may not be specified in the Contract." (Contract Number: MED608 Project Description). This contract calls for full "curb-to-curb" excavation, including sidewalk excavation and is not an "in-kind" replacement of existing utilities alone.

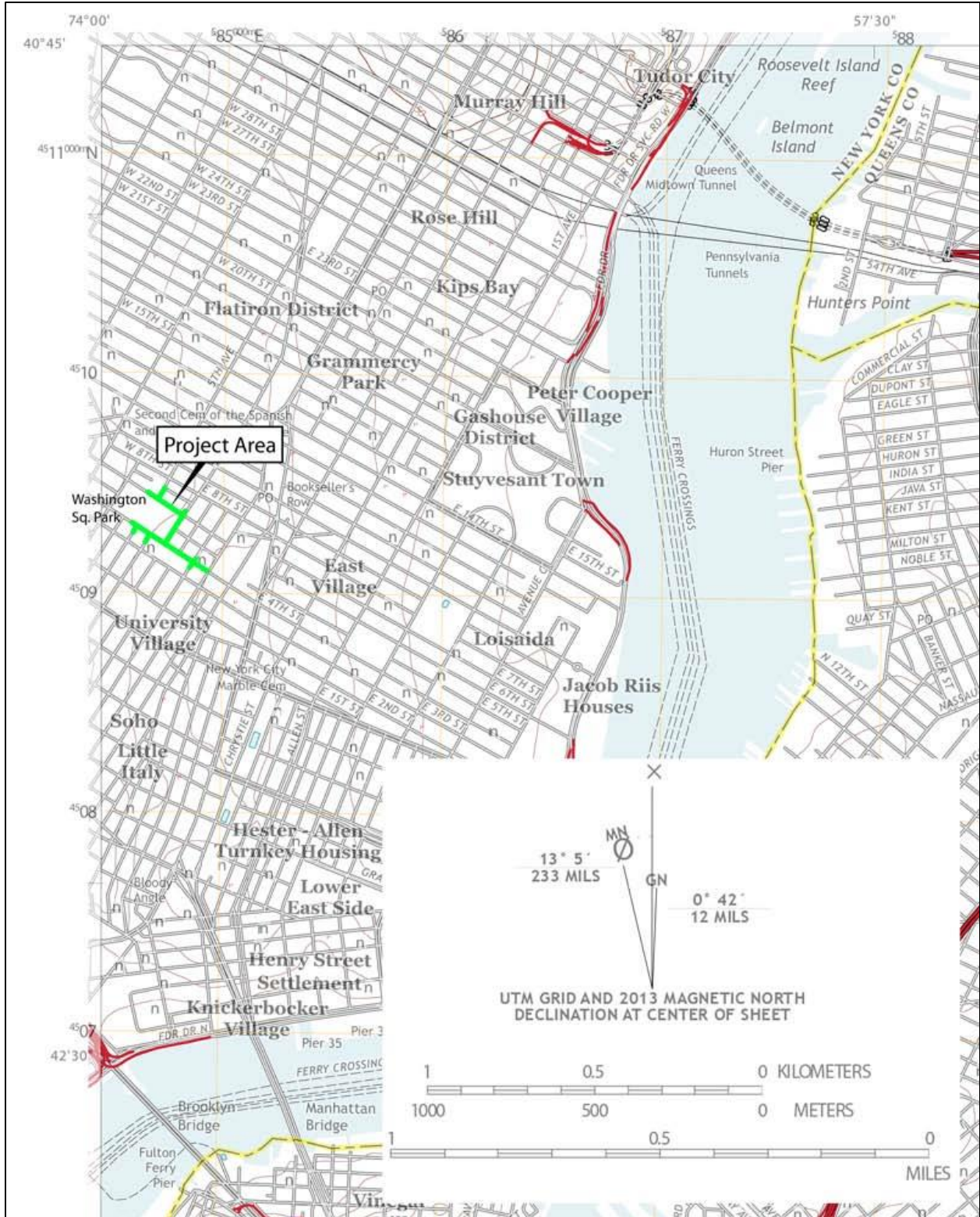
AREA OF POTENTIAL EFFECT

These project activities define the project's Area of Potential Effect (APE). The APE is characterized as all areas in which activities related to the project would disturb ground surface and impact potentially significant cultural resources. Current project plans define the APE as the street beds and sidewalks on Washington Square South between Thompson Street and Washington Square East, West 4th Street between Broadway and Washington Square East, Washington Square East (the full area between Waverly Place and West 4th Street), and Washington Square North between University Place and 5th Avenue as well as portions of the street beds and sidewalks on LaGuardia Place between Washington Square South and West 3rd Street, Thompson Street between Washington Square South and West 3rd Street, Mercer Street between West 4th Street and West 3rd Street, and 5th Avenue between Washington Square North and East 8th Street (Map 02). Additional project activities that may be added to the project scope as per the MED608 Project Description may extend the APE to additional areas.

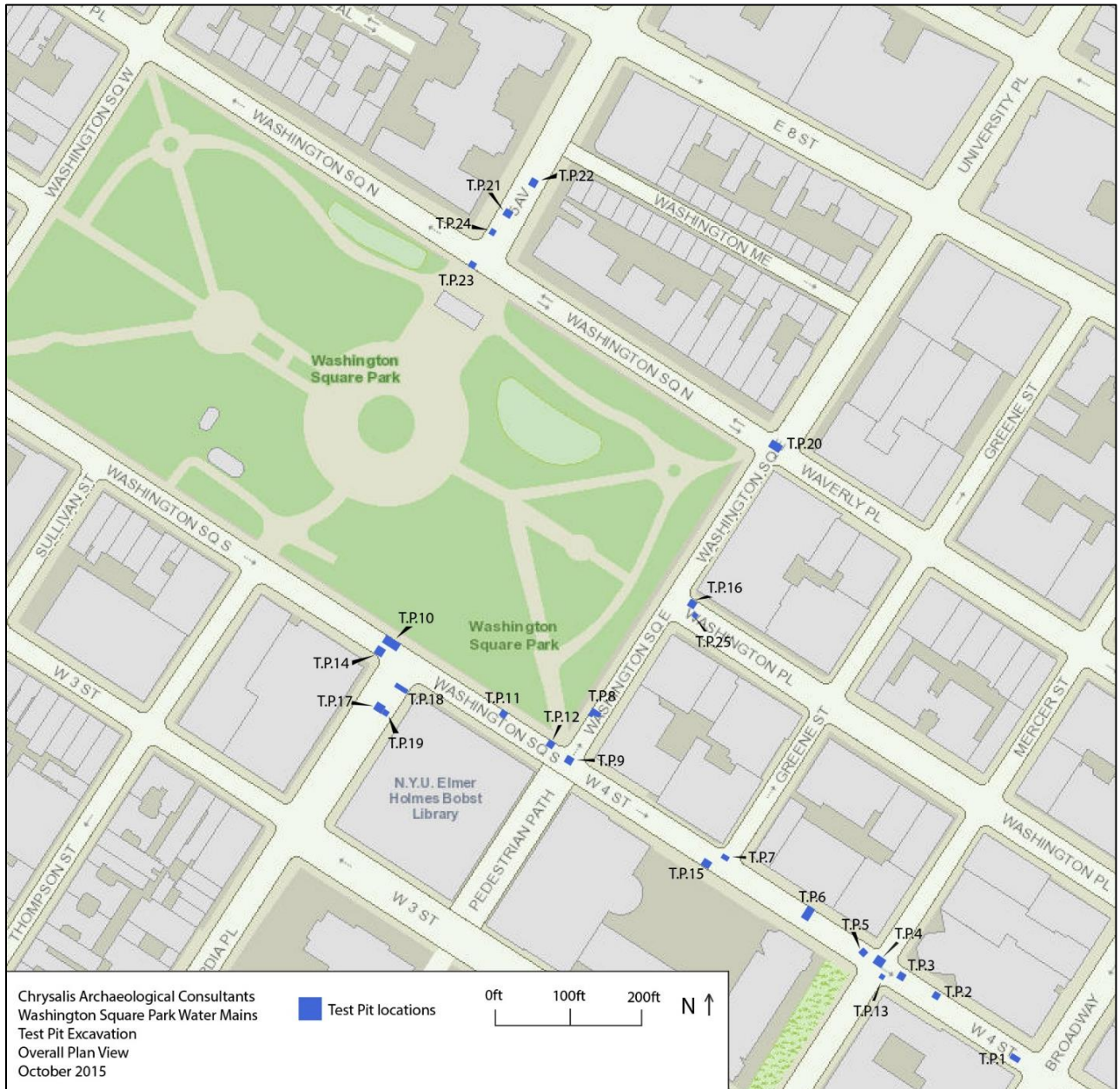
Based on project plans and results of test pit excavations, basic impacts within the APE will include excavation to a minimum of 3' below ground surface (bgs) across the street beds, with water main replacement and new main installation activities reaching to a minimum of 6' bgs, sewer replacement and installation activities will extend at least 11' bgs, and targeted catch basin and chute connection activities will extend at least 6' to 11' bgs and likely deeper in some areas. Impacts to sidewalks will likely be limited to within 2' bgs, although street and traffic light installations will likely require additional deeper excavation.



Map 01: General Project Area, modified from NYCityMap, City of New York 2015.



Map 02: Project Area, USGS Brooklyn 7.5' x 7.5', 2013



Map 03: Test Pit locations across project area, modified from NYCityMap, City of New York 2015.

PREVIOUS ARCHAEOLOGICAL STUDIES

Although a Phase IA Documentary Study and Archaeological Assessment was not conducted for this project, archaeological monitoring was deemed necessary by the LPC due to the project's APE's location within the Greenwich Village Historic District and the historic character of Washington Square Park. Washington Square Park and its bordering streets lay on land that was one utilized by local Native American peoples, land that was later granted by the Dutch to freed slaves in the seventeenth century, served as farmland through much of the eighteenth century, was the site of a potter's field public burial ground from 1797 to 1825, and acted as a military parade ground before becoming a public park in 1850. The surrounding neighborhood grew from farm buildings to a mix of private residences and maintenance structures housing the potter's field cemetery manager before growing into more densely populated middle and upper class housing.

Previous archaeological work in and around the park has uncovered evidence of human remains associated with public burials and burials made in the cemetery during epidemic disease outbreaks in the early nineteenth century. Remains have been identified as shallow as 2.9' below modern surface and as deep as 11' below surface. These remains appear to represent both original interments and bodies that may have been moved to mass burial trenches before the formalization of Washington Square Park in the nineteenth century. Additional work in the area has uncovered evidence of residential cisterns and privies yielding a great deal of information about the health practices and home goods of middle class and wealthier residents of the northwest portion of the neighborhood at Waverly Place and southern portions of the neighborhood at Sullivan Street (now Washington Square South).

For more information about previous archaeological work in the area, see Salwen and Yamin 1990, Howson 1993, and Geismar 2005, 2009, 2012, and 2013.

FIELD RESULTS

From September 21, 2015 through October 9, 2015, JLJ Contracting (JLJ) excavated 25 rectilinear test pits, to confirm the location of existing utilities, ranging from 5' by 5' to 16' by 10' on West 4th Street between Broadway and Thompson Street, LaGuardia Place between West 3rd Street and Washington Square South, Washington Square East between West 4th Street and Waverly Place, Washington Place between Washington Square East and Greene Street, and 5th Avenue between Washington Square North and East 8th Street (Map 03). Excavation revealed one historic wall feature in TP 17, a potential historic basement feature in TP 16, two areas of historic fill soils (TP 4 and TP 20), and a variety of re-deposited fill soils.

Below is a preliminary summary of the Test Pits.

Test Pit 1

Test Pit 1 (TP 1) was an 11' by 5' pit located 10' from the south West 4th Street curb line and 9' west of the southwest Broadway and West 4th Street curb radius. TP 1 exposed existing utilities at 2' bgs and the existing water main at 4.5' bgs. Soils exposed were a consistent 10YR 6/1 sand typical of modern utility fill to 4.5' bgs.

Table 01: TP 1 soil stratigraphy.

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.2'	N/A	Road base	
II	1.2' – 4.5'	10YR 6/1 sand	Utility fill	Clean, well-sorted

Test Pit 2

TP 2 was a 7' by 7' pit located on the north side of West 4th Street, 5' from the north West 4th Street curb and 58.5' from the northeast West 4th Street and Mercer Street intersection curb radius. TP 2 revealed 7.5YR 4/4 silty sand mixed re-deposited fills with moderate concrete, brick, and rounded pebble inclusions surrounding utilities to its base at 3' bgs. This test pit did not continue below the top of exposed utilities.

Table 02: TP 2 soil stratigraphy.

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.2'	N/A	Road base	
II	1.2' – 3'	7.5YR 4/4 silty sand	Mixed, re-deposited fills	Moderate number concrete and brick fragments, rounded pebbles

Test Pit 3

TP 3 was an 8' by 8' pit located on the north side of West 4th Street, located 8' from the north West 4th Street curb line and 5.5' from the northeast West 4th Street and Mercer Street intersection curb radius. TP 3 revealed similar 7.5YR 4/4 silty sand soils to TP 2, formed from mixed, re-deposited fill with moderate concrete, brick, and rounded pebble inclusions. TP 3 terminated at the top of exposed utilities at 3' bgs.

Table 03: TP 3 soil stratigraphy.

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.2'	N/A	Road base	
II	1.2' – 3'	7.5YR 4/4 silty sand	Mixed, re-deposited fills	Moderate number concrete and brick fragments, rounded pebbles

Test Pit 4

TP 4 was a 10' by 10.5' pit located on the northwest side of the West 4th Street and Mercer Street intersection, 4' from the north West 4th Street curb line and 13' from the northwest West 4th Street and Mercer Street curb radius. Excavation revealed 7.5YR silty sand typical of re-deposited fills surrounding shallow utilities in this area of West 4th Street atop a slightly less consistent 7.5YR 4/4 silty sand. This deeper matrix (Stratum IV) contained some well-sorted clam and oyster shells and small, rounded cobbles; these materials are indicative of historic fill sourced partially from architectural and faunal waste. Stratum IV was punctuated by clean, yellowish sandy fill around modern utilities to 3.5' bgs. Only a small, roughly 3' by 2' portion of TP 4 was excavated to 11' bgs within the potentially historic Stratum IV fill after the upper 5' of the test pit was shored for safety.

Table 04: TP 4 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.1'	N/A	Road base	
II	1.1' – 2.6'	7.5YR 4/4 silty sand mixed with pockets of 7.5YR 4/1 sand and gravel	Mixed, re-deposited fills fragments	~10% concrete and brick fragments and rounded pebble inclusions; gravel pockets
III	2.6' – 3.5'	10YR 5/6 sand	Utility fill	Small pebble inclusions
IV	2.6' – 11'	7.5YR 4/4 silty sand	Disturbed/re-deposited fill	Moderate number small cobbles, brick fragments, rounded pebbles. Few clam and oyster shells.

Test Pit 5

TP 5 was a 7' by 7' pit located 9' from the north West 4th Street curb line and 1' east of the northwest West 4th Street and Mercer Street intersection curb radius, 3' west of TP 4 oriented on a slightly northeast to southwest angle. Excavation revealed three thin layers of well-sorted mixed fill and sandy utility fill, with only the center 3' of the test pit dug to a final depth of 3.9' bgs. Excavation was halted after exposing the top of several utilities identified running west to east.

Table 05: TP 5 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.1'	N/A	Road base	
II	1.1' – 1.6'	7.5YR 4/4 silty sand	Mixed/re-deposited fill	Moderate number brick fragments, rounded pebbles
III	1.6' – 3'	10YR 6/4 sand	Utility fill	Compact sand
IV	3' – 3.9'	10YR 4/3 sand	Mixed/re-deposited fill	Moderate number brick fragments, rounded pebbles

Test Pit 6

TP 6 was an 8' by 12' pit located 8' from the north West 4th Street curb line and 100.4' from the northeast West 4th Street and Greene Street intersection curb radius. Excavation revealed two layers of sandy fills, with a deeper 7.5YR 4/4 sandy mixed fill typical of relatively shallow soils on West 4th Street. Excavation was terminated after exposing the top of several utility lines in the northern third of the test pit; the southern two-thirds of TP 6 was not excavated below 2' bgs.

Table 06: TP 6 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 2.5'	7.5YR 4/6 sand	Utility fill	Gravel inclusions concentrated from 1' – 1.5' bgs
III	2.5' – 3.2'	7.5YR 4/4 sand	Mixed/ re-deposited fill	Moderate number concrete and small brick fragments and pebble inclusions.

Test Pit 7

TP 7 was a 5' by 10' pit located at the West 4th Street and Greene Street intersection, 4' from the north West 4th Street curb line and 3' from the west Greene Street curb line. After several north-south utilities were identified around 2' bgs, only the central 3' of TP 7 was excavated to the final depth of 2.9' bgs. Excavation revealed two layers of fills, including a 7.5YR 4/4 sandy mixed fill typical of relatively shallow soils on West 4th Street.

Table 07: TP 7 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 2.5'	7.5YR 4/6 sand	Utility fill	Well-sorted sand
III	2.5' – 2.9'	7.5YR 4/4 sand	Mixed/ re-deposited fill	Moderate number concrete and small brick fragments and pebble inclusions.

Test Pit 8

TP 8 was a 7.5' by 10' L-shaped pit located alongside the west Washington Square East curb line and 43.5' from the northwest West 4th Street and Washington Square East intersection curb radius. TP 8 was expanded to its final L shape after initial excavation to identify shallow utilities was expanded south and west to the curb line. The shallow depth of TP 8 revealed 7.5YR 4/4 sandy mixed fill typical of relatively shallow soils in the area to 2.8' bgs (Image 01).

Table 08: TP 8 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.1'	N/A	Road base	
II	1.1' – 2.8'	7.5YR 4/4 sand	Utility fill	Well-sorted sand



Image 01: TP 8 plan view, facing south.

Test Pit 9

TP 9 was a 9' by 9' pit located in the West 4th Street and Washington Square East intersection, 6' from the east Washington Square East curb line and 5' from the West 4th Street north curb line. Excavation revealed a small layer of clean sandy fill (Stratum II) atop a matrix dense with concrete rubble (Stratum III) that may represent a previously disturbed road surface or utility encasement (Image 02). This material was atop a thick layer of re-deposited fills punctuated by electric, water, and sewer utilities to 10.5' bgs. Only a small, roughly 3' by 2' portion of TP 9 along its north wall was excavated below 5' bgs.

Table 09: TP 9 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.1'	N/A	Road base	
II	1.1' – 2'	10YR 4/6 sand	Utility fill	Well-sorted sand
III	2' – 3'	7.5YR 4/2 sand	Rubble and fill	Dense with angular pebbles, concrete fragments, and Belgian block cobble frags. Possibly former destroyed road.
IV	3' – 10.5'	7.5YR 4/3 sand	Mixed/re-deposited fill	Moderate number concrete and small brick fragments and pebble inclusions.



Image 02: TP 9 west profile before installing wood shoring.

Test Pit 10

TP 10 was a 6.5' by 20' pit located at the north Washington Square South curb line 5.5' east of the west LaGuardia Place curb line. TP 10 was dominated by a large east-west gas main in its south wall surrounded by yellowish clean sand to 4.1' bgs. North of the gas main, excavation revealed 7.5YR 4/6 utility fill with few rounded pebble inclusions to 4' bgs. After the original TP 10 footprint was excavated and backfilled, a 4' extension was dug along its entire south boundary. This revealed a more reddish brown 7.5YR 4/2 sandy fill to 4' bgs. The installation of the large ConEd gas main likely led to the large swathes of well-sorted fill above 4' bgs in this area.

Table 10: TP 10 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.1'	N/A	Road base	
II	1.1' – 1.4'	7.5YR 5/6 sand	Utility fill	Well-sorted sand
III	1.4' – 4'	7.5YR 4/6 sand	Utility fill	Well-sorted with few round pebbles
IV	2' – 4.1'	10 YR 6/2 sand	Utility fill	Well-sorted sand around gas main in southern portion of TP 10
V	1.4' – 4'	7.5YR 4/2 sand	Utility fill	Well-sorted sand around gas main in 4' south extension.

Test Pit 11

TP 11 was a 7' by 7' pit located along the north Washington Square South curb line and 81' from the northwest Washington Square South and Washington Square East intersection curb radius. Excavation only occurred in the central 3' by 3' portion of the test pit to locate existing utility lines, the rest of the test pit footprint was not excavated below 1.1' bgs. Excavation revealed well-sorted reddish brown sand surrounding existing utilities to 2.8' bgs.

Table 11: TP 11 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 1.3'	10YR 5/6 sand	Utility fill	Well-sorted sand
III	1.3' – 2.8'	7.5YR 4/4 sand	Utility fill	Well-sorted with few round pebbles

Test Pit 12

TP 12 was a 7.5' by 7.5' pit located along the north Washington Square South curb line and 4' west of the northwest Washington Square South and Washington Square East intersection curb radius. Only the eastern 3.5' of TP 12 was excavated beyond 1.1' bgs. Excavation revealed a thin band of yellowish grading material atop a reddish brown fill to 3.3' bgs.

Table 12: TP 12 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 1.3'	10YR 5/6 sand	Utility fill	Well-sorted sand
III	1.3' – 3.3'	7.5YR 4/4 sand	Utility fill	Well-sorted with few round pebbles

Test Pit 13

TP 13 was a 5' by 5' pit located at the southwest side of the West 4th Street and Mercer Street intersection, 2' from the east Mercer St. curb line and 6' from the south West 4th Street curb line. Only the central 2.5' square portion of TP 13 was excavated below the road base to confirm the location of two ConEd gas mains. Excavation revealed a clean, yellowish sand matrix atop the gas mains to 4' bgs.

Table 13: TP 13 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.2'	N/A	Road base	
II	1.2' – 4'	7.5YR 5/6 sand	Utility fill	Well-sorted sand

Test Pit 14

TP 14 was a 10' by 10' pit located 1.5' from the south Washington Square South curb line and 4' from the southwest Washington Square South and LaGuardia Place intersection curb radius. A partially intact previous asphalt road surface lay below the modern road base at 1.5' bgs. The majority of the test pit contained mixed reddish brown sand with mid-twentieth century glass fragment inclusions to 5.5' bgs (Image 03). This material was likely disturbed and re-deposited during the installation of gas and water utilities identified from 3.15' to 5.3' bgs in TP 14.

Table 14: TP 14 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 1.3'	7.5YR 4/2 sand and gravel	Utility fill	Well-sorted
III	1.3' – 5.5'	7.5YR 4/2 sand	Mixed/re-deposited fill	Few medium and large concrete fragments inclusions. Broken 1950s-1970s bottle glass.



Image 03: TP 14 excavation in progress, facing north.

Test Pit 15

TP 15 was a 9' by 10' pit located at the southwest side of the West 4th Street and Greene Street intersection, 1' from the south West 4th Street curb line and 6' west of the west Greene Street curb line. Numerous east-west oriented utilities were present across the entire TP 15 length, with excavation halted at 5.2' bgs due to their density. Clean yellowish sand (Stratum III) surrounded a gas main near TP 15's center, while darker reddish brown than typical of West 4th Street shallow fills (Stratum II) was present surrounding this clean fill to the test pit's base.

Table 15: TP 15 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.2'	N/A	Road base	
II	1.2' – 2'/5.2'	7.5YR 4/2 sand	Mixed/re-deposited fill	Few round pebbles, few small brick fragments. Well-sorted. Present to TP 15 floor outside of center of test pit.
III	2' – 5.2'	10YR 6/2 sand	Utility fill	Found in TP 15 center surrounding gas main.

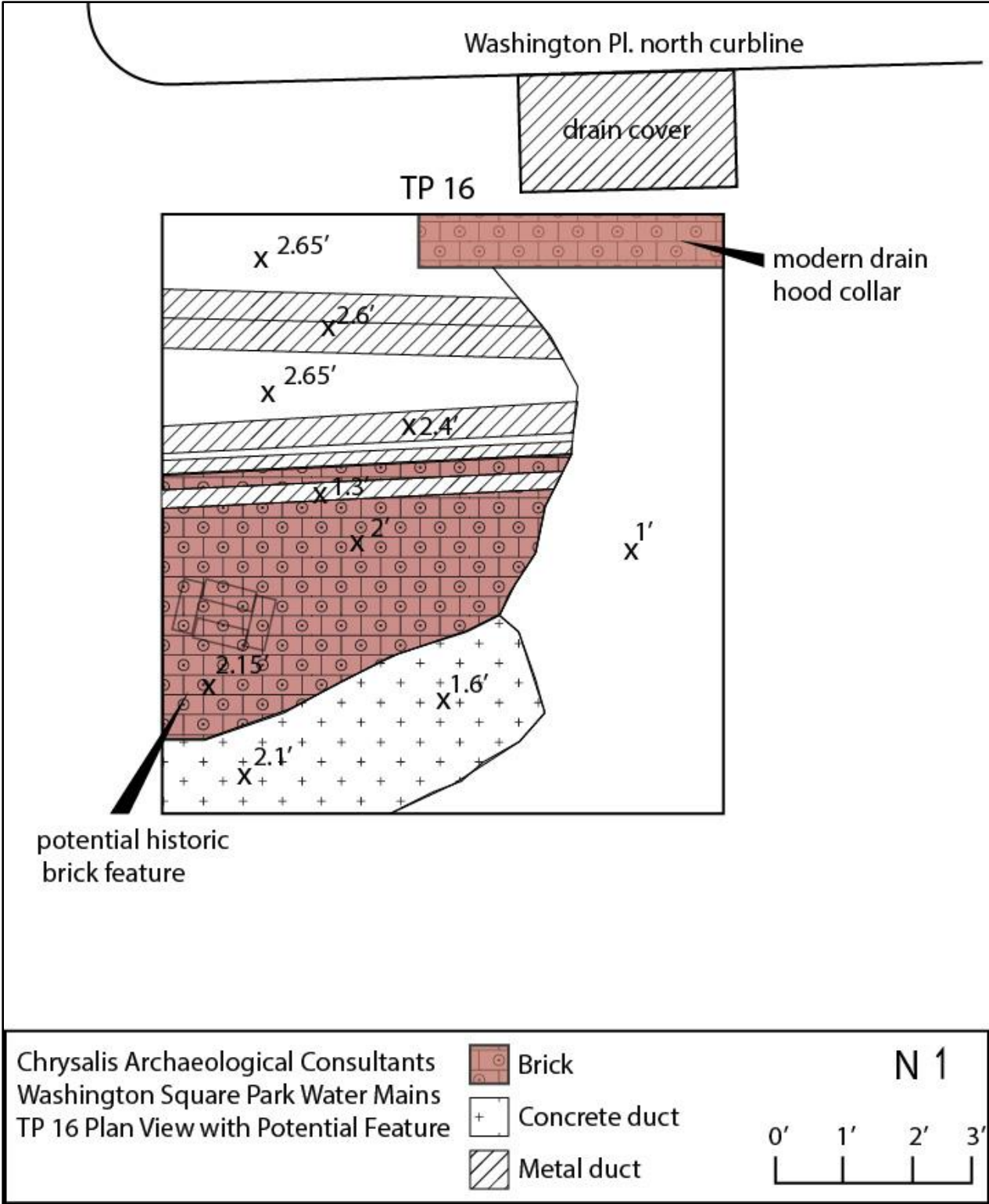
Test Pit 16

TP 16 was an 8.5' by 9' pit located in the northeast portion of the Washington Square East and Washington Place intersection, 2' from the north Washington Place curb line and 1' west of the northeast Washington Square East and Washington Place intersection curb radius. TP 16 was dense with east-west oriented utilities from 1' to 3' bgs, including a mortared brick collar for a nearby catch basin drain hood. The matrix surrounding all the materials uncovered in TP 16 was a mix of lighter 10YR 6/2 sand and 10YR 4/2 sand, disturbed and re-deposited likely by the variety of utility installations that had taken place in the area previously.

A possible historic feature appeared in TP 16: a mortared brick surface sloping lower as it ran south in the south half of TP 16, from 2' to 2.15' bgs (Map 04). The small portions revealed that the brick was tightly constructed, with few evident mortared gaps. A small raised section of four bricks was extant near the west TP 16 boundary that appeared to be an access panel of some sort. This feature had previously had several modern utilities built directly atop its surface. The small portion revealed during TP 16 excavation suggested the structure might be a remnant of a basement barrel vault, a cistern, or a cover for some unmapped historic utility (Image 04).

Table 16: TP 16 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 3'	10YR 6/2 sand mixed with 10YR 4/2 sand	Mixed/re-deposited fill	~20% round and angular cobbles, small concrete and brick fragments inclusions.



Map 04: TP 16 plan view with potential historic brick feature.



Image 04: Historic brick feature in TP 16 plan view, facing north. Raised opening in south half of frame.

Test Pit 17

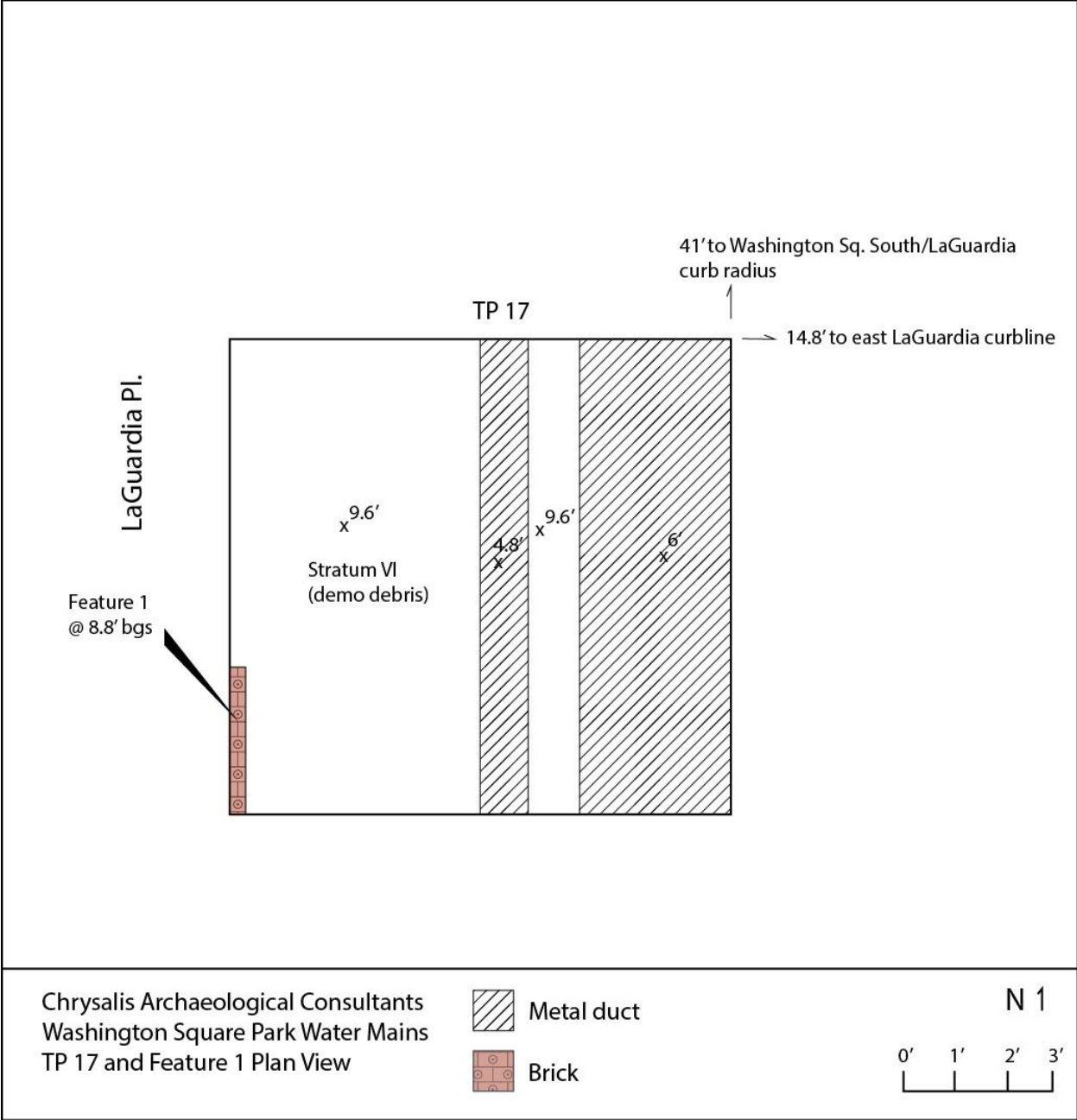
TP 17 was a 10.5' by 9.5' pit located on LaGuardia Place, 14.8' from the east LaGuardia Place curb line and 41' from the southeast Washington Square South and LaGuardia Place intersection curb radius. TP 17 excavation revealed two types of relatively clean, well-sorted fills around utilities to 5.6' bgs (Strata II and III) atop less well-sorted, historically deposited fill to 8.5' bgs (Strata IV and V). At the lowest exposed portion of TP 17 lay a 7.5YR 4/3 sandy soil matrix dense with whole and fragmented bricks measuring 8" by 4" by 2.5", disarticulated schist blocks averaging approximately 1' by 4", mortar fragments with some smoothed plaster remnants, and a few small fragments of undecorated marble facing material (Stratum VI). None of the bricks featured frogging or maker's marks. Stratum IV appeared to be the remnants of a historically razed brick structure that featured smoothed plaster, likely on its interior basement walls, and marble facing, likely on portions of the structure's exterior. This structure was likely razed and the fill left within the building's basement during or before a large north-south water main was installed from 6' to 10' bgs to the east.

Feature 1



Feature 1 was an extant mortared brick wall segment that appeared from 8.8' to 9.6' bgs within Stratum VI in TP 17 (Map 05) (Image 05). Feature 1 was located in the southwest corner of TP 17, within the west test pit boundary wall. This brick wall was likely an interior basement wall for the building that was previously razed in this area. The upper portion of Feature 1 had been previously impacted, making its original depth indeterminate. Feature 1 continued below the TP 17 floor, making its final depth also unknown. The visible portion of Feature 1 featured only stretchers, although its full extent was not visible, as the wall continued south beyond the boundaries of TP 17. Better exposing this feature during full-scale excavation of utilities would help identify its component bricks and building methodology, aiding dating of the structure. An unknown additional extent of Feature 1 remains in the area; special attention should be paid to excavation in the portion of LaGuardia Place surrounding TP 17, as historic artifacts and architectural elements remain in this area.

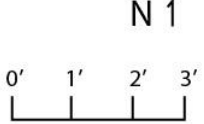
Table 17: TP 17 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.1'	N/A	Road base	
II	1.1' – 2'	7.5YR 5/6 sand	Utility fill	Present in western half of test pit
III	2' – 5.6'	7.5YR 4/3 sand	Mixed/re-deposited fill fragments	Moderate number concrete and small brick fragments, rounded and angular pebbles
IV	5.6' – 8'	7.5YR 6/3 silty sand	Mixed fill	Few pebbles and small brick fragments.
V	8' – 8.5'	5YR 4/3 sand	Mixed fill	Few brick frags. possibly sourced from razed brick building in area
VI	8.5' – 9.6'	7.5YR 4/3 sand	Historic demo debris	Many large brick fragments and whole bricks (8"x4"x2.5"), disarticulated schist blocks (~1'x4"), mortar fragments with evidence of plaster finish



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 Washington Square Park Water Mains
 TP 17 and Feature 1 Plan View

-  Metal duct
-  Brick



Map 05: TP 17 plan view with Feature 1.



Image 05: Feature 1 in extreme southwest of TP 17 plan view, facing north.

Test Pit 18

TP 18 was a 17.5' by 5.5' pit located at the south side of the Washington Square South and LaGuardia Place intersection, 1.5' from the east LaGuardia Place curb line and 5' south of the southeast Washington Square South and LaGuardia Place intersection curb radius. Excavation revealed heavy utility disturbances, with three strata of mixed, relatively well-sorted fill surrounding different installation episodes in the west, center, and eastern portions of TP 18 to 5.6' bgs.

Table 18: TP 18 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 5.6'	10YR 5/2 sand	Mixed fill	Dense with round pebbles and small brick and concrete fragments found in eastern 8' of TP 18
III	1' – 5.6'	7.5YR 4/2 sand	Mixed/re-deposited fill fragments	Moderate number concrete and small brick fragments, angular pebbles
IV	1' – 4'	7.5YR 5/6 sand	Utility fill	Well-sorted. Found in western 2/3rds of TP 18

Test Pit 19

Test Pit 19 was a 6' by 7' pit located on the east side of LaGuardia Place, 6' from the east LaGuardia Place curb line and 42.5' south of the southeast Washington Square South and LaGuardia Place intersection curb radius. Only TP 19's eastern 4' was excavated to 4' bgs due to numerous utilities in the west side of the test pit. Materials below the road base and grading fill were reddish brown sandy soil with pebbles, concrete and brick fragments typical of relatively shallow fills in the area.

Table 19: TP 19 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 1.5'	10YR 5/6 sand	Utility fill	Well-sorted
III	1.5' – 4'	7.5YR 4/3 sand	Mixed/re-deposited fill	Moderate number concrete and small brick fragments, rounded pebbles

Test Pit 20

TP 20 was a 16' by 10' pit located at the Washington Square East and Waverly Place intersection, 10' from the north Washington Square North curb line and 4' from the west University Place curb line. Excavation revealed relatively well-sorted sandy yellowish and reddish brown matrices typical of shallow fills in the area to 5.5' bgs. Only a portion of a 4' extension west of TP 20 was excavated below 5' bgs due to a large manhole blocking much of the east side.

A matrix dense with bricks measuring 8” by 3¼” by 2”, concrete and stone fragments, and mortar pieces lay from 5.5’ to the TP 20 base at 9.3’ bgs (Stratum V) (Image 06). This stratum likely represents debris from the previous demolition of a brick structure in the area, likely razed for construction of a sewer running through the south side of TP 20 at 9.25’ bgs. One brick retained a “TERRY” frogged maker’s mark. This brick was likely produced by the Terry Brothers, who operated a brick factory in Kingston, NY from 1850 to at least 1910 (IBCA 2015). Special attention should be paid to this area during subsequent excavation to relocate and replace utilities, as remnant historic artifacts and architectural features may survive in this area dating to the mid nineteenth century.

Table 20: TP 20 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0’ – 1.1’	N/A	Road base	
II	1.1’ – 3’	7.5YR 5/6 sand	Utility fill	Present in eastern 12’ of TP 20
III	1.1’ – 5.5’	7.5YR 4/3 sand	Mixed/re-deposited fill	Moderate number concrete and small brick fragments, rounded pebbles
IV	1.1’ – 5’	10YR 6/2 sand	Utility fill	Present in western 4’ of TP 20
V	5.5’ – 9.3’	7.5YR 4/3 sand	Historic demo debris	Dense with fragmented and whole bricks (3¼”x2”x8”), concrete and stone fragments, mortar fragments.



Image 06: Stratum V excavation in TP 20, facing east.

Test Pit 21

TP 21 was a 10’ by 11’ pit located on 5th Avenue, 10’ from the West 5th Avenue curb line and 38’ from the northwest Washington Square North and 5th Avenue intersection curb radius. Excavation revealed consistent sandy fill to 7.8’ bgs surrounding a large, 48” water main. Soil was consistent throughout TP 21 and slightly lighter and more yellow than the typical fill material on the east side of Washington Square Park and on West 4th Street.

Table 21: TP 21 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0’ – 1’	N/A	Road base	
II	1’ – 7.8’	10YR 4/4 – 5/5 sand	Utility fill	Well-sorted with few small brick, concrete, and cobble inclusions

Test Pit 22

TP 22 was a 10.5' by 11' pit located on 5th Avenue, 10' from the east 5th Avenue curb line and 92' north of the northeast Washington Square North and 5th Avenue intersection curb radius. Only the center 8' by 4' portion of TP 22 was excavated below 5' bgs. Excavation revealed a thick asphalt and concrete road base atop a consistent yellowish, well-sorted sandy fill surrounding a 36" water main running north-south through the area. Installation of this water main likely destroyed any historic materials in the TP 22 area to 10.5' bgs.

Table 22: TP 22 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.85'	N/A	Road base	
II	1.85' – 10.5'	10YR 4/4 sand	Utility fill	Well-sorted with few small brick and concrete inclusions

Test Pit 23

TP 23 was a 7' by 8' pit located along the Washington Square North south curb line, 6' east of where the 5th Avenue curb line lays. Excavation revealed well-sorted fill soil consistent with that seen in TP 21 and TP 22 to the north to 5' bgs. These three test pits indicate a mass fill episode in 5th Avenue near Washington Square North (Image 07).

Table 23: TP 23 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1'	N/A	Road base	
II	1' – 5'	10YR 4/4 sand	Utility fill	Well-sorted with few small brick and concrete inclusions



Image 07: TP 23 plan view in progress, facing north.

Test Pit 24

TP 24 was a 7' by 5.5' pit located 5.5' from the west 5th Avenue curb line and 15.4' north of the northwest Washington Square North and 5th Avenue intersection curb radius. Excavation revealed a consistent layer of slightly greenish fill to 6.3' bgs, similar to TP 21, TP22 and TP23 fill. This may have been soil deposited in the same mass fill episode that was possibly discolored over time from water running into or retained in a nearby manhole.

Table 24: TP 24 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.1'	N/A	Road base	
II	1.1' – 6.3'	2.5Y 4/2 sand	Utility fill	Well-sorted with moderate number angular pebbles

Test Pit 25

Test Pit 25 was a 6' by 6.3' pit located on Washington Place, 14.5' from the north Washington Place curb line and 10' east of the northeast Washington Square East and Washington Place intersection curb radius. Excavation revealed a matrix containing large concrete fragments, partial and whole bricks, and wood fragments to 2.2' bgs possibly created by destruction of utilities and their encasements in the area. Below this lay a more defined mixed fill matrix, which is more typical of shallow fill in the area, surrounding few utilities running east-west in the area.

Table 25: TP 25 soil stratigraphy

STRATUM	DEPTH BGS	MUNSELL COLOR AND TEXTURE	SOIL TYPE	DESCRIPTION
I	0' – 1.3'	N/A	Road base	
II	1.3' – 2.2'	10YR 4/3 sand mixed with 10YR 4/2 loamy sand	Mixed rubble	Concrete rubble mixed with whole and partial bricks and wood fragments.
III	2.2' – 5'	10YR 4/3 sand	Utility fill	Few pebble and small brick fragments inclusions

CONCLUSIONS

Test pit excavation for the Project revealed four specific areas of concern within the project APE: potential historic fill, represented by the discovery of clam and oyster shell in TP 4 at the northwest side of the West 4th Street and Mercer Street intersection; a possible historic basement or other brick structural feature in TP 16 on Washington Place near the Washington Square Park East intersection; a historic wall feature on LaGuardia Place south of Washington Square South; and historic brick demolition debris in TP 20 at the Washington Square East and Waverly Place intersection within the footprint of the Scotch Presbyterian Church Cemetery. These areas contain, or based on historic materials within the stratigraphic profile, are likely to contain eighteenth or nineteenth century historic artifacts or architectural materials and/or features. No evidence of prehistoric occupation appeared during test pit excavations.

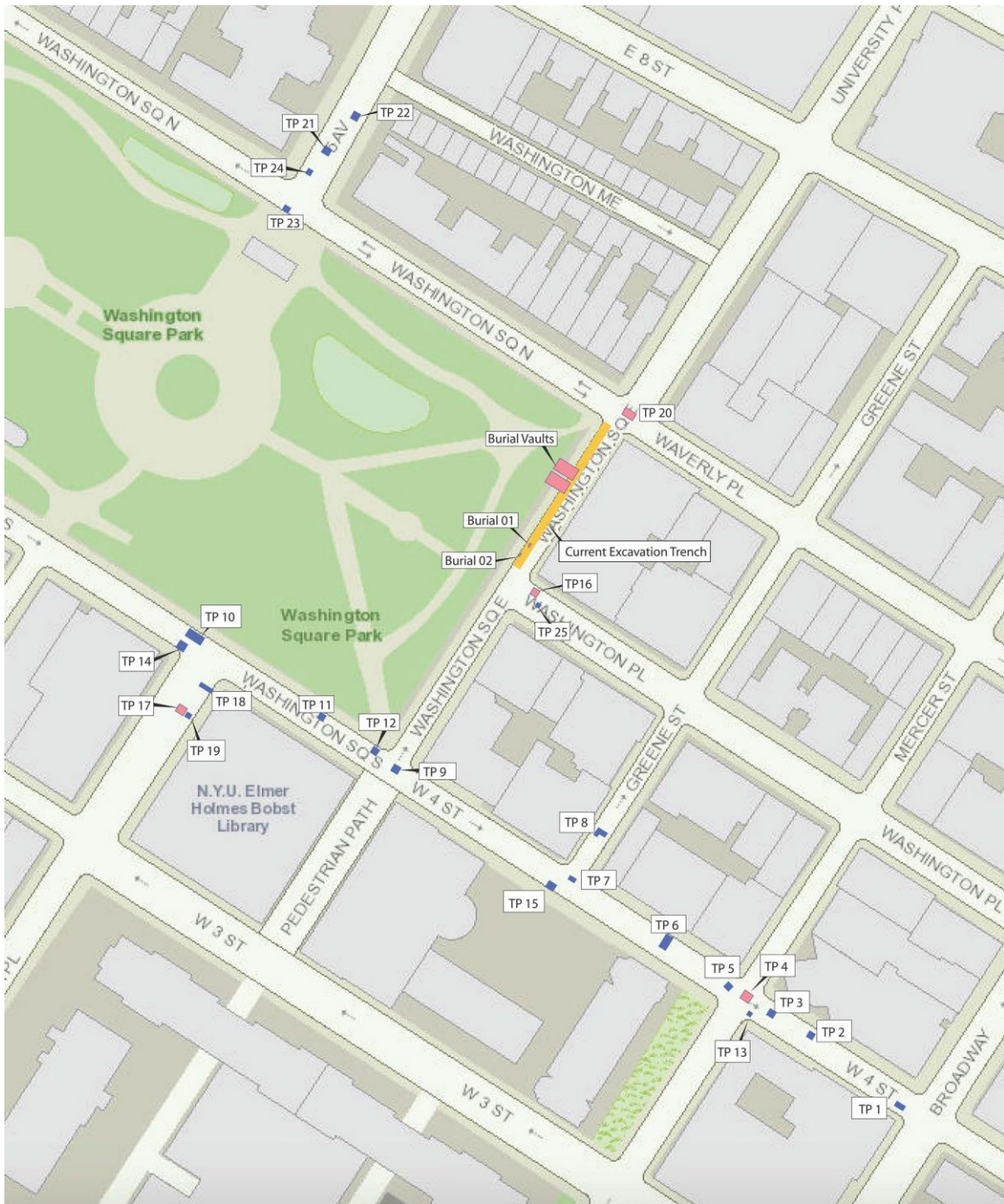
The majority (19 out of 25) of the test pits were excavated only to a specified minimal depth to locate and identify the existing utility. Therefore the majority of these pits were not excavated below 5' bgs, although the proposed construction will exceed these depths. Potentially significant materials may remain below, and/or alongside, these utilities, which could be impacted during utility removal or relocation, as seen with the historic feature directly below modern utility lines in TP 16. It cannot be assumed that no potentially significant material remains are potentially present in these areas based on this limited testing. Additionally, large areas of Washington Square East, Washington Square South west of LaGuardia Place and Washington Square North remain untested at this point in the project and will be subject to new construction.

Based on the archaeological interpretation of the preliminary test pits excavated to locate existing utilities, archaeological monitoring at the four areas of concern listed must occur. These are: the West 4th Street and Mercer Street intersection, Washington Place near Washington Square East, LaGuardia Place south of Washington Square South, and the Washington Square East and Waverly Place intersection. In addition, the area of Washington Square East and the Waverly intersection are known to have been part of the Scotch Presbyterian burying ground and the Potter's Field; two burial vaults and two individual burials have already been uncovered.

Archaeological monitoring should occur, as outlined in the previously approved Archaeological Monitoring Plan (Chrysalis Archaeology 2015a) for all project activities below 3' bgs, as these depths remain generally untested across the project APE and the project has already demonstrated that human remains or burials vaults may be found less than 5' bgs (Chrysalis Archaeology 2015b, 2015c, 2015d, 2015e) (Map 06). Further, the eastern and southern boundaries of the Potter's Field remain unknown and therefore, archaeological monitoring should occur within the blocks surrounding Washington Square Park.

For areas not specifically designated in either the approved Archaeological Monitoring Plan, and/or outlined above, when an Archaeological Monitor is not present on site, the project must strictly follow the Unanticipated Discoveries Protocol. All excavation will be halted in an area where any material or stratigraphic remains are uncovered and the Archaeological team will be alerted of the find. Sufficient time will be allowed for the area to be investigated and considered for cultural resources before proceeding with excavation.

Based on the evidence uncovered during the preliminary test pits, combined with previous archaeological excavation history adjacent to, and in the area, and the exposure of human remains and burial vaults, the project area must be considered as having a high potential for the recovery of cultural resource material remains that date between the eighteenth and early twentieth centuries as well as a high sensitivity for human remains and other potential cemetery features.



Chrysalis Archaeological Consultants

Washington Square Park Water Mains
 Overall Plan View
 November 2015

- Test Pit Excavations
- Trench Excavations
- Archaeologically Positive



Map 06: Current, preliminary, site map representing positive test pits and location of burials (vaults and individuals)

REFERENCES

Chrysalis Archaeological Consultants, Inc.

- 2015a Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015b In-Progress Field Memorandum for the Record #01 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015c In-Progress Field Memorandum for the Record #02 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015d In-Progress Field Memorandum for the Record #02 (Addendum) as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015e In-Progress Field Memorandum for the Record #03 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

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To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A., Christopher Ricciardi, Ph.D., R.P.A.
and Brittany Tillchock

Re: In-Progress Field Memorandum for the Record #05, Preliminary Historical Research into Burial Vaults 01 and 02 and the Descendant Church, as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York Washington Square Park

Date: December 4, 2015 (UPDATED December 16, 2015)

INTRODUCTION

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by the WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York.

An Archaeological Monitoring Plan, previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Chrysalis Archaeology 2015a).

This In-Progress Field Memorandum for the Record #05 briefly outlines the research (to date) identifying the descendant Church associated with the burial vaults exposed on November 3rd and 4th 2015. This is a follow-up to the In-Progress Field Memorandum for the Record 01, 02 and 02 Addendum incorporating portions of those reports with additional information (Chrysalis Archaeology 2015b, 2015c, 2015d).

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BURIAL VAULTS

Two burial vaults were exposed within the street bed of Washington Square East between Washington Square North and Washington Square South opposite the northeast corner of Washington Square Park (Map 01). The vaults are constructed of mortared brownstone with a brick arched roof. They measure 15' north to south by 27' east to west with an approximate interior height of 9' – 10' at the center point. Both have wooden doors secured with metal hinges and a box-style lock that open to a set of three steps (Image 01).

Burial Vault 01 (Image 02) is the northern most of the vaults and, based on limited digital photography, contains an estimated 11 individuals. The majority of the skeletons are in a disarticulated pile in the northeast corner of the vault. This is most likely the result of disturbance after the vault was no longer in use, post-1830.

Burial Vault 01 shows clear evidence of having been breached. The roof, along the northern side, contains a patched area beneath which lay a pile of broken brick on the floor of the vault., According to a newspaper account, in the summer of 1965 workers from the Consolidated Edison Company of New York (ConEd) encountered a burial vault while excavating for utility lines (New York Times August 2, 1965). This patch is likely related to that occurrence.

Burial Vault 02 (Image 03) is located immediately south of Burial Vault 01 and is of identical construction. Several coffins are located within the vault, largely intact, though some have collapsed due to the weight of stacking and perhaps other environmental conditions. Limited digital photography also reveals potential disarticulated skeletal remains in the rear of the vault to the left of the door. There appears to be water leakage along the door of the vault at its western end, as images reveal the door appearing to be “wet” and obvious drip or seepage lines running along the steps (Image 04).

Based on a limited visual assessment there are a minimum of 32 coffins, some with coffin plates. There is a minimum of 10 coffin plates based on digital photographs.

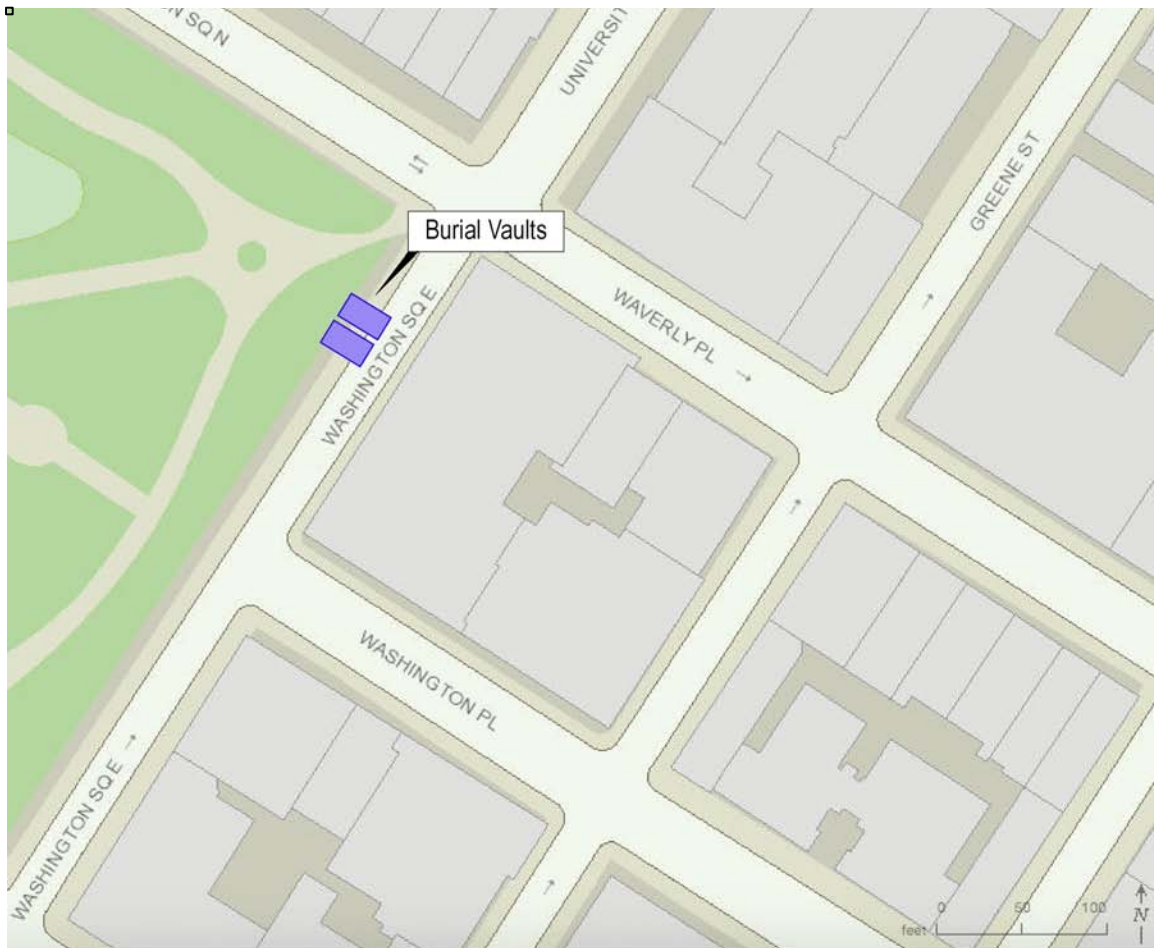
Per the direction of the LPC, there has been no entrance into either of the burial vaults. All measurements, counts and images of the interior were taken through the small opening, created by the removal of one stone, where the wall of the vault meets the arched roof.

Digital photography of the interior of Burial Vault 02 has revealed information from one of the coffin plates. The inscription reads *William Stitt; died _____ 1826; Aged 47 years*. A search of historic newspapers and directories located William Stitt, an accountant residing at Broad and Stone Street, and his obituary dated September 29, 1826 (*Evening Post September 29, 1826*) (Image 06). No other coffin plates were able to be read from the digital photographs.

DIED,
This morning, Mr. William Stitt, aged 47 years. His friends and acquaintances are respectfully invited to attend his funeral to-morrow afternoon at 4 o'clock, from his late residence, corner of Broad and Stone street.

Image 06: Mortuary Notice for William Stitt (*Evening Post* September 29, 1826).

Recently, DDC conducted 3D scanning of the two vaults through the existing opening. Unfortunately various constraints (e.g. not being able to set the scanner on a tripod), did not allow for enough clarity to identify any of the inscriptions on the coffin plates within the Vaults.



Map 01: Area map showing the location of Burial Vaults 01 and 02.



Image 01: Burial Vault 01 showing vault construction and patch on the roof of the vault.



Image 02: Disarticulated skeletons within Burial Vault 01.



Image 03: Burial Vault 02 showing stacked coffins.



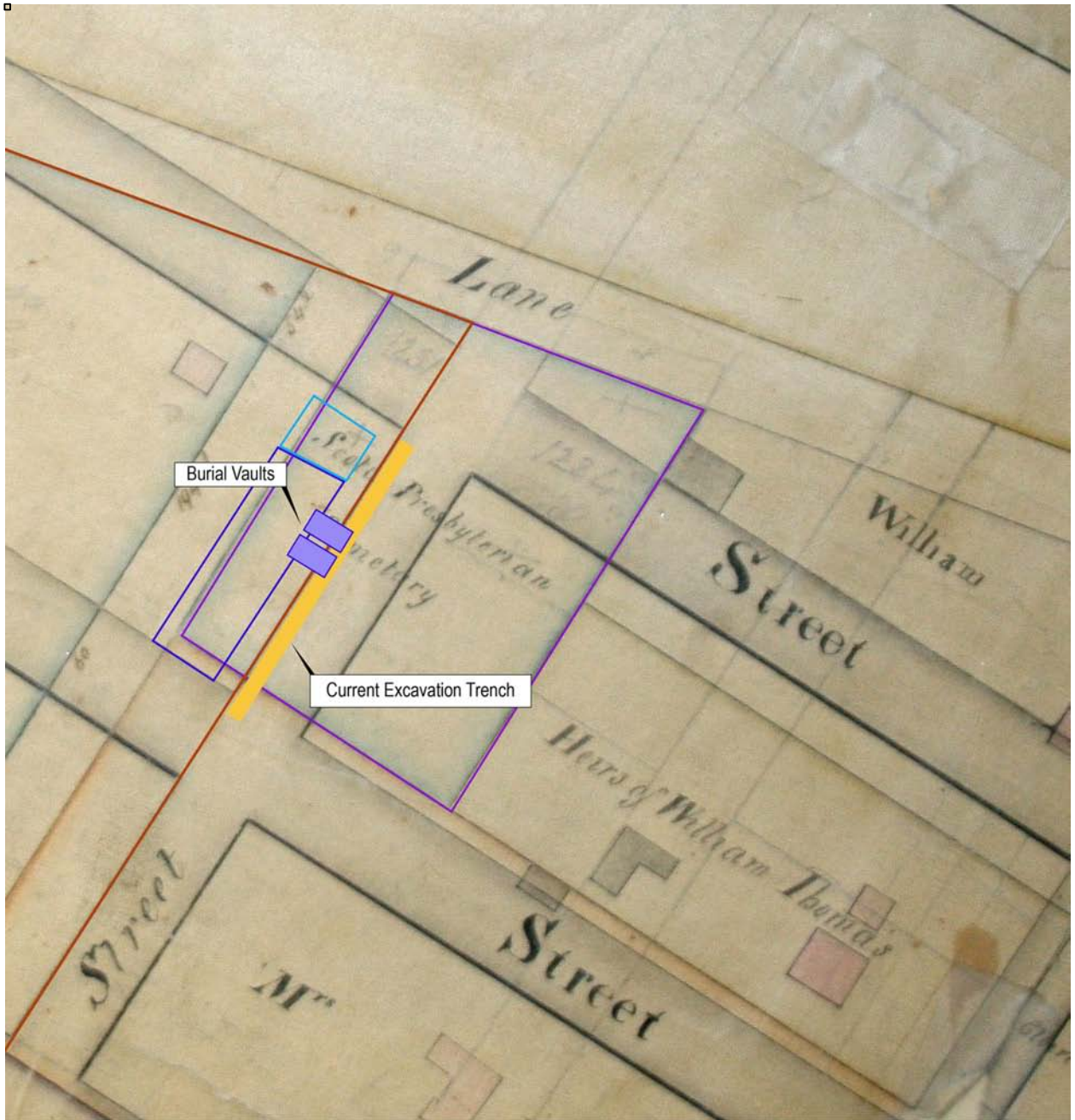
Image 04: Door of Burial Vault 02 showing water seepage.

HISTORIC PROVENANCE

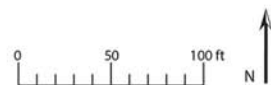
Following discovery of the vaults they were mapped to determine their location relative to the Potter's Field and Church cemeteries that were present in the area from the late eighteenth century through the first quarter of the nineteenth century. The overlay of the burial vault location on readily available maps indicates that the vaults were part of the Scotch Presbyterian Church burying ground.

The first map referenced is the 1817 survey entitled *Map showing the Property affected by the Continuation of 4th, 5th and 6th Streets at right angles with Broadway*. This survey depicts various private properties in the area as well as streets that were never laid (Map 02). The Scotch Presbyterian Church burying ground was located in the northeast portion of what is today Washington Square Park as well as extending further north and east into areas that are presently paved roadway or developed.

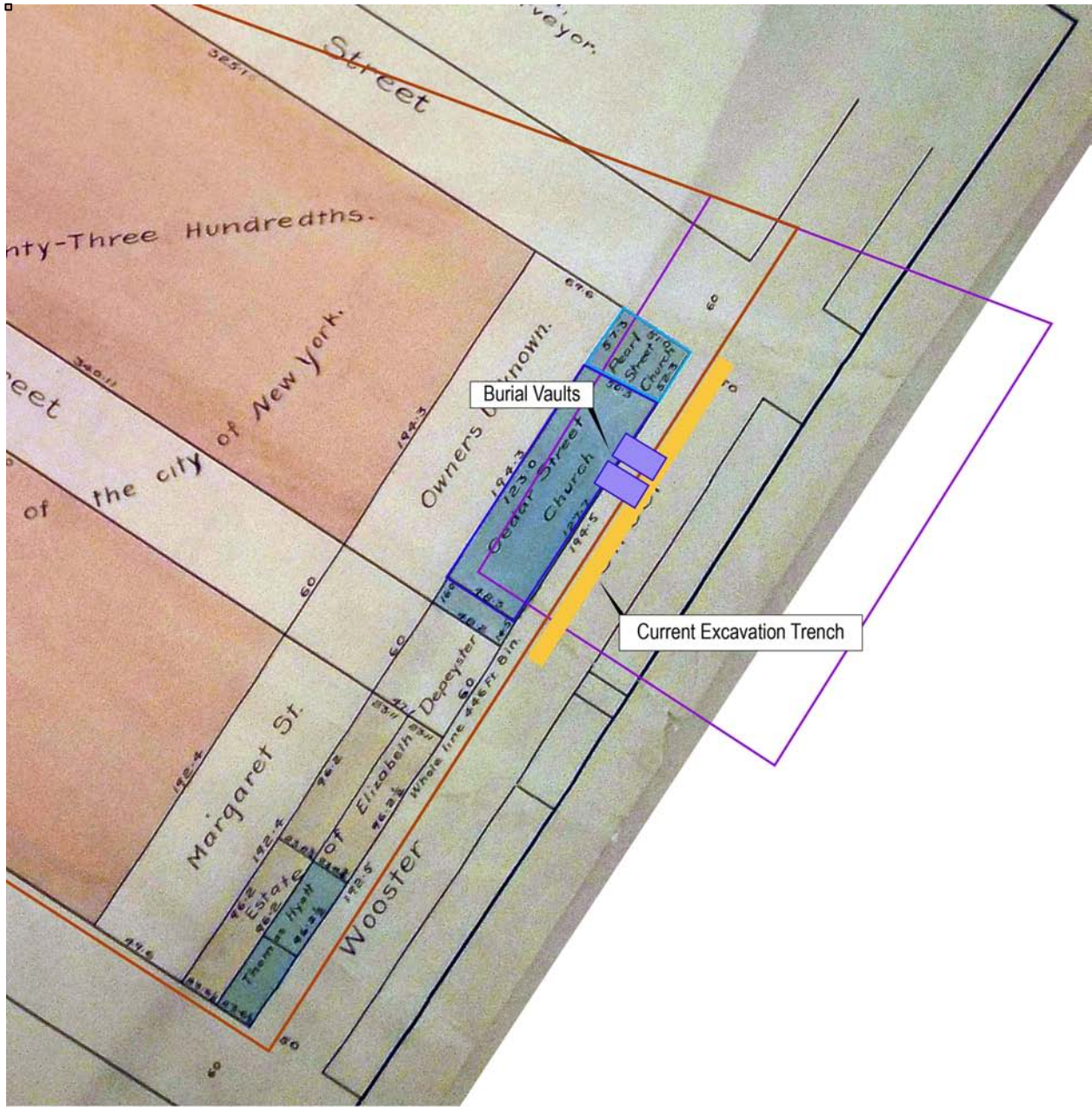
The second map is the 1826 map entitled, *Map of the Contemplated Washington Parade* (Map 03). This map only shows the portion of the burying grounds that were within the area to be developed as the Parade Ground. At this time the area that had been labeled as Scotch Presbyterian Church in 1817 is split. A small portion to the north is labeled Pearl Street Church and the majority of the area is labeled Cedar Street Church. This map also depicts streets, including Margaret Street, which was never laid (Geismar 2005).



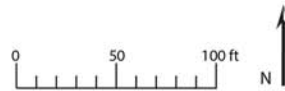
- Presumed Potter's Field Boundaries (1817 map, et al)
- Scotch Presbyterian Burying Ground (1817 map)
- Cedar Street Church Burying Ground (1826 map)
- Pearl Street Church Burying Ground (1826 map)



Map 02: Map showing the Property affected by the Continuation of 4th, 5th and 6th Streets at right angles with Broadway (1817) with overlays.



- Presumed Potter's Field Boundaries (1817 map, et al)
- Scotch Presbyterian Burying Ground (1817 map)
- Cedar Street Church Burying Ground (1826 map)
- Pearl Street Church Burying Ground (1826 map)



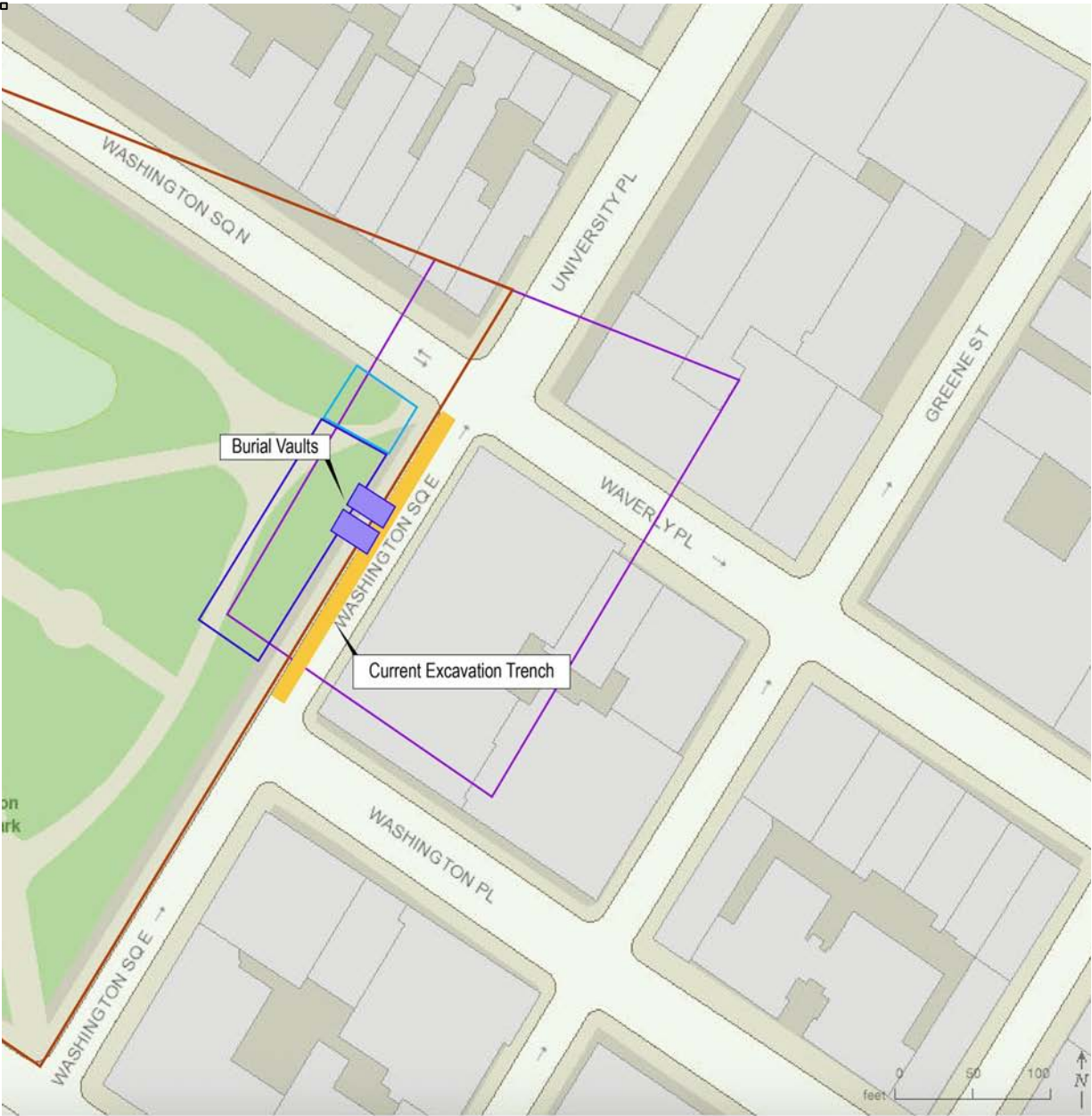
Map 03: *Map of the Contemplated Washington Parade* (1826) with overlays.

Though limited to the proposed boundaries for the Parade Ground this map is useful in that it provide measurements for the proposed Parade Ground. Table 01 is a comparison of the proposed measurements of the Parade Ground with present-day measurements of Washington Square Park as based upon NYCity Map. Though there are some slight discrepancies in the measurements from NYCity Map, current NYC tax records note the dimensions of Washington Square Park as 950.51' by 446.67' (NYC Department of Finance 2015), near identical to the proposed Parade Ground measurements.

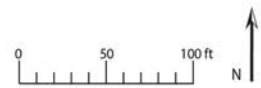
Table 01: Comparison of Proposed Parade Ground and present day Washington Square Park dimensions.

FEATURE	1826 MAP	PRESENT DAY
Washington Square North curb to curb		976'
Washington Square North park	951' 5"	952'
Washington Square East curb to curb		478'
Washington Square East park	446' 8"	450'
Width of Wooster Street (now WSE)	50'	40' (park to building line)
Width of Sixth Street (now WSN)	60'	50' (park to building line)

Map 04 overlays the boundaries of the burying grounds from the 1817 and 1826 maps in relation to the vaults. This plainly locates the burial vaults within the Scotch Presbyterian Cemetery on the 1817 map and the Cedar Street Church property on the 1826 map. Based on the initial documentary research presented in this update, the Cedar Street Church and the Scotch Presbyterian Church are the same church.



- Presumed Potter's Field Boundaries (1817 map, et al)
- Scotch Presbyterian Burying Ground (1817 map)
- Cedar Street Church Burying Ground (1826 map)
- Pearl Street Church Burying Ground (1826 map)



Map 04: Location of skeletal remains and burial vaults in relation to historic burial grounds.

Scotch Presbyterian Church

The Scotch Presbyterian Church was formed in the autumn of 1756 by a small group of parishioners who seceded from first Presbyterian Church within the City of New York. This break was due to dissatisfaction with the subject of psalmody, which caused a division within the Presbyterian Church (Greenleaf 1846:129). The Scotch Presbyterian Church operated under the Associate Presbytery of Pennsylvania and was officially known as “First Associate Presbyterian Church” (Scotch Presbyterian Church 2006). This new congregation initially met in private homes until they moved to a modest building on Little Queen Street (Cedar Street¹) in 1761. This building was replaced with a more formal stone building in 1768 (Wylie 1906:14-15 and Scotch Presbyterian Church 2006:7, 26).

The Cedar Street Church (1768-1836) was located on Cedar Street between Broadway and Nassau Street. A stone was placed in the church with the motto of the Church of Scotland “The bush burned with fire, and the bush was not consumed” inscribed in Hebrew across the top. This stone has been moved with the Church to each of its four locations, including the present day Church on 96th Street and Central Park West (Image 05) (Scotch Presbyterian Church 2006).

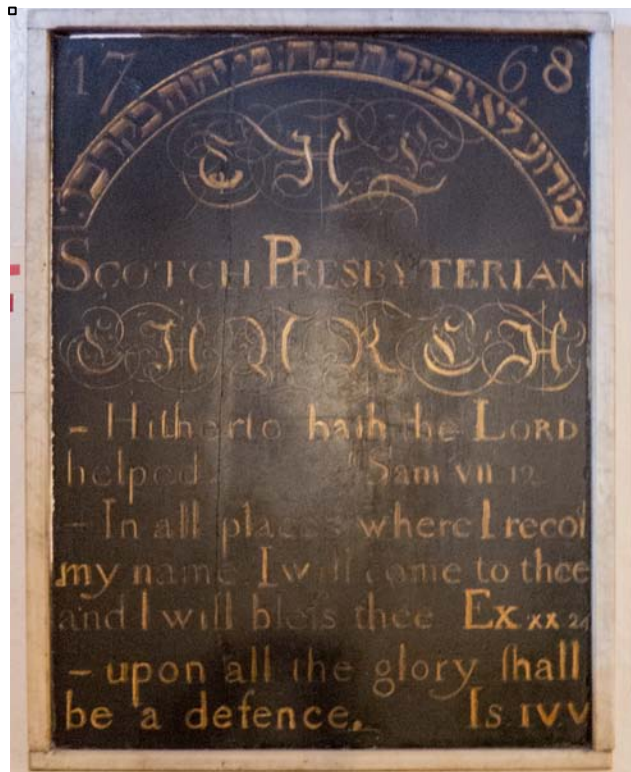


Image 05: Stone plaque from the original Cedar Street Church now located at the Second Presbyterian Church at 96th Street and Central Park West.

¹ Little Queen Street was renamed Cedar Street in 1793.

It should be noted that there was another Presbyterian Church on Cedar Street, located between Nassau Street and William Street and founded in 1808. This is not the same congregation as, or part of, the Scotch Presbyterian Church. This history of this second Cedar Street Church traces to the present day Fifth Avenue Presbyterian Church (Jessup 1908).

As of 1782 the Scotch Presbyterian/Cedar Street Church was officially known as “The First Associate Reformed Church in New York” (Greenleaf 1846:204).

At some point in its history the Scotch Presbyterian/Cedar Street Church formed a collegiate charge with the Pearl Street Church. The Pearl Street Church, organized in 1797, was located on Pearl Street, then Magazine Street, between Elm and Broadway. However, the union of the churches did not last long and they separated sometime after 1804 (Greenleaf 1846:206).

David G Wylie, PhD and Pastor of the Scotch Presbyterian Church located at 96th and Central Park West, published a work entitled, *Our Jubilee: 150th Anniversary of the Scotch Presbyterian Church, New York, 1756-1906*. This book contains a comprehensive history of the Scotch Presbyterian Church, the four locations they occupied since their inception. In 1836 the Church sold its property on Cedar Street and moved to the corner of Crosby Street and Grand Street, where they resided until 1853. In 1853 the Church again moved, this time to Fourteenth Street, a short distance east of Sixth Avenue. They remained in that location until 1893 when they purchased their current property at 96th Street and Central Park West (Wylie 1906:16-18).

Wylie’s research and history of the church corresponds with a New York Times article dated the 23rd of January 1897, in which the author details the history of the Scotch Presbyterian Church and its Pastors (New York Times 1/23/1897). Additionally, a similar history was published in 1917 for the 160th anniversary of the church in the Twenty-Second Annual Report of the American Scenic and Historic Preservation. This source also discussed the cornerstone at the 96th and Central Park West location that reads “1756 Scotch Presbyterian Church 1894”, the year the church was founded and the date the cornerstone was laid for their most recent location (American Scenic and Historic Preservation Society 1917).

The current church building contains several plaques that reference the church’s history as the Scotch Presbyterian Church. According to Pastor Merlin, the church has carried these plaques to each new location of the church throughout its history (Pastor Leslie Merlin, personal communication).

Based upon multiple congruent histories, many of which have been printed by the Church itself, the cornerstone of the current building and the multiple plaques that are part of the Second Presbyterian Church’s building, the evidence is conclusive that the current congregation is descended directly from the Scotch Presbyterian Church.

Table 02: Timeline of relevant events regarding the Scotch Presbyterian Church history.

YEAR	CHURCH LOCATION	ADDITIONAL INFORMATION
1756	Cedar Street, Between Nassau and Broadway	Scotch Presbyterian Church is formed due to dissatisfaction with the subject of psalmody, which caused a division within the Presbyterian Church. Formally called the First Associate Presbyterian Church.
1782	Cedar Street, Between Nassau and Broadway	Officially the First Associate Reformed Presbyterian Church
1817	Cedar Street, Between Nassau and Broadway	1817 <i>Map showing the property affected by the continuation of 4th 5th and 6th streets at right angles with Broadway</i> by Edward Doughty denotes land in the NE corner of what is to be WSP as a Scotch Presbyterian Burial Ground
1822	Cedar Street, Between Nassau and Broadway	Joined the Presbyterian Church in the United States
1826	Cedar Street, Between Nassau and Broadway	George B. Smith 1826 <i>Map of the Contemplated Washington Parade</i> denotes burial grounds within the park
1836	Corner of Crosby and Grand Streets	The Church moves to the corner of Crosby and Grand Streets
1853	14th Street	The Church moves to 14th Street, a short distance from 6th Avenue
1893	96th Street and Central Park West	The Church moves to 96th Street and Central Park West
1917	96th Street and Central Park West	Scotch Presbyterian Church changes its name to Second Presbyterian Church

Burying Grounds

Like many churches of the era, the Scotch Presbyterian/Cedar Street Church maintained a burial ground adjoining, or near, the Church's location on Cedar Street. The Church originally purchased land for a burying ground in 1793 and additional properties in 1796 (Scotch Presbyterian Church 2006:27-28). In addition to these two locations the Church maintained additional burying grounds including a lot in the Eighth Ward (Minutes of the Scotch Presbyterian Church and Scotch Presbyterian Church 2006:9).

The 1817 *Map showing the property affected by the continuation of 4th 5th and 6th streets at right angles with Broadway* by Edward Doughty denotes land in the northeast corner of what was to become Washington Square Park as the "Scotch Presbyterian Cemetery" (Doughty 1817). George B. Smith's 1826 *Map of the Contemplated Washington Parade* denotes the same location as belonging to the Cedar Street Church and the northernmost part as the Pearl Street Church, both of which were the Scotch Presbyterian Church (Smith 1826). Though the Pearl Street Church breaks off from the larger church, a brief history of the Pearl Street Church is presented below, mapping clearly places the burial vaults uncovered within the portion that belong to the Cedar Street property.

Minutes of the Board of Trustees of the Scotch Presbyterian Church make note of the City's plans of the Parade Ground and that they would impact the church's burying ground. There is mention of a petition for "the common council of the City to reconsider their resolution to take the burying ground of the Church in order to enlarge the Military Parade Ground" (Minutes of the Scotch Presbyterian Church 1783 - 1852).

The Minutes of the Common Council of New York recorded on 29 January 1827 that a Petition from the Scotch Presbyterian Church, regarding the lands at Washington Square, was referred to the Committee of Lands and Places. The petition states that the Church has been put to "great trouble and expense" relative to the opening of Wooster Street, the original name of Washington Square East, and that "more than one half of their ground Viz^l 50 by 131 feet was taken for the opening of that street." It further states that the sum awarded them was not sufficient to defray the expense to fence the remainder of their burying ground and that they have "incurred considerable additional expense in disinterring the remains interred in the ground required for Wooster street and placing them in the ground now required for Washington Square" (Minutes of the Common Council XVI 1917:48-49).

According to the petition the City was seeking remaining portions of the Scotch Presbyterian Church's burying ground for the street and square. This action would place, "unpleasant necessity, and additional expense of again disinterring the remains which lay there, and it would be exceedingly distressful to the friends of the deceased" on the Church (Minutes of the Common Council XVI 1917:48-49).

The Common Council rejected the Church's petition stating the opening of the street "was a necessary improvement and loudly called for by the regular progress and increase of population in that part of the City, and could not be delayed any longer" (Minutes of the Common Council XVI 1917:48-49).

Aside from the preliminary documentary and map research undertaken to date, the on site records at the Second Presbyterian Church were also reviewed. Doing so confirmed that the Church archives do not have records regarding this burial ground, confirming historic sources regarding this.

It is a misfortune that the records of our Church Session long ago disappeared and we have no written record older than 50 years. We are fortunate, however, in having the minutes of the Board of Trustees since 1784, and from this we have been able to gather a good many facts. Generally, however, it has been necessary to secure our facts from outside history and from incidental references (Wylie 1906:12).

The Second Presbyterian Church does not have records dating back to the eighteenth and nineteenth centuries. A spokesperson for the Church stated that if anyone kept burial or death registers, Second Presbyterian Church does not know where they are located today (Inskeep 2000:178).

Pearl Street Church

The Pearl Street Church was organized in 1797 and located on Pearl Street, then Magazine Street, between Elm and Broadway. It became the second Associate Reformed Church and formed a collegiate charge with the Scotch Presbyterian Church located on Cedar Street. The two Church's separated sometime after 1804 (Greenleaf 1846:206).

The Pearl Street Church building was destroyed by a fire in 1837, but was rebuilt on the same site. In the winter of 1852/1853 a committee was formed and later concluded that the Central Presbyterian Church on Broome Street and the Second Associate Reform Church on Pearl Street would merge and relocate uptown, where the majority of parishioners then lived (Parkhurst 1906). In 1854 the Madison Square Presbyterian Church opened at the corner of East 24th Street and Madison Avenue (Parkhurst 1906). In 1906 a new church, referred to as the "Parkhurst Church" was built across the street from the original Madison Square Presbyterian Church, the previous location having been sold to Met Life for the expansion of its office buildings. In 1918 another merger took place uniting First Presbyterian, University Place Presbyterian, and Madison Square Presbyterian. Now known as The First Presbyterian Church in the City of New York, they are located on Fifth Avenue at Twelfth Street (The First Presbyterian Church in the City of New York 2015).

Table 03: Timeline of the Pearl Street Church.

YEAR	CHURCH LOCATION	ADDITIONAL INFORMATION
1797	Pearl Street (then Magazine Street) between Elm and Broadway	The Pearl Street Church became the second Associate Reformed Church, organized in 1797, located on Pearl Street (then Magazine Street) between Elm and Broadway
1837	Pearl Street (then Magazine Street) between Elm and Broadway	The Church was destroyed by fire, but rebuilt on the same site
1852/1853	Pearl Street (then Magazine Street) between Elm and Broadway	In the winter of 1852/1853 a committee was formed that concluded the Central Presbyterian Church on Broom Street and the Second Associate Reform Church on Pearl Street would merge and relocate uptown
1854	East 24th Street and Madison Avenue	The Madison Square Presbyterian Church opened at the corner of East 24th Street and Madison Avenue
1906	Across the Street from East 24th Street and Madison Avenue	In 1906 a new church, referred to as the "Parkhurst Church" was built across the street from the original Madison Square Presbyterian Church, the previous location having been sold to Met Life for the expansion of office buildings
1918	5th Avenue and 12th Street	In 1918 another merge took place uniting First Presbyterian, University Place Presbyterian, and Madison Square Presbyterian. Now known as The First Presbyterian Church in the City of New York, located on 5th Avenue and 12th Street

SUMMARY AND RECOMMENDATIONS:

Based on the various documentary sources gathered to date, the two Burial Vaults uncovered were within the burying ground of the Scotch Presbyterian Church that is today known as the Second Presbyterian Church.

In a recent communication dated November 21, 2105, the Second Presbyterian Clerk of Session, Nancy M. Hughes expressed some ambiguity regarding the church's period of ownership relative to the vaults; "even if we were responsible for the burying grounds by the 1820s when the streets were being opened, it's possible that the vaults may pre-date our ownership and therefore the burials might be from the other, affiliated congregation". This "1820s" date is in reference to the Trustees Minutes from 1783 – 1852; it is the period when the minutes reflect discussions among the church trustees regarding the proposed Parade Ground and associated street improvements. Among the earlier entries noted is the church requesting that "...The common council of the City to reconsider their resolution to take the burying ground of the Church in order to enlarge the Military Parade Ground verbally reported that they had prepared a petition to the common council agreeable to the resolution of its board and personally attended in the Common Council chambers in the City Hall..." (Minutes of the Scotch Presbyterian Church 1783 - 1852).

The Trustees Minutes do not contain any references to purchasing or the initial acquisition of the property in question. However, other facts and evidence indicate that the interments within the vault date to the period of ownership by the Scotch Presbyterian Church, now the Second Presbyterian Church, include:

1. The map titled *Map showing the property affected by the continuation of 4th 5th and 6th streets at right angles with Broadway* indicates that the Scotch Presbyterian Church was in possession of this plot as early as 1817, the date of the map.
2. The coffin plate of William Stitt, identified in the digital photographs records the date of burial as 1826. A second coffin plate that is partially discernible from digital photographs appears read 1819. Both of these coffin plates are within the time period of known ownership of the Scotch Presbyterian Church.
3. An overlay of the vault location on the 1826 *Map of the Contemplated Washington Parade* identifies that the vaults are within the portion of the burial ground associated with the Cedar Street branch of the Scotch Presbyterian Church².

Although a search of the Second Presbyterian Church records did not produce any primary source material relevant to the burials within this cemetery, there is a possibility that records from that period were previously transferred to the Presbyterian Historical Society, located in Philadelphia, Pennsylvania. Attempts to ascertain if the Historical Society has records dating to the eighteenth and early nineteenth century are underway.

² The Cedar Street Church and the Pearl Street Church as noted on the 1826 map are both branches of the Scotch Presbyterian Church. The two churches split some time after 1804.

Recent communications from the Church have indicated their interest in the burial vaults and they have requested to visit the site. Additionally in another recent communication dated November 21, 2105, their Clerk of Session, Nancy M. Hughes stated, “the Church would be interested in having any legible coffin plates identified”. The Church reached out again on December 1, 2015 further stating their interest and that the Church requests that the project document the coffin plates to identify the burials. A site visit has been scheduled for December 18, 2015.

Attempts at digital recordation that have been undertaken thus far have proven largely unsuccessful in determining the precise number of individuals within the vaults or obtaining legible information from the coffin plates.

Currently the project has been able to re-route the planned utilities to avoid impact to the burial vaults. However, Chrysalis recommends taking additional steps at recordation to identify an accurate count of the individuals within the vaults as well as identifying any legible information from the coffin plates. Doing so will not only add to our body of knowledge of mortuary practices during the earliest years of the nineteenth century; the recovery of this information will allow for those interred within the vaults to be properly memorialized once again.

Below are recommendations for additional recordation, all of these would require entry by a minimal number of persons into the burial vaults but no remains or artifacts would be disturbed or moved:

1. Surface level high-resolution digital photography.
2. Transcribing the legible the coffin plates and any other identifying information visible without disturbance to the burials.
3. High Resolution Photographic capture of the internal vault architecture and of all observable organic and inorganic materials for 3D modeling and mapping.
4. In-field skeletal analysis of exposed remains.

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City of New York – Department of Finance

2015 NYC Digital Tax Map. Manhattan Block: 549.

Chrysalis Archaeological Consultants, Inc.

2015a Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

2015b In-Progress Field Memorandum for the Record #01 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

2015c In-Progress Field Memorandum for the Record #02 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

2015d In-Progress Field Memorandum for the Record #02 (Addendum) as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

Doughty, Edward.

1817 *Map showing the property affected by the continuation of 4th 5th and 6th streets at right angles with Broadway.*

Evening Post

1826 Mortuary Notice for William Stitt. September 29, 1826. New York. New York.

The First Presbyterian Church in the City of New York

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To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A. and Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #06 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York

Date: December 14, 2015

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by the WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York.

An Archaeological Monitoring Plan, previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Chrysalis Archaeology 2015a).

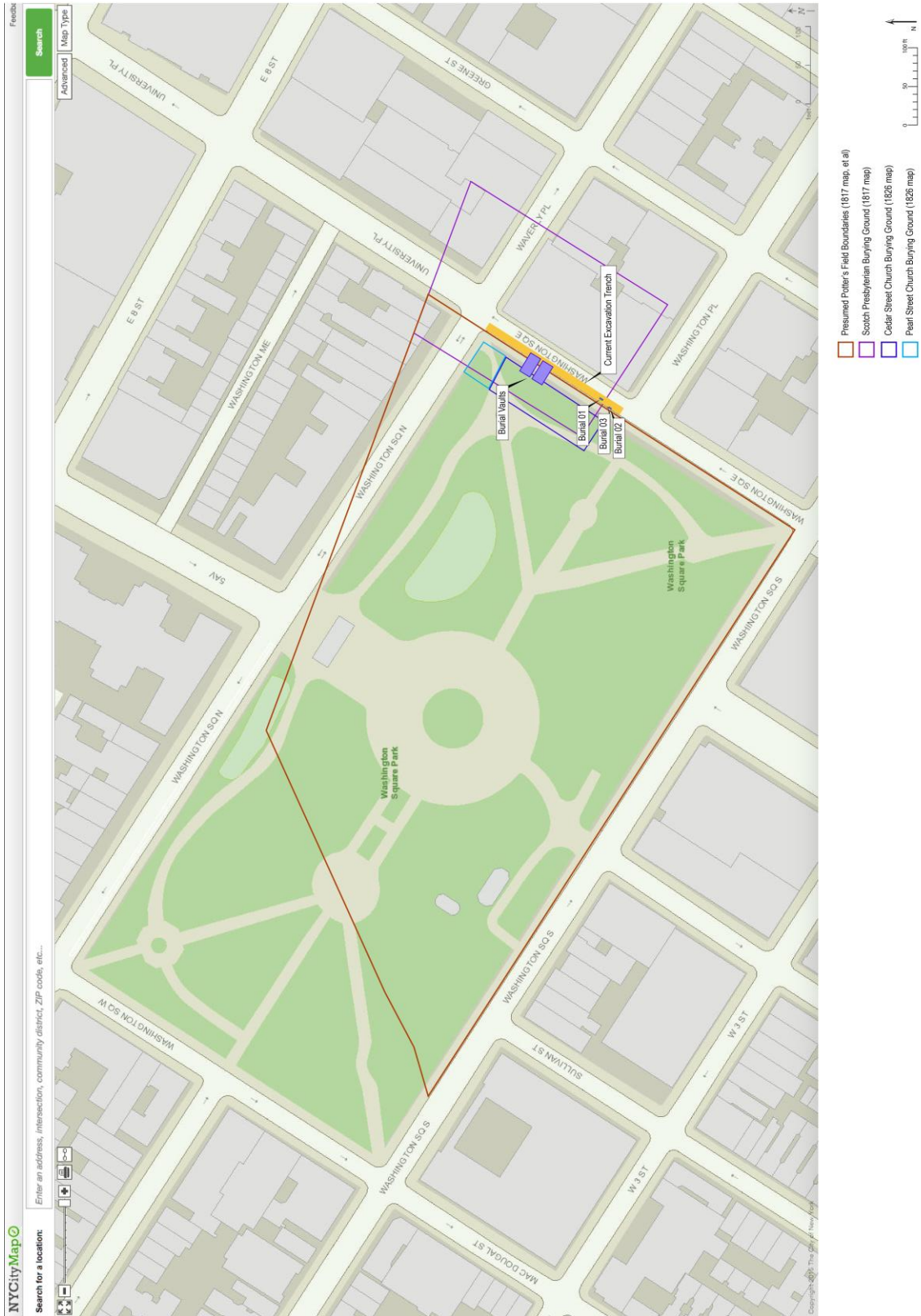
This memorandum briefly outlines the disinterment of the skeletal remain, identified as Burial 01 and 02 (Chrysalis Archaeology 2015b). Detail on the provenience, initial discovery, and disinterment proposal can be found in the Human Remains Discovery and Proposed Disinterment Memorandum #01 that was submitted to, and approved by, the LPC and the NYC Department of Health (DoH) (Chrysalis Archaeology 2015b).

Following issuance of the DoH Disinterment Permit, Chrysalis' Forensic Anthropologist, Dr. Matthew Brown, began the disinterment of Burial 01 on Thursday December 3, 2015. This work continued on Saturday December 5, 2015. Concurrently, under his direction, Alyssa Loorya began disinterment of Burial 02 on Saturday December 5, 2015 (Map 01).

New York Headquarters
4110 Quentin Road
Brooklyn, NY 11234-4322
Phone: 718.645.3962

Brooklyn Laboratory
3604 Quentin Road
Brooklyn, NY 11234-4204
Phone: 718.758.4205

Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354



During excavation of Burial 02 a single element from another individual was exposed in the wall profile. This was labeled as Burial 03.

Disinterment of Burial 01 occurred over a two-day period. Excavation was difficult due to the provenience of the burial less than 6” beneath concrete encased telephone ducts (Image 01). Preliminary field assessment identifies this as a fully articulated adult skeleton. During excavation there was some evidence of a possible coffin line beneath the skeleton.



Image 01: Excavation of Burial 01.

Burial 02 was a disturbed burial. Excavation noted that at least two of the long bones were in the wrong position indicating prior disturbance (Image 02). This skeleton was located immediately beneath the line for the wooden shoring installation. Soil compression in this area, coupled with previous impacts required that several of the skeletal elements, including the skull, be removed within blocks of soil. It is not yet known if the complete skeleton is present.

Excavation identified that this individual was interred within a coffin. The coffin was observed as a decomposed wood lens in the soil. Several nails were also recovered.

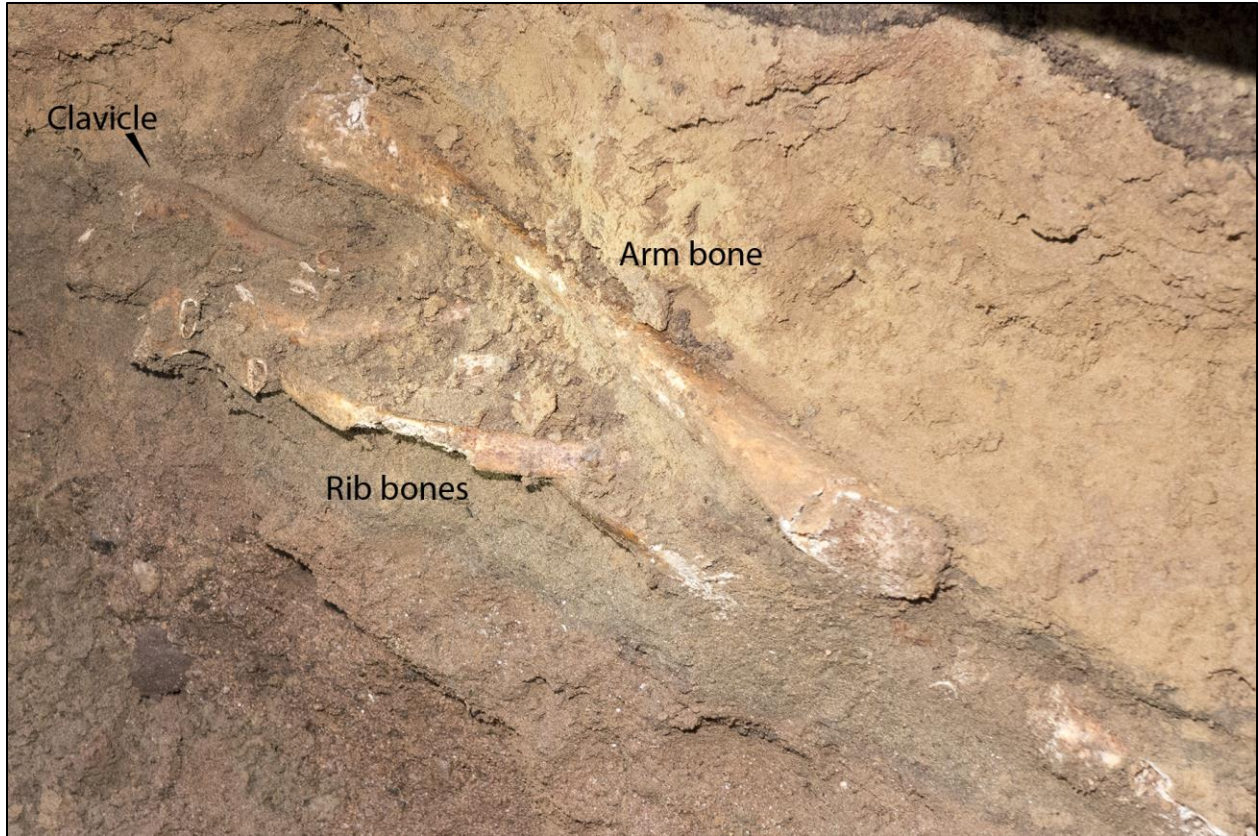


Image 02: Burial 02 displaying placement of clavicle, rib bones and disarticulated arm bone.

The areas immediately beneath and surrounding Burials 01 and 02 were examined post-excavation to see if any additional human remains were present. In the area beyond (i.e. west of and in the wall profile) and slightly above Burial 02 a single skeletal element was observed (Image 03). This element, labeled Burial 03, is from a different individual based on its size. The skeletal element, a humerus, was positioned at approximately 5' below ground surface (bgs). It was removed and no other skeletal elements were observed in association. However, due to the location of Burial 03, beyond and below the wooden shoring, further examination of the area was limited.



Image 03: Burial 03 represented by a single skeletal element.

Burials 02 and 03 are in the vicinity of the Consolidated Edison vaults. Any excavation surrounding the area of the vaults should be monitored for the presence of disarticulated or fragmentary human skeletal remains.

REFERENCES

Chrysalis Archaeological Consultants, Inc.

- 2015a Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015b In-Progress Field Memorandum for the Record #03 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015c Human Remains Discovery and Proposed Disinterment Memorandum #01 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A. and Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #07 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York

Date: December 14, 2015

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by the WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York.

An Archaeological Monitoring Plan, previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Chrysalis Archaeology 2015a).

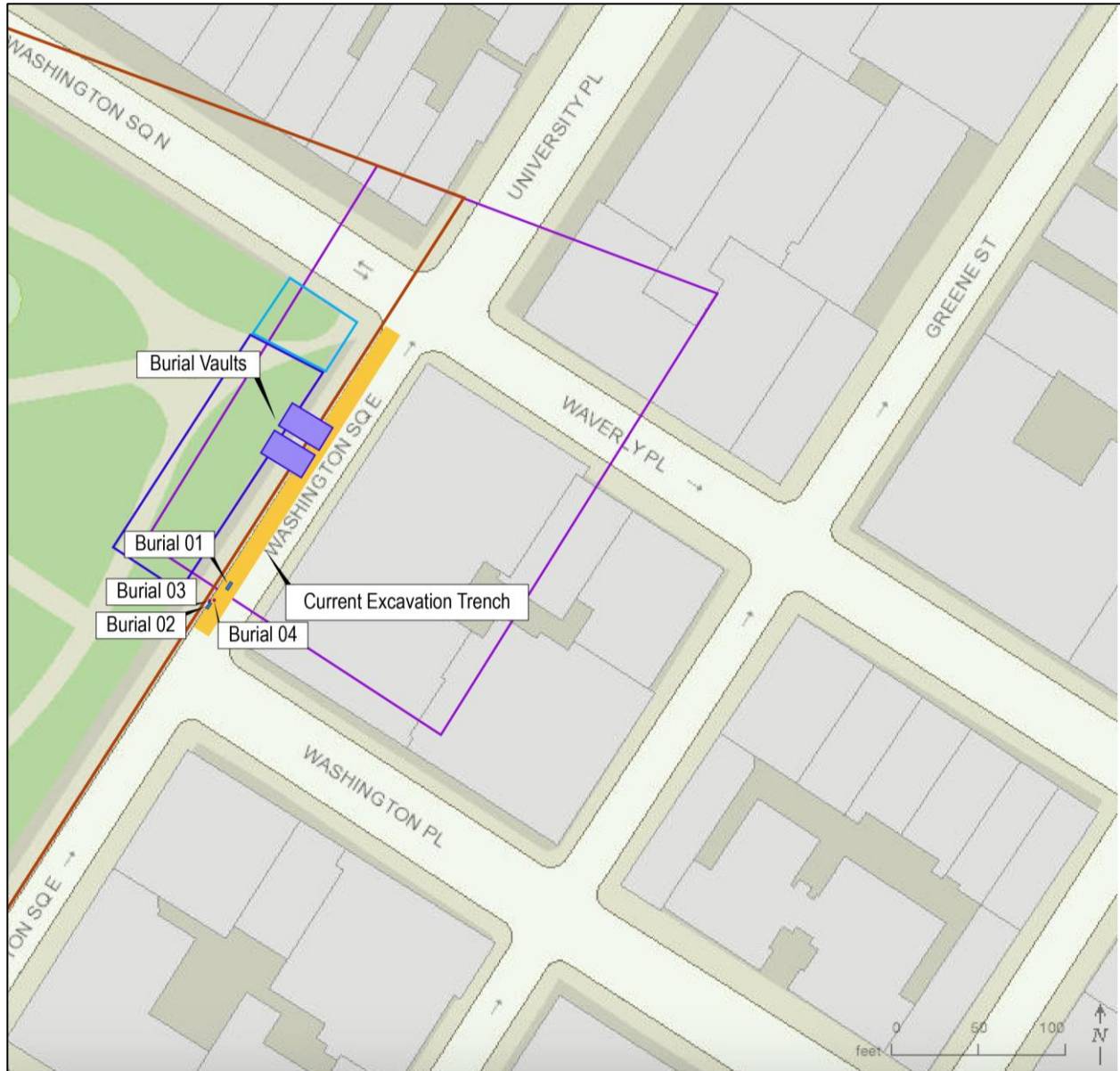
This In-Progress Field Memorandum for the Record #07 describes the discovery of skeletal remains, identified as Burial #04, on Monday, December 7, 2015, as part of monitoring for the Consolidated Edison (ConEd) Gas Line excavation.

Archaeological monitoring identified disarticulated skeletal remains that had been located within the wall of the excavation trench, and were dislodged during excavation and mechanical removal of the concrete encasement of the telephone lines. This discovery was located 8' south of Burial 01 along Washington Square East (Chrysalis Archaeology 2015b, 2015c, 2015d, 2015e, 2015f) within the bounds of the historic Potter's Field (Maps 01 and 02).

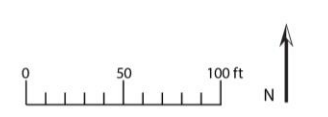
New York Headquarters
4110 Quentin Road
Brooklyn, NY 11234-4322
Phone: 718.645.3962

Brooklyn Laboratory
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Brooklyn, NY 11234-4204
Phone: 718.758.4205

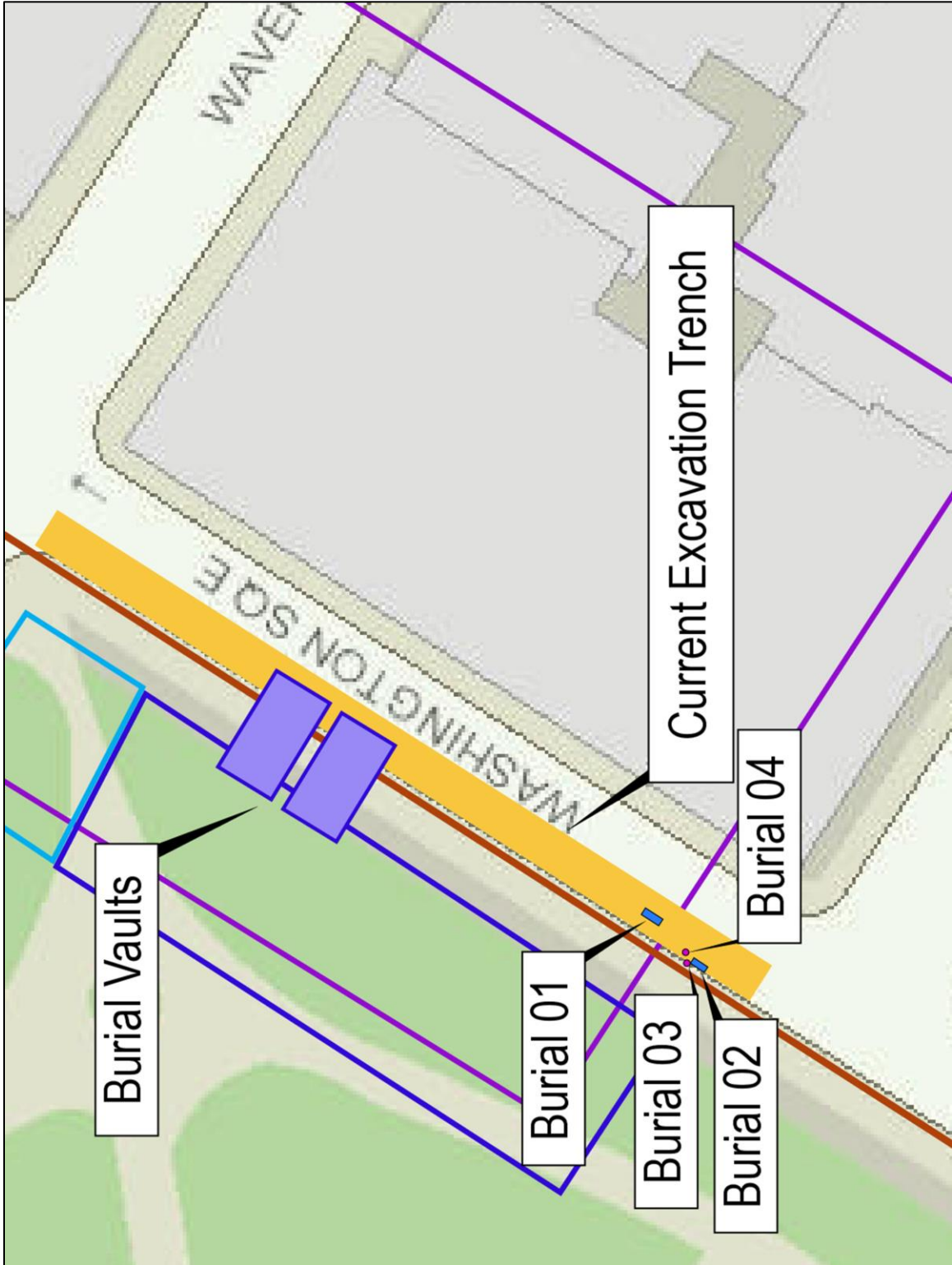
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One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354



- Presumed Potter's Field Boundaries (1817 map, et al)
- Scotch Presbyterian Burying Ground (1817 map)
- Cedar Street Church Burying Ground (1826 map)
- Pearl Street Church Burying Ground (1826 map)



Map 01: Area map showing the location of human remains discoveries; Burials 03 and 04 are not to scale.



Map 02: Detail of area map showing the location of human remains discoveries;
Burials 03 and 04 are not to scale.

The remains consisted of three long bones and possible scapulae fragment and have been labeled as Burial 04 (Image 01). Based on an examination of the sidewall stratigraphy, their original provenience was at approximately 4' to 4.5' below ground surface (bgs). It is likely that these remains were originally part of a skeleton disturbed during installation of the ConEd vaults, located along the sidewalk.

Based on their location it is also possible that these may be part of the same disturbed skeleton recorded as Burial 03. Burial 03 was a single disarticulated humerus located within the wall of the excavation trench discovered during excavation of Burial 02 (Chrysalis Archaeology 2015f).



Image 01: Disarticulated human skeletal remains labeled Burial 04.

The area of the discovery was investigated to determine if any additional skeletal elements had been dislodged or were visible within the trench wall. No other skeletal remains were observed. It is not known if additional elements remain in the unexcavated areas outside the excavation trench.

All procedures as outlined in the Human Remains Protocol were followed (Chrysalis Archaeology 2015a). All appropriate parties were notified and Burial 04 was removed under the existing City of New York – Department of Health (DOH) permit issued to the project (November 2015). Upon completion of the documentation and removal of the fragmented remains, the project was allowed to proceed in this area. The skeletal remains have been transported to Chrysalis' laboratory facility in Brooklyn, New York.

This is the third instance of previously disturbed skeletal remains from the Potter's Field in the vicinity of the previously installed ConEd vaults. Only Burial 01, located beneath the telephone ducts/lines, was fully articulated. Currently the excavation trench is offset from the curb by approximately 2'. If future excavation, on this, or any other future project(s), requires excavation of the area between the existing ConEd vaults and the current trench, special care should be taken for the identification of human skeletal remains as it is clear that excavation for the ConEd vaults disturbed, but not remove, all human remains.

Additionally, the shoring of the current excavation has unavoidably impacted this area. Excavation of Burial 02 was located beneath the shoring and extended slightly beyond the shoring where Burial 03, consisting of a single adult humerus, was revealed. If soils are displaced and brought to the surface during the removal of the shoring there is a possibility those soils could contain skeletal elements. These soils should be screened to ensure that if fragmented human remains are present, they are recovered and placed with the already excavated skeletal remains.

REFERENCES

Chrysalis Archaeological Consultants, Inc.

- 2015a Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015b In-Progress Field Memorandum for the Record #01 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015c In-Progress Field Memorandum for the Record #02 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

- 2015d In-Progress Field Memorandum for the Record #02 (Addendum) as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2015e In-Progress Field Memorandum for the Record #03 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.
- 2015f In-Progress Field Memorandum for the Record #05 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.



To: City of New York – Landmarks Preservation Commission
City of New York – Department of Design and Construction
WSP/Parsons Brinckerhoff

From: Alyssa Loorya, M.A., MPhil., R.P.A., Alex Agran, Eileen Kao and
Christopher Ricciardi, Ph.D., R.P.A.

Re: In-Progress Field Memorandum for the Record #08 as part of Washington Square Park,
New York, New York County, New York – Water Mains Replacement and Connections
Project (MED608) - Located at W. 4th St between Broadway and LaGuardia Place,
Washington Square East, and Washington Square North between Fifth Avenue and
University Place in Manhattan, New York

Date: April 20, 2017

Chrysalis Archaeological Consultants, Inc. (Chrysalis), has been retained by the WSP-Parsons Brinckerhoff (WSP-PB) on behalf of the City of New York - Department of Design and Construction (DDC) to conduct all necessary Cultural Resource Management (Archaeological) tasks associated with the Water Mains Replacement and Connections Project (MED608) at Washington Square Park, located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York.

An Archaeological Monitoring Plan, Unanticipated Discoverers and Human Remains Protocol Plan previously submitted to, and approved by, the City of New York – Landmarks Preservation Commission (LPC), describes the procedures and tasks to be performed as part of the Phase IB Archaeological Project (Chrysalis Archaeology 2015).






This In-Progress Field Memorandum for the Record #08 describes the discovery and investigation of human remains (Feature #12) exposed on Wednesday, April 12, 2017, as part of the monitoring for Test Pit #64 (TP 64). This test pit was excavated in anticipation of the mass excavation for the installation of a trunk main.

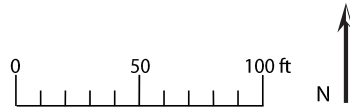
TP #64 is located adjacent to the north curb of Washington Square North, between University Place and 5th Avenue (Map 01). The test pit measured approximately 15.3' (N-S) by 6' (E-W). It is situated between stations 2+84 and 2+90 approximately .85' south of the north curbline.

Main Office
4110 Quentin Road
Brooklyn, NY 11234-4322
Phone: 718.645.3962

Laboratory Facility
2119 East 34th Street
Brooklyn, NY 11234-4902
Phone: 718.645.3962



-  Presumed Potter's Field Boundaries (1817 map, et al)
-  Scotch Presbyterian Burying Ground (1817 map)
-  Cedar Street Church Burying Ground (1826 map)
-  Pearl Street Church Burying Ground (1826 map)
-  Test Pit #64



Map 01: Location of Test Pit #64 relative to historic burial ground boundaries.

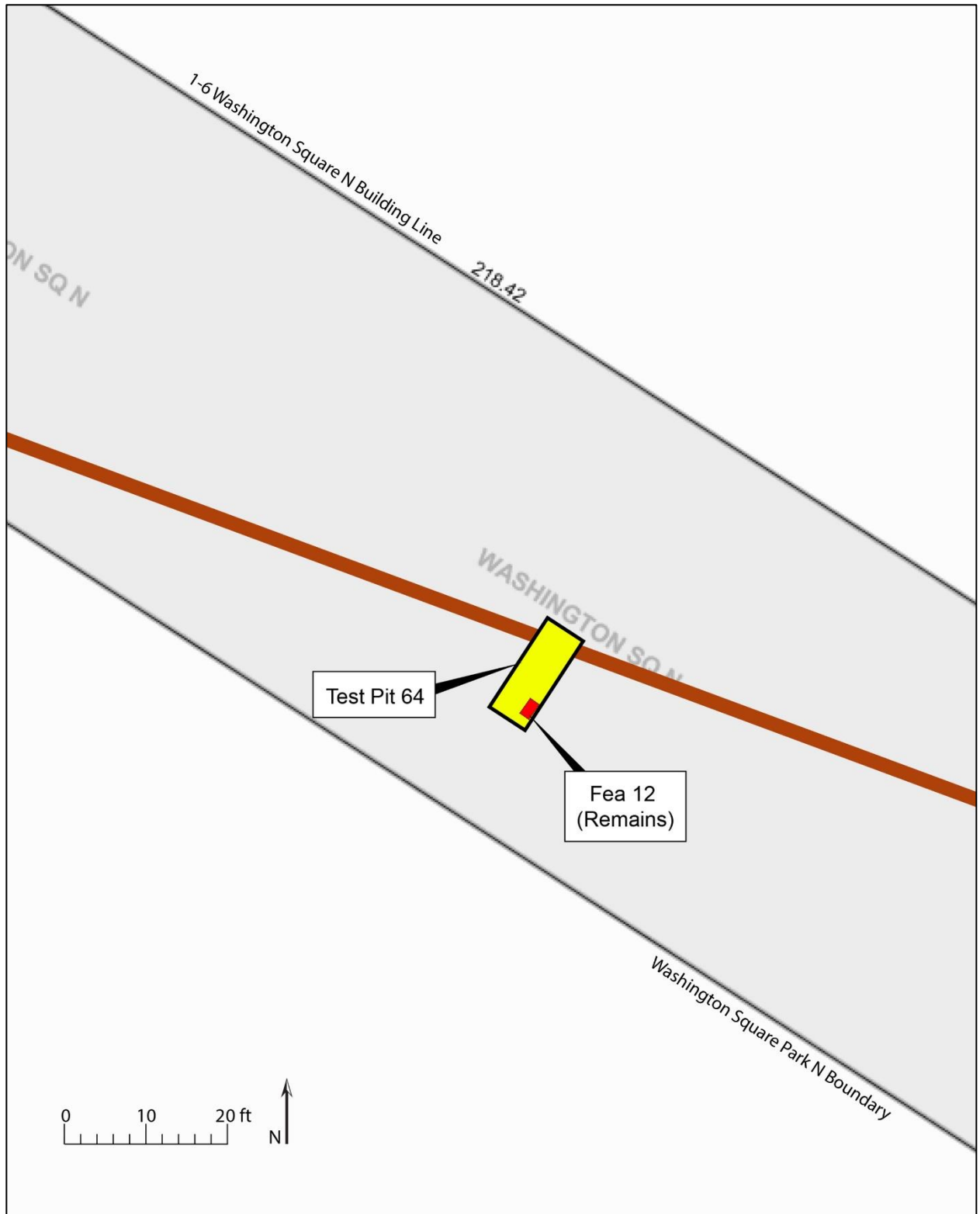
Archaeological monitoring identified the disarticulated skeletal remains in the southeast portion of TP #64 at approximately 9.5' below ground surface (bgs) (Image 01). A previously undisturbed stratum of 2.5Y 4/4 olive brown loamy sand was encountered in TP #64 between 6.25' to 10' bgs, from 11' south of the north curblineline to 15.2' south of the north curblineline. The skeletal remains were found within this stratum beneath utilities, along the east wall of TP #64 in a small area measuring 3.2' by .8' (Map 02).

This burial, or re-deposited skeletal remains, was designated Feature #12. The remains consisted of: one mostly intact cranium, one intact femur, one intact tibia, one distal femur fragment, and one tibia fragment lacking both the distal and proximal ends (Image 02).

The location of the skeletal remains was in close proximity to the unshored trench wall. It was determined that the elements would need to be removed prior to the installation of shoring to prevent damage. Following *in situ* documentation the bones were removed from the test pit and designated FS 121/ Burial 05.



Image 01: Human skeletal remains along east wall of TP 64; facing North.



Map 02: Detail of area map showing location of Feature 12 human remains; remains are not to scale.



Image 02: Feature 12/FS #121: mostly intact cranium, one intact femur, one intact tibia, one distal femur fragment, and one tibia fragment lacking both the distal and proximal ends.

Upon removal, additional archaeological testing occurred in the test pit as the contractor planned to excavate an additional 1.5' to reach a maximum depth of approximately 11' bgs in TP #64. Hand-excavation was undertaken in the southeast section of TP #64, all soils were screened through ¼" mesh to recover any additional human bone fragments or other archaeologically sensitive materials. No *in situ* or intact additional skeletal elements were recovered, though some small human bone fragments were recovered. Also recovered from within and around the remains were nineteenth and twentieth century artifacts including glass fragments and rusted nails. The presence of these late materials suggest that the remains were previously disturbed.

All procedures as outlined in the Human Remains Protocol were followed (Chrysalis Archaeology 2015). The appropriate parties were notified and the skeletal elements was removed under the existing City of New York – Department of Health (DOH) permit issued to the project (November 2015). Upon completion of the documentation and removal of the fragmented remains, the project was allowed to proceed in this area. The skeletal remains have been transported to Chrysalis' laboratory facility in Brooklyn, New York.

Although hand excavation and screening did not recover further *in situ* or intact remains, it is highly possible that additional skeletal remains are located within the immediate area of Feature 12, particularly towards the east, beyond the wall of the test pit. Additionally, TP #64 is located along the Potter's Field's presumed northern boundary (Map 01) and a bulk of the larger Potter's Field area lies to the east of the test pit, increasing the chance of encountering more remains in that direction. A large concrete and brick structure (possibly sewer) was at the southern boundary of the test pit and may have already impacted the remains to the south. Given that plans for the area involve mass excavation of an 11' wide trench, to a depth of 10'+ encompassing the northern half of Washington Square North, special care will be taken for the identification of additional human skeletal remains as the project continues.

REFERENCES

Chrysalis Archaeological Consultants, Inc.

- 2015 Archaeological Monitoring, Unanticipated Discoveries and Human Remains Protocol Plans for the Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York. Report on file with the City of New York – Landmarks Preservation Commission. New York, New York.

Appendix D:
Disinterment Requests and Permits

000065

DISINTERMENT PERMIT

11/24/2015

Disinterment No.

Date

(Month/Day/Year-yyyy)

An application having been filed with this Department as required by the Health Code, permission is hereby given

to JUREK - PARK SLOTT F. M. of 728 - 4 Ave
(Funeral Director's Name/Supt. of Cemetery) (Funeral Establishment/Cemetery)

to disinter the remains of ARCHEOLOGICAL REMAINS MANHATTAN WASHINGTON Square Park
(Name of Deceased)

who died at _____ on _____

now buried in MANHATTAN WASHINGTON SQUARE PARK Cemetery and to be reburied in 3601 - QUENTIN ROAD Crematory*
Cemetery*
BROOKLYN, New York

(Borough, or City and State)

Signature: [Handwritten Signature]
City Registrar (Month/Day/Year-yyyy)



This permit must be handed to the Keeper of the Cemetery or Crematory by the Funeral Director in charge of the funeral.

* Cross out one.

City Registrar

Per J K

THE CITY OF NEW YORK - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF VITAL RECORDS

DISINTERMENT PERMIT

Disinterment No. 000065

Date 12/30/2015
(Month/Day/Year-yyyy)

An application having been filed with this Department as required by the Health Code, permission is hereby given

to Jurek-Park Slope FH of 728-4 AVE
(Funeral Director's Name/Supt. of Cemetery) (Funeral Establishment/Cemetery)

to disinter the remains of Archaeological Remains Manhattan Washington Square Park
(Name of Deceased)

who died at _____ on _____
(Month/Day/Year-yyyy)

now buried in Manhattan Washington Square Park Cemetery and to reinter* them at Brooklyn LaB 3604 Queens RD Crematory*
(Borough, or City and State) (Month/Day/Year-yyyy) (Crematory* Cemetery*)

Brooklyn NY 11234-4204 on or before 12/31/2017
(Borough, or City and State) (Month/Day/Year-yyyy)

This permit must be handed to the Keeper of the Cemetery or Crematory by the Funeral Director in charge of the funeral.

* Cross out one.

[Signature]
City Registrar
Per _____

Replacement Permit

VR 23 (Rev. 1/03)

THE CITY OF NEW YORK - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF VITAL RECORDS

DISINTERMENT PERMIT

Disinterment No. 000065

Date 12/20/2017
(Month/Day/Year-yyyy)

An application having been filed with this Department as required by the Health Code, permission is hereby given

to Jurek-Park Slope FH of 728-4 Avenue
(Funeral Director's Name/Supt. of Cemetery) (Funeral Establishment/Cemetery)

to disinter the remains of Archaeological Remains Manhattan Washington Square Park
(Name of Deceased)

who died at _____ on _____
(Month/Day/Year-yyyy)

now buried in Manhattan Washington Square Park ~~Cemetery~~ and to reinter* them at Brooklyn LAB 3604 Quent. RD ~~Cemetery~~ ^{Crematory*}

Brooklyn NY 11234-4204 on or before December 31, 2019
(Borough, or City and State) (Month/Day/Year-yyyy)

This permit must be handed to the Keeper of the Cemetery or Crematory by the Funeral Director in charge of the funeral.

* Cross out one.

James P. Spang
City Registrar
Per _____

Replacement Permit

VR 23 (Rev. 1/03)

THE CITY OF NEW YORK - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF VITAL RECORDS

DISINTERMENT PERMIT

Disinterment No. 000065

Date 12/20/2019
(Month/Day/Year-yyyy)

An application having been filed with this Department as required by the Health Code, permission is hereby given

to Turek Park Stabe Funeral Home of 728 4th Avenue, Brooklyn
(Funeral Director's Name/Supt. of Cemetery) (Funeral Establishment/Cemetery)

to disinter the remains of Archaeological Remains Manhattan Washington Square Park
(Name of Deceased)

who died at _____ on _____
(Month/Day/Year-yyyy)

now buried in Manhattan Washington Square Park ~~Crematory~~ Crematory and to reinter* them at Brooklyn 364 Quentin Rd Crematory*
(Borough, or City and State) (Month/Day/Year-yyyy)

Brooklyn, NY 11234-4204 on or before March 31st 2020
(Borough, or City and State) (Month/Day/Year-yyyy)

This permit must be handed to the Keeper of the Cemetery or Crematory by the Funeral Director in charge of the funeral.

* Cross out one.

Per Karl Jayana
City Registrar

Replacement Permit

VR 23 (Rev. 1/03)

THE CITY OF NEW YORK - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF VITAL RECORDS

DISINTERMENT PERMIT

Disinterment No. 000065

Date APRIL 16, 2020
(Month/Day/Year-yyyy)

An application having been filed with this Department as required by the Health Code, permission is hereby given

to JURK PARK SLOPE FUNERAL HOME of 728 4th AVE BECYN
(Funeral Director's Name/Supt. of Cemetery) (Funeral Establishment/Cemetery)

to disinter the remains of ARCHEOLOGICAL REMAINS MANHATTAN WASHINGTON SQUARE PARK
(Name of Deceased)

who died at MANHATTAN WASHINGTON SQUARE PARK cremate* on BROOKLYN LAB 3604 QUENTIN CREMATORY*
(Month/Day/Year-yyyy) (Crematory*)

now buried in SQUARE PARK Cemetery and to reinter* them at BROOKLYN LAB 3604 QUENTIN CREMATORY*

BROOKLYN, N.Y. 11234-4204 on or before DEC 31, 2021
(Borough, or City and State) (Month/Day/Year-yyyy)

Stephen Van Dyke
City Registrar

Per J. J.

This permit must be handed to the Keeper of the Cemetery or Crematory by the Funeral Director in charge of the funeral.

* Cross out one.



To: Doris V. Amen, L.F.D., Jurek-Park Slope Funeral Homes, Inc.

From: Alyssa Loorya, M.A., MPhil., R.P.A. and Christopher Ricciardi, Ph.D., R.P.A.

Re: Update regarding Disinterment Permit Number 000065 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York Project

Date: December 30, 2015

On November 24, 2015, Jurek-Park Slope Funeral Homes, Inc. (Jurek) was issued Disinterment Permit Number 000065 for the Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608). The permit required that the excavated human remains be re-interred. The current permit expiration date is December 31, 2015.

Currently, the City of New York – Department of Design and Construction (DDC), the project proponent on behalf of the City of New York, is still determining a location for the re-interment of the human remains. Additionally, DDC and the project team, anticipates that additional human remains will be recovered during the project and would require re-interment as well. Additionally, the remains will undergo forensic analysis.

On behalf of the DDC and the Project, Chrysalis Archaeological Consultants, Inc. (Chrysalis) would like to request an extension to the existing permit to allow for the continued analysis and storage of the human remains recovered to date. The expected timeline of the project is approximately two years, ending in 2017.

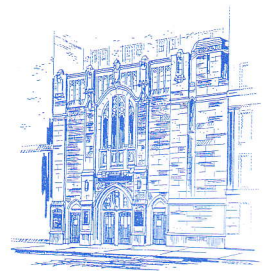
It should be noted that DDC is in discussion with the City of New York – Department of Parks and Recreation (Parks) with regard to the potentially re-interring the remains recovered from the current DDC project, alongside the remains recovered from the most recent Parks project within Washington Square Park, since historically these remains were part of adjacent cemeteries. This is an option that has the support of the City of New York – Landmarks Preservation Commission (LPC).

New York Headquarters
4110 Quentin Road
Brooklyn, NY 11234-4322
Phone: 718.645.3962

Brooklyn Laboratory
3604 Quentin Road
Brooklyn, NY 11234-4204
Phone: 718.758.4205

Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

SECOND PRESBYTERIAN CHURCH



Leslie Merlin, Pastor
Paul Sanner, Minister of Music

January 8, 2016

Alyssa Loorya, MA, MPhil, RPA
President
Chrysalis Archaeological Consultants, Inc.
4110 Quentin Rd.
Brooklyn, NY 11234

RE: Water Main Connection at Washington Square Park (MED608)

Dear Alyssa:

On behalf of the Session and congregation of Second Presbyterian Church of New York City, I'm writing to request that the project at Washington Square Park undertake further documentation and recordation of the coffin plates within the vaults.

As you know, our church is the descendent church of the congregation known as "The Scotch Church" or "Scotch Presbyterian Church" founded in 1756. The two vaults were at one time part of our church's "out of town" burying grounds, and apparently contain the remains of our deceased members. We understand that in one of the vaults, the coffins remain largely undisturbed, including metal coffin plates, which would most likely be legible if access to them were available.

In the interests of both city and church history, we would like to know the identities of those buried in the vault(s), and hope the project will allow the team better access to the vaults so the coffin plates may be read and recorded.

Please feel free to forward this request to relevant city agencies and other parties involved in the dig.

Sincerely,

Nancy M. Hughes
Clerk of Session
(212) 288-5765

cc: Leslie Merlin



To: Doris V. Amen, L.F.D., Jurek-Park Slope Funeral Homes, Inc.

From: Alyssa Loorya, M.A., MPhil., R.P.A. and Christopher Ricciardi, Ph.D., R.P.A.

Re: Update regarding Disinterment Permit Number 000065 as part of Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York Project

Date: September 11, 2017

On December 30, 2015, Jurek-Park Slope Funeral Homes, Inc. (Jurek) was issued Disinterment Permit Number 000065 for the Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608). The permit required that the excavated human remains be re-interred. The current permit expiration date is December 31, 2017 (see copy of permit on next page).

Currently, the City of New York – Department of Design and Construction (DDC), the project proponent on behalf of the City of New York, is still determining a location for the re-interment of the human remains. DDC and the project team, anticipates that additional human remains will be recovered during the project and would require re-interment as well. The remains will undergo forensic analysis.

On behalf of the DDC and the Project, Chrysalis Archaeological Consultants, Inc. (Chrysalis) would like to request an extension to the existing permit to allow for the continued analysis and storage of the human remains recovered to date. The expected timeline of the project is approximately two years, ending in 2019 (December 31, 2019).

It should be noted that DDC is in discussion with the City of New York – Department of Parks and Recreation (Parks) with regard to the potentially re-interring the remains recovered from the current DDC project, alongside the remains recovered from the most recent Parks project within Washington Square Park, since historically these remains were part of adjacent cemeteries. This is an option that has the support of the City of New York – Landmarks Preservation Commission (LPC).

Thank you for your assistance in obtaining an updated permit for the project.

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THE CITY OF NEW YORK - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF VITAL RECORDS

DISINTERMENT PERMIT

Disinterment No. 200065 Date 12/30/2015
(Month/Day/Year-YYYY)

An application having been filed with this Department as required by the Health Code, permission is hereby given

to JUREK-PARK HOPE FH of 728-4 AVE
(Funeral Director's Name/Supt. of Cemetery) (General Establishment/Cemetery)
to disinter the remains of AL Chevalogical Remains Manhattan Washington Square Park
(Name of Deceased)

who died at Manhattan Washington Sq on 12/31/2017
Brooklyn NY 11234-4204 (Month/Day/Year-YYYY) Crematory*
Brooklyn NY 11234-4204 (Borough, or City and State) Crematory*
on or before 12/31/2017 (Month/Day/Year-YYYY) Crematory*
SAUNTER City Registrar

This permit must be handed to the Keeper of the Cemetery or
Crematory by the Funeral Director in charge of the funeral.

* Cross out one.



To: Flor Betancourt, City of New York – Department of Health

From: Alyssa Loorya, M.A., MPhil., R.P.A. and Christopher Ricciardi, Ph.D., R.P.A.

Re: Disinterment Permit Number 000065 - Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) - Located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York Project

Date: May 27, 2020

As you are aware, Chrysalis Archaeological Consultants, Inc. (Chrysalis) was retained in 2015 on behalf of the City of New York – Department of Design and Construction (DDC), to undertake cultural resource management (archaeological) tasks as part of the Washington Square Park, New York, New York County, New York – Water Mains Replacement and Connections Project (MED608) located at West 4th Street between Broadway and LaGuardia Place, Washington Square East, and Washington Square North between Fifth Avenue and University Place in Manhattan, New York Project. As part of the Chrysalis team, Doris V. Amen, L.F.D., of Jurek-Park Slope Funeral Homes, Inc., (Jurek), has undertaken all necessary steps regarding the discovery of human remains associated with the project.

Disinterment Permit Number 000065 was issued to Jurek for the above referenced project on November 24, 2015 (Attachment 1). The permit was renewed on December 20, 2017 (Attachment 2).

This letter provides an update to you, and the City of New York – Department of Health (DOH), regarding the current status and close-out process with regard to the human remains recovered from this project. Additionally, at the request of the City of New York – Landmarks Preservation Commission (LPC), the current DDC project was asked to include remains recovered during the City of New York – Department of Parks and Recreation (Parks) projects completed within Washington Square Park in re-interment of remains from the current (DDC) project. In LPC's assessment all the human remains recovered, from both projects, should be re-interred together as they are contemporaneous and from the same public cemetery that once occupied present-day Washington Square Park.

This letter formally requests permission for the project to obtain a joint permit for re-interment of the human remains recovered from both the DDC and Parks projects.

Currently, Chrysalis is in possession of the remains from the DDC project. Based upon internal discussions between DDC, Parks, LPC, and Chrysalis - Parks will facilitate all necessary requirements for transfer of the remains recovered during their three projects to Chrysalis. Currently, it is Chrysalis' understanding that those remains are in the possession of their consultant.

Once Chrysalis is in possession of all human remains Jurek will request a permit for the transfer and re-interment of the human remains for all four projects (i.e. DDC and the three phases of the Parks projects).

Jurek will facilitate the transfer of remains from Chrysalis' Laboratory facility to Washington Square Park for re-burial.

Approximately XX human skeletal remains were recovered from the DDC project. These remains were dry-brushed, analyzed by Dr. Matthew Brown (report in-process), and have been packaged in acid-free materials and boxes. A digital copy of the report will be provided to your office once finalized and approved by LPC (anticipated for late 2019 - early 2020).

Based on the reports for the three Parks projects on file with LPC, approximately XX human skeletal remains or fragments were recovered during those projects.

As part of the agreement between LPC, DDC and Parks, Parks will provide a simple, pine wooden box to house the remains from all four projects. The box is anticipated to be XX by XX by XX. Parks has identified a location within the park for re-interment: XX within Washington Square Park and will provide the physical labor force to excavate and inter the remains. It is anticipated that this work will occur in the summer of 2019 (specific date is to be determined). The project will inform your office of the actual date via email.

Please advise as to what information or permits are needed for the re-interment either before, or as part of, the permit request from Jurek.

Thank you for your time, understanding, and patience throughout this process.

LETTER OF TRANSMITTAL OF ARCHAEOLOGICAL HUMAN REMAINS OLDER THAN 150 YEARS

DATE: 7/21/2019

FROM:

Thomas Amorosi, Ph.D., RPA
Zooarchaeology and Forensic Anthropology Consulting
20 Sherman Street
Brooklyn, New York 11215-6015
Tel: (718) 832-2873
Cell: (917) 620-7882
Email: tamorosi@ix.netcom.com

TO:

Dr. Christopher Ricciardi (Ph.D., RPA)
Chrysalis Archaeological Consultants, Inc.
4110 Quentin Road
Brooklyn, New York 11234-4322
Tel: (718) 645-3962
Cell (718) 207-8685
Email: cricciardi@chrysalisarchaeology.com.

AUTHORIZED COURIER: Ms. Doris Amen, Jurek Park Slope Funeral Home, 728 4th Avenue, Brooklyn, New York 11232.

AUTHORIZED RECIPIENT: Dr. Christopher Ricciardi (Ph.D., RPA), Chrysalis Archaeological Consultants, Inc.; 4110 Quentin Road, Brooklyn, New York 11234-4322; Tel: (718) 645-3962; Cell (718) 207-8685; Email: cricciardi@chrysalisarchaeology.com.

SPECIMENS TRANSFERRED: The Washington Square Park Project human remains recovered during the 2007/2008 excavations. This assemblage includes 1 archive box of human remains; contained are the remains from TT 3, TT 4, TT 14 and TT 18.

PURPOSE: This assemblage was analyzed and reported in *Prepared by Joan H. Geismar, Ph.D., LLC; 2009; Washington Square Park, Greenwich Village, New York: Phase 1 Construction Field Testing Report (NYS Site Designation: Washington Square Park Potter's Field (WSPPF); NYS Site No. USN A06101.016915)*. The assemblage is now being returned to NYC Department of Parks and Recreation for reburial (contact person Ms. Sybil Young – (718) 760-6421).

Appendix E:
Human Remains Report CERMI

Washington Square Park

Human Remains Report

Matthew Brown, PhD

CERMI LLC

Introduction

Human skeletal remains were encountered during the archaeologically monitored excavation of multiple test pits in 2015 and 2017 along the north and east side of Washington Square Park (WSP), NYC. Skeletal material constituting both *in situ* and disassociated bones were recovered at depths between 4' and 9.5' below the modern road surface. The archaeological phase of this construction project was completed by Chrysalis Archaeology with the human remains subcontracted to CERMI LLC. The following report details the findings pertaining to the human skeletal remains recovered during the 2015 and 2017 excavations at Washington Square Park.

Site Monitoring

In-field monitoring of the construction trenches (specifically related to human remains) was conducted by the author supervision of the PI, Dr Alyssa Loorya. Additional personnel were available and on site at all times during the field phase, aiding in the monitoring of the excavation units. All bone and dental material was either immediately identified upon recovery in the field or bagged and labeled for identification at a later time. Bone and teeth identified as non-human were discarded.

Purpose

The primary purpose for this segment of the project was to monitor, identify and conduct an in-field assessment and laboratory analysis of the human skeletal material from WSP. The analysis of human remains has the potential to offer an immense amount of information pertaining to human biology and cultural practices. Demographic information, including but not limited to, ancestry, mortality and morbidity rates, age and sex percentages, disease, diet and growth rates can be extracted from skeletal remains. The extent to which these types of data can be extracted hinges on a number of variables, most importantly the preservation and completeness of the skeletal material. Post-burial damage that occurred prior to the excavations significantly hindered the type, quality and quantity of data available for analysis from a portion of the material removed from WSP. This being said, a full attempt was made during the assessment of the material to recover as much biological and cultural information as possible.

Laboratory Analysis

Post-excavation analysis was conducted by the author in an off-site laboratory equipped with a complete comparative collection, microscopes, imaging and analysis equipment.

Methodology – Skeletal Analysis

In addition to basic identification of skeletal elements, the analysis followed standard protocol which included skeletal age, sex, ancestry, stature, and pathology where applicable. Determination of age was based on fusion rates for long bones (Scheuer and Black 2000), dental eruption, crown and root formation (White 2012), cranial suture closure rates (Meindl and Lovejoy, 1985) and the status of the auricular surface of the pelvis (Meindl and Lovejoy, 1985). Sex determination was based on maximum diameter of the head for the femur and humerus in addition to cranial and pelvic morphology found in Bass (2005). Stature estimation was based on formula, per ancestry and sex, found in White (2012). Specific regions of the cranium were used estimate ancestry (non-metric) based on methods and characteristics described by Klepinger (2006) and Bass (2005). Metric assessment of ancestry was based on those found in the forensic program FORDISC (results pending). Bone and dental pathology assessment was based on parameters found in Ortner (2003) and Hilson (2005).

Methodology – Recording

All skeletal and dental material from WSP was recorded based on standards, found in Buikstra and Ubelaker (1994) with modifications by the author. Following the completion of data collection in the field and laboratory, all data was then entered in to an Access® database created by the author. The purpose of the database was to create a digital record of all skeletal material from WSP (2015 and 2017) and to make it available to authorized and interested stake holders. In order to facilitate extraction of information from the database through direct searches, each set of skeletal material was assigned three identifying codes (INV; SP#; SubSP#) that increased with specificity. The sub-reports for this appendix use this identification system mirroring the database.

Methodology – Photographs

All skeletal material from WSP was photographed with a Canon 80D using normal settings. When needed, some material was photographed from multiple angles. All images are available upon request.

Report Format

Each set of human remains collected during the WSP project are briefly discussed in separate sub-reports according to the specific INV#/SubSP#.

Statement of Ethics

The excavation, analysis and handling of human skeletal material has been and still is a highly sensitive issue, often leading to polarized views regarding the rationale for excavation and examination of human remains. With this in mind, the excavation, removal and analysis of the Trinity Church skeletal material by all parties taking part in this project was done so ethically and responsibly in accordance with the Society of American Archaeology Statement Concerning the Treatment of Human Remains (see www.saa.org).

Executive Summary

One hundred and ninety-four bones and 50 teeth representing eight individuals (see Table 1) were excavated from the northern and eastern border of WSP between 2015 and 2017 (close of project 2019). Seven of the individuals were classified as adults (non-juvenile), one was a child and one was an infant. The minimum number of individuals (MNI) was calculated based on age, sex, context, bone coloration, and side (left/right).

Of the seven adults, sex determination was possible for three, all of which were identified as showing female morphological and metrical characteristics. Ancestry assessment was only possible for one of the eight individuals, WSP-2, which was identified as showing morphological characteristics of white ancestry. The results of the metric for ancestry is pending.

Evidence of bone pathology was found on 12 of the 194 bones (~6.2%) affecting two of the eight individuals. Pathological conditions in the form of schmorl nodes, abnormal bone growth and cribra femora were identified. All affected bones were from WSP-1, WSP-2 and WSP-7. Dental pathology was found on 31 of 50 teeth (62%). Of these 31 teeth 9 exhibited lesions consistent with caries, 12 displayed hypoplastic defects, and 13 showed calculus deposits. In addition to the pathological conditions identified, two teeth exhibited Carabelli cusp morphology (WSP-1) and five teeth showed ante-mortem chipping (WSP-2).

Only WSP-2 showed clear evidence for being an *in situ* burial. All other material was disturbed showing no evidence for grave outlines. The preservation of the skeletal material ranged from good to poor condition with most of the material showing varying degrees of post-burial damage. Skeletal completeness ranged from 75% to less than 25%.

Table 1 – Sample Results

INV	TRN/TP	B-CNT	T-CNT	AGE	BP	DP	SEX	MNI	YO E
WSP-1	1	48	25	CH	YES	YES	NA	1	2015
WSP-2	1	131	25	AD	YES	YES	F	1	2015
WSP-3	1	3	0	AD	NO	NA	F	1	2015
WSP-4	1	1	0	INF	NO	NA	NA	1	2015
WSP-5	1	1	0	YA-AD	NO	NA	NA	1	2015
WSP-6	73	6	0	AD	NO	NA	F	1	2017
WSP-7	73	1	0	AD	YES	NA	NA	0	2017
WSP-8	73	2	0	AD	NO	NA	NA	1	2017
WSP-9	73	1	0	AD	NO	NA	NA	1	2017
WSP-10	73	0	0	NA	NO	NA	NA	0	2017
TOTAL		194	50					8	

Key: WSP=Washington Square Park; INV=Inventory Number; TRN=Trench; TP=Test Pit; B-CNT=Bone Count;
T-CNT-Tooth Count; MNI=Minimum Number of Individuals; AD=Adult; YA=Young Adult;
CH=Child; INF=Infant;
YO E=Year of Excavation; NA=Not Applicable

WSP-1
WSP15-T1-B2-1 (Child)

Summary Overview

WSP-1 (Burial 2 – 2015) consists the partial remains of a child approximately 12.5 years of age. Overall, WSP-1, is in poor condition with approximately 75% of the skeleton missing post-mortem. The individual bones currently present were found to be in good to poor condition with the majority of skeletal elements exhibiting some evidence for post-mortem damage (PMD) or loss (PML). WSP-1 has an MNI of 1, however, mixed in some of the bags were teeth and bones from burial 1 (WSP-2). These bones and teeth were transferred to WSP-2. Burial 2 was found at a depth of 5.9 feet below the surface positioned in a north-south orientation in Trench 1 along the east side of Washington Square Park. The excavation of this material was completed on December 5, 2015.

Forty-eight bones, representing both cranial and post-cranial elements, and 25 teeth were recovered from WSP-1. Of these 48 bones 8 were from the skull and 40 were post-cranial. Due to PMD and PML all bone growth related markers normally used to determine age, were lacking. Additionally, for the same reason, all cranial and most post-cranial measurements could not be completed. Of the 48 bones, one (~2%) exhibited pathology and 16 of 25 teeth, or 64%, showed some type of dental pathology (see below).

Bone Inventories

Skull Bone Inventory and Summary

WSP-1 contained a partial skull (see Table 2) in poor condition with the exception of the maxilla and palatines which were found to be in fair condition. All cranial bones (n=8) exhibited PMD with some being completely crushed as the result. The cranium was embedded in a hard soil matrix which was mostly removed for analysis (see Figure 1). It was deemed, however, that complete removal would damage the remaining bones rendering them non-diagnostic. As such, some of the soil matrix was left in place. Eight bones of the skull were recorded. Most of the vault bones were crushed or missing post-mortem, while the some of the facial bones survived the burial environment. No cranial bone measurements were possible due to PMD or PML.

Table 2 – Skull Bones

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MAX	L&R	3	NO	1	Bone is in poor condition with PMD to the left and right sides.
PAL	Left	1	NO	1	Bone in fair condition missing part of the lateral inferior section PM.
PAL	Right	1	NO	1	Bone in fair condition missing part of the lateral inferior section PM.
ZYG	Left	3	NO	1	Bone in fair to poor condition missing part of the lateral and anterior section and the maxillary attachment.
SPH	Right	4	NO	1	Bone in poor condition; consists of the right greater wing only.
TEM	Right	4	NO	1	Bone is in poor condition missing all except for the petrous part and the external auditory meatus.
OCC	L&R	4	NA	1	Bone in poor condition missing all with the exception of the synchondrosis (unfused).
MAN	L&R	2	NO	1	Bone in fair to poor condition missing ascending ramus and body post T27. Left side missing the condyle and coronoid process PM. slight green stain on just above the mental eminence on the left side.

Key: COMP=Completion; PATH=Pathology; CNT=Count; MAX=Maxilla; PAL=Palatine; ZYG=Zygomatic; SPH=Sphenoid; TEM=Temporal OCC=Occipital; MAN=Mandible **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Post – Cranial Inventories, Measurements, Summaries and Tables

Post-cranial skeletal material consisted of 35 complete and fragmented elements from the upper and lower appendages, vertebral column, pectoral and pelvic girdles and the rib cage (see Tables 3-6). The bones were found to be in good to poor condition with all but a few suffering from PMD. Of the 35 post-cranial bones, none were found to show any evidence for pathology, with the exception of possible cribra femora affecting the right femur. Below are summaries of post-cranial remains based on regions of the skeleton.

Long Bones/Pectoral Girdle

A total of 10 long bones and 3 bones from the pectoral girdle were recovered from WSP-1 (see Table 3). Of these 13 bones only two were complete and in good condition with the remaining 10 in fair to poor condition. All elements, where fusion could be assessed, were found to be unfused with only a few bones retaining the proximal and or distal epiphyses. One of the 10 bones exhibited pathology in the form of cribra femora, a disorder that has been linked anemia.

The left and right pectoral girdles consisted of the partial left and right clavicles and the partial right scapula. All of the bones were in fair to poor condition. The left and right clavicles were missing the medial and lateral ends PM and the right scapula was missing fragments from the body and glenoid fossa. The glenoid fossa exhibited a complete lack of fusion of suggesting an age younger than 13 years.

All ten long bones were present with varying completeness and preservation. Eight of the ten bones were found to be in fair to poor condition, with the remaining two (left femur; right humerus) being complete enough to allow for maximum length measurements (See Table 9). As noted above, none of the long bones exhibited fusion of any state suggesting an age under 11-14 years depending on the specific bone and epiphysis.

Table 3 – Long Bones/Pectoral Girdle

BONE	SIDE	COMP	PATH	CNT	COMMENTS
HUM	Right	1	NO	1	Bone is complete in good condition. Proximal and distal epiphyses unfused and missing. Possibly abnormally thin.
HUM	Left	2	NO	1	Bone is in fair condition missing most of the proximal end (unfused) and all of the distal end. Lack of muscle attachment definition
RAD	Left	4	NO	1	Bone in poor condition missing the proximal and distal ends including approximately 25% of the proximal and distal shaft. No comparative measurements.
RAD	Right	4	NO	1	Bone is in poor condition missing the proximal and distal ends including approximately 25% of the proximal and distal shaft. No comparative measurements.
ULN	Right	2	NO	1	Bone is in fair condition missing part of the proximal and distal ends. No fusion.
FEM	Left	1	NO	1	Bone in good condition missing fragments from the distal epiphysis. Both epiphyses are unfused. Overall the bone is relatively gracile with non-distinct muscle attachment sites.
FEM	Right	3	YES	1	Bone in poor condition missing the proximal epiphysis (unfused PM) and most of the distal 1/3 of the bone. Shaft broken into multiple pieces PM. Possible cribra femora. No measurements taken due to PMD.
TIB	Left	3	NO	1	Bone in poor condition missing the proximal and distal 25% of the shaft. Missing epiphyses. Shaft broken into multiple pieces PM. No measurements taken.
TIB	Right	3	NO	1	Bone in poor condition missing the proximal and distal 25% of the shaft. Missing epiphyses. The remaining shaft has been broken into multiple pieces PM. No measurements taken.
FIB	SND	4	NO	1	Bone is in poor condition with only a small segment of the mid shaft present.
CLA	Left	2	NO	1	Bone in fair condition missing the medial and lateral ends of the bone. Bone is broken mid-shaft PM. MxL without medial and lateral end = 93.44
CLA	Right	3	NO	1	Bone in poor condition missing the medial 1/3 of the bone and the lateral end. MxL = 65.64
SCA	Right	3	NO	1	Bone in fair condition missing part of the blade, superior spinous fossa, the acromion process and the coronoid process. The glenoid fossa is missing approx. 50% of the surface. Surface was not fused.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; HUM=Humerus; RAD=Radius; ULN=Ulna; FEM=Femur; TIB=Tibia; FIB=Fibula; CLA=Clavicle; SCA=Scapula **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Vertebra and Ribs

Vertebra for WSP-1 consists of eleven vertebra, represented by cervical (CER) and thoracic (THR) elements, in fair to poor condition (see Table 4), all of which exhibited some evidence for PMD. All lumbar, sacral and coccyx vertebrae are missing post-mortem. With the exception of THR1 and THR2, no other vertebra could be numerically identified.

Cervical vertebra (CER3-5) were represented by two vertebra in fair to poor condition, both of which exhibited a lack of complete fusion. The thoracic vertebra consisted of nine elements in fair to poor condition. Of these nine, two were numerically identified (THR1 and THR2). Four of the remaining seven thoracic were relatively complete but could not be numerically identified, only they were consecutive and that they did not represent THR1 – THR2 or THR10 – THR12. In addition, three thoracic arches were identified as individual vertebra but due to PMD could not be numerically identified other than not being part of THR12.

No pathology or anomalies were identified on the cervical or thoracic vertebra. With the exception of the superior and inferior annular rings, which did not show evidence for formation or fusion, all other parts of the cervical and thoracic vertebrae were fused. This gives a very broad age of under 14-16 years of age depending on the sex of the individual.

Ribs were found to be in fair to poor condition with all showing post mortem damage (see Table 4). There are at least seven individual ribs that were able to be sided and with the exception of rib one from the left side none could numerically identified. In addition to the seven ribs, there is also a large number of rib shaft fragments. These were not counted as individual ribs. It is likely that the count of seven ribs represents an underestimate for the total number of ribs present.

Table 4 – Vertebrae and Ribs

BONE	SIDE	COMP	FUS	PATH	CNT	COMMENTS
CER 3-5	NA	2	NO	NO	1	Bone in fair to good condition. C3-C7. Missing the left and right transverse foramen PM.
CER 3-5	NA	4	NO	NO	1	Bone in poor condition missing all except for the body. No fusion. No pathology
THR 1	NA	3	NO	NO	1	Bone in poor condition. With the exception of the body and part of left arch missing all other parts.
THR 2	NA	4	NO	NO	1	Bone in poor condition with only 25% of the body and right arch present. Probably vertebra is T2 based on the shape of the remaining body. No annular rings.
THR 3-9	NA	1	NO	NO	1	Bone in fair condition missing left and right transvers processes, approximately 25% of the anterior border and both superior articular facets. Arches are mostly fused to the body. No annular rings.
THR 3-9	NA	1	NO	NO	1	Bone in fair condition missing the left and right transvers processes and approximately 25% of the anterior border. Mostly complete fusion of the arches to the body on both sides. No annular rings.
THR 3-9	NA	1	NO	NO	1	Bone in fair condition missing both the left and right transvers processes and approximately 10% of the anterior body. No annular rings. The left and right arches are mostly fused to the body.
THR 3-9	NA	4	?	NO	1	Bone in poor condition. Bone is missing all except for part of the right arch the posterior border of the arches and the superior/inferior articular facets.
THR 3-9	NA	4	?	NO	1	Bone in poor condition missing all except for the posterior border of the arches and the superior left and right articular facets and the left articular facet on the left side.
THR 3-9	NA	4	?	NO	1	Bone in poor condition missing all except for part of the right arch which includes the superior and inferior articular surfaces and the superior right body demi facet.
THR 3-9	NA	1	NO	NO	1	Bone in fair condition missing both the left and right transvers processes and approximately 25% of the anterior border. Mostly complete fusion of arches to the body on both sides. No annular rings.
RIB 1	Left	2	NA	NO	1	Rib one is in fair condition missing the vertebral and sternal ends.
RIB 2-12	Right	1	NA	NO	6	Ribs are in fair to poor condition. There were no complete ribs and all have been broken post-mortem. There are at least 6 ribs and all from the right side.

Key: COMP=Completeness; PATH=Pathology; FUS=Fusion; CNT=Count; CER=Cervical; THR=Thoracic; NA=Not Applicable

Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Pelvis

The left and right innominate (see Table 5) were found to be in fair to poor condition. The individual bones of the innominate showed completeness scores ranging from 1 to 4. There was no evidence for fusion. The right innominate consisted of the ilium and ischium, with pubic bone missing PM. The acetabulum and auricular surface are mostly complete. The greater sciatic notch showed a wide notch suggesting a more female type characteristic. However, at this age, sex determination should be taken cautiously. The left innominate is in poor condition with only fragments of the left ilium and ischium remaining. The auricular surface, iliac crest and most of the acetabulum are missing post-mortem. No pathology was identified on the left or right innominate.

Table 5 – Pelvis

BONE	SIDE	COMP	PATH	CNT	COMMENTS
ILI	Left	4	NO	1	The ilium is in poor condition with only fragments of the ala present. Bone likely to have been unfused.
ISC	Left	1	NO	1	The ischium is in poor condition. Only small segment of the acetabulum and the tuberosity present.
ILI	Right	1	NO	1	Ilium is mostly complete and in good condition missing part of the anterior border and the unfused surface of the iliac crest. No fusion between the ilium and pubic bone.
ISC	Right	1	NO	1	The ischium is in poor condition missing the medial part of the bone and most of the ischial tuberosity surface (unfused).

Key: COMP=Completeness; PATH=Pathology; CNT=Count; ILI=Ilium; ISC=Ischium **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Metacarpals/Metatarsals/Phalanges

Metacarpals, metatarsals and phalanges from WSP-1 (see Table 6) were all in poor condition. Only one metacarpal and two metatarsals of the 20 bones normally found in the hand and feet, were present, none of which could be numerically identified. Of the 56 phalanges from the hand and foot, only two bones (both from the hand) were recovered. None of the metacarpals, metatarsals or phalanges exhibited pathology.

Table 6 – Metacarpals/Metatarsals/Phalanges

BONE	SIDE	COMP	PATH	CNT	COMM
MC-NND	SND	3	NO	1	Bone in poor condition missing the proximal and distal ends in addition to sections of the proximal and distal 1/3 of the shaft. Not MC1.
MT-NND	SND	3	NO	1	Bone in poor condition missing the proximal and distal end and sections of the proximal and distal 1/3 of the shaft. Not MT1 or MT 5.
MT-NND	SND	3	NO	1	Bone in poor condition missing the proximal and distal end and sections of the proximal and distal 1/3 of the shaft. Not MT1 or MT 5.
PHP-NND	SND	2	NO	1	Bone in fair condition missing the proximal end PM. Likely to be #2 or 3 based on morphology and size.
PHP-NND	SND	2	NO	1	Bone in fair condition missing the proximal end PM. Likely to be #5 based on morphology and size.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; MC=Metacarpal; MT=Metatarsal; PHP=Phalange Hand Proximal; PHD=Phalange Hand Distal; NND=Numerically Not Determined **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Dentition

Dental material for WSP-1 consists of 25 loose and *in situ* maxillary and mandibular teeth (see Table 7), all of which are in good condition showing no PMD. The maxilla was encased in compact soil (see Figure 1). Some of the soil surrounding the bone and teeth was removed but it was decided that it was best to leave the maxilla encased in the dirt as continued removal would cause extensive breakage to the bone. Due to PMD to the left mandible, teeth post T27 are missing. T1 and T16 (upper left and right 3rd molars – wisdom teeth) never formed. Of the 25 teeth present one tooth, T19, was not erupted. Additionally, the root of this tooth was not formed, suggesting a younger age (see age determination for full analysis of dental age).



Figure 1 – Maxilla encased in soil

Dental Pathology Assessment

Teeth were assessed for presence of hypoplasia, cavities, calculus, and dental attrition (non-pathological), in addition to non-metric traits and dental anomalies. Of the 25 teeth scorable for pathology, 16 or 64% exhibited some type pathological condition.

Enamel hypoplasias result from a reduction in the production of enamel during crown development (Hilson 1995), often as a consequence of non-specific stress events, (i.e. infectious disease, prolonged fever, nutrition deficiencies). These defects frequently form as linear groves on the external surface of the tooth. Linear Enamel Hypoplasias (LEH) were found on 48% (12/25) of the teeth (see Figure 2-arrows) with some teeth recording up to three defects. Only the anterior teeth were affected (canines and incisors). Measurements, which can be found in Table 8, were taken of each defect using a digital sliding caliper (.01mm) from the edge of the LEH to the Cemento-Enamel Junction. These measurements were used to calculate the age at which the defect formed based on formulae found in Lovell and Whyte (1996). Identification of the age at which these defects formed allows for a more thorough interpretation of their potential etiology. All LEH defects occurred between the ages of 1 and 4 year, which cover a period of potentially elevated stress related to weaning and increase risk of infectious and nutrient disease (often directly related to weaning practices and poor quality weaning foods). While it is not clear as to the etiology of the specific defects, it is clear, however, that this individual survived multiple periods of prolonged stress.



Figure 2 – LEH defects (see arrows)
Left to right: Upper central incisor and lower central incisor

Calculus (mineralized plaque) and cavities assessment considered only fully erupted teeth or 24 of the 25 teeth present. Unlike hypoplasias, calculus affected all classes of teeth with 6 of 24 teeth (24%) being affected. Cavities were found on a single molar (T19). Dental wear (attrition) was found on all teeth (except T17-not erupted) and was minimal with no or very small patches of dentine being exposed. Cusps were found to be very distinct suggesting a younger age. In addition to the pathological conditions, dental non-metric traits in the form carabelli cusps were identified on T3 and T14, the upper right and left first molars.

Table 7 – Dental Inventory and Pathology

T-Type	T#	T-SCR	PATH	CAR	CAV	HYP	ATT	OTH	CNT	Tooth Notes
MO	1	6	NA	NA	NA	NA	NA	NA	0	Tooth never formed.
MO	2	1	No	No	No	No	Yes	No	1	Tooth complete and in good condition. Minimal wear.
MO	3	1	No	No	No	No	Yes	Yes	1	Tooth complete and in good condition. Minimal wear pin prick dentine exposure. Carabelli cusp present on the mesiolingual cusp.
PM	4	1	Yes	No	Yes	No	Yes	No	1	Tooth complete and in good condition. Minimal wear without dentine exposure. Minimal calculus at the distal CEJ.
PM	5	1	No	No	No	No	Yes	No	1	Tooth complete and in good condition. Minimal wear.
CA	6	1	Yes	No	No	Yes	Yes	No	1	Tooth complete in good condition. Minimal wear pin prick dentine exposure. 2

										LEH present- Possible more.
IN	7	1	Yes	No	No	Yes	Yes	No	1	Tooth complete in good condition. Minimal wear pin prick dentine exposure. 1 LEH present- Possible more.
IN	8	1	Yes	No	No	Yes	Yes	No	1	Tooth complete in good condition. Minimal wear pin prick dentine exposure. 2 LEH present- Possible more.
IN	9	1	Yes	No	No	Yes	Yes	No	1	Tooth complete in good condition. Minimal wear pin prick dentine exposure. 2 LEH present- Possible more.
IN	10	1	Yes	No	No	Yes	Yes	No	1	Tooth complete and in good condition. Minimal wear with dentine exposure. 1 LEH present- Possible more.
CA	11	1	Yes	No	No	Yes	Yes	No	1	Tooth complete and in good condition. Minimal wear

										with dentine exposure. 3 LEH present.
PM	12	1	No	No	No	No	Yes	No	1	Tooth complete and in good condition. Minimal wear.
PM	13	1	No	No	No	No	Yes	No	1	Tooth complete and in good condition. Minimal wear.
MO	14	1	No	No	No	No	Yes	Yes	1	Tooth complete and in good condition. Minimal wear with dentine exposure. Carabelli cusp present on the mesial lingual cusps.
MO	15	1	No	No	No	No	Yes	Yes	1	Tooth in good condition. Minimal wear with dentine exposure.
MO	16	6	NA	NA	NA	NA	NA	NA	0	Tooth never formed.
MO	17	2	No	NA	NA	No	NA	No	1	Tooth in good condition. Observable due to PMD to crypt. Crown 90-100% complete. No root formation. No pathology recordable.
MO	18	1	Yes	No	Yes	No	Yes	No	1	Tooth in good condition. Small amount

										of calculus on the mesial, lingual, and distal surfaces. Small wear facets.
MO	19	1	Yes	Yes	Yes	No	Yes	No	1	Tooth in good condition. Cavity on occlusal surface Minimal calculus on lingual/ mesial surfaces. Minimal wear.
PM	20	1	Yes	No	Yes	No	Yes	No	1	Tooth in good condition. Minimal wear. Minimal calculus on distal surface.
PM	21	1	No	No	No	No	Yes	No	1	Tooth is in good condition. Minimal wear with dentine exposure.
CA	22	1	Yes	No	No	Yes	Yes	No	1	Tooth is complete in good condition. Minimal wear pin prick dentine patch. 2 LEH possible 3rd.
IN	23	1	Yes	No	Yes	Yes	Yes	No	1	Tooth is complete in good condition. Minimal wear with pin prick dentine patch.

										2 LEH present. Calculus on distal surface.
IN	24	1	Yes	No	No	Yes	Yes	No	1	Tooth is complete and in good condition. Minimal wear with pin prick dentine patch. 2 LEH present.
IN	25	1	Yes	No	No	Yes	Yes	No	1	Tooth is complete and in good condition. Minimal wear with pin prick dentine patch. 2 LEH present.
IN	26	1	Yes	No	No	Yes	Yes	No	1	Tooth is complete and in good condition. Minimal wear with pin prick dentine patch. 2 LEH present.
CA	27	1	Yes	No	Yes	Yes	Yes	No	1	Tooth is complete and in good condition. Minimal wear. 3 LEH present. Calculus present on the mesial, distal and labial surfaces.

Key: T-Type=Tooth Type; T#=Tooth Number; SCR=Score (eruption 1=Erupted in occlusion; 2=Partial or no eruption not in occlusion); PATH=Pathology; CAR=Caries (cavities); HYPO=Hypoplasia; ATT=Attrition; CNT=Count; MO=Molar; CA=Canine; IN=Incisor

Table 8 – Hypoplasia Defects – Measurements

T- Type	T #	LE H- CNT	LEH 1	LEH 2	LEH 3	AGE1	AGE2	AGE3	NOTES
CA	6	3	6.61	4.49	3.81	1.972031 25	3.263906 25	3.67828 13	No measurements complications
IN	8	2	5.5	4.56		2.133333 33	2.546363 63		No measurements complications
IN	9	2	5.55	4.78		2.111363 63	2.449696 97		No measurements complications
IN	10	1	8.4			1.268965 55			No measurements complications
CA	11	3	7.72	6.61	5.64	1.295625	1.972031 25	2.56312 5	No measurements complications
CA	22	2	7.51	6.44		1.423593 75	2.075625		No measurements complications
IN	23	2	4.17	3.39		2.717727 27	3.255689 67		No measurements complications
IN	24	2	4.15	3.61		2.726515 15	2.963787 88		No measurements complications
IN	25	2	3.63	2.8		2.955	3.319696 97		No measurements complications
IN	26	2	4.51	3.57		2.568333 33	2.981363 63		No measurements complications
CA	27	3	7.34	6.28	3.97	1.527187 5	2.173125	3.58078 13	No measurements complications

Key: T=Tooth; T#=Tooth Number; MO=Molar; CA=Canine; IN=Incisor; LEH=Linear Enamel Hypoplasia; CNT=Count

Formulae (Maxilla) = Canine: Age=-.60937500*HT+6.0; Incisor (central): Age=-.43939394*HT+4.550; Incisor (lateral): Age=-.39655172*HT+4.600

Formulae (Mandible) = Canine: Age=-.58823529*HT+6.500; Incisor (central): Age=-.46551724*HT+3.900; Incisor (lateral) Age=-.42187500*HT+3.900

Table 9 – Long Bone Measurements

BONE	SIDE	COMPLETE	MxL	MEAS-NOTES
HUM	RIGHT	YES- UNFUSED	252	Bone is complete. Unfused proximal and distal ends.
FEM	LEFT	YES- UNFUSED	349	Bone is complete. Unfused proximal and distal ends.

Key: MxL=Maximum Length (mm); HUM=Humerus; FEM=Femur

Age Determination

Age assessment was based on dental eruption, root and crown formation, fusion rates and long bone lengths. Dental eruption suggest an age of approximately 12 (+- 2.5 year) years of age while root and crown formation gave a range of 12.2 to 13.2 years old. Long bone maximum length (see Table 9) gave a slightly younger age of between 10 and 11.5 years of age. It is likely that the younger range of 10 -10.5 (femur) is under estimating the age for this individual. It is likely that this child was between 11 and 13 years of age at death.

Sex Determination

Sex determination was not conducted for WSP-1 due to its young age and that sexual dimorphism at this age is minimal in comparison to adults or adolescents.

WSP-2
WSP15-T1-B1-1 (Adult)

Summary Overview

WSP-2 consists of the mostly complete skeleton of an adult female individual excavated from Trench 1 on December 3-4, 2015 at a depth of 4.95' feet below the surface. The skeleton was found in a supine position oriented in a north-south direction with the head in the south and the feet in the north. Based on the presence of coffin nails, it is likely that WSP-2 was interred in a coffin. None of the wood, however survived the burial environment.

One hundred-thirty one bones representing elements from the cranial and post-cranial skeleton were recovered from this burial (see Tables 10 – 23). Bone preservation varied for WSP-2 ranging from poor to good with many of the bones having suffered from post-burial damage. The damage to individual bones, in some cases, limited the type of analysis to be conducted (i.e. maximum length measurements). As such some demographic information from specific bones and or skeletal regions is either missing or incomplete. In addition to the skeletal material, 20 teeth were recovered all of which were found to be in good condition.

Bone pathology was identified in 9 (6.8%) of the 131 bones recovered of which 7 of the 9 affected bones were from the vertebral column. Additionally, dental pathological conditions, including caries and calculus were identified on 15 of the 25 teeth (48%).

Cranial Inventory and Summary

Skull Bone Inventory/Summary

The skull of WSP-2 is in fair condition with some of the individual cranial elements being highly fragmented but relatively complete. Of the 22 bones that comprise the skull (not including the inner ear bones) 15 were identified for WSP-2. Overall the cranium was small and expressed more gracile features that are more in line with female characteristics. Numerous wormian bones were found within the lambdoidal and coronal sutures. The extra sutural bones in the former were extensive and large enough to alter the direction of the suture (see Figure 3-arrow). Abnormal bone growth in the form of arthritic lipping affected the left occipital condyle. Additional bone growth was found on the endocranial surface of the frontal bone. Cranial measurements were taken, where possible, for the purpose of estimating ancestry (see Table 22 and the section on ancestry).



Figure 3 – Cranium – Posterior View
Wormian Bones in Lambdoidal Suture

Table 10 – Cranial Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMM
FRO	L&R	1	YES	1	Bone is complete and in good condition. Abnormal compact bone on the endocranial surface of the bone. Wormian bone present on the left half of the coronal suture.
PAR	Right	1	NO	1	Bone is complete and in good condition. Small greenish stain adjacent to the sagittal suture parallel to obelion.
PAR	Left	1	NO	1	Bone is complete in fair to good condition. Wormian bones in the lambdoidal suture. Broken into fragments PM
OCC	L&R	1	?	1	Bone mostly complete in good to fair condition with PMD and breakage. Multiple large wormain bones on left and right lambdoidal suture altering sutural path. Possible marginal lipping on lateral border of left condyle.
TEM	Left	1	NO	1	Bone is complete and in good condition.
TEM	Right	1	NO	1	Bone is complete and in good condition.
SPH	L&R	3	NO	1	Bone is in fair to poor condition missing most of body. The right side has the basin area.
ZYG	Left	1	NO	1	Bone is complete and in good condition.
ZYG	Right	1	NO	1	Bone is complete and in good condition.
PAL	Right	1	NO	1	Bone is mostly complete and in good condition. Odd suture pattern between the palatines and the maxilla.
PAL	Left	3	NO	1	Bone is in poor condition missing approximately 75%. Odd suture pattern between the palatines and the maxilla.
MAX	L&R	1	YES	1	Bone is mostly complete and in good to fair condition. The right and left sides are mostly complete. Abscesses present at T12 and T14 with

					reduction of alveolar bone leaving part of the roots of various teeth exposed.
NAS	Left	1	NO	1	Bone is complete and in good condition.
NAS	Right	1	NO	1	Bone is complete and in good condition.
MAN	L&R	1	YES	1	Bone is complete and in good condition. Resorption of all molars and reduction of the alveolar bone.
HYD	L&R	3	NO	1	Body of hyoid only. It is not 100% that the hyoid belongs to burial 1

Key: COMP=Completion; PATH=Pathology; CNT=Count; FRO=Frontal; PAR=Parietal; OCC=Occipital; TEM=Temporal; SPH=Sphenoid; ZYG=Zygomatic; PAL=Palatine; MAX=Maxilla; NAS=Nasal; MAN=Mandible; HYD=Hyoid **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Post – Cranial Inventories, Measurements, Summaries and Tables

Long Bones and Pectoral Girdle

The long bones and bones of the pectoral girdle were in fair to poor condition with all suffering PMD and PML. Eleven of the twelve long bones and three of the four bones of the pectoral girdle were present (see Table 11). All of these elements were found to be small and gracile with non-distinct muscle attachment sites. Measurements were taken of all of the long bones but due PMD, none of could be used for stature reconstruction. Comparative material for the humerus and femur were used instead (see Table 16).

Table 11 – Long Bones/Pectoral Girdle

BONE	SIDE	COMP	PATH	CNT	COMMENTS
HUM	Left	2	NO	1	Bone in fair condition missing the proximal end PM. The distal end is present but broken off PM. No pathology. Comparative completed = 300.5
HUM	Right	3	NO	1	Bone in poor condition missing the proximal and distal ends and part of the proximal and distal shaft PM. Piece of iron attached to bone shaft. Comparative completed = 300.5
ULN	Left	1	NO	1	Bone in fair condition missing the distal end PM.
ULN	Right	1	NO	1	Bone in fair condition missing the prx and distal epiphyses PM. The shaft is broken into three pieces.
RAD	Right	1	NO	1	Bone in fair condition missing the prx and distal epiphyses PM. The shaft is broken into 2 pieces.
RAD	Left	1	NO	1	Bone in fair condition missing the prx and distal epiphyses and part of the prx and distal shaft.
FEM	Right	2	NO	1	Bone in fair condition missing the distal epiphysis and part of the distal shaft PM. Maximum length measurement is for comparative bone=413. Actual without distal end=352; Maximum diameter=41.97
FEM	Left	2	NO	1	Bone in fair condition missing the distal epiphysis and part of the distal shaft PM. Maximum length measurement is for comparative bone=413. Bone is broken into 3 pieces. Maximum diameter=41.50
TIB	Left	2	NO	1	Bone in fair condition missing the proximal and distal epiphyses and part of the proximal and distal shaft.
TIB	Right	4	NO	1	Bone in poor condition. Missing all except for 25% of the proximal epiphysis.
FIB	Left	3	NO	1	Bone in poor condition. Missing part of the proximal, distal shaft, proximal epiphysis, entire distal epiphysis.
CLA	Right	1	NO	1	Bone mostly complete missing approximately 1/2 of the sternal epiphyseal surface. Affects measurement.
CLA	Left	1	NO	1	Bone is mostly complete missing the sternal end PM. This will affect measurement.
SCA	Left	4	NO	1	The scapula is in poor condition retaining only the mostly complete glenoid fossa and part of the spine.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; HUM=Humerus; RAD=Radius; ULN=Ulna; FEM=Femur; TIB=Tibia; FIB=Fibula; CLA=Clavicle; SCA=Scapula **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Vertebra/Ribs/Sternum/Patella

A total of twenty-six vertebra, twenty ribs, one patella and part of the sternum were recovered from WSP-2 (see Table 12). The majority of material exhibited some post-mortem damage and ranged in preservation from good to poor. Pathological conditions were restricted to the vertebra. Of the 26 vertebra recovered, seven cervical, twelve thoracic, five lumbar and two sacral elements were identified. In addition to the individual vertebra listed in table 12, there were also numerous vertebral fragments that could not be confidently associated with a specific element. In all cases, however, these fragments were from thoracic vertebra. Seven of the 26 or slightly less than 30% exhibited pathology. Pathological conditions were restricted to schmorl nodes and marginal lipping (see individual vertebra for more detailed description). Schmorl nodes (abnormal depressions in the vertebral bodies) were found on six of the seven vertebra (3 thoracic and 3 lumbar) that exhibited pathology (see Figure 4) and marginal lipping was observed on axis (CER2).

The ribs suffered a high rate of fragmentation with none of the 20 individual ribs identified as being complete. Like the vertebra, there were a number of rib shaft fragments that could not be confidently associated with specific rib ends.

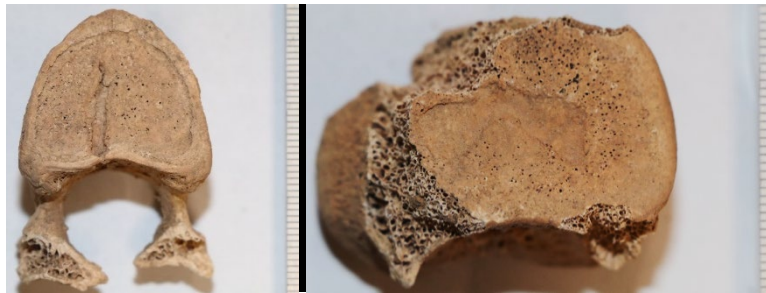


Figure 4 – Schmorl Nodes

Left to Right: Inferior thoracic vertebra and superior lumbar vertebra

Table 12 - Vertebrae

BONE	SIDE	COMP	FUS	PATH	CNT	COMM
CER 1	NA	1	YES	NO	1	Bone is complete and in good condition. Incomplete fusion of the right transverse foramen.
CER 2	NA	1	YES	YES	1	Bone is complete and in good condition. Lipping on the inferior left and right articular facets.
CER 3	NA	1	YES	NO	1	Bone is in fair condition broken PM. Missing part of the body PM.
CER 4	NA	2	YES	NO	1	Bone is in fair condition missing the left arch and associated articulations.
CER 5	NA	1	YES	NO	1	Bone is complete and in good condition. Missing the transverse foramen.
CER 6	NA	1	YES	NO	1	Bone is complete and in good condition. Missing the transverse foramen.
CER 7	NA	1	YES	NO	1	Bone is complete and in good condition. Missing the transverse foramen.
THR 1	NA	3	YES	NO	1	Bone in poor condition missing the left 1/2 of the bone and all associated articulations.
THR 2	NA	2	YES	NO	1	Bone in fair condition missing the posterior arch and the anterior surface of the body.
THR 3	NA	2	YES	NO	1	Bone in fair condition missing the left arch and all associated articulations.
THR 10	NA	1	YES	NO	1	Bone in poor condition missing the left and right arches. Missing the left body rib facets.
THR 11	NA	1	YES	?	1	Bone in fair condition. Possible Schmorl node on the inferior body.
THR 12	NA	1	YES	YES	1	Bone is mostly complete but broken PM. Slight Schmorl node on the inferior surface.
THR-NNI	NA	3	YES	NO	1	Bone in poor condition. Possible T4. No arches. Missing 50% of the superior surface.
THR-NNI	NA	3	YES	NO	1	Bone in poor condition. Possible T5. Body only. Missing 75% of the superior surface.
THR-NNI	NA	2	YES	YES	1	Bone in fair condition missing the both transverse processes and inferior right articular facet. Possible T6. Schmorl node on the inferior body. Linear defect approximately 15.3 mm X 2.57 mm. The node exits through a small tunnel under

						posterior border of the inferior annular ring.
THR-NNI	NA	3	YES	YES	1	Bone in fair to poor condition missing left and right arches and transverse process. Schmorl node on inferior surface of body. Measures approximately 6.34mm X 3.37mm. Possible T7
THR-NNI	NA	3	YES	NO	1	Bone in poor condition missing arches and left and right transverse processes. Possible T8.
THR-NNI	NA	3	YES	NO	1	Bone in poor condition missing arches and left and right transverse processes. Possible T9.
LUM 1	NA	1	YES	NO	1	Bone is mostly complete and in good condition missing the superior right articular facet.
LUM 2	NA	2	YES	YES	1	Bone is mostly complete missing most of the right arch. Shallow Schmorl node on superior body in the shape of a wing nut measuring approximately 10.8mm X 16.09mm.
LUM 3	NA	1	YES	YES	1	Bone is mostly complete Shallow Schmorl node on the superior surface of the body.
LUM 4	NA	1	YES	YES	1	Bone in poor condition but mostly complete. Small shallow Schmorl node on superior body.
LUM 5	NA	2	YES	NO	1	Bone is in poor condition missing approximately 50% of the body and most of the right arch.
SAC 1	NA	1	YES	NO	1	Bone in fair to poor condition with PM breakage into multiple pieces.
SAC 2	NA	3	?	NO	1	Bone in poor condition arches missing PM. Approximately 90% of body present.
RIB 1	Left	2	NA	NO	1	Bone in fair to good condition missing the sternal end.
RIB 1	Right	3	NA	NO	1	Bone in poor condition missing the sternal and vertebral end.
RIB 2-10	Right	NA	NA	NO	9	Ribs in fair to poor condition all showing PM breakage.
RIB 2-10	Left	NA	NA	NO	9	Ribs in fair to poor condition all showing PM breakage.
PAT	Right	2	NA	NO	1	Bone in fair condition missing the apex of the patella..
STE-BOD	NA	4	NA	NO	1	Bone in poor condition-small fragments only.

Key: COMP=Completeness; PATH=Pathology; FUS=Fusion; CNT=Count; CER=Cervical; THR=Thoracic; LUM=Lumbar; SAC= Sacral; PAT=Patella; STE-BOD=Sternal Body; NND=Not Numerically Identified; NA=Not Applicable **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Pelvis

The left and right innominate are in fair to poor condition with both sides exhibiting PMD and PML (see Table 13). The damage to innominates does not affect the auricular surfaces (see Figure 5), which are used for age determination, but does affect the left acetabulum. The left and right pubic bone, the most fragile sections of the innominate, were lost post-mortem. Regions associated with sex determination such as the greater sciatic notch and the pre-auricular sulcus were present. Fusion was complete for both innominate. No abnormalities were observed. Overall the pelvic bones were small which is in line with rest of the skeletal material from WSP-2.

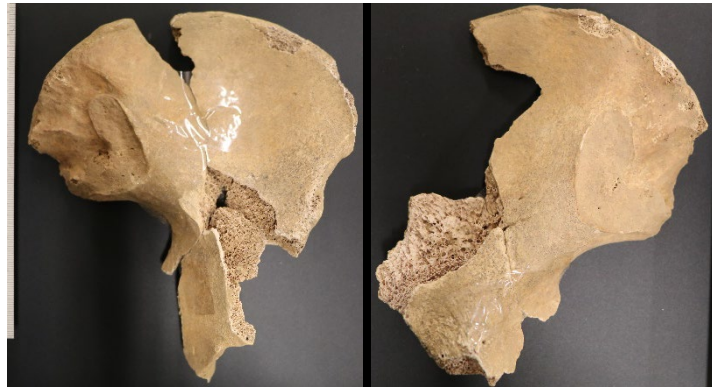


Figure 5 – Left and right innominate

Table 13 – Pelvis

BONE	SIDE	COMP	PATH	CNT	COMMENTS
INN	Right	2	NO	1	The right innominate is in poor condition with the only 50% of the ilium present. The auricular surface is complete and in good condition. Slight pre-auricular sulcus present and wide greater sciatic notch. The acetabulum is approximately 50% complete with the majority coming from the Ilium part.
INN	Left	3	NO	1	The left innominate is in fair condition missing the pubis and 75% of the ischium. The auricular surface is complete and in good condition. There is a slight pre-auricular sulcus present and wide greater sciatic notch. The acetabulum is mostly complete missing most of the pubic portion of the joint.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; INN=Innominate **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Hand and Foot Bone Inventory

Bones of the hand and foot comprised slightly less than 39% (51/131) of the all bones recovered from WSP-2 (see Table 14). Of these 51 bones, 39 were from the hand and 12 represented the foot. Preservation ranged from complete and in good condition to poor missing over 50% of the bone. All of the bones were found to be fused and no pathological conditioned were identified. Maximum length measurement were taken of all bones, when applicable. Some of these measurements, highlighted a slight asymmetry, in length, between the left and right sides of some metacarpal (see comments section of Table 14).

Table 14 – Hand and Foot Bone Inventory

BONE	SIDE	COMP	PATH	CNT	COMMENTS
MC1	Right	1	NO	1	Bone is complete and in good condition. MxL=43.05
MC1	Left	1	NO	1	Bone mostly complete missing 50% of the proximal epiphyses. Affects measurement. MxL=40.83
MC2	Left	1	NO	1	Bone is complete and in good condition. MxL=64.07
MC2	Right	1	NO	1	Bone is complete and in good condition. MxL=63.35
MC3	Right	1	NO	1	Bone is complete and in good condition. MxL=63.03. There is approximately 1mm difference between the left and right sides (left is larger). Same can be found with MC2.
MC3	Left	1	NO	1	Bone is complete and in good condition. No pathology. MxL=64.86. There is approximately 2mm difference in MxL between the left and right sides (left is larger). Same can be found with MC2.
MC4	Right	1	NO	1	Bone is mostly complete and in good condition. MxL=54.73
MC4	Left	1	NO	1	Bone is mostly complete and in good condition. Missing the distal end. Affects measurement. MxL=45.17
MC5	Left	1	NO	1	Bone is mostly complete and in good condition. MxL=50.00
MC5	Right	2	NO	1	Bone in poor condition missing the prx and distal ends PM.
MT1	Left	1	NO	1	Bone is complete and in good condition. MxL=57.12
MT4	Right	1	NO	1	Bone is complete and in good condition. No pathology. MxL=64.95
MT5	Right	1	NO	1	Bone is complete and in good condition. No pathology. MxL=62.69
MT-NND	SND	3	NO	1	Bone in poor condition with only part of the shaft present. No specific ID but not MT1 or MT5.

MT-NND	SND	3	NO	1	Bone in poor condition with only part of the proximal end present. No ID but not MT1.
PHP1	Left	1	NO	1	Bone is mostly complete and in good condition. 29.46.
PHP1	Right	1	NO	1	Bone in good condition missing small fragment from distal end. Doesn't affect measurement. 29.93
PHP2	Right	1	NO	1	Bone complete and in good condition. 38.58
PHP3	Left	1	NO	1	Bone is complete and in good condition. 43.25
PHP3	Right	1	NO	1	Bone complete and in good condition. 42.27
PHP4	Left	1	NO	1	Bone is complete and in good condition. 39.23
PHP4	Right	1	NO	1	Bone complete and in good condition. 39.53
PHI2	Right	1	NO	1	Bone complete and in good condition. 23.43
PHI3	Left	1	NO	1	Bone is complete and in good condition. 26.44
PHI3	Right	1	NO	1	Bone complete and in good condition. 29.39
PHI4	Left	1	NO	1	Bone in fair condition missing the proximal end PM. No measurement.
PHI4	Right	2	NO	1	Bone in fair condition missing the proximal end. No measurement.
PHI5	Left	1	NO	1	Bone is complete and in good condition. 19.58
PHI5	Right	1	NO	1	Bone complete and in good condition. 19.76
PHD2	Right	1	NO	1	Bone is mostly complete missing a small fragment from the shaft but does not affect measurement. 18.71
PHD3	Right	1	NO	1	Bone is complete and in good condition. 18.75
PHD4	Right	1	NO	1	Bone is complete and in good condition. 18.17
PHD5	Right	1	NO	1	Bone is complete and in good condition. 116.97
PFP3	Left	1	NO	1	Bone is complete and in good condition. 28.45
PFP4	Left	1	NO	1	Bone is complete and in good condition. 25.27
PFP5	Left	1	NO	1	Bone is complete and in good condition. 23.17
PFD1	Left	1	NO	1	Bone is complete and in good condition. 25.20
SAC	Right	2	NO	1	Bone in fair condition missing approximately 50%.
LUN	Left	1	NO	1	Bone is complete and in good condition.
PIS	Right	1	NO	1	Bone is complete and in good condition.
HAM	Left	1	NO	1	Bone is complete and in good condition.
HAM	Right	1	NO	1	Bone is complete and in good condition.
CAP	Left	1	NO	1	Bone is complete and in good condition.
TRA	Left	1	NO	1	Bone is complete and in good condition. TRAPIZIOD
TRA	Right	1	NO	1	Bone is complete and in good condition. TRAPIZIOD
CAP	Right	2	NO	1	Bone IN fair condition missing approximately 25% PM.
TRI	Left	2	NO	1	Bone IN fair condition missing approximately 50% PM.

TRI	Right	4	NO	1	Bone in poor condition missing approximately 75% PM.
TAL	Left	3	NO	1	Bone in fair to poor condition missing the inferior 2/3 of the bone PM.
NAV	Right	1	NO	1	Bone in good to fair condition missing the tubercle PM.
CUN 3	Right	1	NO	1	Bone in good to fair condition missing the inferior border.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; MC=Metacarpal; MT=Metatarsal; PHP=Phalange Hand Proximal; PHI=Phalange Hand Intermediate; PHD=Phalange Hand Distal; PFP=Phalange Foot Proximal; PFD=Phalange Foot Distal; SAC=Scaphoid; LUN=Lunate; PIS=Pisiform; CAP=Capitate; TRA=Trapezoid; TRI=Triquet; TAL=Talus; NAV=Navicular; CUN=Cuneiform; NND=Numerically Not Determined; SND=Side Not Determined

Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Dentition

Twenty-five teeth representing dentition from the maxilla and mandible were recovered from WSP-2 (see Table 15). All teeth were found to be in good condition with no significant PMD. Table 15 is an abridged record, listing only the teeth that were present and excluding those that were lost post-mortem or antemortem. A complete inventory has been recorded in the database and is available upon request. Four of the twenty-five teeth (T11, T24, T25 and T29) were originally mixed in with material from Burial 2 (child). These teeth were matched with alveolar sockets from the WSP-2 mandible.

Abnormalities and anomalies were restricted to calculus, caries and ante-mortem chipping. Pathological conditions affected 15 of the 25 teeth or 60%. Cavities were found on 32% of all teeth (8 of 25) while calculus was found on slightly less at 28% or 7 of 25. The severity of caries ranged from small lesions (see Figure 6-arrows) to large portions of the crown being destroyed. All teeth that displayed calculus exhibited minimal deposits often with only specks being identified. Ante-mortem chipping (not considered pathology), affected the apex of the crowns of T8, T9 and T23-25. Dental attrition (wear) ranged from blunting of the cusps to exposure of moderate dentin patches (see Age Determinate section for more detail on dental attrition).



Figure 6 – Mandible – Lingual View of Teeth Cavities affecting T20 and T29 (see arrows)

Table 15 – Dental Inventory and Pathology

T-Type	T#	T-SCR	PATH	CAR	CAL	HYP	ATT	OTH	CNT	COMMENTS
MO	1	1	Yes	Yes	Yes	No	Yes	No	1	Tooth in good condition. Large cavity affects distal buccal crown and buccal root. Probable periodontitis. Minimal calculus. Wear with dentine exposure.
MO	2	1	Yes	Yes	No	No	Yes	No	1	Tooth in good condition. Cavity on occlusal surface. Possible root cavity on buccal surface. Minimal wear with dentine patches.
PM	4	1	No	No	No	No	Yes	No	1	Tooth in good condition. Minimal wear with dentine patches.
PM	5	1	No	?	No	No	Yes	No	1	Tooth in good condition. Possible cavity on the occlusal surface. Minimal wear with dentine patch.
CA	6	1	Yes	No	Yes	No	Yes	No	1	Tooth in good condition. Calculus present on the mesial and distal surface. Minimal wear but significant patch of dentine.
IN	7	1	Yes	Yes	Yes	No	Yes	No	1	Tooth in good condition. Calculus on the mesial, distal and

										lingual surfaces. Minimal wear. Cavity on mesial surface. Invagination.
IN	8	1	Yes	Yes	No	No	Yes	Yes	1	Tooth in good condition. Moderate wear with thick dentine patch. Cavity on mesial surface. Antemortem chipping on the mesial edge of the crown. Dark stain on the distal surface.
IN	9	1	Yes	Yes	No	No	Yes	Yes	1	Tooth in good condition. Moderate wear with thick dentine patch. Cavity on the mesial surface. Antemortem chipping on the mesial crown. Dark stain on the distal surface.
IN	10	1	Yes	?	NA	NA	NA	Yes	1	All that remains of this tooth is a partial root that extends approximately 1mm above the edge of the alveolar bone. Tooth destroyed antemortem. (Possibly the result of a cavity).
CA	11	1	No	No	No	No	Yes	No	1	Tooth in good condition. Minimal wear-eye-shaped dentine patch.

PM	12	1	Yes	?	NA	NA	NA	Yes	1	All that remains of this tooth is a partial root that extend approximately 1mm above the edge of the alveolar bone. Tooth destroyed antemortem. Abscess associated with the root of this tooth. Micro porosity present bordering the edges of the abscess.
PM	13	1	Yes	Yes	Yes	No	Yes	No	1	Tooth in good condition. Cavity on distal surface. Calculus on mesial surface. Minimal wear with dentine patch.
MO	14	1	Yes	?	NA	NA	NA	No	1	All that remains is the mesial root of the tooth. Tooth was destroyed ante-mortem.
MO	15	1	?	?	No	No	Yes	No	1	Tooth in good condition. Minimal wear with dentine patches Possible cavity on the mesial crown.
MO	16	1	Yes	?	Yes	No	Yes	No	1	Tooth in good condition. Minimal wear with dentine patches on the mesial buccal cusp. Possible cavity on buccal

										surface. Minimal calculus on the mesial surface.
PM	20	1	Yes	Yes	No	No	Yes	No	1	Tooth in good condition. Minimal wear with dentin exposure. Small cavity on the occlusal and distal surfaces.
PM	21	1	No	No	No	No	Yes	No	1	Tooth in good condition. Minimal wear with dentine exposure.
CA	22	1	Yes	No	Yes	No	Yes	No	1	Tooth in good condition. Moderate wear with eye-shaped dentine patch. Minimal calculus on lingual surface at and below the CEJ.
IN	23	1	Yes	?	Yes	No	Yes	Yes	1	Tooth in good condition. Minimal wear with linear dentine patch. Minimal calculus on the labial surface at the CEJ. Possible root cavity on labial surface. Antemortem chipping on labial edge.
IN	24	1	No	No	No	No	Yes	Yes	1	Tooth in good condition. Moderate wear. Thick line of dentine exposure. Ante mortem chipping on the

										mesial edge of the tooth.
IN	25	1	No	No	No	No	Yes	Yes	1	Tooth in good condition. Moderate wear. Thick line of dentine exposure. Ante mortem chipping on the mesial edge of the tooth.
IN	26	1	No	No	No	No	Yes	No	1	Tooth in good condition. Moderate wear with linear dentine patch.
CA	27	1	No	No	No	No	Yes	No	1	Tooth in good condition. Moderate wear eye-shaped dentin patch.
PM	28	1	No	No	No	No	Yes	No	1	Tooth in good condition. Minimal wear with patch of dentine.
PM	29	1	Yes	Yes	No	No	Yes	No	1	Tooth in good condition. Minimal wear with patch of dentine. Small cavity on the distal surface at the interproximal facet.

Key: T-Type=Tooth Type; T#=Tooth Number; SCR=Score (eruption 1=Erupted in occlusion; 2=Partial or no eruption not in occlusion); PATH=Pathology; CAV=Cavities; HYP=Hypoplasia; ATT=Attrition; CNT=Count; MO=Molar; CA=Canine; PM=Premolar; IN=Incisor

Long Bone Measurements

Maximum length measurements were taken of comparative laboratory bones for the femur and humerus (see Table 16). Other than comparisons for the femur and humerus, no other long bones were measured. Each bone was measured once-no repeat measurements.

Table 16 – Long Bone Measurements

BONE	SIDE	COMP	MAX-LENGTH	MxL	COMMENTS
HUM	Right	3	COMPARATIVE USED	300.5	Bone missing proximal and distal ends
HUM	Left	2	COMPARATIVE USED	300.5	Bone missing proximal and distal ends
FEM	Right	2	COMPARATIVE USED	413	Bone in fair condition missing distal epiphysis and part of the shaft
FEM	Left	2	COMPARATIVE USED	413	Bone in fair condition missing distal epiphysis and part of the shaft

Key: MxL=Maximum Length; HUM=Humerus; FEM=Femur **Scoring System (COMP):**
 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Age Determination

Assessment of age for WSP-2 is based on external cranial suture closure, dental attrition and the degenerative morphology of the auricular surface of the pelvis (see Tables 17 and 18). As dental eruption and long bone fusion was complete for this individual, these methods could no longer be used. Additionally, the pubic symphyses, the most accurate method for age determination of adults, were missing post-mortem. In addition to the methods addressed above, complete fusion of the sternal end of the clavicle and of the spheno-occipital synchondrosis was observed suggesting an age greater than 25 years of age. Based on all methods of age determination used for WSP-2, it is likely that they were between 25 and 30 years old at the time of death. The younger ages derived from dental attrition likely under aged this individual when compared to fusion, auricular surface and cranial suture ages.

Table 17 – Vault Cranial Suture Closure

V-LMLAM	V-LAM	V-OBE	V-ASAG	V-BRE	AL-LMCOR	AL-LPTE	SC R	V-AGE MEAN
0	1	0	0	0	0	0	1	30.5

Key: V=Vault; AL=Anterior Lateral; LAM= Left Mid-Lambdodial; LAM=Lambda; OBE=Obelion; ASAG=Anterior Sagittal; LMCOR=Left Mid-Coronal; LPTE=Left Pterion **Scoring System:** 0=Open; 1=Partial Closure; 2=Significant Closure; 3=Complete Closure

Table 18 – Dental Attrition/Auricular Surface

MAXILLA-PHASE-AGE	MANDIBLE-PHASE-AGE	LEFT-AUR-S	RIGHT-AUR-S
E-24-30yrs	D-20-24yrs	25-29yrs	25-29yrs

Key: AUR-S=Auricular Surface **Scoring System for Dental Attrition and Auricular Surface:**
 Buikstra and Ubelaker, 1994

Sex Determination

Assessment of biological sex was based on morphology of the skull and pelvis and maximum diameter of the proximal epiphyses of the left and right femur (see Tables 19 and 20). With the exception of the left mastoid process (LMAP) all cranial and post-cranial regions exhibited female morphology.

The greater sciatic notch displayed a wide angle (see Figure 7) and the skull showed more gracile features both more often consistent with female typology. The presence of the left and right pre-auricular sulcus also suggested that WSP-2 was female.

Metric assessment of sex determination based on the maximum diameter of the femoral head suggested that WSP-2 was female. Additional regions assessed which included the extension of the zygomatic arch posteriorly, the frontal bone in the area of the bosses and the morphology of the gonial angle also displayed female type morphology.



Figure 7 – Left Innominate Wide Sciatic Notch (see arrow)

Table 19 – Sex Determination Skull and Pelvis

GLA-SK	LSOM-SK	RSOM-SK	LMAP-SK	RMAP-SK	NUC-SK	MEE-SK	SK-SEX	LGS N-P	RGS N-P	P-SEX
2	2	2	3	2	1	2	Female?	1	1	Female

Key: SK=Skull; P=Pelvis; GLA=Glabella; LSOM=Left Supraorbital Margin; RSOM=Right Supraorbital margin; LMAP=Left mastoid process; RMAP= Right Mastoid Process; NUC=Nuchel Crest; MEE=Mental Eminence; LGSN=Left Greater Siatic Notch; RGSN=Right Greater Siatic Notch. Scoring System (SK and P): 1=Female; 2=Female?; 3=?; 4=Male?; 5=Male

Table 20 – Sex Determination Femur

LEFT-MAXIMUM-DIAMETER	RIGHT-MAXIMUM-DIAMETER	LEFT-SEX IDENTIFICATION	RIGHT-SEX IDENTIFICATION
40.7mm	40.48mm	Female	Female

Key: Scoring System based on standards found in Bass 2005

Ancestry Assessment

Based on non-metrics assessment, WSP-1 is likely to be of European ancestry (see Table 21). The majority of non-metric characteristics assessed for WSP-2 suggest an individual of White ancestry. It is clear, however, there are specific features that do not fit this assessment with some showing features more often found in Asian and or Black populations. Cranial measurements were taken (see Table 22) for the forensic program FORDISC. The results are forthcoming.

Table 21 – Ancestry (Non-Metric)

Method	Index	Ancestry	Comment
Cranial Index	80	White	No complication with the measurements
Post-Bregmatic Depression		White/Asian	No Post-Bregmatic Depression
Metopic Suture		Black/Asian	No metopic suture present
Wormian Bones		Asian	Extra sutural bone are present in some of the sutures
Mental Eminence		White	Prominent and projecting
Palate Suture		White/Black	Irregular
Palate Shape		White	Triangular
Nasal Sill/Dam		White	Distinct sill present
Nasal Bridge		White	Narrow
Nasal Guttering		White/Asian	No guttering
Nasal Spine		White	Nasal spine
Suture Pattern		White	Simple
Incisors		White/Black	Blade
Femur Shape		White/Asian	Curved

Table 22 – Ancestry (Metric – Cranial)

Measurement Code	Value	Measurement Code	Value	Measurement Code	Value
GOL	17.5	WFB	95.57	FRC	106.67
XCB	14	UFBR	99.76	PAC	114.02
MDH	27.08	GNI	25.56	HMF	28.13
TMF	9.70	GOG	96.89	WRB	28.71

See FORDISC help file for a listing of the measurement code and full name.

Stature Reconstruction

Stature reconstruction is based on the maximum lengths of the comparative material for the humerus and femur. Partial bone reconstruction methods were not used for this individual. Based on the results for sex determination (female) and ancestry assessment (white), the appropriate formula was selected. Using this formula average stature for WSP-2 was between 5'1" and 5'3" (see Table 23).

Table 23 – Stature Reconstruction

BONE	SIDE	C-MxL	S-FORM	A-STAT (CM)	A-STAT(FT)	COMM
HUM	L&R	30.05	3.36*HUM+57.97±4.45	158.938	5' 2.52"	Used complete comparison bone
FEM	L&R	41.3	2.47*FEM+54.74±3.72	156.751	5' 1.68"	Used complete comparison bone

Key: C-MxL=Comparison Bone Maximum Length; S-Form=Stature Formula (specific for White Female); A-STAT=Average Stature

WSP-3 and WSP-4

WSP15-T1-B4-1 (Adult) and WSP15-T1-B4-2 (Infant)

Summary Overview

WSP-3 consists of the very partial remains of an adult female individual older than 23 years of age. The material was excavated on December 7, 2015 at a depth of 4' to 4.5' below surface in Trench 1. The skeletal material from WSP-3 is comprised of the left radius, ulna and humerus all belonging to the same individual.

Collected with WSP-3 were two cranial fragments comprising part of one bone (frontal), broken PM, of an infant or very young child (no table constructed). This fragment is labeled as WSP-4 (WSP15-T1-B4-2). Due to the fragmentary state a specific age was not obtainable. The fragments have been entered into the main database but no further description will appear in this report. The remaining section of this report will only detail the bones from WSP-3.

Long Bone Inventory and Measurements

Long bones consisted of the left humerus, radius and ulna (see Table 24). All were found to be in good condition with some PMD. While maximum length measurements were taken for all three bones (see Table 25), only the humerus was complete enough to use for stature reconstruction. The bones did not exhibit any evidence of abnormalities or anomalies.

Table 24 – Long Bones

BONE	SIDE	COMP	PATH	CNT	COMMENTS
HUM	Left	1	NO	1	Bone is complete in good condition. Broken mid shaft PM. Maximum vertical head diameter (40.79).
RAD	Left	1	NO	1	Bone is mostly complete in good condition missing 50% of the distal epiphysis affect the measurement.
ULN	Left	1	NO	1	Bone is mostly complete missing the distal end of the bone.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; HUM=Humerus; RAD=Radius; ULN=Ulna

Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 25 – Long Bone Measurements

BONE	SIDE	COMPLETE	MAXIMUM-LENGTH	MxL	COMMENTS
HUM	LEFT	FUSED	ACTUAL	300.5	Bone broken but complete. Does not affect MxL
RAD	LEFT	FUSED	PARTIAL	211	Partial bone. No stature reconstruction.
ULN	LEFT	FUSED	PARTIAL	118	Partial bone. No stature reconstruction.

Key: MxL=Maximum Length; HUM=Humerus; RAD=Radius; ULN=Ulna

Age and Sex Determination

Based on the fusion rates for the humerus this individual was likely older than 23 years of age. Sex determination was based on the maximum diameter of the head of the humerus (40.79mm), which suggested that these bones belong to a female individual.

Stature Reconstruction

Stature reconstruction is based on the humerus (see Table 26). As ancestry could not be assessed for WSP-3, stature reconstruction was calculated for both black and white females giving a range of 5'1" and 5'2".

Table 26 – Stature Reconstruction

BONE	SIDE	C-MxL	S-FORM	A-STAT (CM)	A-STAT(FT)	COMM
HUM	L	30.05	$3.36 * \text{HUM} + 57.97 \pm 4.45^1$	158.938	5' 2.52"	Used complete comparison bone
HUM	L	30.05	$3.08 * \text{HUM} + 64.67 \pm 4.25^2$	157.224	5' 1.89"	Used complete comparison bone

Key: C-MxL=Comparison Bone Maximum Length; S-Form=Stature Formula; ¹White Female; ²Black Female; A-STAT=Average Stature

WSP-5
WSP15-T1-B3-1

Summary Overview

These remains consist of a single left ulna (see Figure 8 and Table 27) from a non-child/adolescent individual of indeterminate sex excavated from Trench 1 in 2015. The bone is in extremely poor condition with sections of the outer cortex of the shaft flaking off and being broken into multiple pieces. Based on fusion rates for the ulna this individual was older than 18 years of age. Maximum length measurement was taken but due to damage to the proximal and distal ends no stature reconstruction was attempted. Age, sex and ancestry assessment was not attempted due to a lack of specific regions needed to complete these analyses.



Figure 8 – Left Ulna

Table 27 – Long Bones

BONE	SIDE	COMP	PATH	CNT	COMMENTS
ULN	Left	3	NO	1	Bone in poor condition missing part of the proximal and distal ends. The outer cortex of bone is flaking off.

Key: COMP: Completeness; PATH=Pathology; CNT=Count; ULN=Ulna Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

WSP-6 – WSP-9
WSP17-TP73-B4-1-4

Summary Overview

Burial 4 excavated April 2017 from WSP North, TP 73 at a depth of 9 feet below ground surface, is comprised of a total of 10 bones. Based on coloration, skeletal elements and siding it was determined that this group of bones represents at least 4 individuals. Sex determination was possible for 2 of the 4 individuals with cranial ancestry measurements possible for only one of the four persons. Age determination methods suggested that all 4 individuals were adults. Inventory number WSP-6 through WSP-9 were assigned to burial 4.

WSP-6
(WSP17-TP73-B4-1)

Summary overview

These remains consist of the partial cranium of an adult female approximately 26 years of age. The remains were excavated on from TP 73 at a depth of 9 feet BGS. In addition the cranium four complete and partial long bones were recovered. It is possible that WSP-7 belongs with this cranium but there is no direct connection between the two. The bones associated with WSP-8 and 9 show significant difference in coloration and weathering suggesting that they do not belong to WSP-6.

Skull Bone Inventory/Summary

Only seven of the twenty-eight bones of the skull were recovered (see Table 28 and Figure 8) all of which were in good condition with the exception of the sphenoid. The frontal bone along with the splanchnocranium (facial bones), which make of the majority of the skull were all missing post-mortem. Slight green staining was identified on the right parietal, suggesting contact with copper or bronze (see Figure 8). No pathology was identified on the ectocranial or endocranial surfaces. Two small wormian bones were found within the right lambdodial suture (see Figure 8)



Figure 8 – Partial Cranium – Right Profile; Posterior View

Table 28 – Skull Bones

BONE	SIDE	COMP	PATH	CNT	COMM
PAR	Left	1	NO	1	Bone is complete and in good condition.
PAR	Right	1	NO	1	Bone is complete and in good condition. Small green stain located just superior to the squamosal suture. Wormian bones x2 (small) found in the lambdoidal suture.
OCC	L&R	1	NO	1	Bone is complete and in good condition. Wormian bones x2 (small) found in the lambdoidal suture.
TEM	Left	1	NO	1	Bone is mostly complete and in good condition. Missing the mastoid process post-mortem.
TEM	Right	1	NO	1	Bone is complete and in good condition.
SPH	L&R	3	NO	1	Bone is in fair condition missing the lesser wings, part of the body and the part of the sinus cavity.

Key: COMP=Completion; PATH=Pathology; CNT=Count; FRO=Frontal; PAR=Parietal; OCC=Occipital; TEM=Temporal; SPH=Sphenoid; ZYG=Zygomatic; PAL=Palatine; MAX=Maxilla; NAS=Nasal; MAN=Mandible; HYD=Hyoid **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Sex and Age Determination

Sex determination was based on three cranial landmarks the nuchal crest and the right mastoid process and the extension of the zygomatic arch. The nuchal crest exhibited female type characteristics and the mastoid process showed male type morphology. In addition to these features there was a general lack of the suprameatal (extension of the zygomatic arch) feature extending to and posterior to the external auditory meatus. The lack of this particular characteristic is usually found in females. Age determination was based on the extent of closure of the spheno-occipital synchondrosis suggesting an age of 26 years or greater. While the composite scoring system for ectocranial sutures was not possible it should be noted that the sutures that are present generally show a lack of closure and only one region exhibit observable closure (SCR 1). This would point to an individual of approximately 30.5 years of age.

Ancestry Assessment

Measurements of the cranium used for ancestry assessment have been taken. The results using the program FORDISC are pending. Ancestry based on morphological features was limited to the presence of wormian bones identified in the lambdoidal suture. This characteristic is often found in individuals of Asian ancestry.

WSP-7
WSP17-TP73-B4-2

Summary Overview

These remains consist of the distal end of a femur from an individual over the age of 19 (see Table 29 and Figure 9). It is possible that it belongs with WSP-6 and therefore will receive an MNI of zero. Age determination is based solely on the fusion rates for the distal epiphysis. Ancestry and stature reconstruction were not possible. Marginal lipping was found on the anterior and inferior border of the distal articular surface.



Figure 9 – Right Femur

Table 29 – Long Bones

BON E	SID E	COM P	PAT H	CN T	COMM
FEM	Right	3	Yes	1	Bone in poor condition missing all except for 1/4 of the distal shaft and 95% of the distal epiphysis. The posterior condyles are missing PM. Marginal lipping found on the anterior superior border of the distal articulation along with slight lipping along the inferior border between the left and right condyles.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

WSP-8
WSP17-TP73-B4-3

Summary Overview

WSP-8 consists of the right femur and left tibia of an adult individuals of indeterminate sex excavated from TP73 (see Figure 10 and Table 30). Both bones are in fair condition with some post-burial damage to the outer cortex of the bone. Age determination was based solely on fusion rates of the femur and tibia. These suggested an age greater than 19 and probably in the range of 19-25. No evidence for pathology was identified on either of the two bones. Maximum length measurements were taken for both bones allowing for stature reconstruction. Default white male and white female stature formulae were used to calculate height. Stature estimates were calculated for both male and females due to the indeterminate sex determination results from the maximum diameter of the head of the femur (see Table 31). Stature was calculated to have been between approximately 5' 6'' for a female and 5' 7'' for a male (see Table 32). Ancestry was not assessed for this individual due to the lack of necessary skeletal regions.



Figure 10 – Right Femur and Tibia

Table 30 – Long Bones

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FEM	Right	1	NO	1	Bone is complete and in good condition with some PMD to the outer cortex of the shaft. Fusion line still present but should not be taken as suggestive of a non-adult or adolescent. It is possible that the individual is a young adult but closer to 25 yrs of age.
TIB	Left	1	NO	1	Bone in good condition. Some PMD to the cortex and a small fragment missing from the distal epiphysis.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur; TIB=Tibia
Scoring System (COMP): 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

Table 31 – Sex Determination Femur

RIGHT-MAXIMUM-DIAMETER	RIGHT-SEX IDENTIFICATION
44mm	Indeterminate

Key: Scoring System based on standards found in Bass 2005

Table 32: Stature Reconstruction

BONE	SIDE	C-MxL	S-FORM	A-STAT (CM)	A-STAT(FT)	COMMENTS
FEM	R	46	$2.47 * FEM + 54.74 \pm 3.72^1$	168.36	5' 6.24"	Used complete comparison bone
FEM	R	46	$2.38 * FEM + 61.41 \pm 3.27^2$	170.89	5' 7.2"	Used complete comparison bone

Key: C-MxL=Comparison Bone Maximum Length; S-Form=Stature Formula; ¹White Female; ²White Male; A-STAT=Average Stature

WSP-9

WSP17-TP73-B4-4

Summary Overview

These remains consist of the shaft of a right femur of an adult individual (see Figure 11 and Table 33) of indeterminate sex excavated from TP 73 at a depth of 9 feet below ground surface. This femur was recovered with one complete right femur, a distal right femur, left complete tibia and a partial cranium. Separation between these bones into individuals was based on overall size and coloration. This bone does not belong with any of the other material suggesting that it is a separate person. Age determination was based on overall size and comparison to a complete adult femora. Sex, ancestry and stature reconstruction were not attempted due to the incompleteness of the bone. No pathology was detected.



Figure 11 – Right Femur

Table 33 – Long Bones

BONE	SIDE	COMP	PATH	CNT	COMMENTS
FEM	Right	3	NO	1	Bone in poor condition missing the proximal and distal 1/4 of the shaft PM. The outer cortex is flaking off.

Key: COMP=Completeness; PATH=Pathology; CNT=Count; FEM=Femur **Scoring System (COMP):** 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

WSP-10
WSP17-TP73-B4-5

Summary Overview

These remains consist of fragments from two small bags labeled FS121 STRAT 3-4 and FS122 STRAT 4 dated 4-13-2017. These small fragments represent non-cranial material with the majority coming from long bones. These will not be counted as separate individuals. These fragment are non-diagnostic and non-identifiable. Total number of fragments = 5, 2 of which are from the same bone. No demographic information other than that they are all from non-child/infant remains.

Appendix F:
Field Documentation

Washington Square Park - Feature Log

FS #	Trench	Section	Test Pit	Strat	Feature	Comments	# Bags	Date	Collected by
100	1	14	-	III	-	1 large mammal bone end fragment	1	1/13/2016	EK
101	5	24	-	II	-	1 stone slab/tile, 1 ceramic sewer pipe collar sherd	1	2/22/2016	AA
102	6	4	-	II	-	1 dog femur	1	3/8/2016	AA
103	6	4	-	III	-	1 pig humerus	1	3/9/2016	AA
104	9	1	-	III	-	1 bovine long bone fragment	1	3/18/2016	AA
105	6	4	-	III	-	6 large mammal bone fragments	1	3/24/2016	AA
106	6	4	-	III	-	1 horse metacarpal	1	3/29/2016	AA
107	9	2	-	III	-	1 large mammal flat bone fragment	1	3/30/2016	AA
108	12	1	-	II	-	1 lead glazed redware vessel, 1/3 complete	1	4/15/2016	AA
109	16	2	-	IV	-	1 white granite sherd, 1 blue transfer printed pearlware sherd	1	5/5/2016	EK
110	16	4	-	IV	-	stoneware, glass, white granite	1	5/9/2016	EK
111	16	5	-	V	-	1 mammal bone	1	5/9/2016	EK
112	15	4	-	III	-	1 small glass vial/bottle	1	5/24/2016	EK
113	31	3	-	II	-	1 7-Up bottle circa 1955-1968	1	9/7/2016	AA
114	31	7	-	IV	-	1 large mammal flat bone fragment	1	9/23/2016	AA
115	39	9	-	III	10	1 intact glass bottle (CELLIS & CO PHILADA), 1 metal spike	1	12/7/2016	AA
116	42	4	-	II	-	1 large mammal long bone fragment	1	1/5/2017	AA
117	42	5	-	II	-	1 intact wine/liquor bottle, TPQ 1910	1	1/6/2017	AA
118	55	2	-	IV	-	1 Pepsi-Cola clear glass bottle circa 1940-1953	1	3/4/2017	KM
119	-	-	66	II	-	1 intact wine bottle, TPQ 1940	1	3/21/2017	AA
120	-	-	70	II	-	1 cattle metacarpal, 1 cattle long bone fragment, 1 oyster shell	1	4/2/2017	AA
121	-	-	73	IV	12	Human remains	2	4/12/2017	AA
122	-	-	73	III/IV	12	Human remains, glass fragments, ceramic	1	4/13/2017	AA
123	73	13	-	III	-	1 intact wine bottle TPQ 1939	1	6/26/2017	AA
124	73	13	-	III	-	1 intact beer bottle TPQ 1939	1	7/17/2017	AA
125	31	32	-	III	-	1 cut animal long bone fragment (tibia, distal, possibly bovine)	1	8/13/2017	LMK
126	31	37	-	VI	-	1 intact aqua glass Coca-Cola bottle TPQ 1964	1	8/27/2017	LMK
127	83	1	-	II	-	1 nail	1	10/25/2017	ER
128	82	3	-	IV	-	1 glass bottle	1	10/25/2017	ER
129	83	2	-	V	-	1 amber glass bottle circa 1935-1954	1	10/27/2017	ER
130	85	1	-	III	-	3 ceramic sewer pipe sherds, 1 glass fragment, 1 nail	1	11/30/2017	ER
131	-	-	104	lia	-	1 bovine short bone	1	5/31/2018	AA
132	103		-	-	-	9 bottle fragments, 2 ferrous metal hardware, 1 plaster fragment, 5 ironstone sherds, 2 oyster shells	1	10/12/2018	ER
133	103		-	III	-	1 wire nail, 2 ferrous metal spikes	1	10/15/2018	ER
134	103		-	-	-	1 glass bottle	1	10/23/2018	ER
135	103		-	III	-	2 animal bones, 1 rodent tooth, 1 oyster shell, 1 ceramic sherd	1	10/30/2018	ER
136	103		-	III	-	1 Human long bone *Update: animal bone, not human	1	10/30/2018	ER
137	103		-	-	-	13 animal bones, ceramics	2	12/12/2018	ER

Appendix G:
Artifact Database

APPENDIX G: Washington Square Park - 2016-2018 - Artifact Inventory

FS #	Item #	Trench	Section	Test Pit	Strat	Feature	Object Type	Material/I Notes	Date	Collected by
100*	1	1	14		III		faunal	large mammal long bone distal fragment	1/13/2016	EK
101	1	5	24		II		tile	stone slab/tile fragment	2/22/2016	AA
101	2	5	24		II		ceramic	ceramic sewer pipe collar sherd	2/22/2016	AA
102	1	6	4		II		faunal	dog femur	3/8/2016	AA
103	1	6	4		III		faunal	pig humerus	3/9/2016	AA
104	1	9	1		III		faunal	bovine long bone frag	3/18/2016	AA
105	1-6	6	4		III		faunal	large mammal bone frags	3/24/2016	AA
106	1	6	4		III		faunal	horse metacarpal	3/29/2016	AA
107	1	9	2		III		faunal	large mammal flat bone frag	3/30/2016	AA
108	1	12	1		II		ceramic	large lead-glazed redware sherd	4/15/2016	AA
109	1	16	2		IV		ceramic	blue transfer-printed pearlware sherd	5/5/2016	EK
109	2	16	2		IV		ceramic	white granite sherd	5/5/2016	EK
110	1-2	16	4		IV		ceramic	grey salt-g possibly associated with/below Fea. 7	5/9/2016	EK
110	3	16	4		IV		ceramic	ironstone possibly associated with/below Fea. 7	5/9/2016	EK
110	4	16	4		IV		glass vessel	thick vesse possibly associated with/below Fea. 7	5/9/2016	EK
111	1	16	5		V		faunal	mammal bone frag	5/9/2016	EK
112	1	15	4		III		glass vessel	aqua smal near 5' brick manhole	5/24/2016	EK
113	1	31	3		II		glass vessel	7-Up bottle circa 1955-1968	9/7/2016	AA
114	1	31	7		IV		faunal	large mammal flat bone frag	9/23/2016	AA
115	1	39	9		III	10	glass vessel	aqua medi associated with Fea 10 timber	12/7/2016	AA
115	2	39	9		III	10	spike	ferrous spi associated with Fea 10 timber	12/7/2016	AA
116	1	42	4		II		faunal	large mammal bone	1/5/2017	AA
117	1	42	5		II		glass vessel	intact wine/liquor bottle, TPQ 1910	1/6/2017	AA
118	1	55	2		IV		glass vessel	colorless Pepsi-Cola glass bottle circa 1940-1953	3/4/2017	KM
119	1			66	II		glass vessel	pint-size w associated with utilities crossing ~3' bgs	3/21/2017	AA
120	1-2			70	II		faunal	2 bovine bone frags	4/2/2017	AA
120	3			70	II		faunal	oyster shell	4/2/2017	AA
121	1			73	IV	12	human remains	human remains - cranium, long bone (see human remains report)	4/12/2017	AA
122	1-4			73	III/IV	12	human remains	4 frags of human remains (see human remains report)	4/13/2017	AA
122	4			73	III/IV	12	glass vessel	unidentifi from TP wall slump, fill above HR	4/13/2017	AA
122	5			73	III/IV	12	ceramic	refined ea from TP wall slump, fill above HR	4/13/2017	AA
123	1	73	13		III		glass vessel	wine flask TPQ 1905	6/26/2017	AA
124	1	73	13		III		glass vessel	1 intact beer bottle TPQ 1939	7/17/2017	AA
125	1	31	32		III		faunal	cut mammal long bone fragment (tibia, distal, possibly bovine)	8/13/2017	LMK
126	1	31	37		VI		glass vessel	complete ; 2.5' bgs	8/27/2017	LMK
127	1	83	1		II		nail	ferrous, indeterminate	10/25/2017	ER
128	1	82	3		IV		glass vessel	colorless 20th c. unmarked bottle	10/25/2017	ER
129	1	83	2		V		glass vessel	amber pa "Mr. Boston" pinch bottle	10/27/2017	ER
130	1-3	85	1		III		sewer pipe	3 ceramic sewer pipe sherds	11/30/2017	ER

130	4	85	1		III	glass vessel	colorless		11/30/2017	ER
130	5	85	1		III	nail	ferrous, indeterminate		11/30/2017	ER
131	1			104	Ila	faunal	bovine rib fragment		5/21/2018	AA
132	1-9	103	25		various	glass vessel	colorless,	collected from west wall as sheeting installed	10/12/2018	ER
132	10-11	103	25		various	ceramic	2 ironstone	collected from west wall as sheeting installed	10/12/2018	ER
132	12-13	103	25		various	hardware	ferrous metal	collected from west wall as sheeting installed	10/12/2018	ER
132	14-15	103	25		various	faunal	2 oyster shells	collected from west wall as sheeting installed	10/12/2018	ER
132	16	103	25		various	plaster	fragment	collected from west wall as sheeting installed	10/12/2018	ER
133	1-2	103	26		IV-V	nail	ferrous wire nail		10/15/2018	ER
133	3	103	26		IV-V	spike	ferrous rail	taken out of fill by excavation crew	10/15/2018	ER
134	1	103	27			glass vessel	glass bottle	taken out of fill by excavation crew	10/23/2018	ER
135	1-3	103	29		III	faunal	2 long bones, 1 rodent tooth		10/30/2018	ER
135	4	103	29		III	faunal	oyster shell		10/30/2018	ER
135	5	103	29		III	ceramic	refined earthenware		10/30/2018	ER
136	1	103	29		III	faunal	large mammal	thought possible human bone in field, ID'd as non-human	10/30/2018	ER
137	1-13	103	various			faunal	small mammal	TR 103 backfill	12/12/2018	ER
137	14	103	various			ceramic	refined earthenware	TR 103 backfill	12/12/2018	ER
*FS log began at FS#100										

Appendix H:
Resumes

Alexander Agran | Field Director



Mr. Agran has twelve years of experience working in all phases of archaeological excavation and reporting. His specializations include both prehistoric and historic contexts in the Middle Atlantic, New England, and Midwest regions. He has extensive knowledge of laboratory analysis and archival preparation techniques for prehistoric and historic artifacts, and has experience with in-field GPS devices.

SELECTED PROJECT EXPERIENCE BY STATE

Delaware

Harrington Spray Irrigation Disposal Site – Phase IB

Kent County, DE

2008

Conducted shovel test excavation and walking surveys at the historic Blessing Farm. The survey resulted in the confirmation of the 19th and 20th century occupation as well as the identification of two distinct prehistoric occupation loci.

Illinois

Rockies Express Pipeline – Phase III

Pittsfield, IL

2008

Excavated Phase III prehistoric upland occupation site, including structural, hearth, storage, and tool production areas. Analysis included tool microanalysis and storage vessel lipid testing to assess local faunal resources utilized for food and hides. Conducted in advance of Rockies Express – East natural gas pipeline installation.

Michigan

DTE Vector Pipeline – Phase IB

Macomb County, MI and Oakland County, MI

2014

Conducted shovel test excavations and walking surveys along 55 miles of the proposed corridor for the Vector natural gas pipeline to assess the sensitivity of a rural area.

AREAS OF EXPERTISE

Archaeological Survey and Excavation

Construction Monitoring

Prehistoric Artifact Analysis

Laboratory Preparation

EDUCATION

B.A., Anthropology: 2008, Temple University

CERTIFICATIONS

30-Hour OSHA Construction Safety Training (2020)

8-Hour Annual HAZWOPER Refresher Course (2012)

10-Hour OSHA Construction Safety Training (2010)

40-Hour HAZWOPER Safety Training (2009)

PROFESSIONAL EXPERIENCE

2014: Commonwealth Cultural Resources Group

2011-Present: Chrysalis Archaeological Consultants

2008-2011: URS Corporation

CONTACT INFORMATION

aagran@chrysalisarchaeology.com

New York Headquarters
4110 Quentin Road
Brooklyn, NY 11234-4322
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Brooklyn Laboratory
2119 E 34th St
Brooklyn, NY 11234
www.chrysalisarchaeology.com

Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

New Hampshire

[Telecommunication Tower Weber Lane Camp Site NH-5050C – Phase IB](#)

Cheshire County, NH

2015

Conducted site ground survey and shovel test pit excavation in historic town and prehistorically sensitive region in advance of cell tower construction in southern New Hampshire.

New Jersey

[Thompson Park Federal Road Fields Wetland Mitigation Project – Phase IB](#)

Middlesex County, NJ

2015

Performed shovel test excavations in a rural, nineteenth-century industrial area in advance of state-funded wetlands management activities intended to remove invasive species and support native flora and fauna of the New Jersey Pinelands Spotswood Outlier region.

[Oldmans Creek Freshwater Wetland Enhancement and Riparian Zone Restoration Project – Phase IB](#)

Salem County, NJ

2015

Performed shovel test excavations in a prehistorically sensitive rural area in advance of state-funded wetlands restoration intended to remove invasive species, discontinue agricultural use and replace with native species.

[Williams Natural Gas Pipeline – Phase IB](#)

Hunterdon County, NJ

2011

Conducted shovel test excavations along an existing gas pipeline through landforms varying from low to high probability for cultural resources to determine the impact of a proposed new pipeline.

[Rutgers University Campus Expansion – Phase II](#)

Camden County, NJ

2011

Testing and mitigation of Site 28CA124 on Rutgers Camden Campus to recover 19th century residential structures and materials in area of planned new student housing.

[Allied Textile Printing Site Cultural Research Investigation – Phase II](#)

Paterson, NJ

2010

Investigated the 19th century remains of the Colt Gun Mill, Mallory Mill, Passaic Mill, and Todd Mill within the Allied Textile Printing complex, part of America's first planned industrial community. Conducted trenching and unit excavation to map mill raceways and architectural progression. Performed in conjunction with Hunter Research.

[Multi-Use Pathway at Fort Hancock, Sandy Hook Unit, Gateway National Recreation Area – Phase II](#)

Monmouth County, NJ

2009

Conducted testing in historical and prehistorically sensitive oceanfront areas for the National Park Service in advance of hiking and bike trail improvements around Sandy Hook. Special attention paid to 19th century battery area. Required training in unexploded ordnance identification.

New York

[Peck Slip 2020 – Phase IB](#)

New York City, NY

2020

Monitored excavation during the construction of a green space in the center of Peck Slip, an 18th and 19th century shipping area and Historic District in downtown Manhattan.

[Peter Minuit Park – Phase IB](#)

New York City, NY

2020

Monitored excavation during the construction of a playground near Peter Minuit Plaza, at the site of Manhattan's 17th century battery wall.

[St. Peter's Church – Phase IB](#)

Bronx, NY

2019–2020

Conducted shovel test and unit excavations at the site of a 17th century Quaker Friends Meeting House and historic cemetery.

[Alice Austen House – Phase IB](#)

Staten Island, NY

2018

Conducted shovel test excavations on the property of a late 17th century house.

[Worth Street Reconstruction – Phase IB](#)

New York City, NY

2018–Present

Monitored excavation during the upgrading of water, gas, and other utilities along Worth St in lower Manhattan, in the vicinity of the 18th century African Burial Ground and the 19th century Five Points neighborhood.

[Newtown Playground – Phase IB](#)

Queens, NY

2018

Conducted shovel test excavations and monitored excavation in a former mortuary site, in advance of Parks Department improvements.

[Artesian Way, Nissequogue – Phase IB](#)

Suffolk County, NY

2018

Conducted shovel test excavations in an area of high prehistoric

sensitivity, in advance of private housing development construction.

[Conference House Park – Phase IB](#)

Staten Island, NY

2018

Conducted shovel test excavations and monitored excavation for the construction of a new pavilion for the park.

[Forge River – Phase IB](#)

Suffolk County, NY

2017

Conducted shovel test excavations in an area of high prehistoric sensitivity, in advance of the construction of a proposed water treatment facility and associated pump stations.

[Myrtle Avenue – Phase II](#)

Brooklyn, NY

2017

Monitored excavation of a former residential block across from historic Fort Greene Park. Mapped and documented the basements of four property lots; five associated mid-19th century shaft features were excavated.

[City Island Bridge Replacement – Phase II Monitoring](#)

Bronx, NY

2016

Monitored excavations in Pelham Bay Park and City Island in advance of the City Island Bridge replacement to mitigate any impacts to potential pre-historic or historic cultural resources along the river shoreline area.

[John Bowne House – Phase IB](#)

Queens, NY

2016

Monitored core sample drilling in the vicinity of the oldest surviving structure in Queens, an anglo-dutch house dating to 1661.

[404 Littleworth Lane – Phase IB](#)

Nassau County, NY

2016

Monitored excavations on a private residence in an area of high sensitivity for both prehistoric and historic remains.

[Washington Square Park Water Main Replacement – Phase IB](#)

Manhattan, NY

2015–2018

Oversaw excavations and conducted excavation of human remains around Washington Square Park and its surrounding area in order to replace and upgrade water main, sewer, and additional utility services. The park area served as a potter's field and contagious disease cemetery and contains potentially up to 20,000 eighteenth and early nineteenth century burials in addition to structures related to the first free African landowners in the city from the seventeenth century.

[Kosciuszko Bridge Replacement – Phase IB](#)

Queens, NY

2015

Monitored excavation for utility emplacement for evidence of prehistoric activity and early Dutch and English settlement structures and burial areas. Performed for the NY State Department of Transportation in advance of deconstruction and replacement of an early twentieth-century truss bridge at a main borough thoroughfare; replacement activities were part of the first cable-stayed bridge built in New York City since the Brooklyn Bridge.

Van Cortlandt Park Dog Run – Phase IB

Bronx, NY

2015

Performed shovel test excavations in a historically and prehistorically sensitive area of the Bronx to determine the possible impact on the nearby site of the Stockbridge Indian Massacre. Generated comprehensive report on the findings.

Hendrick I. Lott House – Phase IB

Brooklyn, NY

2013

Monitored excavations and conducted excavation of outdoor features associated with 19th century rural and farmland activities at one of the oldest remaining historic houses in New York City

The High Bridge Rehabilitation – Phase IB

New York City, NY and Bronx, NY

2012–2014

Under hazmat conditions, conducted archaeological monitoring of excavation for new footings as well as the removal of toxic lead dust from within the bridge, mapping and architectural investigation of the 19th century bridge spanning the East River.

Peck Slip Rehabilitation – Phase II

New York City, NY

2011–2013

Conducted Phase II monitoring, mapping, and feature-specific excavations during road reconstruction and utility replacements at Peck Slip, an 18th and 19th century shipping area and Historic District in downtown Manhattan.

Fulton Street Reconstruction – Phase II

New York City, NY

2011–2013

Monitored Phase II excavations and investigated historic architecture and water supply features in advance of road reconstruction and utility replacements at Fulton Street in downtown Manhattan's South Street Seaport Historic District.

Liberty Island Utility Upgrade Investigation – Phase IB

New York Harbor, NY

2009

Conducted shovel tests around the Statue of Liberty and Fort Wood to identify historic and prehistoric materials in advance of utility

installations across National Park Service lands. Identified shell middens related to prehistoric island occupation and exploitation of harbor resources.

[Fort Edward/ GE Hudson River Remediation – Phase III](#)

Washington County, NY

2009–2010

Performed excavation along the Hudson River to identify the boundaries of the 18th century Fort Edward as well as prehistoric and contact-era Native American tools and trade goods. Performed shovel test pits across Hudson River islands to attempt to locate mass graves and quarantine housing related to 18th and 19th century yellow fever outbreaks.

[Martin Van Buren National Historic Site– Phase II](#)

Kinderhook, NY

2009

Excavated test pits and trenches to identify the location and trajectory of the original Old Post Road transit line at the Martin Van Buren post-presidential residence and National Historic Site.

Pennsylvania

[Archaeological Testing and Mitigation, Delaware Water Gap Recreation Area Site 36PI136 – Phase III](#)

East Stroudsburg, PA

2010

Performed Phase III excavations in prehistorically sensitive Woodland period river bank areas at Smithfield Beach and Bushkill Access in advance of comfort station and water access enhancements.

[Cabot Gas & Oil Pipeline – Phase IB](#)

Wyoming County, PA

2009

Excavated shovel test pits along multiple portions of upland pipeline routes to assess prehistorically sensitive Woodland areas.

[I-95 /Girard Interchange Project – Phase II, Phase III](#)

Philadelphia, PA

2009–2011

Performed extensive excavation across three miles of 18th and 19th century residential and commercial areas in one of Philadelphia's first communities. Identified wells, privies, architectural features, and property line variations, as well as occupation areas related to contact-era Native Americans. Identified the Dyottville Glassworks riverfront industrial plants and planned worker communities. Conducted artifact analysis of historic and prehistoric materials as well as floatation analysis to identify faunal material, historic diet, and urban agricultural activity.

[Aramingo Canal/Girard Interchange – Phase II](#)

Philadelphia, PA

2008

Monitored and directed excavations to locate and expose the

Aramingo Canal, a 19th century urban canal cut at Gunner's Run creek to extend Philadelphians' access and drain waste material to the Delaware River. Extensive work at and below the local water table documented historic timber bulkhead construction methodology related to landfilling and water access.

West Virginia

Dominion Transmission Pipeline – Phase IB

Marshall County, WV

2011

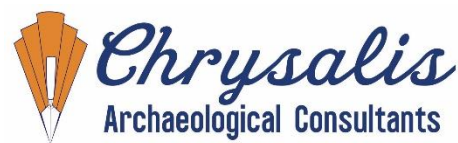
Conducted shovel test excavations along the planned reroute of an existing natural gas pipeline and at the proposed site of a gas processing facility in the floodplain of the Ohio River, just south of Moundsville and several known Adena sites.

PUBLICATIONS

Phase IB Archaeological Monitoring/Testing for the Reconstruction of The Kosciuszko Bridge, Brooklyn-Queens, New York Project (NY SHPO: 05PR00256, BIN: 1075699, Contract Number: D900011, PIN X731.24, Job Number: 025401)

Phase IB Archaeological Monitoring – The Reconstruction of The High Bridge between Manhattan and the Bronx, New York, New York (Contract Number: P-3PNYC01; Parks Number: M307-607M PlaNYC; NY SHPO Number: 10PR02849)

Matthew Brown, Ph.D. | Forensic Anthropologist



Current Academic Positions

Department of Sociology and
Anthropology, Farmingdale State
College, SUNY Assistant Professor
Fall 2015 – Present

Current Cultural Resource Management (CRM) Positions

2007: Bio-archaeologist –Office of Chief Medical
Examiner. World Trade Center Recovery Project

2009: Bio-archaeologist – Joan Geismar Ph.D. LLC.

2010 to present: Bio-archaeologist – Chrysalis Archaeology

2013 to present: Co-Owner/PI– CERMI LABS - Cultural
and Environmental Risk Management International

AREAS OF EXPERTISE

- Archaeology (Pre-Historic and
Historic Caribbean and Late
Period Roman Serbia)
- Human Paleopathology and
Bioarchaeology (Skeletal
Pathology, Dental Pathology,
Disease History)
- Forensic Anthropology and
Archaeology
- Human Osteology and Skeletal
Biology
- Dental Anthropology

EDUCATION

Ph.D., Anthropology: CUNY
Graduate Center, NY, NY 2013

B.A., Anthropology: Brooklyn
College, CUNY, NY, NY 2000

CERTIFICATIONS

OSHA 10 and 30 Hour

Human Skeletal Analysis Experience

- 1/2013 - Present Analysis of human skeletal remains - 18th Century British Navy,
Antigua 9/2000-Present Analysis of human skeletal remains 1st – 6th century Roman Sirmium,
Serbia. 9/2000-Present Analysis of human skeletal remains 1st -13th century Mala Mitrovica,
Serbia.
9/2000-Present Analysis of human skeletal remains 16th Century Turkish Cemetery of Sirmium,
Serbia.

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Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

6/2014 Analysis of human remains - Pre-Columbian Barbuda, West Indies

1/2008 Analysis of human skeletal remains -Pre-Columbian Barbuda, West Indies

6/2005 Analysis of human skeletal remains - Museum of Srem, Sremska Mitrovica, Serbia

8/2003 Field analysis of skeletal remains-Grebenac, Serbia

5/2002 Analysis of human remains -Historic New Jersey

6/2002 Analysis of human remains 18th century, Antigua

Faunal (Zooarchaeology) Analysis Experience

2009 – 2011 City Hall Park, New York City. Historic Zooarchaeological Material

2/2006-1/2008 Muddy Bay, Antigua. Prehistoric Zooarchaeological Material

1999 - 2000 Reykjavik, Iceland. Historic Zooarchaeological Material

6/1999- 7/1999 Department of Anatomy, Universidad de Puerto Rico, Recinto de Ciencias Medicas. Fluctuating Asymmetry in Mammalian Bone

6/1998-7/1998 Department of Anatomy, Universidad de Puerto Rico, Recinto de Ciencias Medicas. Fluctuating Asymmetry in Mammalian Bone

Archaeological Field Experience

7/2016 – 8/2016 Co-PI. Excavation at Galleon Beach, Antigua. 18th Century British Royal Navy Cemetery, Antigua, West Indies.
Co-PI and Project Directors: Dr Georgia Fox and Dr Reg Murphy

6/2015 – 8/2015 Co-PI. Excavation at Galleon Beach, Antigua. 18th Century British Royal Navy Cemetery, Antigua, West Indies.
Co-PI and Project Directors: Dr Georgia Fox and Dr Reg Murphy

6/2014 – 7/2014 UAV Aerial Mapping of Historic Archaeological Sites and Endangered Reef Systems, Antigua (CERMI LABS)
Project Directors: Dr Reg Murphy, Dr. Matthew Brown, Cory Look, Erin Friedman

6/2014 – 6/2014 Excavation of the Pre-Columbian Site of Indian Town Trail, Barbuda
Project Directors: Dr Sophia Perdikaris, Dr Matthew Brown

6/2013-7-2013 *Field Supervisor:* Excavation of the Pre-Columbian Archaeological Site of Indian Creek, Antigua, *Project Directors:* Dr Reg Murphy; Matthew Brown

6/2013 *Field Supervisor:* GPS Archaeological Survey, Antigua, West Indies
Project Director: Matthew Brown, Dr Reg Murphy

7/2012 *Field Supervisor:* Excavation of Historic British Sailors at Galleon Beach Antigua, Excavation and Analysis of Human Remains for BBC production Titled 'Nelson's Caribbean Hell Hole' aired on May 1st 2013

7/2008 Human Remains Excavation. CRM. Chrysalis Archaeological INC. New York
Project Director: Alyssa Loorya

1/2008 *Field Supervisor:* Brooklyn College Archaeological Field School, Barbuda
Project Directors: Dr Sophia Perdikaris, Dr Reg Murphy Dr Thomas McGovern.

8/2007 *Field Supervisor:* GPS Archaeological Survey-Indian Town Trail, Barbuda
Project Director: Dr Sophia Perdikaris

12/2006-1/2007 *Field Supervisor:* Brooklyn College Archaeological Field School, Barbuda
Project Directors: Dr Sophia Perdikaris and Dr Reg Murphy

6/2006-7/2006 *Field Supervisor:* Archaeological Survey, Antigua and Barbuda
Project Directors: Dr Sophia Perdikaris and Dr Reg Murphy

1/2006-2/2006 *Field Supervisor:* Archaeological Fieldwork, Muddy Bay, Antigua
Project Director: Dr Reg Murphy

6/2005 *Field Supervisor:* Archaeological Fieldwork, Lott House, Brooklyn NY
Project Director: Dr Arthur Bankoff

9/2004 *Field Supervisor:* Archaeological Field Work Winthrope's Bay, Antigua
Project Director: Dr Reg Murphy

7/2004-8/2004 *Assistant to the NSF REU Program:* Archaeological Field Work, Iceland
Project Directors: Dr Sophia Perdikaris and Dr Thomas McGovern

8/2003 *Field Supervisor:* Excavation of Human Remains: Archaeological Field
Work, Serbia. Project Director: Dr. Arthur Bankoff

7/2003-8/2003 *Assistant to the NSF REU Program:* Cemetery Excavation Archaeology Field
Work, Iceland. Project Directors: Dr Sophia Perdikaris, Dr Thomas McGovern, Dr.
Jim Wollet

6/2003-7/2003 *Field Assistant:* Archaeology Field Work, Faroe Islands
Project Directors Dr Sophia Perdikaris, Dr Thomas McGovern and Dr Jim Wollett

7/2002-8/2002 *Assistant to the NSF REU Program:* Archaeological Field Work, Iceland
Project Directors: Dr Sophia Perdikaris and Dr Thomas McGovern

5/2002-6/2002 *Field Assistant:* Human Remains Analysis Archaeological Survey, Antigua
Project Directors: Dr. Reg Murphy and Dr. Sophia Perdikaris

March 2, 2002 Archaeological Rescue Effort at World Trade Center, NYC
Use of Archaeological Methods in effort to recover potential Human Remains
from locations near World Trade Center Disaster
Project Directors: Dr. Sophia Perdikaris and Dr. Richard Gould

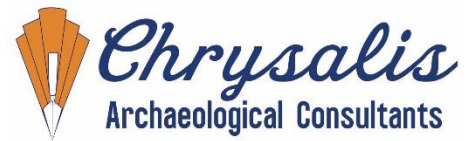
7/2001-8/2001 Research Experience for Undergraduates NSF-REU Program, Iceland
Project directors: Dr. Sophia Perdikaris and Dr. Thomas. McGovern.

7/2000-8/2000 Archaeological Field School, Hofstadir, Iceland.
Project directors: Dr. Sophia Perdikaris and Dr. Thomas McGovern.

5/2000-6/2000 Soil Resistivity Survey: Prospect Park Archaeological Survey Brooklyn, NY.
Project Director: Jerry Sawyer

Lisa Geiger, MA, MS, RPA |

Field Director



Ms. Geiger has ten years of experience working in all phases of archaeological excavation and reporting. Her specializations include both prehistoric and historic contexts in the Middle Atlantic, New England, and Midwest regions. Her professional focus centers on historic urban infrastructure and consumer culture. She has extensive knowledge of laboratory analysis and archival preparation techniques for prehistoric and historic artifacts.

SELECTED PROJECT EXPERIENCE BY STATE

Illinois

[Rockies Express Pipeline – Phase III \(2008\)](#)

Pittsfield, IL

Excavated Phase III prehistoric upland occupation site, including structural, hearth, storage, and tool production areas. Analysis included tool microanalysis and storage vessel lipid testing to assess local faunal resources utilized for food and hides. Conducted in advance of Rockies Express – East natural gas pipeline installation.

New Hampshire

[Telecommunication Tower Weber Lane Camp Site NH-5050C – Phase IB \(2015\)](#)

Cheshire County, NH

Conducted site ground survey and shovel test pit excavation in historic town and prehistorically sensitive region in advance of cell tower construction in southern New Hampshire.

New Jersey

[Lenape Farms Wetland Restoration Project – Phase IA and IB \(2015\)](#)

Atlantic County, NJ

Conducted site assessment research and shovel test pit excavation in a WWI munitions plant historic district and prehistorically sensitive surrounding area in advance of wetland enhancement activities.

[Deep Run Preserve Wetland Mitigation Project – Phase IA \(2014\)](#)

Middlesex County, NJ

Performed documentary research and site survey for historic and prehistoric remains in advance of state-funded wetlands preservation and landscape remodeling designed to reduce invasive species in New Jersey Pinelands wetland habitats.

AREAS OF EXPERTISE

Archaeological Survey and Excavation

Public Outreach and Education

Laboratory Preparation and Data curation

EDUCATION

M.S., Library and Information Science: 2018, University of Illinois at Urbana-Champaign

M.A., Anthropology: 2015, Hunter College (CUNY)

B.A., Archaeology, Classical Studies: 2008, Dickinson College

CERTIFICATIONS

30-Hour OSHA Construction Industry Training (2020)

40-Hour OSHA HAZWOPER Safety Training (2009)

10-Hour OSHA Construction Safety Training (2010)

SWAC - Secure Worker Access Consortium (2014)

PROFESSIONAL EXPERIENCE

2019-2020: Chrysalis Archaeological Consultants

2017-2019: Field Museum of Natural History

2011-2016: Chrysalis Archaeological Consultants

2013: AIA/Carr Plantation Outreach

2008-2011: URS Corporation

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Jamesburg County Park Wetland Mitigation Project – Phase IA (2014)

Middlesex County, NJ

Conducted documentary research and site survey for historic and prehistoric remains within a nineteenth-century industrial town that utilized extensive historic land forming. Performed research in advance of state-funded activities to recreate native Pinelands wetland habitats in the Pinelands Spotswood Outlier region.

Thompson Park Federal Road Fields Wetland Mitigation Project – Phase IA (2014)

Middlesex County, NJ

Performed documentary research and site survey in a rural, nineteenth-century industrial area in advance of state-funded wetlands management activities intended to remove invasive species in Pinelands Spotswood Outlier region.

Pleasant Grove, Jackson Township – Phase IB (2012)

Jackson Township, NJ

Participated in Phase I excavation to assess historic and prehistoric cultural character of rural farmlands and wetlands development areas in Ocean County, NJ.

Allied Textile Printing Site Cultural Research Investigation – Phase II (2010)

Paterson, NJ

Investigated the 19th century remains of the Colt Gun Mill, Mallory Mill, Passaic Mill, and Todd Mill within the Allied Textile Printing complex, part of America's first planned industrial community. Conducted trenching and unit excavation to map mill raceways and architectural progression. Performed in conjunction with Hunter Research.

Rutgers University Campus Expansion – Phase II (2011)

Camden Co., NJ

Testing and mitigation of Site 28CA124 on Rutgers Camden Campus to recover 19th century residential structures and materials in area of planned new student housing.

Multi-Use Pathway at Fort Hancock, Sandy Hook Unit, Gateway National Recreation Area – Phase II (2010)

Monmouth County, NJ

Conducted testing in historical and prehistorically sensitive oceanfront areas for the National Park Service in advance of hiking and bike trail improvements around Sandy Hook. Special attention paid to 19th century battery area. Required training in unexploded ordnance identification.

DuPont Salem River Public Access Boat Ramp – Phase III (2008)

Salem County, NJ

Conducted excavations to expose a prehistoric encampment that included hearth features and occupation material from the Late Archaic through Late Woodland Periods. Performed in advance of Salem River public use recreational docks.

PROFESSIONAL ORGANIZATIONS

Register of Professional Archaeologists (RPA)

Professional Archaeologists of New York City (PANYC)

Society for Historic Archaeology (SHA)

CONTACT INFORMATION

lgeiger@chrysalisarchaeology.com

New York

[The Reconstruction of the Olde Towne of Flushing Burial Ground – Phase IB \(2020\)](#)

Queens, New York

Work plan for archaeological monitoring of playground construction on park formerly used as a nineteenth century municipal burial ground, including designated usage for African American residents in the 1840s.

[Reconstruction of Playground at Peter Minuit Park, Battery City – Phase IB \(2020\)](#)

Manhattan, NY

Testing and monitoring report for reconstruction of the Battery Playscape playground in Lower Manhattan, including positive identification of original Battery Wall segment.

[St. Peter's Church Westchester Square Development Project – Phase IB \(2020\)](#)

Bronx, New York

Shovel pit testing and unit excavation to assess the grounds of the Landmarked St. Peter's Episcopal Church and Cemetery complex. Testing lead to positive identification of location of Second Quaker Meeting house, destroyed by fire in the late nineteenth century.

[Washington Square Park Water Mains Improvements – Phase IB \(2020\)](#)

Manhattan, NY

Conducted monitoring of street bed excavation surrounding three-quarters of Washington Square Park and surrounding roadways for water main upgrades and replacements. Excavation uncovered historic interments and potter's field burials.

[Brightview Senior Living Center– Phase IA \(2020\)](#)

Port Jefferson Station, NY

Documentary study and site assessment in advance of developing rural and suburban land in north central Suffolk County, Long Island.

[Long Beach Water Pollution Control Plant \(WPCP\) Consolidation – Phase IA \(2020\)](#)

Nassau County, New York

Assessment of potential routes for upgrades to sanitation station and new sanitation piping through Long Beach and small south shore coastal island areas.

[Conference House Pavilion Reconstruction – Phase IB \(2020\)](#)

Staten Island, NY

Archaeological monitoring of stripping and concrete work for construction of a new pavilion in Conference House Park and Ward's Point Conservation Area, site of documented Native American occupation as early as Early Archaic period and historic seventeenth century home and Revolutionary War-era manor.

[CC Moore Homestead Park – Phase IB \(2019\)](#)

Queens, NY

Archaeological testing of playground reconstruction over park that previously housed a seventeenth and eighteenth century homestead and former British Revolutionary War headquarters.

[New NY Bridge at the Tappan Zee Bridge – Phase II \(2016\)](#)

Tarrytown, NY

Conducted monitoring of demolition tasks and field testing to assess culturally sensitive areas determined by previous finds and documentary research as part of construction of a new bridge over the Hudson River. Recovered architectural and material evidence of a nineteenth century estate house and associated outbuildings.

[Major Deegan Expressway Upgrade and Maintenance – Phase IA \(2016\)](#)

Bronx, NY

Conducted Phase IA documentary research and site reconnaissance for historic highway repairs and expansions, under special exception from FHWA Section 106 expediency regulations based on the roadway's historic character and unique mid-twentieth century parkway construction.

[Washington Square Park Water Main Replacement – Phase IB \(2015\)](#)**Manhattan, NY**

Oversaw excavations to characterize future construction work around Washington Square Park and its surrounding area in order to replace and upgrade water main, sewer, and additional utility services. The park area served as a potter's field and contagious disease cemetery and contains potentially up to 20,000 eighteenth and early nineteenth century burials in addition to structures related to the first free African landowners in the city from the seventeenth century.

[Pelham Bay Park – Phase II \(2015\)](#)**Bronx, NY**

Designed and conducted Phase II testing to assess the nature and extent of preliminarily identified prehistoric shell middens near Eastchester Bay. Recovered extensive evidence of prehistoric activity including shell deposits, lithic tools and reduction materials, and Woodland-era decorated ceramics. Performed for the National Parks Service in advance of park land management and removal of a twentieth-century seawall damaged by Superstorm Sandy.

[Kosciuszko Bridge Replacement – Phase IB \(2014-2015\)](#)**Brooklyn, NY and Queens, NY**

Monitored demolition of industrial warehouse structures and excavation for temporary bridge footings for evidence of prehistoric activity and early Dutch and English settlement structures and burial areas. Performed for the NY State Department of Transportation in advance of deconstruction and replacement of an early twentieth-century truss bridge at a main borough thoroughfare; replacement activities were part of the first cable-stayed bridge built in New York City since the Brooklyn Bridge.

[Staten Island Farm Colony – Phase IB \(2014\)](#)**Staten Island, NY**

Created and enacted a ground survey testing plan to delineate the boundaries of a potters' field cemetery utilized by residents of a 19th century poor house colony in Richmond County. Performed shovel test excavations to identify early 19th century living areas and to collect materials from a fire-damaged refuse deposit sourced from the poor house institution.

[Village of Ellenville Water System Improvements – Phase IB \(2014\)](#)**Ulster County, NY**

Conducted shovel test pit excavation and walking survey in a historically and prehistorically sensitive town in central New York in advance of improvements to the town water supply and delivery systems.

[Floyd Bennett Field – Phase II \(2014-2015\)](#)**Brooklyn, NY**

Conducted Phase II monitoring for soil contamination remediation across prehistoric and historic-era marshland sites. Identified structures and deposits related to nineteenth century municipal waste management and industrial waste processing plants. Assisted in waste characterization sampling. Generated regional site stratigraphy guide.

[50 Bowery Street – Phase IA, Phase IB \(2013\)](#)**New York City, NY**

Performed documentary study to investigate site use history with a focus on verification of 18th and early 19th century tavern and theatre landscape in Bowery section of lower Manhattan. Conducted excavation to expose 18th and 19th century modified structures including foundations and a cistern.

[Peck Slip Rehabilitation – Phase IA, Phase II \(2011-2014\)](#)

New York City, NY

Supplemented historic business and property background research for Phase IA reporting. Conducted Phase II monitoring, mapping, and feature-specific excavations during road reconstruction and utility replacements at Peck Slip, an 18th and 19th century shipping area and Historic District in downtown Manhattan. Organized public outreach sessions incorporating collaborative lectures and didactic displays. Generated comprehensive, multi-site report synthesizing recent South Street Seaport regional archaeological excavation results.

[Gowanus Canal Study – Phase IA \(2012\)](#)

Brooklyn, NY

Generated 18th and 19th century industrial and commercial production digital site map for historic character study of Gowanus area in southwest Brooklyn leading to application for Historic District status.

[Fulton Street Reconstruction – Phase II \(2011-2014\)](#)

New York City, NY

Monitored Phase II excavations and investigated historic architecture and water supply features in advance of road reconstruction and utility replacements at Fulton Street in downtown Manhattan's South Street Seaport Historic District. Generated comprehensive, multi-site report synthesizing infrastructural elements uncovered by Seaport area excavation activities.

[Archaeological Investigations at City Hall Park – Phase II, Phase III \(2010-2011\)](#)

New York City, NY

Performed Phase II and III excavations at City Hall pinpointing historic architecture and features. Highlighted discoveries include a pre-revolution British jail, early water management features, and large scale refuse deposits. Performed in conjunction with URS.

[Liberty Island Utility Upgrade Investigation – Phase IB \(2010\)](#)

New York Harbor, NY

Conducted shovel tests around the Statue of Liberty and Fort Wood to identify historic and prehistoric materials in advance of utility installations across National Park Service lands. Identified shell middens related to prehistoric island occupation and exploitation of harbor resources.

[Fort Edward/ GE Hudson River Remediation – Phase III \(2009\)](#)

Washington County, NY

Performed excavation along the Hudson River to identify the boundaries of the 18th century Fort Edward as well as prehistoric and contact-era Native American tools and trade goods. Performed shovel test pits across Hudson River islands to attempt to locate mass graves and quarantine housing related to 18th and 19th century yellow fever outbreaks.

[Martin Van Buren National Historic Site– Phase II \(2009\)](#)

Kinderhook, NY

Excavated test pits and trenches to identify the location and trajectory of the original Old Post Road transit line at the Martin Van Buren post-presidential residence and National Historic Site.

Pennsylvania

[Rapp Run and Pine Run Flood Retarding Structure Investigations – Phase IB \(2010\)](#)

Montgomery County, PA

Performed ground survey and shovel tests in prehistorically sensitive areas of Upper Dublin Township in advance of flood control improvements.

[Archaeological Testing and Mitigation, Delaware Water Gap Recreation Area Site 36PI136 – Phase III \(2010\)](#)
East Stroudsburg, PA

Performed Phase III excavations in prehistorically sensitive Woodland period river bank areas at Smithfield Beach and Bushkill Access in advance of comfort station and water access enhancements.

[Lancaster Intermodal Transport Center – Phase III \(2010\)](#)

Lancaster, PA

Performed excavations to expose site 36LA1494 in historic downtown Lancaster City. Identified 18th century wells, privies, structures, and a kiln related to local pottery works as well as foundations of the flagship Pennsylvania Railroad train station from 1860.

[Cabot Gas & Oil Pipeline – Phase IB \(2008\)](#)

Wyoming County, PA

Excavated shovel test pits along multiple portions of upland pipeline routes to assess prehistorically sensitive Woodland areas.

[I-95/Girard Interchange Project – Phase II, Phase III \(2009-2011\)](#)

Philadelphia, PA

Performed extensive excavation across three miles of 18th and 19th century residential and commercial areas in one of Philadelphia's first communities. Identified wells, privies, architectural features, and property line variations, as well as occupation areas related to contact-era Native Americans. Identified the Dyottville Glassworks riverfront industrial plants and planned worker communities. Conducted artifact analysis of historic and prehistoric materials as well as floatation analysis to identify faunal material, historic diet, and urban agricultural activity. Conducted for PA Dept. of Transportation (PADOT).

[Aramingo Canal/Girard Interchange – Phase II \(2008-2009\)](#)

Philadelphia, PA

Monitored and directed excavations to locate and expose the Aramingo Canal, a 19th century urban canal cut at Gunner's Run creek to extend Philadelphians' access and drain waste material to the Delaware River. Extensive work at and below the local water table documented historic timber bulkhead construction methodology related to landfilling and water access. PA Dept. of Transportation (PADOT).

West Virginia

[Dominion Transmission Pipeline– Phase IA \(2009\)](#)

Marshall County, WV

Conducted documentary research to investigate intact historic properties along proposed natural gas pipeline and processing facility areas. Conducted for Dominion Transmission Inc.

CARIBBEAN

[Carr Plantation Archaeological Project \(2013\)](#)

Montserrat, West Indies

Conducted excavations at a 17th and 18th century sugar plantation to reveal historical structures and property boundaries. Performed ground survey to identify previously undocumented plantation lands threatened by Soufriere Hills volcanic flows. Assisted in educational programming with local secondary schools to instruct students in survey and excavation methodology. Performed in conjunction with Boston University and an Archaeological Institute of America outreach grant.

[Gun Hill Archaeological Investigation and Mitigation – Phase II \(2013\)](#)

Montserrat, West Indies

Conducted ground survey and excavation to reveal and document an 18th century canon battery tower and artillery storage area. Performed for Montserratian Parliament and British Governor oversight. Carried out in advance of municipal construction to build a new harbor and island capital after resettlement due to volcanic eruption.

PROFESSIONAL CONFERENCE PAPERS

Council for Northeast Archaeology (CNEHA) Annual Conference, November 2014: “Building New York’s Seaport: Pier and Crib Construction in the Eighteenth and Nineteenth Centuries.”

New York State Archaeology Association, Metropolitan Chapter, October 2014: “A Competent Womanhood: Forming New Identities Through Personal Healthcare and Hygiene.”

Society for Historical Archaeology (SHA), January 2014: “Consumer Hygiene, Contraception, and Douching – Sex Work and Working Class Women”

Council for Northeast Archaeology (CNEHA), November 2013: “Brothels and Bones: Consumer Hygiene and Reproductive Healthcare From City Hall”

Professional Archaeologists of New York (PANYC), May 2013: “Seaport Infrastructure and Water Service”

PUBLICATIONS

2020: Washington Square Park, Water Mains Connections and Replacement, New York, New York.

2020: Phase IA Historical Documentary Report and Archaeological Assessment for the Proposed Brightview Senior Living Center, 1147 NY-112, Port Jefferson Station, Suffolk County, New York

2016: Major Deegan Expressway Maintenance and Expansion – The Bronx, Bronx County, New York.

2016: South Street Seaport: Archaeological Investigations at Peck Slip and Fulton Street – Peck Slip and Fulton Street Reconstruction Projects, New York (New York County), New York.

2015: Phase IB Archaeological Field Test of the Proposed Telecommunication Tower (Weber Lane Camp Site) – NH 5050C, 36 Weber Lane, Fitzwilliam, New Hampshire (NH 5050C).

2015: Phase IB Archaeological Monitoring for the Floyd Bennett Field, Brooklyn, Kings County, New York – US Army Corps of Engineers (ACOE-1) Project (Proj. No. 10-3901.00, Contract No. W912DQ-10-D-3008).

2015: Phase II Archaeological Testing for the Reconstruction of the Waterfront between Pelham Bay Landfill and Watt Avenue in Pelham Bay Park, Bronx, Bronx County, New York (NY SHPO: 13PR01852).

2015: Phase IA Historical Documentary Report and Archaeological Assessment of the Deep Run Preserve Wetland Mitigation Project; Block 8003; Lots 7.11, 8, 9, and 10; Old Bridge Township, Middlesex County, New Jersey

2015: Phase IA Historical Documentary Report and Archaeological Assessment of the Jamesburg County Park Wetland Mitigation Project; Block 18; Lots 5, 6, 6.05, and 7; Helmetta Borough, Middlesex County, New Jersey

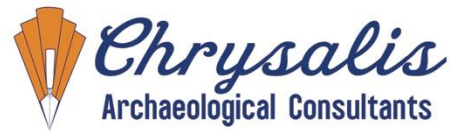
2015: Phase IA Historical Documentary Report and Archaeological Assessment of the Pin Oak Forest Conservation Project; Block 1020.01; Lots 1.03, 1.04, 1.05, and 1.06; Woodbridge Township, Middlesex County, New Jersey

2015: Phase IA Historical Documentary Report and Archaeological Assessment of the Thompson Park Federal Road Fields Wetland Mitigation Project; Block 20; Lots 28.06 and 28.08 Monroe Township, Middlesex County, New Jersey

2014: Phase IA/IB Archaeological Assessment, NYC Farm Colony (LPC #LP-01408). Staten Island, Richmond County, New York.

2012: Phase IA Cultural Resource Documentary Assessment of the Peck Slip Reconstruction - Project Extension – Beekman Street between Front Street and South Street, New York (New York County), New York – Contract Number: HWM1159.

Eileen Kao | Field Director



Since 2008, Ms. Kao has worked in all phases of archaeological planning, excavation, and reporting. Her specializations include both prehistoric and historic contexts in the Middle Atlantic, New England, and Midwest regions. She has extensive knowledge of laboratory analysis, and archival preparation techniques for prehistoric and historic artifacts, and has experience with in-field GPS devices.

SELECTED PROJECT EXPERIENCE BY STATE

Connecticut

Telecommunications Tower Site –Phase IB (2015)

New Haven County, CT

Coordinated and directed ground survey testing plan in advance of a proposed boundary extension to accommodate a new ground space at existing cell tower Site 243036.

New Jersey

Thompson Park Federal Road Fields Wetland Mitigation Project – Phase IB (2015)

Middlesex County, NJ

Coordinated and directed ground survey testing plan in advance of state-funded wetlands management activities intended to remove invasive species and support native flora and fauna.

Oldmans Creek Freshwater Wetland Enhancement and Riparian Zone Restoration Project – Phase IB (2015)

Salem County, NJ

Coordinated and directed ground survey testing plan in an area determined to have high potential for prehistoric archaeological resources in advance of proposed wetland enhancements.

Oldmans Creek Freshwater Wetland Enhancement and Riparian Zone Restoration Project – Phase IA (2015)

Salem County, NJ

Conducted documentary and archival research to determine cultural sensitivity in advance of proposed wetland enhancements to repair a functionally impaired micro-ecosystem affected by years of agricultural activities.

AREAS OF EXPERTISE

Archaeological Survey and Excavation

Laboratory Analysis

Industrial Archaeology

Documentary and Historic Research

EDUCATION

M.A., Anthropology: (Anticipated),
Hunter College

B.A., Anthropology: 2007, University
of Pittsburg, Pittsburg, PA

CERTIFICATIONS

30-Hour Outreach Training for the
Construction Industry (2020)

8-Hour Annual HAZWOPER Refresher
Course (2012)

10-Hour OSHA Construction Safety
Training (2010)

40-Hour HAZWOPER Safety Training
and Update (2009 & 2011)

SWAC – Secure Worker Access
Consortium (2014)

PROFESSIONAL EXPERIENCE

2011-Present: Chrysalis
Archaeological Consultants

2008-2011: URS Corporation

CONTACT INFORMATION

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One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

Pleasantville Atlantic Coastal Mitigation Project – Phase IA (2014)

Atlantic County, NJ

Conducted documentary and archival research to determine cultural sensitivity in advance of wetland mitigation and improvement activities on the Outer Coastal Plain in an area that has suffered much environmental deterioration due to extensive ditching and filling over time.

Lenape Farms Atlantic Coastal Mitigation Project – Phase IB (2014)

Atlantic County, NJ

Developed and directed a ground survey testing plan at various sites within the outdoor recreational area with the potential to yield prehistoric cultural resources and prepared a final report summarizing results.

Lenape Farms Atlantic Coastal Mitigation Project – Phase IA (2014)

Atlantic County, NJ

Conducted documentary and archival research to determine cultural sensitivity in advance of wetland mitigation and improvement activities at a privately owned outdoor recreational area on the Outer Coastal Plain in New Jersey, acquired by the state as part of the Green Acres Program of environmental conservation.

Southard Avenue, Howell Township – Phase IB (2012)

Ocean County, NJ

Created and enacted a ground survey testing plan at historic farm site with the potential to yield cultural historic resources. Conducted research and prepared a final report summarizing results.

Pleasant Grove, Jackson Mitigation Site – Phase IB (2012)

Ocean County, NJ

Created and enacted a ground survey testing plan to investigate prehistoric and historic potential of 19th century farmland. Conducted research and testing of a 10 acre wetland mitigation area, and prepared a final report summarizing the results.

Oradell Reservoir Mitigation Bank – Phase IA/IB (2012)

Bergen County, NJ

Conducted historic documentary research to determine cultural sensitivity and directed ground survey of a wetland mitigation area within the Hackensack River valley. Coordinated field efforts to explore an area with the potential to yield prehistoric resources and prepared a final report summarizing the results.

Williams Natural Gas Pipeline, Stanton Loop – Phase IB (2011)

Hunterdon County, NJ

Testing and surface survey of landforms with high to low probability for cultural resources along existing gas pipeline to determine impact of proposed new pipeline.

Rutgers University Campus Expansion – Phase II (2011)

Camden County, NJ

Testing and mitigation of Site 28CA124 on Rutgers Camden Campus to recover cultural remains in area of planned new student housing.

[Delaware Water Gap National Recreational Area Demolish and Remove Hazardous Structures Park-Wide Project – Phase IB \(2011\)](#)

Monroe County, PA/Sussex County, NJ

Conducted ground survey for possible prehistoric sensitivity in advance of demolition of degraded and abandoned structures in the Delaware Water Gap National Recreation Area. Conducted for the National Park Service.

New York

[Washington Square Park Water Main Replacement and Connection Project – Phase IB \(2015-2020\)](#)

New York City, NY

Monitored excavations for the replacement/upgrade of water main, sewer, and additional utility services and conducted excavation of human remains around Washington Square Park, a known potter's field and contagious disease cemetery.

[Ingersoll Senior Residences \(275 Myrtle Avenue\) – Phase IB/II \(2017\)](#)

Brooklyn, NY

Monitored construction excavation of a former residential block across from historic Fort Greene Park and directed the documentation and excavation of 19th century basements and associated mid-19th century shaft features. Contributed to site reporting including artifact analysis and graphics.

[South Street \(South\) Reconstruction – Phase IB \(2017\)](#)

New York City, NY

Monitored excavations for drainage and infrastructural improvements at a 19th shipping district in close proximity to the Seaport Historic District in downtown Manhattan.

[Hart Island, New York – Shoreline Stabilization Project – Phase IA \(2017\)](#)

Bronx, NY

Conducted historic documentary research to determine archaeological sensitivity of a current public cemetery with origins in Civil War operations and assess the impacts of proposed activities to repair the shoreline damaged by Superstorm Sandy.

[Artesian Way, Nissequogue – Phase II \(2016\)](#)

Suffolk County, NY

Coordinated and directed archaeological testing at Daphne Bayne Shih Estate, also known as the Matheson-Stewart-Lane Estate, in an area slated for new development that was determined as sensitive for Native American activity.

[Ingersoll Senior Residences \(275 Myrtle Avenue\) – Phase IA \(2016\)](#)

Brooklyn, NY

Conducted historic documentary research to determine archaeological sensitivity of a former residential block across from historic Fort Greene Park in advance of construction of new senior housing.

[Charles Point Multi-Use Waterfront Trail – Phase IB \(2016\)](#)

West Chester County, NY

Developed and directed a ground survey testing plan in advance of the construction of a 10' wide multi-use path along an approximately 3,500' long elevated portion of the Hudson River shore line.

John Jermain House, 221 Main Street – Phase IA (2016)

Suffolk County, NY

Contributed to a documentary study investigating the presence of a shaft feature on the private property of the historic John Jermain House, located in a village known for its major whaling industry.

Alcoa Powerhouse – Phase IA (2016)

St. Lawrence County, NY

Contributed documentary research to determine eligibility of the Old Alcoa Powerhouse for inclusion on the National Register of Historic Places.

Bronx River Greenway – Phase IB (2016)

Bronx, NY

Monitored excavations within a portion of the Bronx River Greenway, on behalf of The City of New York – Department of Parks and Recreation.

Reconstruction of Del Valle Square – Phase IA (2017)

Bronx, NY

Conducted documentary and archival research to determine historic cultural sensitivity in a bustling commercial area in the Bronx, in advance of transportation and traffic operations redesign.

New NY Bridge Project – Phase IB (2015)

Tarrytown, NY

Conducted shovel testing and monitored construction excavation and demolition on the site of a former estate associated with historical figures responsible for early innovations in publishing.

New NY Bridge Project – Phase IA (2015)

Tarrytown, NY

Completed additional documentary research investigating the potential historical significance of a property to be impacted by the Tappan Zee Bridge - Hudson River Crossing Replacement Project.

Van Cortlandt Park Dog Run – Phase IB (2015)

Bronx, NY

Performed shovel test excavations in a historically and prehistorically sensitive area of the Bronx to determine the possible impact on the nearby site of the Stockbridge Indian Massacre.

Pelham Bay Park – Phase II (2015)

Bronx, NY

Organized and participated in excavation along the shoreline of Pelham Bay in areas determined as sensitive for Native American activity in advance of construction activities to repair the existing seawall and to develop the landscape for recreational usage.

Kosciuszko Bridge Replacement – Phase IB (2014-2015)

Queens, NY

Monitored excavation for utility emplacement for evidence of prehistoric activity and early Dutch and English settlement structures and burial areas.

Staten Island Farm Colony – Phase IB (2014)

Staten Island, NY

Created and directed a ground survey testing plan to delineate the boundaries of a potters' field cemetery utilized by residents of a 19th century poor house colony in Richmond County. Performed shovel test excavations

to identify early 19th century living areas and to collect materials from a fire-damaged refuse deposit sourced from the poorhouse institution.

[Forth Wadsworth – Phase IB \(2014\)](#)

Staten Island, NY

Monitored ongoing excavations for drainage and infrastructural improvements at a Revolutionary War era fort with the potential to yield pre-historic cultural resources due to its location adjacent to the historically rich waters of the New York Bay.

[City Island Bridge Replacement – Phase II Monitoring \(2014\)](#)

Bronx, NY

Monitored excavations in Pelham Bay Park and City Island in advance of the City Island Bridge replacement to mitigate any impacts to potential pre-historic or historic cultural resources along the river shoreline area.

[50 Bowery – Phase IA/IB \(2013\)](#)

New York City, NY

Contributed to documentary research to determine potential for archaeological sensitivity and conducted monitoring, mapping, and feature-specific excavations to investigate the site use history of a former tavern structure with potential historic significance in the Bowery, Manhattan.

[Hendrick I. Lott House – Phase IB/Monitoring \(2013\)](#)

Brooklyn, NY

Participated in excavation of outdoor features associated with 19th century rural and farmland activities at one of the oldest remaining historic houses in New York City.

[DEL-359 – Catskill and Delaware Interconnection Replacement – Phase IB \(2013\)](#)

Gardiner, Ulster County, NY

Led shovel test to investigate potential prehistoric and historic cultural nature of an aqueduct water shaft station in the Hudson River Valley.

[John Bowne House – Phase IB/Monitoring \(2013\)](#)

Queens, NY

Conducted Phase IB excavation of household features related to 18th and 19th century Dutch settlement landscape in this portion of Long Island. Monitored excavations for structural upgrades to the historic house.

[Little Bay Park – Monitoring \(2013\)](#)

Queens, NY

Conducted Phase II monitoring for infrastructural improvements at a park site with the potential for prehistoric and historic cultural resources related to turn of the century recreational usage by New York City's elite.

[High Bridge Park – Monitoring \(2013-2015\)](#)

New York City, NY

Participated in identification of historic cultural resources beneath the High Bridge, which once housed the historic Croton Aqueduct. Catalogued potential cultural and architectural artifacts, the remnants of infrastructural development activities beneath the bridge.

Archaeological Field Test of 246 Front Street – Phase IA/IB (2012)

New York City, NY

Contributed to historic property background research and monitored test pit excavations in advance of construction on the property to assess any remaining historic cultural resources related to 18th and 19th century commercial activities. Documented findings and prepared a final report summarizing the results.

Fulton Street Reconstruction – Phase II (2011-2014)

New York City, NY

Monitored excavations and investigated historic architecture and water supply features in advance of road reconstruction and utility replacements at Fulton Street in downtown Manhattan's South Street Seaport Historic District.

Gowanus Canal – Phase IA (2011)

Brooklyn, NY

Completed an assessment of archaeological/historic sensitivity for the Gowanus Canal area of Brooklyn, NY as part of NY SHPO's investigation into expansion of the historic district. Developed map analysis to potentially locate the burial site of American Revolutionary War soldiers.

Peck Slip Rehabilitation – Phase II (2011-2014)

New York City, NY

Supplemented historic business and property background research. Conducted monitoring, mapping, and feature-specific excavations during road reconstruction and utility replacements at Peck Slip, an 18th and 19th century shipping area and Historic District in downtown Manhattan. Organized public outreach sessions incorporating collaborative lectures and didactic displays.

Archaeological Investigations at City Hall Park – Phase II, Phase III (2010-2011)

New York City, NY

Performed Phase IB and Phase II excavations at City Hall pinpointing historic architecture and features. Highlighted discoveries include a pre-revolution British jail, early water management features, and large scale refuse deposits. Performed in conjunction with URS.

GE Hudson River Superfund Site – Phase IB (2009)

Washington County, NY

Testing to identify potential shoreline impacts from GE Hudson River/PCB Superfund site-dredging efforts.

Fort Edwards/GE Hudson River Remediation – Phase III (2009)

Washington County, NY

Emergency mitigation excavations to recover submerged wooden portions of the historic Fort Edward site as part of the overall GE Hudson River Dredging program

Ohio

Rockies Express Pipeline – Phase III (2008)

Perry County, OH

Testing and mitigation of Sites 33Pe839 and 33Pe807 along a proposed reroute of existing pipeline. Sites consisted of Woodland period features and lithic scatters. Conducted for the Rockies Express-East Pipeline.

Pennsylvania

[Sharswood/Blumberg Revitalization Area – Phase IA \(2018\)](#)

Philadelphia County, PA

Contributed to an assessment of archaeological/historic sensitivity for the Sharswood Revitalization Area on behalf of AECOM.

[I-95/Girard Interchange Project – Phases II-III \(2009-2011\)](#)

Philadelphia County, PA

Testing and mitigation of various sites along a three-mile stretch of the I-95 corridor to recover cultural remains from previously demolished 17th to early 20th century occupations in the area. Conducted for PA Dept. of Transportation (PADOT), part of overall I-95 expansion project.

[Rapp Run and Pine Run Flood Retarding Structure Investigations – Phase IB \(2010\)](#)

Montgomery County, PA

Testing for proposed Rapp Run and Pine Run flood control structures to support overall flood controlling improvements. Conducted for Upper Dublin Township.

[Archaeological Testing and Mitigation, Delaware Water Gap Site National Recreation Area Site 36PI136 – Phase III \(2010\)](#)

Delaware Water Gap, Monroe County, PA

Testing and mitigation of Site 36PI136 in the Delaware Water Gap National Recreation Area for proposed expansion of comfort stations at Smithfield Beach and Bushkill Access. Conducted for HF3 Construction and the National Park Service.

[SR 263 Road Improvement Project – Phase IB \(2010\)](#)

Bucks County, PA

Testing to identify potential cultural resources in areas of planned storm water drainage basin improvements. Conducted for PADOT

[Lancaster Intermodal Transport Center – Phase III \(2010\)](#)

Lancaster County, PA

Mitigation of Site 36LA1494, in historic downtown Lancaster City. Conducted for Red Rose Transit Authority.

[Cabot Gas & Oil Pipeline – Phase IB \(2008-2009\)](#)

Susquehanna County, PA

Testing of proposed gas pipeline area to connect new wells with existing pipelines. Conducted for Cabot Oil & Gas Corporation.

West Virginia

[Dominion Transmission Inc., Natrium Plant – Phase IB \(2011\)](#)

Marshall County, WV

Ground survey of a floodplain of the Ohio River, just south of Moundsville and known Adena sites, for proposed gas processing facility and reroute of exiting natural gas pipeline. Conducted for Dominion Transmission Inc.

Vermont

[Proposed Cell Phone Tower Site SBA Fay's Corner – Phase IB \(2013\)](#)

Chittenden County, VT

Led archaeological investigations of the possible prehistoric and historic cultural sensitivity of upland rural farmland. Coordinated ground survey and prepared a final report summarizing the findings.

Addendum Report for Cell Phone Tower 15084-S – Phase IB (2013)**Windsor County, VT**

Led archaeological investigations of the possible prehistoric cultural resources associated Native American occupation of an area adjacent to a tributary of the Connecticut River. Coordinated ground survey and prepared a final report summarizing the findings.

PROJECT REPORTS/PUBLICATIONS

Phase IB Archaeological Monitoring for the South Street South Reconstruction from Old Slip to Fulton Street, New York, New York Project (NYC EDC Contract No. 17060019 and NY SHPO: 16PR06025 South Street Reconstruction).

Phase IA - Documentary Study and Archaeological Assessment for the Hart Island, Bronx (Bronx County), New York – Shoreline Stabilization Project

Preliminary Phase IB Archaeological Field Test of 275 Myrtle Avenue, Block 2034, Lot 1, Brooklyn (Kings County), New York

Phase IA Historical Documentary Report and Archaeological Assessment of 275 Myrtle Avenue (Ingersoll Senior Residences), Fort Greene, Brooklyn (Kings County), New York

Phase IA Documentary Study and Archaeological Assessment of P-102DELV- Reconstruction of Del Valle Square, Borough of the Bronx

Phase IA Historical Documentary Report and Archaeological Assessment of the Alcoa Powerhouse, Massena (St. Lawrence County), New York

Phase II Archaeological Field Testing at Artesian Way, Nissequogue, Suffolk County, New York, NY SHPO Project Number: 08PR00799

Phase IA Historical Documentary Report and Archaeological Assessment of the well located at 221 Main Street, Sag Harbor (Suffolk County), New York

Phase IB Archaeological Testing at the proposed Charles Point Multi-Use Waterfront Trail, Peekskill, Westchester County, New York.

Phase IB Archaeological Field Test for the Telecommunications Tower Site – Site Number: 243036, 668 Jones Hill Road, West Haven and Rout 162, West Haven, Connecticut

Phase IA Historical Documentary Report and Archaeological Assessment of the Oldmans Creek Freshwater Wetland Enhancement and Riparian Zone Restoration Project, Block 16, Lot 7, Pilesgrove Township, Salem County, New Jersey

Phase IA Historical Documentary Report and Archaeological Assessment of the Atlantic Coastal Mitigation Bank Site, Block 270, Lots 12 and 13, City of Pleasantville, Atlantic County, New Jersey

Phase I Historical Documentary Study, Archaeological Assessment and Archaeological Survey of the Proposed Lenape Farms Mitigation Project, Block 54, Lot 1, Estell Manor, Atlantic County, New Jersey

Phase IB Archaeological Monitoring – The Reconstruction of Little Bay Park, Queens (Queens County), New York – Project Number: Parks: Q010-112M; NY SHPO: 11PR6844; PIN: X760.18)

Phase IB Archaeological Testing - for Contract DEL-359 – Catskill and Delaware Interconnection at Shaft 4 (Block 1, Lot 41), Gardiner, Ulster County, New York NYOPRHP #: 10PR2329

Phase IB Field Testing and Architectural Survey Report of the Pleasant Grove, Jackson Township, Ocean County, New Jersey Mitigation Site

Phase IB Archaeological Field Test of 246 Front Street (aka 267 ½ Water Street) (Block 107, Lot 34), Manhattan (New York County), NY

The History and Archaeology of the Gowanus Canal Neighborhood, Brooklyn, Kings County, New York

Phase IA Historical Documentary Report and Archaeological Assessment of the Oradell Reservoir Mitigation Bank, Bergen County, New Jersey

Phase IA Documentary Information and Archaeological Assessment for the proposed Sharswood/Blumberg Revitalization Area, Philadelphia, PA

PROJECT/REPORT CONTRIBUTIONS

GRAPHICS

Phase IB Archaeological Monitoring for the Furnishing and Installing Four Inch Telecommunication Ducts, Associated Pull Boxes and Building Penetration at Various Parks and Recreation Facilities, Citywide (Parks Contract Number: CNYG-1216M), Fort Totten, Queens, Queens County, New York

Phase IB Reconstruction of the Pavilion at the end of Hylan Boulevard Adjacent to Satterlee Street in Conference House Park, Staten Island, Richmond County, New York Project (Contract Number R006-213M; E-PIN: 8461780040001 and NY SHPO Number: 14PR02557)

Phase IB Archaeological Field Testing and Monitoring for the Reconstruction of the Paths and Plantings of the Upper Lawn Area of Newtown Playground Project, Queens (Queens County), New York (Q041-116M)

Alyssa Loorya, Ph.D., R.P.A. | President, Principal Investigator



Ms. Loorya is founder and president of Chrysalis Archaeological Consultants. For more than twenty years she has worked in cultural resource management and public education devoted to preserving cultural resources and communicating their value to local communities. She has completed over sixty technical and academic reports and has delivered dozens of presentations concerning preservation compliance, New York City historical development, and educational curricula. Her extensive experience lends itself to her roles in developing and executing research and excavation plans, project management, regulatory compliance and report production.

PROJECTS BY STATE

New York:

Brooklyn:

63/65 Columbia Street – Phase IA (2004)
102 Franklin Avenue Project – Phase IA (2006)
147 Hicks Street – Phase IB (1998)
265 Front Street – Phase I (2016)
1019-1029 Fulton Street – Phase IB/Monitoring (2019)
1662 Bergen Street – Phase IA (2019)
824 Metropolitan Avenue- Phase IA (2020)
Bond Street and Pacific Street – Phase IA (2018)
Brooklyn Navy Yard (Steiner Studio) – Phase IB (2017-2018)
Coney Island Utility Upgrade – Phase IB/Monitoring (2017-2018)
Downtown Brooklyn Reconstruction – Phase IB/Monitoring (2012)
Elias Hubbard House – Phase IB (2001)
Former Naval Yard Annex Brooklyn Navy Yard -Phase IB/Monitoring (2017)
Fulton St – Phase IB (2019)
Gravesend Cemetery – Phase IB (2001)
Greenpoint Project – Phase IA (2013)
Gowanus Canal Study – Phase IA (2012)
Hendrick I. Lott House – Phase IB/Monitoring (2004, 2013)
Floyd Bennett Field – Phase IB/Monitoring (2014)
Marine Park – Phase IB/Monitoring (1997, 2003)
Myrtle Avenue - Ingersol Senior Housing—Phase I/II (2016-2020)
Pieter Claesen Wyckoff House – Phase IB/Monitoring (2004)
Shell Road – Phase IA (2019)
Sponge Park, Gowanus Canal – Phase IB/Monitoring (2017)

AREAS OF EXPERTISE

National Historic Preservation Act
Section 106 Compliance

Material Collections Analysis

Archaeological Survey and Excavation

Public Outreach

EDUCATION

Ph.D., Anthropology and Archaeology:
2018, CUNY Graduate School

M.A., Anthropology and Archaeology:
1998, Hunter College

CERTIFICATIONS

Register of Professional Archaeologists

10-Hour OSHA Construction Safety

30-Hour OSHA Construction Safety

40-Hour OSHA HAZWOPER

SWAC - Secure Worker Access
Consortium

PROFESSIONAL EXPERIENCE

1995-2001: Brooklyn College
Archaeological Research Center

2001-Present: Chrysalis Archaeological
Consultants, President and Principal
Investigator

2006-2010: URS Corporation, Principal
Investigator

2007-2010: Gray & Pape, Supervisory
Consultant

CONTACT INFORMATION

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Brooklyn, NY 11234-4322
Phone: 718.645.3962

Brooklyn Laboratory
3604 Quentin Road
Brooklyn, NY 11234
www.chrysalisarchaeology.com

Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

Manhattan:

50 Bowery – Phase I (2014-2015)
156 Rivington Street – Phase IA (2012)
204 Avenue A – Phase I (2019-2020)
235 Lafayette Street – Phase IA (2013)
246 Front Street – Phase I (2012)
246 Front Street- Phase IB (2012)
311 Broadway – Phase IA (2005)
79 Christopher Street Burial Vault Project – Phase II (2008)
Chambers Street – Phase IB (2005)
City Hall Reconstruction Project – Phase IB and II (2010-2015)
Columbus Park – Phase I (2007)
Consolidated Edison Project – Phase IA (2006)
Dyckman Farmhouse Project – Phase IB/Monitoring (2007)
Ellis Island – Phase IB/Monitoring (2001)
Fortune Society Project – Phase IA (2007)
Fulton Street Reconstruction – Phase I and II (2009-2018)
High Bridge Park – Phase IB/Monitoring (2014-2015)
John Street - Phase IB/Monitoring (2011)
Liberty Island – Phase IB/Monitoring (2001)
Major Deegan Express Bridge – Phase IA (2016)
Peck Slip – Phase I and II (2011-2018)
Peck Slip – Phase 1B/Monitoring (2020)
Peter Minuit Park- Phase IB/Monitoring (2020)
Randall's Island – Phase IB/Monitoring (2018)
Roger Morris Park – Phase IB/Monitoring (2005)
South, South Street – Phase IB/Monitoring (2017-2018)
Stone Street – Phase IB/Monitoring (1998)
Wall Street Water Main Project – Phase I (2007-2008)
Washington Square Park – Phase IB/Monitoring (2015-2020)
Warren Street/John Street – Phase IB/Monitoring (2017)
West Village Housing – Phase IA (2007)
Worth Street—Phase I/Monitoring (2018 to 2020)

The Bronx:

174th Street (Dutch Broadway) Bridge Replacement – Phase IA (2019-2020)
Bartow-Pell Mansion – Phase IB/Monitoring (Barn) (2008, 2012)
Bartow-Pell Mansion – Phase IB/Monitoring (Barn) (1993)
Bartow-Pell Mansion – Phase IB/Monitoring (Cemetery) (2004)
Bronx River Greenway – Phase IB/Monitoring (2015-2016)
City Island Bridge Replacement – Phase IB/Monitoring (2014-2016)
Ferry Point Park – Phase IB/Monitoring (2020)
Fort Independence – Consultation (2012)
Hart Island – Phases I and II (2017 to 2020)
Hunts Point – Phase IA (2019)
Major Deegan Expressway – Phase IA (2016-2017)
Monsignor Del Valle Square – Phase IA (2016)
Pelham Bay Park – Phase IB/Monitoring and II (2015)
Saint Peter's Church – Phase I (2019-2020)
Van Cortlandt Park Dog Run – Phase IB (2015)
Van Cortlandt Park Dog Run – Phase I (2016)

Queens:

C.C. Moore Homestead Park – Phase IB /Monitoring (2019)
John Bowne House – Phase IB/Monitoring (2016)
John Bowne House – Phase II – Phase IB/II/Monitoring (Cistern) (2014)
John Bowne House – Phase IB (Foundation Work) (2019-2020)
Elmhurst Cemetery – Phase IA (1997)
Elmhurst Cemetery - Phase IB (2020)
Fort Totten – Phase IB (2019)
Kosciuszko Bridge Replacement – Phase IB (2016-2017)
Little Bay Park – Phase I (2013-2014)
Martin's Field Phase I Project - Phase IB/Monitoring (2006)
Martin's Field Phase II Project - Phase IB/Monitoring (2006)
Newtown Playground – Phase IB/Monitoring (2018-2019)
Old Town Burial Ground (Martin's Field) -Phase IB/Monitoring (2020)
Queens County Farm Museum – Phase IB/Monitoring (2004)
Rockaway Beach Boulevard – Phase IB/Monitoring (2018)
Riis Park Boathouse – Phase IB/Monitoring (2019-2020)
Rufus King Park – Phase IB/Monitoring (Tree Planting) (2006)
Rufus King Park – Phase IB/Monitoring (Utility Upgrade) (2007)
Rufus King Park- Phase IB/Monitoring (Utility Upgrade) (2020)
Saint George's Church – Phase IB/Monitoring (2010)
South Jamaica Urban Renewal Project – Phase I – Phase IB (2007)
South Jamaica Urban Renewal Project – Phase II – Phase IB (2008)
Wayanda Park – Phase IB/Monitoring (2003)
Woodhaven Boulevard – Phase IA (2020)

Staten Island:

210 Broad Street - Phase IA (2009)
210 Broad Street-Phase IB (2009)
Block 7792, Page Avenue – Phase I (2005)
Alice Austen House – Phase IB (2018)
Conference House Pavilion, - Phase IB (2018-2020)
Farm Colony of NYC – Phase IB (2014)
Fort Wadsworth – Phase IB/Monitoring (Utility Line) (2014)
Fort Wadsworth – Phase IB/Monitoring (Security Perimeter) (2016)
Fort Wadsworth- Phase IB/Monitoring (Building 443 Demo) (2018)
Midland Beach Boulevard – Phase IB/Monitoring (2018)
Ocean Breeze Park – Phase IA (2008)

Nassau County:

545 Arlington Road, Cedarhurst – Phase IB/Monitoring (2014)
Hofstra University – Historical Research Report (2015-2017)
Long Beach/Island Park – Phase IA (2019)
Long Island Rail Road Expansion – Phase IA (2018)
OEHL Residential Facility, Cedarhurst – Phase IB (2014)
U.S. Merchant Marine Academy – Phase IB/Monitoring (2010)

Ulster County:

NYC DEP Water Tunnel – Catskill and Delaware (2013)
Interconnection Replacement – Phase IB/Monitoring (2012)
The Village of Ellenville – Phase IB (2014)

Suffolk County:

221 Main Street, Sag Harbor – Phase I (2016)
404 Littleworth Lane, Sea Cliff – Phase IB/Monitoring (2016)
Artesian Way, Nissequogue – Phase II (2016-2017)
Brightview Senior Living Center, Port Jefferson Station – Phase IA (2019)
Carl's River, Town of Babylon – Phase IA (2017)
Fire Island National Seashore – Phase IB/Monitoring (2014)
Forge River Sewer Line Project – Phase IB/Monitoring (2017-2018)
Hubbard County Park – Phase I (2016)
John Jermain House Well, Sag Harbor – Phase IA (2016)
MacArthur Airport – Phase IA (2018-2020)
Old House, Cutchogue – Phase IB (2018)
The Edwards Homestead; Sayville – Phase IB (2001)

Westchester County:

Charles Point Park, Peekskill – Phase IB (2016)
Consolidated Edison Project – Phase IA (2006)
Memorial Field, Mt. Vernon, NY – Phase I (2010)
Tappan Zee Bridge Replacement – Phase I/Monitoring (2014-2016)
Timothy Knapp House; Rye – Phase IB (1997)

Rockland County:

Village Hall, Village of Grand View on Hudson, NY—Documentation Package/Phase IA (2015-2015)

St. Lawrence County:

Alcoa Powerhouse—Phase IA (2016)

Vermont:

Richmond, VT – Phase IB (2013)
Weathersfield, VT – Phase IB (2013)

New Hampshire:

Fitzwilliam, NH – Phase IB (2015)

Connecticut:

Audubon Society of Greenwich, CT – Phase IB (2001)
West Haven, CT – Phase IB (2015)

Pennsylvania:

Sharswood-Blumberg, Philadelphia Housing Authority – Phase IA (2018)

Massachusetts:

Deerfield and Goshen Archaeological Sensitivity and Procedural Overview- Historical Research Report (2014)

New Jersey:

Atlantic Coastal Mitigation Bank Site, Block 270, Lots 12-13, City of Pleasantville—Phase IA (2014)
Elizabeth River Mitigation Site, Union Township, Union County – Phase IA (2010)
Cranbury Wetland Mitigation Site – Phase I (2009)
Deep Run Preserve, Block 8003, Lot 7 and 11, Old Bridge Township – Phase IA (2014)
Hunterdon County Bridge Replacement – Phase IA (2006)
Jamesburg County Park, Block 18, Lots 5, 6, 6.05, and 7, Helmetta Borough – Phase IA (2014)
Lenape Farms, Atlantic County – Phase I (2015)
Mullica River Mitigation, (Pinelands) Evesham Township, Burlington County – Phase IA (2013)
New Bridge Landing Park – Documentation Plan (2019-2020)
Oldmans Creek Mitigation Site, Pilesgrove Township, Salem County – Phase I (2014, 2015)
Oradell Reservoir Site, Bergen County – Phase I (2012)
Overpeck Creek Park; Englewood – Phase IA (2009)
Pin Oak Forest Conservation Area, Block 1020.01, Lot 1.03, Woodbridge Township – Phase IA (2014)
Pleasant Grove, Jackson Township – Phase I (2012)
Southard Avenue, Howell Township – Phase I (2012)
Spotswood Road; Township of Monroe – Phase I (2012)
Steuben House; Bergen County – Phase I (2019-2020)
Thompson Park Extension, Block 20, Lot 28.06 and 28.08, Monroe Township – Phase I (2015)
Trestle Replacement, Gloucester County – Phase IA (2009)

EMPLOYMENT – EDUCATION-PRESERVATION-CONSULTATION:

BROOKLYN COLLEGE AND DEPARTMENT OF EDUCATION, STAR HIGH SCHOOL

Archaeological-Education Consultant, July 2004 to 2005
Teaching special content classes and grant writing.

CITY UNIVERSITY OF NEW YORK'S – RESEARCH FOUNDATION/GOTHAM CENTER

Educational Consultant - Archaeology and Historic Preservation - City Hall Academy September 2003 – June 2004 and November 2004 to 2005

DIG MAGAZINE

Archaeological-Education Consultant and Contributor, 2000 to 2005

HENDRICK I. LOTT HOUSE PRESERVATION ASSOCIATION, INC.

Program Development, January 2005 to present
Developed the Interpretive-Educational-Curriculum Plan for the Hendrick I. Lott House.

INSTITUTE FOR ARCHAEOLOGICAL EDUCATION AT MANHATTANVILLE COLLEGE

Curriculum Developer and Archaeological Educator, September 1997 to December 1998
PS 134, New York, NY, Scarsdale Elementary School, Scarsdale, NY, Congregation Emmanuel of Harrison, NY, Temple Israel of New Rochelle, NY

NEW JERSEY INSTITUTE OF TECHNOLOGY

Educational Consultant, March 2001 to December 2004, February 2007 and May 2008 to 2009
Developing special content curriculum for NYC Department of Education to meet national and state standards using primary resource historic preservation material. Teacher development and classroom teaching.

PIETER CLAESEN WYCKOFF HOUSE MUSEUM

Archaeological-Educator – Curriculum Development Consultant, 2003 to 2008
Responsibilities include the creation and implementation of Teacher Workshops throughout the school year.

GREATER RIDGEWOOD HISTORICAL SOCIETY

Program Development, January 2016 to present

Developed and implemented an Archaeological Education Curriculum for the Vander-Ende Onder Donk House. Created web and print based media presentations, including several museum displays.

SOUTH STREET SEAPORT MUSEUM

Archaeological Educator, September 1999 to June 2001

PROFESSIONAL SERVICES:

1999 to 2006 Board of Trustees – The Hendrick I. Lott House Preservation Association
2003 to 2007 Member – Historic House Trust Educators Alliance
2002 to 2007 Advisory Board – Pieter Claesen Wyckoff House Museum
2002 to 2007 Advisory Board - Brooklyn Heritage Inc.
2005 to 2007 Board of Trustees - Salt Marsh Alliance
2010 to 2016 Advisory Board – Historic Districts Council of New York City
2012 to 2013 Vice President – Professional Archaeologists of New York City
2013 to 2014 President – Professional Archaeologists of New York City
2016 to present Advisory Board – Pieter Claesen Wyckoff House Museum
2016 to present Board of Trustees – Historic District Council of New York City
2015 to present Vice President - The Hendrick I. Lott House Preservation Association

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:

The Council for Northeast Historical Archaeology (CNEHA)
Historic District Council (HDC)
New York Archaeological Council (NYAC)
The Professional Archaeologists of New York City (PANYC)
The Register of Professional Archaeologists (ROPA)
The Society for Historical Archaeology (SHA)

PUBLICATIONS:

Over 100 publications in CRM and popular magazines published. For full listing see:
www.chrysalisarchaeology.com

Conference Papers/Lectures/Teacher Workshops:

Over 100 Conference Papers presented since 1997. For full listing see: www.chrysalisarchaeology.com

REFERENCES (ARCHAEOLOGICAL):

Project: City Hall and Park, New York, NY
Prime: Beyer Blinder Belle Architects
POC: Richard Southwick, (212) 777-7800, RSouthwick@BBBARCH.com
Year Completed: 2013
Services: Archaeological – Phase IB, II and III Monitoring and Excavation

Project: Peck Slip Reconstruction Project, New York, NY
Prime: Tectonic Engineering
POC: Peter Roloff, (718) 391-9200, PRoloff@tectonicengineering.com
Year Completed: 2015
Services: Archaeological – Phase IA, IB and II Monitoring and Excavation

Project: Fulton Street Reconstruction Project, New York, NY
Prime: HAKS Engineering
POC: Hashem Kotby, (212) 747-1997, hkotby@haks.net
Year Completed: 2015
Services: Archaeological – Phase IA, IB and II Monitoring and Excavation

Project: Gowanus Canal Historic District Survey, Brooklyn, NY
Prime: Gregory Dietrich Preservation
POC: Gregory Dietrich, (917) 828-7926, ggdietrich@msn.com
Year Completed: 2011
Service: Archaeological – Phase IA – including National Register building survey

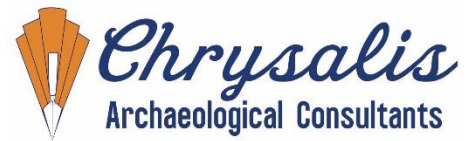
REFERENCES (EDUCATIONAL):

Linda Monte, President
Greater Ridgewood Historical Society/Vander-Ende Onder Donk House
1820 Flushing Avenue
Ridgewood, Queens, New York 11385
Phone: (718) 456-1776
Email: lindabmonte@yahoo.com

Mary Delano and Kate Ottavino
Center for Architecture and Building Science Research
New Jersey Institute of Technology
323 Dr. Martin Luther King Boulevard
Campbell Hall, Room 335
Newark, New Jersey 07102
Phone: (973) 596-3097
E-mail: mdelano@njit.edu

Leah Mollin-Kling, M.A.A, R.P.A. |

Field Director



Ms. Mollin-Kling has over ten years of experience working in all phases of archaeological excavation. Her specializations include both prehistoric and historic contexts in the Middle Atlantic and New England regions. Her professional focus centers on historic urban infrastructure and consumer culture. She has extensive knowledge of field methodologies for pre-contact and historic sites.

SELECTED PROJECT EXPERIENCE BY STATE

New York

[St. Peter's Church – Phase Ib \(2019/2020\)](#)

Bronx, NY

Field Director for Phase Ib field testing of NYC Landmarked St. Peter's Church complex.

[CC Moore Homestead Park – Phase Ib \(2019\)](#)

Queens, NY

Monitored construction trenching in historic park for NYC Parks. Excavated several uncovered features and archaeological deposits.

[1019-1029 Fulton Street – Phase Ib \(2019\)](#)

Brooklyn, NY

Monitored exploratory trenching in section of historic block. Excavated brick wall feature and associated archaeological deposits.

[Alice Austen House – Phase Ib \(2019\)](#)

Staten Island, NY

Field Director for Phase Ib field testing of the yard surrounding the NYC Landmarked Alice Austen House as Part of Sandy Recovery efforts.

[Brooklyn Navy Yard Annex – Phase II Monitoring \(2019\)](#)

Brooklyn, NY

Monitored excavation of trenches in a continuation of Phase Ib work in the vicinity of historic structures and cemetery in the Brooklyn Naval Yard Annex.

[Conference House – Phase Ib \(2018-2019\)](#)

Staten Island, NY

Field Director for Phase Ib monitoring and field testing of a portion of NR-listed Conference House Park.

AREAS OF EXPERTISE

Archaeological Survey and Excavation

Public Outreach and Education

Historic Materials Identification

EDUCATION

Ph.D., Anthropology: expected completion 2025, CUNY Graduate Center, NY, NY

M.A.A., Applied Anthropology: 2009, University of Maryland, College Park

B.A., Archaeology: 2005, Boston University

CERTIFICATIONS

OSHA 30 Hour

HAZMAT 40 Hour

LIRR Safety

PROFESSIONAL EXPERIENCE

2017 – Present: Chrysalis Archaeological Consultants

2016-2017: Geoarcheology Research Associates

2014-2016: Public Archaeology Laboratory

2009-2011: John Milner Associates

2006-2007: Public Archaeology Laboratory

New York Headquarters

4110 Quentin Road
Brooklyn, NY 11234-4322
Phone: 718.645.3962

Brooklyn Laboratory

3604 Quentin Road
Brooklyn, NY 11234
www.chrysalisarchaeology.com

Rhode Island Regional Office

One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

[Newtown Playground – Phase Ib \(2018\)](#)

Bronx, NY

Field Director for Phase Ib field testing to identify whether human skeletal elements are extant at Newtown Playground, a former historic cemetery.

[Artesian Way Lot 1 – Phase Ib \(2018\)](#)

Nissequoque, NY

Field Director for Phase Ib field testing of a lot within the Daphne Beth Shih Estate in Long Island. Identified ample evidence of pre-contact Native resources and features.

[Randall's Island Shoreline Restoration – Monitoring \(2018\)](#)

Queens, NY

Monitored reconstruction efforts of section of shoreline on Randall's Island.

[Hart Island – Pre-Phase \(2018-2019\)](#)

Bronx, NY

Ongoing collection of nineteenth-century human remains on Island in areas of extreme erosion due to Hurricane Sandy in lead-up to large-scale project in 2019.

[Fort Wadsworth Building 433 Demo – Monitoring \(2018\)](#)

Staten Island, NY

Monitored the demolition of a residential building on the Fort Wadsworth Coast Guard base.

[Bond & Pacific Street Historic Well – Phase IA \(2018\)](#)

Brooklyn, NY

Provided Phase IA research and report for an unanticipated historic stone-lined well discovered during construction work.

[Washington Square Park – Monitoring \(2017-2018\)](#)

New York, NY

Monitoring construction of water utility pipes around Washington Square Park in Manhattan for human remains and archaeological resources.

[Forge River Watershed Project – Phase Ib \(2017\)](#)

Brookhaven, NY

Principal Investigator for Phase Ib excavations in various locations in Brookhaven, Long Island, NY for Hurricane Sandy recovery efforts.

[Myrtle Avenue – Monitoring/Phase II \(2017\)](#)

Brooklyn, NY

Monitored construction activities and performed Phase II field testing of remains of mid-nineteenth century row houses in Fort Greene, Brooklyn, NY.

[Brooklyn Navy Yard Annex – Phase Ib \(2017\)](#)

Brooklyn, NY

Monitored mechanical excavation of test pits in the vicinity of historic structures and cemetery in the Brooklyn Naval Yard Annex.

PROFESSIONAL ORGANIZATIONS

Register of Professional Archaeologists (RPA)

Society for Historic Archaeology (SHA)

New York State Archaeological Association (NYSAA)

Professional Archaeologists of New York City (PANYC)

CONTACT INFORMATION

lmollinkling@chrysalisarchaeology.com

[Access Northeast Pipeline – Stony Point T&R - Phase Ia-Ib \(2016\)](#)

Stony Point, NY

Field lead for Phase Ib survey of pipeline corridor in various locations in New York and Connecticut. Created and submitted daily logs, designed field survey methods, used handheld GPS devices, took and kept track of pictures, drew field maps and maintained all paperwork. Also engaged in field walkover to assess site sensitivity prior to fieldwork.

[Atlantic Bridge Pipeline – Phase Ib \(2014-2015\)](#)

Peekskill, NY

Conducted Phase Ib excavation of historic and pre-contact materials along pipeline corridor in various locations around Peekskill, NY.

[Governors Island– Phase Ib – II \(2014\)](#)

New York, NY

Conducted Phase Ib – II excavations underneath existing parking lot to locate the remains of a 19th century Confederate prisoner cemetery and the footprint of out-buildings associated with Castle William for the National Park Service and the Governors Island Preservation and Education Corporation.

[Whitehall Barracks – Phase Ib – II \(2011\)](#)

Whitehall, NY

Excavated 19th century War of 1812 American barracks on remote island. Also uncovered evidence of pre-contact Native presence.

[Martin Van Buren National Historic Site– Phase Ib \(2007\)](#)

Kinderhook, NY

Excavated in various locations within the Martin Van Buren post-presidential residence and National Historic Site.

Connecticut

[Access Northeast Pipeline – Phase Ib \(2015-2016\)](#)

Danubury/Watertown, CT

Field lead for Phase Ib excavation of pipeline corridor in various places in Connecticut. Located evidence of pre- and post-contact Native resources as well as historic-era materials.

[AIM Pipeline – Phase III \(2015\)](#)

Norwich, CT

Lead field crew in Phase III excavation of a multi-component, pre-contact Native site. Analysis included protein residue and phytolith/starch residue analysis on lithic tools.

[AIM Pipeline – Phase II \(2014-2015\)](#)

Norwich, CT and Various Locations

Field technician for Phase II excavation of pipeline corridor in Norwich, CT and various places in Connecticut. Evaluated historic and pre-contact archaeological resources discovered during phase I testing.

New Jersey

[Access Northeast - Mahwah Station M&R – Phase II \(2016\)](#)

Mahwah, NJ

Designed and lead field staff in Phase II testing of a multi-component site in a remote pipeline substation in order to assess the nature and extent of preliminarily identified pre-contact and historic native materials.

Massachusetts

[Saint Joseph's Church Cemetery – Phase III \(2006\)](#)

Roxbury, MA

Assisted in the excavation of a 19th-century primarily Irish immigrant cemetery. Over 1000 individual skeletons were recovered over a period of 6 months.

[Pine Hills and Clam Pudding – Phase I-III \(2006\)](#)

Plymouth, MA

Excavated 19th century farmhouse and 18th century tavern adjacent to the old Boston Road.

Rhode Island

[Acushnet LNG Facility – SPECTRA Pipeline -- Phase II \(2016\)](#)

Acushnet, RI

Field lead on Phase II survey of multi-component site.

[Salt Pond – Phase III \(2006\)](#)

Acushnet, RI

Conducted Phase III excavations of an undisturbed, pre-contact Native American coastal village complex.

Pennsylvania

[Valley Forge – Phase III \(2006\)](#)

Valley Forge, PA

Conducted Phase III excavations in an area adjacent to George Washington's Headquarters.

PROFESSIONAL REPORTS AND PAPERS

REPORTS

Written

Phase IB Archaeological Field Testing and Monitoring for the Reconstruction of the Pavilion at the end of Hylan Boulevard Adjacent to Satterlee Street in Conference House Park, Staten Island, Richmond County, New York Project (Contract Number R006-213M; E-PIN: 8461780040001 and NY SHPO Number: 14PR02557), pending 2020

Phase IB Archaeological Field Testing for Proposed Westchester Square Development Project, Bronx (Bronx County), New York, April 2020

Phase IB Archaeological Monitoring for Housing Preservation and Development of 1019-1029 Fulton Street and 18-22 Putnam Avenue, Block 1991, Lots 1-7, 16, and 106, Brooklyn (Kings), New York (DOB: 321385880) Project, October 2019

Phase IB Archaeological Field Testing of Lot 1 at Artesian Way, Nissequogue (Suffolk County), New York (08PR00799), August 2019

Phase IB Archaeological Field Testing and Monitoring for the Reconstruction of the Paths and Plantings of the Upper Lawn Area of Newtown Playground Project, Queens (Queens County), New York (Q041-116M), July 2019

Phase IB Archaeological Work Plan for Reconstruction of John Bowne House, Flushing (Queens), New York, April 2019

Phase II Archaeological Monitoring of the Brooklyn Navy Yard – Naval Annex Project (Naval Hospital Area) Brooklyn, (Kings County), New York (13PR00424), March 2019

Phase IB Archaeological Field Testing of the Sandy-Related Repairs and Installation of Lighting Project at the Alice Austen Park & House, Staten Island (Richmond County), New York (R117-115MA) (15PR02013), March 2019

Phase IB Archaeological Monitoring Report for the Reconstruction of a Portion of the Western Shoreline on Randall's Island Project, Borough of Manhattan (New York County), New York, November 2018

Phase IA Archaeological Sensitivity Assessment for Construction of Simple, Complex, and Landmark Pedestrian Ramps Project– New York City Design and Construction (HWP15KCL), Boerum Hill, (Kings County), New York, July 2018

Phase IB Archaeological Monitoring Report as part of the Demolition of Building 443, Coast Guard Sector, New York, Staten Island, Richmond County, New York (Project Number: 8771461) (NY SHPO Number: 17PR05603), July 2018

Phase IA Archaeological Sensitivity Assessment Update for the Metropolitan Transportation Authority Long Island Railroad Expansion Project (16SR00995), from Floral Park to Hicksville (Nassau County), New York, April 2018

Phase IA Documentary Information and Archaeological Assessment for the Proposed Sharswood/Blumberg Revitalization Area, Philadelphia, PA, March 2018

Phase II Archaeological Monitoring Plan, Unanticipated Discoveries Plan and Human Remains Protocol for the Brooklyn Navy Yard – Naval Annex (Naval Hospital Area) Project, February 2018

Phase II – Archaeological Analysis Plan for Proposed Development at 275 Myrtle Avenue (Ingersoll Senior Residences), Fort Greene, Brooklyn (Kings County), New York, NY SHPO No.: 16PR04528 – Ingersoll Senior Residences and CEQRA No.: 17CHA002K, February and May 2018

Phase IB Field Test Report, Forge River Watershed Sewer Project, Town of Brookhaven (Suffolk County), New York, NY SHPO No.: 15PR01821, January 2018

Test Pit Monitoring Report, Former Naval Yard Annex, Brooklyn Navy Yard, Brooklyn (Kings County), New York, NY SHPO No.: 13PR00424; NYC LPC No.: Empire State Development Corp/15ESD001K, July 2017

Edited

Fulton Street Phase II Reconstruction Project (HWMVVTC8B) & Peck Slip Redevelopment Project (HWM1159 [HWMWTC7D]) Phase II Archaeological Investigations, Volume III, August 2017

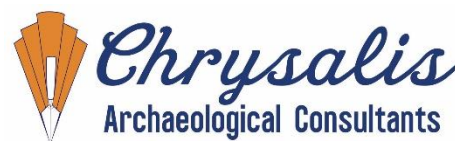
CONFERENCE PAPERS AND PRESENTATIONS

New York State Archaeological Association (NYSAA), April 2018: “Smoking Pipes from the Fort Greene Section of Brooklyn in the Late-Nineteenth Century”.

Society for Historical Archaeology (SHA), January 2009: “Contextualizing Capitalism: Ceramics and the Processes of Urbanization in Early 19th Century Maryland”.

Christopher Ricciardi, Ph.D., RPA |

Principal Investigator



With over 30 years of experience in the field, Dr. Ricciardi is an expert on Section 106 and Federal, State, and Local regulatory criteria for compliance. His research has focused on 17th through 9th century rural communities, highlighting the development of New York City's outer boroughs and its surrounding area. Dr. Ricciardi served as an archeologist for the U.S. Army Corps of Engineers New York District from 2001 - 2009. He has been President of the Professional Archaeologists of New York and the Metropolitan Chapter of the New York State Archaeological Association and is committed to local historic preservation.

PROJECT BY STATE

New York:

Brooklyn:

63/65 Columbia Street – Phase IA (2004)
102 Franklin Avenue Project – Phase IA (2006)
147 Hicks Street – Phase IB (1998)
265 Front Street – Phase I (2016)
1019-1029 Fulton Street – Phase IB/Monitoring (2019)
1662 Bergen Street – Phase IA (2019)
824 Metropolitan Avenue- Phase IA (2020)
Bond Street and Pacific Street – Phase IA (2018)
Brooklyn Navy Yard (Steiner Studio) – Phase IB (2017-2018)
Coney Island Utility Upgrade – Phase IB/Monitoring (2017-2018)
Downtown Brooklyn Reconstruction – Phase IB/Monitoring (2012)
Elias Hubbard House – Phase IB (2001)
Former Naval Yard Annex Brooklyn Navy Yard -Phase IB/Monitoring (2017)
Fulton St – Phase IB (2019)
Gravesend Cemetery – Phase IB (2001)
Greenpoint Project – Phase IA (2013)
Gowanus Canal Study – Phase IA (2012)
Hendrick I. Lott House – Phase IB/Monitoring (2004, 2013)
Floyd Bennett Field – Phase IB/Monitoring (2014)
Marine Park – Phase IB/Monitoring (1997, 2003)
Myrtle Avenue - Ingersol Senior Housing—Phase I/II (2016-2020)
Pieter Claesen Wyckoff House – Phase IB/Monitoring (2004)
Shell Road – Phase IA (2019)
Sponge Park, Gowanus Canal – Phase IB/Monitoring (2017)

AREAS OF EXPERTISE

Archaeological Survey and Excavation

Public Outreach

Laboratory Preparation

Section 106-National Historic Preservation Act

EDUCATION

B.A., 1987, Brooklyn College, CUNY (History and Anthropology and Archaeology).

M.A., 1997, Syracuse University (Anthropology and Archaeology)

Ph.D., 2004, Syracuse University (Anthropology and Archaeology)

CERTIFICATIONS

Register of Professional Archaeologists

10-Hour OSHA Construction Safety Training

30-Hour OSHA Construction Safety Training

SWAC -Secure Worker Access Consortium

PROFESSIONAL EXPERIENCE

2001-Present: Chrysalis Archaeological Consultants

2001-Present: U.S. Army Corps of Engineers

1990-2001: Field and Laboratory Director – Brooklyn College Archaeological Research Center, Brooklyn College, CUNY

CONTACT INFORMATION

cricciardi@chrysalisarchaeology.com

New York Headquarters
4110 Quentin Road
Brooklyn, NY 11234-4322
Phone: 718.645.3962

Brooklyn Laboratory
2119 East 34th Street
Brooklyn, NY 11234
www.chrysalisarchaeology.com

Manhattan:

50 Bowery – Phase I (2014-2015)
156 Rivington Street – Phase IA (2012)
204 Avenue A – Phase I (2019-2020)
235 Lafayette Street – Phase IA (2013)
246 Front Street – Phase I (2012)
246 Front Street- Phase IB (2012)
311 Broadway – Phase IA (2005)
79 Christopher Street Burial Vault Project – Phase II (2008)
Chambers Street – Phase IB (2005)
City Hall Reconstruction Project – Phase IB and II (2010-2015)
Columbus Park – Phase I (2007)
Consolidated Edison Project – Phase IA (2006)
Dyckman Farmhouse Project – Phase IB/Monitoring (2007)
Ellis Island – Phase IB/Monitoring (2001)
Fortune Society Project – Phase IA (2007)
Fulton Street Reconstruction – Phase I and II (2009-2018)
High Bridge Park – Phase IB/Monitoring (2014-2015)
John Street - Phase IB/Monitoring (2011)
Liberty Island – Phase IB/Monitoring (2001)
Major Deegan Express Bridge – Phase IA (2016)
Peck Slip – Phase I and II (2011-2018)
Peck Slip – Phase 1B/Monitoring (2020)
Peter Minuit Park- Phase IB/Monitoring (2020)
Randall's Island – Phase IB/Monitoring (2018)
Roger Morris Park – Phase IB/Monitoring (2005)
South, South Street – Phase IB/Monitoring (2017-2018)
Stone Street – Phase IB/Monitoring (1998)
Wall Street Water Main Project – Phase I (2007-2008)
Washington Square Park – Phase IB/Monitoring (2015-2020)
Warren Street/John Street – Phase IB/Monitoring (2017)
West Village Housing – Phase IA (2007)
Worth Street—Phase I/Monitoring (2018 to 2020)

The Bronx:

174th Street (Dutch Broadway) Bridge Replacement – Phase IA (2019-2020)
Bartow-Pell Mansion – Phase IB/Monitoring (Barn) (2008, 2012)
Bartow-Pell Mansion – Phase IB/Monitoring (Barn) (1993)
Bartow-Pell Mansion – Phase IB/Monitoring (Cemetery) (2004)
Bronx River Greenway – Phase IB/Monitoring (2015-2016)
City Island Bridge Replacement – Phase IB/Monitoring (2014-2016)
Ferry Point Park – Phase IB/Monitoring (2020)
Fort Independence – Consultation (2012)
Hart Island – Phases I and II (2017 to 2020)
Hunts Point – Phase IA (2019)
Major Deegan Expressway – Phase IA (2016-2017)
Monsignor Del Valle Square – Phase IA (2016)
Pelham Bay Park – Phase IB/Monitoring and II (2015)
Saint Peter's Church – Phase I (2019-2020)
Van Cortlandt Park Dog Run – Phase IB (2015)
Van Cortlandt Park Dog Run – Phase I (2016)

PROFESSIONAL ORGANIZATIONS

Register of Professional Archaeologists (RPA)

New York Archaeological Council (NYAC)

Professional Archaeologists of New York City (PANYC)

Council for Northeast Historical Archaeology (CNEHA)

Metropolitan Chapter – New York State Archaeological Association (NYSAA)

Society for Historic Archaeology (SHA)

Queens:

C.C. Moore Homestead Park – Phase IB /Monitoring (2019)
John Bowne House – Phase IB/Monitoring (2016)
John Bowne House – Phase II – Phase IB/II/Monitoring (Cistern) (2014)
John Bowne House – Phase IB (Foundation Work) (2019-2020)
Elmhurst Cemetery – Phase IA (1997)
Elmhurst Cemetery - Phase IB (2020)
Fort Totten – Phase IB (2019)
Kosciuszko Bridge Replacement – Phase IB (2016-2017)
Little Bay Park – Phase I (2013-2014)
Martin's Field Phase I Project - Phase IB/Monitoring (2006)
Martin's Field Phase II Project - Phase IB/Monitoring (2006)
Newtown Playground – Phase IB/Monitoring (2018-2019)
Old Town Burial Ground (Martin's Field) -Phase IB/Monitoring (2020)
Queens County Farm Museum – Phase IB/Monitoring (2004)
Rockaway Beach Boulevard – Phase IB/Monitoring (2018)
Riis Park Boathouse – Phase IB/Monitoring (2019-2020)
Rufus King Park – Phase IB/Monitoring (Tree Planting) (2006)
Rufus King Park – Phase IB/Monitoring (Utility Upgrade) (2007)
Rufus King Park- Phase IB/Monitoring (Utility Upgrade) (2020)
Saint George's Church – Phase IB/Monitoring (2010)
South Jamaica Urban Renewal Project – Phase I – Phase IB (2007)
South Jamaica Urban Renewal Project – Phase II – Phase IB (2008)
Wayanda Park – Phase IB/Monitoring (2003)
Woodhaven Boulevard – Phase IA (2020)

Staten Island:

210 Broad Street - Phase IA (2009)
210 Broad Street-Phase IB (2009)
Block 7792, Page Avenue – Phase I (2005)
Alice Austen House – Phase IB (2018)
Conference House Pavilion, - Phase IB (2018-2020)
Farm Colony of NYC – Phase IB (2014)
Fort Wadsworth – Phase IB/Monitoring (Utility Line) (2014)
Fort Wadsworth – Phase IB/Monitoring (Security Perimeter) (2016)
Fort Wadsworth- Phase IB/Monitoring (Building 443 Demo) (2018)
Midland Beach Boulevard – Phase IB/Monitoring (2018)
Ocean Breeze Park – Phase IA (2008)

Nassau County:

545 Arlington Road, Cedarhurst – Phase IB/Monitoring (2014)
Hofstra University – Historical Research Report (2015-2017)
Long Beach/Island Park – Phase IA (2019)
Long Island Railroad Expansion – Phase IA (2018)
OEHL Residential Facility, Cedarhurst – Phase IB (2014)
U.S. Merchant Marine Academy – Phase IB/Monitoring (2010)

Ulster County:

NYC DEP Water Tunnel – Catskill and Delaware (2013)
Interconnection Replacement – Phase IB/Monitoring (2012)
The Village of Ellenville – Phase IB (2014)

Suffolk County:

221 Main Street, Sag Harbor – Phase I (2016)
404 Littleworth Lane, Sea Cliff – Phase IB/Monitoring (2016)
Artesian Way, Nissequogue – Phase II (2016-2017)
Brightview Senior Living Center, Port Jefferson Station – Phase IA (2019)
Carll's River, Town of Babylon – Phase IA (2017)
Fire Island National Seashore – Phase IB/Monitoring (2014)
Forge River Sewer Line Project – Phase IB/Monitoring (2017-2018)
Hubbard County Park – Phase I (2016)
John Jermain House Well, Sag Harbor – Phase IA (2016)
MacArthur Airport – Phase IA (2018-2020)
Old House, Cutchogue – Phase IB (2018)
The Edwards Homestead; Sayville – Phase IB (2001)

Westchester County:

Charles Point Park, Peekskill – Phase IB (2016)
Consolidated Edison Project – Phase IA (2006)
Memorial Field, Mt. Vernon, NY – Phase I (2010)
Tappan Zee Bridge Replacement – Phase I/Monitoring (2014-2016)
Timothy Knapp House; Rye – Phase IB (1997)

Rockland County:

Village Hall, Village of Grand View on Hudson, NY—Documentation Package/Phase IA (2015-2015)

St. Lawrence County:

Alcoa Powerhouse—Phase IA (2016)

Vermont:

Richmond, VT – Phase IB (2013)
Weathersfield, VT – Phase IB (2013)

New Hampshire:

Fitzwilliam, NH – Phase IB (2015)

Connecticut:

Audubon Society of Greenwich, CT – Phase IB (2001)
West Haven, CT – Phase IB (2015)

Pennsylvania:

Sharswood-Blumberg, Philadelphia Housing Authority – Phase IA (2018)

Massachusetts:

Deerfield and Goshen Archaeological Sensitivity and Procedural Overview- Historical Research Report (2014)

New Jersey:

Atlantic Coastal Mitigation Bank Site, Block 270, Lots 12-13, City of Pleasantville—Phase IA (2014)
Elizabeth River Mitigation Site, Union Township, Union County – Phase IA (2010)
Cranbury Wetland Mitigation Site – Phase I (2009)
Deep Run Preserve, Block 8003, Lot 7 and 11, Old Bridge Township – Phase IA (2014)
Hunterdon County Bridge Replacement – Phase IA (2006)
Jamesburg County Park, Block 18, Lots 5, 6, 6.05, and 7, Helmetta Borough – Phase IA (2014)
Lenape Farms, Atlantic County – Phase I (2015)
Mullica River Mitigation, (Pinelands) Evesham Township, Burlington County – Phase IA (2013)
New Bridge Landing Park – Documentation Plan (2019-2020)
Oldmans Creek Mitigation Site, Pilesgrove Township, Salem County – Phase I (2014, 2015)
Oradell Reservoir Site, Bergen County – Phase I (2012)
Overpeck Creek Park; Englewood – Phase IA (2009)
Pin Oak Forest Conservation Area, Block 1020.01, Lot 1.03, Woodbridge Township – Phase IA (2014)
Pleasant Grove, Jackson Township – Phase I (2012)
Southard Avenue, Howell Township – Phase I (2012)
Spotswood Road; Township of Monroe – Phase I (2012)
Steuben House; Bergen County – Phase I (2019-2020)
Thompson Park Extension, Block 20, Lot 28.06 and 28.08, Monroe Township – Phase I (2015)
Trestle Replacement, Gloucester County – Phase IA (2009)

UNITED STATES ARMY CORPS OF ENGINEERS

North Atlantic Division, February 2009 to present

District Support Team Manager

Serves as a Subject Matter Expert (SME) on civil works project issues as a member of the District Support Team (DST) within the Civil Integration (CID) Division. Supports the CID Chief, DST Team Leader and CID Regional Managers with assigned missions. As an MSC Project and DST Manager, serves as a proactive action officer for assigned Districts, providing guidance and support. Assists DST Team Leader and CID Regional Managers in the development, defense and execution of the civil works program. Required to employ initiative and judgment based on experience to accomplish specific goals. Provides integration across the region and across all business lines. Assesses changes in policy and provides technical interpretation to districts. Interfaces with Headquarters and others to properly identify and facilitate resolution of project issues. Working through Regional Appropriations Managers, DST Leader, and coordinating with other Division offices, maintains integration with the RIT regarding authorizations, appropriations, and other program/project issues. Using extensive technical environmental knowledge provides recommendations to the DST Team Leader and Regional Managers as to the rationale for and proper utilization of funds within the CW program based on project assessments. Monitors milestones, tracks progress and works in a team framework.

UNITED STATES ARMY CORPS OF ENGINEERS

Project Archaeologist, September 2001 to 2009

Cultural Resource Specialist, NHPA, NEPA, EA, EIS and Environmental Coordinator, Project Manager – Mattituck Inlet Study Project area includes: Long Island and the Hudson Valley.

Projects include Storm Damage Reduction, Ecosystem Restoration, Navigation Control, NY-NJ Harbor Deepening Legal Team, Independent Technical Review Lead - Louisiana Coastal Protection and Restoration Project and Alabama Storm Damage and Restoration Project, Environmental Coordinator on the Dredge Material Management Project for New York Harbor, Long Island Sound ACOE – Level I Project Management Certified and the African Burial Ground Reburial Project

CITY UNIVERSITY OF NEW YORK - RESEARCH FOUNDATION/GOTHAM CENTER

Archaeologist, October 2004

Lecturer at the City Hall Academy on archaeology

AUDUBON SOCIETY OF CONNECTICUT
Archaeologist, May 2001

URS-GREINER WOODWARD-CLYDE
Principal Investigator, January to February 2000, February to May 2001
Stone Street, New York, NY, Bronx River Parkway Extension, New York, NY,
Westchester Creek Storage Tank Project, Bronx, NY.

ELLIS ISLAND FOUNDATION
Archaeologist, November – December 2000
Ellis Island Project, New York, NY

SAYVILLE HISTORICAL SOCIETY
Co-Director, Edwards Homestead Archaeological Project October 2000, April-May 2001

NATIONAL PARKS SERVICE
Archaeological Technician, April 2000
Liberty Island Project, New York, NY

NEW YORK COUNCIL FOR THE HUMANITIES
Lecturer - Speakers in the Humanities Program, January 2000 to December 2006

NATIONAL ENDOWMENT FOR THE HUMANITIES
Archaeological Educator, November 1999

HENDRICK I. LOTT HOUSE PRESERVATION ASSOCIATION, INC.
Project Director, September 1999 to September 2001

BROOKLYN COLLEGE ARCHAEOLOGICAL RESEARCH CENTER
Co-Director, May 1998 to August 2001
Hendrick I. Lott House Archaeology Project; Brooklyn, NY
BROOKLYN NEW SCHOOL, BROOKLYN, NEW YORK
Archaeology Educator, December 1998

NEW YORK CITY LANDMARKS PRESERVATION COMMISSION
Site Supervisor, October 1998 to December 1998
Chambers Street Project; New York, NY

DEPARTMENT OF SOCIOLOGY AND ANTHROPOLOGY; FORDHAM UNIVERSITY
Adjunct Instructor (Anthropology), January 1998 to May 1998
Introduction to Archaeology

INSTITUTE FOR ARCHAEOLOGICAL EDUCATION AT MANHATTANVILLE COLLEGE
Curriculum Developer and Archaeological Educator, September 1997 to December 1998
PS 134; New York, NY, Parkway School; Greenwich, CT, Congregation Emmanuel of
Harrison, NY; Temple Israel of New Rochelle, NY

NEW YORK CITY LANDMARKS PRESERVATION COMMISSION
Intern – Archaeologist, September 1997 to December 1997
Stone Street Project; New York, NY

SYRACUSE UNIVERSITY - DEPARTMENT OF ANTHROPOLOGY
Graduate Assistant, September 1995 to December 1995 and September 1996 to May 1997

WILLIAM AND MARY COLLEGE

Teacher Assistant, August to May 1993-1994
Introduction to Cultural Anthropology

RYE (NEW YORK) HISTORICAL SOCIETY

Co-Director, May 1993, 1994, 1995, 1996, 1997, June and October 1997
Timothy Knapp House; Rye, NY

ARCOPLEX/KEY PERSPECTIVES, ARCHAEOLOGICAL GROUP

Excavator, July 1990, July, August 1991
Sign Road; Staten Island, NY, Bartow-Pell Mansion; Bronx, NY, Elmhurst Park; Queens, NY

VOLUNTEER EXPERIENCE:

CITY UNIVERSITY OF NEW YORK'S RESEARCH FOUNDATION

Archaeologist, November 2004 to present
City Hall Academy Educational Project

HUBBARD HOUSE HISTORY PROGRAM

Archaeological Director, May to June 1998
Elias Hubbard House; Brooklyn, NY

BROOKLYN COLLEGE ARCHAEOLOGICAL RESEARCH CENTER

Co-Director, August 1999
147 Hicks Street Cistern Excavation Project; Brooklyn, NY

Laboratory Assistant – Volunteer Instructor, June 1994 to July 1995; June 1997 to July 2001
Introduction to Archaeological Laboratory Methods

Assistant to the Director - Teacher Assistant, June 1993, 1994, 1995, 1996; August 1997;
Marine Park; Brooklyn, NY, Pieter Claesen Wyckoff House; Brooklyn, NY, Bartow-Pell Mansion; Bronx, NY

Trench Supervisor, July-August 1994

Kamenska Chuka; Blagoevgrad, Bulgaria

SYRACUSE UNIVERSITY FALL FIELD EXCAVATION

Excavator, September-October 1995
The Erie House; Port Byron, NY

WILLIAM AND MARY FIELD SCHOOL

Surveyor, May 1994
St. Martin; Netherlands Antilles

RESEARCH EXPERIENCE:

NEW YORK CITY LANDMARKS PRESERVATION COMMISSION

Intern – Archaeologist, September 1997

NEW YORK CITY DEPARTMENT OF PARKS: HISTORIC HOUSE TRUST DIVISION

Research Assistant, January 1995 to July 1996

AWARDS/GRANTS:

Brooklyn Borough President's Historians Award (through the Brooklyn College Archaeological Research Center) - 1998
CUNY-PSE Grant (through the Brooklyn College Archaeological Research Center) - 1998, 1999, 2000
Dissertation Grant - The Holland Society, New York, New York - 1998
Conference Travel Grant - Syracuse University, Syracuse, New York – 1997 through 2001
Honorarium - Glenville School, Glenville, Connecticut - May 1997; Norwalk Connecticut Community College - October 1999; Archaeological Society of Staten Island, Staten Island, New York – 2003, 2004; Bartow-Pell Society, Bronx, New York – January 2004, Woodlawn Historic Society, Queens, New York – March 2004
Performance Awards, U.S. Army Corps of Engineers – New York District 2002 through 2019
USACOE District Commander's Award for Scholarly Research 2005
USACOE Team of the Year Award - Jamaica Bay Marsh Island Restoration Project, 2006
Commander's Certificate of Achievement - NAN (2012) - Brooklyn Navy Yard
Commander's Award for Civilian Service - NAD (2012) - Congressional Taskers
Real Estate Achievement Award - HQ (2012) - Brooklyn Navy Yard
Certificate of Appreciation - NAD (2013) – Hurricane Sandy Work
Civilian Excellence Award - NAN (2006) –

PUBLICATIONS:

Over 100 professional publications have been made. Please see www.chrysalisarchaeology.com for full listing.

LECTURES/PRESENTATIONS:

Over 150 professional and public lectures/presentations have been made. Please see www.chrysalisarchaeology.com for full listing.

REFERENCES:

Provided upon request.

Elissa Rutigliano, B.A. | Archaeologist



Ms. Rutigliano has two years of experience working in all phases of archaeological excavation around the New York City area.

SELECTED PROJECT EXPERIENCE BY STATE

New York

[Reconstruction of Peck Slip – Phase IB \(2020\)](#)

New York, NY

Monitored construction activities and excavation as Field Director in archaeologically sensitive areas during the reconstruction of Peck Slip

[St. Peter’s Church and Cemetery, Westchester Square Development Project – Phase IB \(2020\)](#)

Bronx, NY

Conducted shovel test excavations across the outdoor property belonging to the historic St. Peter’s Church, to identify potential cultural resources and human remains related to a late-17th century Quaker Meeting House and cemetery

[The Battery Playscape, Battery Park – Phase IB \(2020\)](#)

New York, NY

Monitored pre-construction excavation conducted by backhoe of an area where possibly intact remains of the National Register-eligible Battery Wall were identified

[824-832 Metropolitan Avenue – Phase IA \(2019\)](#)

Brooklyn, NY

Conducted documentary research to determine archaeological sensitivity and to assess the impact of proposed development on potential prehistoric and historic cultural resources

[Rehabilitation of East 174th Street Bridge – Phase IA \(2019\)](#)

Bronx, NY

Conducted documentary and archival research to determine archaeological sensitivity and the potential for prehistoric and historic resources, in advance of the rehabilitation of the East 174th Street bridge over Sheridan Expressway

[1662 Bergen St. – Phase IA \(2019\)](#)

New York, NY

Conducted historic documentary research to determine cultural sensitivity in an archaeologically sensitive area located near the Hunterfly Road Houses – Weeksville Heritage Center

AREAS OF EXPERTISE

Archaeological Survey and Excavation

Laboratory Preparation and Analysis

Documentary and Historic Research

EDUCATION

B.A., Archaeology: 2017

Brooklyn College

CERTIFICATIONS

10-Hour OSHA Construction Safety Training (2017)

30-Hour OSHA Construction Safety Training (2020)

PROFESSIONAL EXPERIENCE

2016-Present: Chrysalis Archaeological Consultants

2016-Present: In Bardo Pictures (consultant, freelance)

2015-2017: Indiantown Trail, Antigua & Barbuda (field archaeologist)

2011-2012: HBO (script coverage, freelance)

CONTACT INFORMATION

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One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

[Long Beach Water Pollution Control Plant Consolidation Project – Phase IA \(2019\)](#)

Nassau County, NY

Conducted documentary research to determine archaeological sensitivity and the potential for prehistoric and historic cultural resources in three cities on the south shore of western Long Island, in advance of a large-scale wastewater and sewer management project

[Hart Island \(2018 to present\)](#)

Bronx, NY

Ongoing collection and emergency management of nineteenth-century human remains in areas affected by extreme erosion and weathering resulting from Hurricane Sandy, in advance of a large-scale mitigation project

[Reconstruction of C.C. Moore Homestead Park – Phase IB \(2019\)](#)

Queens, NY

Participated in excavation of an outdoor feature uncovered during construction activities in the historically sensitive C.C. Moore Homestead Park

[204 Avenue A – Phase IA \(2019\)](#)

New York, NY

Conducted historic documentary research to determine cultural sensitivity and to assess the impact of proposed development on potential prehistoric and historic cultural resources

[Reconstruction of the Pavilion at Conference House Park– Phase IB \(2019\)](#)

Staten Island, NY

Monitored excavation of construction activities related to the “Pavilion Project” at the end of Hyland Blvd. adjacent to Satterlee St. at Conference House Park

[St. Peter’s Church and Cemetery, Westchester Square Development Project – Phase IA \(2019\)](#)

Bronx, NY

Conducted documentary and archival research to determine cultural sensitivity of the project site in regard to buried and/or extant cultural resources, as it related to a mid-17th century Colonial townhouse, and a late-17th century Quaker Meeting House and adjoining cemetery; and to assess the potential impact of proposed development to these resources within the project area and the adjacent St. Peter’s cemetery

[Hunts Point Wastewater Treatment Plant – Phase IA \(2019\)](#)

Bronx, NY

Conducted documentary and archival research to determine cultural sensitivity and the potential for prehistoric and historic resources, in advance of construction of new anaerobic digester facilities

[Alice Austen Park and House – Phase IB \(2019\)](#)

Staten Island, NY

Conducted shovel test excavations across the outdoor property associated with the historic Alice Austen Park and House, to identify potential cultural resources in advance of planned Hurricane Sandy-related repairs and improvements

[Elmhurst History and Cemeteries Preservation Society – Statement of Significance \(2018\)](#)

Queens, NY

Contributed documentary research and assisted the Principal Investigator to determine eligibility of a local cemetery and church site for inclusion on the National Register of Historic Places

[Nissequogue - IB \(2018\)](#)

Suffolk County, NY

Participated in shovel test excavations to identify potential prehistoric cultural resources in areas of planned residential development

[Historic Old House, Cutchogue \(2018\)](#)

Suffolk County, NY

Monitored replacement of utility lines in archaeologically sensitive areas surrounding the park.

[Vander-Ande Onderdonk House \(2017 to present\)](#)

Queens, NY

Involved in the creative production and lead design of visual materials and publications, related to special exhibitions and teaching programs pertaining to community outreach initiatives of the Vander-Ande Onderdonk House.

[Myrtle Avenue – Phase IB \(2017 to present\)](#)

Brooklyn, NY

Phase II excavation of several shaft features including wells and cisterns.

[Washington Square Park – Phase IB \(2016 to present\)](#)

New York, NY

Monitored replacement of utility lines in archaeologically sensitive areas surrounding the park.

[The Lott House \(2016 to present\)](#)

Brooklyn, NY

Worked on the design, fabrication, and development of new display methods for exhibitions for the historic Lott House.

Antigua & Barbuda

[Indiantown Trail \(2015 to 2017\)](#)

Barbuda

Helped conduct and carry out all elements of an archaeological excavation at the prehistoric site of Indiantown Trail. Mapped, analyzed, and recorded archaeological artifacts and features. Assisted in the lab analysis (including cleaning, preserving, and identifying artifacts) and the lab management (including maintaining data entry, data integrity, and data catalog) of the collection.

California

[In Bardo Pictures \(2016 to present\)](#)

Los Angeles, CA

Edited and analyzed potential projects to form assessments and compose reports on their potential viability for production. Lead design and the creative production of pitch decks, look books, and investor presentations for independent films that effectively communicated tone and potentiality for each singular project. Illustrated an ability to exercise considerable autonomy and initiative in professional activities; and demonstrated a significant capacity for the management of a project and project team.

[HBO \(2011 to 2012\)](#)

Los Angeles, CA

Conducted deadline-driven script analysis, composed script coverage and notes on feature submissions and templates, analyzed and graded screenplays during development process, advised and made recommendations on structure of scripts, and contributed to generation of ideas and solutions for script challenges.

Caitlin Welks, M.A., Archaeologist

Ms. Welks has nearly ten years of experience working in all phases of archaeological excavation. Her specializations include both prehistoric and historic contexts in the North East and Bronze and Iron Age Israel and the Near East. She has extensive knowledge of field methodologies for prehistoric and historic sites.

SELECTED PROJECT EXPERIENCE BY STATE

New York

Various Projects and Locations Throughout the Five Boroughs Phase I - II (2017- Present)

Phase II excavations on construction sites in Manhattan, Brooklyn the Bronx, Queens, and Staten Island NY, tracing out and excavating foundations, walls, shaft features, wells, and rooms from 19th and 20th century structures demolished before WWII. Tasks also included monitoring construction work, and identifying and excavating archaeological material that have been uncovered from this work. Also responsible for writing notes and descriptions of structures as well as creating feature drawings and plan views of excavated areas. Also responsible for writing pre-excavation work plans, field memos, trench and feature descriptions and notes, Phase IAs, and project reports. Leveraged various New York archives to trace property lines and property ownership. Descriptions of Specific Projects are as follows:

Washington Square Park Water Main Replacement and Connection Project – Phase IB (2015-Present)

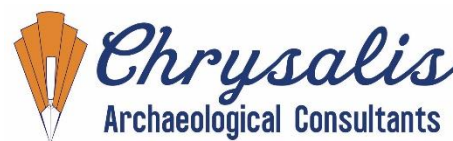
Manhattan, NY

Monitored excavations for the replacement/upgrade of water main, sewer, and additional utility services and conducted excavation of human remains around Washington Square Park, a known potter's field and contagious disease cemetery. Currently working on the Final Report for this project.

Hart Island, New York – Shoreline Stabilization Project – Phase IB (2017-Present)

Bronx, NY

Conducted field survey and recovery of human remains from the currently active potter's field located on Hart Island. Also responsible for writing up field memos and cleaning of remains.



AREAS OF EXPERTISE

Archaeological Survey and
Excavation

EDUCATION

M.A. Jewish Studies, Focus -
Ancient Israel and the Near East:
2017, University of Maryland,
College Park

B.A., Archaeology: 2009,
Hamilton College

CERTIFICATIONS

OSHA 10 Hour

PROFESSIONAL EXPERIENCE

2017 – Present: Chrysalis
Archaeological Consultants

2013-2014: Skelly and Loy, Inc.

2012: AECOM Public
Archaeology Laboratory

2011: A.D. Marble & Company

2011: Rhea Engineers &
Consultants Inc.

2010: Christine Davis Consultants

PROFESSIONAL ORGANIZATIONS

American School of Oriental
Research (ASOR)

College Art Association (CAA)

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Brooklyn, NY 11234

Ingersoll Senior Residences (275 Myrtle Avenue) – Phase IB (2016-Present)

Brooklyn, NY

Conducted field excavation on this archaeologically sensitive former residential site across from historic Fort Greene Park in advance of construction of new senior housing. Currently working on processing and cataloging the artifacts found in preparation for the final report.

CC Moore Homestead Playground - Phase IB (2019)

Queens, NY

Conducted field monitoring on this archaeologically sensitive park in Queens, New York playground during park reconstruction.

Alice Austen Park- Phase IB (2019)

Staten Island, NY

Conducted field testing on this archaeologically sensitive park located around the historic Alice Austen House in Staten Island, New York.

Worth St- Phase IB (2019)

Queens, NY

Conducted field monitoring on this possibly archaeologically sensitive area on the outskirts of Five Points in Manhattan, New York.

Pennsylvania

Various Projects and Locations - Phase I - II (2013-2014)

Phase I and II excavations. Included digging shovel test pits, opening and excavating 1m x 1m units, excavating features, creating unit and feature drawings and soil profiles, cataloging pre-contact and post-contact period artifacts, and assisting in site grid set-up and site-specific methodology.

Port Allegany – Phase I (2012)

Phase I excavation. Included digging shovel test pits, opening and excavating 1m x 1m units, drawing profiles, filling out paperwork, and cleaning and analyzing pre-contact artifacts.

Kittanning and Danville – Phase II (2011)

Phase II prehistoric excavation. Included opening and excavating 1m x 1m units, creating unit and feature drawings, soil profiles, analyzing and cataloging prehistoric artifacts, assisting in site grid set-up and site-specific methodology, excavating features, digging shovel test pits, and monitoring backfill endeavors.

New Geneva – Phase II (2011)

Phase II historic mill excavation, supervised by Skelly & Loy. Included setting in and excavating 1m x 1m units, excavating features, recording data, digging shovel test pits, and cleaning and cataloging artifacts.

[Pittsburgh – Phase I –II \(2010\)](#)

Phase I and II excavations included digging shovel test pits, surface collection, excavating features, and cleaning and cataloging pre-contact and post-contact period artifacts.

West Virginia

[Various Projects and Locations - Phase I - II \(2013-2014\)](#)

Phase I and II excavations. Included digging shovel test pits, opening and excavating 1m x 1m units, excavating features, creating unit and feature drawings and soil profiles, cataloging pre-contact and post-contact period artifacts, and assisting in site grid set-up and site-specific methodology.

[Parsons – Phase I \(2011\)](#)

Phase I fieldwork, supervised by Skelly & Loy. Tasks included digging shovel test pits, screening for artifacts, excavating 1m x 1m units, excavating features, filling out field forms, and mapping and site grid set-up.